Muhammad Abid Saleem

Master of Science (Marketing)

Bachelor of Business Administration (Honours)

Model of Eco-Socially Conscious Consumer Behaviour Related to Choice and Use of Personal Cars – Evidence from an Emerging Economy

This thesis is submitted in fulfilment of the requirement for the degree of Doctor of Philosophy (PhD), Management and Commerce, at James Cook University

College of Business, Law and Governance

James Cook University

1 James Cook Drive

Townsville, Australia

Advisory Panel:

Professor Lynne Eagle (Principal Supervisor)

Professor David Low (Associate Supervisor)

March 2019

Research Outputs

<u>**From thesis**</u>

Journal Articles – Published

1.   Saleem, M. A., Eagle, L., & Low, D. (2018). **Climate change behaviours related to purchase and use of personal cars: Development and validation of eco-socially conscious consumer behaviour scale**. *Transportation Research Part D: Transport and Environment, 59*, pp. 68-85. doi:https://doi.org/10.1016/j.trd.2017.12.023
2.   Saleem, M. A., Eagle, L., & Low, D. (2018). **Market segmentation based on eco-socially conscious consumers' behavioural intentions: Evidence from an emerging economy**. *Journal of Cleaner Production, 193*, pp. 14-27. doi:https://doi.org/10.1016/j.jclepro.2018.05.067
3.   Saleem, M. A., Eagle, L., & Low, D. (2018). **The power of spirituality: exploring the effects of environmental values on eco-socially conscious consumer behaviour**, *Asia–Pacific Journal of Marketing and Logistics,* 30(4), pp. 867-888

Journal Articles – Under Review

1.   Saleem, M. A., Eagle, L., & Low, D. **Determinants of Eco-Socially Conscious Consumer Behaviour Related to Choice and Use of Personal Cars**, *Transportation Research Part D: Transport and Environment,* Under Review
2.   Saleem, M. A., Eagle, L., & Low, D. **Normative Influences on Eco-Socially Conscious Consumer Behaviour Related to Choice and Use of Personal Cars: An Emerging Economy Perspective**, *Journal of Environmental Psychology,,* Under Review

Conference Presentations

1.   Saleem, M. A., Eagle, L., & Low, D., (2018).   **Environmental values and eco-socially conscious consumer behaviour: does spirituality say anything**? International Social Marketing Conference, Singapore, 15-17 July 2018.

<u>**Other than thesis**</u>

1.   Saleem, M. A., Bhutta, M. Z., Noman, M., Zahra, S. (2018). **Enhancing performance and commitment through leadership and empowerment: An emerging economy perspective**, *International Journal of Bank Marketing*, in press
2.   Yaseen, A., Saleem, M. A., Zahra, S., & Israr, M. (2018). **Precursory effects on entrepreneurial behaviour in the agrifood industry**. *Journal of Entrepreneurship in Emerging Economies, 10*(1), pp. 2-22. doi:10.1108/JEEE-08-2016-0029
3.   Saleem, M. A., Yaseen, A., & Zahra, S. (2018). **Predictors of Organizational Commitment in Public Sector Hospitals of Pakistan — A Moderated Mediation Study**. *Journal of Health Management, 20*(2), pp. 206-225. doi:10.1177/0972063418763656
4.   Saleem, M. A., Yaseen, A., & Wasaya, A. (2018). **Drivers of customer loyalty and word of mouth intentions: the moderating role of interactional justice**. *Journal of Hospitality Marketing & Management*, pp. 1-28. doi:10.1080/19368623.2018.1469447
5.   Saleem, M. A., Zahra, S., & Yaseen, A. (2017**). Impact of service quality and trust on repurchase intentions – the case of Pakistan airline industry**. *Asia–Pacific Journal of Marketing and Logistics, 29*(5), pp. 1136-1159. doi:10.1108/APJML-10-2016-0192
6.   Saleem, M. A., Wasaya, A., & Zahra, S. (2017). **Determinants of Frozen Food Purchase Intentions: Insights from a Developing Country**. *Indian Journal of Marketing, 47*(7), pp. 47-59. doi:10.17010/ijom/2017/v47/i7/116476

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet the requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the material included in this thesis is original and is an intellectual product of the author of this thesis. Proper citation/ acknowledgment has been made to the work of other authors contained in this thesis.

_____

Muhammad Abid Saleem

Author

18 March 2019

Acknowledgments

To my parents, whatever I am today, all my success and achievements, are the result of how you nurtured and trained me. Without any doubt, you invested all financial, intellectual and social resources at your disposal on my wellbeing. I can just say, I am nothing without you and it is impossible to express in words my gratitude for all your kindness and sacrifices that shaped my life altogether.

To my advisory panel, Professor Lynne Eagle and Professor David Low – I very much appreciate your efforts, commitment and skills you employed to make this project of mine complete. I always found you available, looking forward to guiding me not only in the matters related to theoretical and conceptual foundations of the thesis but also to assist me in other facets of management for better productivity and balanced life.

To my wife who has always been very helping and cooperating, giving me the space required to concentrate on my work. It was never easy, and it was only you who could stand by me and enable me to complete this project.

To my colleagues, Samira Zare, Azeem Shah, Jing Li (Lydia), Andrea Grout and Chonlada Pharino. You were all very friendly and cooperative and provided a great environment at the office that helped me to complete this thesis in time.

Thank you everyone for being lovely companions on this journey.

Muhammad Abid Saleem
Author
18 March 2019

Statement of Contributions of Others

Name of Assistance	Contribution	Names, titles and Affiliation of Contributors
Supervision	Primary Supervisor	Professor Lynne Eagle, James Cook University
	Secondary Supervisor	Professor David Low, James Cook University
Financial Support	James Cook University Postgraduate Research Scholarship (JCUPRS) College of Business Law and Governance, JCU, Australia	JCU Townsville Australia
Data Collection	Research Assistants	National University of Modern Languages (NUML) Pakistan
	Industry Specialists	Honda Motors Pakistan, Pak Suzuki Ltd. Pakistan, Indus Toyota Motors Pakistan
Collaborations	Co-authored Papers 1. **Climate change behaviours related to purchase and use of personal cars: Development and validation of eco-socially conscious consumer behaviour scale**. *Transportation Research Part D: Transport and Environment, 59*, pp. 68-85. doi:https://doi.org/10.1016/j.trd.2017.12.023 2. **Market segmentation based on eco-socially conscious consumers' behavioural intentions: Evidence from an emerging economy**. *Journal of Cleaner Production, 193*, pp. 14-27. doi:https://doi.org/10.1016/j.jclepro.2018.05.067 3. **The power of spirituality: exploring the effects of environmental values on eco-socially conscious consumer behaviour**, *Asia–Pacific Journal of Marketing and Logistics,* 30(4), pp. 867-888 4. **Environmental values and eco-socially conscious consumer behaviour: does spirituality say anything**? International Social Marketing Conference, Singapore, 15-17 July 2018.	Saleem, M. A., Eagle, L., & Low, D. (2018).
Editing Support	Copyediting and proofreading services according to the protocols in the university-endorsed *National Guidelines for Editing Research Theses*	Dr. John Cokley PhD, *EduPreneur Services International*

Abstract

This thesis focuses on developing a model of eco-socially conscious consumer behaviour related to choice and use of personal cars. It presents empirical evidence relating to the factors that must be considered when promoting environmentally friendly cars (noted as alternative fuel vehicles (AFVs) throughout the thesis), especially in an emerging economy such as Pakistan. The rationale and motivation behind this project is that there is an increasing rate of environmental problems such as air pollution and CO_2 in emerging economies and relatively lower competence in developing strategies aimed at improving climate change resilience. Together with changing the climate, anti-environmental anthropogenic activities make it more difficult for affected communities to prosper. To curb these environmental problems, studies reported in the academic literature have suggested taking measures to reduce the impact of human activities on the environment and regulating consumption of environmentally harmful products. In response to these emerging demands, marketers have invested heavily, regarding both product development and promotion of pro-environmental behaviours, in various domains of commercial interest. One such area is the use of personal cars, a sector that is proliferating and, given that CO_2 emissions from cars are one of the most significant sources of environmental problems (particularly global warming), there is a need to promote alternative fuel vehicles (AFVs) and eco-social behaviours in the use of personal cars. This thesis reports on two major studies to answer three underlying research questions. The first study focuses on two research questions. The first research question, RQ_1, explores how automobile industry consumers (those in the personal cars segment) define eco-socially conscious behaviour (ESCCB) related to the choice and use of personal cars in Pakistan. The second research question, RQ_2, attempts to identify the profiles of different customer segments based ESCCB defined in RQ_1. The second study is focused on the theoretical explanation of factors that are suggested in the literature to affect ESCCB related to the choice and use of personal cars. The Theory of Planned Behaviour (TPB) and Value-Beliefs-Norms Theory (VBN) have been converged to provide a holistic explanation of ESCCB.

Based on scientific methodologies recommended for new scale development, the results reported in this thesis suggest that ESCCB related to choice and use of personal cars is a latent construct manifested in three underlying dimensions: eco-social use, eco-social purchase and eco-social conservation. A market segmentation approach using cluster and discriminant analysis suggests that three consumer segments exist in the Pakistani automobile market based on response towards eco-social behaviour and inclination towards choosing AFVs. The first segment, the conservatives, are not concerned about the environmental issues, prefer conventional cars, and are least sensitive to the eco-social use of personal cars. The

second segment, the indifferents, are unsure whether they should buy AFVs and whether this will positively affect the environment. The third segment, and the largest one (51%), the enthusiasts, are highly inclined towards purchasing AFVs and eco-social use of personal cars to reduce the impact of the use of personal cars on the environment. The findings of Study 1 hold significant implications for marketing practitioners and policymakers. Some conceptual and methodological limitations are highlighted.

The results of Study 2 suggest that the Theory of Planned Behaviour (TPB), Value-Belief-Norm (VBN) Theory and the integrated model, were all found to be very strong in explaining not only ESCCB intentions but also actual behaviour, related to purchase of environmentally friendly cars and conservation of fuel. Results showed that the integrated model based on TPB and VBN was stronger in predicting ESCCB-conservation (49.7 per cent variance) than TPB (46.7 per cent variance) and VBN (26.7 per cent variance). A similar pattern of results was evident for ESCCB-purchases (integrated model: 14.8 per cent variance, TPB: 12.5 per cent variance, VBN: 10.8 per cent variance). However, the predictive power of the three models for actual eco-socially conscious consumer behaviour (ESCCB) had slightly different results. TPB was found stronger to predict actual ESCCB (33.4 per cent variance), followed by the integrated model based on TPB and VBN (31.9 per cent variance) and VBN (15.7 per cent variance).

This study contributes to both theoretical and practical aspects linked with eco-socially conscious consumer behaviour related to choice and use of personal cars. These contributions extend the theoretical literature related to eco-social behaviours and provides policy measures for marketing practitioners and public policy makers. The study findings not only provide guidelines for automobile related behaviours but can also be generalised in other areas.

Keywords: Eco-Socially Conscious Consumer Behaviour (ESCCB), egoistic values, altruistic values, biospheric values, Value-Belief-Norm (VBN) Theory, the Theory of Planned Behaviour (TPB), new scale development, alternative fuel vehicles.

Table of Contents

List of Tables

List of Figures

List of Acronyms

AC	Awareness of Consequences
AFVs	Alternative Fuel Vehicles
AGFI	Adjusted Goodness of Fit Index
AR	Awareness of Responsibility
AV	Altruistic Values
AVEs	Average Variance Explained
BV	Biospheric Values
BDS	Bachelor of Dental Surgery
CFA	Confirmatory Factor Analysis
CFI	Composite Fit Index
CI	Confidence Interval
CR	Composite Reliability
DAE	Diploma in Associate Engineering
DSP	Dominant Social Paradigm
DVM	Doctor of Veterinary Medicine
EC	Environmental Concern
ECCB	Ecologically Conscious Consumer Behaviour
EFA	Exploratory Factor Analysis
EgV	Egoistic Value
ELOC	Environmental Locus of Control
ESC	Eco-Social Conservation
ESP	Eco-Social Purchase
ESU	Eco-Social Use

ESCCB	Eco-Socially Conscious Consumer Behaviour	
FDI	Foreign Direct Investment	
FMCG	Fast Moving Consumer Goods	
FMS	Faculty of Management Science	
FRPM	Free Response Perceptual Mapping	
FTSE	Financial Times Stock Exchange	
GDP	Gross Domestic Product	
GE	Green Electricity	
GFI	Goodness of Fit Index	
GFT	Goals Framing Theory	
GPB	Green Purchase Behaviour	
GhG	Green House Gases	
HoD	Head of Department	
HTMT	Hetrotrait-Monotrait	
ICT	Incentive Crowding Theory	
IEA	International Energy Agency	
IMF	International Monetary Fund	
IPCC	Intergovernmental Panel on Climate Change	
IRO	Intrinsic religious orientation	
KMO	Kaiser-Meyer-Olkin	
KPK	Khyber Pakhtunkhwa	
MCE	Motivation Crowding Effect	
MANOVA	Multivariate Analysis of Variance	
MBBS	Bachelor of Medicine and Bachelor of Surgery	
MEC	Means Ends Chains	
MPT	Motivation Protection Theory	

MSCI	Morgan Stanley Capital International
NUML	National University of Modern Languages
NAT	Norms Activation Theory
NCS	National Consumer Study
N_2O	Nitrous Oxide
NEP	New Ecological Paradigm
NFI	Norm Fit Index
NSW	New South Wales
NUST	National University of Science and Technology
OICA	Organisation International des Constructeurs d'Automobiles (International Organization of Motor Vehicle Manufacturers)
PAF	Principal Axis Factoring
PAMA	Pakistan Automotive Manufacturers Association
PCA	Principal Component Analysis
PCE	Perceived Consumer Effectiveness
PEPA	Pakistan Environmental Protection Agency
PKR	Pak Rupee
QAU	Quaid-e-Azam University
RD	Regional Director
RMSEA	Root mean square error of approximation
SDC	Small Displacement Car
SEM	Structural Equation Modelling
SL	Source Language
SOM	Self-Organising Maps
S&P	Standard and Poors
SPSS	Statistical Package for the Social Sciences
SUV	Suburban Utility Vehicle
TIB	Theory of Interpersonal Behaviour

TL	Target Language	
TLI	Tucker Lewis Index	
TME	Theory of Marketing Ethics	
TPB	Theory of Planned Behaviour	
TRA	Theory of Reasoned Action	
UK	United Kingdom	
UNIDO	United Nations Industrial Development Organization	
USA	United States of America	
USEPA	United States Environmental Protection Agency	
VBN	Value-Beliefs-Norms Theory	
VIF	Variance Inflation Factor	
WTP	Willingness to Pay	
ZMET	Zaltman Metaphor Elicitation Technique	

Chapter One: Introduction

Climate change is destroying our path to sustainability. Ours is a world of looming challenges and increasingly limited resources. Sustainable development offers the best chance to adjust our course – Ban Ki-Moon

1.1 Introduction

Environmental issues are emerging as undeniable facts that are being recognised at all global forums. Ever since the inception of the industrial revolution in the mid-18th century, environmental deterioration has been on the rise (Tan, 2015). Pollution, global warming, energy crisis, disequilibria in ecosystems, ozone layer depletion and climate changes are among the most devastating environmental problems (Shah, 2015). Research in the environmental sciences identifies many reasons for emergent environmental issues including deforestation, high consumption, overpopulation, land disturbance and, most importantly, emission of greenhouse gases (GhGs) (de Richter, Ming, Caillol, & Liu, 2016; Shah, 2015).

Greenhouse gases create global warming which causes abrupt changes in the environment including a high melting rate of ice on glaciers, a rise in sea levels, droughts, and more frequent periods of infrequent rainfall or extreme weather leading to floods (Ramanathan & Feng, 2009). Major anthropogenic greenhouse gases include carbon dioxide (CO_2), water vapours, methane (CH_4), chlorofluorocarbons (CFCs) and nitrous oxide (N_2O) (Ramanathan & Feng, 2009). Thus far, CO_2 is reported to be the most frequently emitted GhG in the troposphere of the earth. CO_2 is produced by burning fossil fuels (oil, coal, natural gas), carbon-containing organic matter, for instance, wood products, and solid waste (USEPA, 2015), hence, it is a significant contributor towards environmental degradation.

The emission of CO_2 occurs from sources that are many and various. According to a recent International Energy Agency (IEA) report, by far the most significant source of CO_2 emissions from human activities is energy consumption generated from fossil fuels, which constitutes 90% of CO_2 emissions, 9% of CH_4 and 1% of N_2O (IEA, 2015). Sector-wise, 'electricity and heat' production contributes the highest (42%) emissions followed by the 'transport' sector (23%) (IEA, 2015). Consumption of energy is closely associated with the growth rate of countries: higher growth rates leading to more consumption and vice versa. Global gross domestic product (GDP) growth rates highlight an increasing trend in the emerging economies of Asia, Latin America, Africa and the Middle East. Among the countires of these regions, China and India remain the highest CO_2 emitting countries

respectively (IEA, 2015). Emerging economies in this thesis refer to those countries that are rapidly progressing towards becoming technologically advanced, experiencing constant improvement in GDP growth and infrastructural investment, and that possess attractive foreign direct investment (FDI) opportunities (Jain, 2006). Including Pakistan, there are approximately 23 countries that are identified as emerging economies by the International Monetary Fund (IMF), Morgan Stanley Capital International (MSCI), Standard and Poor's (S&P) and Dow Jones (FTSE, 2016; IMF, 2016; MSCI, 2016).

The transport sector plays a vital role in the growth of any country as economic activity fuels transport demand. This sector serves the needs of both freight and passenger transportation. Passenger transport means vary from personal cars to metros and subway trains for domestic needs and airlines for both domestic and international travel. Similarly, for domestic freight movement, trucks and rail cars are more common while international freight, in volume, is dominated by ocean shipping, with some airfreight of perishable goods. Energy consumed in transportation primarily (95%) comes from oil-based fuels which create high levels of CO_2 emissions (IPCC, 2004). Of all CO_2 emissions generated by the transport sector, 44.5% are contributed by light-duty vehicles (passenger cars) alone (IPCC, 2004). This high percentage indicates incremental trends in the use of vehicles for urban transport, especially in emerging economies. Another crucial aspect is high population growth in emerging economies and currently the low access to motorised means of transportation in those economies. These facts imply that, in coming decades, growth in personal income may be expected to result in the possession and use of more personal vehicles which will further exacerbate the GhG emissions statistics (IPCC, 2004).

Transport activity has been increasing rapidly for the past few decades and is expected to grow at an even faster pace in the near future. Current trends in emerging economies point towards ownership of private cars, instead of mass transit, as means of transportation because of multiple factors, the lack of rapid transit infrastructure being the most important one (IEA, 2009). Currently, vehicle ownership per thousand persons is highest for Monaco (863) and the United States (809) closely followed by New Zealand (733), Italy (673), Australia (687) and Canada (605) (OICA, 2016). Statistics from Asia, however, provide a different picture. China and India are two rapidly growing countries both regarding population (1.37 billion with 0.5% annual growth and 1.25 billion with 1.22% annual growth respectively as at 2015) and GDP growth rate (6.8 % and 7.3% respectively) (CIA, 2015). Both countries have very low vehicle ownership per thousand persons, that is,

85 and 17 respectively (OICA, 2016). Similarly, another country from the same region, Pakistan, with a rapidly growing population (200 million growing at 1.46% annually as at 2015) and GDP (growth rate 4.2%) (CIA, 2015), has even lower numbers of possession of personal cars , that is 13 vehicles per thousand ("Vehicles in use | OICA," 2016).

Based on these statistics, it is projected that vehicular ownership rates will increase in emerging economies in the years to come. Reasons to accept such projections include the market potential, population growth and improving per capita income, reflected by GDP growth, of these countries. This may cause an elevation in transport energy consumption and result in depletion of natural resources more quickly than at present. These trends are likely to result in a substantial increase in CO_2 emissions, which, as noted earlier, is a significant cause of environmental pollution. Such consequences have already started to appear. For instance, the number of personal cars in China is growing at a rate of 20% per annum with a fivefold increase in personal travel over the past 20 years, and this is expected to quadruple transport energy use levels between 2002-2025 (IPCC, 2004). Statistics from neighbouring India are no different. Overall, Indian travel energy consumption will keep growing at a rate of 4.5% during this period as against 6% for China (IPCC, 2004). While increases in travel and possession of personal cars are inevitable, the rate of emissions and use of fossil fuels can still be regulated. Innovative environment-friendly technologies can achieve this by shaping consumer behaviour towards the use of alternative transport modes, such as public transport and bicycles, for commuting and leisure travel. Energy-efficient vehicle technologies may also help to reduce the impact of growing travel energy consumption on the environment while curtailment in the use of personal cars may result in less consumption of vital energy resources.

Fuel-efficient or 'green cars' use advanced technology to reduce climatic impact from exhaust emissions and to gain better performance regarding environmental impacts. Fuel-efficient cars serve two purposes: they can halve the amount of fuel use and reduce CO_2 emissions. Technological solutions for providing fuel efficiency include improvement in internal combustion engines, hybridisation of vehicles and electric or fuel cell vehicles (IEA, 2009). Although fuel-efficient technology improves vehicle environmental performance, this does not guarantee lower overall emissions since technology alone cannot transform consumption patterns. For instance, even allowing for improved technology, increases in transport consumption may ultimately mitigate the positive effects of efficient

production, a phenomenon referred to in the academic literature as a 'rebound effect' (Arne, Matthias, & Cathy, 2015; Herring & Sorrell, 2009).

Based on this information, it can be expected that substantial growth in the purchase rates of automobiles is likely in emerging economies due to economic stability and an upsurge in per capita income (Plombon, 2011). Given these predictions, it becomes imperative, in the perspective of the global environment, that a strategy should be developed to ensure that consumers prefer energy-efficient vehicles over traditional technology-driven automobiles. Moreover, it is also important that consumers' use of personal cars complies with environmental requirements, such as using low CO_2 emitting cars, carpooling and using public transport or bicycles, where possible, to save fuel consumption. However, consumer behaviour related to the purchase and use of personal cars is based on a complex set of decisions contingent upon product need compatibility, cultural traits, values, norms, and the nature of efforts made by the corporates to promote specific behaviours (Brand, Anable, & Tran, 2013; Marc & Barbara, 2013; Steren, Rubin, & Rosenzweig, 2016). Understanding such behaviour, therefore, requires a systematic study to answer a number of research questions. Three fundamental questions in this domain may include conceptualising the nature of behaviour related to use and purchase of environment-friendly cars, the target consumers to whom these vehicles should be marketed, and factors that govern the purchase and sustainable use of the automobile. To reflect on these enquiries, and to help frame the thesis, a review of the literature has been undertaken to investigate concepts of eco-friendly consumer behaviour (see section 2.2), the nature of consumer groups who prefer environment-friendly products (see section 2.6) and different paradigms and theories which tend to explain pro-environmental behaviours (see section 3.2). This review highlights some shortcomings in the literature, paving the way to conduct further research to address these issues.

Investigation of sustainable consumer behaviour is not a new phenomenon. The existing literature documents a number of studies about general as well as several specific pro-environmental behaviours. General behaviours investigated thus far include, but are not limited to, Ecologically Conscious Consumer Behaviour (ECCB) (Roberts, 1991; Tilikidou, 2013), Environmentally Responsible Behaviour (ERB) (Iwata, 2001), Ethically Minded Consumer Behaviour (EMCB) (Sudbury-Riley & Kohlbacher, 2016), General Ecological Behaviour (GEB) (Kaiser & Wilson, 2000), Personal Pro-Environmental Behaviour (PPEB) (Walton & Austin, 2011) and Socially Responsible Consumer Behaviour (SRCB) (Roberts,

1995, 1996). Similarly, specific pro-environmental behaviours comprise a wide range of behaviours, for instance, willingness to reduce personal car use (Jansson, 2011; Nordlund & Garvill, 2003), hybrid car purchase intentions (Oliver & Lee, 2010), reuse of bedsheets and towels (Huang, Lin, Lai, & Lin, 2014a), loyalty to public bicycle systems (Chen, 2016) and purchase intentions towards green energy (Rahbar & Wahid, 2011). Contextual analysis of these studies reveals that they have been conducted in the context of economically advanced countries such as Germany, Sweden, the United Kingdom, the US, Spain, Australia and Italy. However, evidence reported from emerging economies is not only limited in volume but also sparse in scope and inconclusive because of contextual constraints towards performing pro-environmental behaviours – purchasing power might be one mitigating factor in emerging economies. Nevertheless, improvement in the economies of such countries has increased the potential of pro-environmental behaviours and the market of green products. It is, therefore, worthwhile to investigate the pattern of consumer behaviour, the nature of potential consumer markets who prefer environment-friendly products, and human and cultural factors that facilitate or impede such behaviours in emerging markets. Building on the gaps identified in the literature, the current study is framed around three major objectives, which tend to advance research in pro-environmental consumer behaviour in an emerging economy context.

First, the recommendations of Tilikidou (2002) are used as a foundation. This author noted that the measurement of consumer behaviour essentially requires conceptually appropriate and culturally relevant measurement tools, i.e., instruments for measurement of specific behaviours. In reviewing the literature in this area, it is found that there is a lack of research reporting appropriate measurement instruments that are culturally relevant to emerging economy perspectives. The reasons for this might be that: firstly, sustainable consumer behaviour is a nascent phenomenon in emerging economies where necessities are barely met; and secondly, that research evidence on sustainable consumer behaviour is generally reported from economically advanced countries. Therefore, the extant literature reports measurement instruments from developed countries. Some noteworthy contributions in the area of developing measurement instruments to tap pro-environmental behaviours from developed countries' perspectives are by Dunlap (2008); Dunlap, Van Liere, Mertig, and Jones (2000); Kaiser (1998); Roberts (1995) and Markle (2013) (for a consolidated summary, see Appendix III:). Nonetheless, these instruments may not yield valid results in countries such as Pakistan where the nature of pro-environmental consumer behaviour may

not be consistent with that exhibited by consumers in developed economies. Apart from cultural differences, an analysis of existing measures of sustainable consumer behaviour reveals that instruments are either focused on specific pro-environmental behaviours related to energy, food, or recycling, or are too general to address the issues related to 'green cars choice and use.' A detailed description of available measurement scales and their scope is provided in Section 2.2 of this thesis. The limitation associated with the nature and scope of available measurement instruments is a hindrance in studying pro-environmental consumer behaviours related to 'sustainable car choice and use,' in an emerging economy context. This study, therefore, intends to address this problem by developing a new instrument to measure consumers' behavioural intentions related to the choice of private car and sustainable car use, including, but not limited to, curtailment of car usage. The new scale is intended to incorporate both ecological and social facets of ethical behaviour in the cultural perspectives of an emerging economy, i.e., Pakistan.

Second, due to lack of research in emerging economies, there is little known about the characteristics of consumers who prefer environment-friendly products. As has long been acknowledged, the success of any marketing plan relies on targeting the right customer (Dibb, 1998; Kotler, 1997). Corporate efforts to develop and successfully market an eco-innovation can hardly thrive without knowledge about the characteristics of potential consumers of such products. A review of literature pertinent to green consumer segments reinforces the need to set forth a research agenda for the investigation of this phenomenon in an emerging economy (for details see section 2.6). Thus, this study intends to identify demographic, psychographic and behavioural characteristics of green consumers, based on their choice and use of green cars, in the broader market of Pakistan.

Finally, the literature review highlights that research related to factors predicting sustainable consumer behaviour is scarce and is weak regarding consistent findings and widely agreed upon causal models (see section 3.2 for details). Various interdisciplinary theories and paradigmatic explanations of pro-environmental behaviours report inconsistent evidence and suggest that further research is needed in different cultural contexts (Carrington, Neville, & Whitwell, 2010, 2014; Johnstone & Tan, 2014). In emerging economies, the state of the evidence is even scarcer. Therefore, this study attempts to develop an integrated consumer behaviour model, built on the most significant theories of social psychology to explain factors predicting consumers' preferences towards environment-friendly cars and sustainable car use, in the context of an emerging economy, Pakistan.

1.2   Rationale for the study

Increasingly negative effects of human behaviours on the environment have led to a substantial body of research seeking to better understand consumer behaviour in general, and green consumer behaviour in particular. However, an in-depth understanding of pro-environmental behaviours, most relevant to the aforementioned environmental problems in particular cultures, and policy interventions to foster such behaviours, is dependent on three key factors: First, understanding the exact nature of specific pro-environmental behaviour where policy intervention is required; second, identification of target consumers whose behaviour need to be modified; and last, but not the least, the factors which facilitate or impede such behaviours. These key factors are connected in a sequential array of research objectives in this thesis, which ultimately lead to a holistic model of pro-environmental consumer behaviour in an emerging economy context.

Although multiple theories and models have been proposed for explaining sustainable behaviour, the predictive power and generalisability of such proposals continue to be debated (Johnstone & Tan, 2015; Kates et al., 2001; Miniero, Codini, Bonera, Corvi, & Bertoli, 2014). Theories in the domain of green marketing have been borrowed primarily from social psychology. The most cited among these and the early developers of each theory are: the Theory of Planned Behaviour (TPB) (Fishbein & Ajzen, 1975), the Theory of Interpersonal Behaviour (TIB) (Triandis, 1979), the Theory of Values-Beliefs-Norms (VBN) (Stern, Dietz, Abel, Guagnano, & Kalof, 1999b), the Norms Activation Theory (NAT) (Schwartz, 1977a) and the Protection Motivation Theory (Rogers, 1975). Though constructs of green marketing are conceptually close to the constructs propounded in these theories, it is still unclear how useful these theories are in predicting sustainable consumer behaviour (Redd, 2012). A detailed discussion of this issue is presented in section 1.4.3 of this chapter. This thesis, therefore, attempts to provide new evidence by developing a hybrid model after integrating relevant theories for better predictability of sustainable consumer behaviour.

1.3   The Context of the Study

This study is conducted in the context of the automobile industry of Pakistan to illustrate the importance of understanding consumer behaviour related to the choice of environment-friendly cars and sustainable car use for environmental protection.

In the following section, a brief overview of the automobile industry of Pakistan is presented.

1.3.1   Automobile Industry in Pakistan

As noted earlier, Pakistan is a rapidly growing country in South Asia with an estimated population of 200 million, as at July 2015, growing at a rate of 1.46% per annum (CIA, 2015). The country is currently facing several major environmental issues namely air pollution from vehicles' exhaust, water pollution from raw sewage, industrial wastes, agricultural run-off, deforestation, soil erosion and desertification (CIA, 2015). Air pollution is one of the biggest environmental issues in Pakistan, attributed primarily to inefficient energy use and accelerated growth in the use of personal cars emitting CO_2 (Zaman, 2008). According to The World Bank (2014) report on CO_2 emissions, Pakistan's CO_2 emission rate reached 0.9 metric tonnes per capita in 2011, well above its level a decade before, which was 0.7 metric tonnes, indicating likely increases in GhG emissions in the near future. Automobiles, both in commercial and individual or household use, constitute a significant proportion of CO_2 emissions in Pakistan. The overall transport sector contributes 170kg of CO_2 per capita in Pakistan as of 2015. Although these emissions are quite below the world average, which is 985kg/capita, the rapidly growing automobile industry, coupled with high car possession rate, has made it a point of concern for environmentalists ("Vehicles in use | OICA," 2016).

Numerous studies on the impact of environmental pollution in more developed countries, caused explicitly by automobile exhausts, suggest that the issue of pollution in emerging economies is escalating, as it has in the developed world (Afroz, Rahman, Masud, Akhtar, & Duasa, 2015; Beck, Rose, & Hensher, 2013). Hence, these results warrant the need to address this issue in Pakistan. A study conducted in the context of air pollution reported that 60%-70% of air pollution in Pakistan is contributed by vehicles' exhaust out of which 81% is contributed by motor cars in individual and household use (Ilyas, 2007). In addition to environmental pollution, general consumption patterns of automobile consumers have elevated concerns over natural resources depletion, which has raised serious questions about the availability of these resources for future generations.

The automobile market in Pakistan is growing at a rapid pace. According to the report of the Pakistan Automotive Manufacturers Association (PAMA), total personal cars sold during 2014-2015 were 152,524 units as against the figure of 118,102 units during 2013-2014, highlighting growth of almost 30% (PAMA, 2015). This escalating growth is because

of the increased purchasing power of local customers, stable fiscal policy, improved economics of the automobile sector and the overall recovery of the economy from the global financial crisis (Aftab, 2016). Three big automobile companies are manufacturing or assembling personal cars in Pakistan: Pak Suzuki Motors Ltd, Indus Motors Company Ltd, and Honda Atlas Cars Pakistan Ltd. The industry has an oligopolistic structure characterised by imperfect competition and market orientation on price sensitivity (Aqill, Aziz, Dilshad, & Qadeer, 2014). Importation of used cars also constitutes a sizeable segment depending upon changing governmental policies (Aqill et al., 2014).

In 2015 the Pakistani Government reduced import duty to 50 percent on all hybrid cars between 1300CC to 2500CC, to attract importers and provide wider consumer options (Siddiqui, 2015). More, recently, the Government approved an Auto Development Policy (ADP) (2016-21) incentivizing new entrants to the automotive market by reducing duties on completely built units (CBUs) and spare parts and slashing the import duty on manufacturing plants for setting up assembling and manufacturing facility, in order to encourage foreign direct investment (FDI) in the sector (Rana, 2016). This policy is expected to open the Pakistani market to locally assembled and manufactured new product lines including alternative fuel vehicles.

Realising its international commitments on environmental protection and long-term national energy objectives, governmental policy for the importation of hybrid fuel-efficient vehicles has remained flexible in Pakistan. The Government of Pakistan has already reduced import duty on all hybrid cars in a major category to 50%, that is 1300CC to 2500CC, to attract importers and provide options to the ultimate consumer (Siddiqui, 2015). Recently, the Government has approved an Auto Development Policy (ADP) (2016-21) incentivising the new entrants by reducing duties on completely built units and spare parts and slashing the import duty on manufacturing plants for setting up assembling and manufacturing facility, to encourage foreign direct investment (FDI) (Rana, 2016). This policy is expected to open the Pakistani market to locally assembled and manufactured new product lines including 'green cars'.

1.4 Theoretical Frameworks and Research Gaps

Considering the environmental importance of vehicle emissions and progressive evolution in technology, manufacturing of cars using environment-friendly technology has remained the focus of automobile producers during the past couple of decades. However,

acceptance of these products among the masses has not received substantial attention. Especially, marketers are sceptical about the future of such products in emerging economies such as Pakistan. Research in this area rarely provides any consistent guidelines to marketing practitioners. For example, some researchers argue that consumers who care about the environment are likely to purchase environmentally friendly products and prefer pro-environmental behaviours (Chekima, Syed Khalid Wafa, Igau, Chekima, & Sondoh Jr, 2016; Kanchanapibul, Lacka, Wang, & Chan, 2014). Contrary to this, another body of research indicates that even with a positive attitude towards environmental cause, there exists a huge intention-behaviour gap attributed to numerous factors (López-Mosquera, Lera-López, & Sánchez, 2015; Ramayah, Lee, & Mohamad, 2010; Zhao, Gao, Wu, Wang, & Zhu, 2014). These contradictions in the existing literature call for a renewed investigation in this area. Based on earlier works of this type, such as by Roberts (1991), there is a need to develop an original measurement scale, in the context of an emerging economy, which taps behavioural intentions related to choice and use of green cars. Then, based on this measurement instrument, consumer markets may be segmented to identify key socio-demographic and psychographic characteristics of green consumers. As a result, a paradigmatic explanation of choice and use of green cars can be made in the light of various theories (for more details, see section 3.3). This study, therefore, attempts to address the issues related to the prediction of behavioural intentions regarding green car choice and use, under three interconnected research questions. First, as indicated in the literature, the contextual operationalisation of constructs used to measure pro-environmental behaviours that are more pertinent to environmental issues is vital in sustainability marketing studies (Kaiser, 1998; Kaiser & Gutscher, 2003; Kaiser & Wilson, 2000). Second, identification of consumer groups who are more inclined towards pro-environmental action is essential for the successful development and marketing of eco-innovation. Lastly, a paradigmatic explanation of consumers' purchase behaviour of eco-friendly cars in the context of emerging economies is imperative. This thesis addresses these questions in three conceptual frameworks: the development of a psychometric measure for choice and use of green cars; green consumer segmentation; and norms-driven eco-socially conscious consumer behaviour.

Connected with the problems mentioned above, the literature review identifies three important research gaps in the domain of sustainable consumer behaviour (for details see Chapter Two: Literature Review). First, there is a paucity of research related to measurement instruments developed in the context of an emerging economy. This makes it inappropriate

to uncritically use existing measures because cultural variables and social conditions of new settings often fail to support various well-researched pro-environmental behaviours (Kaiser, 1998). As Tilikidou (2002) argued that the use of appropriate measurement instruments that capture the targeted consumer behaviour is critical for the validity of study results in green consumer behaviour research, this thesis develops a comprehensive measurement scale of *Eco-Socially Conscious Consumer Behaviour* (ESCCB) including indicators on 'choice and use of automobile' in emerging economies. Existing measures of pro-environmental behaviour come from developed countries, majorly from the US, which may not fit well with socio-demographics of emerging economies (Iwata, 2001; Roberts, 1991; Tilikidou, 2013).

Second, evidence on green consumer segments presents an inconclusive account of the characteristics of consumers who prefer green products and engage in pro-environmental behaviours. The extant research in green consumer segmentation has used demographics, psychographics and behavioural factors to define characteristics of green consumers. Past study findings, in terms of demographic profiles, fail to establish a general rule for the relative influence of income, education, gender, age and occupational characteristics on green consumers' behaviour (Chan, 2000; Finisterra do Paço & Raposo, 2010; Jain & Kaur, 2006; Roberts, 1996; Thompson, Anderson, Hansen, & Kahle, 2010), leaving future researchers with an opportunity to provide new culture-specific evidences. Studies on psychographic and behavioural components also provide inconsistent results in terms of key psychographic characteristics of green consumers (Barber, 2014; Park & Lee, 2014; Robert & James, 1999) and the number of potential green consumer segments based on sustainable behaviour or behavioural intentions (Baris, Harald, & Angi, 2015; Lavelle, Rau, & Fahy, 2015; Park & Lee, 2014; Singh, 2011). These shortcomings and inconsistencies call for a fresh investigation into green consumer segmentation research.

Finally, there is a major gap regarding theoretical explanations of green purchase behaviour. The existing literature documents growing evidence that ethical consumerism is not burgeoning even though consumers embrace ethical values (Marylyn & Ahmad, 2001; Szmigin, Carrigan, & McEachern, 2009). Existing theories, borrowed from other disciplines (Ajzen, 1991; Fishbein & Ajzen, 1975; Schwartz, 1977a; Stern et al., 1999b; Triandis, 1979) have been reported to hold weak explanatory power to predict green purchase behaviour (Redd, 2012). This study integrates concepts from the Value-Beliefs-Norms Theory (Stern et al., 1999b) and the Theory of Planned Behaviour (Ajzen, 1991) to provide a comprehensive account of ESCCB. Moreover, as Isaac and Ian (2011) also reported that

most of the studies explaining pro-environmental behaviour are limited to a 'Euro-American' context, investigation in this area in the context of an emerging economy is justified.

1.4.1 Research Gap 1: Measurement Instrument of Eco-Socially Conscious Consumer Behaviour (ESCCB)

Since the start of research into environmental marketing in the 1970s, the development of a comprehensive measurement instrument, incorporating elements from both general and specific pro-environmental behaviours, has always been in great need, but it was not until the late 1990s that the domain received more acknowledgment. There are a number of studies providing scales for measurement of environment-friendly consumer behaviour. Researchers have widely used some of these scales, for instance the 'New Ecological Paradigm (NEP) (Dunlap, 2008; Dunlap et al., 2000), which has been modified several times to accord improvements as suggested in research studies. The other most-commonly used scales for measurement of ecological behaviour include Ethically Conscious Consumer Behaviour (ECCB) (Roberts, 1996), Ethically Minded Consumer Behaviour (EMCB) (Sudbury-Riley & Kohlbacher), ECOSCALE (Stone, Barnes, & Montgomery, 1995) and Socially Responsible Consumer Behaviour (SRCB) (Roberts, 1995). A review of the existing literature, however, reveals some significant weaknesses in the available research instruments, which warrants further investigation in this area.

One of the major gaps in the literature focusing on measurement instruments for ecologically conscious consumer behaviour is, as noted in earlier sections, that most of them originate from the US (Armel, Yan, Todd, & Robinson, 2011; Dunlap & Van Liere, 1978; Ellis & Thompson, 1997; Markle, 2013; Walton & Austin, 2011). Measurement instruments are usually very sensitive to community and cultural perspectives because (a) behaviours, encompassing measurement instruments, that are easy to perform in one culture may not have the same essential facilitating factors in other cultures (Kaiser, 1998), (b) behaviours that have significant impacts on the environment differ considerably from one country to other country (Gatersleben, Steg, & Vlek, 2002), (c) many behaviours measured in a scale may not match radically different cultures. Therefore, it is important to develop an instrument that corresponds to emerging economies, and thus, measures behaviours have a significant impact on the environment, and necessary support remains available to execute such behaviours.

The other deficiency in the literature related to measurement scales of ecologically conscious consumer behaviour is the exclusion of social behaviours from the ecological domain. The existing measurement scales primarily encompass the concepts of general pro-environmental behaviours (Karp, 1996; Pelletier, Tuson, Green-Demers, Noels, & Beaton, 1998; Stone et al., 1995; Tilikidou, 2002), specific pro-environmental behaviours (Armel et al., 2011; Iwata, 2001; Markle, 2013; Walton & Austin, 2011), denial of Dominant Social Paradigm (DSP) (Dunlap & Van Liere, 1978; Nisbet, Zelenski, & Murphy, 2009) and ecological worldview orientations (Dunlap et al., 2000; Kaiser, 1998). In most of these scales, the focus has remained on sustainability from an ecological point of view, and the social perspective has received less emphasis. However, some exceptions include the work of Sudbury-Riley and Kohlbacher (2015) and Roberts (1995, 1996) who included items on social behaviour in their measurement scales.

Existing measurement scales cover a variety of pro-environmental behaviours including recycling behaviour, energy conservation, choice of green hotels and purchase of eco-labelled products (Iwata, 2001; Markle, 2013; Walton & Austin, 2011). In the context of this study, the significant discrepancy in these scales is that they do not capture the sustainable behaviours related to purchase and use of green cars. There are a few exceptions in this regard but the scales relevant to such behaviours are either too brief (Jansson, Marell, & Nordlund, 2010) or too detailed to be used (Armel et al., 2011). For instance, the Stanford Climate Change Behaviour Survey (SCCBS) consists of 97 items which make application of this survey difficult in a study containing multiple variables. Moreover, the behaviours measured in this survey are diverse and address numerous GhG emitting behaviours which make certain sections of this scale irrelevant in the context of the current study. A summary of key studies on measurement scales is provided in Table 1.4.

These shortcomings merit the need to develop a new instrument for measurement of *Eco-Socially Conscious Consumer Behaviour*, in the context of the purchase and use of green cars, by incorporating the aforementioned missing links. Therefore, the first research question of this study is:

RQ$_1$: How can the social and ecological perspectives of consumer behaviour related to the purchase and use of green cars be assessed in one measurement scale, in an emerging economy?

1.4.2 Research Gap 2: Green Consumer Segments

Consumer segmentation refers to dividing the bigger market into distinct groups having unique needs. Understanding of different consumer segments in green marketing is particularly important because the concern for environmental issues (besides the elevating importance of environmental issues) is not equally shared among all groups. The specific consumer segments who may receive environmental messages and accordingly take appropriate actions need to be identified before the development of environmental campaigns (Jain & Kaur, 2006).

The focus of the literature regarding the demographic, psychographic and behavioural explanation of green consumer characteristics thus far has been limited to developed countries, and that too with inconsistent outcomes. For instance, in some studies age, education, and income have been found to be positively related with certain ecological behaviours (Balderjahn, 1988a; Finisterra do Paco, Barata Raposo, & Filho, 2009; Robert & James, 1999) but in some other studies they are either negatively related (Jain & Kaur, 2006; Roberts, 1996) or not associated at all (Chan, 2000; Thompson et al., 2010). Likewise, the other important demographic variables, gender and occupation, also receive contradictory findings in various studies (D'Souza, Taghian, Lamb, & Peretiatko, 2007; Finisterra do Paco et al., 2009). These inconsistencies necessitate further investigation of the demographic factors in profiling green consumers.

The research on behavioural segmentation of the green consumers also appears to contain findings that are inconsistent. For example, Schwepker and Cornwell (1991) in their study, conducted in the US, reported that US consumers could be divided into two segments in terms of their 'purchase intentions towards ecologically packaged products'. More recently, in the same US market, Barber (2014) reported four segments for 'preference of green hotels' behaviour. The findings of Barber (2014) were however, confirmed by Park and Lee (2014) who reported the same number of segments for different behaviours including, 'perceived quality of green products,' 'conspicuous environmentalism' and 'importance of corporate social responsibility'. The findings of these studies suggest that green consumer segments may vary from one pro-environmental behaviour to other and across various consumer markets. These variations suggest that it is valuable to study green consumer segments in Pakistan from the perspective of 'sustainable choice and use of cars' to explore the depth and breadth of appropriate markets and market segments.

Unlike varying findings reported in the literature on demographic and behavioural profiles of consumers, results reported in the literature about psychographic segmentation are relatively consistent. However, the research on psychographic consumer profiles is diverse and provides no single set of characteristics that receives consensus among the majority of studies. For instance, a study conducted in Canada reported 'perceived consumer effectiveness' as a key psychographic factor profiling the consumer for 'ecological concern' (Kinnear, Taylor, & Ahmed, 1974). The same factor was reported in a study conducted in Germany for 'home insulating behaviours' (Balderjahn, 1988a) and in the US for 'ecologically conscious consumer behaviour (ECCB)' (Robert & James, 1999). However, studies conducted more recently focused on 'self-transcendence values' and 'conservation values' for environmental concern (Barber, 2014) and 'product quality belief' for conspicuous environmentalism (Park & Lee, 2014). The diversity in psychographic variables and studied behaviours, therefore, demand more investigation in this area to provide an account of the consumer market in an emerging economy like Pakistan.

Analysis of existing research on green consumer profiles, from demographic, psychographic and behavioural perspectives, highlights another gap. Consumer behaviours deliberated in major studies of existing literature are either general or specific pro-environmental behaviours and have been conducted in more developed markets. Interestingly, within this body of research, there are only a few studies that took sustainable consumer behaviour in 'choice and use of automobile' as a variable of interest to make a base for green consumer segmentation. This deficiency demands research in this important area, which has a pivotal role in worsening the natural environment.

A summary of selected studies on demographics, psychographics and behavioural profiles of consumers is given in Table 1.1, Table 1.2 and Table 1.3 respectively.

This thesis intends to address the shortcomings above in a scholarly way and attempts to answer the following research question:

RQ_2: What are the demographic, psychographic and behavioural characteristics of consumers who are eco-socially conscious in purchase and use of the car in Pakistan?

Table 1.1: Summary of Research Studies in Green Consumer Demographic Profiling

Dependent Variable			Relationship of Demographic Characteristics with Dependent Variable				
Study	Setting	Construct	Age	Gender	Education	Income	Occupation
(Balderjahn, 1988a)	Germany	Home insulating behaviour	+	NT	+	+	NT
(Roberts, 1996)	US	ECCB	+	S	+	-	NS
(Robert & James, 1999)	US	ECCB	+	S	+	+	NT
(Chan, 2000)	Hong Kong	Green consumerism knowledge, Perception about environmentally friendly products	NS	NS	+	+	S
(D'Souza et al., 2007)	Australia	Environmental labelling awareness and satisfaction	+	NS	NT	+	S
(Finisterra do Paço & Raposo, 2010)	Portugal	Environment-friendly buying, Perceived efficiency, Recycling, sensitivity to resource saving	+	NS	+	+	S
(Thompson et al., 2010)	US	Knowledge of environmental issues, Willingness to pay, Knowledge of certification, ECCB, Environmental concern, PCE	-	NT	NS	NS	NT

NS: Not significant, S: Significant, NT: Not tested in the study

Table 1.2: Summary of Research in Green Consumer Psychographic Profiling

Dependent Variable			Relationship of Psychographic Characteristics with Dependent Variable				
Study	Setting	Construct	PCE	Altruism	Understanding	Harm avoidance	Personal Values
(Kinnear et al., 1974)	Canada	Ecological concern	+	NT	+	+	NS
(Balderjahn, 1988b)	Germany	Home insulating behaviour	+	NT	NT	NT	NS
(Robert & James, 1999)	US	ECCB	+	+	NT	NT	S
(Barber, 2014)	US	Environmental concern	NT	NT	NT	NT	(Self-Transcendence and Conservation values)
(Park & Lee, 2014)	US	Conspicuous environmentalism	(Product Quality Belief)	NT	NT	NT	

NS: Not significant, S: Significant, NT: Not tested in the study

Table 1.3: Summary of Research in Green Consumer Behavioural Profiling

Study	Setting	Particular/General Environmental Behaviour	Segments Revealed
(Schwepker & Cornwell, 1991)	US	Purchase intentions towards ecologically packaged products	Two segments: 'Low PI' and 'high PI'
(Park & Lee, 2014)	US	Conspicuous Environmentalism, Importance of corporate social responsibility (CSR), Perceived Quality of Green Products	Four Clusters
(Yilmazsoy, Schmidbauer, & Rösch, 2015)	China, Germany and Turkey	Recycling, Less packaging, public transport,	Four segments: from 'greenest' to 'least green'
(Lavelle et al., 2015)	Ireland	Household consumption (buying organic food, conserving water)	Two segments: 'Habitual consumers' and 'occasional consumers'

Table 1.4: Summary of Existing Measures of Sustainable Consumer Behaviour

Sr. #	Scale Name	Developed by	Setting	Description
1	New Environmental Paradigm (NEnvP)	(Dunlap & Van Liere, 2008)	US	The 12-item 'New Environmental Paradigm Scale' is unidimensional. It demonstrated satisfactory internal reliability as well as predictive, content and construct validities between two samples i.e. General Public Sample (GPS) and Environmental Organization Sample (EOS). The items of the scale reflected the inherent concepts of balance of nature, limits to growth and human domination.
2	SRCB	(Roberts, 1995, 1996)	US	A 26-items scale consisting of two dimensions: ECCB (18-items) and socially conscious consumer behaviour (SCCB) (8-items). The scale measured both ecological and social perspectives of consumer behaviour about the environment.
3	ECCB	(Roberts, 1991; Tilikidou, 2001)	Greece	The construct primarily consisted of three key dimensions, i.e., cognitive dimension, affective dimension and behavioural dimension. Cognitive dimension was measured by Environmental knowledge, affective dimension by pro-environmental attitudes and recycling attitudes, and behavioural dimension by pro-environmental purchase behaviour, pro-environmental post-purchase behaviour, and pro-environmental activities.
4	Nature Relatedness (NR) Scale	(Nisbet et al., 2009)	Canada	A 21-item scale measured human nature relation on three distinct dimensions: NR-Self, NR-Perspective and NR- Experience.
5	Pro-environmental Behavioural Scale	(Markle, 2013)	US	A 19-item scale consisting of four subscales: Conservation, Environmental Citizenship, Food and transportation was developed having satisfactory internal reliability and validity. Test-retest correlations proved that the scale was reliable in measuring the underlying concepts.
6	EMCB	(Sudbury-Riley & Kohlbacher, 2016)	UK, Germany, Hungary, Japan	EMCB 10-items scale consisted of five distinct dimensions: Ecobuy, Ecoboycott, Recycle, Pay more, and CSRboycott, incorporating items from ecological and social perspectives based on self-report actual behaviours. The construct showed consistency across five nations' sample.

1.4.3 Research Gap 3: Factors Predicting Eco-Socially Conscious Consumer Behaviour

Besides the growing importance of, and concern for, environmental causes among consumers, explanation of pro-environmental or eco-social purchase behaviour has always remained limited (Auger & Devinney, 2007; Carrington et al., 2010). On top of that, factors predicting consistency in performing environmental actions requiring more time and energy are also complex and elusive (Kristofferson, White, & Peloza, 2014). These shortcomings have led to the recognition of scarcity of research in eco-socially conscious consumer behaviour especially in the context of emerging economies. Although research in these areas has been conducted in different contexts (see, for example, Carrington et al., 2010; Carrington et al., 2014) with varying explanations provided with policy implications, specific behavioural and contextual explanations (as pertinent to this study) are lacking. Recommendations from these existing studies raise the importance of borrowing several socio-psychological theories for an improved explanatory power of theories to illuminate a range of pro-environmental behaviour. Not only do existing theories provide weak predictive power of pro-environmental behaviours; they also fail to explain specific green purchase behaviours (Redd, 2012). These limitations require integrating various theories to develop a comprehensive eco-socially conscious consumer behaviour model with better explanatory power. This study, therefore, focuses upon integration of concepts from, value-driven predictors of ecological behaviour from Value-Belief-Norm (VBN) Theory (Stern et al., 1999b), and most relevant explanation of behavioural occurrence from Theory of Planned Behaviour (TPB) (Ajzen, 1991), to provide a comprehensive model of eco-socially conscious consumer behaviour.

Furthermore, as Cheah and Phau (2011) also reported, most of the studies explaining pro-environmental behaviour are limited to a 'Euro-American' context, which justifies further investigation in this area in emerging economies. Extension of evidence to different cultural contexts brings interesting insights that can help to advance cross-cultural models of eco-social behaviours. Justified by these limitations, this thesis addresses the final research question:

RQ3: Which factors effect eco-socially conscious consumer behaviour in an emerging economy context?

1.5 Research Design and Methodology

1.5.1 Logical Schema of the Study

In order to achieve answers to the research questions raised in earlier sections of this chapter, this study follows a three-step approach. In the first step, a new measurement scale, eco-socially conscious consumer behaviour (ESCCB), was developed that includes elements of choice and sustainable use of green cars. Elements concerning the choice of 'green cars' encompass adoption of environment-friendly technology, i.e. purchase of an EU compliant car or a hybrid vehicle. In this study, 'green car' refers to a vehicle that has no or low detrimental effects on the environment relative to other alternatives available. Elements related to sustainable use of cars include carpooling, use of public transport instead of a personal car, use of cycles where possible, walking instead of using a car and so forth.

In the second step, the newly developed ESCCB scale was utilised as a basis to explore various consumer segments. The descriptors employed to define the profile of green consumer segments correspond to demographics, psychographics and behavioural characteristics of consumers.

In the last step, Value-Belief-Norm Theory (VBN) and Theory of Planned Behaviour (TPB) were integrated to develop a causal model of ESCCB. Segments identified during the second step were treated as separate groups, and a multi-group moderation analysis was conducted to explain how model results vary across various consumer segments.

1.6 Methodological Approach

This study utilises a multiple-method approach with two main studies to answer the research questions raised in earlier sections of this chapter. A multiple-method approach with qualitative and quantitative aspects renders comprehensive explanations especially in behavioural studies (Cresswell & Clark, 2011). Methods used to answer each research question carry their justification of appropriateness, validity, and comprehension (discussed in Chapter Three: Theoretical Model and Hypotheses – Study 2 Specifically, this thesis employs qualitative (focus group interviews) and quantitative (a survey through a self-administered questionnaire) methods to answer the underlying three research questions. Moreover, use of various multivariate analysis techniques is carried out to provide statistical evidence on underlying hypotheses of the study. An overview of the research design for the studies undertaken for this thesis is shown in Table 1.5.

Table 1.5: Overview of Research Design

Research Question	Research Gap	Study	Research Methodology	Analysis Technique
RQ$_1$: How can social and ecological perspectives of consumer behaviour, related to purchase and use of green car, be assessed in one measurement scale, in an emerging economy context?	GAP 1: Scales available for measurement of pro-environmental behaviour are majorly developed in the US, so evidence from an emerging economy is important. Measurement scales readily available do not address some key cultural perspectives for facilitating pro-environmental behaviour prevalent in various economies.	Study 1	Qualitative: Focus group interviews and literature analysis. Quantitative: A survey by self-administered questionnaire (n =1500).	Qualitative analysis with Leximancer 4.0 EFA, CFA, Correlation analysis, using SPSS 25.0 and AMOS 25.0 Exploratory Factor Analysis (EFA), Cluster Analysis, Discriminant Analysis.
RQ$_2$: How do consumers of the automobile industry of Pakistan differ from each other on various demographic, psychographics and behavioural variables?	Gap 2: Literature available on demographics, behaviour and psychographics characteristics of green consumers presents incongruent views.			
RQ$_3$: Which factors affect ESCCB in an emerging economy context?	GAP 3: Existing theories do not adequately explain green purchase behaviour. Research outside Euro-American context is limited.	Study 2	Qualitative: Focus group interviews. Quantitative: A survey by self-administered questionnaire (n =3000).	Qualitative analysis with Leximancer 4.0 EFA, CFA, Correlation analysis, SPSS 24.0 and structural equation modelling (SEM) using SmartPLS 3.0.

1.7 Contributions of the Study

This study makes three valuable contributions to the existing body of knowledge encompassing sustainable consumer behaviour. All three contributions provide a comprehensive explanation and policy suggestions for sustainable marketing practice (see Table 1.6).

1.7.1 Literature Contribution One: Measurement Scale of Eco-Socially Conscious Consumer Behaviour

As a first contribution, this study adds to the literature of environmental marketing by contributing a new measurement scale to capture consumer behaviour including ecological as well as social facets. Development of this measure is a unique scholarship as it includes insights from a very different culture compared with those investigated in earlier studies of this kind. The population in Pakistan is quite different from the populations of developed countries in terms of culture and psychographics. The findings of this study, therefore, can enhance theoretical grounding of ecological behaviour and add more explanatory power to the construct of *Eco-Socially Conscious Consumer Behaviour,* particularly as it relates to developing economies such as Pakistan. The choice of environment-friendly products and performing ecologically conscious behaviour are in part dependent on economic aspects. Evidence from economically depressed countries can help to realise more insights into the theoretical understanding of ecological behaviours. Finally, integrating socially responsible behaviour with an ecological concern can provide a comprehensive measurement tool for assessment of eco-social behaviour having greater explanatory power.

1.7.2 Literature Contribution Two: Green Consumer Segments

As a second contribution, this study provides a detailed discussion of demographic, psychographic and behavioural segments of green consumers building on the recommendations of Thompson et al. (2010), Park and Lee (2014) and Hine et al. (2014). Evidence related to green consumer profiles based on the above criteria adds to the literature of segmentation by exploring a broader range of psychographic and socio-demographic factors as well as specific pro-environmental behaviour related to the purchase of green cars and their sustainable use.

1.7.3 Theoretical Contribution Three: Holistic Model Explaining Eco-Socially Conscious Consumer Behaviour

The third and final contribution of this study is the development of a holistic model by integrating two important and widely used theories of social psychology. This model incorporates various concepts, particularly in an emerging economy context, to yield a more powerful model determining consumer ESCCB. This model attempts to provide an integrated explanation of ESCCB with better predictability compared with existing models. This study, therefore, lays emphasis on the importance of socio-cultural factors in explaining ecological behaviour in cross-cultural contexts.

Table 1.6: Overview of Thesis Contributions

Practical Problem	Research Gap	Research Question	Literature Contribution	Practical Contribution
Practical Problem 1: Marketers do not have an appropriate tool to measure the eco-social behaviour of consumers in emerging economies.	Research Gap 1: Existing measurement instruments do not include social perspectives in measurement tools and the tools are mostly from the developed world.	Research Question 1: How can social and ecological perspectives of consumer behaviour, related to purchase and use of green car, be assessed in one measurement scale, in an emerging economy?	Contribution 1: Development of a new measure which includes both ecological and social behaviours. New measurement instrument incorporates cultural perspectives of an emerging economy.	Practical Contribution 1: New measurement tool helps marketers of various industries, especially automobile industry, to assess consumers' level ethical purchases given ecological as well as social beliefs.
Practical Problem 2: No evidence available on green consumers' characteristics in the automobile industry of Pakistan.	Research Gap 2: Studies reporting on demographic, psychographic and behavioural characteristics of customers studies show inconsistent findings.	Research Question 2: How do consumers in the automobile industry of Pakistan differ from each other on various demographic, psychographics and behavioural variables?	Contribution 2: Consumer segments and their characteristics regarding demographics, psychographics and behaviour.	Practical Contribution 2: Identification of green consumer segments and their characteristics will help automobile marketers to develop appropriate green marketing strategies focused on environmentally conscious consumers.
Practical Problem 3: Practitioners in ecological marketing are confronted with the issue that consumers showing ecological intentions fail to translate these intentions into actual purchase behaviour'.	Research Gap 3: Individual theories in sustainable marketing domain lack in strong explanation of ESCCB.	Research Question 3: What are the theoretical predictors of ESCCB in an emerging economy?	Contribution 3: Development of a holistic model to predict ESCCB by integrating two theories from social, ecological and behaviour formation perspectives. Validation of the model in an emerging economy context.	Practical Contribution 3: Model of ESCCB helps practitioners understand the factors affecting consumers' choice and use of personal cars and engaging in eco-social behaviours.

Table 1.7: Conceptual Contributions of the Study

General Conceptual Goal	Envisioning		Explicating		Relating		Debating	
Specific Conceptual Goal	Identifying	Revising	Delineating	Summarising	Differentiating	Integrating	Advocating	Refuting
Meaning	To see that something exists; to apprehend, notice, or behold.	To see something that has been identified in a new way; to reconfigure, shift perspectives, or change.	To detail, chart, describe, or depict an entity and its relationship to other entities.	To see the forest for the trees; to encapsulate, digest, reduce, or consolidate.	To see types of things and how they are different; to discriminate, parse, or see pieces or dimensions that comprise a whole.	To see previously distinct pieces as similar, often in terms of a unified whole whose meaning is different from its constituent parts; to synthesise, amalgamate, or harmonise.	To endorse a way of seeing; to support, justify or suggest an appropriate path.	To rebut a way of seeing; to challenge, counter argue, contest, dispute, or question.
Metaphorical role of the researcher	The astronomer	The artist	The cartographer	The astronaut	The naturalist	The architect	The guide	The prosecutor
Metaphorical tool	The telescope	The paintbrush	The map	The space ship	The magnifying Glass	Architectural Plans	The compass	The evidence
Common name applied to contribution	Novel framework; new perspective	Revised perspective; alternative view	Conceptual framework; structural framework; propositional inventory	Review paper	Typological/ taxonomic framework; classification scheme.	Integrative Framework	Position paper	Critique/ rejoinder/ commentary

Evaluation criteria based on execution	Make us aware of what we have been missing and why it is important; reveal what new questions can be addressed from identifying the entity.	Identify why revision is necessary; reveal the advantages of the revised view and what novel insights it generates; maintain parsimony.	Describe what the entity is, why it should be studied, and how it works (e.g., its antecedents, processes, moderating factors); provide a roadmap for future research.	Circumscribe what falls within and outside the scope of the summary; develop an organising framework; comprehensive in article inclusion; provide clear, accurate, and relevant conclusions; simplify through reduction; develop research priorities.	Indicate how entities are different and why differentiation matters; indicate what novel insights can be gleaned or what findings can be reconciled from differentiation.	Accommodate extant knowledge; explain puzzling or inconsistent findings; reveal novel insights; create parsimony.	Clearly state the issue and one's perspective on that issue; state premises and assumptions; provide credible and unambiguous evidence; draw conclusions that support the advocated view; avoid fallacious reasoning errors.	Clearly state the issue and one's perspective on that issue; state premises and assumptions; provide credible and unambiguous evidence; draw conclusions that are consistent the refuted view; avoid fallacious reasoning errors.
Evaluative criteria based on interestingness, suggest that…	What is unseen is seen; what is unobservable is observable; what is unknown is known; what	What is seen, known, observable, or known can be seen differently.	What is simple is complex; what is micro is macro; what is unrelated is related; what is holistic is particularistic.	What is complex is simple; what is macro is micro; what is unrelated is related; what is particularistic is holistic	What is similar is different; what is inseparable is separable; what is organised is disorganised; what is unidimensional is multidimensional;	What is different is similar; what is separable is inseparable what is disorganised is organised; what is multidimensional is	What is false is true; what is unacceptable is acceptable; what is wrong is right; what is	What is true is false; what is acceptable is unacceptable; what is right is wrong; what is appropriate is inappropriate.

	does not matter, matters a great deal.			what is homogeneous is heterogeneous.	is unidimensional; what is heterogeneous is homogeneous	inappropriate is appropriate.	
Similarities in thinking skills and facilitating tools.		Divergent thinking: facilitated by search for metaphors; questioning assumptions, look for hidden events and outliers, engage in introspection.		Logical reasoning: facilitated by Mapping.		Comparative reasoning: facilitated by Venn diagrams and comparison matrices.	
Differences in thinking skills and facilitating tools.	Inductive reasoning: facilitated by outlines.	Expert's mind and a beginner's mind: facilitated by finding anomalies, questioning assumptions, heuristic references.	Deductive reasoning: facilitated by theories in use.	Inductive reasoning: facilitated by outlines.	Analytical reasoning: facilitated by analogies and metaphors.	Analogical reasoning facilitated by analogies and metaphors.	Syllogistic reasoning: facilitated by argument diagrams, argument schemes, and awareness of persuasion tactics.

Source: Adopted from MacInnis (2011)

Figure 1.1: Structure of the thesis
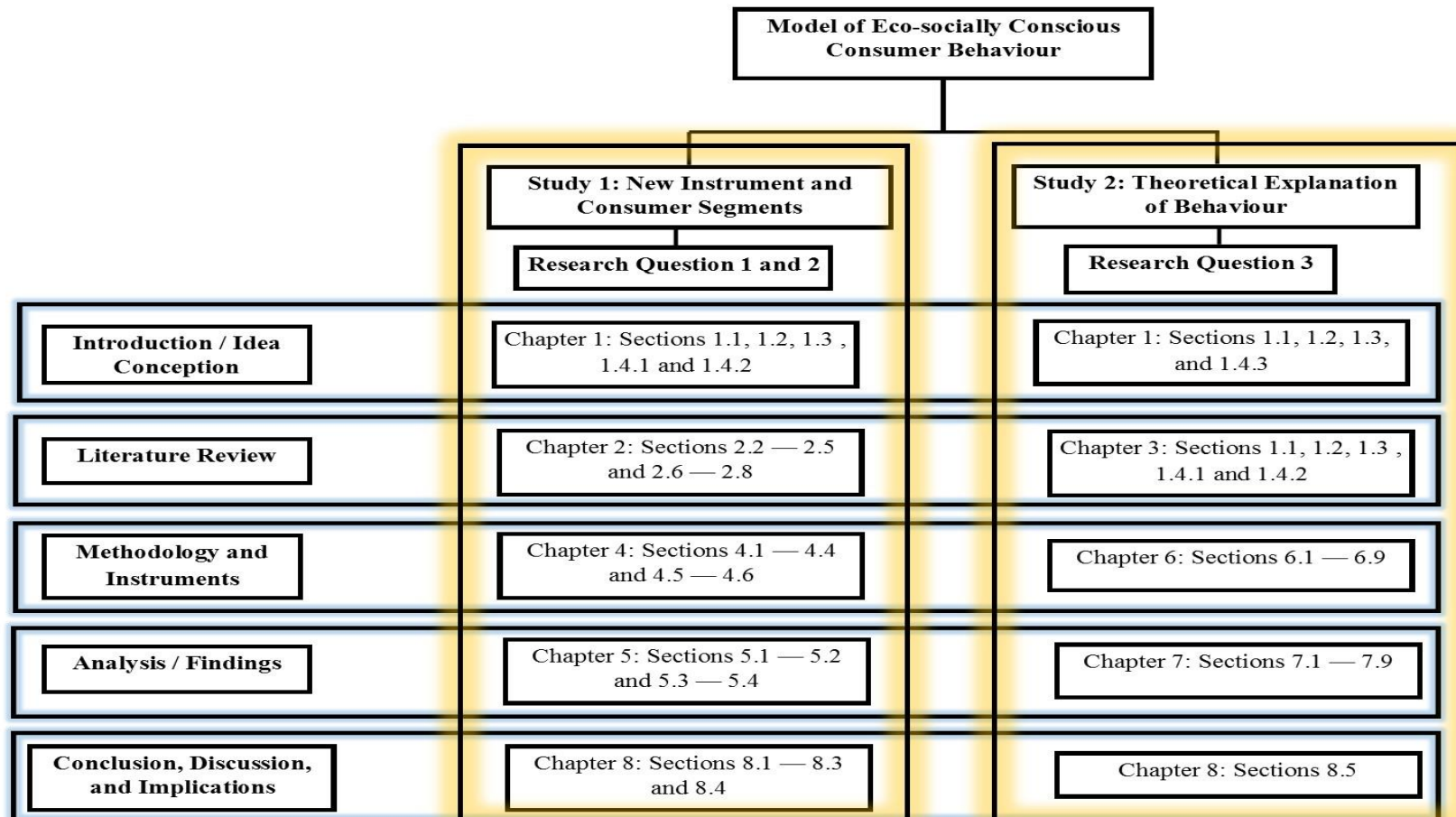
1.7.4 Conceptual Contributions of the Study

Conceptual contributions are important integral components of research studies aiming to enhance the level of knowledge in a specific domain. According to MacInnis (2011), the process of conceptualisation of theoretical advancement refers to "abstract thinking involving the mental representation of an idea" (*p.140*). This study conceptually contributes to the domain of *Green Marketing* in three different ways (see Table 1.7).

1.7.4.1 Revising

The first conceptual contribution of this study is in the form of *Revision.* In Study 1, addressing RQ_1, this thesis revises the construct of ECCB by adding socio-cultural elements into it. The process involves redefining eco-social perspectives in the choice and use of personal cars and testing the resultant model in an emerging economy. It is necessary to develop this scale as existing measures of ESCCB are inadequate to capture consumer behaviour related to choice and sustainable use of green cars. The new scale helps to provide an alternate view of consumers' behavioural preferences from a less developed country with different socio-cultural context.

1.7.4.2 Delineating

The second conceptual contribution of this study is in the form of *Delineating.* In response to RQ_2, this study explicates the characteristics of green consumer segments from demographic, psychographic and behavioural perspectives. The process involves understanding the relationships between bases and descriptors of sustainable consumption and then developing socio-demographic, psychographic and behavioural profiles of distinct consumer segments.

1.7.4.3 Integrating

Finally, in response to RQ_3, this study makes a third conceptual contribution in the form of *integrating.* The process involves combining the Theory of Planned Behaviour (TPB) and Value-Belief-Norm (VBN) Theory to provide a paradigmatic explanation of ESCCB in choice and use of green cars. This study accommodates the plurality of views about the effectiveness of these theories in predicting ESCCB by integrating constructs from both theories to develop one model.

1.7.5 Practical Contributions of the Study

Besides theoretical and conceptual contributions, this study makes a number of practical contributions as well. First, the newly developed measurement scale will be helpful for marketers in the assessment of consumers' purchasing patterns and likeability for green products. Marketers can obtain a better idea of the nature, viability and depth of the consumer behaviour related to purchasing green automobiles. Moreover, this scale will also provide evidence of socio-ecological behaviours other than specific pro-environmental purchasing which will assist environment activists to develop environmental campaigns accordingly.

Second, this study provides a comprehensive understanding of green consumers in Pakistan. This will specifically help marketers in various industries to formulate an effective strategy for inculcating environment-friendly attributes in their products and then properly positioning this eco-innovation in the right target market. Insights from segmentation research will not only assist the marketers in the automobile industry but also other products and brands planning to launch eco-friendly offerings. This body of evidence will also help multinational organisations, who emphasise the environmental cause as their core strategy, to plan new product developments or expand their business with existing eco-products in new markets of emerging economies.

Finally, this study provides marketing professionals and industry practitioners with a comprehensive model for understanding the intention-behaviour gap. This model is tested in an emerging economy so provides an in-depth understanding of factors, which affect consumers' ESCCB in purchase and use of personal cars. Although this model can primarily be applied in the automobile industry, insights from its results are equally relevant to other industries where the prime motive is to exploit ecological attributes of products to gain competitive advantage.

1.8 Delimitations

The basic idea of this study revolves around the initial conception of the impact of human activities on the environment (Ehrlich & Holdren, 1972). This impact has been stated by the following equation (Chertow, 2000; Ehrlich & Holdren, 1972):

$I = P \times A \times T$

I = Impact of Human Activities on Environment

P = Human Population

A = Affluence

T = Technology

After several published criticisms of the IPAT equation, an amended version of this equation was presented by Kates (2000) given below,

Figure 1.2: The Environment Impact Equation by Kates (2000)

IMPACTS 1. Environmental Degradation 2. Resources Depletion	POPULATION 1. People 2. Households	CONSUMPTION / PERSON Energy, Materials, Information, Transformation	IMPACTS / CONSUMPTION
	↑ Slow Population growth	↑ Satisfy More with what we have Satiate Well-met needs Sublimate Wants for greater goods	↑ Shift To less harmful consumption Shrink Energy and materials Substitute Information for energy and materials

The scope of this thesis is limited to the highlighted part of the equation. However, consumption patterns are scattered, and anti-environment impacts of these patterns are widely dispersed, but the scope of this thesis is focused only on the use of automobiles.

Reducing the carbon footprints of automobiles requires technological enhancements at a corporate level, legal frameworks and policies from government and behavioural transformations at the consumer end. This study concentrates on the last constituent. Therefore, environmental protection and conservation of energy through eco-social consumer behaviour is the core objective of this study.

Technologically, there are several types of eco-friendly cars ranging from low CO_2 emitting 'EU compliant' technology to the latest electric vehicles (EV). This study refers to 'green cars' as a general term referring to the vehicle that is the best option available on environmental performance compared with the alternatives.

1.9 Outline of the Thesis

This thesis is comprised of eight chapters (see Figures 1.2 and 1.2). Following this first chapter, *Chapter 2: Literature Review and Hypotheses – Study 1,* provides a detailed account and critical summary of existing studies in the field, about the research questions, RQ_1 and RQ_2, developed in Chapter 1. In brief, Chapter 2 helps to set the theoretical foundation to answer the first two research questions of this study. Furthermore, this chapter reviews the available literature on existing constructs of ecologically conscious consumer behaviour and green consumer segmentation for a better grounding of the research objectives.

Chapter 3: Theoretical Model and Hypotheses – Study 2, provides a brief literature review of theories and variables that are particularly notable for predicting sustainable consumer behaviour, based on the proposed integration of the VBN Theory and TPB. Research hypotheses are then developed and presented for the verification of these relationships.

Chapter 4: Research Methodology – Study 1, provides a detailed description of the philosophical underpinnings of Study 1, encompassing Research Questions 1 and 2. This chapter provides justification for using a multi-method approach as well as outlining the scale development process after providing a review of various approaches for developing a new measure. To answer RQ_2, descriptors and the basis for socio-demographic, psychographic and behavioural profiling of green consumers are also outlined in this chapter.

Chapter 5: Study 1 Results, presents the results for Research Question 1 and Research Question 2. This is followed by the findings of Study 1 explaining the structure of the new construct and the state of green segments based on demographics, psychographics and behaviour.

Chapter 6: Research Methodology – Study 2, provides an overview of the research methodology undertaken in Study 2. In particular, justification is provided for using variance-based structural equation modeling (SEM).

Chapter 7: Results of Study 2 reports the results and findings of Research Questions 3. Results of the SEM are reported in this chapter. Briefly, this chapter outlines the results of EFA, CFA, validity of constructs and path analyses. At the end of the chapter, the findings and their significance for marketers are discussed.

Chapter 8: Discussion and Conclusion, concludes this thesis by addressing the research questions posited in Chapter 1 and addressed by Study 1 (Chapters 2, 3 and 4) and Study 2 (Chapters 5, 6 and 7). Drawing on the results of Study 1 and Study 2, this chapter presents overall theoretical and practical contributions, as well as the limitations of the current research design. Discussion of the findings and their implications, limitations and directions for future research are detailed at the end of this chapter.

Figure 1.3: Overview of Thesis

Chapter 1: Introduction

Chapter 2: Literature Review and Hypotheses – Study 1

Chapter 3: Theoretical Model and Hypotheses – Study 2

Chapter 4: Research Methodology – Study 1

Chapter 5: Results of Study 1

Chapter 6: Research Methodology – Study 2

Chapter 7: Results of Study 2

Chapter 8: Discussion and Conclusion

1.10 Conclusion

Chapter One has developed the foundation for this thesis by first justifying the importance of the topic for marketers, environmentalists and society. This chapter has identified elements of interest for strategic marketing practitioners in the automobile industry. It then identified three important research gaps that develop the foundation of the research program for this study. The three research questions for this study are postulated with each research gap, justified by relevant literature. Following the discussion of the identified gaps, the research design of this thesis is discussed, highlighting research questions, research gaps, pertinent methodology and statistical tests

for data analysis. This chapter then discusses related theoretical, conceptual and practical contributions made in response to the research questions, followed by a discussion of the limitations of the thesis.

Chapter Two: Literature Review – Study 1

2.1 Introduction

The previous chapter (Chapter One: Introduction) summarised this thesis by presenting the background, research gaps, contribution, rationale, implications and delimitations of the study. This chapter focuses on critical analyses of measures of pro-environmental consumer behaviour, key studies conducted in the domain of green consumer segments, and the theories and models established to explain pro-environmental consumer behaviour.

This chapter is organised into two major sections. The first section discusses the importance of measurement scales in marketing research and their relevance to the thesis objectives. This section starts with definitions, similarities, and differentiation of the concepts of ecological and social behaviours, critical analyses of the already developed measurement scales of ecological and social behaviour, the importance of cultural perspectives in the development of measurement scales, and the need to redefine the measures in an emerging economy perspective.

The second section starts with an introduction of market segmentation and its importance followed by a review of the extant literature on green consumer segments, context and methodology of the studies, a summary of key findings and a justification of the need to conduct further study in this area.

Finally, this chapter summarises its findings and provides a way forward to the third chapter of this thesis.

2.2 Measurement Scale of Eco-Socially Conscious Consumer Behaviour

Assessment of consumer behaviours requires valid and reliable instruments capable of capturing the conceptual elements of the specific behaviour being examined. The viewpoint of sustainability in the purchase and use of personal means of transport involves many behavioural aspects. Two core aspects are: (1) purchasing an environment-friendly car, and (2) using the personal car in environmentally sustainable way. The sustainable use of a personal car includes either using it in a way that it uses as little energy as possible or using public transport for commuting and other purposes. Purchase

of an environment-friendly car relates to attributes of the vehicle. 'Green car,' as explained in the previous chapter (Section 1.1), refers to a vehicle that has efficient technology which reduces its environmental impacts. This technology ranges from alternate energy using engines including hybrid technology, an electrical vehicle, and efficient combustion engines. A decrease in the use of personal cars may be achieved by carpooling, using cycle for commuting, walking for shorter distances and using public transport.

Several studies can be traced in the literature proposing measurement scales for explaining sustainable consumer behaviour from various perspectives. However, the purpose of this study is to extend the existing body of literature by developing a measurement scale for gauging eco-socially conscious consumer behaviour specific to the choice of a green car and its use in a sustainable way.

Keeping in view the recommendation of Kaiser (1998) who noted that, ' whether the goal of the research is behaviour change or the evaluation of different determinants of ecological behaviour, the accurate measurement of ecological behaviour is a precondition' (p. 395), assessment of existing scales measuring environmental behaviours is vital to assure that an accurate measure is developed.

2.3 Relating Ethical, Social and Ecological Behaviours

Consumer ecological behaviours are conceptually similar to social behaviours as they both pertain to a wider domain – ethical behaviour (Bridges & Wilhelm, 2008; Eagle & Dahl, 2015; Kumar, 2014). Ethical behaviour is motivated by a number of factors including morality, religiosity, environmental awareness, social consciousness, and patriotism (Belz & Peattie, 2012; Eagle & Dahl, 2015). In general, the same motivations drive ecological and social behaviours as well (Belz & Peattie, 2012). However, there are certain paradigmatic distinctions, which isolate the conceptual measurement of social behaviour scales from ecological behaviour scales. These peculiarities originate from classical social and ecological marketing contexts. Social marketing entails programs to bring about sustained positive behavioural change at individual, community and society level, encompassing, but not limited to, public health, environment, human rights, politics and public administration (Belz & Peattie, 2012). Social behaviours, therefore, explain the social change in consumer behaviour at both micro and macro levels to enhance the wellbeing of society as a whole. On the other hand, ecological marketing deals with the

impact of marketing activities on the environment and deliberate behaviours such as energy conservation. During the late 1980s and early 1990s, ecological marketing assumed the form of environmental marketing and sustainability marketing. Environmental and sustainability marketing encompasses a diverse range of issues including conservation of natural resources, maintenance of biodiversity and protection of the environment (Belz & Peattie, 2012; Dahlstrom, 2010). Both social and ecological behaviours lead to sustainable consumer behaviours. Sustainability is a micro/macro concept that asserts the importance of sustainable development by focusing on marketing practices, steered towards individuals, communities, institutions, societies, stakeholders and consumers, with due consideration towards future generations as well (Belz & Peattie, 2012). Sustainable behaviour accordingly embraces a wider perspective explicating how consumption can be regulated by norms to protect environment and conserve natural resources.

The choice of environment-friendly cars and their sustainable use includes two concepts – ecological and social behaviours. Also, these two concepts combine to form the base of environmental behaviours, which leads to sustainable development (Dahlstrom, 2010). In isolation, neither ecological nor social behaviours ensure sustainability. Improvement in technological perspectives can protect the environment but cannot help to save resources. The existing literature documents that some environment-friendly technologies have negatively affected resource conservation as the use of products increases because of economic efficiency, a phenomenon known as 'Jevons Paradox' or 'Rebound Effect' (Jevons, 1906; Saunders, 1992). Recent studies examined the rebound effect in multiple contexts. For instance, Sellen and Harper (2002) reported that, contrary to general expectations of people regarding reductions in paper usage due to electronic media technologies, office paper use increased by 14.7% in the US during the period 1995-2000. Similar findings were reported in the energy sector and the automobile industry as well (Arne et al., 2015; Galvin, 2016; Grant, Jorgenson, & Longhofer, 2016; Herring & Sorrell, 2009; York, 2006). These studies argue that improving technology alone may not contribute to long-term sustainability objectives. Therefore, understanding consumer behaviour both from ecological as well as social perspectives is imperative in sustainable behaviour research.

In the following sections of this chapter, measurement scales focusing on environmental, ecological and social consumer behaviour are critically analysed.

2.4 Scales for Measurement of Pro-Environmental Behaviours

Existing studies have attempted to measure pro-environmental behaviours from multiple perspectives. However, the element of specific behaviours related to choice and use of cars, which is the most important factor in an environmental disturbance in growing economies, is only partially captured in existing measurement scales.

2.4.1 New Environmental Paradigm (NE$_{nv}$P) and New Ecological Paradigm (NEP) Scales

The New Environmental Paradigm Scale (NE$_{nv}$P) was developed by Dunlap and Van Liere (1978). NE$_{nv}$P is an attitudinal measure or a worldview, describing individuals' understanding of nature, resources and their relationship with human beings. NE$_{nv}$P advocates sustainable growth fostered by balanced human interaction with nature, which contradicts the notions of traditional human dominance over nature and abundance of progress, promoted in an anti-environment dominant social paradigm (DSP) worldview. The scale measures general attitudes of the public towards nature, including items such as 'humans must live in harmony with nature in order to survive' (see table 1, Dunlap & Van Liere, 1978, p. 13). Originally, the scale consisted of 12 items, with three reverse-coded questions, and was unidimensional. For validation purposes, it was tested across two different samples, a general public sample, and an environmental organisations sample, and was found valid across respondents from both samples.

Later, an amended 15-item New Ecological Paradigm (NEP) scale was proposed by Dunlap et al. (2000). Although the original NE$_{nv}$P had remained unarguably the most widely used measure of an emerging worldview, in retrospect it nonetheless appeared to be falling short of measuring emerging environmental beliefs, a reason why the NEP was developed (Dunlap et al., 2000). The new NEP scale included an additional facet, 'human exemptionalism'(Dunlap et al., 2000, p. 432) which measured the concept of human exemption from natural laws as an anti-ecological view in his scale.

A meta-analysis of the studies using NEP reports that there is a significant difference in the aggregate score on the NEP scale between the general public and those identifying as environmentalists and also that the variations in using a number of items from the original NE$_{nv}$P are also substantial in different cultures (Hawcroft & Milfont, 2010). One of the prominent limitations in the use of the NEP scale, identified by this meta-analysis, was its predominant use in North America and relatively negligible

evidence advanced from other countries. This limitation, along with others, warrants the need to apply the NEP scale across different parts of the world with amended items corresponding to dimensions of individual cultures.

The NEP scale specifically describes how much individuals are concerned about the changes in their environment and ascription of these changes to their behaviours, without discussing any specific behaviour. This scale can help to assess the probability of performing a wide range of pro-environmental behaviours, contingent on many other factors. Choice and use of green cars specifically, however, cannot be measured by using this scale. Nonetheless, the scale is useful in understanding the motives behind performing ESCCB.

2.4.2 Ecologically Conscious Consumer Behaviour and General Ecological Behaviours (GEB)

The ECCB construct was first proposed by Roberts (1991) and was later refined by Tilikidou (2001). The measurement instrument for ECCB was also developed by Tilikidou (2001). The core concept of ECCB was based on three dimensions: 'cognitive dimension,' 'affective dimension,' and 'behavioural dimension' (Tilikidou, 2001, p. 59). The final version of the instrument contained four dimensions: 'pro-environmental purchase behaviour' measured by 15 items, 'pro-environmental activities' measured by 13 items, 'pro-environmental attitudes' measured by 35 items, and 'recycling attitudes' measured by 28 items (Tilikidou, 2002, pp. 52-53). ECCB is, thus far, one of the most widely used scales in green marketing studies (Awad, 2011; Roberts, 1996; Tilikidou, 2013).

An inherent issue with ECCB is the number of items needed to measure the concept. Due to the great number of items, the scale lacks precision because of redundancy and suffers from non-response during application. This is because of the large number of items and diverse range of dimensions described in the ECCB scale and is one of the major reasons why researchers have used only subscales of this instrument in their studies (Fraj & Martinez, 2006; Khare, 2015). In the perspective of the current study, only one item was found, 'I avoid using my car unless it is absolutely necessary' (Tilikidou, 2002, p. 52), to tap behaviours related to personal car use despite the fact that many environmental pollution problems are caused by automobile exhausts and private-vehicle use. Therefore, this scale is also insufficient to serve the purpose of measuring green car choice and use behaviours.

Measurement of ecological behaviours is an intricate process because such behaviours are distinct and are reflected by a different set of factors. Moreover, such behaviours differ from one context to another and within a range of specific pro-environmental behaviours. No single metric can be devised to measure all types of ecological behaviours; however, subscales of instruments representing different ecological behaviours, with reasonable correlation, can be utilised to measure general pro-environmental behaviour. In one such attempt, the general ecological behaviour (GEB) scale was developed by Kaiser (1998). The GEB assessed a number of general as well as specific behaviours in one scale, considering the attitude-behaviour paradox. The scale consisted of 38 items and seven distinct dimensions.

For the purpose of this thesis, this scale contains a noteworthy dimension – 'ecological automobile use', which included five items measuring the use of public transport or sustainable intercity use of personal cars (Kaiser, 1998). Although this subscale is specifically intended to tap the behavioural perspectives of sustainability in the use of the automobile, its scope was limited to only a few aspects including use of public transport, driving at a particular speed and using an environment-friendly fuel type (see for example, Kaiser, 1998, p. 405). Nonetheless, during the process of new scale development in this current study, these elements can be utilised to reflect aspects of sustainable behaviours related to car use.

2.4.3 Pro-Environmental Behaviour (PEB) Scale

The Pro-Environmental Behaviour(PEB) scale was developed by Markle (2013) in response to reported inconsistencies in measurement of behaviours reflected in various studies utilising some commonly used pro-environmental behaviour measures. The PEB consists of 19 items and four dimensions including behaviours related to 'conservation,' 'environmental citizenship,' 'food' and 'transportation' (see for example, Markle, 2013, p. 909). Since the introduction of the PEB, many studies have used this scale as an outcome variable in various settings. For instance, Holmstrom (2015) investigated the impact of personality traits on PEB and found that personality traits do not affect PEB. Contrarily, the results from a study by King (2015) highlighted a negative association of the PEB with neo-liberalism – another personality trait. In a similar study conducted in Jakarta, Abraham, Pane, and Chairiyani (2015) reported that cynicism and environmental self-efficacy positively lead to the pro-environmental behaviours listed in the PEB. Finally, in their longitudinal study conducted in Italy, Prati, Albanesi, and Pietrantoni

(2015) revealed that social identity positively leads to PEB. These studies provided evidence of the PEB correlating to personality traits and its effectiveness towards the measurement of underlying pro-environmental behaviours.

PEB is a widely accepted measure of pro-environmental behaviours related to energy, food and transportation. Nonetheless, use of this scale does not fully encompass the scope of the current study. The transportation subscale of the PEB was measured on three items reflecting behaviours related to the use of public transport, carpooling and choosing the use of a bicycle or walking instead of a driving car (Markle, 2013). This provides only a superficial measurement of an important ecological behaviour, omitting many important aspects which contribute to environmental degradation and unsustainable behaviours. In the context of the current study, PEB is considered as a shallow measurement tapping behaviours related to sustainable choice and use of green cars. As choice and use of personal car is primary 'individual-level' behaviour (Armel et al., 2011, p. 672) causing the most detrimental effects on the environment, a more detailed study of personal car choice and use behaviours is required to understand the motivations behind such behaviours and ways to change them. Therefore, the inclusion of all key aspects related to the choice and use of a car is vital for comprehensive measurement of such behaviours. Nevertheless, the items related to carpooling and use of a bicycle instead of a personal car can be included in an initial items pool during the scale development process of the current study.

2.4.4 Socially Responsible Consumer Behaviour (SRCB) and Ethically Minded Consumer Behaviour (EMCB) Scales

The scale for measurement of socially responsible consumer behaviour (SRCB) was developed by Roberts (1995, 1996). The scale tapped both ecologically conscious consumer behaviour (18 items) and socially conscious consumer behaviour (8 items). The emergence of incorporating social responsibility with ecological responsibility stems from studies reporting effectiveness of corporate social responsibility (CSR) in developing favourable consumer attitudes towards corporate as well as product brands (see for example, Ailawadi, Neslin, Luan, & Taylor, 2014; Anadol, Youssef, & Thiruvattal, 2015; Eagle & Dahl, 2015; Hartmann, Heinen, Melis, & Simons, 2013; Kolk, Dolen, & Ma, 2015; Saharan & Singh, 2015; Wan & Toppinen, 2016). According to Roberts (1995), a socially responsible consumer is a person 'who purchases products or

services which he or she perceives to have a positive (or less negative) impact on the environment or uses his/her purchasing power to express current social concerns' (p. 104).

Items capturing the concept of subscale ecological consciousness measured general as well as specific pro-environmental attitudes. General attitudes, for instance, included purchasing attitudes towards products creating less pollution, containing low pollutants, made up of recycled raw material, available in reusable containers, and causing no harm to the environment. The specific attitudes, however, encompassed questions regarding the use of toilet tissues made up of recycled paper, avoiding products packed in aerosol containers, reducing the use of a private car, and purchasing low-phosphate detergent.

On the other hand, the items measuring the subscale 'socially consciousness' reflected upon the facets concerned with ethical behaviour. The questions in this subscale measured the attitudes of consumers towards companies who: discriminate against minorities and depict minorities in negative ways in advertisements; depict women in negative ways; use deceptive advertisements; and are involved in labour disputes (for details see Table 4, p. 105). At the time of its development, the SRCB scale was the only measurement instrument containing both social as well as ecological behaviours. Therefore, it enjoyed widespread acceptability among academics and practitioners (Akehurst, Afonso, & Gonçalves, 2012; Mohr, Webb, & Harris, 2001; Roberts, 1996). Nevertheless, as Mohr et al. (2001) also noted, social behaviours evolve and new dimensions should be incorporated to understand and specify the full range of socially conscious behaviour in the current era.

The two facets of SRCB described here hold importance in the context of the current study. Specific attitudes included in the ecological consciousness subscale, contain items on private car use that can be borrowed in the development of the scale for the ESCCB. Similarly, the social consciousness subscale highlights consumers' choice of products from corporates who adhere to ethical practices. These elements are identical to the conceptualisation of consumers' choice of cars built on environmentally friendly technologies, considering the general ethical behaviour of car manufacturers as well.

The ethically minded consumer behaviour (EMCB) scale was developed by Sudbury-Riley and Kohlbacher (2016) in response to the aforementioned evolutionary advancements in social behaviours. The EMCB scale consists of 10-items capturing five distinct dimensions. These dimensions capture concepts of ecological purchase, anti-

environment boycott, recyclability, premium payment for environment-friendly products, and boycott of organisations involved in anti-environmental activities.

The unique characteristic of the EMCB scale is that it has wider applications because it was tested and validated in four different countries: UK, Germany, Hungary and Japan. However, methodologically, the scale suffers from certain limitations. First, the questions in the scale are multi-barreled which create response issues as respondents can have varying attitudes on multiple aspects included in one question (Bickman & Rog, 2009). Second, the scale fails to demonstrate measurement invariance, which creates problems in 'pre-post test equating' (Wright, Huber, O'Neill, & Linacre, 2000, p. 745). Though Sudbury-Riley and Kohlbacher (2016) attributed this problem to extreme response styles of various respondent groups, the unique characteristic of cross-national generalisability, inherent in the EMCB scale, is distorted. Last, the EMCB was developed using data from four different developed nations. Therefore it does not represent the emerging economies where culture and context are different from developed nations. When the adoption of innovative (and environment-friendly) technology and exhibition of pro-environmental behaviours are core research questions, the importance of contextual analysis is even greater. These limitations call for a renewed investigation in developing a measurement instrument to incorporate both ecological and social perspectives in one scale, in an emerging economy perspective.

Nonetheless, the EMCB scale can be utilised to recognise how consumers' behaviour related to ecological purchases and premium payment can be measured in the specific case of green car choice. Since this study intended to validate the measure in an emerging economy context, methodological constraints highlighted in the EMCB scale provided guidelines to bring rigour to the study that formed the first phase of the thesis research program.

2.4.5 Stanford Climate Change Behaviour Survey

The Stanford Climate Change Behaviour Survey (SCCBS) was specifically designed to assess behaviour towards GhG emissions. It was developed by Armel et al. (2011). The 97-item scale measured individual-level behaviours of four different categories: transportation, food, waste management and electricity usage. The SCCBS is a comprehensive survey that covers all aspects of individual behaviour related to GhG emissions. Interestingly, the survey measured transportation-related behaviours in detail including 'carpooling, 'using public transport', 'driving energy-efficient vehicle',

'maintaining vehicle for better environmental performance' and 'using bicycle instead of car for short trips' (Armel et al., 2011, p. 679)

Though the SCCBS provides a comprehensive account of consumer behaviours related to GhG emissions, two key shortcomings may limit its application. First, the scale was tested on a student sample which has been excessively criticised for being a 'too-narrow database' in the generalisability of study results (Sears, 1986, p. 516). More recently, Henry (2008) concluded that there are significant differences between student populations and non-student participants regarding expression on numerous variables. These recommendations suggest using a non-student population especially for a study that produces an output for wider utilisation, i.e. a measurement instrument. Nonetheless, there are proponents of the validity of studies utilising student samples, who contend that student samples do not necessarily pose a threat to the internal or external validity of a study if appropriate measures are taken to ensure generalisability (Druckman & Cam, 2009). A more balancing view in this context is presented by Espinosa and Ortinau (2016) who demystified the traditional beliefs about representation, willingness and homogeneity of student samples. They concluded that students do not represent the actual population in many factors, most important being 'respondents level of familiarity and experience with contextual setting' (p. 3156). Continuing this discussion, they argued that while student samples are an affordable and accessible source of data, their use can be challenged when taking the larger perspective, particularly regarding the homogeneity of student samples with actual populations (for details see, Espinosa & Ortinau, 2016).

SCCBS is a very useful inventory to measure consumer behaviours related to GhG emissions. This thesis utilised the items for transportation-related behaviours to measure car choice and use. The methodological criticism raised regarding the SCCBS can be mitigated by validating the new measure, i.e. ESCCB, on actual consumer populations across two different countries to ensure more extensive application and generalizability.

A summary of the overlap of the scales noted above with the intended measure proposed and validated in this thesis is provided in Table 5.1: Overlaps and similarities of ESCCB scale with related constructs.

2.5 Conclusion

The literature on the measurement scales for pro-environmental behaviour highlights that the available scales, while abundant, are either conceptually irrelevant to

the measurement of choice and use of green (environmentally friendly) cars or methodologically weak, limiting the ability to generalise findings in emerging economy contexts. Nonetheless, general guidelines for scale development and item pool generation can be obtained from these studies. Many of these scales, for instance, SCCBS, provide an in-depth understanding of what constitutes consumer behaviour towards choice and use of green cars. Development of the measurement instrument for ESCCB related to choice and use of cars is discussed in Chapter 5 of this thesis in the light of literature cited above and methodological recommendations of the scale development process (Churchill, 1979; Clark & Watson, 1995; Tomarken, 1995).

In the following sections, a literature review related to green consumer segments is presented.

2.6 Market Segmentation and Green Consumers

Evolutionary marketing practices argue that the likelihood of success for products or services increases when corporate planning shifts from mass marketing towards micro marketing, i.e. from generic products to tailor-made value propositions (Kotler, 1997). Market segmentation, therefore, is an indispensable part of an organisation's overall strategic planning. Corporate objectives developed to achieve substantial growth – both regarding revenues and profits and building corporate image – essentially require long-term marketing planning which is incomplete without a clearly articulated segmentation strategy (Dibb & Simkin, 1991). It has been recognised for several decades that while successful marketing segmentation can create a competitive advantage for organisations, failure of an in-depth understanding and execution of segmentation strategy can result in a thorough collapse of a marketing plan (Beane & Ennis, 1987). Therefore, a careful analysis of segmentation strategy, led by product-market potential and interdepartmental strategic congruence, is essential (Morden, 1984). Notably, in the case of technologically advanced and high-involvement products, a careful analysis of target customers is required to identify appropriate segments (Kotler, 1997; Sushandoyo & Magnusson, 2014). The introduction and success of green cars also requires a close understanding of consumer characteristics. Sustainable consumer behaviour towards choice and purchase of environment-friendly vehicles is a complex phenomenon contingent upon multiple factors both internal and external to the customers. Internal factors may include demographics, psychographic and behavioural characteristics (Samdahl & Robertson,

1989; Thompson & Kaminski, 1993; Thompson et al., 2010) whereas external factors comprise environmental enablers or impediments (Afroz et al., 2015; Knez, Jereb, & Obrecht, 2014).

This section of the thesis analyses the literature on marketing segmentation in the context of ecological marketing and green consumers. Ecological marketing assumes the concept of promoting products and services that have minimal carbon footprints and contribute to both ecosystem preservation and natural resources conservation (Peattie & Crane, 2005; Yilmazsoy et al., 2015). On the other hand, green consumers are those who prefer products and services which have satisfactory environmental performance (Luzio & Lemke, 2013). These segments exist with different characteristics from one society to another and have distinct consumption patterns. Marketing of green products is primarily focused on green consumers as they respond more favourably to green products and environmental marketing mix strategies (Tadajewski & Wagner-Tsukamoto, 2006). Therefore, an understanding of green consumer segments regarding socio-demographics, psychographics and behavioural attributes is essential.

2.7 Market Segmentation

Market segmentation refers to 'the analysis of a particular total demand in terms of its constituent parts, so that sets of buyers can be determined' (Morden, 1984, p. 22). In other words, market segmentation helps to define and target the appropriate group of customers who value an organisations' offerings, are substantial in number, and can easily be accessed (Claycamp & Massy, 1968; Hoek, Gendall, & Esslemont, 1996; Kotler, 1997). In the wake of decreasing organisational resources, optimal use of budgets has become a key element in effective planning. Closely aligned with marketing planning processes, market segmentation provides a cornerstone to identify untapped consumer markets and assists in formulating marketing mix strategies for new product development and effective positioning, ensuring flexible and efficient operations (Beane & Ennis, 1987; Morden, 1984; Morden, 1987). This efficiency and flexibility help to raise the level of output with minimum inputs, thus, decreasing the cost of serving consumers.

Market segmentation divides a larger group of customers into smaller chunks (segments) each of which has unique characteristics. These smaller groups have intergroup heterogeneity and intragroup homogeneity which requires the organisations to develop distinct marketing strategies for each segment that is targeted (Dibb & Simkin,

1991; Robertson & Barich, 1992). Based on the specific needs of the customers, organisations target one or more segments after analysing the match between the consumer demands and organisational resources and capabilities. The focus and specialisation resulting from market segmentation and targeting can provide organisations with a sustainable competitive advantage which then leads to high revenues and profits (Kara & Kaynak, 1997).

Environment-friendly vehicles are high-involvement products – products which are expensive and create more dissonance if their actual performance fails to match the performance expected by consumers (Fournier, 1991). Environment-friendly vehicles attract consumers who are eco-sensitive, perform ethical behaviours, acknowledge changing environmental conditions and are determined to play their role in the restoration of natural ecosystems (Eze & Ndubisi, 2013; Jansson, 2011; Lee & Kim, 2008). These consumers have different demographic, psychographic and behavioural characteristics. It is therefore imperative for marketers to understand the nature and characteristics of green consumers for the success of eco-innovation-based marketing activity.

Despite the overarching importance of green market segmentation, studies conducted in this domain have long been criticised for being fragmented and lacking in conceptual and methodological rigour (see, for example, the seminal paper by Wind, 1978). The criteria to evaluate the nature and quality of studies in the area of market segmentation include the nature of problem definition, research design, data collection methods, analysis techniques and interpretation of results (Wind, 1978). According to Wind (1978), a comprehensive segmentation study should address both management requirements and theoretical perspectives, be focused on segment-level inferences, and use culture-specific bases and descriptors to develop and define consumer segments. Wind's criteria for methodological robustness encompasses the use of multiple research methods, new procedures of data collection to improve data validity, appropriate analysis techniques to answer the underlying research question, and detailed interpretation of results in line with design and execution of segmentation strategy.

More recently, the recommendations of Wind (1978) have been widely acknowledged (Higgs & Ringer, 2007; Steenkamp & Ter Hofstede, 2002; Wedel & Kamakura, 2002) and researchers have started employing novel methodologies and rigorous research designs in segmentation studies (Mostafa, 2009; Tabi, Hille, & Wüstenhagen, 2014). However, as noted earlier, the majority of evidence is reported with

traditional methods and, more importantly, from developed countries. The information about characteristics of green consumers in emerging economies is limited and presents an interesting research avenue.

In the following sections, a critical analysis of key studies of marketing segmentation is reported.

2.7.1 Green Consumer Segments

The behavioural philosophy of green consumer segments stems from the concept of sustainable development. Sustainable development refers to 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (UN Documents, 1987). Consumers belonging to green segments vary from other consumer segments based on socio-demographics (Balderjahn, 1988a; Finisterra do Paço & Raposo, 2010; Thompson et al., 2010), psychographics (Barber, 2014; Bishop & Barber, 2012) and behavioural perspectives (Lavelle et al., 2015; Park & Lee, 2014; Yilmazsoy et al., 2015). While there is an abundance of research evidence reported in the literature with respect to demographics, psychographics and behavioural profiles of consumers, the validity of findings from such studies and their cross-cultural generalisability is subject to criticism (Baris et al., 2015; Lavelle et al., 2015; Thompson et al., 2010).

2.7.2 Demographic Correlates of ESCCB

Research in green consumer segments has excessively utilised demographics alone to distinguish among various consumer groups on several pro-environmental behaviours. Most commonly reported demographic indicators include gender, age, education, income, locality, ethnicity, family size, and race (Beane & Ennis, 1987; Cleveland, Papadopoulos, & Laroche, 2011; Kotler, 1997). For instance, a study conducted in Portugal segmented consumers into three groups: 'the uncommitted', 'the green activists' and 'the undefined', based on criteria including environmental friendly buying behaviour, environmental activism, environmental knowledge, environmental concern, recycling and resource saving (Finisterra do Paço & Raposo, 2010, pp. 434-435). The 'green activists group' scored highest on pro-environmental behaviours and was found to be comprised of consumers in middle-aged groups (25-34 and 45-54), with high education levels (Higher Education), and who were working in jobs for which formal tertiary qualifications were required (middle and senior management). This evidence

suggests that consumers with stable income sources, high education levels, and who are in middle-aged groups are predisposed towards pro-environmental behaviours (Finisterra do Paço & Raposo, 2010). These findings correspond to the findings from studies conducted in the US (Straughan & Roberts, 1999), Australia (D'Souza, Taghian, & Lamb, 2006) and Hong Kong (Chan, 2000). Regardless of slight differences in bases and descriptors used to define green consumer behaviour, the studies reported above highlight the same status of demographic variables in green consumer segments.

Results from the emerging economies are different, however. Contrary to the findings noted above, evidence from India suggests that age does not have any effect on environmental attitudes and environmental knowledge (Jain & Kaur, 2006). This study further postulated that education and income, too, have no association with environmental attitudes, suggesting that demographic differences concerning ecological behaviour exist across different cultures and geographic regions. More recently, Thompson et al. (2010) conducted a study in the US to explore the demographic profiles of consumers supporting eco-labelled forest products (building material and home improvement goods). They found insignificant associations of income and education with reported environmentally conscious purchase intentions. These findings reiterated that demographic differences occur both across study settings and concerning specific pro-environmental behaviours, implying the need to provide original culture-specific, demographic explanations of green consumers in different countries.

In a continuation of research on demographic segmentation, a more recent study examined variables including age, income, literacy and gender, against ECCB, and found that, individually, all these demographics fail to generate any significant variance in ECCB (Akehurst et al., 2012). These findings imply that description of green consumer segments in demographic terms alone is unsound and fails to provide strong grounds for marketing decisions. However, demographic segmentation of green consumers did not lose importance and researchers continued to describe demographic profiles of green consumers in their studies alongside other variables. For example, recently, Poortinga and Darnton (2016) provided an in-depth analysis of consumer segments prevalent in Wales. They included socio-demographics such as gender, age, identity, household type, social grade and tenure in a model to explain attitudes towards climate change and concern about energy security. Instead of relying exclusively on demographics, they included personal values as psychographic indicators, to provide more variations in green consumer

segments. The study revealed six segments including 'enthusiasts,' 'pragmatists,' 'aspirers,' 'community focused,' 'commentators,' and 'self-reliant' (p. 225). The 'enthusiasts' demonstrated the highest concern for energy security and the most positive attitude towards climate change, thus leading them to be categorised as the greenest segment. The study discovered that all demographic attributes differ significantly across the six segments, and the segments proved to be stable in post hoc analysis (see Poortinga & Darnton, 2016, p. 227, table 2). The studies thereafter utilised more robust and novel research designs to cross-validate the strategic importance of demographic profiling in marketing decision-making. One such study, conducted in Spain in the context of sustainable tourism, utilised latent class models and uncovered three consumer segments based on knowledge of sustainable tourist destinations, type of sustainable behaviour and willingness to pay more for sustainable tourist destinations (López-Sánchez & Pulido-Fernández, 2016). The three segments included 'reflective tourist,' 'unconcerned tourist' and 'pro-sustainable tourist', the latest being the most environment-friendly (pp. 64-65). Analysis of these segments highlights that age, income and education are key demographic attributes that segregate these segments. The studies exploring demographic attributes of consumer segments vary in their conceptual as well as methodological approaches. A summary of selected studies describing segmentation type, problem definition, research design, data collection method, analysis technique, and findings is provided in Appendix IV:

Based on the above evidence, it is not surprising that age, income, gender, education, and occupation are important correlates of pro-environmental behaviour but their ability to discriminate between consumers who prefer and those who do not prefer pro-environmental behaviours is inconclusive. The relationship of different demographic indicators to eco-socially conscious consumer behaviour related to choice and use of green cars (ESCCB), is presented in the following sections based on the most frequently cited evidence from the available literature.

2.7.2.1 Age and ESCCB

There are several possible explanations for the relationship of age with ESSB, both backed by logic and empirical evidence of relationships between age and other pro-environmental behaviours. For instance, Roberts (1991) argues that environmental disasters are events of most recent times and affect younger age groups/generations more than they do older sections of the population. Similar suggestions were made by Robert

and James (1999) and Finisterra do Paço and Raposo (2010), and that young consumers are more sensitive to environmental issues than older consumers. However, Chan (2000) suggests that age is directly related to pro-environmental behaviours and older consumers are more prone to prefer environmentally friendly products than younger consumers.

This thesis builds on the idea that the younger generation (consumers in the age bracket of 18-35 years) is more knowledgeable about growing environmental issues and is concerned about the future of Planet Earth from a sustainability perspective. Therefore, young consumers are expected to prefer green cars and sustainably use them more than the older consumers.

2.7.2.2   Income, Education and ESCCB

There is a consensus among researchers that high income and education lead to people performing pro-environmental behaviours (Chan, 2000; Finisterra do Paço & Raposo, 2010; Paço & Raposo, 2009). It is logically appealing as well because the complicated relationship of human actions with the environment is more plausible for an educated consumer than one less educated. Similarly, paying an extra sum of money to support an environmental cause is also dependent on consumers having resources available (such as discretionary income). The most plausible line of logic for income as a significant correlate of pro-environmental behaviours can be drawn from the work of Maslow (1969) who emphasised that fulfilment of basic needs is mandatory before moving up Maslow's 'hierarchy of needs' to higher levels such as self-actualisation. High income helps to meet basic needs as well as enabling consideration of options such as supporting an environmental cause.

2.7.2.3   Gender and ESCCB

As with other demographic variables, gender has received inconsistent findings about being a significant discriminator between green and non-green consumers. Roberts (1996) and Robert and James (1999) reported that gender is significantly associated with ECCB. Roberts (1996) further added that females were more inclined towards ECCB than males. Contrarily, a stream of more recent studies found gender to be an insignificant factor in differentiating green consumers from non-green consumers (Chan, 2000; D'Souza et al., 2007; Finisterra do Paço & Raposo, 2010).

This thesis, therefore, examines the role of gender on ESCCB in a society that is driven by male dominance. Since the burden of protection, security and fulfilment of

family needs is primarily the responsibility of males in Pakistan, it is likely that ascription of accountability towards environment, and subsequently engaging in pro-environmental behaviours, is more common in males than females.

2.7.2.4 Occupation and ESCCB

Occupation is also an important correlate of pro-environmental behaviours. Several studies found the occupation to be a significant factor discriminating between green and non-green consumers. Finisterra do Paço and Raposo (2010) reported that consumers associated with intellectual, scientific and artistic occupations tend to engage in environmentally friendly buying behaviour, recycling and natural resources conservation more than do those associated with other occupations. Correspondingly, Akehurst et al. (2012) and Roberts (1991) suggest that individuals in civil service and political organisations are more prone to act in a socially responsible way. Several other studies have presented identical findings and concluded that occupation is a significant factor to discriminate green consumers from non-green consumers (see, for instance, D'Souza & Taghian, 2005; Finisterra do Paço & Raposo, 2010; Jain & Kaur, 2006; Paço & Raposo, 2009; Vocino, Polonsky, & Dolnicar, 2015).

Although occupation has been well studied in the literature, there are several criticisms regarding its uniqueness. Some researchers contend that occupation in its effect is similar to income and social class (Finisterra do Paço & Raposo, 2010) so its comprehension as a factor should not be approached without caution. In the context of the current study, the most significant occupation divide emerges in the form of agriculturist, executive, and employee (Pakistan Bureau of Statistics, 2013). The results may explicitly provide evidence of which group is more concerned about the environment. Though climate change may be affecting all three groups equally, the relationship of occupation with ESCCB is subtle. Nevertheless, it is evident that occupation is a significant discriminator of ESCCB.

2.7.3 Psychographic Correlates of ESCCB

Psychographic segmentation of customers involves using criteria of values, attitudes, interests, lifestyles, social class, personality characteristics, activities and opinions to classify unique clusters having homogenous needs (Cahill, 1997; Kotler, 1997; Oates, Shufeldt, & Vaught, 1996). Psychographic variables are claimed to be more useful in profiling green consumers compared with demographic variables (Robert &

James, 1999). Significant amounts of past research attention have been dedicated to explaining a variety of green consumer behaviour and consumer profiling according to psychographic criteria. For instance, psychographic variables have been utilised to explain consumer behaviour pertinent to sustainable tourism (López-Sánchez & Pulido-Fernández, 2016), green food purchases (John, Ray, & Tim, 2013; McCarthy, Liu, & Chen, 2016), green hotels loyalty (Barber, 2014; Tanford & Malek, 2015), energy saving (Rypakova, Stefanikova, & Moravcikova, 2015; Sütterlin, Brunner, & Siegrist, 2011), choice of environment-friendly transportation (Fürst, 2014) and willingness to pay for green electricity (Tabi et al., 2014).

Environmental values, personality traits, personal beliefs, attitude towards green brand and lifestyle are the most commonly employed variables in psychographic segmentation research (Plummer, 1974; Yilmazsoy et al., 2015). Some of these variables reflect consistent results across different pro-environmental behaviours while the others demonstrate varying outcomes. For instance, Barber (2014) assessed that, based on 'attitudinal and aspirational' values, green hotel customers can be divided into four segments namely, 'Hunter Green' *(*consumers willing to engage in all type of pro-environmental behaviours and support campaigns for environmental cause*)* , 'Green' (consumers engaged in campaigns but selective on pro-environmental behaviours)*,* 'Light Green' (consumer engaged in campaigns but not supportive of pro-environmental behaviours) and 'Not at all Green' (consumers neither supportive of environmental campaigns nor pro-environmental behaviour) (pp. 371-372). The hunter green segment scored highest on attitudinal and aspirational pro-environmental values, suggesting that these values elevate the desire to select green hotels. In another study, Robert and James (1999) identified political orientation and altruism as two important correlates of ecologically conscious consumer behaviour. Their study indicates that psychographic variables were stronger than demographics in predicting ecological behaviour. The consumer segments, therefore, can predominantly be distinguished based on psychographics and such segmentation assists strategic formulation more realistically. Similarly, a more relevant study conducted to segment consumers who drive automobiles in the USA reported five consumer segments based on environmental values and environmental self-efficacy: *True Greens, Low Potency Greens, Moderate Greens, Modest Greens and Non-Greens* (Oliver & Rosen, 2010, p. 386). True Greens showed the highest environmental propensity and willingness to purchase and use hybrid cars,

followed by Low Potency Greens and Moderate Greens. Modest Greens and Non-Greens segments scored low on environmental values and environmental self-efficacy and, accordingly, low willingness to buy and use hybrid cars.

Subsequently, personality factors and lifestyle were examined in numerous studies to distinguish among various consumer profiles (Fraj & Martinez, 2006; Park & Lee, 2014; Tabi et al., 2014). In their study conducted in a Spanish context, Fraj and Martinez (2006) reported that individuals with self-fulfilment feelings tend to adopt an ecological lifestyle, show environmental consciousness and take part in environmental protection campaigns. Although the study results confirmed the earlier evidence of same nature (Kinnear et al., 1974; McCarty & Shrum, 1994), it was confined to a limited number of personality traits and pro-environmental behaviours and considered only self-fulfilment values and recycling behaviour.

More recently, many studies have focused on a number of other psychographic factors for green consumer profiling. These factors include 'sustainable intelligence' (López-Sánchez & Pulido-Fernández, 2016, p. 61), perceived consumer effectiveness (PCE) and environmental concern (EC) (Awad, 2011), attitudes, preferences and opinions (Tanford & Malek, 2015) and response efficacy, self-efficacy and personal efficacy (Sütterlin et al., 2011). The environmental behaviours tested as outcome variables in these studies are either general, for instance, ECCB (Awad, 2011), or specific to the hospitality industry, for instance energy conservation (Sütterlin et al., 2011), choice of tourist destination (López-Sánchez & Pulido-Fernández, 2016) and hotel preference (Tanford & Malek, 2015). The areas related to transportation and allied products or services have received limited consideration in psychographic segmentation. Moreover, evidence from growing economies is also rare. Many studies in the literature have recommended re-conducting psychographic analysis of green consumers in various cultural perspectives, as personal attributes and lifestyle are very sensitive to cultural variations (Barber, 2014; Park & Lee, 2014).

The first study reported in this thesis used perceived consumer effectiveness, environmental concern, neuroticism and spirituality as psychographic correlates of ESCCB.

2.7.3.1 *Perceived Consumer Effectiveness (PCE) and ESCCB*

Perceived consumer effectiveness refers to consumers' belief that they can positively affect the environmental problems by engaging in pro-environmental

behaviours (Robert & James, 1999). There is the consensus of researchers that PCE is positively associated with various kinds of pro-environmental behaviours (Cleveland, Kalamas, & Laroche, 2005, 2012; Kalamas, Cleveland, & Laroche, 2014). For instance, Özşahin, Kabadayı, Dursun, Alan, and Tuğer (2015) conducted a study on Turkish students and found that PCE is the most influential factor affecting green purchase intentions. In another study, Jacobson, Jacobson, and Hood (2015) found PCE to be an important component for predicting behaviours towards environmental contamination among consumers of five different European countries.

ESCCB related to choice and use of a car is high-involvement behaviour and is considered to affect environment significantly as GhG emissions have substantial environmental consequences. Therefore, consumers who believe that choosing an environment-friendly car and its sustainable use can curtail detrimental effects on the environment may engage in ESCCB.

2.7.3.2 Egoistic, Altruistic and Biospheric Values and ESCCB

Egoistic, altruistic and biospheric values are constituents of environmental concern (Snelgar, 2006). Egoistic values compel individuals to pursue self-interest and behave in a way to achieve self-gratification (De Groot & Steg, 2008). Altruistic values evoke selflessness and helping behaviour in general while biospheric values are specifically related to the environment (Albayrak, Aksoy, & Caber, 2013; Rhead, Elliot, & Upham, 2015).

The concept of altruism was introduced by Schwartz (1977a) who proposed that individuals' traits to engage in helping behaviour strengthen ecological concern and lead to pro-environmental behaviours. Research studies conducted later showed that egoistic values are inversely related to pro-environmental behaviours whereas altruistic and biospheric values are directly associated with pro-environmental behaviours, environmental concern, and conservation behaviour (De Groot & Steg, 2008; Fornara, Pattitoni, Mura, & Strazzera, 2016; Ojea & Loureiro, 2007; Schultz et al., 2005). Consumers who prefer self-interest to collective benefits are more likely to evaluate the functional benefits associated with choice and use of cars and, therefore, are less likely to prefer environment-friendly cars and sustainably use them. Contrarily, consumers more prone to helping behaviour and sensitivity towards the environment are expected to purchase environmentally friendly cars and use them in a way that collectively benefits them, the society and environment.

Spirituality is often confused with religiosity while, in fact, spirituality is a more abstract term and is independent of formal religious institutions (such as organised via a mosque or church) fundamental religious beliefs (Trinity or Oneness) or religiously organised formal rules (Kelly, 2003). Unlike religion, spirituality is an individual-specific phenomenon that deals with ones' beliefs about life and nature, and moral values encompassing a relationship with people and divine power (Chairy, 2012; Kelly, 2003).

The extant literature on the relationship of spirituality to pro-environmental behaviour suggests that individuals scoring high on spiritual values are more susceptible to demonstrate pro-environmental behaviours (Garfield, Drwecki, Moore, Kortenkamp, & Gracz, 2014; Kelly, 2003). Afsar, Badir, and Kiani (2016) showed that workplace spirituality enhances employees' concern towards the environment and induces pro-environmental behaviours. In another study conducted on undergraduate students in Indonesia, Chairy (2012) suggests that spirituality leads to a stronger urge to consume pro-environmental products.

Individuals with spiritual traits consider protection of natural environment as their moral obligation and prefer products which satisfy this moral urge. It can, therefore, be inferred that spiritual values may prefer purchasing green cars and using them in a way that sustainability is ensured.

2.7.4   Behavioural Correlates of ESCCB

Behavioural segmentation suggests that consumers can be categorised into unique groups based on criteria including their buying behaviour on special occasions such as Christmas and Easter, benefits sought from a product, loyalty towards a product or corporate brand, and their rate of product or service usage (Beane & Ennis, 1987; Hollywood, Armstrong, & Durkin, 2007; Johnson, Ringham, & Jurd, 1991; Kotler, 1997). Use of behavioural variables in green consumer segmentation research has received great attention. Researchers have focused on segmenting consumer markets by numerous behavioural variables. These variables include: behavioural intentions to visit/revisit a green hotel; intentions to recommend a green hotel and green hotel loyalty (Barber, 2014; Tanford & Malek, 2015); recycling behaviour for newspapers, cans, and bottles/jars (McCarty & Shrum, 1994); media usage and general eco-friendly behaviours (Park & Lee, 2014); and adoption of green electricity (Tabi et al., 2014). Nevertheless, while

behavioural segmentation has been extensively studied and reported in the academic literature, there is a paucity of evidence about certain behavioural aspects, of which automobile use and purchase are the most important.

However, a noteworthy exception in this context is the work of Sütterlin et al. (2011) who included 'energy saving behaviour related to car use and purchase' (p. 8140) in their study exploring consumer segments based on energy curtailment. They reported that the 'idealistic energy-saver' segment reflected greater intentions towards sustainable use of cars and purchase of energy-efficient vehicles (p. 8144). Though the work of Sütterlin et al. (2011) provides useful information about behavioural segments based on eco-friendly vehicle purchase and use, it suffers from some weaknesses. First, as noted by the authors themselves, there is no measure in the study design that can control social desirability effects, thus making the self-reported behaviour less close to actual behaviours. Another issue is the validity and reliability of the measurement scale used to capture sustainability perspective in vehicle use and purchase. The authors did not check the validity of the measurement items and this limits the generalisability of the findings of the study. Last but not the least, the study context suggests revalidation of the model as some contextual factors might differ in other countries, especially the availability of public transport (Sütterlin et al., 2011).

Profiling of consumers according to their behaviour towards ESCCB related to choice and use of green cars can produce interesting findings. The first dimension of ESCCB – choice of green cars – may bring about simpler results, i.e. consumers may or may not opt to buy green cars. However, dividing consumers into various segments based on level and intensity of their behaviour towards sustainable use of cars can result in multiple clusters. Sustainable use of green cars is a relative phenomenon measured by several elements. It is likely that consumers who prefer to use public transport for commuting may not opt out the use of personal cars while travelling with family for shopping or fun. The level of sustainable behaviour towards the use of personal cars depends on infrastructural facilities and other environmental factors that facilitate or impede such behaviours. Hence, consumers highly committed towards pro-environmental behaviour may score high on most, if not all, of the elements of sustainable car use while others, may score low or average.

As a result of the literature review provided above, the following conceptual model is adapted for RQ2:

Figure 2.1: Conceptual Model for Segmentation Analysis
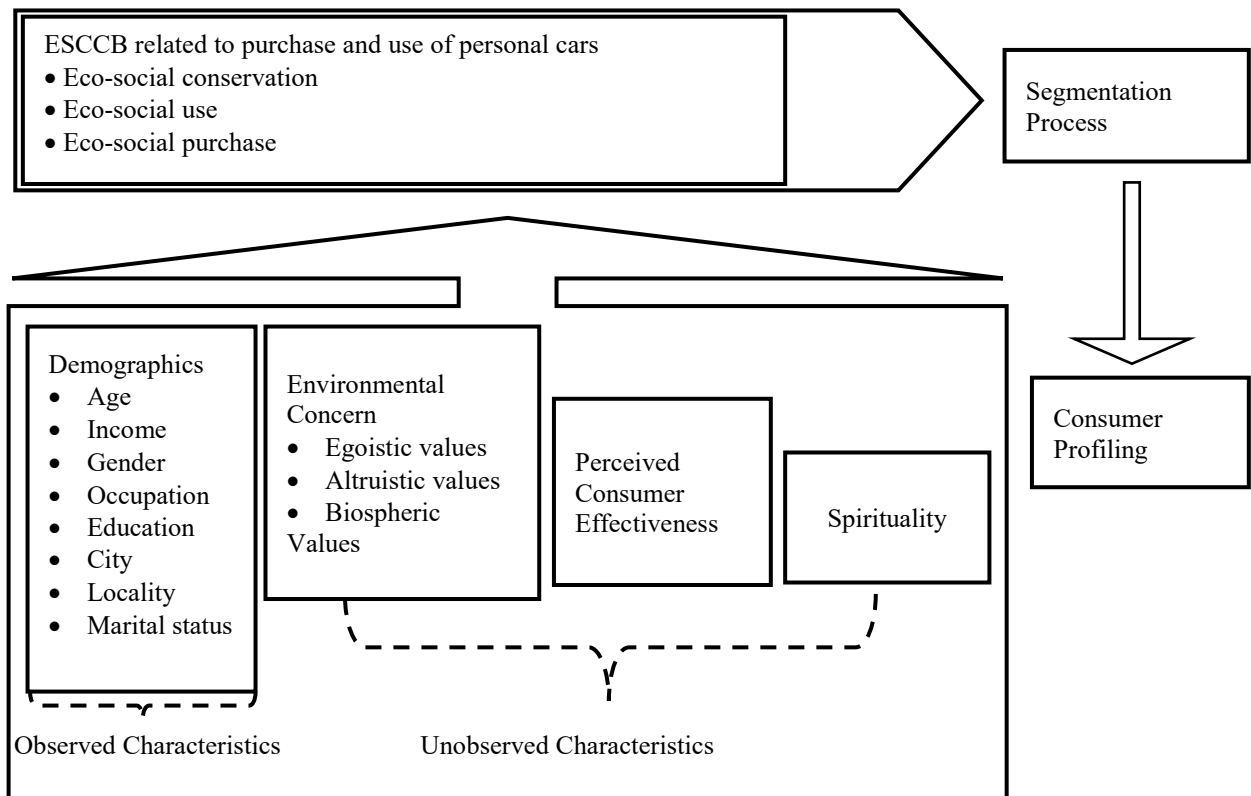
2.8 Conclusion

This chapter summarised the literature on green consumer segments and various demographic, psychographic and behavioural characteristics of those consumers who care for the environment and are inclined towards environment-friendly products. The overarching objective of this thesis revolves around the idea of bringing gross behavioural change among consumers of emerging economies to protect the environment and conserve natural resources. However, assessment of factors shaping consumer behaviour towards the purchase of environment-friendly products is not productive without a thorough analysis of consumers' needs and wants from the lens of strategic marketing, of which segmentation analysis is a central pillar (Kotler, 1997). Insights from segmentation analysis can be utilised to evaluate how various factors affect each consumer group, and consequently, tailor-made products and programs can be designed to serve each segment.

The following chapter, Chapter 3, encapsulates theories and factors explaining pro-environmental behaviours and helps to develop a holistic model of ESCCB by converging various theories.

Chapter Three: Theoretical Model and Hypotheses – Study 2

3.1 Introduction

The previous chapter summarised the literature relating to research questions RQ_1 and RQ_2 (Study 1). Discussions in Chapter 2 were divided into two sections – Section 2.2 Measurement Scale of Eco-Socially Conscious Consumer Behaviour and Section 2.6 Market Segmentation and Green Consumers. Section 2.2 analysed the available literature on existing measurement scales of pro-environmental behaviours, mandates and caveats of these scales, the context of the development of these scales and their utility for the current study. Section 2.6 included a review of the literature on demographic, psychographic and behavioural segmentation studies in sustainability marketing and pro-environmental behaviours, potential correlates of ESCCB and hypothesis derived for the current study.

The current chapter advances the discussion initiated in Chapter 2 and attempts to develop a holistic theoretical model of ESCCB explaining the choice of green cars and their sustainable use. This chapter discusses various contextual factors, advances theoretical convergence to address the intention-behaviour gap and derives hypotheses in an emerging economy perspective, i.e., Pakistan.

3.2 Model of Eco-Socially Conscious Consumer Behaviour

Research into the purchase and use of environmentally friendly products is abundant and constantly increasing. Several models and theories from the social-psychological domain have been proposed to aid understanding of factors governing consumers' pro-environmental behaviour (see for example, Afroz et al., 2015; Chekima et al., 2016; López-Mosquera et al., 2015). With increasing behavioural explanations regarding theories and models, the choice of any particular sustainable consumer behaviour model has become an intricate process (Bamberg & Schmidt, 2003). Additionally, while there are many studies describing consumer behaviour in the context of green purchasing, investigations encompassing high-involvement products are as yet limited (Knez et al., 2014). Utilising existing theories from social psychology to explain consumer behaviour is advantageous in the sense that these theories provide predefined constructs and well established causal patterns to explain behaviours (Redd, 2012). However, most recently, Rezvani, Jansson, and Bodin (2015) argued that there are several

conceptual as well as methodological gaps in explaining consumer behaviour pertaining to environment-friendly innovation adoption, which warrants further research in this area. In the following sections, a critical review of theories used in the literature to describe sustainable consumer behaviour is provided and then justification is offered for the choice of particular theories to explain eco-socially conscious conusmer behaviour related to choice and use of personal cars in this thesis.

3.3   Theories of Sustainable Consumer Behaviour

In the existing literature, sustainable consumer behaviour has been explicated through a number of theoretical models. These models explaining consumer behaviour underpin factors including personality, emotions, attitudes, a disposition to innovation adoption and symbolism (Rezvani et al., 2015). Based on behavioural underpinnings, theories in sustainable consumer behaviour can be divided into two major categories: Rational Choice Theories and Normative Theories.

3.4   Rational Choice Theories

Rational choice theories are based on the fundamental premise that an individual's social or economic behaviour is based on specific objectives, is reflective and consistent, and causes maximisation of utility (Arrow, 1990). Such behaviours may involve cost and benefit analysis of purchasing one product or preferring one behaviour over other. Based on fundamental assumptions of rational choice behaviours, the literature reports four different theories that can be categorised as rational choice theories, (a) Theory of Planned Behaviour (TPB), (b) Theory of Interpersonal Behaviour (TIB), (c) Motivation Protection Theory (MPT) and (d) Motivation Crowding Effect (MCE). However, the following sections only analyse TPB and MCE as these two theories are the most cited in the literature on pro-environmental consumer behaviour.

3.4.1   Motivation Crowding Effect (MCE) or Incentive Crowding Theory (ICT)

MCE or ICT was first proposed by Frey and Jegen (2001). Contrary to classical rational choices, ICT argues that the application of financial incentives or punishments can lead to 'crowd-out' or 'crowd-in' effects relating to the intrinsic motivation to perform certain behaviours (which incentives are targeted at) or refrain from performing undesired actions (Frey, 2012, p. 77). This crowding effect is the result of monetary incentives, which undermine the intrinsic motivation of consumers to engage in certain

behaviour. MCE has a wide range of applications in social psychology, politics and labour economics. It defies traditional assumption that monetary benefits always lead to increased motivation for performing tasks. Incentive crowding alone cannot predict any behaviour; nonetheless, it explains exceptional situations when incentivising individuals not only fails to strengthen required behaviours but also explains which incentives can have an effect that is the opposite of what was intended (Bellé, 2015; Frey, 2012; Frey & Jegen, 2001).

Huang et al. (2014a) empirically tested the crowding out effect in the hospitality industry and reported that cash discounts to reuse bed sheets and towels lowered hotel guests' internal motivation to perform such behaviours, confirming that crowding out occurred when monetary intervention was applied to strengthen green consumer behaviour. Similarly, Beretti, Figuières, and Grolleau (2013) investigated the impact of financial incentives directed towards an individual or an environmental cause regarding effects on motivating pro-environmental behaviours and found that monetary rewards, except in a few cases, reduced individuals' intrinsic motivations towards the environmental cause. Many other studies from the literature relating to social and pro-environmental behaviours confirmed the existence of motivation crowd-out during course of presentation of monetary rewards (see for example, Bellé, 2015; Chmielewski, Bove, Lei, Neville, & Nagpal, 2012; Hughes, Luksetich, & Rooney, 2014; Jacobsen, Hvitved, & Andersen, 2014; Perino, Panzone, & Swanson, 2014).

Contrary to the evidence documented above, a stream of research exploring the impact of environmental taxes to promote pro-environmental behaviours reports different findings. In a recent study conducted in the Netherlands, Kok (2015) found that customers responded favourably to CO_2 based tax incentives for purchasing cars emitting less GhGs, and the policy enabled the Netherlands to attain the highest share of electric vehicle sales in 2013 compared to previous years. In another study, conducted in China, Qu, Liu, Zhu, and Liu (2014) argued that consumers' purchase behaviour of small displacement cars was moderated by economic incentives to purchase such cars rather than environmental concern. Hennessey, Yun, and Macdonald (2012) reported identical findings from Norway where a CO_2 emissions tax was imposed on registration and ownership of petrol cars, which resulted in a drastic shift of purchase behaviour from petrol to diesel cars. Many other studies in the domain of environmental tax report similar patterns of findings

(see for example, Brand et al., 2013; Coad, de Haan, & Woersdorfer, 2009; Mannberg, Jansson, Pettersson, Brännlund, & Lindgren, 2014).

3.4.2 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour is derived from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) which proposes that behavioural intentions of a person follow a rational process of deliberate, and volitional assessment. Based on Self-Efficacy Theory (SET), behavioural control was added to the TRA to improve its predictive power and bridge intention-behaviour gap (Ajzen, 2002). According to the TPB, behavioural intentions are an immediate proxy of actual behaviour and are influenced by attitude, subjective norms and perceived behavioural control (Ajzen, 1991) which are contingent to a corresponding belief set, i.e., behavioural beliefs, normative beliefs and control beliefs.

Application of TPB is widespread. Many studies can be traced in the literature utilising TPB to explain a variety of pro-environmental behaviours (see for example, Kanchanapibul et al., 2014; Qu et al., 2014). For instance, Albayrak et al. (2013) conducted a study of consumers of Turkish telecom services and applied the TPB proposal to explain a model of e-invoice subscription behaviour. They found that consumers with high environmental concern and low sceptical views scored high on positive attitudes towards e-invoice subscription and reflected behavioural intentions to subscribe to e-invoices. Such consumers had high positive subjective norms as well. The variance highlighted by TPB model was also adequate which confirmed the validity of the model in predicting pro-environmental behaviours in Euro-Asian context. Several other studies exploring a range of pro-environmental behaviours, including adoption of carbon-free transportation (Jiang, Ling, Feng, Wang, & Shao, 2017), public bike acceptance (Chen, 2016), water conservation (Lam, 1999, 2006), intentions to adopt electric vehicles (Barbarossa, Beckmann, De Pelsmacker, Moons, & Gwozdz, 2015; Schuitema, Anable, Skippon, & Kinnear, 2013), PHEVs adoption (Adnan, Md Nordin, Hadi Amini, & Langove, 2018), use of public transportation (Heath & Gifford, 2002) and recycling behaviour (Oztekin, Teksöz, Pamuk, Sahin, & Kilic, 2017), also reported that the TPB model substantially explains the targeted behaviours. In the light of literature evidence on suitability of TPB in explaining pro-environmental behaviours, this thesis also utilises this theory to provide and model of ESCCB related to choice and use of

personal cars. The following sections provide conceptual links between various constructs of the TPB and aid in hypotheses development.

3.4.2.1 Relationship of Constructs of TPB with ESCCB Related to Choice and Use of Green Cars

To address the final research question of this study (see section 1.4.3), The Theory of Planned Behaviour (TPB) is relevant to ESCCB. TPB provides the most simplistic but comprehensive explanation of consumer behaviour. Considering that consumers' behavioural intentions follow 'a reasonable, consistent and often automatic fashion from their beliefs about performing the behaviour' (Fishbein & Ajzen, 2010a, p. 24), TPB assumes that such behaviours are dependent on consumers' perceived consequences of such behaviours and are, thus, not restrained by external factors such as product unavailability (Ajzen, 1991; Redd, 2012). Ajzen (1991) further noted that behavioural intention is the closest proxy of actual behaviour. Hence, TPB is equally effective in studies where the core objective is to explain behavioural intentions or when actual behaviour is not measurable. This quality of TPB makes it most suitable for this thesis as ESCCB related to choice and use of green cars is mostly reflected by behavioural intentions as actual behaviour is difficult to observe challenging to measure.

3.4.2.2 Background Factors and Belief Formation

Formation of behaviour, according to TPB, follows a systematic process starting from fundamental information or belief about a particular behaviour of interest. According to Fishbein and Ajzen (2010a), such beliefs originate from background information regarding the product or issue under consideration, and vary from consumer to consumer based on 'personality, demographic factors and information' (p. 20).

- *Informational factors and Beliefs*

Knowledge about the existence and attributes of a brand plays an important role in brand preference and purchase behaviour. Classical studies in brand management show that consumers tend to purchase a brand that they recognise and can recall (Keller, 1993). In a recent study of young consumers of smartphones, conducted in Malaysia, Sasmita and Suki (2015) reported that brand awareness is the most influential factor affecting brand equity. In another study of hotel customers in Taiwan, Lin (2013) notes that brand familiarity and purchase intentions have a very strong relationship. From these studies

and many others, it is evident that consumers prefer to purchase the products with which they are more familiar regarding product characteristics and price and have positive brand image. Esch, Langner, Schmitt, and Geus (2006) in a study of two consumer product categories (chocolate and athlete shoes) conducted in Germany, revealed that consumers' brand knowledge, including both brand awareness and brand image, is a very strong predictor of current and future purchases. However, it is important to understand that in the context of green product choice, the knowledge factor refers to product capability to positively affect the environment (or its detrimental effects on environment). Logically, greater awareness of environmental issues originating from product (or a specific behaviour) may lead to higher environmental sensitivity and consequently more engagement in choice of environment-friendly products or pro-environmental behaviours (Michael Jay, Romana, & Stacy Landreth, 2011; Mourad & Ahmed, 2012; Taufique, Vocino, & Polonsky, 2017).

For instance, in a study conducted in Malaysia, Yusof, Singh, and Razak (2013) reported knowledge to be an important component predicting environmental friendly car purchase intentions. Likewise, results from a study by Kanchanapibul et al. (2014) reveal that young consumers (students) in the UK tend to engage in green purchase behaviour if they have sufficient ecological knowledge. Though this finding refers to knowledge about the environment and not the product, additional evidence from a study by Zhao et al. (2014) suggests that various recycling and green product purchase behaviours are linked with knowledge of a product's environmental performance. Also, Polonsky, Vocino, Grau, Garma, and Ferdous (2012) noted that carbon specific and general knowledge about environment are strongly associated with environmental attitudes and behaviour.

Conceptually, there is widespread consensus that brand knowledge is composed of brand awareness and brand image (Esch et al., 2006; Keller, 1993). In the context of the current study, it was intended to explore whether or not knowledge about environmental factors (GhG emissions) and green products serve to develop favourable normative, control and behavioural beliefs that ultimately translate into corresponding attitudes.

Based on a conceptual understanding of knowledge about environmental issues associated with a product, the following hypotheses emerged:

$H_{1a,b,c:}$ Environmental knowledge is positively associated with behavioural (H_{1a}), normative (H_{1b}), and control beliefs (H_{1c})

3.4.2.3   Relationship between Beliefs and Corresponding Norms, Perceived Behavioural
Control and Attitude towards Behaviour

Beliefs are defined as 'the subjective probability that an object (target behaviour) has a certain attribute (outcome of behaviour)' (Fishbein & Ajzen, 2010b, p. 96). In the TPB proposal three sets of beliefs are proposed that link with their respective causal chain constructs: behavioural beliefs (associated with attitude towards behaviour), normative beliefs (associated with subjective norms) and control beliefs (associated with perceived behavioural control).

The interlink between behavioural beliefs and attitude towards behaviour is described by the expectancy-value model (Feather & Newton, 1982) which argues that the degree of favorableness or unfavorableness towards a behaviour is the product of a latent disposition or tendency of individuals to respond towards that behaviour. In simple words, the likelihood of positive or negative attitudes towards specific behaviour depends on the type of evaluations about consequences of performing the behaviour. If 'behaviour is perceived to result in more positive than negative outcomes, the attitude towards behaviour would be favourable' (Fishbein & Ajzen, 2010b, p. 20).

Quite similar to the assumption of how attitudes towards behaviour are produced by behavioural beliefs, the TPB proposal suggests that subjective norms are also derived from relevant normative beliefs. Normative beliefs refer to individuals' perceptions of what a particular referent or group expects of them (injunctive beliefs) or involved in (descriptive beliefs) in the context of a specific behaviour. Both injunctive and descriptive normative beliefs link respectively with injunctive (which refers to what a general referent or group expects one to do) and descriptive norms (which refers to what a general referent or group is actually involved in) (Cialdini, Reno, & Kallgren, 1990; Fishbein & Ajzen, 2010b).

Finally, perceived behavioural control (PBC) is defined as 'the extent to which people believe that they are capable of performing a given behaviour and that they have control over its performance' (Fishbein & Ajzen, 2010b, pp. 154-155). Analogous to attitude towards behaviour and subjective norms, perceived behavioural control is also derived from salient control beliefs elicited by individuals. It can therefore be inferred

that control beliefs are positively associated with perceived behavioural control (Fishbein & Ajzen, 2010b).

The theoretical interlink of beliefs and respective attitudes, norms and behavioural controls has been verified in several research studies (Moons & De Pelsmacker, 2015; Nayum, Klöckner, & Mehmetoglu, 2016; Nayum, Klöckner, & Prugsamatz, 2013). Based on the theoretical explanation and the literature evidence, the following hypothesis are drawn:

H_2: Behavioural beliefs are positively associated with attitude towards behaviour

$H_{3a,b}$: Normative beliefs (injunctive and descriptive) are positively associated with respective subjective norms (injunctive and descriptive)

H_4: Control beliefs are positively associated with perceived behavioural control

3.4.2.4 *Subjective Norms, Perceived Behavioural Control and Attitude towards Behaviour leading to Eco-Socially Conscious Consumers' Behavioural Intentions and Self-Reported ESCCB*

Ajzen (1991) conceptualised that behaviours are dependent on 'motivations' and 'ability' to perform certain actions. (p. 182). Fishbein and Ajzen (2010b) theorised that the motivation behind any behaviour (or behavioural intentions) is directly associated with the attitude towards behaviour, subjective norms and perceived behavioural control. If an individuals' assessment of a particular behaviour (attitude towards behaviour) is positive, it is highly likely that motivations towards that behaviour (behavioural intentions) would also be favourable and vice versa. Similarly, if there is a social pressure (subjective norms) to perform a certain behaviour, the probability of an individual's commitment to such behaviour will be high and vice versa. Based on suggestions of Cialdini et al. (1990), this study evaluates subjective norms as descriptive subjective norms and injunctive subjective norms. Descriptive subjective norms are individuals' beliefs about how prevalent any behaviour is among their referent others, whereas the injunctive norms are the perceived pressure individuals feel to become engaged in certain behaviour (Rimal & Real, 2003; White, Smith, Terry, Greenslade, & McKimmie, 2009).

Finally, Ajzen (1991) added the concept of perceived behavioural control to the TRA and provided explanations of behavioural inexistence despite positive attitude and favourable subjective norms. He highlighted that situational factors at times hinder the elicitation of certain behaviour even if the attitudes towards behaviour and subjective norms favour it.

Subsequent research in the application of TPB, particularly related to pro-environmental behaviour, provided evidence on the conceptual relationship of constructs propounded in this theory. For example, in a study conducted in India, Arpita (2015) reported that personal and socio-environmental norms, peer influence and green self-identity positively affect attitudes towards behaviour and general pro-environmental behavioural intentions. Similarly, in another study López-Mosquera et al. (2015) highlighted that positive attitudes towards environment lead to recycling behaviour, purchase of environment-friendly cars and sustainable use of cars. Based on these studies and conceptual schema of TPB, the following hypotheses are proposed:

$H_{5a,b,c}$: Subjective descriptive norms positively lead to ESCCB related to choice and use of personal cars (eco-social purchase, eco-social use and eco-social conservation).

$H_{6a,b,c}$: Subjective injunctive norms positively lead to ESCCB related to choice and use of personal cars (eco-social purchase, eco-social use and eco-social conservation).

$H_{7a,b,c}$: Attitude towards behaviour positively leads to ESCCB related to choice and use of personal cars (eco-social purchase, eco-social use and eco-social conservation).

$H_{8a,b,c}$: Perceived behavioural control positively leads to ESCCB related to choice and use of personal cars (eco-social purchase, eco-social use and eco-social conservation)

3.4.2.5   ESCCB Intentions and Eco-Socially Conscious Consumer Behaviour

In their original account of the reasoned action approach, Fishbein and Ajzen (2010b) argued that intentions are the closest proxy of actual behaviour and, given certain level of compatibility between intentions and behaviour, intentions can considerably predict actual behaviour. The aforementioned arguments have been tested by several studies in literature (Moons & De Pelsmacker, 2015; Nayum et al., 2013) and verified that behavioural intentions account for an appreciable amount of variance in actual behaviour.

Since the purpose of this thesis is to provide an explanation of self-reported eco-socially conscious consumer behaviour (explained in section 6.6.8 of this thesis) of automobile customers in Pakistan, the ESCCB scale developed in this study (RQ_1- see section 4.4 for details) is utilised as customers' behavioural intentions leading to self-reported actual ESCCB behaviour as per theorising of the TPB proposal. Based on the TPB model, it may be proposed that:

$H_{9a,b,c}$: ESCCB intentions (eco-social purchase, eco- social use, eco- social conservation) positively lead to eco-socially conscious consumer behaviours.

While intentions have proved to be very strong predictors of actual behaviour, there still exist some contradictions between what people say and what they actual do – an intention-behaviour gap (Fishbein & Ajzen, 2010b). Among the various explanations of what might be the significant reasons for such gaps, one plausible logic is the presence of situational factors which impede actual behaviour (Fishbein & Ajzen, 2010b). For instance, while customers may be willing to buy an environment-friendly product and engage in pro-environmental behaviours, the unavailability of the product and or lack of infrastructural facilities to engage in particular behaviour might prevent intentions from translating into actual behaviour. Therefore, Fishbein and Ajzen (2010b) suggested that actual behavioural control can not only effect the intention-behaviour gap but also directly affect the perceived behavioural control. In brief, perceived as well as actual behavioural control are not linked with each other, but also intervene in the intention-behaviour relationship. Hence, this study proposes that:

H_{10a}: Actual behavioural control is positively associated with perceived behavioural control.

$H_{10b1,2,3}$: Perceived behavioural control moderates the ESCCB intentions (eco-social purchase, eco-social use, eco-social conservation) and eco-socially conscious consumer behaviour relationships.

$H_{10c1,2,3}$: Actual behavioural control moderates the ESCCB intentions (eco-social purchase, eco-social use, eco-social conservation) and eco-socially conscious consumer behaviour relationships.

Based on the theoretical explanation provided above, the adapted model of TPB is provided below in Figure 3.1.

Figure 3.1: Theory of Planned Behaviour
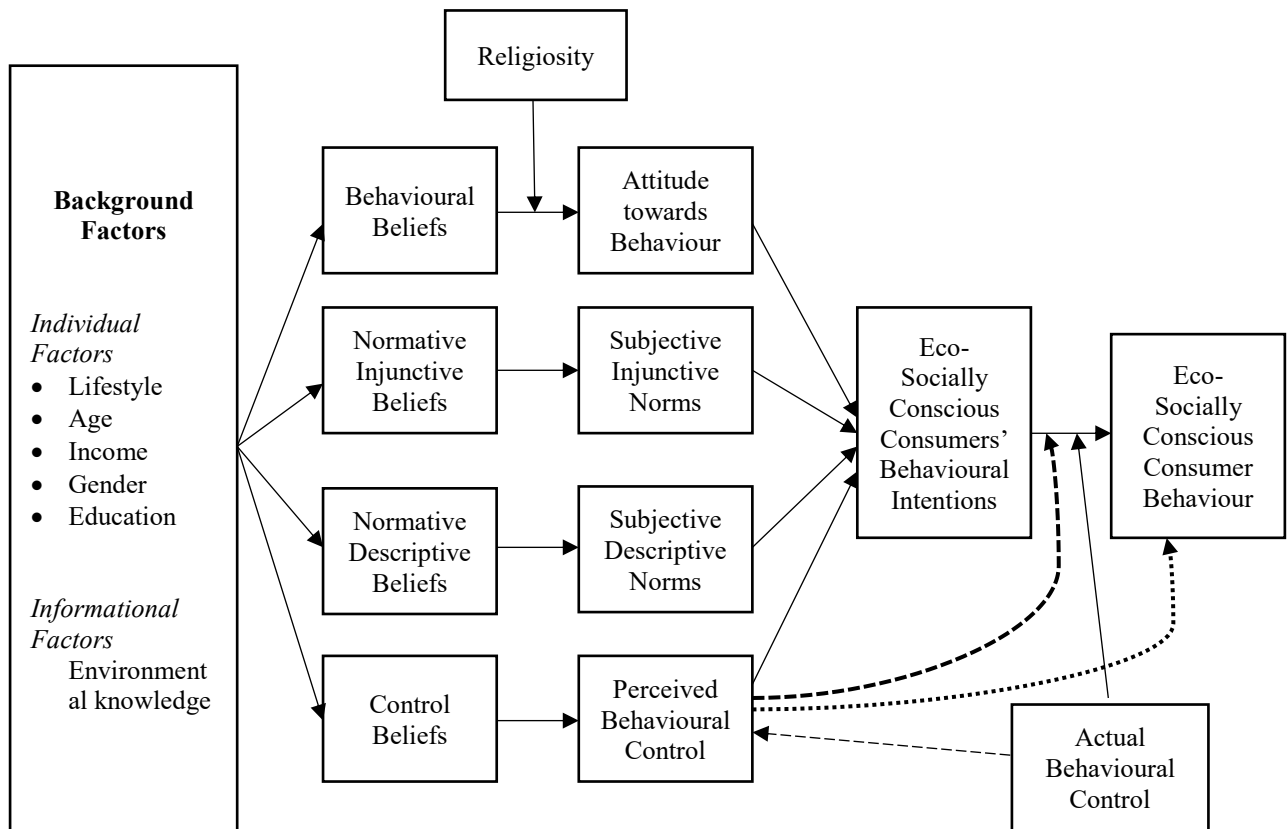
Notes: Source: Adapted from (Ajzen, 1991, p. 182); the construct of eco-socially conscious consumer behavioural intentions consists of three components: eco-social purchase, eco-social use and eco-social conservation

3.5 Normative Theories

Normative theories tend to explain consumer behaviour through the prism of normative influence (both social and personal) justifying human actions and their impact on people, society at large and the environment. Instead of relying on functional benefits associated with products, normative theories suggest evaluating the ethical perspective of ones' behaviour from personal and others' norms. In brief, the norms-driven behaviour is associated with emotions derived from ones' values and beliefs, augmented by the expectations and actions of important others. The most prominent normative theories in sustainability marketing, reported thus far, include Goals Framing Theory (GFT), Norms Activation Theory (NAT) and Values-Beliefs-Norms (VBN) Theory.

3.5.1 Goals Framing Theory (GFT)

GFT was postulated by Lindenberg and Steg (2013) who suggested that pro-environmental behaviours can be better explained through the lens of 'norms-guided'

principles (Lindenberg & Steg, 2013, p. 37). They further explained that norms-guided behaviour follows four critical steps: the formation of social norms, the spread of norms, goal-framing for conformance to norms, and flexibility of norm-guided behaviour to situational contexts. According to Lindenberg and Steg (2013), the goals that guide norm-driven behaviour relate to pleasure seeking (hedonic goals), exchange benefits (gains goals) and obligation to self-regulation (normative goals). The extent and nature of human behaviour depend on the strength of any one of these goals. Engagement of individuals in pro-environmental behaviours reflects the overarching strength of the normative goal-frame, which is likely if normative goals are supported by biospheric values – values related to environmental protection. (Lindenberg & Steg, 2013).

In a recent study, Steg, Bolderdijk, Keizer, and Perlaviciute (2014) suggested that pro-environmental behaviour can be fostered by either reducing the tangible cost of performing environmental friendly behaviour, thus supporting hedonic and gain goals, or by solidification of normative goals through 'values' and 'situational factors' (Steg et al., 2014, p. 105). They stressed that development of values that are supportive to normative goals is more important to foster pro-environmental behaviours as it reduces the impact of motives related to cost or consumption gains.

The importance of normative goals-driven behaviour is predominant in situations where the cost of performing an environment-friendly behaviour is high. In the specific case of adopting environment-friendly technology in automobiles, consumers' gain goals are affected negatively. Similarly, curtailment in the use of a personal car damages hedonic values. Therefore, support for normative goals is inevitable, which is primarily driven by strong biospheric values that may reduce the impact of hedonic and exchange losses in case of adopting pro-environmental behaviours.

Although the GFT presents a unique idea of motivations behind pro-environmental behaviours, the explanation of norm-guided behaviour is deliberated in more details in the NAT proposed by Schwartz (1977a).

3.5.2 Norms Activation Theory (NAT)

NAT focuses on pro-social behaviour related to helping others in different ways. NAT was proposed by Schwartz (1977a) who suggested that ethical or social behaviour is a product of active norms driven by a sense of moral obligation. Behaviour driven by norms, therefore, corresponds to one's values and expectations (Redd, 2012).

In a further explanation of the NAT proposal, Schwartz (1977a) noted that human behaviour is initiated by construction of an individual's cognitive schema about his or her ideal state of affairs. This cognitive structure leads to conforming norms construction, which is activated by some environmental stimuli, for instance, the perceived seriousness of an environmental problem, which is the second step of the three-step norms activation process leading to prosocial behaviour. In the last stage, individuals adhere to this active situation by engaging in certain behaviours consistent with their norms. Applications of NAT can be found in the literature on social behaviour, ecological behaviour, and business ethics. For instance, Khare (2015) applied NAT in a study conducted in India and reported the effectiveness of the model in predicting ecologically conscious purchase behaviour. Similarly, NAT has been successfully applied to understand conservation of resources and sustainability as well. For instance, in a study conducted by Han (2014) in South Korea, consumers' behavioural intentions to attend an environmental convention were predicted by slightly modifying the traditional NAT model adding 'feelings of pride and guilt' as supplementary constructs (p. 464). The modified framework demonstrated exceptional results and an increased predictive power towards consumers' pro-environmental behavioural intentions.

The NAT model has also been tested in the context of many other pro-environmental behaviours including electricity saving behaviour (van der Werff & Steg, 2015; Zhang, Wang, & Zhou, 2013), hotel guests' post-purchase decision-making (Han, Hwang, Kim, & Jung, 2015) and travellers' environmental behaviour in a cruise travelling context (Han, jae, & Hwang, 2016). Although the NAT model has been applied in the diverse study setting, the model still has limited generalisability in the sense that it only measures behaviours related to a particular study setting since its constructs have 'behaviour-specific conceptualisation' (van der Werff & Steg, 2015, p. 9). In brief, the NAT is a preliminary proposal towards the comprehension of norms-driven ethical behaviour that, later on, developed into a more sophisticated form of causal chain process to explain pro-environmental behaviours, i.e., VBN Theory.

3.5.3 Value-Belief-Norms (VBN) Theory

As an extension of the NAT, the Value-Belief-Norms Theory (VBN) was proposed by Stern et al. (1999b). Fundamental postulates of this theory stem from NAT and include seven distinct but related constructs organised in a causal relationship to exclusively explain pro-environmental behaviours (PEB) (Stern et al., 1999b). The seven

constructs of VBN are categorised by values, beliefs and norms. Values include 'biospheric values', 'altruistic values' and 'egoistic values'; beliefs include the 'new ecological paradigm', 'awareness of consequences' and 'ascription of responsibility' and norms are related to a 'pro-environmental personal norms' construct that leads to various behaviours ranging from 'environmental activism' to 'private sphere behaviours' (Stern et al., 1999b, p. 84). The fundamental assumption of this theory is that pro-environmental behaviour can be predicted via an array of values, beliefs and norms connected in a causal chain process – values leading to beliefs, beliefs leading to norms and norms ultimately shaping pro-environmental behaviour.

Applications of VBN Theory can be found in a number of studies explaining pro-environmental behaviours including willingness to pay for wildlife (Ojea & Loureiro, 2007), travellers' pro-environmental behaviours in green lodging (Han, 2015), students' car use for university routes (Bamberg & Schmidt, 2003), consumers' behaviour related to curtailment and innovation adoption (Jansson et al., 2010), and intentions to improve household energy efficiency (Fornara et al., 2016).

In analysing the findings of previous studies, the results showed a variation in the level of importance of VBN constructs in predicting the behaviour under study. For instance, Jansson et al. (2010) conducted their study in Sweden to apply concepts of the VBN Theory to predict behaviour related to 'willingness to adopt alternate fuel vehicles (AFVs)' and 'willingness to curtail car use' (Jansson et al., 2010, p. 361). They found that biospheric values, the ascription of responsibility, personal norms and car habit strength significantly predicted a willingness to curtail car use. All these variables, except ascription of responsibility, appeared to be significant predictors of willingness to adopt green car as well. Similarly, Fornara et al. (2016) studied non-economic aspects of consumer behaviour related to the adoption of green energy technology among households in Italy. The study employed constructs of the VBN model along with five additional constructs including trust in 'information sources,' 'injunctive and descriptive norms,' 'attitudes towards green energy,' and 'intentions to use green energy' (Fornara et al., 2016, p. 4). The results of the multiple-mediation model revealed that the VBN causal chain followed the originally conceptualised relationships except that there was a non-significant link between ascription of responsibility and awareness of consequences. Furthermore, the relationship between moral norm and informational influence appeared to be most influential. The study served two purposes: it verified the usefulness of the

application of the VBN causal model to energy-related behaviour, and it introduced additional constructs that improved the model's predictive power.

These studies, along with many others, support the argument that VBN is one of the most influential theories in pro-environmental behaviour research as the conceptualisation of its constructs directly correlate with pro-environmental behaviours (see for example, De Groot & Steg, 2008; Yusof et al., 2013). However, the causal chain process of VBN may not always validate the inter-constructs relationship across various behaviours – as in the case of Fornara et al. (2016) where construct ascription of responsibility did not significantly relate to awareness of consequences. These findings warrant the need to apply the VBN to different study settings and diverse pro-environmental behaviours. In this thesis, VBN Theory is utilised for the development of a model of ESCCB about choice and use of a car, in an emerging economy context.

Figure 3.2: VBN Theory
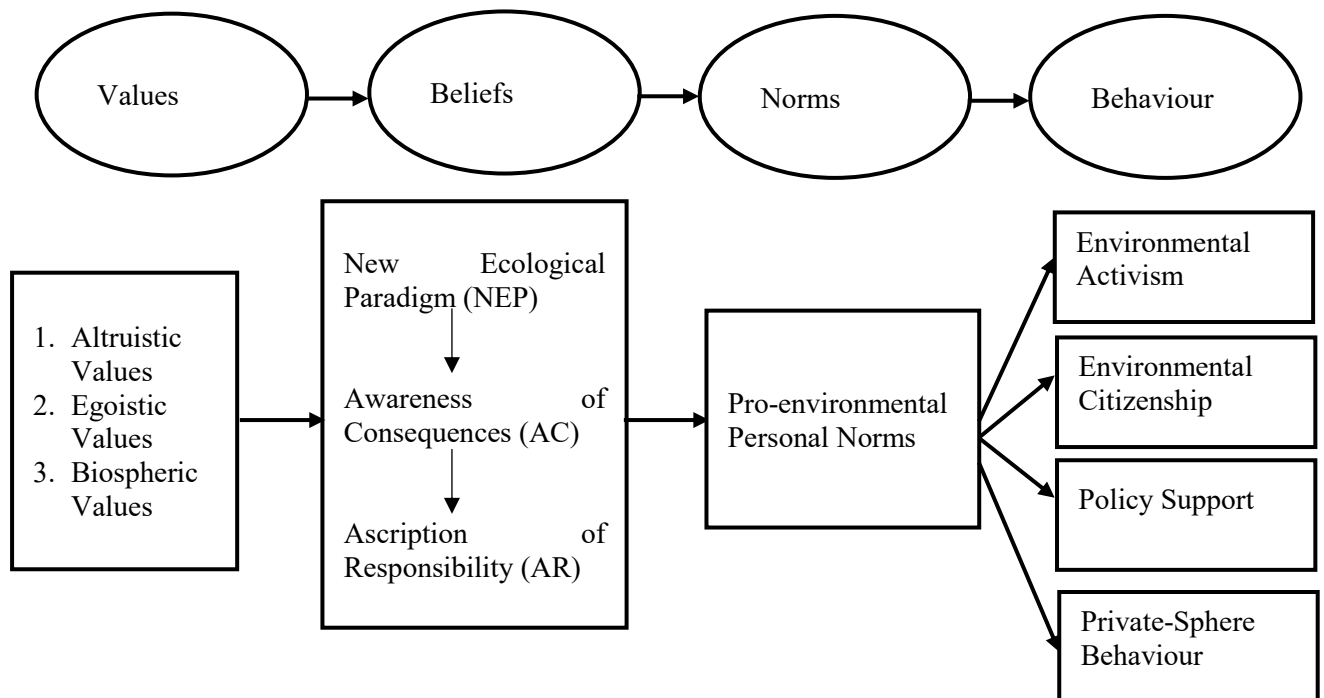
Notes: Source: Taken from (Stern et al., 1999b, p. 84); the behavioural component of VBN conceptualised in the this thesis are eco-socially conscious consumer behavioural intentions that include eco-social purchase, eco-social use and eco-social conservation

3.5.3.1   Development of Hypotheses Related to VBN Theory

As the VBN Theory has been used in a variety of studies explaining pro-environmental behaviours , ESCCB related to choice and use of cars is expected to be predicted by use of this theory as well. The constructs of VBN Theory act in a unique

causal chain process to predict the ultimate criterion variable, i.e. ESCCB. The following section describes the conceptual and theoretical relation of a causal chain process linking various constructs of VBN Theory leading to ESCCB related to choice and use of personal cars. Consequently, hypotheses have been developed for further testing, with the findings reported in later parts of this thesis.

- *Relationship of Values and NEP in the Context of Choice and Use of Green Cars*

Personal value orientations are the building blocks of VBN Theory that influence individuals' general ecological worldview (new ecological paradigm). According to Stern, Dietz, and Kalof (1993), three distinct forms of value orientations motivate behaviours pertinent to the environment: biospheric values, altruistic values and egoistic values. Biospheric values are related to a concern for environment and ecosphere. Decision-making influenced by biospheric values utilises an evaluation of behaviour regarding its impact on ecosystems (De Groot & Steg, 2008). Altruistic values motivate helping behaviours for general others and society, and appraise the impact of engaging in (or refraining from) a particular behaviour on the wellbeing of other people (Steg, De Groot, Dreijerink, Abrahamse, & Siero, 2011). However, unlike biospheric and altruistic values, the critical impetus of commitment to a particular behaviour, driven by egoistic values, is personal gain or self-interest (Snelgar, 2006).

NEP is a general ecological worldview that guides an interplay between human behaviour and environment on the lines of mutual existence (Dunlap et al., 2000). NEP is an antithesis of a dominant social paradigm (DSP) which advocated human dominance on all creations of nature and proposed that advancements in technology and economics can provide a resolution for all planetary problems (Kilbourne, Beckmann, & Thelen, 2002). Contrary to DSP, NEP argues that human survival is manifested in coexistence with other elements of nature – the environment being the most important one of those elements. Therefore, ethical consumption, environmental protection, and reduced human interference to natural processes should be the frontline strategies for a balanced and prolonged survival (Chua, Quoquab, Mohammad, & Basiruddin, 2016; Lau, Hashim, Samah, & Salim, 2016).

There is a plethora of research available in the literature that proposes causal relationships of egoistic, altruistic and biospheric values with NEP (see for example, Chua et al., 2016; Nguyen, Lobo, & Greenland, 2017). Egoistic values, which primarily focus on self-improvement and attainment of power, negatively relate to NEP. NEP advocates

the dominance of nature and proposes an individual's actions to support the existence and sustainability of the natural system, which conflicts with what egoistic values tend to achieve. In his original conceptualisation of environmental values, Snelgar (2006) proposed that egoistic values are negatively associated with pro-environmental behaviours, and the other constructs discussed in the following sections (i.e., NEP, AR, AC, Personal norms (PN)) leading to pro-environmental behaviours. This proposition was further augmented by some later studies (Jansson et al., 2010). However, a more recent stream of research suggested that egoistic values may relate positively to pro-environmental behaviours where the targeted behaviour is high-involvement and the consequences of not engaging in pro-environmental behaviours may deem to hamper the self-interest (Saleem, Eagle, & Low, 2018). In the similar vein, Chua et al. (2016) also noted that egoistic values are positively associated with NEP. Considering that the purchase and use of personal cars involve a lot of financial, social and physical risk analysis, and thus is a high-involvement decision, this study supports the later stream of research and proposes that egoistic values are positively associated with ESCCB related to choice and use of personal cars.

Contrary to complex interplay and conflicting evidence surrounding the relationship between egoistic values and NEP, there is a preponderance of evidence, and a consensus among researchers of this field, suggesting that biospheric and altruistic values are positively associated with NEP (Obeng & Aguilar, 2018; Rhead et al., 2015). Given the fundamental concept of biospheric values, it is quite logical to argue that individuals who are more sensitive towards environment and biosphere, may tend to possess pro-ecological beliefs (NEP) and therefore behave in a way that supports pro-environmental actions (Lau et al., 2016). Though not directly associated with the environment, altruistic values reflect ethical behaviour from a social perspective and promote trans-situational objectives of individuals to help others by preferring altruism over self-interest (Perrea et al., 2014). Therefore, a positive association of altruistic values with pro-environmental attitudes (NEP) is evident in the literature (Han et al., 2015; Jansson, Nordlund, & Westin, 2017).

Based on the literature cited above, it may be hypothesised that,

H_{11a}: Biospheric values are positively associated with NEP.

H_{11b}: Egoistic values are positively associated with NEP.

H_{11c}: Altruistic values are positively associated with NEP.

- *Awareness of Consequences (AC) and Ascription of Responsibility (AR)*

The theoretical model of VBN posits that NEP evokes awareness among the individuals of probable adverse consequences to individual interest, society or environment, that might result from acting (or not acting) in a particular way (pro-environmental behaviour) (Zhang, Zhang, Zhang, & Cheng, 2014). In the context of the natural environment, the construct AC refers to the belief that one is aware of deteriorating environmental conditions and the likelihood of the occurrence and severity of the consequences of the deterioration. Awareness of adverse consequences to valued objects sensitises individuals about the environment, and their perceived responsibility towards the environment and they tend to circumvent the situation by engaging in eco-friendly behaviours, refraining from anti-environmental actions or supporting such campaigns which promote pro-environmental behaviours (Dunlap & Van Liere, 1978; Hiratsuka, Perlaviciute, & Steg, 2018). Stern et al. (1999b) proposed that higher concerns about the environment (NEP) lead to greater awareness of consequences of environmental problems and consequently an increased sense of obligation or ascription of responsibility (AR). The extant literature suggests that NEP is directly associated with AC, and consequently, AC is positively linked to AR (van der Werff, Steg, & Keizer, 2013). It is, therefore, hypothesised that,

H_{12}: NEP is positively associated with AC.

H_{13}: AC is positively associated with AR.

Further to the direct effect relationships, the VBN Theory also justifies an indirect effect of NEP between value orientations and AC, and the indirect role of AC between NEP and AR. For instance, Stern et al. (1999b) suggested that environmental values (egoistic, altruistic and biospheric) develop ecological world view (NEP) which in turn enhances the AC leading to an increased AR towards environmental problems. The theoretical link has been further verified by the empirical evidence available in the extant literature (Hartmann, Apaolaza, & D'Souza, 2018). It is therefore proposed that:

H_{14a}: NEP mediates the relationship of egoistic values with AC.

H_{14b}: NEP mediates the relationship of altruistic values with AC.

H_{14c}: NEP mediates the relationship of biospheric values with AC.

- *Personal norms (PN) and ESCCB*

The last chain of causal relationships in the VBN framework describes how pro-environmental beliefs lead to pro-environmental norms and respective behaviour. In their theory, Stern et al. (1999b) highlighted that the causal chain process of VBN structurally leads to 'activating a sense of moral obligation that creates a predisposition to act in support of movement goals' (pp. 85-86). The sense of moral obligation, which Stern et al. (1999b) referred to as personal pro-environmental norms, then leads to a variety of pro-environmental behaviours including activism, public sphere behaviours, private sphere behaviours and behaviours in organisations. In various studies, however, these 'movement goals' (Stern et al., 1999b, p. 86) have been customised in the particular context of the study. In this current study, the intention is to explain the choice and use of personal cars as the primary outcome variable and an overall ESCCB as explained in the earlier parts of this study.

Personal norms refer to the felt moral obligation to act in a pro-environmental way and are immediate antecedents of targeted behaviours in the VBN framework (Linda. & Judith., 2010). Forming and activation of personal norms depend on corresponding beliefs, and resultantly the type of norms activated, and the strength of norms define the likelihood of individuals actually performing the behaviour (Schwartz, 1977b). Literature notes that, based on triggering events or factors, personal norms can be categorised as, 1) integrated norms – induced by evaluation of right or wrong based on morality, and 2) introjected norms – persuaded by personal guilt or pride (Cialdini, Kallgren, & Reno, 1991; Lind, Nordfjærn, Jørgensen, & Rundmo, 2015). Precisely, introjected personal norms are motivated by guilt avoidance or expression of pride whereas integrated personal norms are manifested in moral evaluation using self-reasoning and empathy (Bamberg, Hunecke, & Blöbaum, 2007). Nonetheless, both integrated and introjected norms are important constituents of norms-driven pro-environmental behaviour.

The VBN framework argues that individuals' engagement in pro-environmental behaviours is influenced by the feeling of moral obligation (personal pro-environmental norms) to act ecologically, triggered by their perceived ability to avert, or feel responsibility towards (ascription of responsibility) environmental problems (Hiratsuka et al., 2018; Obeng & Aguilar, 2018). In addition to theoretical logic, there is adequate empirical evidence in the literature as well to support the conceptualised relationship of beliefs (AR) with personal norms, leading to targeted pro-environmental behaviours. For

example, Han (2015) in a study conducted on hotel guests' behaviour in South Korea, reported that AR positively leads to personal norms, and personal norms are positively associated with guests' pro-environmental intentions to revisit the hotel. Similar results were reported by Onwezen, Antonides, and Bartels (2013) and Onwezen, Bartels, and Antonides (2014) in their studies conducted in the Netherlands. Based on theoretical logic and empirical evidence, it may be proposed that:

$H_{15a,b}$: Ascription of responsibility positively leads to introjected (H_{15a}) and integrated (H_{15b}) personal norms.

$H_{16a,b,c,d}$: Introjected personal norms are positively associated with ESCCB-purchase (H_{16a}), ESCCB-use (H_{16b}), and ESCCB-conservation intentions (H_{16c}), and eco-socially conscious consumer behaviour (H_{16d}).

$H_{17a,b,c,d}$: Integrated personal norms are positively associated with ESCCB-purchase (H_{17a}), ESCCB-use (H_{17b}), and ESCCB-conservation intentions (H_{17c}), and eco-socially conscious consumer behaviour (H_{17d}).

3.6 Integration of Theory of Planned Behaviour (TPB) and Value-Belief-Norm (VBN) Theory

The effectiveness of a theoretical explanation of pro-environmental behaviour remains debatable due to the nature and contextual limitations of socio-psychological theories being utilised in pro-environmental behaviour research. However, there is a consensus among researchers that TPB and VBN are the most effective in research relating to pro-environmental behaviour and these theories have been excessively utilised in various studies explaining general as well as particular pro-environmental behaviours (Chang & Chang; Chen, Chang, & Chang, 2016; Fornara et al., 2016; Gaur, Amini, Banerjee, & Gupta, 2015; Jansson et al., 2010; Kalafatis, Pollard, East, & Tsogas, 1999; Khare, 2015; Manning, 2009). In a recent study, Redd (2012) provided a critical analysis of five different theories in the context of green purchase behaviour and reported that constructs of TPB and VBN are more closely related to the conceptual schema of many pro-environmental behaviours than other theories tested. However, there are certain limitations in each theory, which have restricted the effectiveness of these theories towards providing a complete explanation of pro-environmental behaviours. Interestingly, the inherent weakness in TPB is a key strength of VBN and vice versa. For instance, TPB inadequately explains the values underlying formation of pro-

environmental attitudes, subjective norms and behavioural controls. However, VBN is enriched with concepts of altruistic, egoistic and biospheric values leading to AC that formulates attitude towards pro-environmental behaviours. On the other side, though VBN is closely associated with pro-environmental behaviours because of its highly focused constructs, nevertheless, it lacks the precision and simplicity of explaining rational choice behaviours reflected in TPB.

These limitations have stimulated the need to merge the conceptual constructs of TPB and VBN in a logical sequence to develop a new integrated model, which can provide better predictability. Drawing on these recommendations, some attempts have already been made to converge TPB and VBN in a holistic model. For instance, Han et al. (2015) in their study conducted in Korea, merged the concepts of TPB and VBN to explain guests' intentions to stay in green hotels and found that the model was remarkably strong in predicting such behaviours, explaining 57.9% variance in behavioural intentions. In another study, Han et al. (2016) merged the Model of Goal-directed Behaviour (MGB) with the Norm-Activation Model (NAM) in Korea, considering environmentally responsible cruise context, and reported that the converged model had greater prediction power than MGB and NAM in isolation. Based on these evolving trends related to the convergence of theories, the intention in this study is to merge TPB and VBN and develop a holistic model to explain ESCCB related to choice and use of green cars.

- *Relationship between Environmental Values and Attitudes towards Behaviour*

Based on the relationship of biospheric, altruistic and egoistic values with environmental concern (NEP), conceptualised in section 3.5.3.1, it can be deduced that the same relationship pattern is applicable for environmental values (constructs of VBN) and attitudes towards behaviour (constructs of TPB). This is logical as: (1) both NEP and attitudes towards behaviour have the same measurement specificity and level of causation in their respective behavioural models; and (2) both constructs (NEP and attitude towards behaviour) follow the same conceptual outcome (Redd, 2012). Therefore, the relationship of altruistic, biospheric and egoistic values with attitudes towards behaviour may be proposed as:

$H_{18a,b,c}$: Altruistic ($H_{18a)}$, egoistic ($H_{18b)}$, and biospehric values ($H_{18c)}$ are positively associated with attitude towards behaviour.

- *Relationship of Subjective Norms with Pro-Environmental Personal Norms*

A sizeable body of research evidence, both theoretical and empirical, indicates that individuals' personal opinions or behaviours are strongly affected by others (Hsu & Lin, 2016; Ifinedo, 2016; Wang, 2014; Zhu, Wang, Wang, & Wan, 2016). Consistent with the postulates of TPB, not only are individual behaviours and attitudes affected by opinions of other people, but individual opinions are also reshaped under the influence of social pressures and group norms (Germar, Schlemmer, Krug, Voss, & Mojzisch, 2014; White et al., 2009). In brief, groups or individuals affecting ones' behavioural intentions may also affect ones' personal pro-environmental norms. Thus, the following additional hypotheses are proposed:

$H_{19a,b}$: Subjective descriptive (H_{19a}) and injunctive (H_{19b}) norms are positively associated with personal (introjected) pro-environmental norms.

$H_{19c,d}$: Subjective descriptive (H_{19c}) and injunctive (H_{19d}) norms are positively associated with personal (integrated) pro-environmental norms.

3.6.1.1 Religiosity and Sustainable Behaviour

Religion is a significant foundation of individuals' belief systems. According to a survey conducted in 2010, more than 85% of the total world population, comprising adults and children, reflected some form of religious affiliation (Pew Forum, 2012). Studying religiosity (i.e. the impact of religious beliefs) is worthwhile in the quest for the development of behavioural models to increase acceptability of environment-friendly products to a broader consumer across the world. Muslims constituted around 22.32% (1.6 billion) of the total world population as of 2012, with rapidly increasing numbers of adherents in Europe and America (Pew Forum, 2012). Pakistan has the second biggest Muslim population in the world (11.0%) with 96.0% of its population following Islam (Pew Forum, 2012).

Religiosity is a major factor affecting purchase decisions in religious communities. Research on religion is on the rise. However, the inclusion of religion in modern paradigms of consumer behaviour has only received significant attention in a few cases (see for example, Martin & Bateman, 2014; Mathras, Cohen, Mandel, & Mick, 2016).

Many studies in the existing literature discuss the impact of religiosity on consumer behaviour. For instance, research on 'Halal' products reports that there is very

strong commitment among Muslim consumers to choose products that are halal certified, and halal certification overrides every other attribute of products in preference process (Guritno, Schlich, Pawelzik, & Ismoyowati, 2015; Mohayidin & Kamarulzaman, 2014; Wan Rashid, Muda, Wibowo, & Ahmad, 2016). A stream of consistent evidence suggests that religiosity is a highly influential factor when there is a direct relationship between products and the core beliefs of consumers, for instance, prohibition from consuming pork and liquor (see for example, Fischer, 2016; Ismoyowati, 2015; Khalek, 2014; Said, Hassan, Musa, & Rahman, 2014; Verbeke, Rutsaert, Bonne, & Vermeir, 2013). However, in cases where products are not directly relevant to core beliefs, for instance, the purchase and use of environment-friendly cars, the role of religious beliefs is not abundantly researched. Nevertheless, a small number of very interesting studies, specifically in the domain of religiosity and pro-environmental behaviours, can be traced in the literature that can help to conceptualise the relationship between religiosity and ESCCB.

One such study conducted on students in the US refuted a false belief that religiosity reduces concern for the environment among Judeo-Christians (Martin & Bateman, 2014). The study reported that consumers with religious beliefs are no different from those who do not hold religious beliefs regarding attitudes towards pro-environmental behaviours. In another study, conducted in Mexico in the religious context of Christianity, Felix and Braunsberger (2016) found a very strong positive relationship between intrinsic religious orientation (IRO), environmental attitudes and propensity to buy environment-friendly products. Religious beliefs reduce the materialistic evaluations of consumers and raise concern for others including the environment. For instance, Pace (2013) investigated the specific tenets of the Buddhist religion and found that religiosity reduces materialism. The evidence from these studies supports the idea that religiosity neutralises egoistic values and promotes altruistic behaviour which may lead to concern for the environment and ultimately translate into pro-environmental behaviours. Another attempt to explore the impact of religiosity on business and ethics was made by Vitell (2009). He concluded, after reviewing a number of studies in the domain of religiosity and ethics, that both consumers and business practitioners with strong religious beliefs possess strong ethical norms and tend to evaluate their decisions through an ethical prism.

Finally, an intriguing study by Hope and Jones (2014) suggests the need to rethink the impact of religious beliefs, from different religious faiths, on pro-environmental behaviour. In their study, conducted in the UK, Hope and Jones (2014) provided a

comparative account of Christianity, Islam, and non-religious communities and showed that both Christians and Muslims showed low urgency to address environmental issues compared with secular communities. They added that Muslim respondents showed greater resistance towards the acceptance of environment-friendly technology due to specific beliefs about life after death and divine intervention.

Islamic directives on the protection of the environment and conservation of energy, however, depict a different picture. Abdul-Matin (2010) extracted specific texts relating to this from the Holy Qur'an, such as that 'In Islam, all humans are considered stewards of the Earth, and in the Qur'an, God sets forward clear principles about this stewardship that include taking care of oneself, of others, and of the planet' (p. 3). In providing a further explanation, Abdul-Matin (2010) quotes six fundamental principles of Islam that direct people to protect the natural habitat as signs of God, act as stewards of the earth and maintain its natural balance, be protectors of the planet and move with justice (Abdul-Matin, 2010, p. 5). In both letter and spirit, the Islamic teachings direct Muslims to protect the environment, conserve energy and prefer products that augment this larger cause. Some ethical principles, linked with the environment, derived from the Qur'an, are summarized in Table 3.1.

In the light of literature summarised above, it may be proposed that:

$H_{20a,b,c:}$ Religiosity is positively associated with egoistic (H_{20a}), altruistic (H_{20b}) and biospheric (H_{20c}) values.

$H_{21:}$ Religiosity is positively associated with behavioural beliefs.

$H_{22a,b}$: Religiosity is positively associated with personal introjected (H_{22a}) and integrated pro-environmental (H_{22b}) norms.

Based on the theoretical convergence of the TPB and the VBN, an integrated model of ESCCB is provided in Figure 3.3: Theoretical Model of the Study.

Table 3.1 A summary of Islamic Environmental Ethics

Ethical Principal	Evidence from the teachings of Qur'an
Stewardship	'And we have given you (humans) mastery over the earth and appointed for you therein a livelihood…'(Qur'an 7:10)
Preservation and protection of creation in all its forms	The reason for conserving the environmental is that the environmental is God's creation. The creation of this earth and all its natural resources is a sign of His wisdom, mercy, power and His other attributes and therefore serves to develop human awareness and understanding of the Creator. Muslims should protect and preserve the environment because by doing so they protect God's creatures, which pray to Him and praise Him (Foltz, Denny, & Baharuddin, 2003).

	'Work not corruption in the earth after it has been set in order, and call on Him in fear and hope. Surely the mercy of God is near to those who act with excellence.' (Qur'an 7:56)
	'The seven heavens and the earth, and all beings therein declare His Glory. There is not a thing but the celebrates His praise, and yet you understand not how they declare His Glory.' (Qur'an 17:44)
Respect for the privileges of the other species	'There is not an animal in the earth, nor a flying creature, flying on two wings, but they are communities like you.' (Qur'an 6:38)
	'…there is no Muslim who plants a tree or sows a field from which a human, bird or animal eats, but it shall be reckoned as charity.' (saying of Prophet Muhammad quoted in Foltz et al. (2003)
Using no more than what is necessary	Prophet Muhammad instructed his companions not to waste water even when performing religiously mandated ablutions. He said: 'Even if you take the ablutions in a fast-flowing river, do not waste the water.'
	'…and do not waste in excess, for God loves not those who waste.' (Qur'an 6:141)

Figure 3.3: Theoretical Model of the Study
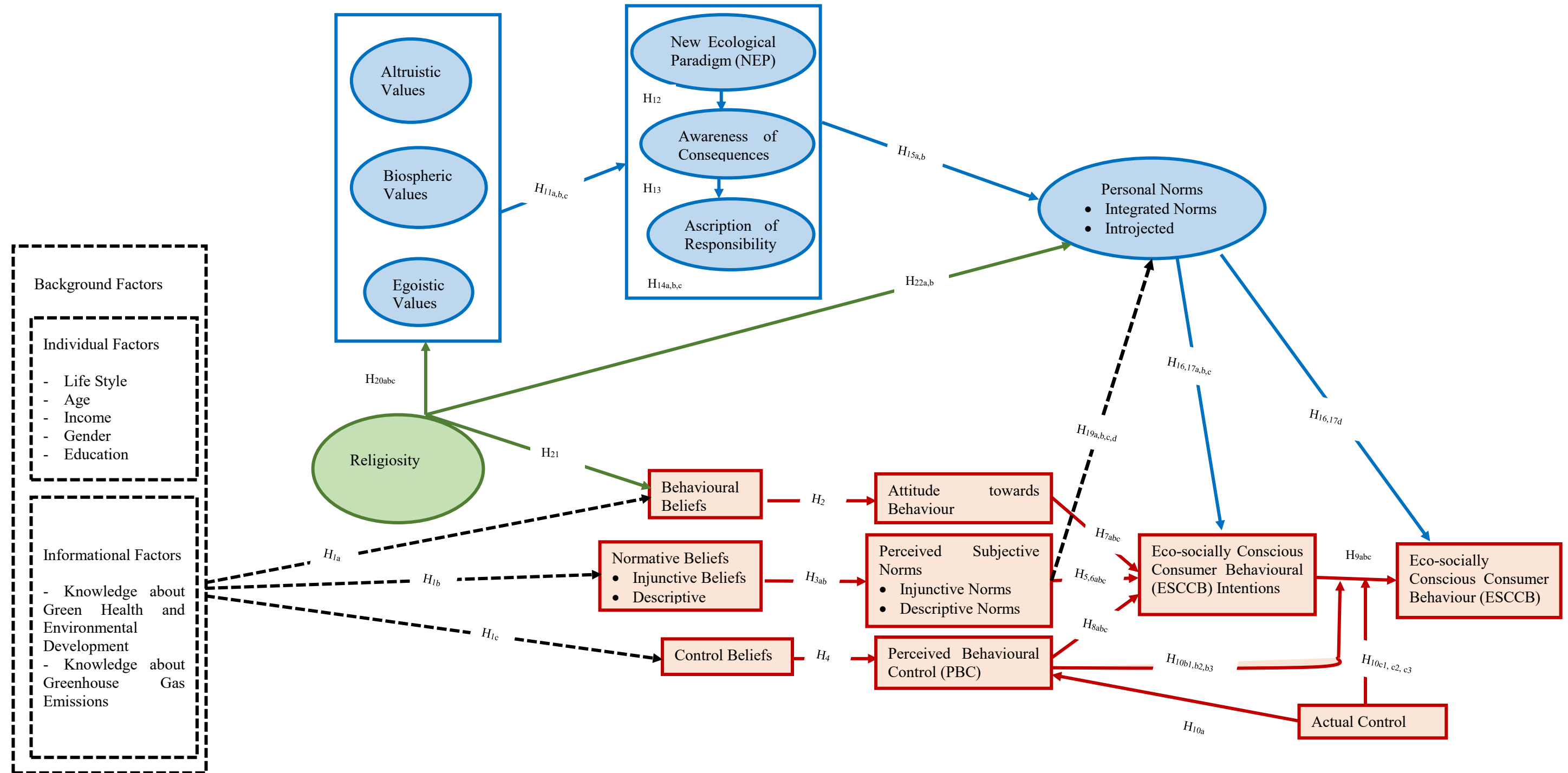
Notes: Constructs and paths shaded in blue are the original schematic representation of Value-Belief-Norm (VBN) Theory; Constructs and paths shaded in red are the original schematic representation of Theory of Planned Behaviour (TPB); Constructs and paths shaded in green are additional linkages – construct's conceptualisation and measurement have been taken from literature while the linkages are original contributions of this study; Constructs and paths in dotted lines are conceptual linkages for integration of TPB and VBN, originally theorised by this study.

3.7 Conclusion

This chapter summarised evidence from the literature and used the findings to conceptualise relationship of various theoretical constructs in the context of Pakistan, concerning ESCCB related to choice and use of green cars. Various theories and models, reported in the literature, were critically reviewed in this chapter and an integrated framework was proposed, by combining TPB and VBN, to address RQ_3 of this study. Accordingly, a number of hypotheses were developed for testing. The next chapter, Chapter 4, presents the methodology for Study 1.

Chapter Four: Research Methodology – Study 1

4.1 Introduction

The previous chapters, Chapters Two and Three, summarised literature on measurement scales of pro-environmental behaviours, green consumer segments, and their characteristics and the theories that have been used to explain various pro-environmental behaviours. In Chapter Two, hypotheses were developed to address the research question related to demographic and psychographic characteristics of green consumers in an emerging economy, Pakistan. However, in Chapter Three, various theories were outlined and a conceptual model drawn by converging two widely used theories in green marketing domain i.e., TPB and VBN Theory. In Chapter Three, hypotheses were developed to assess the impact of the theoretical constructs on our variable of interest through causal chain processes recommended in these theories. The current chapter, Chapter Four, presents an overview of the overall research plan and outlines a methodology to answer the research questions RQ_1 and RQ_2. Methodological considerations to answer RQ_3 are described in Chapter Six.

In this current chapter, the philosophical paradigm underpinning the methodological approach of Study-1 and Study-2 is described first. After this, a detailed explanation of the research design and methodology for Study-1 is provided. The section on research design for Study-1, both for RQ_1 and RQ_2 includes a description of study design, justification of methodological approach, population and sampling design and data collection techniques. Specific issues in scale development about RQ_1 are explicated in detail in section 4.4. The methodological explanation for RQ_2 is outlined in section 4.5.

4.2 Philosophical Paradigm and Overall Research Plan – Study 1

Development of sustainability marketing as a discipline has evolved through various phases from research on fundamental worldviews, for instance Dominant Social Paradigm (DSP) (Milbrath, 1984; Pirages & Ehrlich, 1974) and New Ecological Paradigm (NEP) (Cotgrove, 1982; Dunlap & Van Liere, 1978) to test theoretical models explaining general as well as specific pro-environmental behaviours (Afroz et al., 2015; Roberts, 1996; Tilikidou, 2001). Philosophical perspectives or paradigms, within which the scholarly research on environmental marketing sits, vary from positivism to constructivism (see Table 4.1). In view of the research objectives of this study, the

positivist paradigm is used, which assumes that 'reality is real and apprehensible' (Guba & Lincoln, 1994, p. 108) and involves theory testing with the help of quantitative data (Perry, Riege, & Brown, 1999; Sobh & Perry, 2006). In brief, this study mainly utilised quantitative methods to verify the hypotheses with a little involvement of qualitative tools that provide input for further quantitative analysis.

Positivism is based on the philosophical thoughts of August Comte who emphasised that understanding human behaviour is more realistic through observation, experiment and reason (Persson, 2010). Positivism underlies the principles of determinism, empiricism, parsimony, and generality (Cohen, Manion, & Morrison, 2011). These principles formulate a systematic approach to discover social reality. This systematic approach proposes to develop the causal relationship between agents of events, a collection of verifiable facts to test these relationships, execution of the phenomenon in the most economical way and systematic generalisation of findings to the population at large (Dash, 2005). One of the merits of a positivist approach is that the role of the researcher is limited and objective. The findings thereby obtained are free from bias, are observable and can be quantified (Hersh & Tucker, 2005; Keuth, 2015). The methodological approach in positivism is based on quantitative surveys, experiments and observation of the phenomenon that leads to hypothesis testing, as described in Table 4.1.

Quantitative methods adopted in the positivist paradigm undertake a deductive approach of testing hypothesised relationships with the help of measurable data and statistical analysis. As the hypothesised relationships in this current study are supported from literature (see sections 2.2, 2.7 and 3.2), a quantitative design was more appropriate to verify whether these relationships hold or not in a specific context and with particular data (Aaker, Kumar, Leone, & Day, 2016). RQ_1 involved focus group interviews as a qualitative data collection method while quantitative data was collected with the help of a structured questionnaire. Analysis of the qualitative data, collected through focus group interviews and the literature analysis, was conducted by using Leximancer v. 3.0. Data obtained through the quantitative survey (by questionnaire) was analysed using statistical tests namely EFA, CFA and orrelation Analysis using software AMOS v. 23.0 and SPSS v. 24.0. For research question RQ_2, this study utilised quantitative data that was collected with the help of a structured questionnaire through a quantitative survey. Statistical tests that were utilised to analyse this data include EFA, Cluster Analysis, Multiple Discriminant Analysis (MDA) and Analysis of variance (ANOVA).

Table 4.1: Philosophical Paradigms of Scientific Research

Elements	Paradigms			
	Positivism	Realism	Critical Theory	Constructivism
Ontology	Naïve Realism: Reality is real and apprehensible	*Critical Realism:* Reality is real but imperfectly and probabilistically apprehensible, so triangulation from multiple sources is required to know it	Historical Realism: Reality is virtual and is crystallised gradually over a period of time by cultural, political, social, ethnic, economic, and gender values,	Critical Relativism: Multiple local and specific constructed realities
Epistemology	Objectivist: Findings true – researcher looks at reality objectively through the one-way prism	*Modified Objectivist:* Findings are probably true. The researcher is aware of the need to triangulate the findings for confirmation	Subjectivist: value mediated findings Researcher realises the need to intervene and bring social transformation intellectually	Subjectivist: created findings Hermeneutical / Dialectical approach to unveiling reality. Interpretive social science. Researcher actively participates with the respondents and the social world they live in
Methodologies	Experiments, quantitative surveys, hypotheses verification, theory testing	Case studies, convergent interviews, triangulation, validation of quantitative results through qualitative analysis	Action research and participant observation. Changing the social world by moulding human behaviour through respondents' participation and group dynamics	Unstructured interviews, focus groups, observation, action research and grounded theory

Source: Adapted from Guba and Lincoln (1994); Perry et al. (1999) and Sobh and Perry (2006)

4.3 Research Design Study 1

Research questions posited in Study 1 require adopting an empirical setting for the development of new measurement scale (RQ1) and segmentation analysis of consumers (RQ2). The methodological approach adopted in Study-1 is consistent with recommendations in the body of literature relating to scale development (Churchill, 1979; Churchill, Ford, & Walker, 1974; Clark & Watson, 1995; Hinkin, 1995) and segmentation analysis (Akehurst et al., 2012; Roberts, 1991; Roberts, 1995, 1996). Focus group interviews were conducted as a qualitative component to supplement the item generation phase of new scale development in RQ1. The remaining part of RQ1 required data collection through a quantitative survey by a structured questionnaire. The developed scale, resulting from RQ1, was utilised in RQ2 for segmenting green consumers. RQ2 involved collection of quantitative data only, based on a quantitative questionnaire.

Table 4.2: Overall Research Design and Methods

Study	Objective	Research Question	Methods
Study 1	To develop a scale of ESCCB related to choice and use of green cars	RQ$_1$: How can social and ecological perspectives of consumer behaviour, related to purchase and use of green cars, be assessed in one measurement scale, in an emerging economy?	Data Collection: Qualitative: Focus group interviews, literature analysis Quantitative Survey by Questionnaire Analysis: Focus group analysis to operationalise scale domain and generate items pool by using Leximancer v. 4.0 EFA, CFA, Correlation Analysis and analysis of reliability (α) of the scale by using SPSS and AMOS
	To identify green consumer segments and explain their various characteristics based on demographic, psychographic, and behavioural criteria	RQ$_2$: How do consumers of the automobile industry of Pakistan differ from each other on various demographic, psychographics and behavioural variables?	Data Collection: Quantitative Survey by Structured Questionnaire Data Analysis: Descriptive Analysis, EFA, Cluster Analysis, MDA and ANOVA
Study 2	To identify the factors affecting ESCCB related to choice and use of green cars	RQ$_3$: Which factors effect eco-socially conscious consumer behaviour in an emerging economy context?	Data Collection: Quantitative Survey by Structured Questionnaire Data Analysis: EFA, CFA, Analysis of reliability (α) of the scales, Correlation Analysis and Path Analysis by using SPSS and SmartPLS 3.2.5 Post Hoc analysis by using PROCESS Macro in SPSS.

4.3.1   Target Population and Sampling Design

The target population for the current study was comprised of individual customers of three automobile brands: Toyota Indus Motors, Honda Atlas Cars Pakistan and Pak Suzuki Motors, across selected cities of four provinces of Pakistan. The rationale behind choosing aforesaid three automobile manufacturers is that these companies hold a major market share (collectively hold 86 percent of total market share) in the automobile industry of Pakistan. This study only focussed on individual customers and not the corporate clientele or institutional customers. Individual customers are more liberal in their choice and use of cars as compared to corporate or institutional customers who might have commercial as well as legal restrictions in choice of car, amore restricted and formal process of procurement, and also have relatively different motivations for its use (Kotler,

1997). For instance, in certain public sector departments of Pakistan, procurement policy is strictly administered by governmental regulations regarding the specifications of car and brand, and the choice of car brand is more dependent on adherence to that policy instead of free choice. Use of institution-serviced cars in such departments may also be regulated under specific job requirements; hence, the study of curtailment and efficiency behaviours related to personal car purchase and use deems irrelevant for corporate and institutional customers.

4.3.1.1 Sampling Unit

A sampling unit is the element of the population that is selected as potential target respondent in the data collection process. Decisions about sampling units are vital as they indicate the elements of the population which are included in the research process and those who are excluded (Zikmund, Babin, Carr, & Griffin, 2013). In this current study, individual customers visiting 3S dealerships with the intention to purchase a new car were taken as the sampling unit. It is important to note that the notation 3S dealerships is standard for branded dealership network of automobiles in Pakistan (and elsewhere). Customers who visited dealerships for the repair of their vehicles, exchange of used vehicles, or those who purchase a new vehicle from dealerships other than 3S were excluded from the target population. Corporate clients were also excluded from this study for a reason explained in section 4.3.1.

The 3S dealerships provide sales, service and spare parts facility to consumers, and only sell products of their parent company. For instance, a 3S dealership of Suzuki sells cars manufactured by Suzuki Company and provides service and spare parts for cars of Suzuki brand only. This study focuses only on the 3S dealerships for two reasons. First, 3S dealerships are licensed distributors of their respective corporate brands and are, therefore, more reliable. Customers trust that 3S dealerships distribute genuine products and meet the criteria of advertised products' attributes. Second, 3S dealerships cover a wide range of geographic areas and have standard product variants. For instance, a 3S dealership in one city has the same standard alternatives in any product line that other dealerships have in the same city or any other city across the country.

4.3.1.2 Recruitment of Key Respondents

This study utilised proportionate stratified random sampling for the recruitment of the potential respondents. This technique provides the ability to divide the target

population into various groups based on one or more population characteristics, which forms the basis of homogeneity within each group and heterogeneity between groups (Zikmund et al., 2013). These groups are known as 'strata' and represent unique characteristics. The target population is first divided into unique groups and then from each group a random selection of the respondents is carried out. Final selection of the subjects from respective strata can be carried out based on the prescribed proportion of strata in the actual population, thus, evolving into proportionate stratified random sampling (Adams, Khan, Raeside, & White, 2007; Zikmund et al., 2013). One of the merits of proportionate stratified random sampling is that it yields a better representative sample by reducing random sampling error (Zikmund et al., 2013).

In this current study, the bases for strata were the geographic location of the respondents and the corporate brand they choose to purchase the car from, i.e. Toyota, Honda or Suzuki. There were four major strata based on provincial divisions including Punjab, Sindh, Balochistan and Khyber Pakhtunkhwa (KPK). From selected cities of each province, there were three more strata based on dealership brand including Toyota, Honda and Suzuki. From the list of customers of the respective dealerships, a proportionate number of customers was selected on the principle of random sampling. This provided a proportionate representation of customers on the geographic as well as brand preference basis. A total of 1200 subjects were recruited to respond to the survey. A detailed description of the number of dealerships and final recruitment plan from each dealership, city, and province is provided in Figure 4.2.

4.3.2 Survey Technique

For data collection, second-year students of Bachelor of Business Administration (BBA-Hons) program, from the National University of Modern Languages (NUML) Pakistan, were selected and trained. NUML has eight campuses across Pakistan, all running BBA (Hons) program. Campuses are located in Karachi, Hyderabad, Quetta, Lahore, Multan, Faisalabad, Islamabad, and Peshawar (see Figure 4.1 for the geographical location of campuses). Data from Rawalpindi was collected by students of the Islamabad campus due to the proximity of Rawalpindi with Islamabad. The researcher personally collected data from Mardan and Sargodha as there is no campus of NUML in these cities.

Figure 4.1: Geographical Location of Campuses of NUML

The author of this thesis (hereafter referred to as the researcher) is a Lecturer in Management Sciences department of NUML and is on leave for the period required to complete the PhD thesis. The researcher has chosen the strategy to take students as research assistants inspired by students' engagement and internship initiative of NUML. Under this initiative, ongoing undergraduate students are provided an opportunity to volunteer in research programs, industrial internships and social activities to broaden their horizons and experience practical implications of academic knowledge. However, becoming part of such activities is at the sole discretion of the students, and they are not influenced by any means, nor is their academic performance linked to being part of such activities. Moreover, considerable attention is paid to students' safety, and institutional protocols are strictly followed in this regard. In the scenario of the current study, the researcher recruited students from the cities of their origin to ensure that they did not confront any cultural issues. The data collection period was carefully selected to make sure that activities had no adverse effects on students' academic performance. Finally, the choice of dealerships was made carefully, and areas which have even mild security problems were excluded. For instance, far northern parts of the country like Swat, Gilgit and Federally Administered Tribal Areas have been omitted for security reasons.

As a part of the formal protocol of NUML to initiate such activities, a circular was sent to Regional Directors of all campuses from Dean of Faculty of Management Sciences (FMS), NUML Islamabad Pakistan, describing the scope of the study and learning potential for students who intended to participate in data collection process. Participating students were paid for data collection activity according to rates commensurate in the region and approved by their university. Regional Directors of the campuses asked the respective Head of Departments (HoDs) of their campus to nominate students for data collection, preferably from the fourth semester of the program as these students had quite recently passed the Business Research Methodology course. The nomination of students was finalised during December 2016.

The number of students who were trained for data collection activity differed from one city to other. Data collection activity was carried out in teams, each team comprising two students. Three teams each from Karachi and Lahore, one each from Quetta, Multan, Faisalabad and Peshawar and two from Islamabad were trained for data collection. Overall, 12 teams with a total of 24 students were trained to collect data from dealerships. The researcher organised three training sessions through video conference, connecting from Multan Campus, with teams of all cities. The team from Multan attended the training session face-to-face. In the first session, the scope of the research and fundamental ethical issues were briefed. In the second session data collection plan, the contact person details at the dealerships, and contact hours to visit dealerships were discussed. In the third session, a practice activity was conducted and administered by the researcher in a simulated environment to ensure that teams had understood all important instructions. The training were carried out in the third week of January 2017. Actual data collection commenced from second week of April 2017 until the mid of May 2017.

Before the actual start of data collection process, permissions were sought from dealership owners and respective sales managers were contacted to provide lists of customers with tentative dates and time of vehicle delivery. Dealership managers were ensured of confidentiality of the data. To further address the potential concern of the dealerships, only names of the customers, tentative dates and time of visit were taken. Data collection in January and February followed a unique purchase behaviour of the customers in the automobile industry of Pakistan. Usually, customers pay the booking price of vehicles in November and December of the preceding year to have a vehicle delivered and accordingly registered in the New Year. Therefore, the numbers of

customers purchasing cars in April and May are much higher than the other months unless there is a launch of the new model in any other month of the year.

The researcher visited each city, at least once, to administer the data collection process. In the first week of data collection, the researcher personally visited Multan and Lahore. In the second week, Islamabad/Rawalpindi and Peshawar were visited. In this week, the researcher collected data from Mardan as well which is in close vicinity of Peshawar. In the third week, Faisalabad was visited and the researcher collected data from Sargodha as well which is in close vicinity of Faisalabad. In the fourth week, the researcher visited Karachi to administer data collection process, and in fifth and the final week of data collection, Quetta was visited to administer data collection process. The data collection plan was developed according to the visit schedule of the researcher to facilitate both the data teams and the researcher. The completed surveys were couriered to the Multan campus through respective campuses using campus standard courier service.

4.3.2.1   Managing Data Quality

To ensure the quality of data, various measures were adopted. First, data collection instrument (questionnaire) was translated in the local language to ensure that respondents, regardless of their education level, can easily understand each question. Second, various questions of the survey instrument were reverse coded to ensure that response bias can be reduced. Finally, research assistants were provided with adequate training, apart from their existing experience of the process, related to the purpose of research and structure of the research instrument to ensure that they could assist respondents in case of any ambiguity.

Figure 4.2: Recruitment of Respondents

Target Population Customers of 3S dealerships* of Toyota, Honda and Suzuki from four provinces of Pakistan Total Sample Size Required: 1200														
Province		Punjab					Sindh		Balochistan	KPK				
Conveniently selected cities		Lahore	Multan	Rawalpindi / Islamabad**	Sargodha	Faisalabad	Karachi	Hyderabad	Quetta	Peshawar	Mardan	Total	Proportion of Dealerships	Number of respondents to be selected randomly (Dealership wise)
Number of Dealerships	Toyota	9	2	4	1	2	10	1	1	2	1	33	29.46%	354
	Honda	4	2	3	1	2	6	1	0	1	0	20	17.86%	214
	Suzuki	15	3	8	1	3	19	3	2	4	1	59	52.68%	632
Total		28	7	15	3	7	35	5	3	7	2	112	100%	1200
Proportion of Cities		25%	6.25%	13.39%	2.68%	6.25%	31.25%	4.46%	2.68%	6.25%	1.79%	100%		
Number of respondents to be selected randomly (City wise)		300	75	161	32	75	375	54	32	75	21	1200		

Note: * 3S dealerships are branded distribution network providing sales, service and spare parts facility to the consumers of a specific brand. **Federal Capital is shown as the part of the Punjab province due to its proximity with the city Rawalpindi (both known as twin-cities), which is the part of the Punjab province.

4.4 ESCCB Scale – Scale Development Process

Scale development is a rigorous scientific process that involves consideration of several aspects. A sound measure, as described by the American Psychological Association (1985), is the one that reflects both reliability and validity (Zaltman, 1997). The literature records a high number of studies that have successfully developed various measurement scales in environmental marketing (Markle, 2013; Pelletier et al., 1998; Sudbury-Riley & Kohlbacher, 2016; Thompson & Phua, 2005). These studies have followed the seminal work of Churchill (1979) for scale development process. The scale development process devised by Churchill (1979) is outlined in Figure 4.3.

Figure 4.3: Procedure for Developing Measurement Scales
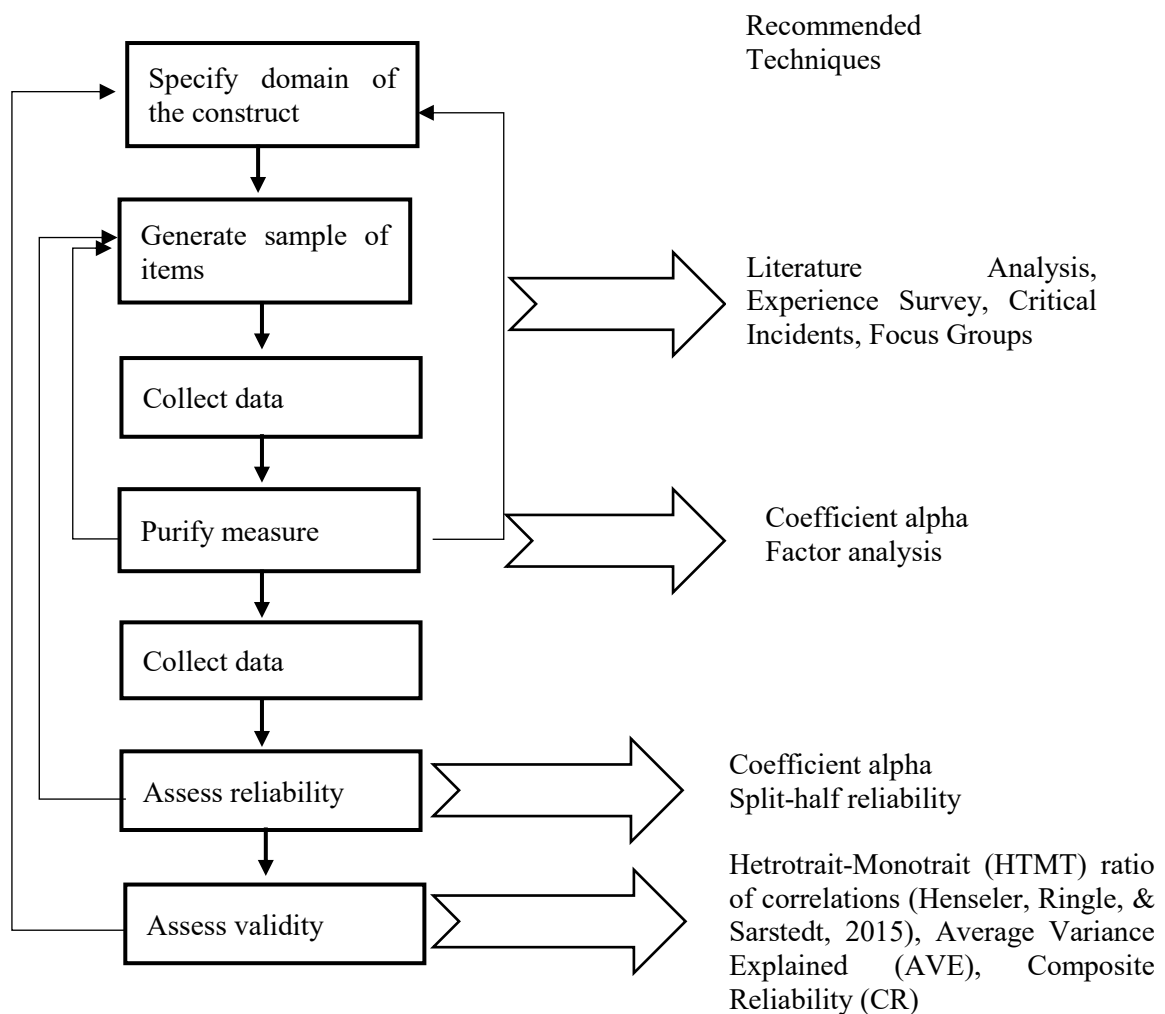
Source: Adapted from Churchill (1979)

The seven-step scale development process proposed by Churchill (1979) has received great appreciation by a number of scholars (see, Clark & Watson, 1995; Hinkin, 1995; Zaltman, 1997). This process deals with the development of multi-item measures as Churchill noted that multi-item scales used to measure a specific phenomenon are more appropriate than single-item measures. The reason for such a contention is the 'considerable uniqueness,' the scope of 'greater categorisation of groups' and low 'measurement error' of multi-item scales as compared to single-item measures (Churchill, 1979, p. 66). This scale development process is structured in a way that it ensures new measures demonstrate content, construct and criterion validity as well as internal consistency (Churchill, 1979).

4.4.1 Domain Specification

The first step in the recommended procedure of scale development deals with specifying the domain of the construct. The delineation of the intended construct helps to identify potential sources for generation of items pool. In this study, 10 semi-structured interviews were conducted to provide a comprehensive definition of the construct 'Eco-Socially Conscious Consumer Behaviour (ESCCB) Related to Choice and Use of Green Car.' Interviews were conducted from six academics, two each from the departments of marketing, psychology and economics, two senior practitioners from the automobile industry and two environmental activists. Two academics each from three different universities, including NUML, National University of Science and Technology (NUST) and Quaid-e-Azam University (QAU), were selected. One industry practitioner each from Toyota and Honda were recruited for an interview. Environmental activists were recruited from the United Nations Industrial Development Organization (UNIDO), Islamabad Pakistan. The interviews helped to identify what is 'included in the definition of the construct and what is excluded' (Churchill, 1979, p. 67).

4.4.2 Generating Items Pool

The second step in the construct development process is generating an items pool to capture all aspects of the construct. The fundamental idea behind generating an items pool is to ensure content adequacy of the construct (Hinkin, 1995). Churchill (1979) suggested using exploratory research techniques to develop the pool of items that may cover all aspects of construct defined during domain specification process. These techniques include literature analysis and experience surveys (Maruyama, Sato, Nohara,

& Imura, 2015). Relying on the recommendations of Churchill (1979) and many others (Hinkin, 1995; Maruyama et al., 2015), this study utilised a deductive scale development approach and conducted both a literature analysis and interviews to generate an initial items pool. The literature analysis involved the study of existing scales, for instance, Stanford Climate Change Behaviour Survey (Armel et al., 2011) and policy recommendations from transportation research (Dahlstrom, 2010). Five focus group interviews were also conducted involving seven participants in each focus group. Participants for focus group interviews were recruited from academia, the automobile industry and general consumer groups. The participants were selected relying on purposive sampling principles considering subjects' academic relevance, industrial exposure of dealing with environmental campaigns and record of being part of environmental movements. Items generated at this stage were then reviewed by the researcher and three academic experts, including two from the specific domain and one language expert, for editing and content validity.

4.4.3   Data Collection – Stage 1: Purification of Measure

After initial scrutiny of the items, data were collected from an initial sample of 250 respondents, selected randomly from different dealerships of Suzuki, Toyota, and Honda, in proportion explained in section 4.3.1.2. Purification of the measure then followed the 'domain sampling model' which proposes to use all items of the domain to calculate measurement score (Nunnally, 1978a). Statistically, correlation analysis, factor analysis and coefficient alpha were estimated to purify the measure before the second set of data was collected. Items with inter-item correlation near zero and low coefficient alpha were removed before further data collection. Afterward, exploratory factor analysis (EFA) was conducted to identify dimensions of the construct. Various iterations of step 1 and step 2 occurred as preceding procedure produced least desired outcomes, that is 'alpha coefficient was too low, and restructuring of the items forming dimensions was unproductive' (Churchill, 1979, p. 69)

4.4.4   Data Collection – Stage 2: Assessment of Reliability

An inherent quality of the domain sampling model is that it addresses all kinds of issues and errors that occur within the content of a measure and distort content validity. These errors are reflected in the low average correlation of items that are ambiguous or potentially unrelated to the measure. Calculation of item-to-total correlation can identify

such items that can be eliminated to purify measurement scale (Churchill, 1979; Churchill et al., 1974; Clark & Watson, 1995). However, use of test-retest reliability to calculate coefficient alpha as a measure of internal consistency should be avoided because of the basic problem of respondents' memories associated with test-retest reliability analysis (Zaltman, 1997). Therefore, a new set of data was collected from 800 respondents (refer to section 4.3.1.2 for data collection plan) and coefficient alpha was estimated. Suitability of items was assessed based on the criteria proposed by Nunnally (1978a). Items satisfying the criteria of reliability were further assessed for validity.

4.4.5 Assessment of Convergent, Discriminant and Criterion Validity

The preceding steps in the scale development process ensured that the proposed measure is internally consistent and holds content validity but it is not sufficient to declare that the construct is valid and adequately measures the intended concept (Nunnally, 1978a). Construct validity revolves around the idea that the intended trait is adequately measured by its indicators (convergent validity) and is a different variable (discriminant validity) (Campbell & Fiske, 1959). The criterion validity of a measure refers to the notion that the measure 'behaves as expected' (Churchill, 1979, p. 72).

Confirmatory factor analysis in structural equation modelling (SEM) has been extensively used to assess the convergent and discriminant validity of the constructs (Jöreskog, 1967). In confirmatory factor analysis, shared variance among measures of a latent construct demonstrate its convergent validity and are reflected by average variance extracted (AVE) and composite reliability (CR) (Fornell & Larcker, 1981). Traditionally, discriminant validity of the constructs was determined by comparing the AVE of the constructs with squared correlation; in other words, square roots of AVEs were compared with correlations between constructs, and the construct was considered to have discriminant validity if levels of AVE were greater than squared correlations (Fornell & Larcker, 1981). However, more recently, Henseler et al. (2015) challenged this approach in a simulation and suggested use of Hetrotrait-Monotrait ratio of correlations (HTMT), derived from the classical Multitrait-multimethod matrix (Campbell & Fiske, 1959), to assess discriminant validity of the constructs.

Based on the above recommendations, the current study conducted confirmatory factor analysis and computed AVE and CR to assess convergent validity while discriminant validity was assessed by using approaches suggested both by Fornell and Larcker (1981) and Henseler et al. (2015).

Criterion validity of the construct states that the newly developed measure relates to other variables in a way as expected. In other words, the relationship of the newly developed scale or construct with other constructs, independent or dependent, should yield expected results. Criterion validity of this newly constructed measure was assessed as part of RQ_3 of this study where this newly developed construct was tested in a holistic theoretical model.

4.5 Market Segmentation Analysis

As a part of RQ_2 of the Study-1, segmentation analysis was conducted to describe demographic, psychographic and behavioural characteristics of the target population based on a new measure developed as a result of RQ_1, that is 'ESCCB related to choice and use of personal cars.'

4.5.1 Survey Design

Data collection procedure, target population and sampling strategy for RQ_2 is the same as that of RQ_1. Data to address both research questions was collected through the same procedure and instrument. Details of the target population, sampling design, and data collection technique are outlined in sections 4.3.1 and 4.3.2 respectively. A description of the data collection instrument, however, is provided in following sections.

4.5.2 Survey Instrument

The data collection instrument, i.e., a survey questionnaire, comprised two major sections. The first section included items from the new scale development purified after reliability analysis (see section 4.4.4). This section serves two purposes. First, data from this section helped to finalise the scale development process and produce a new measure, thus, addressing RQ_1. Second, data on items of final scale were treated as a dependent variable of research question RQ_2. The second section of the survey instrument was comprised of questions on demographic and psychographic variables which were used as descriptors of demographic and psychographic consumer profiles.

4.5.2.1 Demographic Variables and ESCCB

Demographic variables pertinent to this study included age, income, gender, education, and occupation (see section 2.7.2). These variables were utilised as independent variables in developing a profile of ESCCB. Data on age was taken by using different age brackets, starting from 19 to 63 years of age with an interval of seven years.

The upper age bracket was described as '64 and above'. Data on income was taken on income brackets starting from a monthly income of PKR 45,000 to 99,000 with intervals of PKR 10,000, and the final bracket was described as '100,000 and above'. These income brackets correspond to the age brackets used to describe the average purchasing power and disposable earnings of the target market of the current study (Pakistan Bureau of Statistics, 2013, 2016). Education was measured on different brackets, described as 'not educated at all', 'Primary' (Grade 5), 'Middle' (Grade 8), 'Matric' (Grade 10), 'Intermediate' (Grade 12), 'Associate Diploma' (Grade 12 equivalent), 'Bachelors' (Hons Degree), 'Masters', 'MPhil', 'PhD', 'DVM' (Doctorate in Veterinary Medicine), 'MBBS', and 'Others'. The variable gender was measured by taking response on options, 'Male' or 'Female.' Finally, the variable 'Occupation' was measured in various occupations including, 'Landlord,' 'Private Job,' 'Government Job' and 'Own Business'. Under 'Private Job,' options included 'Education,' 'Construction,' 'Mining,' 'Security,' 'Banking,' 'Insurance,' 'Airline,' 'Restaurant,' 'Fast Moving Consumer Goods (FMCG)' 'Fertilizers and Pesticides' and 'others'. Under 'Government Job,' options included 'Education,' 'Police,' 'Army,' 'Aviation,' 'Local Government,' 'Finance,' 'Medical,' 'Administration,' 'Civil Service', and 'Others'. Occupations selected for this study are commonly adopted professions by employees in Pakistani society.

4.5.2.2 Psychographic Variables and ESCCB

Psychographic variables pertinent to this current study included 'perceived consumer effectiveness' (PCE), egoistic, altruistic and biospheric values,' and 'spirituality' (see section 2.7.3). The operational definition and measurement of these variables is given in following sections.

- *Perceived Consumer Effectiveness (PCE)*

Perceived consumer effectiveness refers to the degree of consumers' belief that they are capable of bringing any change in status quo by their behaviour (Kinnear et al., 1974). Consumers who believe that they can change their environment by acting in a particular way belong to a category of high perceived consumer effectiveness while those who believe that their actions can hardly bring any change belong to a category of low perceived consumer effectiveness. Perceived consumer effectiveness is context specific and is dependent on the nature of the problem and type of action consumer can take to solve the problem. This study utilised the scale of perceived consumer effectiveness

adapted from earlier studies. A total of seven items were utilised to measure PCE. Four items were adapted from Lee, Kim, Kim, and Choi (2014), one from Theotokis and Manganari (2015) and two reverse coded items from Ellen, Wiener, and Cobb-Walgren (1991). These items have been used in the existing literature and found reliable and valid in measuring PCE more recently (Özşahin et al., 2015) and are culturally consistent with the population of current study. Sample items include 'there is not much that any one individual can do about the environment'. Response on questionnaire items was taken on a 7-point Likert scale, 1 standing for 'strongly disagree' and 7 for 'strongly agree'.

- *Egoistic, Altruistic and Biospheric Values*

Egoistic, altruistic and biospheric values underpin the basis for pro-environmental decisions (Stern et al., 1999b). Egoistic values relate to ones' self-centredness and focus on a cost-benefit analysis of actions (De Groot & Steg, 2008). On the other side, people with altruistic values always consider others' benefit while taking any action and those with biospheric values consider the impact of their decisions on the natural habitat, ecosystem, and biosphere as a whole, and act accordingly (De Groot & Steg, 2008; Fornara et al., 2016; Snelgar, 2006). This current study adapted the scales for measurement of egoistic, altruistic and biospheric values from the existing literature (Snelgar, 2006; Stern et al., 1993; Stern, Kalof, Dietz, & Guagnano, 1995). Egoistic values were measured by a 5-item scale (including two reverse coded items), three adapted from Stern et al. (1993) while other two from Stern et al. (1995). Altruistic values were measured by a 5-item scale (including one reverse coded item), three adapted from Stern et al. (1993) while other two by Stern et al. (1995). Finally, biospheric values were measured by a 5-item scale (including two reverse coded items), one adapted from Snelgar (2006), one from Stern et al. (1993), one from Stern et al. (1995) while the last two from both Stern et al. (1993) and Stern et al. (1995). Responses on the items were tracked on the 7-point Likert scale.

- *Spirituality*

This study built on the work of Garfield et al. (2014) to operationally define spirituality as 'a belief in the spiritual interconnectedness and essential oneness of all phenomena, both living and non-living; and a belief that happiness depends on living in accord with this understanding' (Garfield et al., 2014, p. 357) . To measure spirituality, this study adapted the 11-items 'Oneness Beliefs Scale' originally developed by Garfield

et al. (2014). This scale has two dimensions. Spiritual oneness is measured by eight items while physical oneness is measured by three items. Response on items was recorded using a 7-point Likert scale.

4.5.3 Translation of Instrument

The data collection instrument was translated into Pakistan's national language Urdu. The translated instrument was presented to the respondents to improve response rate. For translation of the instrument, the 7-step process recommended by Sousa and Rojjanasrirat (2011) was followed. In the first step, known as forward translation, two independent translators, whose native language was target language (TL), independently translated the instrument from the source language (SL) to the TL. This yielded two translated versions of the questionnaire. In the second step, the two translated versions of the questionnaire were compared by a third language specialist having command on both SL and TL. The primary researcher, the original two translators, and the third language specialist developed a consensus on resolving certain discrepancies and a preliminary version of the translated instrument was finalised. In the third step, another two independent translators who had not seen the actual instrument in SL earlier blind back-translated the preliminary translated version into SL. In the fourth step, back-translated versions of the instrument were compared with each other and with the original instrument in SL. A multidisciplinary panel comprised of the researcher, all four translators involved from steps 1-4 and a specialist from the environmental marketing domain, resolved any discrepancies in this version. After removing all discrepancies, the translated instrument in TL was ready to use as a pretest. In the fifth step, the translated instrument was pre-tested among 10-40 participants of TL, from the actual population. They were asked to rate the instructions of the questionnaire, items, response rate and sentence structure on a dichotomous scale stating 'clear' or 'unclear'. An expert panel was involved comprising three independent translators not engaged earlier in the process to assess the instrument for clarity of instructions items and response format. In step six, the translated instrument was pretested in a population of bilingual individuals. Finally, in step seven, full psychometric testing of the instrument was conducted on a sample of 771 respondents from the actual target population and reliability and validity were reported.

4.5.4   Analysis Technique

Data collected from the instrument was used to conduct various statistical analyses to define demographic and psychographic characteristics of various consumer segments. Exploratory factor analysis, cluster analysis, multiple discriminant analysis and ANOVA were carried out in SPSS v. 23.0. For testing of the translated instrument, EFA, CFA and Cronbach alpha coefficients were estimated.

4.6   Conclusion

This chapter outlined the methodology for Study-1 to address RQ_1 and RQ_2. At the start, the overall philosophical paradigm and research design, both for Study-1 and Study-2, were explained. In the latter part, the target population, sampling design and data collection procedure were explained for Study-1 including RQ_1 and RQ_2. After that, scale development process was detailed to address RQ_1 specifically. Finally, a detailed explanation of the proposed data collection instrument to address RQ_2 was provided as well as a detailed process for translation of data collection instrument and analysis technique. The following chapter, Chapter 5, presents findings of Study-1.

Chapter Five: Results of Study 1

5.1 Introduction

Chapter Five presents the analysis and discussion of findings pertaining to Study 1, thus answering the first (RQ$_1$) and the second research questions (RQ$_2$) that are stated as:

How can social and ecological perspectives of consumer behaviour, related to purchase and use of personal cars, be assessed in one measurement scale in an emerging economy context (RQ$_1$); and How do consumers of the automobile industry of Pakistan differ from each other on various demographics, psychographic and behavioural variables (RQ$_2$)?

This chapter begins with the 7-step process of new scale development to answer RQ$_1$, followed by a segmentation analysis of customers to answer RQ$_2$. The results of this study provide input for the assessment of the holistic model of ESCCB related to choice and use of personal cars (RQ$_3$). The preceding sections are divided into two main sub-studies: sub-study 1, from section 5.2.1 to 0, explicates the results of RQ$_1$ and, sub-study 2 from section 5.3.1 to 5.3.5 explains the results of RQ$_2$.

5.2 Sub-Study 1: Measure of ESCCB related to Choice and Use of Green Cars

Sub-study 1 followed the guidelines provided in Section 4.4 of this thesis and undertook the 7-step process of scale development to answer RQ$_1$. For the systematic presentation of results, the sub-study 1 is divided into three auxiliary investigations: section 5.2.4 Supplementary Sub-Study 1: Item Purification, section 5.2.5 Supplementary Sub-Study 2: Validity and Reliability Assessment and, section 5.2.6 Supplementary Sub-Study 3: The Nomological Validity of the ESCCB Scale..

5.2.1 Conceptualisation of ESCCB

Consumer ecological behaviours are conceptually similar to social behaviours as both pertain to a broader domain – ethical behaviour (Eagle and Dahl, 2015; Kumar et al., 2013). Ethical behaviour is motivated by a number of factors including morality, religiosity, environmental awareness, social consciousness, and patriotism (Belz and Peattie, 2012; Eagle and Dahl, 2015). In general, the same motivations drive both ecological and social behaviours (Belz and Peattie, 2012). However, there are certain

paradigmatic distinctions, which distinguish the conceptual measurement of social behaviour scales from those of ecological behaviour scales, which are mainly related to their different end-goals.

Social marketing entails programs aiming to change behaviour at individual, community, and society levels across diverse sectors (Belz and Peattie, 2012). Social behaviours, therefore, explain the social change in consumer behaviour at both micro and macro levels to the extent that they enhance societal wellbeing. On the other hand, ecological marketing deals with the impact of marketing activities on the environment and deliberates behaviours like energy conservation and environmental protection (Autio et al., 2009; Narula and Desore, 2016). During the late 20th century, ecological marketing evolved and branched into environmental and sustainability marketing. These fields encompass a diverse range of issues including conservation of natural resources, maintenance of biodiversity and protection of the environment (Belz and Peattie, 2012; Dahlstrom, 2010). Both social and ecological behaviours lead to sustainable consumer behaviours.

Sustainability is a micro/macro concept that asserts the importance of sustainable development by focusing on marketing practices and addresses the interdependence of sustainability with individuals, communities, institutions, societies, stakeholders and consumers, including future generations (Belz and Peattie, 2012). Hence, sustainable behaviours embrace a wider perspective explicating how consumption can be regulated by norms to protect the environment and conserve natural resources. The purchase of environmentally friendly cars and their sustainable use is comprised of both concepts – ecological and social behaviours. Also, these two concepts combine to form the foundation of environmental behaviour, which supports sustainable development (Dahlstrom, 2010). In isolation, neither ecological nor social behaviours can ensure sustainability. For instance, improvements in technology may help to protect the environment but alone will not ensure sufficient conservation of resources. Environmentally friendly technologies may negatively affect resource conservation as (for reasons of economic efficiency) the use of these technologies increases; a phenomenon known as the 'Jevons Paradox' or the 'Rebound Effect' (Jevons, 1906; Saunders, 1992).

The rebound effect exists in many contexts: Sellen and Harper (2002) reported that, contrary to expectations regarding paperless offices, paper use increased by 14.7%

in the USA during 1995-2000. Similar findings were reported in the energy sector and the automobile industry (Arne et al., 2015; Galvin, 2016; Grant et al., 2016; Herring and Sorrell, 2009; York, 2006). These studies indicate that improving technology alone may not sufficiently contribute to long-term sustainability objectives, which justifies seeking more in-depth understanding of consumer behaviour both from an ecological as well as social perspective.

5.2.2 Qualitative Study for Item Generation and Content Validity

This study followed both deductive and inductive approaches for the generation of initial pool of items. Firstly, using a deductive approach, the literature about environmental marketing and sustainability issues was used as a reference to extract potential items for further analysis. Following the approach adopted by Flatten et al. (2011), the literature review was conducted by screening all articles published in 12 environmental and social science journals (*Journal of Environmental Psychology, Climatic Change, The Journal of Environmental Education, Journal of Social Issues, Journal of Applied Social Psychology, Environment and Behaviour, Social Behaviour and Personality, Human Ecology, Journal of Marketing Theory and Practice, Journal of Business Research, Journal of Business Ethics, Psychology and Marketing*) from 1990 to 2016 to identify related constructs that provided measurement for pro-environmental behaviours similar to ESCCB. Journals were selected based on their strong relevance to environmental marketing topics and their scope encompassing consumer behaviour and sustainability. The rationale behind choosing the period is that sustainability research actively emerged on the academic horizon in 1990, and this study started data collection in December 2016. We focused only on studies that proposed instruments for measurement of ecological behaviour with some dimensions relevant to and having overlap with ESCCB. As a result, 14 studies were selected (see Table 5.1) and analysed. Based on existing practice, the relevant items were chosen as an initial pool in the scale development process for the ESCCB (Flatten et al., 2011; Hinkin, 1995).

After the deductive approach, an inductive approach was employed, and five semi-structured focus group interviews were conducted, each involving seven participants: three automobile industry marketers, two researchers from academia working in marketing faculties, and two managers working in the non-governmental organisation (NGOs) sector engaged in environmental protection initiatives (25 men and 10 women; age range 35-50 years). The participants were provided with information

summarising the project and its scope. During interviews, six questions were asked and the participants were engaged in a moderated discussion. Questions were related to concepts regarding environmentally friendly cars: firstly, the factors affecting their purchase and use, and ways to encourage their purchase and use; and secondly, participants' perception of the impact of the use of personal cars on the environment. Interviews were audio recorded and later transcribed for analysis.

The analysis was carried out using Leximancer v. 4.5 (Smith and Humphreys, 2006). Three major themes emerged with a number of underlying concepts. The concepts were cross-matched with the literature analysed using deductive approaches, and the irrelevant concepts were deleted (Crofts and Bisman, 2010; Smith and Humphreys, 2006). Finally, 51 items were produced as a result of the analyses. Content validity of the exhaustive list of items was checked. Three experts (one each from industry, the NGO sector, and academia) reviewed the items for content relevance and clarity of wording. Consequently, nine items containing colloquial ambiguity, highlighted by the experts, were reworded. The process led to the refined version of 51 items that was subject to translation and was used for the initial data collection.

Table 5.1: Overlaps and similarities of ESCCB scale with related constructs

Scale Name	Setting	Scale Description	The domain of Overlap with ESCCB
New Environmental Paradigm ($NE_{nv}P$)	US	The 12-item 'New Environmental Paradigm Scale' is unidimensional. It demonstrated satisfactory internal reliability as well as predictive, content and construct validities among two samples, i.e. General Public Sample (GPS) and Environmental Organization Sample (EOS). The items of the scale reflected the inherent concepts of balance of nature, limits to growth and human domination (Dunlap, 2008).	Eco-Social use: Using telecoms instead of personal cars for business when possible Wisely planning routes to avoid traffic congestion Eco-Social Conservation: Avoiding tailgating and air-conditioning to save fuel
ECOSCALE	US	ECOSCALE is a 31-items measure of the environmentally conscious consumer. The seven dimensions of ECOSCALE include opinion and beliefs, awareness, willingness to act, attitude, action taken, ability to act and knowledge (Stone et al., 1995).	Eco-Social Purchase: Buying and using small displacement car (SDC) for environmental reason
Socially Responsible Consumer Behaviour (SRCB)	US	A 26-items scale consisting of two dimensions: ECCB (18-items) and socially conscious consumer behaviour (SCCB) (8-items). The scale measured both ecological and social perspectives of	Eco-Social Purchase: Buying a hybrid car with automatic transmission which has

			consumer behaviour about the environment (Roberts, 1995, 1996).	better environmental performance Eco-Social Use: Walking for short distances Carpooling whenever possible
Motivation Towards Environment Scale (MTES)	Canada		A 20-item measure of motivation act pro-environmentally revealed five dimensions: intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation and motivation (Pelletier et al., 1998).	Eco-Social Conservation: Self-directed and motivated behaviour towards car maintenance to ensure better environmental performance
General Ecological behaviour (GEB)	Switzerland		A 38-item measure with seven dimensions including, prosocial behaviour, ecological garbage removal, water and power conservation, ecologically aware consumer behaviour, garbage inhibition, volunteering in nature protection activities and ecological automobile use, was tested om Swiss transportation associations which yielded satisfactory score on reliability and validity (Kaiser, 1998)	Eco-Social use: Avoiding using the personal car in peak hours to avoid traffic jams which cause pollution
New Ecological Paradigm (NEP)-Revised	US		The original multi-faceted New Ecological Paradigm (NEP) or Worldview consisted of three dimensions: balance of nature, limits to growth and human domination of nature, initially. Later on, one-factor 15-item revised NEP measure was introduced having satisfactory internal reliability. The 'NEP-Revised' consisted of 15-items measuring the endorsement of ecological worldview (Dunlap et al., 2000)	Eco-Social Use: Avoiding installing accessories that create friction and consume more energy Eco-Social Conservation: Avoid excessive or unnecessary travelling Use of technology to substitute travelling
General Ecological behaviour (GEB)-Revised	US		The original GEB scale was modified from 38-items to 51-items scale on same seven dimensions and was tested in the US to assess cross-cultural validity. Scale yielded satisfactory reliability and validity (Kaiser & Wilson, 2000)	Eco-Social Use: Keeping the car eco-friendly to avoid air pollution
Environmentally Responsible Behaviour (ERB)	Japan		A 25-items unidimensional ERB scale measured various pro-environmental behaviours including recycling, water conservation, electricity conservation, environmental protection, pro-environmental purchases and use of eco-labelled products (Iwata, 2001)	Eco-Social Purchase: Buying a hybrid car with claims of better environmental performance Eco-Social Conservation: Avoiding use of energy consuming car accessories

ECCB	US	The construct primarily consisted of three key dimensions, i.e., cognitive dimension, affective dimension and behavioural dimension. Cognitive dimension was measured by Environmental knowledge, affective dimension by pro-environmental attitudes and recycling attitudes, and behavioural dimension by pro-environmental purchase behaviour, pro-environmental post-purchase behaviour and pro-environmental activities (Roberts, 1991; Tilikidou, 2001)	Eco-Social Purchase: Pro-environmental purchase and willingness to pay high for environment-friendly products
Nature Relatedness (NR) Scale	Canada	A 21-item scale measured human nature relation on three distinct dimensions: NR-Self, NR-Perspective and NR-Experience (Nisbet et al., 2009)	Eco-Social Conservation: Ethical use of natural resources to manage the balance in the natural ecosystem
Personal Pro-Environmental Behaviours (PPEB)	USA	PPEB was 6-item unidimensional self-report scale measuring perspectives of transportation energy conservation, natural resources conservation, recycling and purchase of environmentally friendly products (Walton & Austin, 2011)	Eco-Social Purchase: Buying environmentally friendly products Eco-Social Conservation: Reduced use of transport to conserve energy
Stanford Climate Change Behaviour Survey (SCCBS)	US	A 97-item survey consisting of four major climate-relevant behavioural categories, i.e. Transportation, Food, Waste and Electricity, was established with 10 subcategories (Armel et al., 2011)	Eco-Social Conservation: Saving fuel by using fuel-efficient vehicles Eco-Social Use: Using a bicycle for commuting
Pro-environmental Behavioural Scale (PEB)	US	A 19-item scale consisting of four subscales: Conservation, Environmental Citizenship, Food and transportation was developed having satisfactory internal reliability and validity. Test-retest correlations proved that the scale was reliable in measuring the underlying concepts (Markle, 2013)	Eco-Social Use: Using alternate transportation means to avoid the use of personal cars
Ethically Minded Consumer Behaviour (EMCB)	UK, Germany, Hungary, Japan	EMCB 10-items scale consisted of five distinct dimensions: Ecobuy, Ecoboycott, Recycle, Paymore, and CSRboycott, incorporating items from ecological and social perspectives based on self-report actual behaviours. The construct showed consistency across five nations' sample (Sudbury-Riley & Kohlbacher, 2016)	Eco-Social Purchase: Buying products with least detrimental impact on the environment

5.2.3 Translation of Initial Pool of Items

The purpose of this study was to develop a scale that could be administered at national level across Pakistan and validated for an actual customers' population with varying educational background and limitations in understanding a foreign language. It was thus deemed appropriate to translate the questionnaire into the national language of Pakistan for the convenience of the respondents and to maintain the quality of data (Doerr, 2009; Xian, 2008). Following the translation/back-translation guidelines of Sousa and Rojjanasrirat (2011), the items were first translated into Urdu by two experts, and then back-translated by two different experts to ensure consistency and accuracy. Finally, the translated version was administered for pilot testing to 40 university students at postgraduate level (age: 25-35 years; gender: 17 females and 23 male; language proficiency (English): 33 'high', 7 'moderate'; language proficiency (Urdu): 38 'high', 2 'moderate'). Of the total 40 respondents, 32 (80%) acknowledged that the instructions, items, sentence structure and the response scale were clear. Five (12.5%) found that instructions were convoluted, while the remaining 3 (7.5%) objected to using 5-points as response scale. Necessary modifications were made before the final translated instrument was administered to 250 respondents in supplementary sub-study 1.

5.2.4 Supplementary Sub-Study 1: Item Purification

Before implementing the actual study, we conducted a pilot survey, thus employing supplementary sub-study1, to reduce the number of items to a manageable size. Pilot testing was conducted on a sample of 250 customers selected randomly from seven dealerships of Toyota Motors, Honda Atlas Motors and Pak Suzuki Motors, all situated in the Multan district of Pakistan. Respondents were provided with a 51-item translated version of the questionnaire at the dealership and were requested to indicate on a 7-point scale (1 = "strongly disagree," 7 = "strongly agree") the extent to which they agreed with the statements regarding purchase and use of personal cars. Additionally, demographic details were also obtained including age, gender, income, education and marital status. Analysis of the data was conducted using IBM SPSS 24.0. 174 usable responses were received, with a response rate of 69.6%.

A total of 86.2% of the respondents belonged to the age bracket of 19-40 years old (30.5% were between 19-26 years old; 33.9% 27-33years old and 21.8% between 34-40 years old), 78.2% were male and 21.8% female, with half being married and half

single. 77.6% indicated that their monthly income in Pakistani Rupee was between 45,000–85,000 (USD 450-850). The majority of respondents were from a highly educated background, with 33.3% having MPhil degrees (18 years of education) and another 33.3% having obtained a Master degree (16 years of education), which corresponds to growing trends in higher education across the country (Khattak, 2017). After analysing the demographics, inter-item correlation of the initial pool of items was calculated. Preliminary screening of items was carried out using the criteria of corrected Item-total Correlation and the items below the cut-off value of 0.40 were dropped in sequential iterations (Clark and Watson, 1995; Loo, 2002; Nunnally, 1978). The process resulted in a final 22-item scale with each item having satisfactory corrected item-total correlations. A summary of the corrected Item-total Correlation is provided in Table 5.2: Corrected Item-total Correlation – Pilot Study (n=174).

5.2.5 Supplementary Sub-Study 2: Validity and Reliability Assessment

5.2.5.1 Sample and Data Collection

Data for supplementary sub-study 2 was collected from customers of Toyota Motors, Honda Atlas Motors and Pak Suzuki Motors across 112 dealerships nationwide. A proportionate stratified random sampling technique was employed to recruit the respondents. This technique provides liberty to divide the target population into various groups based on one or more population characteristics, which form the basis of homogeneity within group and heterogeneity between groups resulting in a better sample representation and, consequently, greater potential for generalisability of the study results (Adams et al., 2007; Zikmund et al., 2013). A total of 1,200 respondents were randomly chosen from the dealerships located in 11 different cities of Pakistan.

The survey was administered with the help of 24 survey assistants studying for business administration degrees at a national university. All had experience in data collection and volunteered to assist with a fixed compensation. Prior permission was sought from the university to recruit the students, who were provided with two-days' training about the scope of the study and peculiarities of the survey. Before the actual collection of data, permissions were sought from the dealerships and arrangement were made to facilitate the interaction of survey assistants with customers at automobile dealerships. Before the actual presentation of the survey instrument, respondents were provided with an information sheet which outlined the scope of the study. Respondents

were requested to answer the survey questions, keeping in mind the project background given in information sheet. Data collection was carried out from April 18, 2017, to May 05, 2017.

The questionnaire for this study included three sections: demographic information, 22 items related to the ESCCB scale taken from study 1, and 15 items related to the construct of environmental concern. Environmental concern is a three-dimensional scale including egoistic, altruistic and biospheric values. For measurement, a 5-item Likert-based scale for each dimension was adopted from literature (Snelgar, 2006; Stern et al., 1999b). Responses on subscales of environmental concern later helped in establishing the nomological validity of the ESCCB scale which is discussed in supplementary sub-study 3.

Of the total 1200 surveys distributed, 771 usable responses were received constituting a response rate of 64.25 per cent, which is considered acceptable in such studies (Baruch, 1999). Consumer responses were randomly split into sub-samples for validation of convergent, discriminant and nomological validity (Kumar, 2014; Pan, Zhang, Gursoy, & Lu, 2017) using the IBM SPSS 24.0 random sample selection utility. First, a sub-sample of 400 respondents was utilised to perform EFA and CFA. To estimate nomological validity (supplementary sub-study 3), the second sub-sample was used (549 respondents).

5.2.5.2 Test of Common Method Variance, Missing Values and Non-Response Bias

Considering that data on all items was captured through a single source, and making an allowance for the recommendations of Richardson, Simmering, and Sturman (2009), common method bias was tested by employing the Harman one-factor technique. The principal component analysis revealed that six factors emerged with a total explained variance of 58%. However, none of the factors accounted for major variance confirming that common method bias was not an issue. Further validation was done by specifying a structural equation model of the items with an unmeasured common latent factor (CLF). The comparison showed that there were no significant differences between standardised regression weights of both models (with and without CLF), further endorsing the inexistence of common method variance (Podsakoff, MacKenzie, & Podsakoff, 2012).

In line with the approaches suggested and utilised in the literature (Flatten, Engelen, Zahra, & Brettel, 2011; Newman, 2003), the missing values in the data were examined. Because of the data collection methodology adopted in this study involving

research assistants who personally administered the data collection process, only 3% missing values were found in the completed questionnaires and were estimated by following the full information maximum likelihood (FIML) procedure.

Finally, to verify that the responding sample is representative and that non-response bias does not pose any serious threat to the generalizability of the study results, the suggestions of Clottey and Grawe (2014) were followed. Comparison of the early (*n* = 475) and the late respondents (*n* = 296) on the initial 22-items (presented in Table 5.2: Corrected Item-total Correlation – Pilot Study (n=174)) resulted in no statistically significant differences, thus confirming that non-response bias was not an issue.

Table 5.2: Corrected Item-total Correlation – Pilot Study (n=174)

Item	Description	Corrected Item-total Correlation		Status
		First iteration	Final iteration	
ESCCBP1	I select a car with a high rear axle ratio for that produces least friction and save energy	0.456	0.488	Retained
ESCCBP2	I select a car with overdrive transmission to get improved fuel efficiency	0.372	-	Deleted
ESCCBP3	I avoid permanent roof racks on the car for that creates more air friction and cause to use more fuel	0.376	-	Deleted
ESCCBP4	I avoid wide thread tires for that cause road friction and consume more fuel	0.503	0.590	Retained
ESCCBP5	I consider using radial tires for that help to preserve fuel resource	0.511	0.572	Retained
ESCCBP6	If I have multiple car purchases available, given all other factors same, I choose the one with better environmental performance	0.495	0.559	Retained
ESCCBP7	I avoid purchasing a car with power consuming accessories to save energy resource	0.475	0.491	Retained
ESCCBP8	If available, I prefer to purchase a hybrid car as it saves fuel	0.310	-	Deleted
ESCCBP9	If available, I can consider purchasing an electric car as that saves fuel	0.391	-	Deleted
ESCCBP10	I prefer buying a car with automatic transmission as it consumes less petrol	0.558	0.611	Retained
ESCCBP11	I prefer buying a car with environmental certification	0.291	-	Deleted
ESCCBP12	I prefer buying a car with claims of better environmental performance	0.349	-	Deleted
ESCCBP13	I prefer to buy the brand which considers environmental protection in the manufacturing process	0.488	0.544	Retained
ESCCBP14	I prefer buying car brand which considers environmental protection in delivering the cars to consumers	0.317	-	Deleted

ESCCBP15	I prefer buying car brand which considers environmental protection in product marketing	0.267	-	Deleted
ESCCBP16	I would buy an electric vehicle even if its quality is lower than a conventional car	0.458	0.562	Retained
ESCCBP17	I would buy an electric vehicle even if its performance is lower than a conventional car	0.567	0.627	Retained
ESCCBP18	I would buy an electric vehicle even if it has a less appealing design	0.569	0.678	Retained
ESCCBP19	While buying a car, I take into consideration the emission levels	0.519	0.624	Retained
ESCCBP20	I plan to buy a Small Displacement Car (SDC)	0.514	0.562	Retained
ESCCBP21	I am willing to buy an SDC when I decide to buy	0.313	-	Deleted
ESCCBP22	I am willing to buy an SDC although it is small and not luxury looking.	0.227	-	Deleted
ESCCBP23	I am willing to buy an SDC although it is not as comfortable as a larger car.	0.341	-	Deleted
ESCCBP24	I would like to buy an SDC to reduce air pollutant emission	0.383	-	Deleted
ESCCBP25	I would like to buy an SDC as a responsible consumer	0.538	0.616	Retained
ESCCBP26	I would not buy a car that I expect will damage the environment	0.540	0.642	Retained
ESCCBU1	Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing speed limits	0.490	0.514	Retained
ESCCBU2	Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing the steady pace	0.477	0.483	Retained
ESCCBU3	I avoid tailgating to ensure that I drive in economic modes	0.380	-	Deleted
ESCCBU4	I avoid using air-conditioning as much as possible to save fuel for environmental reasons	0.434	0.516	Retained
ESCCBU5	I avoid using unnecessary brakes to avoid fuel loss	0.506	0.679	Retained
ESCCBU6	I change oil regularly to ensure that vehicle remains environment-friendly	0.389	-	Deleted
ESCCBU7	I maintain regular car check-ups to ensure that it remains environment-friendly	0.374	-	Deleted
ESCCBU8	I ensure that my vehicle is roadworthy and environment-friendly	0.317	-	Deleted
ESCCBU9	I regularly replace oil and air filters to ensure that my car remains environment-friendly	0.318	-	Deleted
ESCCBU10	I wisely plan routes to avoid traffic congestion for environmental reasons	0.370	-	Deleted
ESCCBU11	I use public transport whenever possible to avoid harmful effects of car use on the environment	0.339	-	Deleted
ESCCBU12	I use a bicycle whenever possible to avoid harmful effects of car use on the environment	0.318	-	Deleted

ESCCBU13	I often use telephonic communication to avoid transportation use for environmental reasons	0.450	0.504	Retained
ESCCBU14	I often use video conferencing to avoid transportation use for environmental reasons	0.396	-	Deleted
ESCCBU15	I do not use extra weight in a car trunk to avoid extra fuel use	0.336	-	Deleted
ESCCBU16	I walk short distances to save fuel consumption	0.382	-	Deleted
ESCCBU17	I always consider fuel economy while driving	0.543	0.533	Retained
ESCCBU18	I constantly monitor fuel mileage to ensure that I conserve fuel in car transportation	0.385	-	Deleted
ESCCBU19	I prefer riding a bicycle than driving for short distances	0.370	-	Deleted
ESCCBU20	I prefer taking public transport than using my car for short distances	0.378	-	Deleted
ESCCBU21	I try to keep my car as ecologically sound as possible	0.540	0.649	Retained
ESCCBU22	Even on freeways, I drive under 60 to conserve fuel	0.558	0.657	Retained
ESCCBU23	Usually, I do not drive my car on weekends when there is a rush of cars	0.377	-	Deleted
ESCCBU24	I usually give way to other drivers rather than cutting them off	0.276	-	Deleted
ESCCBU25	I often do carpooling for transportation	0.185	-	Deleted

5.2.5.3 *Demographic characteristics of the respondents*

Before splitting the data into sub-samples, respondents' characteristics were analysed. Demographic profiles are summarised in Table 5.3. Corresponding to the results of the pilot study, almost 85 per cent of the respondents were between 19-40 years old (33.7% were between 19-26 years old; 28.9% were between 27-33 years old, and 23.0% were 34-40 years old) which matches the overall demographic profile of the country (Countrymeters, 2017). Male respondents considerably outnumbered female respondents (70.3% vs 29.7%), which is significantly different from the national gender distribution (World Population Review, 2017): a not-unexpected result in a conservative society like Pakistan where the involvement of females is relatively less than that of males in the purchasing of high-involvement products. About education, 15.6% of the respondents had undergraduate degrees, 32.8% had completed their Masters, while 26.8% held MPhil degrees.

Table 5.3: Demographic Statistics of the Respondents – Main Study

Variable	Category	Distribution	
		Frequency	Percentage
Age Group	19-26	260	33.7
	27-33	223	28.9
	34-40	177	23.0
	41-47	88	11.4
	48-54	17	2.2
	55 and above	6	0.8
Gender	Male	542	70.3
	Female	229	29.7
Monthly Income*	45000-55000	298	38.7
	56000-65000	135	17.5
	66000-75000	116	15.0
	76000-85000	75	9.7
	86000-95000	34	4.4
	96000-105000	25	3.2
	106000 and above	88	11.4
Education	No formal Education	5	0.6
	Primary (year 5)	8	1.0
	Secondary School Certificate	33	4.3
	Higher Secondary School Certificate (HSSC)	25	3.2
	DAE	19	2.5
	Bachelors (year 14)	120	15.6
	Masters (year 16)	253	32.8
	MPhil (year 18)	207	26.8
	DVM	14	1.8
	MBBS or BDS	34	4.4
	Bachelors of Engineering	35	4.5
	Others	18	2.3

Note: *n* = 771; * income is given in Pakistan Rupee (PKR); DAE: Diploma of associate of engineering; MBBS: Bachelor of medicine and Bachelor of surgery; BDS: Bachelors of dental surgery; DVM: Doctor of Veterinary Medicine

5.2.5.4 *Exploratory Factor Analysis (EFA) and Dimensionality Assessment*

Bearing in mind that ESCCB is a new scale and that its underlying dimensions might be correlated, a series of principal axis factoring (PAF) with Promax rotation were iteratively carried out (Hair, 2010; Netemeyer, Bearden, & Sharma, 2003). The appropriateness of the 400 responses for factor analyses was established through the Kaiser-Meyer-Olkin (KMO) measure, which was far above (KMO = 0.782) the cut-off value of 0.50 (Kaiser, 1974), indicating desirable sampling adequacy. In addition, sufficient correlations between the variables were evident from Bartlett's test of Sphericity, which was significant ($p < 0.001$). Initially, items were examined based on their communalities and those having communality lower than the cut-off point of 0.50 (Kaiser, 1960) were sequentially deleted. Further reduction of items was carried out based

on factor loadings. The items with low factor loading (<0.60) or high cross-loading (>0.50) were deleted one at a time to ensure accuracy (Hair, 2010; Nunnally, 1978b). After several iterations, a total of nine items converging on three factors, remained in the ESCCB scale. All factors had Eigen values greater than 1 (factor 1 = 3.61, factor 2 = 1.34, factor 3=1.32), and explained 56.64% of the total variance, which exceeded the suggested criteria of 50% (Hair, 2010; Yong & Pearce, 2013). The Cronbach alpha (α) calculated for each factor was greater than 0.70 ($\alpha_{factor1}$= 0.775, $\alpha_{factor2}$ = 0.743, $\alpha_{factor3}$ = 0.784) indicating substantial internal consistency within each dimension (Nunnally, 1994). Based on the results of EFA reported in Table 5.4 and our theoretical conceptualisation of the ESCCB scale, an examination of items comprising each factor led us to name the factors as follows: eco-social conservation, eco-social use and eco-social purchase.

5.2.5.5 Confirmatory Factor Analysis (CFA), Construct Validity and Reliability

Subsequent to EFA, confirmatory factor analyses using AMOS 23.0 were conducted with maximum likelihood method of estimation (Byrne, 2013). In this study, we specified three measurement models:

- *Model 1 (one-factor model)*

ESCCB specified as a uni-dimensional construct with three subfactors. The covariance among the nine items can be accounted by a single factor.

- *Model 2 (two-correlated-factors model)*

ESCCB specified as a multi-dimensional construct underlying 2 first-order factors. Covariance among the items can be accounted for by two restricted first-order factors, each representing a unique dimension of ESCCB. Factor one consisted of five correlated items, while factor two consisted of four correlated items.

- *Model 3 (three-correlated-factors model)*

ESCCB specified as a multi-dimensional construct underlying 3 restricted first-order factors, which accounted for covariance among nine items under 3 unique dimensions of ESCCB.

The recommendations of Hooper, Coughlan, and Mullen (2008) were followed and three categories of model fit indices were utilised as a benchmark: absolute measures (GFI ≥ 0.90, RMSEA : 0.05-0.08), incremental fit measures (CFI ≥ 0.90, NFI ≥ 0.90, TLI ≥ 0.90), and parsimonious fit measures (AGFI ≥ 0.90, χ^2/df ≤ 5). Results of the CFA

reported in Table 5.5 indicate that one-factor model reflected a poor fit of data. Together with the one-factor model, the two-factor model also reproduced marginal fit, with certain indices not satisfying the ideal model fit criteria. Moreover, examination of estimates showed that many indicators reflected poor loading, i.e., $\lambda \leq 0.50$ (Byrne, 2013), resulting in a decision to delete the items, which ultimately resulted in the poor factorial specification and an inadmissible solution. However, the three-factor model highlighted excellent model fit, with fit indices exceeding the expected standard criteria. The model fitting process allowed an examination of modification indices (MIs) which helped to uncover some discrepancies between proposed and estimated models (Hayduk, Cummings, Boadu, Pazderka-Robinson, & Boulianne, 2007). Based on higher values of MIs, a pair of items (ESCCB15 and ESCCB17) on the same dimension (Eco-social use) were allowed to covariate, which is conceptually plausible as both indicators measure same construct (Byrne, 2013; Das, 2014). This process of covariation resulted in improvement of model estimates. The standardised factor loadings of the three-factor model were all substantial and statistically significant. The estimated model is given in Figure 5.1.

5.2.5.6 Reliability assessment

Construct reliability refers to the degree to which the instrument consistently measures the intended phenomenon and repeatedly provides identical results (Nunnally, 1994). Construct reliability can be computed by using the formula suggested by Fornell and Larcker (1981) as follows:

$$Construct\ reliability\ (CR) = \frac{(\sum_{i=1}^{n} \lambda_i)^2}{(\sum_{i=1}^{n} \lambda_i)^2 + (\sum \delta_i)}$$

where λ_i is the standardised loading and δ_i is the measurement error of each item.

The reliability coefficients for the three subscales of ESCCB range from 0.781 to 0.796 and are reported in Table 5.6. The estimates meet the standard criteria ($\alpha \geq 0.7$) suggested by Nunnally (1978a) and confirm that the scale is reliable.

5.2.5.7 Convergent and discriminant validity

The validity of a construct refers to its ability to measure what it is meant to measure (Clark & Watson, 1995). Convergent and discriminant validities are of important concern in measurement model validation. The degree to which underlying measures of a factor reflect their respective construct is known as convergent validity (Churchill,

1979; Hair, 2010). Measures of the construct which load with satisfactory weight ($\lambda > 0.5$) to their respective factors attest convergent validity of the construct (Wixom & Watson, 2001). Furthermore, average variance extracted (AVE) from the factors exceeding 0.5 also reflects that convergent validity is ensured. Table 5.6 reports factor loadings and AVEs of subscales of ESCCB (AVEs ranging from 0.544 to 0.568), which confirm that convergent validity of the scales is established. Discriminant validity refers to the concept that dissimilar constructs behave differently from each other (Burns, Veeck, & Bush, 2016). According to the criteria stated by Churchill (1979), square roots of AVEs of constructs should be greater than squared multiple correlations to ascertain discriminant validity. Comparison of the square root of AVEs and squared multiple correlations of constructs reported in Table 5.6 indicates that correlations among the factors are lower than correlations between the items or measures of a factor. Hence, discriminant validity is confirmed.

Table 5.4: Factorial Structure of the Proposed ESCCB Scale* (*n*=400)

Items	Description	Factor 1	Factor 2	Factor 3
ESCCB 1	I select a car with a high rear axle ratio for that produces least friction and saves energy	0.665		
ESCCB 2	I avoid using wide thread tires for that cause road friction and consume more fuel	0.854		
ESCCB 3	I consider using radial tires for the reason that they help to preserve fuel resource	0.683		
ESCCB 15	Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing speed limits		0.588	
ESCCB 16	Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing steady pace		0.968	
ESCCB17	I always consider fuel economy while driving		0.550	
ESCCB 8	I would buy an electric vehicle even if its quality is lower than a conventional car			0.730
ESCCB 9	I would buy an electric vehicle even if its performance is lower than a conventional car			0.901
ESCCB 10	I would buy an electric vehicle even if it has a less appealing design			0.534
Cronbach Alpha (α)		0.775	0.743	0.784
Eigen Values		3.614	1.342	1.320
Total Scale Reliability		0.812		

		0.782
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy		0.782
Bartlett's Test		0.000
Total Variance Explained		56.64%

Note: * Principal Axis Factoring (PAF) conducted with Promax Rotation

Table 5.5: Comparison of Measurement Model Fit Indices (*n*=400)

Model	χ^2	χ^2/Df	GFI	AGFI	CFI	NFI	TLI/NNFI	RMSEA
One-factor Model	83.081	4.154	0.958	0.905	0.947	0.933	0.905	0.089
Two-factor Model	73.598	3.874	0.962	0.911	0.954	0.940	0.914	0.085
Three-factor Model	74.86	3.255	0.963	0.927	0.957	0.925	0.932	0.075

Table 5.6: Measurement Model Properties of the 9-item ESCCB Scale (*n*=400)

Factor and Items	λ*	AVE	CR	Eco-Social Conservation	Eco-Social Use	Eco-Social Purchase
Eco-Social Conservation		0.544	0.781	0.737		
ESCCB 1	0.712					
ESCCB 2	0.798					
ESCCB 3	0.698					
Eco-Social Use		0.557	0.789	0.455	0.759	
ESCCB 15	0.793					
ESCCB 16	0.769					
ESCCB 17	0.671					
Eco-Social Purchase		0.568	0.796	0.461	0.426	0.754
ESCCB 8	0.815					
ESCCB 9	0.794					
ESCCB 10	0.639					

Note: *Standardised factor loadings were all significant at *p < 0.01;* AVE: Average variance extracted; CR: Construct reliability; items on diagonal given in bold and italic are the square root of AVEs; items off the diagonal are squared multiple correlations between dimensions and are significant at *p < 0.05*

Figure 5.1: Three-Factor Measurement Model of ESCCB
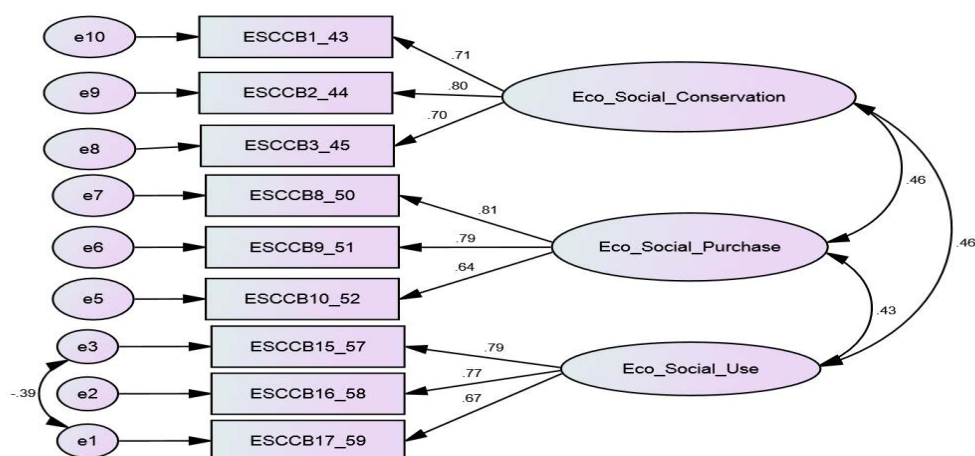
χ^2 = 74.86, χ^2/Df = 3.255, GFI = 0.963, RMSEA = 0.075, CFI = 0.957, TLI = 0.932, NFI = 0.925, AGFI = 0.927

5.2.5.8   Higher-order models of ESCCB

After having identified three correlated but conceptually and statistically distinct dimensions of ESCCB, two second-order models were specified.

- *Model 1 (reflective - reflective type)*

Model 1 was specified as reflective first-order, reflective second-order model. Reflective first-order measurement describes that the lower order model (first-order) is comprised of effect indicators, which represent all possible sample items measuring its latent construct in a relationship of simple regression (Faizan, Mostafa, Marko, M., & Kisang, 2018). Similarly, reflective second-order measurement shows that the higher-order model is connected to its manifest latent lower order variables in a causal flow with regression paths moving from higher-order latent construct to lower order latent constructs. The construal of this type of model shows that the indicators of the lower order model are strongly correlated (given the assumption that they represent the sample of items constituting their respective latent factor). Similarly, the higher-order reflective measurement highlights that the underlying first-order latent constructs are also strongly correlated and are assumed to formulate the whole of higher-order construct by representing the sample of lower order constructs

A higher-order model was specified as 'reflective first-order, reflective second-order' considering that eco-social purchase, eco-social use and eco-social conservation are manifestations of ESCCB and change in ESCCB brings change in its dimensions (MacKenzie, Podsakoff, & Podsakoff, 2011; Polites, Roberts, & Thatcher, 2012, p. 27; Varshneya & Das, 2017). The model highlighted a causal flow from higher-order construct (ESCCB) to the three first-order latent factors, positing that ESCCB is manifested in three latent factors wherein each factor is reflected by three items. This approach has been widely used in most recent studies (for instance, see Tanwar & Prasad, 2017) and recommended in the literature regarding the classical theory of structural equation modelling for reflective constructs (Bowen & Guo, 2012; Byrne, 2013; Hair, Sarstedt, Ringle, & Mena, 2012).

The results of the above stated estimated model indicate excellent fit indices as shown in Figure 5.2. The estimates of the model confirm the existence of second-order factors as all first-order latent variables correlated significantly and substantially with the

higher-order construct (eco-social conservation: $\beta = 0.701$, p < 0.01; eco-social use: $\beta = 0.657$, p < 0.01 and eco-social purchase: $\beta = 0.649$, p < 0.01).

- *Model 2 (reflective-formative type)*

Model 2 is specified as reflective first-order, formative higher-order model. As explained for Model 1, the lower-order model is specified as reflective first-order model. However, the higher-order model is formative. In formative measurement, the regression paths move from indicators to their latent construct thereby formulating their respective latent construct using linear combination (Sarstedt, Hair, Ringle, Thiele, & Gudergan, 2016). Hence, the changes in indicators bring change in the construct they construe. In higher-order formative models, the lower (first-order) model act as indicators of, the higher-order models (Hair et al., 2012; Sarstedt et al., 2016).

A second higher-order model of ESCCB was specified as 'reflective first-order, formative second-order' bearing in mind that eco-social conservation, eco-social use and eco-social purchase act as the indicators of ESCCB and change in any of these dimensions tend to bring change in ESCCB. Such conceptualisation of higher-order constructs is common in behavioural science and has been proposed by many researchers (Flatten et al., 2011; Mas'ud, Manaf, & Saad, 2017). The proposed model was evaluated by using program SmartPLS version 3.0.

Model estimates reported in Figure 5.3 show that all three dimensions contributed significantly to the formation of ESCCB (eco-social conservation: $\beta = 0.446$, p < 0.01; eco-social use: $\beta = 0.4.3$, p < 0.01 and eco-social purchase: $\beta = 0.456$, p < 0.01). Quality of the second-order reflective-formative model was assessed against three criteria: (1) weights of first-order constructs, (2) examination of multicollinearity by variance inflation factor (VIF) and (3) discriminant validity based on multitrait-multi methods matrix. Estimates of the first-order constructs, contributing towards the formation of ESCCB, were all substantial (>0.10) and consistent with underlying theory (all contributed positively towards the formation of ESCCB). Thus, the first criterion is met (Chairy, 2012). Examination of multicollinearity showed that the VIF values of first-order constructs ranged from 1.23 to 1.28 which is far below the common cut-off threshold of 5 (Hair et al., 2012), suggesting that first-order constructs are tapping into different aspects of the ESCCB. Finally, discriminant validity of the model was tested using heterotrait-monotrait (HTMT) ration of correlations among the first-order constructs (Henseler et al., 2015). HTMT compares the correlations of indicators within constructs

(monotrait-heteromethod correlation) with correlations of indicators across constructs (heterotrait-heteromethod correlations), and the resulting ration must be lower than the restrictive threshold of 0.85 to indicate discriminant validity (Amaro & Duarte, 2016; Kline, 2011). HTMT values reported in Table 5.7 show that discriminant validity is established.

Figure 5.2: Second-Order (Reflective-Reflective) Factor Structure of ESCCB
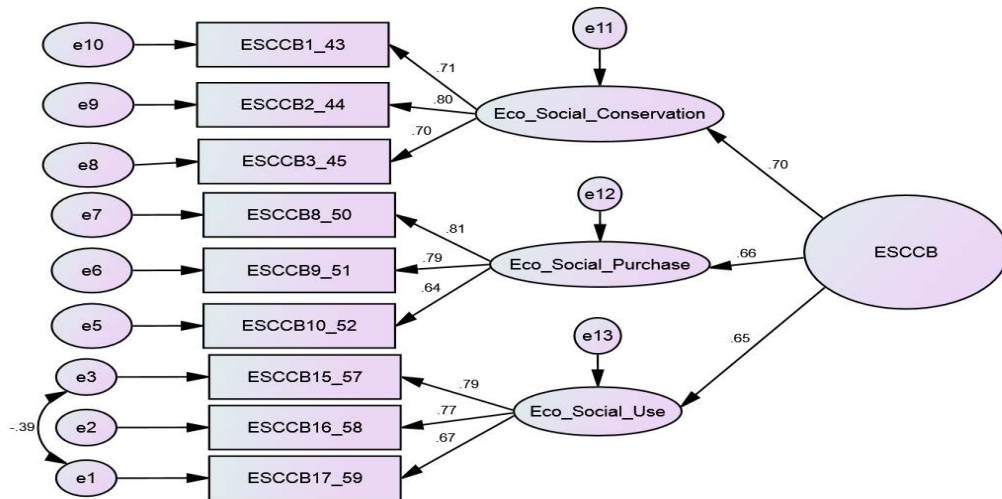
Figure 5.3: Second-Order (Reflective-Formative) Factor Structure of ESCCB

Notes: *** Regression weights significant at p < 0.01

130
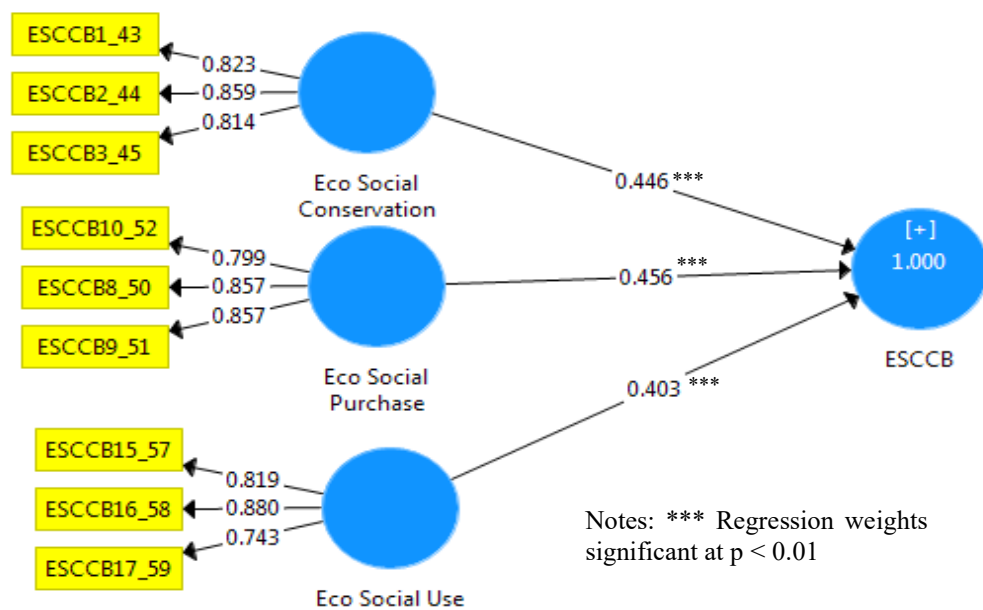
Table 5.7: Discriminant Validity of Higher-Order Model using HTMT

Variables	Eco-Social Conservation	Eco-Social Purchase	Eco-Social Use
Eco-Social Conservation	1.27		
Eco-Social Purchase	0.517 CI90 (0.399, 0.624)	1.28	
Eco-Social Use	0.464 CI90 (0.339, 0.572)	0.479 CI90 (0.352, 0.584)	1.23

Notes: CI, confidence interval; values in parenthesis report bias corrected lower level and upper-level confidence intervals for $HTMT_{90}$; Values on the diagonal, in bold and italic are VIF for the constructs

5.2.6 Supplementary Sub-Study 3: The Nomological Validity of the ESCCB Scale

While theoretical foundations and statistical evidence support the concept of ESCCB, another means of advancing its plausibility is identifying the behaviour of ESCCB in its nomological net of antecedents. Nomological validity proposes a comparison of two related constructs and confirmation of their relationship as theorised in literature to ensure that new construct 'behaves as it is expected' (Curcuruto, Mearns, & Mariani, 2016; Davis & Cernas Ortiz, 2017; Howell & Buro, 2017).

It is reasonable to expect a positive relationship between environmental values, manifested in the environmental concern construct, and ESCCB. Environmental concern refers to the degree to which individuals evaluate their behaviour, or that of others, and develop an attitude based on facts about the environment (Chen & Lee, 2015; Fransson & Garling, 1999). Egoistic, altruistic and biospheric values are constituents of environmental concern (Snelgar, 2006). Egoistic values compel individuals to pursue self-interest and behave in a way to achieve self-gratification (De Groot & Steg, 2008; Snelgar, 2006). These values help to promote general pro-environmental behaviour if individuals' satisfaction is embedded in environmental protection (Stern et al., 1993; Stern et al., 1995), however, in case of more specific pro-environmental behaviours like ESCCB, we expect to observe a weak statistical association of egoistic values with ESCCB. Similarly, altruistic values evoke selflessness and helping behaviour for others and may raise general pro-environmental intentions (Albayrak et al., 2013). However, we assume that very specific behaviours like ESCCB, may not generate perceptions of substantial 'social altruism' among customers, hence altruistic values may fail to converge in statistical association with ESCCB. Contrarily, biospheric values are specifically related to the environment (Albayrak et al., 2013; Rhead et al., 2015) and are

expected to be highly associated with ESCCB. Given these theoretical conceptualisations, we specified and tested two models to verify the nomological behaviour of ESCCB.

- *Model 1a*

The first model specified for nomological validity of ESCCB followed theorising environmental concern as a composite variable of three underlying dimensions: namely, altruistic values, egoistic values and biospheric values. Environmental concern was taken as a predictor, expected to have a positive effect on ESCCB as supported by the literature (Bertrandias & Elgaaied-Gambier, 2014; Jekria & Daud, 2016; Newton, Tsarenko, Ferraro, & Sands, 2015).

- *Model 1b*

The second model specified for nomological validity of ESCCB conceptualised altruistic values, egoistic values and biospheric values as three unique first-order constructs individually affecting ESCCB in different ways. Based on evidence from the literature, it was expected that only biospheric values would positively affect ESCCB, while altruistic and egoistic values will remain insignificant (Albayrak et al., 2013; Lau et al., 2016; Rhead et al., 2015).

Analysis revealed that the data of this study had a satisfactory level of fit for both models as highlighted in Figure 5.4 and Figure 5.5. Estimates of the first model, Model 1a, showed that environmental concern as a composite construct of egoistic, altruistic and biospheric values was positively associated with ESCCB ($\beta = 0.664$, $t = 9.748$, $p < 0.01$) which corroborated our expectations and literature evidence, thus, confirming the nomological validity of newly developed ESCCB construct. Additionally, the estimates of the second model, Model 1b, also confirmed the existence of nomological validity as biospheric, egoistic, and altruistic values associated with ESCCB as expected in the literature (Biospheric values: $\beta = 0.757$, $t = 4.483$, $p < 0.01$; Egoistic values: $\beta = 0.049$, $t = 0.310$, $p = 0.75$; Altruistic values: $\beta = -0.064$, $t = -0.330$, $p = 0.741$). The estimates of both models are reported in Table 5.8.

Figure 5.4: Nomological Model1ₐ of ESCCB
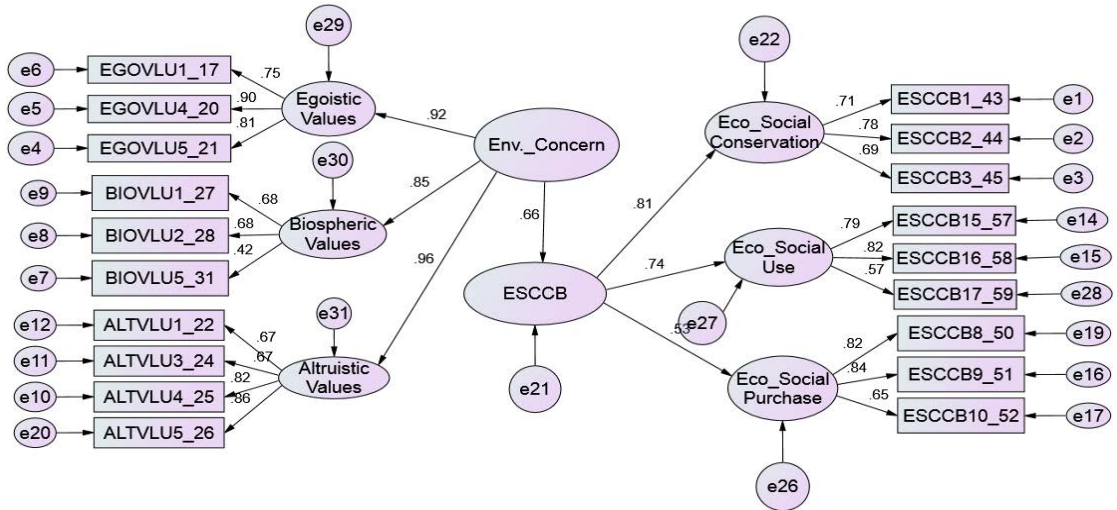
$\chi^2 = 450.733$, $Df = 145$, $\chi^2/Df = 3.109$, GFI = 0.921, CFI = 0.937, TLI = 0.925, NFI = 0.910, RMSEA = 0.062

Figure 5.5: Nomological Model1ᵦ of ESCCB
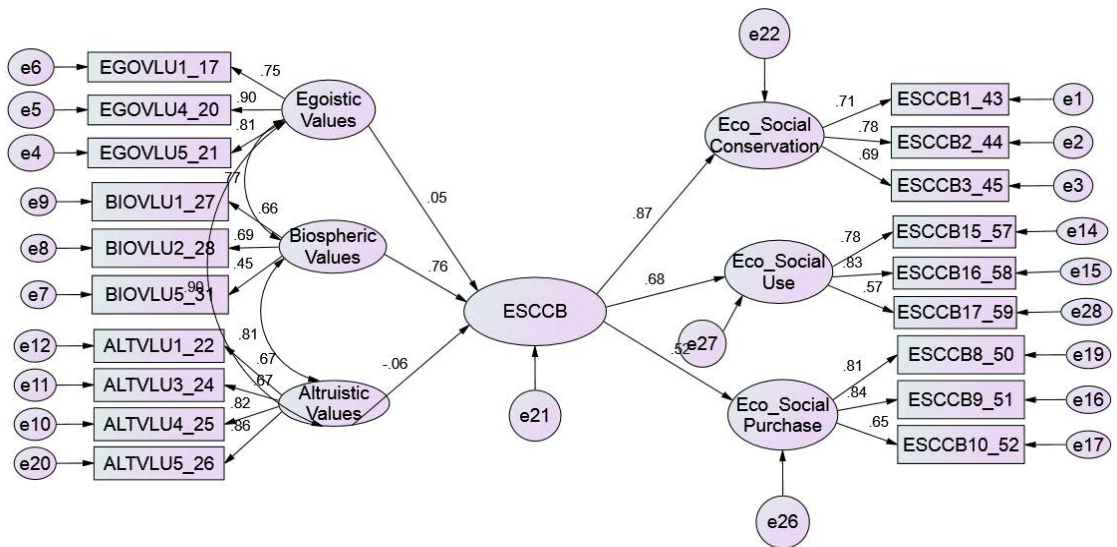
$\chi^2 = 425.591$, $Df = 143$, $\chi^2/Df = 2.976$, GFI = 0.926, CFI = 0.926, TLI = 0.930, NFI = 0.915, RMSEA = 0.060

Table 5.8: Nomological Behaviour of the ESCCB scale (N = 549)

Predictors	Model 1a				Model 1b				Nomological Behaviour
	β	S.E	t	p	β	S.E	t	p	
Environmental Concern	0.664	0.058	9.748	0.000	-	-	-		As expected
Egoistic Values	-	-	-	-	0.049	0.136	0.310	0.756	As expected
Biospheric Values	-	-	-	-	0.757	0.254	4.483	0.000	As expected
Altruistic Values	-	-	-	-	-0.064	0.160	-0.330	0.741	As expected

5.3 Sub-Study 2: Generating Consumer Profiles

The second research question of this study, RQ_2, is about the profiles of consumers who prefer to purchase green or pro-environmental products or favour environmentally friendly behaviours. More specifically the RQ_2 of this study is stated as 'how do consumers of the automobile industry of Pakistan differ from each other on various demographic, psychographics and behavioural variables'? The preceding sections hereon discuss the approach to address RQ_2 and the results thereby obtained after analysis of data. For a systematic presentation, this study is referred to as 'sub-study 2' in subsequent sections.

In sub-study 2, the primary basis of segmentation is eco-socially conscious consumers' behavioural intentions (ESCCB) related to the choice and use of personal cars. ESCCB explains consumers' ecological as well as social orientations towards pro-environmental behavioural intentions specific to the use and purchase of personal cars. The ESCCB scale developed in response to RQ_1 is used as input to augment RQ_2.

Data analysis was conducted using SPSS v.24.0 and AMOS v.23.0. Although measurement model characteristics have already been explained in section 5.2, the process was repeated for two important reasons: (1) different subsample was utilised ($n = 549$) for providing split sample validity of the results for measurement model, (2) additional constructs were entered in the measurement model which requires retesting of measurement characteristics. After measurement model validity was established, the full dataset ($n = 771$) was utilised for cluster analysis, ANOVA and MDA. Chi-square test (χ^2) for differences among clusters based on demographic information was performed to define clusters' observed characteristics.

5.3.1 Measurement Model Validity

In the first step, EFA was conducted to identify dimensionality of the measurement scales. Principal component analysis (PCA) with Varimax rotation method was applied (Gabay, Flores, Moskowitz, & Maier, 2010). The results showed that 549 responses were appropriate for factor analysis in terms of sample adequacy (KMO = 0.948) and inter-item correlation (Bartlett's test: $\chi^2 = 10447.25, p < 0.001)$ (Adachi, 2016; Kaiser, 1974). The resulting factors altogether accounted for 55.61 per cent variance (Yong & Pearce, 2013). Items with low factor loading (<0.60) or high cross-loading (>0.50) were iteratively removed (Hair, 2010; Nunnally, 1994) and the resulting solution was subject to CFA.

Based on the results of the EFA, the confirmatory measurement model was specified by postulating PCE and spirituality as uni-dimensional constructs and ESCCB and environmental concern as multi-dimensional constructs. Results of the measurement model of ESCCB were consistent with its original conceptualisation and development. The ESCCB scale converged into three dimensions, each dimension correlating positively with other. Similarly, the results regarding the measurement model of environmental concern confirmed a three-factor model including egoistic values, altruistic values and biospheric values. The three value sets correlated positively with each other. Some researchers logically argue that, unlike altruistic and biospheric values, egoistic values resist or create opposition while engaging in pro-environmental behaviours (Jansson, 2011; Nordlund & Garvill, 2003), hence, correlate negatively with altruistic and biospheric values. However, there is another stream of research that provides an explanation of how and when egoistic values converge into one measure of environmental concern with biospheric and altruistic values and may lead positively to engagement in behaviours related to environmental protection. For instance, Snelgar (2006) conducted a study on university students in the UK and found that three-factor model of environmental concern consisting of egoistic, altruistic and biospheric values best fits his data, where all three values were positively correlated. He argued that egoistic values may produce concerns for the environment if one believes that 'environmental damage will adversely affect the self' (Snelgar, 2006, p. 88). These arguments were further confirmed in a study conducted by Ojea and Loureiro (2007) who found a positive relationship between egoistic values and willingness to pay for wildlife protection. The apparently conflicting evidence regarding the conceptual definition of egoistic values can further be explained

from the work of Schultz (2000, 2001) who used confirmatory factor analytic procedures and provided support for a three-factor model of environmental concern including dimensions discussed above. Schultz (2000) based his arguments on the model of inclusion and noted that individuals with high levels of interconnectedness of self and nature involve in pro-environmental behaviours only if driven by biospheric values. However, those who are at low levels of inclusion may take part in pro-environmental behaviours driven by egoistic values if they consider that negative effects on nature can affect the self. In the case of the current study, it is argued that AFVs tend to reduce air contamination, which is a major source of environmental pollution, causing health issues that directly affect the 'self-interests' as well as others.' Hence, egoistic values may correlate positively with altruistic and biospheric values.

The results of the measurement model highlighted excellent model fit indices (χ^2/df = 2.795, GFI = 0.883, CFI = 0.925, TLI = 0.917, NFI = 0.889, RMSEA = 0.057) and adequate measure loadings (Byrne, 2013; Hooper et al., 2008). For further analyses, convergent and discriminant validities of the measures were examined. Criteria and process explained in Section 5.2.5.7 were followed to assess the validity of measurement model.

Table 5.9: Mean, SD and Correlations Among Scales And Sub-Scales (*n* = 549)

Constructs	Dimension	Mean	SD	EC	AV	BV	EgV	ESCCB	ESC	ESU	ESP	Sprtlt	PCE
EC		5.167	1.212	1									
	AV	5.271	1.387	0.898	1								
	BV	4.807	1.299	0.802	0.574	1							
	EgV	5.423	1.507	0.896	0.752	0.546	1						
ESCCB		4.591	1.056	0.509	0.440	0.467	0.422	1					
	ESC	4.491	1.349	0.474	0.368	0.495	0.380	0.798	1				
	ESU	4.914	1.302	0.508	0.485	0.371	0.459	0.764	0.448	1			
	ESP	4.370	1.413	0.221	0.189	0.233	0.159	0.776	0.422	0.365	1		
Sprtlt		5.229	1.266	0.764	0.691	0.598	0.693	0.523	0.464	0.533	0.238	1	
PCE		4.915	1.334	0.725	0.635	0.574	0.671	0.515	0.482	0.472	0.259	0.666	1

Notes: All correlations are significant at $p < 0.01$; EC: environmental concern; AV: altruistic values; BV: biospheric values; EgV: egoistic values; ESCCB: eco-socially conscious consumers' behavioural intentions; ESC: eco-social conservation; ESU: eco-social use; ESP: eco-social purchase; Sprtlt: Spirituality; PCE: perceived consumer effectiveness

Table 5.10: Factor Loadings, AVEs, Composite Reliability, and Correlations (*n* = 549)

Factors and Items	λ*	AVE	CR	A	B	C	D
ESCCB		0.514	0.752	0.717			
ESCCB 1	0.717						
ESCCB 2	0.778						
ESCCB 3	0.688						
ESCCB 4	0.585						
ESCCB 15	0.759						
ESCCB 16	0.807						
ESCCB 8	0.815						
ESCCB 9	0.840						
ESCCB 10	0.652						
Perceived Consumer Effectiveness		0.641	0.877	0.669	0.801		
PCE 1	0.812						

PCE 2	0.880						
PCE 3	0.749						
PCE 4	0.755						
Environmental Concern		0.754	0.901	0.686	0.780	0.868	
EGOVLU 5	0.814						
EGOVLU 4	0.897						
EGOVLU 1	0.747						
BIOVLU 1	0.598						
BIOVLU 2	0.825						
BIOVLU 5	0.580						
ALTVLU 1	0.738						
ALTVLU 3	0.746						
ALTVLU 4	0.811						
ALTVLU 5	0.906						
Spirituality		0.561	0.899	0.721	0.681	0.849	0.749
SPRTLT 1	0.708						
SPRTLT 3	0.653						
SPRTLT 4	0.726						
SPRTLT 5	0.813						
SPRTLT 6	0.823						
SPRTLT 7	0.720						
SPRTLT 8	0.786						

Note: * Standardised factor loadings were all significant at $p < 0.01$; AVE: Average variance extracted; CR: Construct reliability; items on diagonal given in bold and italic are the square root of AVEs; items off the diagonal are squared correlations between dimensions and are significant at $p < 0.05$

Results reported in Table 5.10 highlight that the measures explored in this study were valid as well as reliable (CR > 0.7 for each construct) (Nunnally, 1978a).

5.3.2 Cluster Analysis, ANOVA and MDA

After the factor analysis, hierarchical clustering approach was applied following the recommendations of Punj and Stewart (1983). This approach has recently been used in several studies involving segmentation based on sustainability-related behaviours (Canever, Trijp, & Lans, 2007; Güçdemir & Selim, 2015; Paço & Raposo, 2009). Hierarchical cluster analysis was done with Wards method for eight variables (see Table 5.11) by taking Squared Euclidean distance as a measure of difference among the resulting clusters. As a result of the hierarchical analysis, the percentage of variance in heterogeneity stopping rule was examined (Cooksey, 2014; Jansson, Marell, & Nordlund, 2009; Shao, Ross, & Grace, 2015), which resulted in a 3-cluster solution being determined to be the most appropriate. The resulting clusters were validated and characterised using attitudinal variables: environmental values, ESCCB, spirituality and perceived consumer effectiveness. The results of the cluster analysis are summarised in Table 5.11.

Subsequent to the cluster analysis, and after reaching an optimal cluster solution, several tests were carried out to identify whether any significant differences existed between the groups. For this purpose, ANOVA and MDA were conducted (Hair et al., 2012; Jansson et al., 2017). First, the assumption of equality of group means was tested. Results reported in Table 5.12 reveal that the three groups were significantly different from each other for all test variables.

Table 5.11: Results of Cluster Analysis

Variables	Cluster 1 "Conservatives" $n = 154$ (19.9%)	Cluster 2 "Indifferents" $n = 219$ (28.4%)	Cluster 3 "Enthusiasts" $n = 398$ (51.6%)	$F_{(2,768)}$	Sig.
Spirituality	3.60	4.75	6.12	655.77	0.000
PCE	3.13	4.59	5.79	561.10	0.000
Altruistic Values	3.55	4.72	6.24	588.05	0.000
Biospheric Values	3.26	4.61	5.51	301.26	0.000
Egoistic Values	3.22	5.10	6.45	823.50	0.000
Eco-social conservation	3.14	4.27	5.14	187.68	0.000
Eco-social use	3.65	4.48	5.64	238.46	0.000
Eco-social purchase	3.67	4.20	4.73	36.94	0.000

Note: numbers against variables in each segment reflect mean score on a seven-point likert scale, significant at level $p < 0.05$, PCE: perceived consumer effectiveness

Table 5.12: Test of Equality of Group Means

Variables	Wilks' λ	F $_{(2, 768)}$	Significance
Spirituality	0.369	655.77	0.000
PCE	0.406	561.10	0.000
Altruistic values	0.395	588.05	0.000
Biospheric values	0.560	301.26	0.000
Egoistic values	0.318	823.50	0.000
Eco-social conservation	0.672	187.67	0.000
Eco-social use	0.617	238.46	0.000
Eco-social purchase	0.912	36.949	0.000

Figure 5.6: Canonical Discriminant Function for the Three Groups
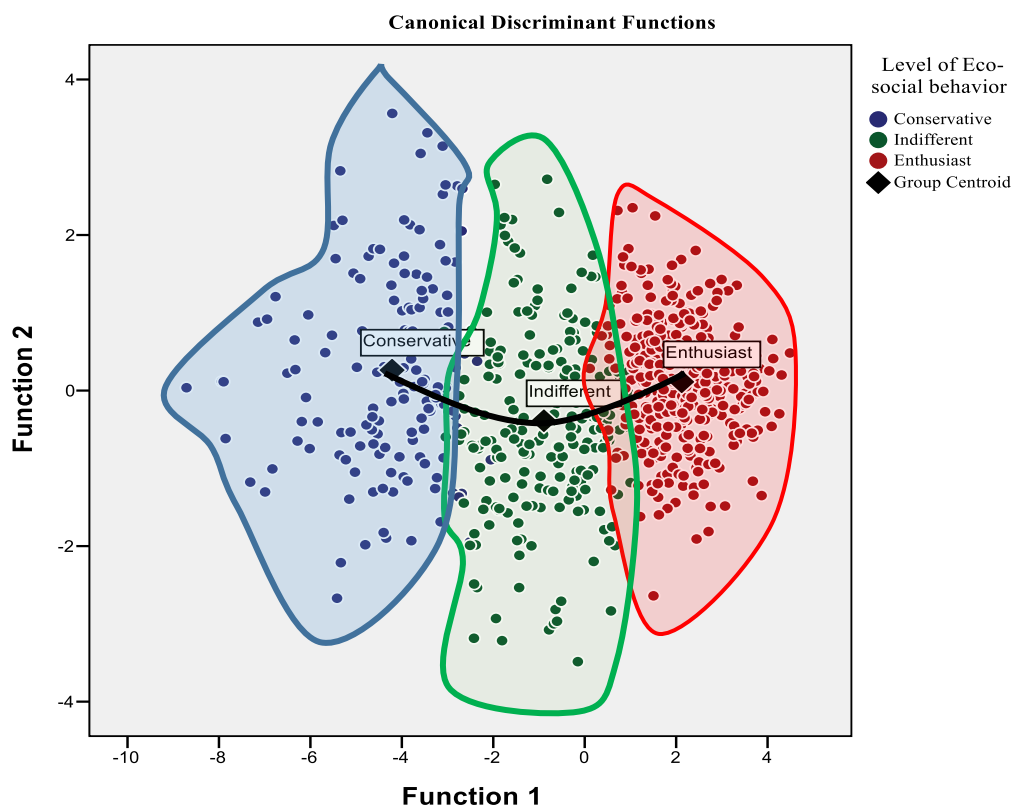
The Wilks λ statistic for each variable revealed that 'egoistic values' was the most powerful variable differentiating between the three groups (λ = 0.318, F (2, 768) = 823.50, p <0.001) followed by 'spirituality' (λ = 0.369, F (2, 768) = 655.77, p <0.001) and 'altruistic values' (λ = 0.395, F (2, 768) = 588.05, p <0.001). The group differences on the basis of 'eco-social purchase' were least significant (λ = 0.912, F (2, 768) = 36.949, p <0.001). The discriminant analysis identified two canonical discriminant functions explaining differences between the three clusters. Results showed that function 1 explained a greater quotient of variation between the groups than function 2. However,

both discriminant functions were statistically significant (Z1: $\lambda 1 = 0.132$, $\chi 2 = 1548.53$, $p < 0.001$; Z2: $\lambda 2 = 0.940$, $\chi 2 = 46.967$, $p < 0.001$) (Hair, 2010).

Figure 5.6 highlights the difference between group centroids for the both discriminant functions, further confirming that difference among group centroids of the 'the conservatives', 'the indifferents' and 'the enthusiasts' clusters is greater for function 1 as compared to function 2.

To further examine the contribution of each discriminant function for individual variables, we analysed the structure matrix. Table 5.13 reports the relative contribution of each of the variables to the discriminant functions and shows that all the variables, except eco-social purchase, demonstrated high correlation with function 1. Spirituality had the strongest correlation with the first discriminant function ($r = 0.591$) followed by PCE ($r = 0.527$), altruistic values ($r = 0.498$), biospheirc values ($r = 0.488$), egoistic values ($r = 0.357$), eco-social conservation ($r = 0.282$) and eco-social use ($r = 0.102$). Eco-social purchase correlated highly with function 2 ($r = 0.366$).

Table 5.14 presents classification results highlighting the number of individual cases correctly and incorrectly classified in clusters based on prior probabilities. The percentage of correctly classified cases can be viewed on the diagonal (left to right). It shows that approximately 96 per cent of the total cases were classified correctly in respective clusters (cluster1: 96.1 per cent, cluster 2: 89.5 per cent and cluster 3: 99.5 per cent).

Table 5.13: Structure Matrix

Variables	Function 1	Function 2
Spirituality	0.591[*]	-0.382
PCE	0.527[*]	0.379
Altruistic values	0.498[*]	0.492
Biospheric values	0.488[*]	-0.134
Egoistic values	0.357[*]	-0.311
Eco-social conservation	0.282[*]	-0.130
Eco-social use	0.102[*]	0.050
Eco-social purchase	0.316	0.366[*]

Note: [*] Largest absolute correlation between each variable and any discriminant function

Table 5.14: Classification Matrix

Original Group	Count	Predicted group membership[*]		
		Cluster 1	Cluster 2	Cluster 3
Cluster 1	154	148 (96.1)	6 (3.9)	0 (0)
Cluster 2	219	5 (2.3)	196 (89.5)	18 (8.2)
Cluster 3	398	0 (0)	2 (0.5)	396 (99.5)
Total	771	153	204	414

Note: Figures in parentheses are percentages, * 96.0% of original group cases correctly classified

Understanding of the resulting segments was further strengthened by characterising the clusters based on observed/demographic features with the help of bivariate analysis, including cross-tabulation of several demographic variables with segment membership. The significance of demographic variables in the differentiation between the three groups was identified by Pearson's chi-square (χ^2) test. Variables involved in this analysis included gender, age, education, locality, city, income, marital status and occupation. The results of the bivariate analysis are summarised in Table 5.15.

These results suggest that there is a significant difference between the segments for gender ($\chi^2 = 12.451$, $p < 0.01$), education ($\chi^2 = 12.451$, $p < 0.01$), city ($\chi^2 = 12.451$, $p < 0.01$) and income ($\chi^2 = 12.451$, $p < 0.01$). Consumer profiles based on age, locality, marital status and occupation are not statistically different across the segments. Based on the analysis of observed and unobserved characteristics, segment profiles are proposed as follows:

5.3.3 The Conservatives

Regarding observed characteristics, 'the conservatives' segment (segment 1: 19.9 per cent) consists of respondents spread almost equally across the age brackets of 19-47 years (19-26: 26 per cent, 27-33:26 per cent, 34-40: 24.7 per cent, 41-47: 18.2 per cent. Compared with other segments and the overall high percentage of those under 34 years of age in the main sample (19-33: 62.6 per cent), this segment has a considerably low number of young individuals (19-33: 52 per cent). Similarly, approximately 60.7 per cent of the consumers in this segment hold undergraduate (38.1 per cent) or graduate degrees (22.7 per cent), which is substantially lower than the respective representation of these groups in the total sample (undergraduate: 48.4 per cent, graduate: 26.8 per cent). By implication, the Conservatives are relatively less educated as compared to the other two segments. On the income scale, individuals in this segment have relatively high income compared with the total sample average (PKR 66000-75000: 16.9 per cent versus 15.0 per cent, 76000-85000: 11.7 per cent versus 9.7 per cent, 86000-95000: 9.1 per cent versus 4.4 per cent).

'The conservatives' segment has the lowest score on all variables measuring unobserved characteristics: spirituality ($M = 3.60$), PCE ($M = 3.13$), altruistic values ($M = 3.55$), biospheric values ($M = 3$), egoistic values ($M = 3.22$), eco-social conservation ($M = 3.14$), eco-social use ($M = 3.65$) and eco-social purchase ($M = 3.67$). These variables indicate lower mean values for 'the conservatives group' as compared to 'the indifferents'

and 'the enthusiasts'. Additionally, all these values are lower than the sample means as well. This indicates that 'the conservatives' are less pro-environmental, lower on spirituality and tend not to purchase or use eco-tech vehicles or conserve natural resources.

5.3.4   The Indifferents

'The indifferents' segment (segment 2: 28.4 per cent) is composed of individuals with a relatively low mean age as compared to the mean age of the total sample (19-26: 37.4 per cent versus 33.7 per cent). With respect to education, this segment has the highest percentage of undergraduates (53.9 per cent) which, together with graduates (20.5 per cent), scores slightly below the educational level of the total sample average (74.4 per cent versus 75.2 per cent), but significantly above the mean education level of the Conservatives (60.8 per cent). As for income, 41.6 per cent of individuals in this segment belong to the lowest income group (PKR 45000-55000) compared to the overall proportion of the sample (38.7 per cent), 'the conservatives' (33.1 per cent) or 'the enthusiasts' (39.2 per cent).

'The indifferents' predominantly score as almost neutral on all unobserved characteristics: spirituality (X = 4.75), PCE (X = 4.59), altruistic values (X = 4.72), biospheric values (X = 4.61), eco-social conservation (X = 4.27), eco-social use (X = 4.48) and eco-social purchase (X = 4.20). The only exception, egoistic values (X = 5.10), is also the strongest factor discriminating the three segments (see Table 5.11). Individuals in this segment seem unconcerned about eco-social behaviours related to choice and use of personal cars and also reflect low levels of environmental concern. Their seeming indifference prompted our description of this group as 'the indifferents'.

5.3.5   The Enthusiasts

Analysis of demographic characteristics of 'the enthusiasts' segment (segment 3: 51.6 per cent) shows that individuals in this segment mostly belonged to the young (19-26: 33.7 per cent) and middle age groups (27-33: 30.7 per cent, 34-40: 23.1 per cent). This proved greater than the total sample average and the average of 'the conservatives' segment. The age difference between 'the indifferents' and 'the enthusiasts' for young and middle age group brackets is negligible. Regarding education, this sample has the highest percentage of graduates (31.9 per cent, surpassing individual contribution of each of the other two segments and the average of the total sample). In regard to income, 'the

enthusiasts' has the highest percentage of individuals belonging to the highest income category (PKR 106000 and above: 14.3 per cent). This figure is larger than the individual contribution of the other two segments as well as the total sample average.

'The enthusiasts' scored highly for all unobserved variables: spirituality (X = 6.12), PCE (X = 5.79), altruistic values (X = 6.24), biospheric values (X = 5.51), egoistic values (X = 6.45), eco-social conservation (X = 5.14) and eco-social use (X = 5.64). The only exception was eco-social purchase (X = 4.20). It is therefore evident that individuals in 'the enthusiast' segment are highly eco-social when it comes to choice and use of personal cars, have high spirituality quotient and concern for the environment and perceive that their actions can effectively bring positive change in environment.

Table 5.15: Demographics by Segments (*n*=771)

Variables	Conservatives	Indifferents	Enthusiasts	Total	χ^2	df	Sig.
Gender					12.451	2	0.002
Male	59.1	70.8	74.4	70.3			
Female	40.9	29.2	25.6	29.7			
Age					16.630	10	0.083
19-26	26.0	37.4	34.7	33.7			
27-33	26.0	27.9	30.7	28.9			
34-40	24.7	21.5	23.1	23.0			
41-47	18.2	11.0	9.0	11.4			
48-54	3.9	1.8	1.8	2.2			
55 and above	1.3	0.5	0.8	0.8			
Education					53.840	26	0.001
No formal education	1.3	0.0	0.8	0.6			
Primary (year5)	1.3	0.9	0.0	0.5			
Middle (year 8)	1.9	0.0	0.3	0.5			
Matric (year 10)	9.1	4.6	2.3	4.3			
Intermediate (year 12)	7.7	7.3	4.1	5.7			
Undergrad (year 16)	38.1	53.9	48.2	48.4			
Graduate (year 18)	22.7	20.5	31.9	26.8			
MBBS or BDS	5.2	4.1	4.3	4.4			
DVM	1.3	1.8	2.0	1.8			
B.E	7.1	4.6	3.5	4.5			
Others	1.3	2.3	2.8	2.3			
Locality					6.532	4	0.163
City	77.9	86.8	82.4	82.7			
Suburb	13.6	7.3	8.8	9.3			
Village	8.4	5.9	8.8	7.9			
City					140.067	22	0.000
Lahore	26.6	21.9	10.6	17.0			
Karachi	20.1	22.4	9.5	15.3			
Quetta	1.9	0.5	1.3	1.2			
Hyderabad	22.7	14.2	5.3	11.3			
Peshawar	6.5	5.5	8.0	7.0			
Islamabad	5.8	8.2	15.3	11.4			

Multan	7.1	13.2	28.1	19.7			
Faisalabad	0.6	1.4	0.8	0.9			
Mardan	1.3	1.8	1.8	1.7			
Sargodha	1.3	1.4	0.5	0.9			
Rawalpindi	3.2	6.4	8.5	6.9			
Others	2.6	3.2	10.3	6.7			
Income*					36.894	12	0.000
45000-55000	33.1	41.6	39.2	38.7			
56000-65000	20.8	20.5	14.6	17.5			
66000-75000	16.9	18.3	12.6	15.0			
76000-85000	11.7	6.8	10.6	9.7			
86000-95000	9.1	2.3	3.8	4.4			
96000-105000	0.6	1.8	5.0	3.2			
106000 and above	7.8	8.7	14.3	11.4			
Marital status					11.864[a]	6	0.065
Single	43.5	54.3	55.3	52.7			
Married	51.3	43.4	43.0	44.7			
Divorced	4.5	1.4	1.5	2.1			
Widowed	0.6	0.9	0.3	0.5			
Occupation					8.456[b]	8	0.390
Landlord	12.3	8.2	9.5	9.7			
Businessman	15.6	20.5	14.8	16.6			
Private Job	42.9	47.9	49.2	47.6			
Government Job	25.3	21.9	24.1	23.7			
Armed Forces	3.9	1.4	2.3	2.3			

Note: Numbers below the segments indicate percentages, * income is given in Pakistan Rupee, [a] in two cells there are less than five observations, [b] in two cells there are less than two observations, significance level 0.05, MBBS: Bachelor of Medicine and Bachelor of Surgery, BDS: Bachelor of Dental Surgery, DVM: Doctor of Veterinary Medicine, BE: Bachelor of Engineering

5.4 Conclusion

This chapter provided the quantitative findings of Study 1 to address the first two research questions (RQ_1 and RQ_2) thus providing input for analysis of our third research question (RQ_3). Research question (RQ_1) was related to the development of ESCCB scale related to purchase and use personal cars. This study conceptualised, developed and validated the ESCCB scale comprising three dimensions including eco-social purchase, eco-social use and eco-social conservation. The second research question (RQ_2) intended to identify whether there exist any consumer segments who prefer the pro-environmental problems in automobile market of Pakistan. The study found that there exist three different segments: the conservatives, the indifferent and the enthusiasts. Interestingly, the environmentally oriented segment (the enthusiasts) included more than 50% of the total sample. The next chapter, Chapter Six, presents the methodology of Study 2, which aims to address the third research question (RQ_3).

Chapter Six: Research Methodology - Study 2

6.1 Introduction

The previous chapter presented the results of the first study. The results presented in this previous chapter were aimed at answering the first research question (RQ_1) and the second research questions (RQ_2). This chapter presents the methodological approach adopted to answer the third research question (RQ_3) of this thesis. This chapter starts with an explanation of the research design for Study 2, followed by the methods adopted to answer RQ_3. A justification of the survey method is then provided correlate it with the philosophical paradigm driving this study. A thorough description of the measurement instrument, data collection technique and analysis approach is then detailed. Following this, a comparison of variance and co-variance-based structural equation modeling (SEM) is presented, and elaboration of how the use of both techniques can ensure robustness of results and validity of inferences is articulated.

6.2 Philosophical Paradigm and Research Plan - Study 2

The philosophical underpinnings of the Study 2 are similar to those explained in section 4.2: Philosophical Paradigm and Overall Research Plan – Study 1, of this thesis. To avoid redundancy, the description of positivism as a philosophical paradigm of Study 2 is not provided at this point. It is, however, important to reinforce that a positivist research design is appropriate when the overarching objective of any study is to replicate (with some adaptation) the existing theoretical models in a new culture, and with the help of new datasets (Neuman, 2004), which is the case of this thesis. The justification of research design derived from positivist paradigm is described in subsequent sections.

6.3 Overall Research Design

A classical explanation of how philosophical paradigms guide research plans is explained in the research design 'onion' offered by Saunders et al. (2015), shown in Figure 6.1. The design of Study 2 of this thesis is quantitative. The rationale behind adopting quantitative design is that, with the data from the Pakistani automobile market, Study 2 aims at validating existing theoretical models (TPB and VBN Theory), which have established constructs and relationships, so deductive approach is more appropriate (Neuman, 2004). Quantitative research design follows a deductive approach as the focus

remains on a data-driven test of the established theoretical model(s). While single or multiple quantitative methods can be used to implement a quantitative research plan, a mono-method approach for data collection is adopted in this study by using personal survey method.

Personal surveys involve direct interaction of the interviewers or research assistants with the respondents, often employing standardised questionnaires. This approach is easy to administer, holds the advantage of simplicity, brings in reliable information obtained, and provides ease of coding and analysing the data at later stages (McDaniel & Gates, 2014). This study utilised self-administered structured questionnaire to collect data. A description of the questionnaire is given in section 6.6: Measurement Instrument.

Figure 6.1: The Research Design 'Onion'
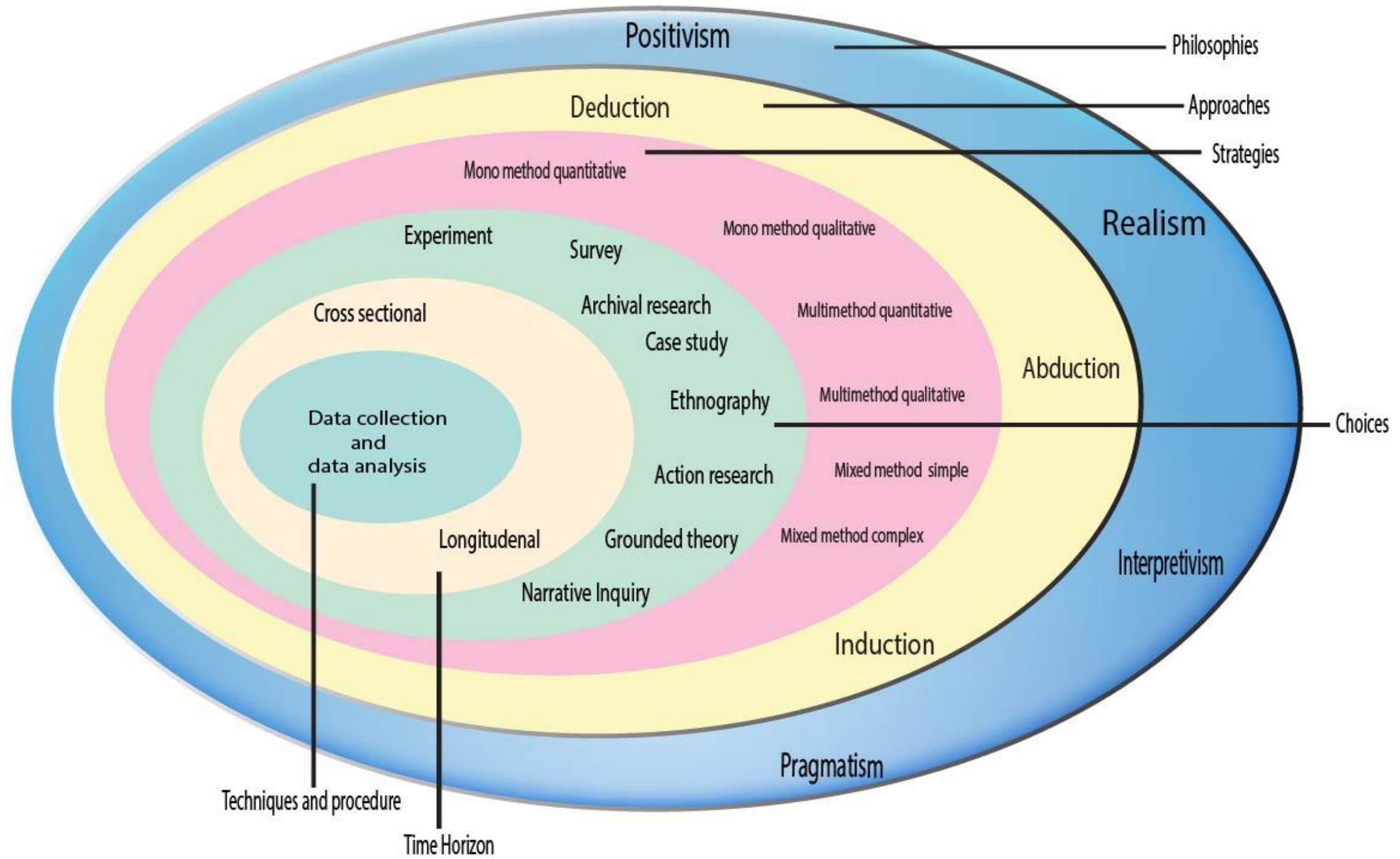
Source: Adapted from Saunders, Lewis, and Thornhill (2015)

6.4 Target Population and Sampling Plan

The target population, unit of analysis and process of recruitment of subjects is carried out in the same way as was done in Study 1, and is explained in sections 4.3.1: Target Population and Sampling Design, 4.3.1.1: Sampling Unit, and 4.3.1.2: Recruitment of Key Respondents. There is however, a change in sample size calculation for Study 2.

6.4.1 Sample Size - Study 2

While a general rule of 'higher the better' is advised while calculating sample sizes to get better representation of the population (Cooper & Schindler, 2006), a more relevant stream of research suggests looking at the requirements the preferred data analysis technique to decide about sample size (Christopher Westland, 2010). More specifically, structural equation modelling (SEM), that is the primary analytics approach in Study 2, requires higher sample sizes than normal for reliable results. Generally, a rule of 10 cases per free parameter (or a total sample in the range of 200-400 cases) is suggested in order to get an appropriate sample size for reliable results while SEM is applied (Wolf, Harrington, Clark, & Miller, 2013). The research instrument provided in Appendix IX: Final Survey of Study 2 - Untranslated, shows that there are 144 free parameters to be estimated (excluding demographics), so 1440 cases are required for reliable results as per criteria suggested above. Additionally, this thesis also considered that the class of SEM (PLS-SEM) utilised in Study 2 (explained in section 6.8 of this chapter) has the capability of providing reliable results even if the sample size is not very large (Hair, Hult, Ringle, & Sarstedt, 2016). Keeping in view that there is often less than 50% response rate when samples are selected randomly (Mealing et al., 2010; Morton, Bandara, Robinson, & Carr, 2012), a total of 3000 subjects were randomly recruited for data collection. Details of sample characteristics and response rate are documented in section 7.2 of this thesis.

6.5 Data Collection

The collection of data was carried out by using a structured self-administered questionnaire and utilising the strategy of personal contact of data collection assistants with respondents at different automobile dealerships in different cities across Pakistan.

6.5.1 Survey Procedure

The survey was carried out from December 2017 to February 2018. In this study, Study 2, the only difference from Study 1 is the time of data collection. The other procedures adopted were same as explained in 4.3.2: Survey Technique.

6.6 Measurement Instrument

The measurement instrument used in Study 2 consisted of two main sections: demographic information and adapted measures of variables identified in the integrated conceptual framework. Demographic information included age, gender, income and the city of residence, place of residence, possession of a car, formal education, marital status and occupation. The second section included 144 elements to tap 23 latent variables of the study. The measurement instrument is attached in Appendix IX: The detailed description of operational definitions and the measurement of the constructs of Study 2 is given in subsequent sections.

For a logical presentation of measurement of variables, the subsequent sections present the constructs in an arrangement identified in the two theories, i.e., Theory of Planned Behaviour (TPB) and Value-Belief-Norm Theory (VBN), integrated to develop the conceptual model of this study.

6.6.1 Environmental Knowledge

In the literature relating to the TPB, environmental knowledge is considered as an important construct influencing the personal car choice and use behaviours through attitudes (Flamm, 2009; Polonsky et al., 2012). In this study, environmental knowledge is operationally conceptualised as respondents' cognizance of the impacts of vehicles' emissions and other direct and indirect contributions to various type of environmental pollutions. For measurement, this study adapted the 8-items Likert-based scale from Flamm (2006) to measure respondents' level of environmental knowledge.

6.6.2 Green Lifestyle

A green lifestyle denotes the adoption of pro-environmental practices in the conduct of daily life activities. From a measurement perspective, this study adopted the approach of Ragas, Tantay, Chua, and Sunio (2017) and divided green lifestyle into two categories: green health and environmental development and greenhouse gas emission reduction.

6.6.2.1 *Green Health and Environmental Development*

Green health and environmental development facet taps consumer lifestyle regarding general activities related to health and environmental sustainability. This study utilised seven Likert-based statements from Ragas et al. (2017) to measure green health and environmental development lifestyle of consumers.

6.6.2.2 *Greenhouse Gas Emissions' Reduction*

Lifestyle related to greenhouse gas emissions' reduction mainly focuses on the activities aimed at reducing the emissions of GhGs and, in this study, was measured by three items, again adapted from Ragas et al. (2017).

6.6.3 Measurement of Perceived Subjective Norms

As defined by Fishbein and Ajzen (2011), subjective norms refer to a social pressure to engage (or not to engage) in a particular behaviour, determined by related beliefs. The subjective norms are determined by (i) the expectations (normative pressure) of important others regarding performing or not performing a specific behaviour – injunctive norm, and (ii) perceptions that others are (or are not) involved in performing a particular behaviour – descriptive norms (Cialdini et al., 1990).

6.6.3.1 *Injunctive Norms: Normative Beliefs and Motivation to Comply*

In the conceptual position of subjective norms, the injunctive part relates to individuals' perceptions of prescribed action desired by the social agent (referent individual or group) irrespective of actual action of the agent himself or herself. In this study, injunctive norms are the perceptions of individuals about what other people, important to them, expect from them concerning choice and use of personal cars. Subjective injunctive norms are developed by the strength of injunctive normative beliefs and motivation to comply with the pressure exerted by important others. This current study followed the guidelines of Fishbein and Ajzen (2011) for the measurement of injunctive norms and took into account the factors related to normative beliefs and motivations to comply.

By so doing, this study utilised six items to tap normative injunctive beliefs of the individuals and four items to measure the motivations to comply with the pressure exerted by others. Response on the items was measured on the seven-point Likert scale. The

statements used in this study are consistent with the practices of some existing studies conducted in the similar domains (Moons & De Pelsmacker, 2015; Nayum et al., 2013).

Consequently, injunctive norms were measured by the formula given below, where 'N' refers to injunctive norms, 'n' is the injunctive normative beliefs about referent and 'm' is motivation to comply with the referent. The number identifies the statements to normative beliefs and motivations to comply:

$$N \approx \Sigma n6m4$$

6.6.3.2 *Descriptive Norms*

Descriptive norms are slightly different from injunctive norms. Descriptive norms refer to ones' perception of others (social change agent) involved (or not involved) in a particular behaviour, thus, exerting a social pressure on oneself to engage in (or restrain from) the behaviour. In this study, a direct measure of descriptive norms has been utilised reflecting the individuals' perception about others' (referent) behaviour related to choice and use of personal cars. Four Likert-based items have been utilised to measure descriptive norms. A similar type of items has been used in several existing studies (Moons & De Pelsmacker, 2015; Nayum et al., 2013).

6.6.4 Measurement of Attitudes towards Behaviour

An attitude is defined as 'a latent disposition or tendency to respond with some degree of favorableness or unfavorableness to a psychological object' (Fishbein & Ajzen, 2011, p. 76). From the measurement perspective, the attitude towards an object (or behaviour) is more persistent and evaluative unlike the similar construct of 'effect' which is driven by emotions, mood, and arousal and is a short-lived disposition towards any object or behaviour (Fishbein & Ajzen, 2011). This current study operationally defined attitudes towards behaviour as individuals' disposition towards buying an environmentally friendly car and using eco-social ways of transportation as being favourable or unfavourable decisions.

Measurement of attitude has been undertaken in several ways ranging from bipolar semantic differential scales (Coulter & assistant, 2004; Morland & Williams, 1969) to a method of summated ratings using interval-based measurements on Likert-scales (Reece, Herbenick, Hollub, Hensel, & Middlestadt, 2010). As direct measurement of attitude, this study utilised a six-item seven-point Likert-based scale focused on

ESCCB related to choice and use of personal cars. A similar type of measurement has been reported in several existing studies (Moons & De Pelsmacker, 2015; Nayum et al., 2013).

6.6.4.1 Behavioural Belief Strengths and Outcome Evaluation Belief

Apart from the direct measure, the original TRA approach suggests that attitudes can be measured as a product of beliefs as well. The expectancy-value model describes that attitudes' formation follows a systematic process based on the strength of beliefs (behavioural belief strength) and evaluation of object attributes (outcome evaluation) (Fishbein, 1963; Miles & Louis, 1988). Under such process, the following symbolic representation explains the formation of attitude – where A stands for attitude towards an object (or behaviour), b_i is the strength of i beliefs while e_i is the evaluation of i attributes:

$$A \approx \Sigma b_i e_i$$

In this current study, six items were utilised to measure individuals' behavioural beliefs about ESCCB related to choice and use of personal cars while five items were utilised to measurement outcome evaluation. All items were based on seven-point Likert-based statements. The measurement is consistent with the approach used in several existing studies (Nayum et al., 2013).

6.6.5 Measurement of Control Beliefs and Perceived Behavioural Control (PBC)

Perceived behavioural control is defined as 'people's perceptions of the degree to which they are capable, or have control over, performing a given behaviour' (Fishbein & Ajzen, 2011, p. 64). Theoretically, PBC equals to control beliefs and their power to assist or obstruct in performing a particular behaviour and is denoted by following equation,

$$PBC \approx \Sigma c_i p_i$$

where PBC is perceived behavioural control; c_i is the belief about presence of i control factor(s); p_i is the power of factor(s) i to assist or obstruct performance of a particular behaviour, and all control beliefs are summed to make up perceived behavioural control (Fishbein & Ajzen, 2011).

Control beliefs refer to the subjective probability of degree of control, shaped by internal and external factors, over performing a particular behaviour. Briefly, control beliefs lead to the perception that one can, or cannot, perform (or restrain from) a certain behaviour (perceived behavioural control), given the time and resources. In this current study, control beliefs were operationally conceptualised as the ones' views about the availability of environmentally friendly personal car options (ESCCB related to purchase of personal cars) and accessibility to eco-social choices in use of environmentally friendly modes of transportation (ESCCB related to use of personal cars). Consequently, four items (seven-point Likert-based) were developed, constituting the control beliefs, for use in this study. A similar type of operational measurement for control beliefs has been utilised in the studies of Moons and De Pelsmacker (2015) and Nayum et al. (2013).

This study also introduces a direct measure of PBC. In this study, PBC operationally refers to as individuals' perceived control over decisions of buying an environmentally friendly personal car or performing eco-social behaviours pertinent to use of personal cars. Consistent with the recommendations of Fishbein and Ajzen (2011) for measurement of PBC, this study utilised six direct questions comprising of individuals' capacity and autonomy, collectively forming perceived capability, to purchase an eco-friendly personal car and use it eco-socially. Responses to the items were measured on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The approach of measurement of PBC adopted in this study is consistent with several existing studies (Moons & De Pelsmacker, 2015; Nayum et al., 2013), which focused on behaviours similar to ESCCB related to purchase and use of personal cars.

6.6.6 Measurement of Behavioural Intentions

Behavioural intentions represent a person's willingness/readiness to perform (or refrain from) a behaviour. In this study, the methods for measuring behavioural intentions of individuals related to choice and use of personal cars have been adapted from Study 1 of this thesis, explained in section 4.4 ESCCB Scale – Scale Development Process. The ESCCB construct is based on three dimensions: eco-social use intentions, eco-social conservation intentions and eco-social purchase intentions. The ESCCB construct is measured on a nine-item Likert-based scale (each dimension measured by three items).

6.6.7 Actual Behavioural Control

In the context of TRA, actual control factors are theorised as essential components that impact the translation of behavioural intentions into the conduct of actual behaviour (Fishbein & Ajzen, 2011). These factors are specific to the context of behaviours under deliberations i.e., ESCCB related to the choice and use of personal cars. This study conceptualised measurement of actual behavioural control by proposing four Likert-based statements measured on a seven-point scale (1 strongly disagree, seven strongly agree).

6.6.8 Measurement of Actual Behaviour

In the context of the conceptual domain of behaviours, described regarding action, target, context and time (Fishbein & Ajzen, 2011), ESCCB behaviours were measured as self-reported behaviours of consumers, and seven Likert-based statements were utilised to measure this construct. The statements were related to ESCCB related to choice and use of personal cars in more recent behaviours.

6.6.9 Measurement of constructs of Value-Belief-Norm (VBN) Theory

The constructs of VBN Theory, presented in a causal schema offered by Stern, Dietz, Abel, Guagnano, and Kalof (1999a), are categorised in values, beliefs and norms. In this study, the measurement of the constructs of VBN Theory was undertaken following the suggestions and conceptual derivations provided in norm-activation model and value theory (Schultz & Zelezny, 1998; Schwartz, 2006; Stern, Dietz, & Guagnano, 1998)

6.6.9.1 Measurement of Values

Values are the fundamental unit of norms formation in VBN model. The scale for altruistic values was first proposed by Schwartz (1992). Three value orientations (also explained in section 4.5.2.2: Psychographic Variables and ESCCB, of this study) of VBN Theory include biospheric, altruistic and egoistic values. Biospheric values are individuals' views that are related to natural environments and species, altruistic values linked with welfare and concern for other people, while egoistic values are associated with self-interest. A five-item Likert-based scale for each of the three value sets was utilised for measurement of individuals' value orientations. The items were adapted from, and/or extensively used in, existing studies (Hiratsuka et al., 2018; Obeng & Aguilar, 2018; Steg, Dreijerink, & Abrahamse, 2005).

6.6.9.2 Measurement of Beliefs

Moving across the causal model of the VBN, the next set of constructs belong to the belief system of individuals including new ecological paradigm (NEP), awareness of consequences (AC) and ascription of responsibility (AR).

- *Measurement of NEP*

Conceptually NEP measures the individuals' general beliefs about human activities and their impact on the environment, biosphere or cosmos. This study utilised a 10-item Likert-based inventory of NEP, adapted from Dunlap and Van Liere (2008), which was based on the first revised version of NEP proposed in Dunlap et al. (2000).

- *Measurement of Awareness of Consequences (AC)*

In the VBN model, the AC refers to individuals' beliefs about consequences of their actions (or a particular problem entailing the targeted behaviour) on the environment (Stern et al., 1998). The literature on VBN Theory uses terms 'problem awareness' (Linda. & Judith., 2010) and 'awareness of need' as well (Schwartz, 1977a) for AC – all with similar conceptual meanings. There are different studies in literature which have utilised respondents' general beliefs on environmental conditions to measure AC (Fransson & Garling, 1999; Stern et al., 1999a), however, a behaviour-specific measure of AC has been regarded as more influential in predicting the intentions and behaviours than general beliefs (Annika & Jörgen, 2002; Linda. & Judith., 2010).

This current study took the latter approach and measured AC by utilising an 11-item Likert-based scale for measurement of AC. The scale covered aspects of problems arising out of using personal cars, both regarding environmental pollution and resources depletion. This measurement approach corresponds to the studies by Steg et al. (2005), Han et al. (2016) and Han (2015).

- *Ascription of Responsibility (AR)*

AR has theoretically been defined in two ways: first, as individuals' feelings of responsibility for environmental issues (Bamberg & Schmidt, 2003; Schwartz, 1977a) and second, as individuals' beliefs about their ability to avoid the negative consequences on environmental, or provide remedy, by engaging in (or refraining from) a particular behaviour (Dunlap & Van Liere, 1978; Lind et al., 2015; Stern et al., 1999a). This current study took into account the importance of both conceptualisations of AR and proposed a

five-item Likert-based scale for measurement of AR: four items measuring individuals' feelings of responsibility towards environmental problems and one item measuring the individuals' ability to provide remedy or avoid the problem, by engaging in an eco-social behaviour in choice and use of personal cars.

6.6.9.3 Measurement of Personal Norms

The Norms Activation Model (NAM) explicates the role of personal norms as the drivers of pro-environmental behaviour and the causal linkages between beliefs and personal norms to explain how personal norms (PN) are developed. PN refers to a person's feelings of moral duty or obligation to engage in or restrain from a particular behaviour as a consequence of values and beliefs (as described in the causal chain of VBN Theory) (Nordlund & Garvill, 2003; Schwartz, 1977a). In the literature relating to normative influences on behavioural intentions, or actual behaviour, personal norms have been classified as integrated or introjected in nature.

- *Integrated Norms*

Integrated norms are internalised and deeply engraved moral values, congruent with self-concept, motivating an individual to behave (or not to behave) in a certain way (Morris, Hong, Chiu, & Liu, 2015; Thøgersen, 2006). This current study operationalises integrated personal norms as individuals' moral obligation towards eco-social behaviour related to choice and use or personal cars for environmental reasons. For measurement, this study utilised a seven-item Likert-based scale which is in line with measurement of integrated personal norms in existing studies of a similar kind (Doran & Larsen, 2016; Rouven & Svein, 2016).

- *Introjected Norms*

Introjected norms are driven by superficial and shallow values motivated by feelings or emotions of expected guilt or pride (Morris et al., 2015; Thøgersen, 2006). This current study utilised a seven-item Likert-based measure of introjected personal norms which taps the aspects of guilt arising out of not behaving eco-socially during purchase and use of personal cars. Again, this measurement is in line with some existing studies of a similar kind (Doran & Larsen, 2016).

6.6.10 Measurement of Religiosity

The concept of religiosity involves individuals' state of ascription or association with religion, both at the level of belief and actual engagement in religious activities (Allport & Ross, 1967; Hoge, 1972). The concepts of intrinsic (belief) and extrinsic religiosity (actual engagement) have been propounded as equally important components in the measurement of religiosity (Hoge, 1972; Koenig & Büssing, 2010; Liu & Koenig, 2013). However, this current study holds that, as actual religious activities vary from one religion to other, the findings based on intrinsic-extrinsic measurement of religiosity become restricted (Liu & Koenig, 2013). Therefore, in this study, the general measure of religiosity as a belief (intrinsic religiosity) has been utilised. A 10-item Likert-based scale of religiosity has been utilised to measure individuals' general religious beliefs, adopted from existing studies (Hoge, 1972; Koenig & Büssing, 2010; Liu & Koenig, 2013).

A detailed description of the survey instrument used in Study 2 is provided in Appendix IX: Final Survey of Study 2 - Untranslated.

6.7 Construct Reliability and Validity

In survey-based research, an essential element, to establish the effectiveness of procedures and authenticity of results obtained thereby, is reliability and validity of instruments used to collect data (Saunders et al., 2015). In this current study, the measurement instrument (structured questionnaire) is based on the measure of constructs adapted from existing studies. There is a need to establish that the measures of each construct (and overall instrument) are reliable and valid thus suggests that results obtained are generalisable, at least as long as measurement authenticity is concerned.

6.7.1 Reliability

Reliability refers to the capability of an instrument to consistently measure its intended and underlying concept (Nunnally, 1994). A reliable instrument highlights a significant departure from measurement errors. A highly cited, and significantly relevant to this study, approach for measurement of reliability is testing the internal consistency of instrument by means if inter-item correlation and measure of Cronbach alpha (α) (Hair, 2010; Nunnally, 1978a; Saunders et al., 2015). Literature shows that an alpha score of 0.70 or greater reflects that instrument holds internal consistency. Also, an inter-item correlation of 0.30 or greater shows reliability in the instrument (Hair, 2010). The

reliability results of the measures used in Study 2 are discussed in Chapter Seven: Results of Study 2 of this thesis.

6.7.2 Validity

The validity of measurement instrument reflects that the instrument successfully measures the underlying concept in line with its conceptual domain (Churchill et al., 1974; Nunnally, 1994). A valid instrument signifies that the findings of the study can be used to inform policy development and implementations with reasonable confidence, at least at the level of the measurement instrument. As was emphasised considerably in Study 1 (see sections, 5.2.5: Supplementary Sub-Study 2: Validity and Reliability Assessment and 5.2.5.7: Convergent and discriminant validity), Study 2 also reports on three important aspects of the validity of measurement instrument being used prior to principal analysis, i.e. model/theory testing, including convergent validity, discriminant validity and criterion validity. The detailed description of these validity aspects is provided in Chapter Seven: Results of Study 2.

6.8 Data Analysis - PLS SEM

Besides the single method of data collection, there are several statistical techniques that have been utilised to analyse the collected data and to achieve the research objectives of Study 2. The primary analytical model adopted to analyse collected data is structural equation modeling (SEM). SEM as a package of methodologically rigorous statistical tests is growing in importance across several knowledge domains mainly in psychology, international business, marketing and economics and finance. SEM helps to accommodate the need of testing complex research models involving main as well as intervening effects, all simultaneously, thus serving equally in theory building and testing (Richter, Sinkovics, Ringle, & Schlägel, 2016). The chief merit of SEM is its capability to test both measurements as well as a structural model (path analysis) (Byrne, 2013) and this is the reason why this technique is most suitable to employ for this current study (Study 2). While factor-based covariance SEM (CB-SEM) and composite-based partial least square SEM (PLS-SEM) are highly used in the research of business and management, PLS-SEM is recognised as predominantly more flexible yet equally, or even more, rigorous in producing reliable and valid results (Matthews, Sarstedt, Hair, & Ringle, 2016; Sarstedt et al., 2016). However, it is judicious to mention that there exist data and methodological differences in deciding when PLS-SEM is more appropriate as

compared to CB-SEM (for details see, Sarstedt et al., 2016). The detailed explanation of how SEM processes have been applied, results achieved and discussion of findings, has been provided in Chapter Seven: Results of Study 2, of this thesis.

6.9 Conclusion

This chapter has presented the methodological design of Study 2 that assists in addressing research question three (RQ$_3$) of this thesis. In this chapter, an overview of research design, followed by data collection strategy, description of the measurement instrument and an overview of data analysis technique, is presented. The next chapter, Chapter Seven, provides the results of Study 2 and a discussion of findings.

Chapter Seven: Results of Study 2

7.1 Introduction

The purpose of Study 2 was to test theoretical models of ESCCB developed as a result of the literature analysis conducted and reported in Chapter Three: Theoretical Model and Hypotheses – Study 2. Results presented in this chapter address the third and final research question: Which factors effect ESCCB in an emerging economy context? For a better organisation and meaningful interpretation of results, findings relating to the Theory of Planned Behaviour (TPB), Value-Belief-Norm (VBN) Theory and the integrated model of TPB and VBN are reported separately under sections 7.5, 7.7 and 7.8 of this chapter respectively. Following this, the results of all three models are summarised and conclusion is drawn.

7.2 Overview of the Sample

The data collection process for Study 2 followed the techniques explained in sections 4.3.1 and 6.5, of this thesis. Initially, a total of 3,000 respondents was randomly selected from lists provided by the managers of different automotive dealerships who were contacted by the research assistants recruited to collect data in this project (see section 4.3.1.2: Recruitment of Key Respondents for details). The selected respondents were provided with an information sheet to seek their consent to participate in the study. Of the total customers contacted, 1,860 responded positively and agreed to complete the questionnaire (62% response rate). However, when respondents were met at an agreed time and date by the research assistants and were presented with the survey, another 400 refused to complete the questionnaire due to its length. Of the remaining 1,460 respondents who agreed to participate in the research and to complete the questionnaire, 88 left more than 60% of the questionnaires (on average) incomplete for various reasons. In total, 1,372 usable response were received (45.73% response rate) and were subject to the data analysis which is presented in later sections of this chapter. The response rate achieved thereon is considered satisfactory given the sampling technique and data collection methodology (LaRose & Tsai, 2014; Nulty, 2008).

7.3 Preliminary Data Screening

Before conducting the main analysis of the data, preliminary screening was carried out to clean the data for subsequent analysis. Firstly, data was analysed for bias generated from or as a result of data collection process including non-response bias, missing values and outliers (Field, 2017; Giles, 2002).

7.3.1 Analysis of Non-Response Bias, Missing Values and Outliers

Following the recommendations of Clottey and Grawe (2014) that 'late respondents are most similar to non-respondents because their replies required more prodding and took the longest time' (p. 413), we compared the group means of the early and the late respondents. As data collection process started in the first week of December 2017 and continued towards the end of February 2018, the responses were categorised as 'early' and 'late' based on the midpoint of this time period i.e. 15 January 2018. Data was recorded in SPSS accordingly – early respondents entered first followed by late respondents. As the data collection process was slow initially and picked up pace at the later stages, 579 responses were recorded until 15th of January, hence these were classified as early respondents while the remaining 793 were categorised as late respondents. The mean test of both groups was conducted on 32 important items from the Study 2 questionnaire. These survey items included five items of ESCCB-conservation, three items of ESCCB-purchase, four items of ESCCB, 11 items of personal norms, and nine items of subjective norms. These items were considered important for the sake of non-response bias assessment because, (1) the items of ESCCB-conservation, ESCCB-purchase and ESCCB are common across both theories i.e. TPB and VBN, underpinning the base of this study and, (2) the items of subjective norms and personal norms are key constructs for the integration of TPB with VBN, which is one of the core contributions of this thesis. The ANOVA statistical test that compared early respondents with late respondents revealed that there was no significant difference between the early and the late respondents in terms of these items, thus confirming that non-response bias does not pose any serious threat to the validity of results of this study. The results of the ANOVA tests for early and late respondents are summarised in Appendix XI: Test of Non-Response Bias – Study 2.

Analysis of missing values is an important concern in quantitative studies based on survey methods. Analysis of missing values and adoption of appropriate technique for

estimation of missing responses, or any other suitable decision about missing values, help to reduce complexities arising out of missing data at the later stages when main analysis is employed (Giles, 2002). Missing value analysis using SPSS v. 25.0 highlighted that there were no missing values in any of the constructs, or items of any constructs. This was not surprising for the reason that the data collection method was driven by personal contact by the research assistants with the respondents, which led to more assistance available while the subjects were responding to the survey, hence, eliminating non-responses. In addition, the responses with significant missing values had already been removed from the portfolio of completed inventory at the first stage, eliminating potential problems in later data analysis.

Outliers are scores that appear different and dissimilar from the other data in the total dataset or in the dataset of constructs (Field, 2017). As outliers are known to cause serious bias in estimates, various tests were conducted to identify the outliers in the data. Using boxplots and z-scores, it was found that the data were free of extreme values, hence, appropriate to proceed with subsequent main analysis.

7.4 Descriptive Statistics

In response to a variety of questions asked in the survey, results showed that 63.6% of respondents were in the age bracket of 19-26 years, which is a young sample. The other major age categories were >26-33 years (18.7%) and >33-40 years (11.4%). The sample is thus skewed towards a young consumers' base. Response to additional questions showed that there was almost an equal gender split in the sample (male: 55.7% vs female: 44.3%). Income-wise, the majority of the respondents (39.2%) belonged to an income bracket of 45000-55000 (Pakistan Rupee). The other major income category was 65000-75000 (16.9%) and >105000 (12.0%). The respondents were also asked about whether they currently own a personal car or not and the results showed that the majority were in possession of a car (62.1%). In terms of marital status, the majority of the respondents were single (70.4%). With respect to occupation a clear majority was 'private job holder' (51.2%) followed by 'government job holders' (22.6%), 'businessmen' (13.1%) and 'landlord' (11.7%). Finally, the results showed that the respondents in the sample were fairly educated as majority held a Master's degree (46.8%) followed by a 'professional degree' holders (27.1%) and Bachelor's degree (11.8%). A comparison between the profile of respondents of Study 1, presented in Table 5.3: Demographic

Statistics of the Respondents – Main Study, and Study 2, presented in Table 7.1: Demographic distribution of the respondents (*n*=1372) shows that the respondents' profiles of the both studies (Study 1 and 2) correspond to each other. For instance, the sample was represented largely by the young respondents in Study 1 (19-33: 61%) and the similar trend is evident in the sample of Study as well. Although the sample of Study 1 was overly represented by male respondents (70.3%), an equal gender mix is evident in Study 2. The characteristics relating to income showed an even closer resemblance. In Study 1, majority of the respondents (38.2 per cent) belonged to the first income category, i.e., PKR 45000-55000, whereas in Study 2 this ratio was 39.2 per cent. Similarly, education wise the sample of Study 1 mainly consisted of Master's degree holders (32.8 per cent) which is similar to sample characteristics of Study 2 (46.8 per cent). The sample characteristics of both studies correspond to overall population characteristics in terms of age (0-24 years: 52.50 per cent), gender (1.06 males/female) and income (per capita income 58,500 per month) (CIA, 2017). While the statistics related to education are very different when the sample is compared with overall population characteristics, it is plausible as the data was collected from cities that have higher literacy rates than more rural areas.

Table 7.1: Demographic distribution of the respondents (*n*=1372)

Variable	Category	Distribution	
		Frequency	*Percentage*
Age	19-26	872	63.6
	>26-33	256	18.7
	>33-40	156	11.4
	>40-47	12	0.9
	>47-54	44	3.2
	>54-61	24	1.7
	>61	8	0.6
Gender	Male	764	55.7
	Female	608	44.3
Income*	45000-55000	538	39.2
	>55000-65000	130	9.5
	>65000-75000	232	16.9
	>75000-85000	94	6.9
	>85000-95000	114	8.3
	>95000-105000	100	7.3
	>105000	164	12.0
Car possession	Yes, have a car	852	62.1
	No, don't have a car	520	37.9
Marital Status	Single	966	70.4
	Married	372	27.1

	Divorced	28	2.0
	Widowed	6	0.4
Occupation	Landlord	160	11.7
	Businessman	180	13.1
	Private Job	702	51.2
	Government Job	310	22.6
	Armed Forces	20	1.5
Education	< High School	22	1.5
	High School	66	4.8
	Bachelor's Degree	162	11.8
	Master's Degree	642	46.8
	MBBS and BDS	372	27.1
	DVM	36	2.6
	BE	6	0.4
	Others	66	4.8

Notes: * Income is in Pakistan Rupee (PKR); MBBS = Bachelor of medicine and Bachelor or surgery; BDS = Bachelor of dental surgery;' DVM = doctor of Veterinary Medicine; BE = Bachelor of engineering

7.5 Results of Theoretical Model – Theory of Planned Behaviour

Testing of the first theoretical model based on TPB followed the technique explained in section 6.8 Data Analysis - PLS SEM. The analytical process in theory testing begins with verification of measurement model and establishing the validity of the theoretical constructs, followed by structural model analyses. The adapted theoretical model of TPB for ESCCBs is presented in Figure 3.3: Theoretical Model of the Study, which shows the constructs and their interrelationship in a schematic representation. The following sections discuss the results of measurement and the structural model.

7.5.1 Measurement Model Properties

Measurement model validation is vital for the estimates of a structural model to be realistic and applicable. Measurement model assessment involves testing reliability and validity of constructs of the theoretical model. Assessment of measurement model starts with an analysis of the structure of constructs and their underlying dimensions, commonly done through the factor analytic approach (Costello & Osborne, 2005).

7.5.2 Principal Components Analysis (PCA)

To many researchers, the purpose of both EFA and PCA are the same with minor variations, however, various simulation-based studies have proven that PCA and EFA result in almost similar kind of results and can be interchangeably used (Field, 2017). PCA was conducted using the Varimax method of rotation with a major aim of reducing

the number of items to a manageable size, confirm the structure of latent constructs, their underlying dimensions and respective observed variables in which dimension are manifested (Yong & Pearce, 2013). Varimax rotation as a choice of rotation method is logical as the constructs that were subjected to PCA were all unique in their concept and nature – even the latent dimensions of the same construct had unique theoretical nuances, which rationalises the use of the orthogonal class of rotation (Costello & Osborne, 2005; Giles, 2002).

The results of PCA were examined based on several criteria (Costello & Osborne, 2005; Field, 2017; Giles, 2002; Kaiser, 1974). Firstly, suitability of the data for conducting factor analysis was judged by examining the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test for sufficient inter-item correlations. Secondly, shared variance produced by items was assessed by examining communalities. Thirdly, the number of components extracted based on root mean or Kaiser's criterion (Eigen values) and overall variance produced by the factors was examined. Finally, the decision about structure of constructs and retaining or deleting a particular item was made on the basis of factor loading and cross loadings.

The literature suggests that a KMO value of 0.5 or higher indicates the sample size is adequate to enable a factor analysis to be conducted (Adachi, 2016; Kaiser, 1960). The second criteria indicating sufficient inter-item correlations (but no multicollinearity) is reflected through significance test of Bartlett's test – significant value of Bartlett's test ($p < 0.05$) 'indicates that original correlation matrix is an identity matrix' (Field, 2017, p. 810). The results reported in Table 7.2: Measurement properties of TPB model, verify sampling adequacy for the analysis (KMO = 0.916), termed 'marvellous' (showing lowest proportion of common variance generated by the items) according to Kaiser and Rice (1974), and that inter-relationship of items is satisfactory (Bartlett's test: $\chi^2 = 49959.125$, df = 2080, $p < 0.05$). Results further showed that the communalities of items ranged between 0.513-0.785, which show satisfactory levels of shared variance explained by each item (Kaiser, 1960). To determine the number of components extracted, Eigen values were examined and factors with Eigen value of 1 or above were retained. Consequently, 16 factors were extracted explaining an overall 66.977% variance that is greater than the minimum criteria i.e. > 50%, hence, acceptable (Beavers et al., 2013). Individual variance explained by each factor ranged between 3.11-6.90 per cent, which shows that all factors contributed significantly to the total variance and that the possibility

of any single factor dominating the total explained variance (or common method variance) can be ruled out (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Subsequent analysis involved examination of individual items for their factor loading and cross loadings. Items with factor leading of lower than 0.40 were straight away removed from the analysis. The iterative process involved examining the items based on the criteria of factor scores to be greater than 0.40 and the difference between cross loadings to be less than 0.20 (Hair, 2010). The procedure resulted in the elimination of several items until a clean structure was obtained. To make sense of the factors, the naming process followed the theoretical basis of constructs and the factor structure was accordingly set. The description of resulting items after PCA is given in Table 7.3.

Table 7.2: Measurement properties of TPB model

Construct	Items	Comm.	λ	% variance	AVEs	√AVEs	CR	α
1. Environmental Knowledge	ENNKNWLG1	0.563	0.598	5.783	0.552	0.743	0.880	0.837
	ENNKNWLG3	0.558	0.617					
	ENNKNWLG5	0.611	0.652					
	ENNKNWLG6	0.674	0.759					
	ENNKNWLG7	0.683	0.767					
	ENNKNWLG8	0.660	0.742					
2. Lifestyle health	GLSHED1	0.663	0.711	3.378	0.697	0.835	0.873	0.782
	GLSHED2	0.766	0.752					
	GLSHED3	0.750	0.740					
3. Lifestyle-GhG emissions	GLSGHG1	0.654	0.692	3.113	0.620	0.787	0.830	0.696
	GLSGHG2	0.605	0.632					
	GLSGHG3	0.637	0.732					
4. Behavioural Beliefs	BhBl1	0.674	0.723	4.358	0.661	0.813	0.886	0.829
	BhBl2	0.680	0.723					
	BhBl4	0.723	0.674					
	BhBl5	0.665	0.702					
5. Normative Injunctive Beliefs	NrInBl1	0.664	0.713	3.274	0.660	0.812	0.854	0.744
	NrInBl2	0.619	0.551					
	NrInBl3	0.725	0.752					
6. Normative Descriptive Beliefs	NrDBl1	0.672	0.433	3.928	0.612	0.782	0.887	0.841
	NrDBl2	0.704	0.509					
	NrDBl3	0.641	0.597					
	NrDBl4	0.632	0.637					
	NrDBl5	0.608	0.597					
7. Control Beliefs	CntlBl1	0.644	0.680	3.599	0.703	0.838	0.876	0.788
	CntlBl2	0.754	0.758					
	CntlBl4	0.595	0.613					
8. Attitude towards Behaviour	AttoBeh3	0.579	0.615	3.811	0.580	0.761	0.846	0.758
	AttoBeh4	0.637	0.658					
	AttoBeh5	0.639	0.707					
	AttoBeh6	0.641	0.700					
9. Subjective Injunctive Norms	SbInNr1	0.643	0.584	4.441	0.591	0.769	0.878	0.826
	SbInNr2	0.752	0.741					
	SbInNr3	0.621	0.552					

		λ	Comm.		AVE	√AVEs	CR	
	SbInNr5	0.585	0.652					
	SbInNr6	0.563	0.494					
10. Subjective Descriptive Norms	SbDNr1	0.660	0.601	3.738	0.590	0.768	0.851	0.765
	SbDNr2	0.664	0.646					
	SbDNr3	0.646	0.608					
	SbDNr4	0.619	0.632					
11. Perceived Behavioural Control	PBC3	0.643	0.562	4.106	0.660	0.812	0.886	0.829
	PBC4	0.679	0.630					
	PBC5	0.751	0.770					
	PBC6	0.759	0.777					
12. ESCCB - Purchase	ESCBPInt1	0.785	0.840	3.875	0.753	0.868	0.901	0.837
	ESCBPInt2	0.753	0.823					
	ESCBPInt3	0.762	0.814					
13. ESCCB - Conservation	ESCBCInt1	0.766	0.721	4.210	0.692	0.832	0.899	0.849
	ESCBCInt2	0.795	0.765					
	ESCBCInt3	0.710	0.640					
	ESCBUInt1	0.513	0.478					
14. Actual Behavioural Control	AcBhCntl1	0.641	0.654	4.346	0.652	0.807	0.882	0.820
	AcBhCntl2	0.686	0.693					
	AcBhCntl3	0.763	0.786					
	AcBhCntl4	0.676	0.716					
15. Eco-Socially Conscious Consumer Behaviour	ESCCBA1	0.669	0.698	4.116	0.628	0.792	0.871	0.801
	ESCCBA2	0.733	0.763					
	ESCCBA3	0.553	0.561					
	ESCCBA6	0.685	0.739					
16. Religiosity	Rlgsty1	0.525	0.554	6.900	0.632	0.795	0.910	0.881
	Rlgsty2	0.699	0.704					
	Rlgsty4	0.784	0.809					
	Rlgsty6	0.744	0.766					
	Rlgsty7	0.701	0.756					
	Rlgsty8	0.689	0.742					
Kaiser-Meyer-Olkin (KMO) value					0.916			
Bartlett's test					0.000			
Total percentage variance explained					66.977			

Note: Principal component analysis conducted with Varimax rotation; Comm. = communalities; λ: factor loadings; AVE = average variance explained; √AVEs = square root of AVEs; CR = composite reliabilities; ESCCB = Eco-socially Conscious Consumers' Behavioural Intentions

7.5.3 Validity of Measures

The primary concern after establishing constructs' structure is to authenticate whether the new structure is valid and reliable. There are two major validity concerns for adapted measures: convergent and discriminant validity. The explanation on convergent and discriminant validity is given in section 5.2.5.7: Convergent and discriminant validity , of this thesis. The following sections discuss the results of convergent and discriminant validity of constructs of extended TPB model. The model specification was done using PLS-SEM technique by utilising SmartPLS 3.2.5 program, as explained in section 6.8: Data Analysis - PLS SEM, of this thesis.

Firstly, the TPB model was specified without including the background factors that are included in the latest iteration of this model (refer to Figure 7.1). The model was estimated using reflective-reflective measurement. Reflective-reflective specification features a flow of causality from higher-order constructs (hierarchical constructs) to lower order constructs (first-order constructs) and from lower order constructs to observed items (variables). This kind of specification of constructs of TPB has been widely conceptualised and utilised in various behavioural contexts in literature (see for example, Dewberry & Jackson, 2018; Gao, Wang, Li, & Li, 2017; Ma, Hipel, Hanson, Cai, & Liu, 2018). After estimation of the first model (i.e. without background factors), another model was specified including the background factors (Figure 7.2) with the same measurement specifications as in first model. The estimates of convergent and discriminant validity reported in succeeding sections were taken from the second model as it reported the estimates on all 16 factors retrieved as a result of PCA.

7.5.3.1 Convergent Validity

Convergent validity can be assessed by three different criteria: First, by observing the factor weight – if factor weight is 0.5 or greater, convergent validity is considered to be established (Wixom & Watson, 2001); Second, by examining composite reliability (CR) – if CR is 0.7 or greater, convergent validity is not an issue (Burns et al., 2016; Nunnally, 1978b). Third, by calculating average variance explained (AVE) by the factor – if AVE is 0.5 or greater the convergent validity is confirmed (Fornell & Larcker, 1981). Estimates reported in Table 7.2 show that the loadings of the items range between 0.509-0.840, AVEs between 0.552-0.753, and CRs between 0.830-0.910, hence, all there criteria of satisfactory convergent validity ($\lambda > 0.5$, AVEs > 0.5 and CR > 0.7) are met.

Table 7.3: Description of the measurement instrument of TPB

Constructs	Subscale	Items	Description of items
1. Environmental Knowledge	-	ENNKNWLG1	Personal cars pollute the environment for each mile driven
		ENNKNWLG3	Personal cars are source of gases that many scientists believe are warming Earth's climate
		ENNKNWLG5	Exhaust from cars create air pollution
		ENNKNWLG6	Personal cars are source of noise pollution
		ENNKNWLG7	Exhaust from personal cars are important source of smog
		ENNKNWLG8	Exhaust from personal cars are an important source of pollution that cause asthma

2. Life Style	Lifestyle - Health and Development	GLSHED1	I participate in fun runs, tree planting projects and other eco-friendly activities in the community
		GLSHED2	I plant trees, flowers or other plants in my backyard
		GLSHED3	I decorate my house with short plants
	Lifestyle - GhG Emissions	GLSGHG1	I perform regular vehicle (car) maintenance to check its gas emission
		GLSGHG2	I usually combine errands when going out to save time and reduce gas emission
		GLSGHG3	I turn off my vehicle if I expect to be idle for more than a minute
3. Behavioural Beliefs	-	BhBl1	My selecting a car with high rear axle ration will help reduce negative impacts of personal cars on environment
		BhBl2	If I avoid using radial tires, it will help conserve fuel
		BhBl4	If I buy electric vehicles, it will help me protect environment from car exhausts
		BhBl5	If I reduce personal car use, it will help conserve fuel
4. Normative Beliefs	Normative Injunctive Beliefs	NrInBl1	When it comes to buying a car, I want to choose one which I believe most people who are important to me think I should choose
		NrInBl2	I want to choose mode of transportation which I believe most people who are important to me think I should choose
		NrInBl3	When it comes to fuel economic ways of driving a car, I want to follow what I believe people important to me think I should do
	Normative Descriptive Beliefs	NrDBl1	I believe that people who are important to me are planning to engage in activities for environmental protection
		NrDBl2	I believe that people who are important to me are planning to adopt practice that help conservation of resources for environmental reasons
		NrDBl3	I believe that people who are important to me are planning to reduce use of personal car for environmental reasons
		NrDBl4	I believe that people who are important to me are inclined to drive ethically in a way that is good for fuel economy
		NrDBl5	I believe that people who are important to me are planning to use electric vehicle for environment
5. Control Beliefs	-	CntlBl1	I believe have enough options to select from in electric car categories while I choose to buy one
		CntlBl2	I believe I have public transportation options available if I consider to use

		CntlBl4	I believe I have ways to reduce the use of personal car for environmental reasons
6. Attitude towards Behaviour	-	AttoBeh3	For me using public transport instead of personal car is rational
		AttoBeh4	For me using public transport instead of personal car is a wise decision
		AttoBeh5	For me carpooling instead of using personal car is rational
		AttoBeh6	For me carpooling instead of using personal car is a wise decision
7. Subjective Norms	Subjective Injunctive Norms	SbInNr1	People who are important to me will support me when I drive environment-friendly car
		SbInNr2	People who are important to me try to convince me to drive and environment-friendly car
		SbInNr3	Most people who are important to me think I should buy an environment-friendly car
		SbInNr5	People whose opinion I value would prefer me to do carpooling whenever possible for commuting
		SbInNr6	Many of the people that are important to me insinuated that I should consider environmental protection while buying a car
	Subjective Descriptive Norms	SbDNr1	Most of the people that are important to me own environment-friendly cars
		SbDNr2	I believe that most of the people that are important to me are considering buying environmentally friendly car
		SbDNr3	Most of the people that are important to me do carpooling for commuting
		SbDNr4	Most of the people that are important to me prefer using public transport for commuting instead of personal cars
8. Perceived Behavioural Control	-	PBC3	It was mostly up to me whether I would prefer public transport instead of personal car for commuting
		PBC4	It was mostly up to me whether I would do carpooling for commuting
		PBC5	If I wanted, I could use public transport for commuting
		PBC6	If I wanted, I could do carpooling for commuting
9. ESCCB	ESCCB - Purchase	ESCBPInt1	I would buy an electric vehicle even if its quality is lower than a conventional car
		ESCBPInt2	I would buy an electric vehicle even if its performance is lower than a conventional car
		ESCBPInt3	I would buy an electric vehicle even if it has a less appealing design
	ESCCB - Conservation	ESCBCInt1	I select a car with a high rear axle ration for that produces least friction and saves energy

		ESCBCInt2	I avoid using wide thread tires for that cause road friction and consume more fuel
		ESCBCInt3	I consider using radial tires for that help to preserve fuel resource
		ESCBUInt1	If I have multiple car choices available, given all other factors same, I choose the one with better environmental performance
10. Actual Behavioural Control	-	AcBhCntl1	I have time, resources and opportunity to buy an environment-friendly car
		AcBhCntl2	I have opportunity to use public transport for commuting
		AcBhCntl3	I have opportunity to do carpooling for commuting
		AcBhCntl4	I have availability of environmentally friendly cars in the town to choose from
11. ESCCB	-	ESCCBA1	The environmental performance of the car I currently hold is satisfactory
		ESCCBA2	In selecting my car (the most recent you purchased), I considered the element of friction in its design
		ESCCBA3	In selecting tyres for my car (the most recent you purchased), I avoided wide threads to avoid extra road friction and fuel consumption
		ESCCBA6	During my last car purchase, I considered the option of electric vehicle
12. Religiosity	-	Rlgsty1	My faith involves all of my life
		Rlgsty2	In my life, I experience the presence of the Divine (i.e., God)
		Rlgsty4	Nothing is as important to me as serving God as best as I know how
		Rlgsty6	My religious beliefs are what really lie behind my whole approach to life
		Rlgsty7	I try hard to carry my religion over into all my other dealings in life
		Rlgsty8	One should seek God's guidance when making every important decision

7.5.3.2 *Discriminant Validity*

Discriminant validity was tested using the heterotrait-monotrait (HTMT) ratio between the constructs (Henseler et al., 2015). The details of this technique and the traditional criteria suggested by Fornell and Larcker (1981), are given in section 5.2.5.7: Convergent and discriminant validity, of this thesis. As the literature suggests the use of HTMT instead of traditional criteria of comparison of squared AVEs with correlations of constructs (for details see, Hamid, Sami, & Sidek, 2017; Henseler et al., 2015; Valaei & Jiroudi, 2016), the HTMT ratio between the constructs and the estimates was calculated and showed that HTMT ratio between the constructs were in the range of 0.127-0.704,

which is far below the most stringent criteria i.e. HTMT < 0.85 (Henseler et al., 2015). HTMT ratio between the construct along with the confidence intervals (CI) for the estimates are summarised in Table 7.4.

7.5.4 Reliability of the Measures

Reliability of the measures is an important facet of a measurement model. An explanation of reliability is provided in section 6.7.1: Reliability of this thesis. Based on criteria suggested by Nunnally (1978b), the Cronbach's alpha values (α) were examined and are reported in Table 7.2. It was found that the alpha values range between 0.696-0.881. Although the alpha value of the construct 'lifestyle greenhouse gas emissions' is below the standard criteria i.e. 0.7, the difference is very meagre and can be ignored on the grounds that the alpha score is often underestimated in SmartPLS (Hair et al., 2016; Lance, Butts, & Michels, 2006), and it is better to use CR values. The analysis of CR related to the aforesaid construct verified its reliability (CR = 0.830).

Table 7.4: Discriminant validity of constructs using HTMT85

Variables	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A. EK																
B. LSH	**0.468** (0.399, 0.532)															
C. LSG	**0.473** (0.401, 0.535)	**0.522** (0.449, 0.592)														
D. BB	**0.441** (0.378, 0.506)	**0.481** (0.422, 0.540)	**0.431** (0.346, 0.501)													
E. NIB	**0.424** (0.356, 0.488)	**0.493** (0.424, 0.554)	**0.497** (0.419, 0.569)	**0.459** (0.389, 0.529)												
F. NDB	**0.572** (0.506, 0.635)	**0.490** (0.429, 0.545)	**0.394** (0.321, 0.461)	**0.667** (0.609, 0.719)	**0.551** (0.490, 0.607)											
G. CB	**0.331** (0.263, 0.398)	**0.407** (0.341, 0.474)	**0.370** (0.301, 0.437)	**0.530** (0.459, 0.593)	**0.531** (0.460, 0.593)	**0.449** (0.384, 0.513)										
H. ATB	**0.431** (0.361, 0.489)	**0.314** (0.240, 0.389)	**0.344** (0.276, 0.406)	**0.489** (0.424, 0.553)	**0.477** (0.408, 0.537)	**0.578** (0.522, 0.631)	**0.450** (0.370, 0.522)									
I. SIN	**0.506** (0.446, 0.568)	**0.613** (0.554, 0.675)	**0.652** (0.590, 0.717)	**0.582** (0.516, 0.647)	**0.725** (0.668, 0.775)	**0.626** (0.575, 0.672)	**0.566** (0.509, 0.621)	**0.491** (0.429, 0.546)								
J. SDN	**0.221** (0.161, 0.293)	**0.414** (0.347, 0.485)	**0.381** (0.212, 0.448)	**0.443** (0.369, 0.513)	**0.517** (0.442, 0.585)	**0.535** (0.465, 0.607)	**0.629** (0.575, 0.683)	**0.499** (0.420, 0.578)	**0.600** (0.544, 0.653)							
K. PBC	**0.414** (0.347, 0.479)	**0.445** (0.383, 0.506)	**0.423** (0.358, 0.494)	**0.483** (0.405, 0.550)	**0.531** (0.463, 0.595)	**0.591** (0.523, 0.651)	**0.539** (0.483, 0.599)	**0.573** (0.509, 0.636)	**0.586** (0.532, 0.634)	**0.620** (0.555, 0.680)						

174

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
L. ESCCBP	**0.193** (0.137, 0.256)	**0.127** (0.087, 0.175)	**0.235** (0.160, 0.305)	**0.162** (0.094, 0.230)	**0.289** (0.224, 0.360)	**0.225** (0.168, 0.286)	**0.258** (0.190, 0.320)	**0.262** (0.190, 0.333)	**0.251** (0.189, 0.316)	**0.407** (0.337, 0.476)	**0.264** (0.190, 0.333)				
M. ESCCBC	**0.401** (0.335, 0.467)	**0.391** (0.322, 0.454)	**0.396** (0.332, 0.463)	**0.564** (0.499, 0.631)	**0.619** (0.558, 0.678)	**0.675** (0.627, 0.720)	**0.634** (0.582, 0.684)	**0.594** (0.533, 0.651)	**0.670** (0.620, 0.721)	**0.638** (0.587, 0.690)	**0.618** (0.568, 0.669)	**0.299** (0.237, 0.359)			
N. ABC	**0.241** (0.177, 0.303)	**0.367** (0.296, 0.433)	**0.268** (0.193, 0.339)	**0.351** (0.278, 0.419)	**0.446** (0.381, 0.507)	**0.430** (0.365, 0.494)	0.469 (0.398, 0.530)	**0.494** (0.430, 0.562)	**0.483** (0.417, 0.541)	**0.575** (0.506, 0631)	**0.553** (0.494, 0.607)	**0.397** (0.336, 0.453)	**0.581** (0.522, 0.640)		
O. ESCCB	**0.320** (0.257, 0.379)	**0.370** (0.311, 0.428)	**0.477** (0.410, 0.542)	**0.423** (0.351, 0.497)	**0.472** (0.407, 0.530)	**0.411** (0.349, 0.469)	**0.456** (0.394, 0.521)	**0.527** (0.460, 0.590)	**0.511** (0.451, 0.564)	**0.607** (0.545, 0.663)	**0.550** (0.492, 0.604)	**0.388** (0.317, 0.460)	**0.537** (0.471, 0.600)	**0.571** (0.507, 0.635)	
P. Relg.	**0.440** (0.378, 0.500)	**0.423** (0.364, 0.479)	**0.357** (0.290, 0.426)	**0.490** (0.423, 0.548)	**0.492** (0.423, 0.546)	**0.704** (0.656, 0.748)	**0.400** (0.344, 0.453)	**0.483** (0.422, 0.540)	**0.518** (0.460, 0.570)	**0.458** (0.395, 0.518)	**0.477** (0.416, 0.529)	**0.234** (0.170, 0.291)	**0.520** (0.456, 0.580)	**0.398** (0.336, 0.461)	**0.414** (0.353, 0.470)

Note: EK = environmental knowledge; LSH = lifestyle health; LSG = lifestyle greenhouse emissions; BB = behavioural beliefs; NIB = normative injunctive beliefs; NDB = normative descriptive beliefs; CB = control beliefs; ATB = attitude towards behaviour; SIN = subjective injunctive norms; SDN = subjective descriptive norms; PBC = perceived behavioural control; ESCCBP = Eco-socially Conscious Consumers' Behavioural Intentions – Purchase; ESCCBC = Eco-socially Conscious Consumers' Behavioural Intentions – Conservation; ABC = actual behavioural control; ESCCB = Eco-socially Conscious Consumers' Behavioural Intentions; Relg. = religiosity; HTMT = heterotrait-monotrait ratio of correlations; values in bold are HTMT ratio between constructs; values in parenthesis are confidence intervals (CI_{85}) of HTMT ratio.

7.6　Structural Model Analysis and Hypothesis Testing

After establishing the measurement model validity, the next important step is to test the paths hypothesised in the theoretical model. The findings of the structural model analysis are arranged in two major sections: 7.6.1: TPB Model without Background Factors, and 7.6.2: TPB Model with Background Factors. Findings of each model, and sub models, are provided in succeeding sections.

7.6.1　TPB Model without Background Factors

There is an abundance of research reported in literature that provides results of core constructs of the TPB model (Adnan, Nordin, & bin Abu Bakar, 2017; Chen, 2016; Jiang et al., 2017). For comparison on the level of core constructs, the TPB model was first analysed without background factors. Results of direct and indirect effects are reported in the following sections.

7.6.1.1　Estimates of Direct Effects

Results reported in Table 7.5: Direct effects model of TPB-without background factors, reveal that behavioural, injunctive, descriptive and control beliefs are positively associated with their respective constructs including attitudes towards behaviour, injunctive norms, descriptive norms and perceived behavioural control (β behavioural beliefs = 0.261, t = 8.865; β injunctive beliefs = 0.0.575, t = 26.772; βdescriptive beliefs = 0.437, t = 15.141; βcontrol beliefs = 0. 307, t = 10.878). It evident that injunctive beliefs have the strongest association with injunctive norms followed by the relationship of descriptive beliefs and descriptive norms, control beliefs and perceived behavioural control, and lastly, behavioural beliefs and perceived behavioural control. Subsequent analysis showed that attitude towards behaviour is positively associated with both ESCCB-purchase (β = 0. 081, t = 2.399) and ESCCB-conservation (β = 0. 201, t = 8.172), but the relationship is much stronger between attitude towards behaviour and ESCCB-conservation than between attitude towards behaviour and ESCCB-purchase. Similarly, the relationship of subjective descriptive norms with ESCCB-purchase (β = 0.275, t = 7.942) and ESCCB-conservation (β = 0.208, t = 7.316) is also positive and statistically significant. Surprisingly, however, the relationship of subjective descriptive norms with ESCCB-purchase is stronger than the relationship of subjective descriptive norms with ESCCB-conservation. Contrary to the results of subjective descriptive norms, results revealed that the relationship of subjective injunctive norms is significant with ESCCB-conservation

($\beta = 0.293$, $t = 9.913$) but not with ESCCB-purchase ($\beta = 0.032$, $t = 0.990$). Somehow, similar results are obtained about the relationship of perceived behavioural control with ESCCB-conservation ($\beta = 0.182$, $t = 6.308$) and ESCCB-purchase ($\beta = 0.025$, $t = 0.668$). Furthermore, the results showed that ESCCB-purchase, ESCCB-conservation and perceived behavioural control are positively associated with eco-socially conscious behaviour (ESCCB-purchase: $\beta = 0.147$, $t = 5.151$; ESCCB-conservation: $\beta = 0.264$, $t = 7.974$; perceived behavioural control: $\beta = 0.294$, $t = 9.553$). Finally, religiosity is found to be positively linked with attitude towards behaviour ($\beta = 0.258$, $t = 8.863$) and actual behavioural control is also positively associated with perceived behavioural control ($\beta = 0.349$, $t = 13.300$).

The result of interactional relationships show that the interaction term of religiosity and behavioural beliefs is negatively associated with attitudes towards behaviour ($\beta = -0.085$, $t = 4.130$). From these results, it can be inferred that religiosity negatively affects the behavioural beliefs linked with environment, therefore, the interaction term of religiosity and behavioural beliefs is linked negatively with attitude towards behaviour.

The interaction of actual behavioural control with ESCCB-conservation (actual behavioural control * ESCCB-conservation) and ESCCB-purchase (actual behavioural control * ESCCB-purchase) was found to have statistically non-significant association with ESCCB ($\beta_{\text{actual behavioural control * ESCCB-conservation}} = 0.026$, $t = 0.975$; $\beta_{\text{actual behavioural control * ESCCB-purchase}} = 0.106$, $t = 1.615$). Likewise, the interaction term of perceived behavioural control with ESCCB-conservation (PBC * ESCCB-conservation) and ESCCB-purchase (PBC * ESCCB-purchase) had also insignificant association with eco-socially conscious consumer behaviour ($\beta_{\text{PBC* ESCCB-conservation}} = 0.008$, $t = 0.792$; $\beta_{\text{PBC* ESCCB-purchase}} = -0.039$, $t = 0.313$).

7.6.1.2 Estimates of Indirect Effects

Estimates of indirect effects were taken from a 'specific indirect effects' model provided by SmartPLS program. The indirect paths and their respective estimates are summarised in Table 7.6. Results show that behavioural beliefs are positively associated with ESCCB-conservation and ESCCB-purchase through attitude towards behaviour, thus, attitude towards behaviour positively mediates the relationship of behavioural beliefs with ESCCB-conservation ($\beta = 0.053$, $p < 0.05$) and ESCCB-purchase ($\beta = 0.022$, $p < 0.05$). Similarly, the indirect relationship of behavioural beliefs with eco-socially

177

conscious consumer behaviour through attitude towards behaviour and ESCCB-conservation ($\beta = 0.014$, $p < 0.05$) and ESCCB-purchase ($\beta = 0.003$, $p < 0.05$) is also positive and statistically significant.

On the other hand, normative injunctive beliefs are positively associated with ESCCB-conservation through injunctive norms ($\beta = 0.169$, $p < 0.05$) and with eco-socially conscious consumer behaviour through injunctive norms and ESCCB-conservation ($\beta = 0.045$, $p < 0.05$). However, association of injunctive beliefs with ESCCB-purchase through injunctive norms ($\beta = 0.019$, $p = 0.325$), and with eco-socially conscious consumer behaviour through injunctive norms and ESCCB-purchase ($\beta = 0.003$, $p = 0.349$) is not statistically significant. Similarly, control beliefs is positively associated with ESCCB-conservation through perceived behavioural control ($\beta = 0.057$, $p < 0.05$) and with eco-socially conscious consumer behaviour through perceived behavioural control and ESCCB-conservation ($\beta = 0.015$, $p < 0.05$). However, the relationship of control beliefs with ESCCB-purchase through perceived behavioural control ($\beta = 0.007$, $p = 0.483$), and with eco-socially conscious consumer behaviour through perceived behavioural control and ESCCB-purchase ($\beta = 0.001$ $p = 0.512$) is statistically non-significant.

Slightly different from the results mentioned above, it was found that descriptive beliefs are positively associated with ESCCB-conservation ($\beta = 0.091$, $p < 0.05$) and ESCCB-purchase ($\beta = 0.121$ $p < 0.05$) through descriptive norms. Similarly, the association of descriptive norms with eco-socially conscious consumer behaviour through descriptive norms and ESCCB-conservation ($\beta = 0.024$, $p < 0.05$), and with eco-socially conscious consumer behaviour through descriptive norms and ESCCB-purchase ($\beta = 0.024$, $p < 0.05$) is also positive and statistically significant. Results of relationships concerning actual behavioural control share the similar pattern. It was found that actual behavioural control is positively associated with ESCCB-conservation through perceived behavioural control ($\beta = 0.065$, $p < 0.05$), and with eco-socially conscious consumer behaviour through perceived behavioural control and ESCCB-conservation ($\beta = 0.017$, $p < 0.05$). However, the relationships of actual behavioural control with ESCCB-purchase through perceived behavioural control ($\beta = 0.009$, $p = 0.495$), and with eco-socially conscious consumer behavioural through perceived behavioural control and ESCCB-purchase ($\beta = 0.001$, $p = 0.524$) are statistically insignificant.

Finally, the results related to the relationships of religiosity show that religiosity is positively associated with ESCCB-conservation ($\beta = 0.052$, $p < 0.05$) and ESCCB-purchase ($\beta = 0.021$, $p < 0.05$) through attitude towards behaviour, and with eco-socially conscious consumer behaviour ($\beta = 0.014$, $p < 0.05$) through attitude towards behaviour and ESCCB-conservation. The relationship of religiosity with eco-socially conscious consumer behaviour through attitude towards behaviour and ESCCB-purchase ($\beta = 0.003$, $p = 0.062$) is, however, not statistically significant. The results of interaction terms of religiosity showed that the interaction term of religiosity with behavioural beliefs (religiosity*behavioural beliefs) was negatively associated with ESCCB-conservation through attitude towards behaviour ($\beta = -0.017$, $p < 0.05$), as well as with eco-socially conscious consumer behaviour through attitude towards behaviour and ESCCB-conservation ($\beta = -0.004$, $p < 0.05$). The relationships of the above-mentioned interaction term with ESCCB-purchase through attitude towards behaviour ($\beta = -0.007$, $p = 0.054$), and eco-socially conscious consumer through attitude towards behaviour and ESCCB-purchase ($\beta = -0.001$, $p = 0.103$) were not statistically significant.

Table 7.5: Direct effects model of TPB-without background factors

Independent Variable (X)	Dependent Variable (Y)	Estimate	t	p	Status
Behavioural Beliefs	Attitude Towards Behaviour	0.261	8.865	0.000	Supported
Normative Injunctive Beliefs	Subjective Injunctive Norms	0.575	26.772	0.000	Supported
Normative Descriptive Beliefs	Subjective Descriptive Norms	0.437	15.141	0.000	Supported
Control Beliefs	Perceived Behavioural Control	0.307	10.878	0.000	Supported
Religiosity	Attitude Towards Behaviour	0.258	8.863	0.000	Supported
Religiosity*Behavioural Beliefs	Attitude towards Behaviour	-0.085	4.130	0.000	Supported
Attitude Towards Behaviour	ESCCB-Purchase	0.081	2.399	0.017	Supported
	ESCCB-Conservation	0.201	8.172	0.000	Supported
Subjective Injunctive Norms	ESCCB-Purchase	0.032	0.990	0.323	NS
	ESCCB-Conservation	0.293	9.913	0.000	Supported
Subjective Descriptive Norms	ESCCB-Purchase	0.275	7.942	0.000	Supported
	ESCCB-Conservation	0`.208	7.316	0.000	Supported
Perceived Behavioural Control	ESCCB-Purchase	0.025	0.668	0.504	NS
	ESCCB-Conservation	0.182	6.308	0.000	Supported
ESCCB - Purchase	Eco-Socially Conscious Consumers' Behaviour	0.147	5.151	0.000	Supported
ESCCB - Conservation	Eco-Socially Conscious Consumers' Behaviour	0.264	7.974	0.000	Supported
Actual Behavioural Control	Perceived Behavioural Control	0.349	13.300	0.000	Supported
Actual Behavioural Control* ESCCB - Conservation	Eco-Socially Conscious Consumers' Behaviour	0.026	0.031	0.975	NS
Actual Behavioural Control* ESCCB - Purchase	Eco-Socially Conscious Consumers' Behaviour	0.106	1.615	0.107	NS
Perceived Behavioural Control	Eco-Socially Conscious Consumers' Behaviour	0.294	9.553	0.000	Supported
PBC* ESCCB - Conservation	Eco-Socially Conscious Consumer Behaviour	0.008	0.264	0.792	NS
PBC* ESCCB - Purchase	Eco-Socially Conscious Consumer Behaviour	-0.039	1.009	0.313	NS

Note: ESCCB = Eco-socially conscious consumers' behavioural intentions; PBC = perceived behavioural control; Hyp. = hypotheses

Table 7.6: Indirect effects model of TPB – without background factors

Relationships	Estimate	p	Status
Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Conservation	0.053	0.000	Supported
Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Conservation -> Eco-Socially Conscious Consumer Behaviour	0.014	0.000	Supported
Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase	0.022	0.017	Supported
Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.003	0.049	Supported

Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation	0.169	0.000	Supported
Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.045	0.000	Supported
Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase	0.019	0.325	NS
Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.003	0.349	NS
Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation	0.091	0.000	Supported
Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.024	0.000	Supported
Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase	0.121	0.000	Supported
Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.018	0.000	Supported
Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation	0.057	0.000	Supported
Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.015	0.000	Supported
Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase	0.007	0.483	NS
Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.001	0.512	NS
Religiosity -> Attitude towards Behaviour -> ESCCB -Conservation	0.052	0.000	Supported
Religiosity -> Attitude towards Behaviour -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.014	0.000	Supported
Religiosity -> Attitude towards Behaviour -> ESCCB-Purchase	0.021	0.023	Supported
Religiosity -> Attitude towards Behaviour -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.003	0.062	NS
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation	-0.017	0.000	Supported
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	-0.004	0.001	Supported
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase	-0.007	0.054	NS
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	-0.001	0.103	NS
Actual Behavioural Control -> Perceived Behavioural Control -> ESCCB -Conservation	0.065	0.000	Supported
Actual Behavioural Control -> Perceived Behavioural Control -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.017	0.000	Supported
Actual Behavioural Control -> Perceived Behavioural Control -> ESCCB-Purchase	0.009	0.495	NS
Actual Behavioural Control -> Perceived Behavioural Control -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.001	0.524	NS

Figure 7.1: Estimated TPB model - without background factors
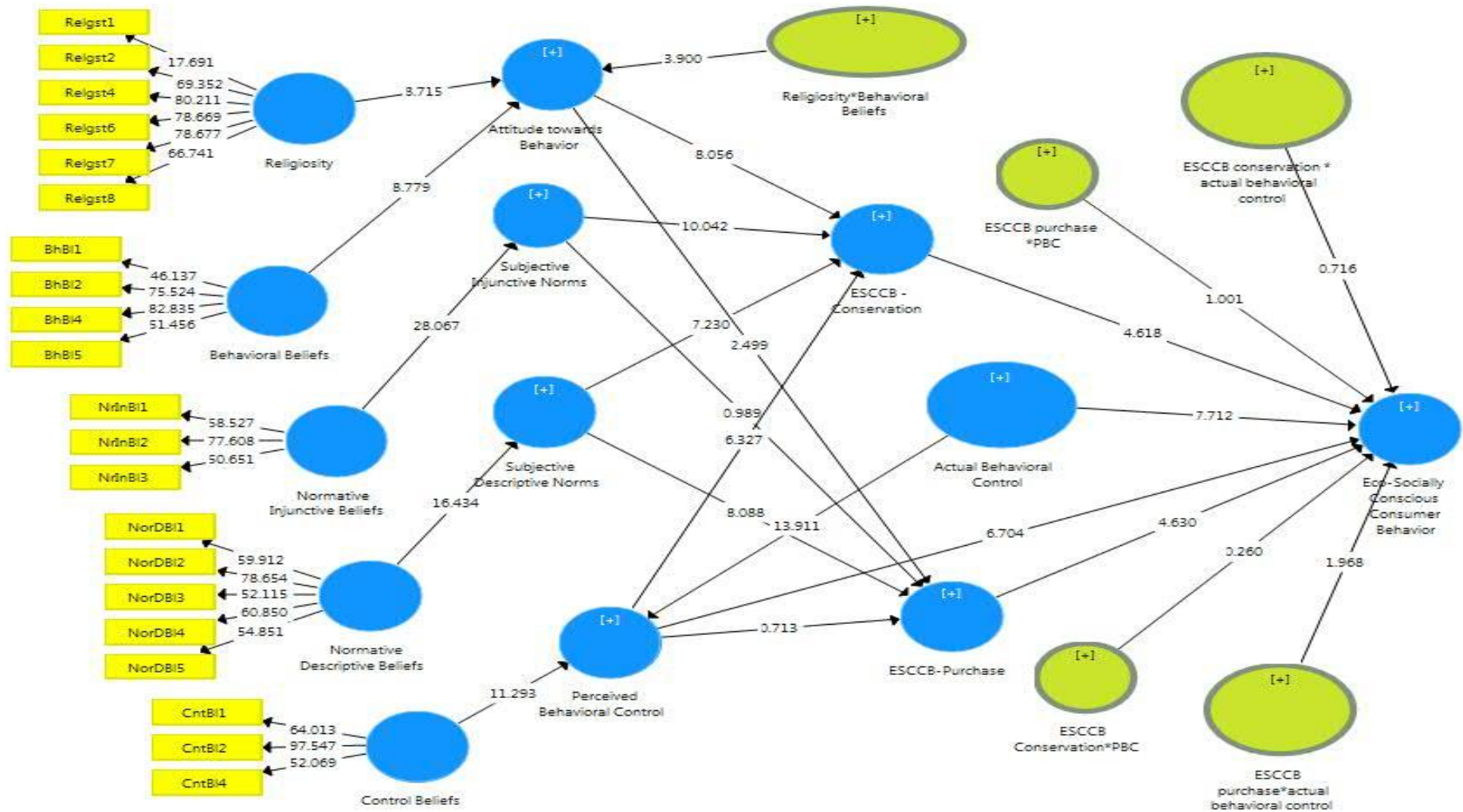
7.6.2 TPB Model with Background Factors

The extended model of theory of planned behaviour suggests that the belief system driving norms, and subsequently targeted behavioural intentions and behaviour, are affected by several background factors. In this study, background factors included environmental knowledge and lifestyle as well as some of the demographic factors including age, income, gender and education. Environmental knowledge and lifestyle are treated as quasi-metric variables in the extended structural model of TPB while the demographic variables are used to conduct multi-group analysis (MGA).

7.6.2.1 Estimates of Direct Effects

Estimates of direct and indirect effects of TPB with background factors are summarised in Table 7.7: Direct and indirect effects model of TPB- with background factors. Results pertinent to direct effects show that environmental knowledge is positively associated with behavioural beliefs ($\beta = 0.218$, $p < 0.05$), control beliefs ($\beta = 0.135$, $p < 0.05$), descriptive beliefs ($\beta = 0.362$, $p < 0.05$), and injunctive beliefs ($\beta = 0.173$, $p < 0.05$). Similarly, lifestyle (GhG emissions) is positively associated with behavioural beliefs ($\beta = 0.160$, $p < 0.05$), control beliefs ($\beta = 0.144$, $p < 0.05$), descriptive beliefs ($\beta = 0.082$, $p < 0.05$), and injunctive beliefs ($\beta = 0.207$, $p < 0.05$). Results further show that lifestyle (health and development) is positively associated with behavioural beliefs ($\beta = 0.251$, $p < 0.05$), control beliefs ($\beta = 0.211$, $p < 0.05$), descriptive beliefs ($\beta = 0.238$, $p < 0.05$), and injunctive beliefs ($\beta = 0.229$, $p < 0.05$).

7.6.2.2 Estimates of Indirect Effects

Specific indirect effects of the background factors (lifestyle-GhG, lifestyle health and development, and environmental knowledge) along with the core constructs of TPB are noted in Table 7.7: Direct and indirect effects model of TPB- with background factors. Results show that all other indirect effects are positive and statistically significant except those involving ESCCB-purchase. To avoid redundancy of results reporting, only those results are reported here that are non-significant. Results show that association of environmental knowledge with ESCCB-purchase is statistically insignificant through control beliefs and perceived behavioural control ($\beta = 0.001$, $p = 0.483$). Similarly, the association of environmental knowledge with ESCCB-purchase through injunctive beliefs and injunctive norms is also statistically non-significant ($\beta = 0.003$, $p = 0.345$). Furthermore, association of environmental knowledge with eco-socially conscious

consumer behaviour through behavioural beliefs, attitude towards behaviour and ESCCB-purchase is non-significant (β = 0.001, p = 0.051). Similarly, link of environmental knowledge with eco-socially conscious consumer behaviour through control beliefs, perceived behavioural control and ESCCB-purchase is also non-significant (β = 0.000, p = 0.471). Similar are the results of environmental knowledge with eco-socially conscious consumer behaviour through injunctive beliefs, injunctive norms and ESCCB-purchase (β = 0.000, p = 0.343).

Lifestyle (GhG emissions) also did not receive statistical support in its indirect relation with ESCCB-purchase through control beliefs and perceived behavioural control (β = 0.001, p = 0.488). Similar are results pertaining to the association of lifestyle (GhG emissions) with ESCCB-purchase through injunctive beliefs and injunctive norms (β = 0.004, p = 0.325). Furthermore, lifestyle (GhG emissions) with eco-socially conscious consumer behaviour through control beliefs, perceived behavioural control and ESCCB-purchase (β = 0.000, p = 0.475). Association of Lifestyle (GhG emissions) with eco-socially conscious consumer behaviour through injunctive beliefs, injunctive norms and ESCCB-purchase also did not receive statistical support (β = 0.000, p = 0.321).

Lifestyle (health and development) also did not receive statistical support in several indirect effects. Relationship of lifestyle (health and development) with ESCCB-purchase through control beliefs and perceived behavioural control is not statistically significant (β = 0.002, p = 0.472). Lifestyle's (health and development) association with ESCCB-purchase through injunctive beliefs and injunctive norms is also not statistically significant (β = 0.004, p = 0.332). Similar are the results related to relationship of lifestyle (health and development) with eco-socially conscious consumer behaviour through control beliefs, perceived behavioural control and ESCCB-purchase (β = 0.000, p = 0.463). Finally, lifestyle (health and development) linked with eco-socially conscious consumer behaviour through injunctive beliefs, injunctive norms and ESCCB-purchase does not receive statistical support (β = 0.001, p = 0.323). The results of significant indirect effects are summarised in Table 7.7: Direct and indirect effects model of TPB-with background factors.

7.6.2.3   Multi-group Analyses (MGA)

- *MGA based on Gender*

MGA related to gender difference showed that there were no significant differences between male and female respondents on various relationships. Results reported in Appendix XII: Multi-group analysis (MGA) based on Gender - Direct effects, show that the relationships between ESCCB-conservation and eco-socially conscious consumer behaviour ($\beta_{male} - \beta_{female} = 0.156, p < 0.05$), ESCCB-purchase and eco-socially conscious consumer behaviour ($\beta_{male} - \beta_{female} = 0.164, p < 0.05$), and between descriptive norms and ESCCB-purchase ($\beta_{male} - \beta_{female} = 0.226, p < 0.05$) are statistically different for the two groups (male and female). However, the difference of indirect paths for male and female groups was more prominent as there were at least seven different relationships in which coefficients for male groups were statistically different from female groups. Results showed that the estimate of total indirect direct effects, from attitude towards behaviour to eco-socially conscious consumer behaviour, were statistically different between male and female groups ($\beta_{male} - \beta_{female} = 0.086, p < 0.05$). Similarly, the coefficients of total indirect effects, from behavioural beliefs to ESCCB-purchase ($\beta_{male} - \beta_{female} = 0.082, p < 0.05$), and behavioural beliefs to eco-socially conscious consumer behaviour ($\beta_{male} - \beta_{female} = 0.022, p < 0.05$), were statistically different between male and female groups. Similar results were found for estimates of total indirect effects pertaining to some other paths as well: descriptive beliefs to ESCCB-purchase ($\beta_{male} - \beta_{female} = 0.087, p < 0.05$), descriptive beliefs to eco-socially conscious consumer behaviour ($\beta_{male} - \beta_{female} = 0.046, p < 0.05$), religiosity to eco-socially conscious consumer behaviour ($\beta_{male} - \beta_{female} = 0.024, p < 0.05$), and descriptive norms to eco-socially conscious consumer behaviour ($\beta_{male} - \beta_{female} = 0.110, p < 0.05$). Estimates of total indirect effects related to MGA based on gender are summarised in Appendix XIII: Multi-group analysis (MGA) based on Gender - Indirect effects.

- *MGA based on Income*

Estimates of direct effects of MGA based on income are summarised in Appendix XIV: Multi-group analysis (MGA) based on Income -Direct effects. Unlike gender, there are more direct effect paths that have statistically different estimates for high, medium and low-income groups.   Results showed that high- and medium-income groups had significantly different estimates on various paths. Results showed that estimates of high-

and medium-income groups were significantly different for the association of: attitudes towards behaviour and ESCCB-conservation (β high income $-$ β medium income $= 0.209$, $p < 0.05$), attitudes towards behaviour and ESCCB-purchase (β high income $-$ β medium income $= 0.333$, $p < 0.05$), behavioural beliefs and attitude towards behaviour (β high income $-$ β medium income $= 0.176$, $p < 0.05$), ESCCB-purchase * PBC and ESCCB (β high income $-$ β medium income $= 0.400$, $p < 0.05$), ESCCB-purchase and ESCCB (β high income $-$ β medium income $= 0.337$, $p < 0.05$), PBC and ESCCB-purchase (β high income $-$ β medium income $= 0.231$, $p < 0.05$), PBC and ESCCB (β high income $-$ β medium income $= 0.316$, $p < 0.05$), and subjective descriptive norms and ESCCB-purchase (β high income $-$ β medium income $= 0.292$, $p < 0.05$).

Similarly, differences between high and low-income groups are also significant for several paths. Difference between the estimates for high and low-income groups was found significantly for following paths: attitude towards behaviour and ESCCB-purchase (β high income $-$ β low income $= 0.231$, $p < 0.05$), ESCCB-purchase * PBC and eco-socially conscious consumer behaviour (β high income $-$ β low income $= 0.388$, $p < 0.05$), ESCCB-purchase and eco-socially conscious consumer behaviour (β high income $-$ β low income $= 0.150$, $p < 0.05$), PBC and ESCCB-conservation (β high income $-$ β low income $= 0.181$, $p < 0.05$), PBC and ESCCB-purchase (β high income $-$ β low income $= 0.277$, $p < 0.05$), and PBC and eco-socially conscious consumer behaviour (β high income $-$ β low income $= 0.150$, $p < 0.05$).

Finally, the difference between low- and medium-income group is quite apparent for several path estimates. Difference between the estimates for low and medium-income groups was found significantly for following paths: attitude towards behaviour and ESCCB-conservation (β low income $-$ β medium income $= 0.175$, $p < 0.05$), ESCCB-conservation*actual behavioural control and eco-socially conscious consumer behaviour (β low income $-$ β medium income $= 0.212$, $p < 0.05$), ESCCB-purchase and eco-socially conscious consumer behaviour (β low income $-$ β medium income $= 0.187$, $p < 0.05$), descriptive beliefs and descriptive norms (β low income $-$ β medium income $= 0.138$, $p < 0.05$), PBC and eco-socially conscious consumer behaviour (β low income $-$ β medium income $= 0.166$, $p < 0.05$), religiosity and attitude towards behaviour (β low income $-$ β medium income $= 0.117$, $p < 0.05$), religiosity*behavioural beliefs and attitude towards behaviour (β low income $-$ β medium income $= 0.104$, $p < 0.05$), and descriptive norms and ESCCB-purchase (β low income $-$ β medium income $= 0.173$, $p < 0.05$).

Next, the estimates of total indirect effects also have statistically significant difference occurring between the three groups. Estimates of indirect effects of MGA

based on income are summarised in Appendix XV: Multi-group analysis (MGA) based on Income -Indirect effects. Results showed that there were statistically significant differences between high and medium income groups on following paths: actual behavioural control and ESCCB-purchase (β high income $-$ β medium income $= 0.077$, $p < 0.05$), actual behavioural control and eco-socially conscious consumer behaviour (β high income $-$ β medium income $= 0.094$, $p < 0.05$), behavioural beliefs and ESCCB-conservation (β high income $-$ β medium income $= 0.078$, $p < 0.05$), behavioural beliefs and ESCCB-purchase (β high income $-$ β medium income $= 0.097$, $p < 0.05$), control beliefs and ESCCB-purchase (β high income $-$ β medium income $= 0.074$, $p < 0.05$), control beliefs and eco-socially conscious consumer behaviour (β high income $-$ β medium income $= 0.074$, $p < 0.05$), and descriptive belief and ESCCB-purchase (β high income $-$ β medium income $= 0.143$, $p < 0.05$).

Similarly, there also exist statistical differences between estimates of high- and low-income groups on several paths. The following paths have statistically estimated difference for high- and low-income groups: actual behavioural control and ESCCB-conservation (β high income $-$ β low income $= 0.061$, $p < 0.05$), actual behavioural control and ESCCB-purchase (β high income $-$ β low income $= 0.092$, $p < 0.05$), actual behavioural control and ESCCB (β high income $-$ β low income $= 0.055$, $p < 0.05$), behavioural beliefs and ESCCB-purchase (β high income $-$ β low income $= 0.078$, $p < 0.05$), control beliefs and ESCCB-conservation (β high income $-$ β low income $= 0.054$, $p < 0.05$), control beliefs and ESCCB-purchase (β high income $-$ β low income $= 0.083$, $p < 0.05$), and control beliefs and ESCCB (β high income $-$ β low income $= 0.049$, $p < 0.05$).

Finally, there also exists statistically significant difference between low and medium income groups for estimates of following paths: attitude towards behaviour and eco-socially conscious consumer behaviour (β low income $-$ β medium income $= 0.049$, $p < 0.05$), behavioural beliefs and ESCCB-conservation (β low income $-$ β medium income $= 0.049$, $p < 0.05$), behavioural beliefs and eco-socially conscious consumer behaviour (β low income $-$ β medium income $= 0.014$, $p < 0.05$), descriptive beliefs and ESCCB-purchase (β low income $-$ β medium income $= 0.090$, $p < 0.05$), injunctive beliefs and eco-socially conscious consumer behaviour (β low income $-$ β medium income $= 0.040$, $p < 0.05$), religiosity and ESCCB-conservation (β low income $-$ β medium income $= 0.073$, $p < 0.05$), and religiosity and eco-socially conscious consumer behaviour (β low income $-$ β medium income $= 0.020$, $p < 0.05$).

- *MGA based on Age*

Estimates of direct effects of MGA based on age are summarised in Appendix XVI: Multi-group analysis (MGA) based on Age - Direct effects. The following paths are found to have statistically significant group difference in their direct effects estimates for young and mature respondent groups: attitude towards behaviour and ESCCB-purchase (β mature respondents $-$ β young respondents $= 0.159$, $p < 0.05$), ESCCB-purchase and eco-socially conscious consumer behaviour (β mature respondents $-$ β young respondents $= 0.197$, $p < 0.05$), ESCCB-purchase*actual behavioural control and eco-scoail conscious consumer behaviour (β mature respondents $-$ β young respondents $= 0.350$, $p < 0.05$), and descriptive norms and ESCCB-purchase (β mature respondents $-$ β young respondents $= 0.359$, $p < 0.05$).

The group differences for total indirect estimates, between mature and young groups, are found for only two paths: religiosity and ESCCB-purchase (β mature respondents $-$ β young respondents $= 0.048$, $p < 0.05$) and descriptive norms and eco-socially conscious consumer behaviour (β mature respondents $-$ β young respondents $= 0.096$, $p < 0.05$). Estimates of total indirect effects of MGA based on age are summarised in Appendix XVII: Multi-group analysis (MGA) based on Age - Indirect effects.

- *MGA based on Education*

The last MGA was conducted for education groups. The respondents were divided in three groups: those holding Bachelor's degree, Master's degree and a Professional degree.

The estimates of direct effects related to MGA based on education are summarised in Appendix XVIII: Multi-group analysis (MGA) based on Education -Direct effects. Results show that Bachelor's and Master's degree holders differ significantly from each other on the following direct path estimates: attitude towards behaviour and ESCCB-purchase (β Bachelor's degree $-$ β Master's degree $= 0.275$, $p < 0.05$), control beliefs and perceived behavioural control (β Bachelor's degree $-$ β Master's degree $= 0.136$, $p < 0.05$), and ESCCB-purchase * actual behavioural control and eco-socially conscious consumer behaviour (β Bachelor's degree $-$ β Master's degree $= 0.214$, $p < 0.05$).

Similarly, differences in estimates are found for direct effects of following paths for Bachelor's degree and professional degree holders: control beliefs and perceived behavioural control (β Bachelor's degree $-$ β Professional degree $= 0.181$, $p < 0.05$), ESCCB-purchase * actual behavioural control and eco-socially conscious consumer behaviour (β Bachelor's

degree $-$ β $_{Professional\ degree}$ = 0.351, $p < 0.05$), perceived behavioural control and ESCCB-conservation (β $_{Bachelor's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.165, $p < 0.05$), and descriptive norms and ESCCB-purchase (β $_{Bachelor's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.248, $p < 0.05$).

Lastly, differences between Master's and Professional degree holders are found for direct effect estimates of three paths: injunctive beliefs and injunctive norms (β $_{Master's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.094, $p < 0.05$), descriptive beliefs and ESCCB-conservation (β $_{Master's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.129, $p < 0.05$), and descriptive beliefs and ESCCB-purchase (β $_{Master's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.137, $p < 0.05$).

The examination of total indirect estimates reported in Appendix XIX: Multi-group analysis (MGA) based on Education -Indirect effects, reveal that there is nearly negligible difference between the three groups in estimates of indirect paths. Results show that Masters and Bachelor's degree holders differ from each other in association of control beliefs and ESCCB-conservation (β $_{Bachelor's\ degree}$ $-$ β $_{Master's\ degree}$ = 0.077, $p < 0.05$) and religiosity and ESCCB-purchase (β $_{Bachelor's\ degree}$ $-$ β $_{Master's\ degree}$ = 0.071, $p < 0.05$). Similarly, Bachelor's and Professional degree holders differ in association between control beliefs and ESCCB-conservation (β $_{Bachelor's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.110, $p < 0.05$) and descriptive beliefs and ESCCB-purchase (β $_{Bachelor's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.098, $p < 0.05$). Finally, Master's and Professional degree holder differ in relationships of descriptive beliefs and ESCCB-conservation (β $_{Master's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.073, $p < 0.05$) and descriptive beliefs and ESCCB-purchase (β $_{Master's\ degree}$ $-$ β $_{Professional\ degree}$ = 0.081, $p < 0.05$).

The description of groups formed for MGA is provided in Appendix XX: Description of groups for multi-group analysis.

Table 7.7: Direct and indirect effects model of TPB- with background factors

Relationships	Est.	*p*	Status
Environmental knowledge -> Behavioural beliefs	0.218	0.000	Supported
Environmental knowledge-> Control beliefs	0.135	0.000	Supported
Environmental knowledge-> Normative descriptive beliefs	0.362	0.000	Supported
Environmental knowledge-> Normative injunctive beliefs	0.173	0.000	Supported
Lifestyle - GhG emissions-> Behavioural beliefs	0.160	0.000	Supported
Lifestyle - GhG emissions-> Control beliefs	0.144	0.000	Supported
Lifestyle - GhG emissions-> Normative descriptive beliefs;	0.082	0.006	Supported
Lifestyle - GhG emissions-> Normative injunctive beliefs	0.207	0.000	Supported
Lifestyle – health and development-> Behavioural beliefs	0.251	0.000	Supported
Lifestyle – health and development-> Control beliefs	0.211	0.000	Supported
Lifestyle – health and development-> Normative descriptive beliefs	0.238	0.000	Supported
Lifestyle – health and development-> Normative injunctive beliefs	0.229	0.000	Supported
Environmental knowledge -> Behavioural Beliefs -> Attitude towards Behaviour	0.057	0.000	Supported
Lifestyle Greenhouse Emissions -> Behavioural Beliefs -> Attitude towards Behaviour	0.042	0.000	Supported
Lifestyle Health -> Behavioural Beliefs -> Attitude towards Behaviour	0.065	0.000	Supported
Environmental knowledge -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation	0.011	0.000	Supported
Lifestyle Greenhouse Emissions -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation	0.008	0.000	Supported
Lifestyle Health -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation	0.013	0.000	Supported
Environmental knowledge -> Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation	0.008	0.001	Supported
Lifestyle Greenhouse Emissions -> Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation	0.008	0.001	Supported
Lifestyle Health -> Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation	0.012	0.000	Supported
Environmental knowledge -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation	0.033	0.000	Supported
Lifestyle Greenhouse Emissions -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation	0.007	0.010	Supported
Lifestyle Health -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation	0.022	0.000	Supported
Environmental knowledge -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation	0.029	0.000	Supported
Lifestyle Greenhouse Emissions -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation	0.035	0.000	Supported
Lifestyle Health -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation	0.039	0.000	Supported

Path			
Environmental knowledge -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase	0.005	0.027	Supported
Lifestyle Greenhouse Emissions -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase	0.003	0.027	Supported
Lifestyle Health -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase	0.005	0.023	Supported
Environmental knowledge -> Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase	0.001	0.483	NS
Lifestyle Greenhouse Emissions -> Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase	0.001	0.488	NS
Lifestyle Health -> Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase	0.002	0.472	NS
Environmental knowledge -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase	0.043	0.000	Supported
Lifestyle Greenhouse Emissions -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase	0.010	0.013	Supported
Lifestyle Health -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase	0.028	0.000	Supported
Environmental knowledge -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase	0.003	0.345	NS
Lifestyle Greenhouse Emissions -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase	0.004	0.325	NS
Lifestyle Health -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase	0.004	0.332	NS
Environmental knowledge -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.002	0.008	Supported
Lifestyle Greenhouse Emissions -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.001	0.008	Supported
Lifestyle Health -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.002	0.007	Supported
Environmental knowledge -> Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.001	0.009	Supported
Lifestyle Greenhouse Emissions -> Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.001	0.008	Supported
Lifestyle Health -> Control Beliefs -> Perceived Behavioural Control -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.002	0.004	Supported
Environmental knowledge -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.006	0.001	Supported
Lifestyle Greenhouse Emissions -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.001	0.030	Supported
Lifestyle Health -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.004	0.003	Supported
Environmental knowledge -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.005	0.001	Supported

Lifestyle Greenhouse Emissions -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.006	0.001	Supported
Lifestyle Health -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.007	0.002	Supported
Environmental knowledge -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.001	0.051	NS
Lifestyle Greenhouse Emissions -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.000	0.049	Supported
Lifestyle Health -> Behavioural Beliefs -> Attitude towards Behaviour -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.001	0.048	Supported
Environmental knowledge -> Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.000	0.471	NS
Lifestyle Greenhouse Emissions -> Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.000	0.475	NS
Lifestyle Health -> Control Beliefs -> Perceived Behavioural Control -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.000	0.463	NS
Environmental knowledge -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.006	0.000	Supported
Lifestyle Greenhouse Emissions -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.001	0.028	Supported
Lifestyle Health -> Normative Descriptive Beliefs -> Subjective Descriptive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.004	0.001	Supported
Environmental knowledge -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.000	0.343	NS
Lifestyle Greenhouse Emissions -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.000	0.321	NS
Lifestyle Health -> Normative Injunctive Beliefs -> Subjective Injunctive Norms -> ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.001	0.323	NS
Environmental knowledge -> Control Beliefs -> Perceived Behavioural Control -> ESCCB	0.009	0.001	Supported
Lifestyle Greenhouse Emissions -> Control Beliefs -> Perceived Behavioural Control -> ESCCB	0.009	0.000	Supported
Lifestyle Health -> Control Beliefs -> Perceived Behavioural Control -> ESCCB	0.013	0.000	Supported
Environmental knowledge -> Control Beliefs -> Perceived Behavioural Control	0.042	0.000	Supported
Lifestyle Greenhouse Emissions -> Control Beliefs -> Perceived Behavioural Control	0.044	0.000	Supported

Lifestyle Health -> Control Beliefs -> Perceived Behavioural Control	0.065	0.000	Supported
Environmental knowledge -> Normative Descriptive Beliefs -> Subjective Descriptive Norms	0.158	0.000	Supported
Lifestyle Greenhouse Emissions -> Normative Descriptive Beliefs -> Subjective Descriptive Norms	0.036	0.008	Supported
Lifestyle Health -> Normative Descriptive Beliefs -> Subjective Descriptive Norms	0.104	0.000	Supported
Environmental knowledge -> Normative Injunctive Beliefs -> Subjective Injunctive Norms	0.100	0.000	Supported
Lifestyle Greenhouse Emissions -> Normative Injunctive Beliefs -> Subjective Injunctive Norms	0.119	0.000	Supported
Lifestyle Health -> Normative Injunctive Beliefs -> Subjective Injunctive Norms	0.131	0.000	Supported

Note: ESCCB = Eco-socially conscious consumers' behavioural intentions; Est. = estimates

Figure 7.2: Estimated TPB model - with background factors
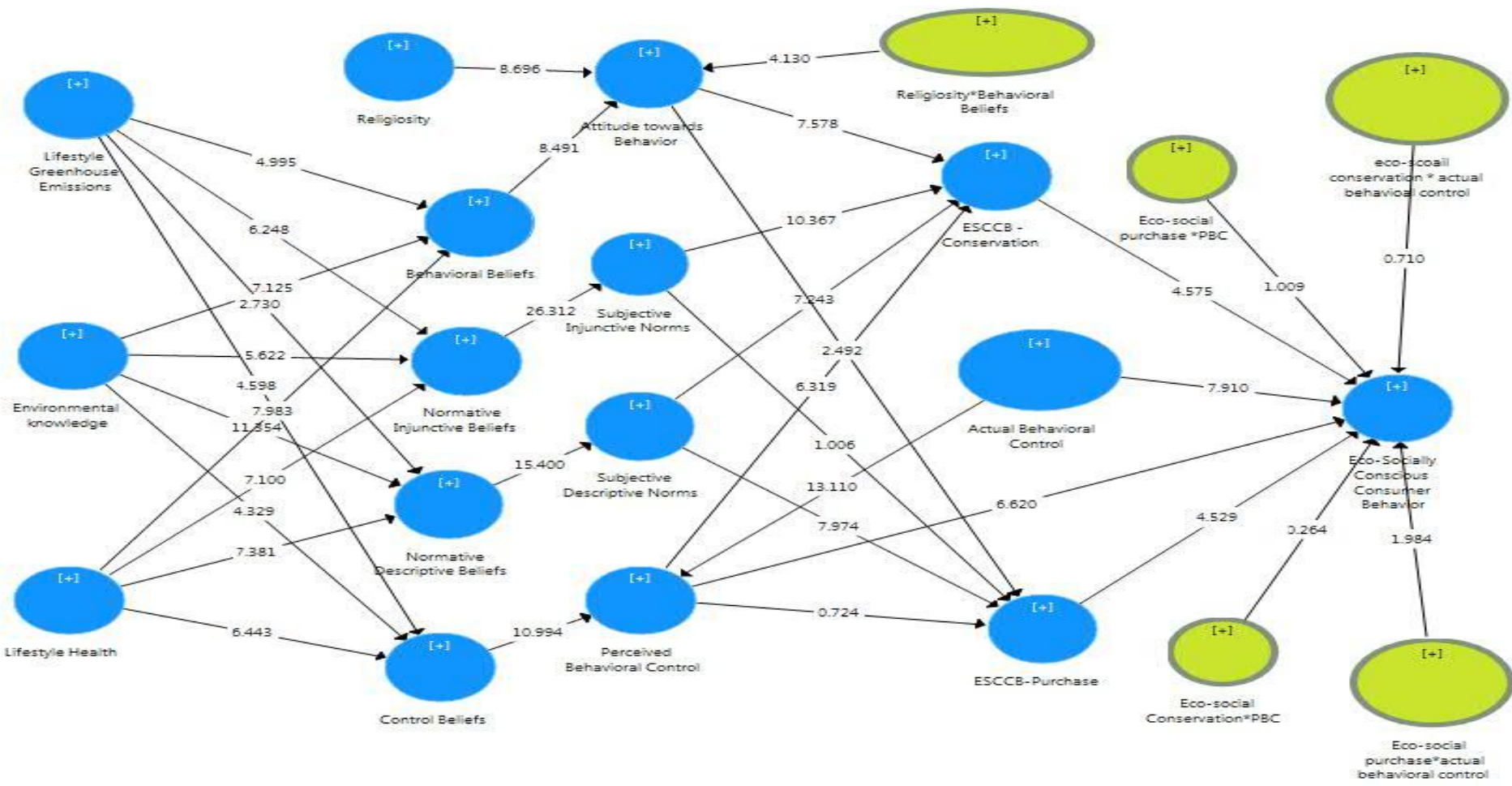
7.7 Results of Theoretical Model: Value-Belief -Norm Theory

The analytical approach adopted to test the TPB model was followed to analyse the VBN model as well. Firstly, the measurement model was verified followed by the structural model. The adapted conceptual model of ESCCB based on VBN is schematically presented in Figure 7.3. The following sections present measurement model and structural model analysis.

7.7.1 Measurement Model Properties

Standard procedures to test measurement models and the relevant evaluation criteria are explained in earlier sections. The following sections discuss the findings of measurement model of VBN theory.

7.7.1.1 Principal Components Analysis (PCA)

As a first step, PCA was conducted. Results showed a satisfactory Kaiser-Meyer-Olkin (KMO) value (KMO = 0.926), and a statistically significant Bartlett test ($p < 0.05$). These results reflect satisfactory sample and inter-item correlation; hence it was feasible to proceed with further component analysis. Analyses of communalities ranged in 0.527-0.777 showing a satisfactory shared variance by each item. Based on root mean criteria (Eigen value), 11 components were extracted with a cumulative variance of 67.479% explained by these components. Similarly, the percentage variance explained by each / individual component was in the range of 4.23-12.77 per cent that reflected even contribution of each factor towards total variance explained.

Further analyses involved an inspection of individual items. An iterative process was carried out for removal of items with low factor loading or cross loadings. The final iteration resulted in the retention of items with factor loadings for the items ranging in 0.524-0.832. The results of PCA are summarised in Table 7.9.

7.7.2 Validity and Reliability of Measures

The convergent validity of the measures is assessed through factor loading, composite reliability (CR) and average variance extracted (AVE), while the discriminant validity of the measures is assessed through HTMT ratio. Estimates of convergent validity are summarized in Table 7.8 while HTMT estimates are summarized in Table 7.10.

Figure 7.3: Theoretical Model of ESCCB Adapted from VBN
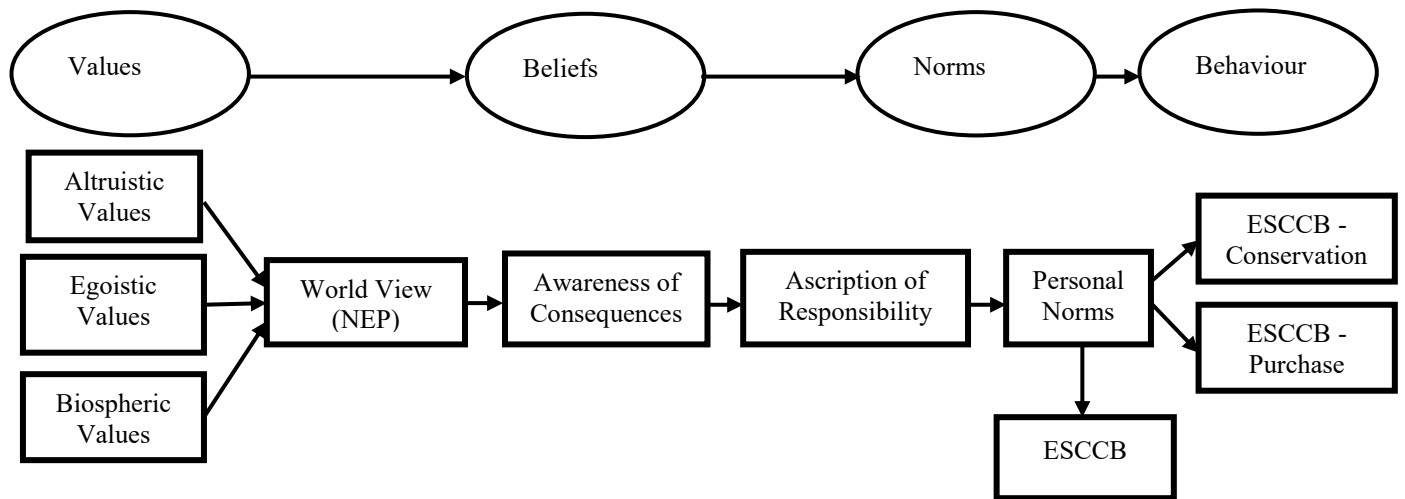
Table 7.8: Measurement Model Properties of VBN

Construct	Items	Comm.	λ	Percentage variance	AVEs	√AVEs	CR	α
1. Altruistic Value	AltVal1	0.607	0.547	4.822%	0.658	0.811	0.885	0.827
	AltVal3	0.578	0.572					
	AltVal 4	0.647	0.677					
	AltVal5	0.627	0.630					
2. Biospheric Value	BioVal1	0.752	0.705	4.374%	0.633	0.795	0.872	0.808
	BioVal2	0.734	0.730					
	BioVal3	0.663	0.771					
	BioVal5	0.683	0.662					
3. Egoistic Value	EgoVal1	0.706	0.679	5.824%	0.642	0.801	0.898	0.861
	EgoVal2	0.584	0.696					
	EgoVal3	0.730	0.815					
	EgoVal4	0.702	0.677					
	EgoVal5	0.742	0.711					
4. New Ecological Paradigm	NEP1	0.682	0.726	6.979%	0.641	0.800	0.914	0.888
	NEP3	0.684	0.736					
	NEP4	0.671	0.684					
	NEP5	0.764	0.652					
	NEP6	0.723	0.732					
	NEP8	0.580	0.697					
5. Awareness of Consequences	AwrConsq2	0.608	0.717	12.770%	0.639	0.799	0.946	0.937
	AwrConsq3	0.527	0.536					
	AwrConsq4	0.660	0.717					
	AwrConsq5	0.692	0.764					
	AwrConsq6	0.702	0.693					
	AwrConsq7	0.775	0.774					
	AwrConsq8	0.722	0.747					
	AwrConsq9	0.711	0.769					
	AwrConsq10	0.672	0.736					
	AwrConsq11	0.639	0.711					
6. Ascription of Responsibility	AscResp1	0.672	0.592	5.112%	0.654	0.809	0.904	0.867
	AscResp2	0.650	0.635					
	AscResp3	0.753	0.729					
	AscResp4	0.733	0.612					

Construct	Item	λ	Comm.	% variance	AVE	√AVE	CR	α
	AscResp5	0.678	0.611					
7. Personal Norms Integrated	PrsnlNrmInteg1	0.714	0.687	6.124%	0.686	0.828	0.916	0.885
	PrsnlNrmInteg2	0.727	0.723					
	PrsnlNrmInteg3	0.698	0.675					
	PrsnlNrmInteg6	0.590	0.602					
	PrsnlNrmInteg7	0.674	0.641					
8. Personal Norms Introjected	PrsnlNrmIntro2	0.622	0.599	6.288%	0.576	0.759	0.890	0.854
	PrsnlNrmIntro3	0.579	0.524					
	PrsnlNrmIntro4	0.726	0.775					
	PrsnlNrmIntro5	0.629	0.687					
	PrsnlNrmIntro6	0.612	0.723					
	PrsnlNrmIntro7	0.642	0.733					
9. Eco-socially Conscious Consumer Behaviour	ESCCB1	0.664	0.697	4.723%	0.622	0.789	0.868	0.802
	ESCCB2	0.715	0.772					
	ESCCB3	0.531	0.581					
	ESCCB6	0.689	0.758					
10. ESCCB-Conservation	ESCCB-Cons1	0.696	0.713	6.225%	0.645	0.803	0.900	0.861
	ESCCB-Cons2	0.752	0.780					
	ESCCB-Cons3	0.698	0.728					
	ESCCB-Cons4	0.607	0.675					
	ESCCB-Cons5	0.625	0.626					
11. ESCCB-Purchase	ESCBPInt1	0.777	0.832	4.238%	0.754	0.868	0.902	0.837
	ESCBPInt2	0.711	0.792					
	ESCBPInt3	0.736	0.805					
Kaiser-Meyer-Olkin (KMO) value					0.926			
Bartlett's test					0.000			
Total percentage variance explained					67.479			

Notes: Principal component analysis conducted with Varimax rotation; Comm. = communalities; λ: factor loadings; AVE = average variance explained; √AVEs = square root of AVEs; CR = composite reliabilities; ESCCB = Eco-socially Conscious Consumers' Behavioural Intentions

7.7.2.1 Convergent Validity

Results show that the factor loading of the measures range in 0.524-0.832, AVEs range in 0.576-0.754, and CR in 0.872-0.946. According to stated criteria for these measures, it can be inferred that the measures reflect their intended concept, hence, the convergent validity is established.

7.7.2.2 Discriminant Validity

HTMT ratios range between 0.185-0.725. The HTMT ration between the constructs reveal that constructs are significantly unique from each other. Therefore, the discriminant validity of the measures is established.

7.7.2.3 Reliability of Measures

Cronbach's alpha estimates of the measures range between 0.802-0.937. Therefore, according to the criteria specified by Nunnally (1994), the measures of this

study have internal reliability. The description of the measurement instrument refined as a result of PCA are reported in Table 7.9.

Table 7.9:Description of the Measurement Instrument - VBN Theory

Construct	Items	Description
1. Altruistic Value	AltVal1	Pollution generated here harms people all over the earth
	AltVal3	The effects of pollution on public health are worse than we realise
	AltVal 4	Environmental protection will help people have a better quality of life
	AltVal5	Environmental protection benefits everyone
2. Biospheric Value	BioVal1	Modern development threatens wildlife
	BioVal2	Over the next several decades, thousands of species of plants and animals will become extinct
	BioVal3	Claims that we are changing the climate are exaggerated (R)
	BioVal5	The balance of nature is delicate easily upset
3. Egoistic Value	EgoVal1	A clean environment provides me with better opportunities for recreation
	EgoVal2	Protecting the environment will threaten jobs for people like me (R)
	EgoVal3	Laws to protect the environment limit my choices and personal freedom (R)
	EgoVal4	Environmental protection is beneficial to my health
	EgoVal5	Environmental protection will provide a better world for me and my children
4. New Ecological Paradigm	NEP1	We are approaching the limit of the number of people the Earth can support
	NEP3	Human ingenuity will insure that we do not make the Earth unlivable (R).
	NEP4	Humans are seriously abusing the environment
	NEP5	Plants and animals have as much right as humans to exist
	NEP6	Despite our special abilities, humans are still subject to the laws of nature
	NEP8	Humans were meant to rule over the rest of nature (R)
5. Awareness of Consequences	AwrConsq2	Use of personal cars causes climate change
	AwrConsq3	Use of personal cars causes exhaustion of natural resources
	AwrConsq4	Global warming is a problem for society
	AwrConsq5	Using environment friendly cars help reduce global warming
	AwrConsq6	Reduction in use of personal cars help to curtail global warming
	AwrConsq7	The exhaustion of fossil fuels is a problem
	AwrConsq8	Using environmentally friendly cars help reduce exhaustion of fossil fuels
	AwrConsq9	Reduction in use of personal cars help to curtail exhaustion of fossil fuels
	AwrConsq10	Quality of environment will improve if we use environmental friendly cars

	AwrConsq11	Quality of environment will improve if we reduce use of personal cars
6. Ascription of Responsibility	AscResp1	I believe that I am jointly responsible for environmental pollution by use of personal cars
	AscResp2	I feel jointly responsible for exhaustion of fossil fuels due to use of personal cars
	AscResp3	I feel jointly responsible for global warming
	AscResp4	Along with government and industry, I am also responsible for climate change
	AscResp5	I feel, at individual level, one cannot help to reduce environmental problems caused by use of personal cars (R).
7. Personal Norms Integrated	PrsnlNrmInteg1	I feel an obligation to choose environment friendly car instead of traditional one
	PrsnlNrmInteg2	I feel personally obliged to use personal car as less as possible
	PrsnlNrmInteg3	Regardless of what others do, I feel it my moral obligation to use environment friendly car
	PrsnlNrmInteg6	People like me should do everything possible to mitigate the negative effects of personal car use on environment
	PrsnlNrmInteg7	I feel it obligatory to bear the environment and nature in mind in my daily life behaviour
8. Personal Norms Introjected	PrsnlNrmIntro2	I would sometimes have a bad conscience if I didn't own an environmentally friendly car
	PrsnlNrmIntro3	I sometimes have a bad conscience because I use personal car excessively when I can avoid it
	PrsnlNrmIntro4	I sometimes have a bad conscience that I own a powerful and spacious car
	PrsnlNrmIntro5	I would sometimes have a bad conscience if I owned a powerful and spacious car
	PrsnlNrmIntro6	I sometimes have a bad conscience that I use personal car while I can use public transport
	PrsnlNrmIntro7	I sometimes have a bad conscience that I use personal car while I could walk for short distances
9. Eco-socially Conscious Consumer Behaviour	ESCCB1	The environmental performance of the car I currently hold is satisfactory
	ESCCB2	In selecting my car (the most recent you purchased), I considered the element of friction in its design
	ESCCB3	In selecting tyres for my car (the most recent you purchased), I avoided wide threads to avoid extra road friction and fuel consumption
	ESCCB6	During my last car purchase, I considered the option of electric vehicle
10. ESCCB-Conservation Intentions	ESCCB-Cons1	I select a car with a high rear axle ratio for that produces least friction and saves energy
	ESCCB-Cons2	I avoid using wide thread tires for that cause road friction and consume more fuel
	ESCCB-Cons3	I consider using radial tires for that help to preserve fuel resource
	ESCCB-Cons4	If I have multiple car choices available, given all other factors same, I choose the one with better environmental performance

	ESCCB-Cons5	Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing speed limits
11.ESCCB-Purchase Intentions	ESCBPInt1	I would buy an electric vehicle even if its quality is lower than a conventional car
	ESCBPInt2	I would buy an electric vehicle even if its performance is lower than a conventional car
	ESCBPInt3	I would buy an electric vehicle even if it has a less appealing design

7.7.3 Structural Model Analysis and Hypothesis Testing

The results of the structural model analysis of VBN theory are reported using the same analytical sequence as that used for the TPB analysis. The estimates of direct and indirect effects are reported in the following sections.

7.7.3.1 Estimates of Direct Effects

The estimates of direct effects pertaining to the analysis of VBN theory are reported in Table 7.11. Results show that biospheric, egoistic and altruistic values are positively associated with ($\beta_{\text{biospheric values}} = 0.126, p < 0.05;$ $\beta_{\text{egoistic values}} = 0.431, p < 0.05;$ $\beta_{\text{altruistic values}} = 0.241, p < 0.05$). Furthermore, new ecological paradigm is positively associated with awareness of consequences ($\beta = 0.515, p < 0.05$), and awareness of consequences is positively associated with ascription of responsibility ($\beta = 0.658, p < 0.05$). Moreover, ascription of responsibility is positively associated with personal introjected norms ($\beta = 0.571, p < 0.05$) and personal integrated norms ($\beta = 0.613, p < 0.05$). The association between norms and ESCCB-purchase, ESCCB-intention and ESCCB showed that personal introjected norms are positively associated with ESCCB-purchase ($\beta = 0.210, p < 0.05$), ESCCB-conservation ($\beta = 0.199, p < 0.05$) and ESCCB ($\beta = 0.276, p < 0.05$). Similarly, personal integrated norms are positively associated with ESCCB-purchase ($\beta = 0.163, p < 0.05$), ESCCB-conservation ($\beta = 0.382, p < 0.05$) and ESCCB ($\beta = 0.172, p < 0.05$).

7.7.3.2 Estimates of Indirect Effects

Estimates of indirect effects are reported in Table 7.12: Specific Indirect Effects of ESCCB - VBN Theory. Results show that altruistic values are positively associated with awareness of consequences through the new ecological paradigm ($\beta = 0.124, p < 0.05$), and with ascription of responsibility through the new ecological paradigm and awareness of consequences ($\beta = 0.082, p < 0.05$). Associations of altruistic values with personal

integrated norms (β = 0.050, *p < 0.05)* and personal introjected norms (β = 0.047, *p < 0.05)* are also positively mediated by new ecological paradigm, awareness of consequences and ascription of responsibility. Relationships of altruistic values with ESCCB-conservation (β = 0.019, *p < 0.05)*, ESCCB-purchase (β = 0.008, *p < 0.05)* and eco-socially conscious consumer behaviour (β = 0.009, *p < 0.05)* are mediated by the new ecological paradigm, awareness of consequences, ascription of responsibility and personal integrated norms. Furthermore, altruistic values are associated with ESCCB-conservation (β = 0.009, *p < 0.05)*, ESCCB-purchase (β = 0.010, *p < 0.05)* and eco-socially conscious consumer behaviour (β = 0.013, *p < 0.05)* are mediated by the new ecological paradigm, awareness of consequences, ascription of responsibility and personal introjected norms.

Results pertinent to specific indirect effects linking biospheric values show that the new ecological paradigm positively mediates the relationship of biospheric values with awareness of consequences (β = 0.065, *p < 0.05)*. Association of biospheirc values with ascription of responsibility is positively mediated through new ecological paradigm and awareness of consequences (β = 0.043, *p < 0.05)*. Relationships of biospheric values with personal integrated norms (β = 0.026, *p < 0.05)* and personal introjected norms (β = 0.024, *p < 0.05)* are also positively mediated by the new ecological paradigm, awareness of consequences and ascription of responsibility. Associations of biospheric values with ESCCB-conservation (β = 0.010, *p < 0.05)*, ESCCB-purchase (β = 0.004, *p < 0.05)* and eco-socially conscious consumer behaviour (β = 0.005, *p < 0.05)* are mediated by the new ecological paradigm, awareness of consequences, ascription of responsibility and personal integrated norms. Finally, biospheric values are associated with ESCCB-conservation (β = 0.005, *p < 0.05)*, ESCCB-purchase (β = 0.005, *p < 0.05)* and eco-socially conscious consumer behaviour (β = 0.007, *p < 0.05)* are mediated by the new ecological paradigm, awareness of consequences, ascription of responsibility and personal introjected norms.

At the end, associations of egoistic values with awareness of consequences through the new ecological paradigm (β = 0.222, *p < 0.05)*, and with ascription of responsibility through the new ecological paradigm and awareness of consequences (β = 0.043, *p < 0.05)* are also significant. Associations of egoistic values with personal integrated norms (β = 0.090, *p < 0.05)* and personal introjected norms (β = 0.083, *p < 0.05)* are also positively mediated by the new ecological paradigm, awareness of consequences and

ascription of responsibility. Relationships of egoistic values with ESCCB-conservation ($\beta = 0.034$, *p < 0.05)*, ESCCB-purchase ($\beta = 0.015$, *p < 0.05)* and eco-socially conscious consumer behaviour ($\beta = 0.015$, *p < 0.05)* are mediated by the new ecological paradigm, awareness of consequences, ascription of responsibility and personal integrated norms. Furthermore, egoistic values are associated with ESCCB-conservation ($\beta = 0.017$, *p < 0.05)*, ESCCB-purchase ($\beta = 0.017$, *p < 0.05)* and eco-socially conscious consumer behaviour ($\beta = 0.023$, *p < 0.05)* are mediated by the new ecological paradigm, awareness of consequences, ascription of responsibility and personal introjected norms.

The estimated model of ESCCB, adapted from VBN, is shown in Figure 7.4.

Table 7.10: Discriminant Validity of Constructs Using HTMT - VBN Model

Variables	A	B	C	D	E	F	G	H	I	J	K
A. AV											
B. BV	0.500										
C. EV	0.388	0.499									
D. NEP	0.502	0.470	0.622								
E. AC	0.652	0.440	0.465	0.544							
F. AR	0.581	0.435	0.449	0.541	0.725						
G. PIntgN	0.644	0.425	0.484	0.558	0.673	0.694					
H. PIntrN	0.379	0.354	0.444	0.449	0.531	0.636	0.584				
I. ESCCB	0.437	0.471	0.399	0.479	0.486	0.474	0.346	0.405			
J. ESCCBP	0.185	0.299	0.316	0.320	0.287	0.322	0.316	0.344	0.388		
K. ESCCBC	0.655	0.478	0.397	0.544	0.511	0.547	0.551	0.442	0.529	0.330	

Notes: AV = altruistic value; BV = Biospheric value; EV= egoistic value; NEP = new ecological paradigm; AC= awareness of consequences; AR= awareness of responsibility; PIntgN= personal integrated norms; PIntrN= personal introjected norms; ESCCB = eco-socially conscious consumer behaviour; ESCCBP = eco-socially conscious consumers' behavioural intentions purchase; ESCCBC = eco-socially conscious consumers' behavioural intentions conservation; HTMT = heterotrait-monotrait ratio of correlations

Table 7.11: Direct Effects Model of ESCCB-VBN Theory

Independent Variable (X)	Dependent Variable (Y)	Estimate	*t*	*p*	Status
Biospheric values	New ecological paradigm	0.126	3.453	0.001	Supported
Egoistic values	New ecological paradigm	0.431	14.57	0.000	Supported
Altruistic values	New ecological paradigm	0.241	7.300	0.000	Supported
New ecological paradigm	Awareness of consequences	0.515	17.973	0.000	Supported
Awareness of consequences	Ascription of responsibility	0.658	32.618	0.000	Supported
Ascription of responsibility	Personal introjected norms	0.571	28.518	0.000	Supported
	Personal integrated norms	0.613	27.229	0.000	Supported
	ESCCB-Purchase	0.210	6.355	0.000	Supported

Personal norms	introjected	ESCCB-Conservation	0.199	6.722	0.000	Supported
		Eco-socially conscious consumer behaviour	0.276	8.799	0.000	Supported
Personal norms	integrated	ESCCB -Purchase	0.163	5.530	0.000	Supported
		ESCCB -Conservation	0.382	12.584	0.000	Supported
		Eco-socially conscious consumer behaviour	0.172	5.483	0.000	Supported

Table 7.12: Specific Indirect Effects of ESCCB - VBN Theory

Relationships	Est.	p	Status
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility	0.043	0.001	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences	0.065	0.000	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> ESCCB-Conservation	0.010	0.002	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> ESCCB-Conservation	0.005	0.001	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> ESCCB-Purchase	0.004	0.003	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> ESCCB-Purchase	0.005	0.003	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> Eco-socially Conscious Consumer Behaviour	0.005	0.006	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated	0.026	0.001	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected	0.024	0.001	Supported
Biospheric values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> Eco-socially Conscious Consumer Behaviour	0.007	0.001	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated	0.090	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> Eco-socially Conscious Consumer Behaviour	0.023	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> ESCCB-Purchase	0.017	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> ESCCB-Purchase	0.015	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> ESCCB-Conservation	0.017	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected	0.083	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility	0.146	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> ESCCB-Conservation	0.034	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences	0.222	0.000	Supported
Egoistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> Eco-socially Conscious Consumer Behaviour	0.015	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility	0.082	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences	0.124	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> ESCCB-Conservation	0.019	0.000	Supported

Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> ESCCB-Conservation	0.009	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> ESCCB-Purchase	0.008	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> ESCCB-Purchase	0.010	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated -> Eco-socially Conscious Consumer Behaviour	0.009	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected -> Eco-socially Conscious Consumer Behaviour	0.013	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms integrated	0.050	0.000	Supported
Altruistic values -> New ecological paradigm -> Awareness of consequences -> Ascription of responsibility -> Personal norms introjected	0.047	0.000	Supported

Note: Est. = estimate

Figure 7.4: Estimated Model of ESCCB - VBN Theory
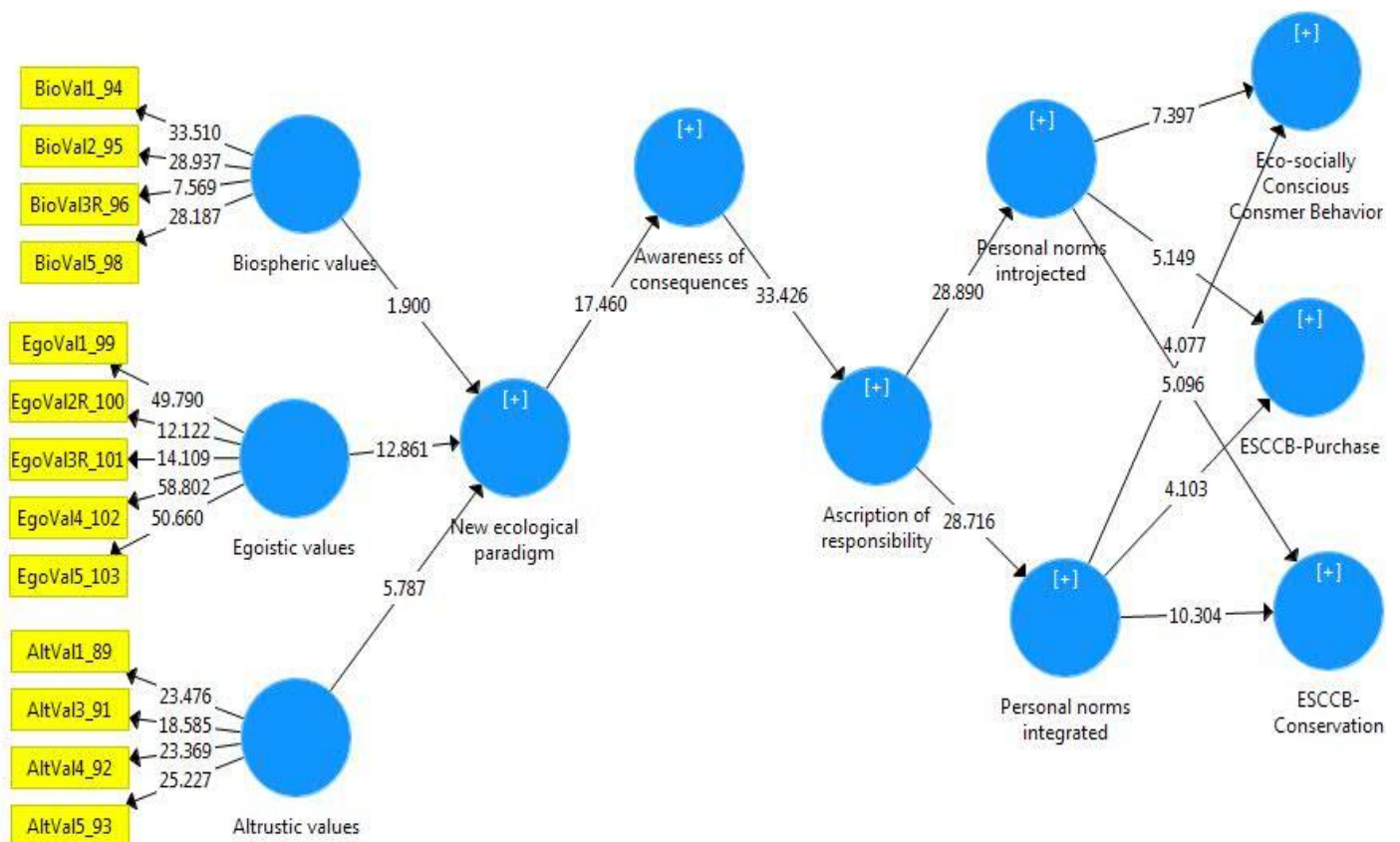
7.8 Results of Integrated TPB and VBN Model

The theory of planned behaviour and the value-belief-norm theory have several underlying commonalities, which make these two the best candidates for integration to develop an integrated model that can more powerfully explain eco-socially conscious consumer behaviours related to choice and use of personal cars. The integrated model of TPB and VBN is presented in Figure 3.3. Following the model testing approach explained in section 7.5: Results of Theoretical Model – Theory of Planned Behaviour, the following sections provide results of measurement model properties and structural model analysis.

7.8.1 Measurement Model Properties

The measurement model includes the constructs of both TPB and VBN analysed together for verification of convergent and discriminant validity. As a set convention, first principal component analysis is reported followed by reporting of convergent and discriminant validity.

7.8.2 Principal Components Analysis

Results of the principal component analysis are summarized in Table 7.13. Initial assessment revealed that sample size is sufficient (KMO = 0.930) and that there is adequate inter-item correlation to proceed further with components analysis (Bartlett's test: χ^2 = 104754.958, df = 5671, p < 0.05). The communalities of the items ranged in 0.586 - 0.834 indicating sufficient shared variance explained by each item.

PCA resulted in 23 unique components based on Eigen value greater than 1, collectively generating 67.719 % variance which is satisfactory. Percentage of variance explained by each component ranged in 1.667-7.596 indicating no single component overshadowed the percentage of total variance explained, thus indicating that common method bias may not be an issue (Podsakoff et al., 2012). Analysis of factor loading and cross loadings, and an iterative process of deleting items with insufficient loading or violating cross loading criteria resulted in retaining almost all of the constructs of TPB and VBN except normative descriptive beliefs which couldn't load as a separate component. Furthermore, there were some changes in the measurement items of some of the constructs. The factor loadings of the resulting items ranged in 0.450 – 0.811 that are considered adequate.

7.8.3 Validity of Measures

The convergent validity is assessed by the measure of factor loading, composite reliability and AVES reported in Table 7.13, while the discriminant validity is assessed through the estimates HTMT ratio reported in Table 7.15.

7.8.3.1 Convergent Validity

Results show that the factor loadings of the measures range in 0.450 – 0.811. Loadings of the factor less than the standard criteria ($\lambda < 0.5$) raise concerns about convergent validity, however, assessment of other criteria, i.e., CR (ranging in 0.8300.941) and AVEs (ranging in 0.552-0.829) confirms that convergent validity of the measures is established.

7.8.3.2 Discriminant Validity

HTMT ratio between the constructs of the integrated model range in 0.127-0.729, thus confirming that the constructs maintain their uniqueness and measure significantly different concepts.

7.8.3.3 Reliability of the Measures

Cronbach's alpha estimates of the measures in the integrated model of TPB and VBN range in 0.696-0.930. The alpha value of the construct 'Lifestyle GhG Emissions' ($\alpha = 0.696$) is lower than the standard cut off value i.e. 0.7, and, therefore, alarms sound about reliability of this construct. However, a corresponding assessment of CR shows that the reliability is established (CR = 0.830).

Table 7.13: Measurement Properties of the Integrated Model Based on TPB and VBN

Constructs	Items	Comm.	λ	% variance	AVEs	√AVEs	CR	α
1. Environmental Knowledge	ENNKNWLG1	0.612	0.645	3.775	0.552	0.743	0.881	0.838
	ENNKNWLG3	0.586	0.623					
	ENNKNWLG5	0.639	0.675					
	ENNKNWLG6	0.650	0.693					
	ENNKNWLG7	0.680	0.722					
	ENNKNWLG8	0.649	0.692					
2. Lifestyle-health	GLSHED1	0.611	0.668	2.286	0.698	0.835	0.873	0.782
	GLSHED2	0.772	0.748					
	GLSHED3	0.737	0.718					
3. Lifestyle-GhG Emissions	GLSGHG1	0.660	0.656	1.995	0.621	0.788	0.830	0.696
	GLSGHG2	0.598	0.548					
	GLSGHG3	0.671	0.738					
4. Behavioural Beliefs	BhBl1	0.705	0.684	3.107	0.661	0.813	0.886	0.829
	BhBl2	0.709	0.727					

	BhBl4	0.741	0.718					
	BhBl5	0.697	0.700					
5. Normative Injunctive Beliefs	NrInBl1	0.703	0.685	2.131	0.661	0.813	0.854	0.745
	NrInBl2	0.659	0.586					
	NrInBl3	0.708	0.720					
6. Control Beliefs	CntlBl1	0.711	0.718	2.352	0.704	0.839	0.877	0.788
	CntlBl2	0.769	0.768					
	CntlBl4	0.638	0.623					
7. Attitude towards Behaviour	AttoBeh3	0.624	0.574	2.248	0.580	0.761	0.846	0.758
	AttoBeh4	0.652	0.636					
	AttoBeh5	0.688	0.683					
	AttoBeh6	0.648	0.667					
8. Subjective Injunctive Norms	SbInNr1	0.647	0.518	2.628	0.591	0.769	0.878	0.826
	SbInNr2	0.673	0.616					
	SbInNr3	0.629	0.548					
	SbInNr5	0.574	0.591					
	SbInNr6	0.569	0.450					
9. Subjective Descriptive Norms	SbDNr1	0.708	0.655	2.281	0.693	0.832	0.871	0.779
	SbDNr2	0.681	0.611					
	SbDNr3	0.680	0.656					
10. Perceived Behavioural Control	PBC3	0.697	0.534	2.503	0.661	0.813	0.886	0.829
	PBC4	0.711	0.596					
	PBC5	0.777	0.763					
	PBC6	0.754	0.753					
11. Actual behavioural Control	ActBehCntrl1	0.679	0.647	3.074	0.651	0.807	0.882	0.820
	ActBehCntrl2	0.698	0.683					
	ActBehCntrl3	0.752	0.768					
	ActBehCntrl4	0.675	0.705					
12. Religiosity	Relgsty2	0.723	0.595	4.102	0.705	0.839	0.923	0.895
	Relgsty4	0.804	0.755					
	Relgsty6	0.766	0.723					
	Relgsty7	0.773	0.753					
	Relgsty8	0.733	0.707					
13. Altruistic Value	AltVal1	0.707	0.584	3.198	0.658	0.811	0.885	0.827
	AltVal3	0.684	0.583					
	AltVal 4	0.738	0.670					
	AltVal5	0.706	0.613					
14. Biospheric Value	BioVal1	0.765	0.734	2.622	0.632	0.795	0.871	0.808
	BioVal2	0.770	0.765					
	BioVal3	0.683	0.686					
	BioVal5	0.696	0.615					
15. Egoistic Value	EgoVal1	0.765	0.689	3.244	0.640	0.800	0.897	0.861
	EgoVal2	0.645	0.675					
	EgoVal3	0.742	0.808					
	EgoVal4	0.760	0.675					
	EgoVal5	0.753	0.685					
16. New Ecological Paradigm	NEP1	0.726	0.707	3.998	0.641	0.801	0.914	0.888
	NEP3	0.724	0.733					
	NEP4	0.686	0.641					
	NEP5	0.786	0.633					
	NEP6	0.769	0.724					
	NEP8	0.629	0.704					
17. Awareness of Consequences	AwrConsq2	0.683	0.686	7.596	0.642	0.801	0.941	0.930
	AwrConsq3	0.630	0.501					

		λ	Comm.		AVE	√AVE	CR	
	AwrConsq4	0.688	0.700					
	AwrConsq5	0.728	0.745					
	AwrConsq6	0.774	0.675					
	AwrConsq7	0.794	0.760					
	AwrConsq8	0.766	0.723					
	AwrConsq9	0.731	0.765					
	AwrConsq10	0.711	0.699					
	AwrConsq11	0.731	0.708					
18. Ascription of Responsibility	AscResp1	0.718	0.596	2.464	0.654	0.809	0.904	0.867
	AscResp2	0.689	0.498					
	AscResp3	0.834	0.738					
	AscResp4	0.750	0.475					
	AscResp5	0.707	0.533					
19. Personal Norms Integrated	PrsnlNrmInteg1	0.749	0.599	1.957	0.787	0.887	0.917	0.865
	PrsnlNrmInteg2	0.750	0.626					
	PrsnlNrmInteg3	0.732	0.558					
20. Personal Norms Introjected	PrsnlNrmIntro2	0.660	0.584	3.561	0.576	0.759	0.890	0.854
	PrsnlNrmIntro3	0.674	0.502					
	PrsnlNrmIntro4	0.770	0.749					
	PrsnlNrmIntro5	0.705	0.654					
	PrsnlNrmIntro6	0.693	0.754					
	PrsnlNrmIntro7	0.676	0.726					
21. Eco-socially Conscious Consumer Behaviour	ESCCB1	0.713	0.657	1.667	0.829	0.910	0.907	0.794
	ESCCB2	0.712	0.633					
22. ESCCB-Conservation	ESCCB-Cons2	0.731	0.464	2.458	0.661	0.813	0.886	0.829
	ESCCB-Cons3	0.717	0.461					
	ESCCB-Cons4	0.701	0.630					
	ESCCB-Cons5	0.687	0.631					
23. ESCCB-Purchase	ESCBPInt1	0.784	0.811	2.473	0.754	0.868	0.902	0.837
	ESCBPInt2	0.760	0.798					
	ESCBPInt3	0.782	0.805					

Kaiser-Meyer-Olkin (KMO) value	0.930
Bartlett's test	0.000
Total percentage variance explained	67.719

Notes: Principal component analysis conducted with Varimax rotation; Comm. = communalities; λ: factor loadings; AVE = average variance explained; √AVEs = square root of AVEs; CR = composite reliabilities; ESCCB = Eco-socially Conscious Consumers' Behavioural Intentions

Table 7.14: Estimates of Direct Effects of Integrated Model Based on TPB and VBN

Independent Variable (X)	Dependent Variable (Y)	Estimate	t	p	Status
Biospheric values	New ecological paradigm	0.127	3.371	0.001	Supported
	Attitude towards behaviour	0.067	2.032	0.042	Supported
Egoistic values	New ecological paradigm	0.434	15.285	0.000	Supported
	Attitude towards behaviour	0.176	5.489	0.000	Supported
Altruistic values	New ecological paradigm	0.236	7.108	0.000	Supported
	Attitude towards behaviour	0.211	6.650	0.000	Supported
New ecological paradigm	Awareness of consequences	0.515	18.886	0.000	Supported
Awareness of consequences	Ascription of responsibility	0.659	32.178	0.000	Supported
Ascription of responsibility	Personal introjected norms	0.463	16.033	0.000	Supported
	Personal integrated norms	0.398	15.937	0.000	Supported
Personal introjected norms	ESCCB-Purchase	0.176	4.806	0.000	Supported

	ESCCB-Conservation	0.048	1.841	0.066	Not Supported
	Eco-socially conscious consumer behaviour	0.132	3.825	0.000	Supported
Personal integrated norms	ESCCB -Purchase	0.085	2.450	0.014	Supported
	ESCCB -Conservation	0.149	5.378	0.000	Supported
	Eco-socially conscious consumer behaviour	-0.038	0.852	0.394	Not Supported
Religiosity	Altruistic values	0.567	23.481	0.000	Supported
	Biospheric values	0.366	14.905	0.000	Supported
	Egoistic values	0.405	15.974	0.000	Supported
	Behavioural Beliefs	0.267	9.569	0.000	Supported
	Personal Integrated Norms	0.335	12.841	0.000	Supported
	Personal Introjected Norms	0.131	4.982	0.000	Supported
Lifestyle Health	Behavioural Beliefs	0.186	6.191	0.000	Supported
	Control Beliefs	0.211	6.690	0.000	Supported
	Normative Injunctive Beliefs	0.230	7.237	0.000	Supported
Lifestyle GhG	Behavioural Beliefs	0.130	4.316	0.000	Supported
	Control Beliefs	0.144	4.889	0.000	Supported
	Normative Injunctive Beliefs	0.207	6.210	0.000	Supported
Environmental Knowledge	Behavioural beliefs	0.151	4.833	0.000	Supported
	Control beliefs	0.135	4.300	0.000	Supported
	Normative Injunctive Beliefs	0.174	5.600	0.000	Supported
Behavioural Beliefs	Attitude towards Behaviour	0.234	7.858	0.000	Supported
Control Beliefs	Perceived Behavioural Control	0.307	10.991	0.000	Supported
Normative Injunctive Beliefs	Subjective Injunctive Norms	0.574	26.441	0.000	Supported
Attitude towards Behaviour	ESCCB-Conservation	0.172	6.528	0.000	Supported
	ESCCB-Purchase	0.020	0.549	0.583	Not Supported
Perceived Behavioural Control	ESCCB-Conservation	0.141	4.519	0.000	Supported
	ESCCB-Purchase	0.002	0.079	0.937	Not Supported
	Eco-socially Conscious Consumer Behaviour	0.149	4.413	0.000	Supported
Perceived Behavioural Control* ESCCB-Conservation	Eco-socially Conscious Consumer Behaviour	0.002	0.769	0.442	Not Supported
Perceived Behavioural Control* ESCCB-Purchase	Eco-socially Conscious Consumer Behaviour	-0.063	0.920	0.358	Not Supported
Subjective Injunctive Norms	ESCCB-Conservation	0.268	8.516	0.000	Supported
	ESCCB-Purchase	0.004	0.185	0.853	Not Supported
	Personal Integrated Norms	0.018	0.565	0.572	Not Supported
	Personal Introjected Norms	0.032	0.946	0.345	Not Supported
Subjective Descriptive Norms	ESCCB-Conservation	0.185	6.328	0.000	Supported
	ESCCB-Purchase	0.212	6.093	0.000	Supported
	Personal Integrated Norms	0.097	3.723	0.000	Supported

	Personal Introjected Norms	0.090	3.142	0.002	Supported
ESCCB-Conservation	Eco-socially Conscious Consumer Behaviour	0.110	2.797	0.005	Supported
ESCCB-Purchase	Eco-socially Conscious Consumer Behaviour	0.107	3.706	0.000	Supported
Actual Behavioural Control	Eco-socially Conscious Consumer Behaviour	0.237	7.240	0.000	Supported
Actual Behavioural Control	Perceived Behavioural Control	0.347	13.205	0.000	Supported
Actual Behavioural Control*ESCCB-Conservation	Eco-socially Conscious Consumer Behaviour	0.018	0.364	0.716	Not Supported
Actual Behavioural Control*ESCCB-Purchase	Eco-socially Conscious Consumer Behaviour	0.061	1.177	0.239	Not Supported

7.8.4 Structural Model Analysis and Hypothesis Testing

The results of the structural model analysis of the integrated model are presented in the following sections, using the same analytical sequence followed in earlier sections of this chapter.

7.8.4.1 Estimates of Direct Effects

The results of the direct effects of the integrated model are summarised in Table 7.14. Results suggest that biospheric, egoistic and altruistic values are positively associated with the new ecological paradigm and attitude towards behaviuor (Biospheric values: $\beta_{NEP} = 0.127$, $p < 0.05$; $\beta_{attitudes\ towards\ behaviour} = 0.067$, $p < 0.05$; Egoistic values: $\beta_{NEP} = 0.434$, $p < 0.05$; $\beta_{attitudes\ towards\ behaviour} = 0.176$, $p < 0.05$; Altruistic values: $\beta_{NEP} = 0.236$, $p < 0.05$; $\beta_{attitudes\ towards\ behaviour} = 0.211$, $p < 0.05$). Similarly, the new ecological paradigm is positively associated with awareness of consequences ($\beta = 0.515$, $p < 0.05$), awareness of consequences with ascription of responsibility ($\beta = 0.659$, $p < 0.05$) and ascription of responsibility with personal introjected ($\beta = 0.463$, $p < 0.05$) and integrated norms ($\beta = 0.398$, $p < 0.05$). Furthermore, personal integrated norms are positively associated with ESCCB-purchase ($\beta = 0.176$, $p < 0.05$), ESCCB-conservation ($\beta = 0.149$, $p < 0.05$) but with eco-socially conscious consumer behaviour the relationship is not statistically significant ($\beta = -0.038$, $p = 0.394$). On the other hand, personal introjected norms are positively associated with ESCCB-purchase ($\beta = 0.176$, $p < 0.05$), eco-socially conscious consumer behaviour ($\beta = 0.132$, $p < 0.05$) but with ESCCB-conservation the relationship is not statistically significant ($\beta = 0.048$, $p = 0.066$). Interestingly, the relationship of religiosity with all constructs was positive and statistically significant (β

altruistic values $= 0.567$, $p < 0.05$; β biospheric values $= 0.366$, $p < 0.05$; β egoistic values $= 0.405$, $p < 0.05$; β behavioural beliefs $= 0.267$, $p < 0.05$; β personal integrated norms $= 0.335$, $p < 0.05$; β personal introjected norms $= 0.131$, $p < 0.05$).

Table 7.15: Discriminant Validity of Constructs Using HTMT - Integrated Model

Variables	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
A. AV	1																						
B. BV	0.500	1																					
C. EV	0.388	0.499	1																				
D. NEP	0.502	0.470	0.622	1																			
E. AC	0.669	0.453	0.469	0.547	1																		
F. AR	0.581	0.435	0.449	0.541	0.729	1																	
G. PIntgN	0.622	0.412	0.450	0.548	0.664	0.693	1																
H. PIntrN	0.379	0.354	0.444	0.449	0.531	0.636	0.549	1															
I. ESCCB	0.414	0.409	0.397	0.435	0.433	0.407	0.305	0.375	1														
J. ESCCBP	0.185	0.299	0.316	0.320	0.288	0.322	0.299	0.344	0.332	1													
K. ESCCBC	0.655	0.461	0.391	0.543	0.524	0.530	0.550	0.441	0.472	0.335	1												
L. EnVKn	0.496	0.274	0.323	0.386	0.572	0.460	0.418	0.357	0.323	0.193	0.391	1											
M. LSH	0.437	0.300	0.290	0.360	0.425	0.434	0.367	0.246	0.315	0.127	0.396	0.468	1										
N. LSGhG	0.346	0.319	0.203	0.183	0.386	0.395	0.334	0.305	0.452	0.235	0.400	0.473	0.522	1									
O. BhBl	0.550	0.323	0.240	0.255	0.484	0.508	0.478	0.346	0.365	0.161	0.569	0.441	0.481	0.431	1								
P. NrInjBl	0.514	0.468	0.349	0.399	0.468	0.470	0.415	0.362	0.434	0.289	0.633	0.424	0.493	0.497	0.460	1							
Q. CntBlf	0.460	0.337	0.316	0.341	0.547	0.541	0.351	0.329	0.435	0.320	0.543	0.386	0.360	0.183	0.255	0.531	1						
R. AttB	0.514	0.372	0.392	0.503	0.593	0.628	0.492	0.515	0.448	0.262	0.613	0.431	0.314	0.344	0.489	0.477	0.450	1					
S. SbInjNr	0.615	0.421	0.295	0.401	0.495	0.508	0.453	0.380	0.455	0.251	0.682	0.506	0.613	0.652	0.583	0.725	0.566	0.491	1				
T. PBC	0.583	0.506	0.364	0.456	0.564	0.545	0.490	0.425	0.490	0.264	0.622	0.414	0.445	0.423	0.482	0.531	0.539	0.573	0.586	1			
U. SbDsNr	0.475	0.433	0.316	0.372	0.391	0.340	0.414	0.338	0.526	0.367	0.631	0.212	0.418	0.365	0.420	0.514	0.597	0.479	0.598	0.586	1		
V. AcBC	0.361	0.370	0.275	0.458	0.399	0.521	0.411	0.358	0.531	0.397	0.560	0.241	0.367	0.268	0.350	0.446	0.469	0.494	0.483	0.553	0.546	1	
W. Rlgsty	0.657	0.388	0.426	0.505	0.600	0.569	0.657	0.453	0.362	0.192	0.546	0.448	0.438	0.366	0.497	0.475	0.407	0.496	0.514	0.476	0.439	0.383	1

Notes: AV = altruistic value; BV = Biospheric value; EV= egoistic value; NEP = new ecological paradigm; AC= awareness of consequences; AR= awareness of responsibility; PIntgN= personal integrated norms; PIntrN= personal introjected norms; ESCCB = eco-socially conscious consumer behaviour; ESCCBP = eco-socially conscious consumers' behavioural intentions purchase; ESCCBC = eco-socially conscious consumers' behavioural intentions conservation; EnVKn = environmental knowledge; LSH = lifestyle health; LSGhG = lifestyle greenhouse gas emissions; BhBl = behavioural beliefs; NrInjBl = normative injunctive beliefs; CntBlf = control beliefs; AttB = attitude towards behaviour; SbInjNr = subjective injunctive norms; PBC = perceived behavioural control; SbDsNr = subjective descriptive norms; AcBC = actual behavioural control; Rlgsty = religiosity; HTMT = heterotrait-monotrait ratio of correlations

Figure 7.5: Estimated Integrated Model of ESCCB based on TPB and VBN
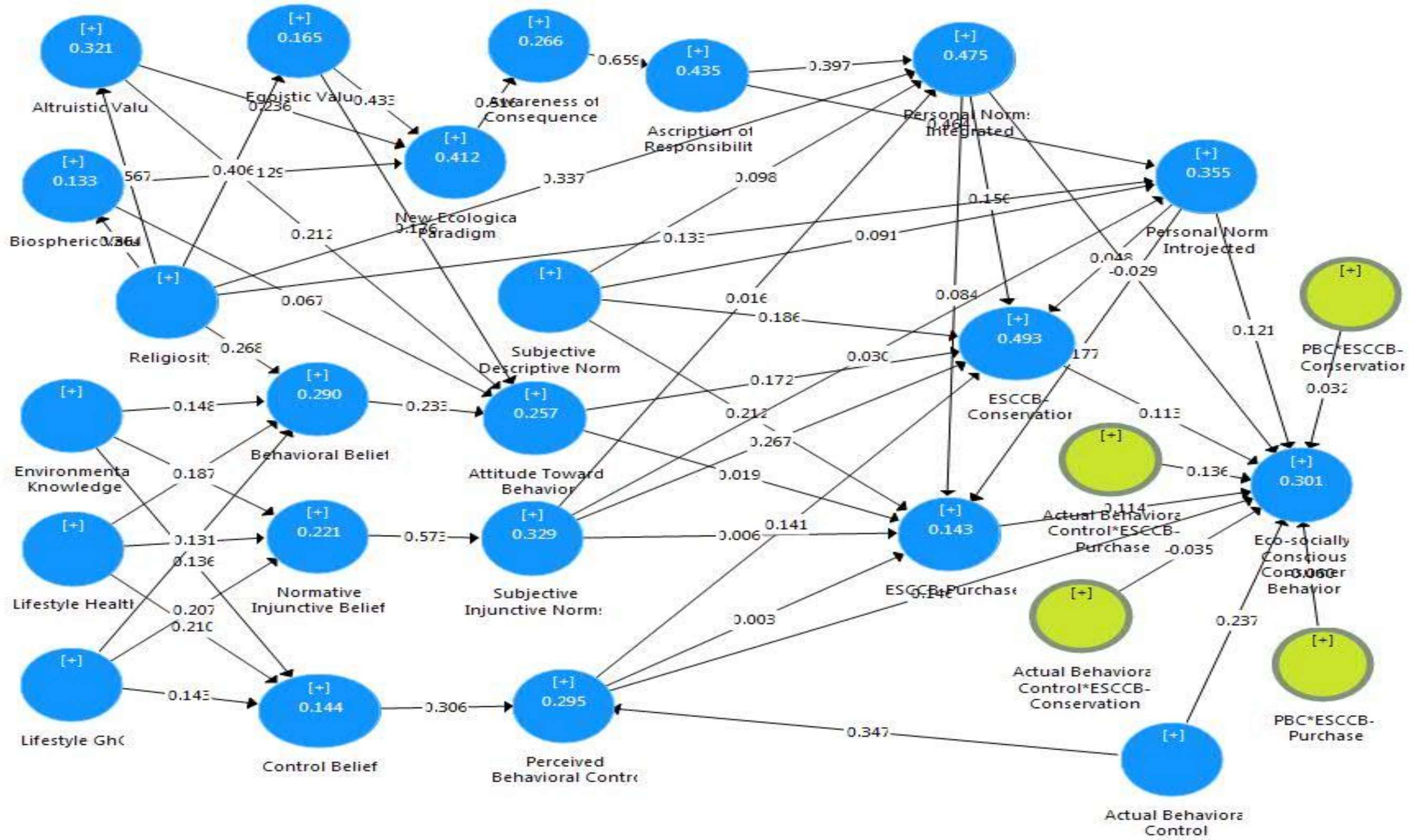
Relationships of lifestyle-health, lifestyle-GhG emissions and environmental knowledge with behavioural beliefs, control beliefs and normative injunctive beliefs were all positive and statistically significant (lifestyle-health: β behavioural beliefs = 0.186, $p < 0.05$; β control beliefs = 0.211, $p < 0.05$; β normative injunctive beliefs = 0.230, $p < 0.05$ lifestyle-GhG: β behavioural beliefs = 0.130, $p < 0.05$; β control beliefs = 0.144, $p < 0.05$; β normative injunctive beliefs = 0.207, $p < 0.05$; environmental knowledge: β behavioural beliefs = 0.151, $p < 0.05$; β control beliefs = 0.135, $p < 0.05$; β normative injunctive beliefs = 0.174, $p < 0.05$). Likewise, behavioural, control and injunctive beliefs are positively associated with attitude towards behaviour, perceived behavioural control and injunctive norms respectively (behavioural beliefs: β = 0.234, $p < 0.05$; control beliefs: β = 0.307, $p < 0.05$; normative injunctive beliefs: β = 0.574, $p < 0.050$). On the same lines, attitudes towards behaviour, perceived behavioural control and subjective injunctive norms are positively associated with ESCCB-conservation (β attitude towards behaviour = 0.172, $p < 0.05$; β perceived behavioural control = 0.141, $p < 0.05$; β subjective injunctive norms = 0.268, $p < 0.050$), but the relationship with ESCCB-purchase is not statistically significant (β attitude towards behaviour = 0.020, $p = 0.583$; β perceived behavioural control = 0.002, $p = 0.937$; β subjective injunctive norms = 0.004, $p = 0.853$). The relationships of subjective injunctive norms with personal integrated (β = 0.018, $p = 0.572$) and introjected norms (β = 0.032, $p = 0.345$) do not receive statistical support. Contrarily, subjective descriptive norms is positively associated with ESCCB-conservation (β = 0.185, $p < 0.05$), ESCCB-purchase (β = 0.212, $p < 0.05$), personal integrated norms (β = 0.097, $p < 0.05$), and personal introjected norms (β = 0.090, $p < 0.05$). Finally, ESCCB-conservation (β = 0.110, $p < 0.05$), ESCCB-purchase (β = 0.107, $p < 0.05$) and actual behavioural control (β = 0.237, $p < 0.05$) are positively associated with eco-socially conscious consumer behaviour.

7.8.4.2 Estimates of Total Indirect Effects

Estimates of indirect effects are summarised in Table 7.16. To avoid redundancy of reporting model estimates, only those paths are mentioned below that are statistically non-significant. Results show that the indirect path leading from lifestyle GhG (β lifestyle GhG = 0.002, $p = 0.554$), lifestyle health (β lifestyle health = 0.003, $p = 0.536$), actual behavioural control (β actual behavioural control = 0.001, $p = 0.938$), altruistic values (β altruistic values = 0.013, $p = 0.066$), behavioural beliefs (β behavioural beliefs = 0.005, $p = 0.589$), environmental knowledge (β environmental knowledge = 0.002, $p = 0.538$), control beliefs (β control beliefs = 0.000, $p = 0.938$), normative injunctive beliefs (β injunctive beliefs = 0.007, $p = 0.692$)

214

and subjective injunctive norms (β subjective injunctive norms = 0.007, p = 0.323) to ESCCB-purchase fail to receive statistical support. Similarly, the total indirect paths from environmental knowledge (β environmental knowledge = 0.002, p = 0.578), lifestyle GhG (β lifestyle GhG = 0.002, p = 0.579), lifestyle health (β lifestyle health = 0.002, p = 0.578) and normative injunctive beliefs (β normative injunctive beliefs = 0.010, p = 0.572) to personal integrated norms fail to receive statistical support. The total indirect effects for paths from environmental knowledge (β environmental knowledge = 0.003, p = 0.355), lifestyle GhG (β lifestyle GhG = 0.004, p = 0.358), lifestyle health (β lifestyle health = 0.004, p = 0.350), and normative injunctive beliefs (β normative injunctive beliefs = 0.018, p = 0.343) with personal introjected norms also didn't receive statistical support. Finally, total indirect effects from subjective injunctive norms to ESCCB-conservation (β = 0.004, p = 0.443) and ESCCB-purchase (β = 0.007, p = 0.323) were also non-significant.

The estimated integrated model is presented in Figure 7.5.

Table 7.16: Total Indirect Effects of Integrated Model Based on TPB And VBN

Relationships	Estimate	t	p	Status
Actual Behavioural Control -> ESCCB-Conservation	0.049	4.192	0.000	Supported
Actual Behavioural Control -> ESCCB-Purchase	0.001	0.078	0.938	NS
Actual Behavioural Control -> Eco-socially Conscious Consumer Behaviour	0.057	4.522	0.000	Supported
Altruistic Value -> Ascription of Responsibility	0.080	5.812	0.000	Supported
Altruistic Value -> Awareness of Consequences	0.122	5.919	0.000	Supported
Altruistic Value -> ESCCB-Conservation	0.043	5.378	0.000	Supported
Altruistic Value -> ESCCB-Purchase	0.013	1.840	0.066	NS
Altruistic Value -> Eco-socially Conscious Consumer Behaviour	0.010	3.893	0.000	Supported
Altruistic Value -> Personal Norms Integrated	0.032	5.515	0.000	Supported
Altruistic Value -> Personal Norms Introjected	0.037	5.540	0.000	Supported
Ascription of Responsibility -> ESCCB-Conservation	0.082	5.277	0.000	Supported
Ascription of Responsibility -> ESCCB-Purchase	0.115	5.791	0.000	Supported
Ascription of Responsibility -> Eco-socially Conscious Consumer Behaviour	0.067	4.232	0.000	Supported
Attitude Towards Behaviour -> Eco-socially Conscious Consumer Behaviour	0.021	2.501	0.013	Supported
Awareness of Consequences -> ESCCB-Conservation	0.054	5.208	0.000	Supported
Awareness of Consequences -> ESCCB-Purchase	0.076	5.658	0.000	Supported

Awareness of Consequences -> Eco-socially Conscious Consumer Behaviour	0.044	4.092	0.000	Supported
Awareness of Consequences -> Personal Norms Integrated	0.262	13.333	0.000	Supported
Awareness of Consequences -> Personal Norms Introjected	0.305	13.794	0.000	Supported
Behavioural Beliefs -> ESCCB-Purchase	0.005	0.541	0.589	NS
Behavioural Beliefs -> Eco-socially Conscious Consumer Behaviour	0.005	2.306	0.021	Supported
Biospheric Value -> Ascription of Responsibility	0.043	3.416	0.001	Supported
Biospheric Value -> Awareness of Consequences	0.065	3.454	0.001	Supported
Biospheric Value -> ESCCB-Conservation	0.015	2.328	0.020	Supported
Biospheric Value -> ESCCB-Purchase	0.006	2.086	0.037	Supported
Biospheric Value -> Eco-socially Conscious Consumer Behaviour	0.004	2.663	0.008	Supported
Biospheric Value -> Personal Norms Integrated	0.017	3.228	0.001	Supported
Biospheric Value -> Personal Norms Introjected	0.020	3.318	0.001	Supported
Control Beliefs -> ESCCB-Conservation	0.043	4.097	0.000	Supported
Control Beliefs -> ESCCB-Purchase	0.000	0.078	0.938	NS
Control Beliefs -> Eco-socially Conscious Consumer Behaviour	0.050	4.717	0.000	Supported
Egoistic Value -> Ascription of Responsibility	0.148	10.583	0.000	Supported
Egoistic Value -> Awareness of Consequences	0.224	12.089	0.000	Supported
Egoistic Value -> ESCCB-Conservation	0.042	6.120	0.000	Supported
Egoistic Value -> ESCCB-Purchase	0.021	3.213	0.001	Supported
Egoistic Value -> Eco-socially Conscious Consumer Behaviour	0.014	4.269	0.000	Supported
Egoistic Value -> Personal Norms Integrated	0.059	8.359	0.000	Supported
Egoistic Value -> Personal Norms Introjected	0.068	8.421	0.000	Supported
Environmental Knowledge -> Attitude Towards Behaviour	0.036	3.535	0.000	Supported
Environmental Knowledge -> ESCCB-Conservation	0.039	5.484	0.000	Supported
Environmental Knowledge -> ESCCB-Purchase	0.002	0.616	0.538	NS
Environmental Knowledge -> Eco-socially Conscious Consumer Behaviour	0.011	3.695	0.000	Supported
Environmental Knowledge -> Perceived Behavioural Control	0.042	3.913	0.000	Supported
Environmental Knowledge -> Personal Norms Integrated	0.002	0.556	0.578	NS
Environmental Knowledge -> Personal Norms Introjected	0.003	0.925	0.355	NS
Environmental Knowledge -> Subjective Injunctive Norms	0.100	5.407	0.000	Supported
Lifestyle GhG -> Attitude Towards Behaviour	0.031	3.782	0.000	Supported
Lifestyle GhG -> ESCCB-Conservation	0.044	5.752	0.000	Supported

Lifestyle GhG -> ESCCB-Purchase	0.002	0.592	0.554	NS
Lifestyle GhG -> Eco-socially Conscious Consumer Behaviour	0.012	3.983	0.000	Supported
Lifestyle GhG -> Perceived Behavioural Control	0.044	4.359	0.000	Supported
Lifestyle GhG -> Personal Norms Integrated	0.002	0.555	0.579	NS
Lifestyle GhG -> Personal Norms Introjected	0.004	0.919	0.358	NS
Lifestyle GhG -> Subjective Injunctive Norms	0.119	5.947	0.000	Supported
Lifestyle Health -> Attitude Towards Behaviour	0.043	5.382	0.000	Supported
Lifestyle Health -> ESCCB-Conservation	0.053	6.514	0.000	Supported
Lifestyle Health -> ESCCB-Purchase	0.003	0.620	0.536	NS
Lifestyle Health -> Eco-socially Conscious Consumer Behaviour	0.016	4.207	0.000	Supported
Lifestyle Health -> Perceived Behavioural Control	0.065	5.514	0.000	Supported
Lifestyle Health -> Personal Norms Integrated	0.002	0.556	0.578	NS
Lifestyle Health -> Personal Norms Introjected	0.004	0.936	0.350	NS
Lifestyle Health -> Subjective Injunctive Norms	0.132	6.428	0.000	Supported
New Ecological Paradigm -> Ascription of Responsibility	0.340	15.315	0.000	Supported
New Ecological Paradigm -> Awareness of Consequences				Supported
New Ecological Paradigm -> ESCCB-Conservation	0.028	4.852	0.000	Supported
New Ecological Paradigm -> ESCCB-Purchase	0.039	5.285	0.000	Supported
New Ecological Paradigm -> Eco-socially Conscious Consumer Behaviour	0.023	3.878	0.000	Supported
New Ecological Paradigm -> Personal Norms Integrated	0.135	10.373	0.000	Supported
New Ecological Paradigm -> Personal Norms Introjected	0.157	10.698	0.000	Supported
Normative Injunctive Beliefs -> ESCCB-Conservation	0.156	7.809	0.000	Supported
Normative Injunctive Beliefs -> ESCCB-Purchase	0.007	0.396	0.692	
Normative Injunctive Beliefs -> Eco-socially Conscious Consumer Behaviour	0.020	2.533	0.011	Supported
Normative Injunctive Beliefs -> Personal Norms Integrated	0.010	0.565	0.572	NS
Normative Injunctive Beliefs -> Personal Norms Introjected	0.018	0.948	0.343	NS
Perceived Behavioural Control -> Eco-socially Conscious Consumer Behaviour	0.016	2.031	0.043	Supported
Personal Norms Integrated -> Eco-socially Conscious Consumer Behaviour	0.026	3.123	0.002	Supported
Personal Norms Introjected -> Eco-socially Conscious Consumer Behaviour	0.024	3.104	0.002	Supported
Religiosity -> Ascription of Responsibility	0.121	9.518	0.000	Supported

Religiosity -> Attitude Towards Behaviour	0.278	14.467	0.000	Supported
Religiosity -> Awareness of Consequences	0.184	10.835	0.000	Supported
Religiosity -> ESCCB-Conservation	0.114	8.070	0.000	Supported
Religiosity -> ESCCB-Purchase	0.071	4.997	0.000	Supported
Religiosity -> Eco-socially Conscious Consumer Behaviour	0.031	2.600	0.009	Supported
Religiosity -> New Ecological Paradigm	0.356	17.555	0.000	Supported
Religiosity -> Personal Norms Integrated	0.048	7.911	0.000	Supported
Religiosity -> Personal Norms Introjected	0.056	7.997	0.000	Supported
Subjective Descriptive Norms -> ESCCB-Conservation	0.019	3.064	0.002	Supported
Subjective Descriptive Norms -> ESCCB-Purchase	0.024	2.983	0.003	Supported
Subjective Descriptive Norms -> Eco-socially Conscious Consumer Behaviour	0.056	4.526	0.000	Supported
Subjective Injunctive Norms -> ESCCB-Conservation	0.004	0.768	0.443	NS
Subjective Injunctive Norms -> ESCCB-Purchase	0.007	0.988	0.323	NS
Subjective Injunctive Norms -> Eco-socially Conscious Consumer Behaviour	0.035	2.573	0.010	Supported

7.9   Comparison of TPB, VBN and Integrated Models

Testing of model-fit indices to draw inferences regarding which model performs better in SmartPLS, involves complex decisions as unlike CB-SEM, variance-based SEM doesn't provide much rich information on the model fit index (Hair et al., 2016). However, some comparative information can be obtained to make a conservative assessment about the quality of the model. Coupled with R^2 values, the model-fit indices can help to determine which of the four models tested and reported in earlier sections of this chapter is the stronger and has greater predictive power for eco-socially conscious consumer behaviour and behavioural intentions. Model fit indices reported in the subsequent section include standardised root mean square residual (SRMR) and RMS-theta.

The SRMR measure is a difference between the observed correlation and model implied correlation (Hair et al., 2016), thereby, evaluating the average amount of the inconsistencies between observed and expected correlations as an absolute measure of model fit criterion. Specifically, SRMR helps to indicate and correct any potential misspecification in the model (Hair et al., 2016). An SRMR value of 0.10 or 0.08 reflects an adequately fit model (Hair, Sarstedt, Ringle, & Gudergan, 2017; Sarstedt et al., 2016).

RMS-theta measures the root mean squared residual covariance matrix of the outer model error terms (Lohmöller, 1989). This measure has been utilised to assess model fit as it is suggested when the model has only reflective measures (Hair et al., 2016). A value of RMS-theta closer to zero is recommended and a well-fitting model is assumed to have a value at least less than 0.12 (Hair et al., 2016).

Model-fit indices are reported in Table 7.17, and show that the three models provide a good fit of data in terms of SRMR and RMS-theta measures. Further examination of R2 and adjusted R2 values show that VBN model generates 26.6% variance in ESCCB-conservation, 10.7% variance in ESCCB-purchase and 15.6% variance in eco-socially conscious consumer behaviour. The TPB model (without background factors), however, is stronger than the VBN in terms of variance created in ESCCB-conservation (46.5%), ESCCB-purchase (12.2%) and eco-socially conscious consumer behaviour (33.1%). Finally, the integrated model produced 49.5% variance in ESCCB-conservation, 14.4% variance in ESCCB-purchase and 31.4% variance in eco-socially conscious consumer behaviour. It is evident that the integrated model is better in comparison to the other two models (TPB and VBN) both in terms of model-fit criteria and the variance explained in key behavioural intentions (ESCCB-conservation and ESCCB-purchase).

Table 7.17: Comparison of the Structural Models

Model fit indices & R^2	VBN	TPB (without background factors)	Integrated model of TPB and VBN
SRMR	0.026	0.035	0.032
RMS-theta	0.110	0.110	0.098
R^2:			
ESCCB-Conservation	0.267	0.467	0.497
ESCCB-Purchase	0.108	0.125	0.148
Eco-socially Conscious Consumer Behaviour	0.157	0.334	0.319
Adjusted R^2:			
ESCCB-Conservation	0.266	0.465	0.495
ESCCB-Purchase	0.107	0.122	0.144
Eco-socially Conscious Consumer Behaviour	0.156	0.331	0.314

7.10 Conclusion

Chapter Seven has reported the results of Study 2 encompassing RQ$_3$. The data collected through survey methodology ($n = 1{,}372$) was utilised to assess the theoretical frameworks based on TPB, VBN and an integrated model. The results supported testing the corresponding hypotheses of each theoretical model. The comparison of the three models is presented to deduce which model better predicts eco-socially conscious consumers' behavioural intentions and actual behaviour linked with purchase and use of personal cars. The following chapter (Chapter 8) discusses the implications of the findings from both studies and provides guidelines for policy makers and marketing practitioners. The conceptual and methodological limitations of both studies (Study 1 and Study 2) are outlined in this chapter, together with future research directions.

Chapter Eight: Discussion and Conclusion

8.1 Introduction

The overall objective of this thesis was to explain the factors that influence individuals' ESCCB related to choice and use of personal cars in the context of an emerging economy, Pakistan. To achieve this overarching objective, three underlying research questions were identified and informed the development of two main studies. The first study, Study 1, was comprised of the first (RQ_1) and second research questions (RQ_2), while the second study, Study 2, encompassed the third research question (RQ_3). The three research questions identified in this thesis, based on research gaps in the literature, were as follows:

RQ_1: How can social and ecological perspectives of consumer behaviour, related to purchase and use of green cars, be assessed in one measurement scale, in an emerging economy context?

RQ_2: How do consumers of the automobile industry of Pakistan differ from each other on various demographic, psychographics and behavioural variables?

RQ_3: Which factors effect ESCCB in an emerging economy context?

The results of Study 1 and Study 2 are summarised in Chapter Five: Results of Study 1, and Chapter Seven: Results of Study 2, respectively. This present chapter, Chapter Eight, summarises both studies (Study 1 and Study 2), discusses the findings of all three research questions (RQ_1, RQ_2 and RQ_3), and reflects on theoretical and managerial implications based on these findings. This is followed by a discussion of limitations and recommended future research directions. The chapter concludes with a summary of findings and recommendations.

8.2 Discussion of the Results of Study 1

Study 1 in this thesis answered the two research questions, RQ_1 and RQ_2. RQ_1 was focused on defining the concept of eco-social behaviours by integrating ecological and social behaviour together in one domain. By this means, the behaviours linked with use and purchase of personal cars were viewed through the lens of eco-social domain. The following section discusses the findings of RQ_1.

8.3 RQ1: Understanding ESCCB in the Pakistani Context

Section 5.2: Sub-Study 1: Measure of ESCCB related to Choice and Use of Green Cars, reported in Chapter Five: Results of Study 1 of this thesis documents a series of supplementary sub-studies used for the development and validation of the ESCCB scale designed to measure consumer behaviour towards the purchase and use of personal cars in the specific socio-cultural context of an emerging economy. In so doing, sub-study 1 fills a gap in the literature by establishing a customised measure to capture consumer behavioural intentions related to one of the most influential human activities affecting climate change, i.e., purchase and use of personal cars. The scale development process resulted in a 9-item measure with three dimensions, achieving satisfactory internal reliability for the whole scale ($\alpha = 0.812$) and for all the individual factors (see Table 5.4). The alpha levels suggest that scale items are ideally correlated, and the underlying factors are adequately distinct to develop the three different dimensions representing the ESCCB scale (Nunnally, 1978a; Streiner, 2003). A test of validity further confirmed that each dimension reflected satisfactorily on its higher-order construct (AVEs > 0.5) and demonstrated individual distinctiveness ($R^2 < \sqrt{AVEs}$) (Fornell & Larcker, 1981). It is believed that this is the first study of its kind to provide a comprehensive measure of consumer behaviour related to purchase and use of personal cars that demonstrates psychometric rigour and operationally valid results on a national sample. Most previous studies in related areas either emphasise general pro-environmental behaviours (Dunlap & Van Liere, 2008; Tilikidou, 2013) or inadequately address the issue of purchase and use of personal cars (Armel et al., 2011; Kaiser & Wilson, 2000; Markle, 2013), leaving conceptual and methodological gaps. Therefore, sub-study 1 extended the existing literature to improve understanding of an important category of climate change behaviours – purchase and use of personal cars.

8.3.1 Eco-Social Purchase

The findings of supplementary sub-study 2 show that the 'eco-social purchase' was the most significant dimension of ESCCB ($\beta = 0.456$). Eco-social purchase consisted of items focused on consumers' purchase of an electric vehicle, which was seemingly unexpected in the context of a country where an energy crisis is at its peak. However, increasing sales of hybrid car in Pakistan suggests that there is an increasing inclination

on the part of consumers towards the purchase of alternative fuel vehicles irrespective of operational costs and infrastructural hurdles (Khan, 2015).

8.3.2 Eco-Social Conservation

The 'eco-social conservation' dimension proved to be the second most significant facet ($\beta = 0.446$) of ESCCB. This evinces that consumers prefer to buy an auto brand that gives maximum fuel efficiency and that they are concerned about consumption and mileage. This preference is reflected through findings regarding consumers' disposition towards the purchase of a car with high rear-axle ratio and tyres that create the least possible friction to ensure that less fuel is consumed. As noted in the literature review, decisions related to fuel efficiency can help in reducing CO_2 emissions which is, by far, the most significant contributor to global warming and climate change (de Richter et al., 2016; Montag, 2015).

8.3.3 Eco-Social Use

Finally, 'eco-social use' was the third important dimension of the ESSCB scale ($\beta = 0.403$), characterised by items including environment-friendly alternative appraisal for travelling, driving at lower speeds and maintaining a steady driving pace. This showed high levels of concern among consumers towards the ecologically oriented use of personal cars which is important from an environmental perspective. As noted in the literature review, use of environmentally friendly technology alone may not help to reduce the negative effects of human activities on the environment, so responsible consumer behaviour is instrumental in this respect – thus we may hold that eco-social use of cars is a way forward towards ethical consumption.

The nomological testing of the ESCCB scale (supplementary sub-study 3) against a related construct, environmental concern, showed significant positive relationship between the both constructs ($\beta = 0.67$, t = 9.75, p < 0.01), thus, supporting our assertion that ESCCB correlates with related constructs as expected in the literature (Jekria & Daud, 2016). More specifically, it was found that consumers with concern for the environment and biodiversity showed a high positive inclination towards ESCCB ($\beta = 0.75$, t = 4.48, p < 0.01).

8.3.4 Implications for the Marketers and Policy Makers

In summary, the ESCCB inventory proposed and validated in this study attempts to integrate the fragmented explanations of personal car use and purchase, reflected as subscales or items of subscales presented in several existing works (Armel et al., 2011; Kaiser, 1998; Markle, 2013). The distinction of ESCCB lies in its focused approach towards personal car use and purchase behaviours. Therefore, this scale can be utilised to assess eco-social use, conservation and purchase behaviours, especially in an era of unprecedented global commitments towards emissions reduction by decreasing personal car use and eliminating petrol and diesel cars (Swinford, 2017).

The findings related to RQ_1 of Study 1, offer both academic and practical contributions. Academically, these findings advance the extant literature on pro-environmental behaviours and introduce a new perspective by integrating social and ecological behaviours, specified on purchase and use of personal cars. The major academic contribution is a conceptualisation of a somewhat elusive concept, that of ESCCB and the offering of an integrative framework including actionable dimensions of eco-social conservation, eco-social purchase and eco-social use of personal cars. Unlike previous measures mostly focused on general ecological behaviours, the ESCCB scale specifically focuses on behaviours related to purchase and use of personal cars, thus providing a detailed account of this important pro-environmental behaviour. The findings have provided empirical evidence resulting in a testable scale achieving satisfactory reliability and validity. The model of ESCCB obtained therefore provides useful foundations on which further theoretical and empirical research can be built across different cultures and contexts.

This new conceptualisation of ESCCB can benefit several stakeholders of automobile industry in different ways. Recognising the importance of the effects of purchase and use of personal cars on the environment, the findings of RQ_1 provide useful insights for automobile marketing practitioners and customers, government and NGOs. There are two important implications that marketing managers may consider while devising plans for existing and new brands of personal cars. Firstly, as eco-social purchase is the most important factor of ESCCB, which is focused on the purchasing preference of consumers regarding electric vehicles, this presents an opportunity for automobile manufacturers to invest in this growing market. This may be an especially attractive strategy, due to liberal government initiatives for the automobile industry for 2016–2021

224

(EDB, 2016), which have created potentially lucrative investment opportunities in the environment-friendly vehicle market. Secondly, eco-social conservation is the dimension which consumers regarded as the second most important factor. Therefore, marketing managers should consider developing marketing messages that aim to bolster positive perceptions of an automobile's environmental performance, by emphasising the vehicle's fuel conservation capability through its design and technological innovation (AFDC, 2017). Such messages are likely to increase the prestige of brands which intend to build their image on environmental performance.

For NGOs focusing on climate-change policy and environmental management programs, the newly developed construct of ESCCB provides guidelines for some actionable strategies. The results indicated that the eco-social use dimension included items that were focused on socially responsible use of cars in terms of adhering to speed limits and choosing environmentally friendly alternatives to travel. Hence, social marketing campaigns may be designed in collaboration with local authorities to educate consumers with messages such as 'drive slow – drive safe' and 'protect life – save environment', to promote prosocial use of cars and reduce fuel use, ultimately reducing the anti-environment impacts of personal car usage. Finally, policy makers and government agencies may consider partnering with industry to invest in the development of infrastructure to support the use of electric vehicles. Such long-term initiatives may not only contribute to clean environment objectives but also boost growth in the automobile sector eventually leading to increased governmental tax earnings.

8.3.5 Limitations in the Use of ESCCB and Future Research Directions

Considering that this study is the first attempt to develop and validate a framework of ESCCB related to purchase and use of personal cars, the findings presented may not be absolutely conclusive. There are some limitations which offer avenues for future research. First, there were two sets of data utilised for the scale development: the first dataset for initial screening of item pools and the second for testing validity, including nomological behaviour of the newly developed scale. Though the second dataset was split into two subsamples to ensure that construct validity and nomological validity were based on different samples, the literature recommends use of an entirely different set of data for testing nomological behaviour of constructs. Future studies may consider this literature suggestion. Second, the Pakistani automobile industry is highly regulated, thus reducing

consumers' choices. The ESCCB scale generated in such a context needs to be validated in countries with a much more liberal industry structure and consumer purchasing behaviour that avails greater choice in the market. For that purpose, the initial 22-items (given in Table 5.2: Corrected Item-total Correlation – Pilot Study (n=174)) may be utilised to confirm scale reliability and validity in different cultures. Finally, the Kaiser (1974) criterion of Eigen values was utilised to determine the number of components underlying ESCCB construct which may understate the number of factors in certain cases. It is therefore suggested to use minimum average partial test (MAP) (Velicer, 1976) to cross-validate the exact number of factors by using R-Menu v2.0 for SPSS (for detailed procedure, see Courtney, 2013). An MAP test may be applied on 22-items initial pool reported in Table 5.2: Corrected Item-total Correlation – Pilot Study (n=174).

8.4   RQ$_2$: Understanding Green Consumer Segments

The second research question, RQ$_2$, of Study 1, aimed at understanding green consumer segments and their characteristics. The findings of Sub-Study 2: Generating Consumer Profiles , identify three consumer segments based on their eco-social behaviour, thereby answering RQ$_2$. The detailed description of the resulting segments is provided in sections 5.3.3:The Conservatives, 5.3.4:The Indifferents, and 5.3.5: The Enthusiasts, of this thesis. The following sections provide a discussion on characteristics of the three segments and highlight some implications based on the findings.

8.4.1   Comparative Discussion of the Three Segments

The composition of the three segments, i.e., the enthusiasts, the indifferents and the conservatives, reveals that 'the enthusiast' group consists of slightly over half (51.6 per cent) of the total sample. Studies reported in the literature show that, on average, pro-environmental segments constitute approximately 35%-45% (for instance, see González, 2015; Paço & Raposo, 2009; Yilmazsoy et al., 2015). Thus, the much higher percentage (51.6 per cent) figure for enthusiasts is an important finding for this study as well as in the context of other explorations on this topic. Furthermore, the findings demonstrate greater awareness and inclination of customers towards pro-environmental behaviours in the emerging economies, which, in turn, provides an opportunity to promote green brands, and eco-social behaviours.

The analysis of the clusters revealed that 'biospheric values' is an important factor differentiating between the three segments. This finding is consistent with a similar study

conducted in Sweden reporting that decisions regarding choice of high-involvement eco-innovations and curtailment behaviours are strongly influenced by biospheric values (Jansson et al., 2010). However, in terms of a hierarchy of importance, 'egoistic values' is the most important factor differentiating the three segments. Interestingly, however, this finding contradicts the way literature in the field ranks the importance of the three constituents of environmental concern, i.e., biospheric, altruistic and egoistic values, in predicting pro-environmental behaviours. For instance, Fornara et al. (2016) and Snelgar (2006) suggest that biospheric values are the most important constituent of environmental concern. These are directly associated with environment-related issues and, hence, the most significant predictors of pro-environmental behaviours. Similarly, there are some studies which even note that egoistic values are negatively associated with pro-environmental behaviours (Jansson et al., 2010; Nordlund & Garvill, 2002, 2003), which is in line with the original definition of this construct (Schwartz, 1992; Stern et al., 1998). Nonetheless, it is noted by De Groot and Steg (2009) that aligning 'anti-environmental' egoistic values with 'pro-environmental' altruistic and biospheric values can result in an even stronger and more sustained commitment towards pro-environmental behaviours than 'pro-environmental' values, i.e., biospheric values, alone. The latter is consistent with the findings of RQ2. Additionally, it is prudent to mention here that such dissimilarities are admissible because of the differences in the measurement of the egoistic values construct. In relation to the conduct of the study designed to answer RQ2, measurement of values followed the approach of conceptualising the values as 'consequences' (see, for details, Joireman, Lasane, Bennett, Richards, & Solaimani, 2001) rather than 'fundamental values' (see, for details, Schwartz, 1992), which caused the major dissimilarities between the results of RQ2 and the others studies in literature mentioned above.

The findings of RQ2 add to the small number of contributions in the literature linking spirituality with pro-environmental behaviours (Chairy, 2012; Crowe, 2013; Garfield et al., 2014). Results showed that spirituality is the second most significant factor differentiating between 'the conservatives,' 'the indifferents' and 'the enthusiasts'. Given that the concept of spirituality is detached from religious associations (Garfield et al., 2014), these findings indicate scope for further research on this construct for several categories of pro-environmental behaviours across various cultural settings. More specifically, evidence on spirituality presented in the findings of RQ2 validates the

application of the 'oneness belief scale' in a non-Western context. This broadens the potential research horizon into more spiritually-focused Asian economies such as China, India, and Indonesia (Palmer & Siegler, 2017).

After environmental values and spirituality, perceived consumer effectiveness (PCE) is the third most important factor demarcating the three segments. The results show that 'the enthusiasts' consider themselves capable of affecting the environment through their consumption pattern, a finding consistent with the conclusions of previous studies (see, for example, Akehurst et al., 2012; Jacobs et al., 2015; Kabaday, Dursun, Alan, & Tuğer, 2015). Conceptual commonalities were found between PCE and environmental locus of control (ELOC) (Cleveland et al., 2012; Trivedi, Patel, & Savalia, 2015). This link provides an avenue to further the research on ELOC by proposing its relationship with pro-environmental behaviour in line with the results of PCE provided in this current study.

A comparison of the three sub-scales of ESCCB highlights that eco-social use of personal cars is the most important factor discriminating among the three segments. This is followed by the additional two sub-scales, eco-social conservation and eco-social purchase. Although eco-social purchase, reflected by preference towards AFVs, is also statistically significant in differentiating between the three groups, its importance comes in slightly lower than the other two ESCCB dimensions. This reflects that 'the enthusiasts' segment places more emphasis on conserving resources in the use of personal cars than investing in eco-technology. While this finding differs from previous studies in developed economies which showed a growing interest among consumers to invest in eco-technology in personal cars (Coad et al., 2009; Qian & Soopramanien, 2011, 2015), the results of the current study are plausible. There are infrastructural impediments to the choice and use of AFVs in Pakistan that hinder consumers' ability to adopt this technology.

As for demographic characteristics, the findings of the RQ_2 note that gender, education, the city of residence and income are important factors significantly discriminating between the three segments. Results regarding gender provide a resolution for the inconsistent evidence reported in prior literature. As noted earlier, one research stream suggests gender to be a non-significant factor in discriminating between green and non-green consumers (D'Souza et al., 2006; Finisterra do Paço & Raposo, 2010) while another proposes that green consumers are significantly different from non-green

consumers with respect to gender (González, 2015; Yilmazsoy et al., 2015). The findings of RQ2 reveal that 'the enthusiasts' segment primarily consists of male (74.4%) consumers, unlike 'the indifferents' (70.8%) or 'the conservatives' (59.1%). The cross comparison of individuals in total sample with 'the enthusiasts' group shows a greater percentage of males in the latter (the enthusiasts: 74.4%, 25.6% female; total sample: 70.3% male, 29.7% female). This shows that males appear more concerned about environmental issues than females, however, these findings should be utilised with caution as the sample is overly represented by males.

Results related to the level of education highlight that 'the enthusiasts' have the higher percentage of consumers with a graduate degree (31.9%) whereas this percentage is significantly lower for 'the indifferents' (20.5%) and 'the conservatives' (22.7%). These findings are consistent with the literature (Awad, 2011; González, Felix, Carrete, Centeno, & Castaño, 2015) supporting the notion that consumers with a high level of education perform more eco-social behaviours than those who are relatively less educated. Consistent with the level of education, the proportion of people with relatively high monthly income (106000 rupee or above) is higher for 'the enthusiasts' (14.3%) as compared to 'the indifferents' (8.7%) and 'the conservatives' (7.8%) which is consistent with the literature (Jain & Kaur, 2006; Yilmazsoy et al., 2015).

8.4.2 Implications for Marketers and Policy Makers

Although the Pakistani economy is gradually picking up pace with an impressive growth in the automobile sector, rapidly rising environmental pollution exacerbated by the high use of traditional technology-driven personal cars is a growing concern. Particularly, predictions of future deadly heat waves potentially caused by global warming and temperature anomalies (Im et al., 2017) are alarming for environmentalists and policymakers. In such situations, controlling the emissions of GhGs (most importantly CO_2) is a growing challenge. The findings reported in this study provide a step forward in the direction of promoting eco-social behaviours related to purchase and use of AFVs, which can help reduce carbon footprints. The description of segment profiles can be valuable for policymakers and also for firms for strategy making at the corporate level. For instance, the size of the pro-environmental segment (51.6%), 'the enthusiasts', indicates a high level of environmental values among consumers, willingness to engage in eco-social conservation, and inclination towards the purchase of AFVs. Particularly, keeping in view the aim of reducing CO_2 emissions and conservation

of natural resources (fossil fuels), firms can target 'the enthusiast' segment to promote AFVs. The marketers need to focus on psychosocial and behavioural characteristics of the consumers of 'the enthusiast' segment and develop product, price and promotion strategies accordingly. The resulting products may then be marketed using appropriate vehicles of communication. For instance, AFVs can be targeted at high income and educated class residing in urban areas of densely populated regions. Promotion strategies for such cars may consider emphasising cars' environmental performance and capacity to reduce carbon footprints to attract eco-social consumers' segment, i.e. 'the enthusiasts'. The findings relevant to the elements of eco-social conservation and eco-social use can guide environmentalists who consider environmentally oriented anti-consumption to be a means for sustainability (García-de-Frutos et al., 2016). Bearing in mind that extensive use of personal cars can lead to more emissions and depletion of resources, the social marketing campaigns may focus on 'the enthusiast' segment to promote ethical car use and avoiding using personal cars whenever possible. If this type of focus is successful, it may result in increased ethical consumer behaviour leading to less fuel consumption and reduced road congestions. Another interesting implication relates to the results regarding the 'spirituality' variable. The findings show that the individuals with spiritual inclinations can be persuaded to purchase AFVs by linking product attributes with spiritual teachings. Marketers should carefully consider this element in the promotion of AFVs. This finding is not only useful for automobile industry marketers to promote the purchase of AFVs but also for social marketing organisations to promote other ecological behaviours including recycling, resources preservation, environmental protection and conservation of biodiversity. This approach can be useful because spiritual teachings in many emerging economies emphasise environmental protection, maintaining the balance of nature, and sustainable behaviour (Abdul-Matin, 2010).

8.4.3 Limitations Pertinent to the Findings of RQ$_2$ and Future Research Directions

Although considerable attention was devoted to the conceptual accuracy and methodological rigour adopted to answer RQ$_2$ in this thesis, the approach cannot be claimed to be entirely free of limitations. Several areas provide opportunities for future research in this domain. First, because of gender bias in the sample for RQ$_2$, the external validity of the results may be restricted (Baris et al., 2015). Future studies should aim to employ stratified sampling techniques, taking gender as one of the criteria for stratification. Second, the conceptual model of RQ$_2$ presented in Figure 2.1: Conceptual

Model for Segmentation Analysis, is also confined to differentiating eco-social consumers from ordinary consumers in personal cars' choice and use. Future studies should aim to provide explanatory models for other eco-social behaviours including recycling, energy conservation and ecological purchases, following the methodology adopted in this thesis. This may help to validate the results of RQ_2 across different sectors and population segments. Finally, there is a need to conduct a similar type of segmentation studies in other developing countries to assess the nature and inclination of consumers towards environment-friendly products and eco-social behaviours.

8.5   Discussion of the Results of Study 2

The second study of this thesis, the Study 2, utilised the input from Study 1 and endeavoured to provide a theoretical explanation of ESCCB utilising the TPB, the VBN theory and an integrated model of the both theories, thereby answering RQ3. The following sections discuss the results, implications based on findings and limitations linked with the three theoretical models of ESCCB.

8.5.1   RQ3: Theoretical Explanation of ESCCB

The theory of planned behaviour (TPB) and the Value-Belief-Norm (VBN) Theory are utilised to provide theoretical explanations of factors that affect ESCCB. The following section discuss the results of TPB and VBN.

8.5.2   Theory of Planned Behaviour

Results related to the estimates of theory of planned behaviour are consistent with the current stream of research related to application to TPB in various contexts. As this thesis attempted to test both models of the TPB, i.e., with and without background factors, the following sections provide separate discussions of the results pertaining to the both models.

8.5.2.1   *Discussion of results of TPB model without background factors*

The core constructs of the TPB model include normative beliefs (injunctive and descriptive), beliefs towards behaviour and control beliefs. These beliefs link directly with their corresponding attitude set (subjective norms, attitude towards behaviour and perceived behavioural control) which lead to intentions and subsequently to actual behaviour subject to some effects of actual behaviour control (Fishbein & Ajzen, 2010a). Results reported in Table 7.5, show that, as proposed, the individuals' beliefs are

positively associated with attitude towards behaviours, subject norms and perceived behavioural control. It is however, evident that normative beliefs (injunctive and descriptive) about ESCCB (ECCB-purchase, ESCCB-conservation and actual ESCCB) have stronger association with their respective causal chain constructs (injunctive and descriptive norms) than control and behavioural beliefs. This suggests that normative beliefs are stronger triggers of ESCCB at the initial level of causal array of the TPB and that individuals who believe that important others are involved in ESCCB and require the same from individuals, are strongly likely to develop positive subjective norms towards ESCCB. The control beliefs are the second most important belief set in terms of strength of associated with respective attitude i.e., perceived behavioural control, followed by association of behavioural beliefs with attitude towards behaviour. Interestingly however, the results showed that religiosity is though significantly associated with attitude towards behaviour but is the weakest factor in terms of magnitude of association. This is somehow surprising for a collectivist religious society, however, the recent wave of liberalism and departure from dogmatic religious following has started a debate in Pakistani society about rational justification of religious teachings instead of blind faith. This has increased tolerance for conflicting beliefs and behaviours are more often driven primarily through the lenses of self-interest. Perhaps this is the reason why the product of religious beliefs with behavioural beliefs is associated negatively with attitude towards behaviour, suggesting that people still believe in traditional religious thought of human dominance over natural resources and other elements of the ecosystem. Apart from consistency with some literature on religiosity and pro-environmental behaviours (Bhuian & Sharma, 2017; Islam & Chandrasekaran, 2015), this evidence also is consistent with findings from a recent study conducted in China (Yang & Huan, 2018). Further analysis shows that although attitude towards ESCCB is positively associated with both ESCCB-purchase and conservation intentions, the link is very weak between attitude towards behaviour and ESCCB-purchase. Further in the causal chain, it is evident that the individuals who are influenced by important others to engage in ESCCB are willing to engage in ESCCB-conservation intentions but not purchase. Consistent with this pattern of findings, perceived behavioural control also leads positively to conservation intentions but not to purchase intentions. However, if individuals find important others to be engaged in both ESCCB-purchase and conservation intentions (subjective descriptive norms), then they are also likely to intend to engage in both behaviours. This shows that a positive attitude

towards ESCCB and expectations about others that they will engage in ESCCB-purchase and conservation intentions may strongly lead to individuals' intentions to engage in both ESCCB-purchase and conservation. Finally, both ESCCB-purchase and conservation intentions lead to actually performing eco-socially conscious consumer behaviour that is the targeted behaviour related to choice and use of personal cars. It is also worthwhile to note that perceived and actual behavioural controls are directly linked with actual ESCCB but the product of perceived behavioural control with ESCCB-purchase and conservation intentions is not associated with actual ESCCB. The findings are similar for moderating effects of actual behavioural control. All the findings of direct effects summarised above not only correspond to actual proposal of the TPB (Fishbein & Ajzen, 2010b) but also to several studies later confirming the application of TPB in a range of prosocial (Lin, Broström, Nilsen, & Pakpour, 2018; Lin, Updegraff, & Pakpour, 2016; Potard, Kubiszewski, Camus, Courtois, & Gaymard, 2018) and environmental behaviours (Adnan et al., 2018; Gao et al., 2017; Taufique & Vaithianathan, 2018).

The TPB proposal suggests the targeted behaviour under investigation is reached through a causal chain process involving multiple intervening factors (mediators and moderators) (Fishbein & Ajzen, 2010b). Results reported in the Table 7.6, reveal that behavioural beliefs positively lead to ESCCB-conservation and purchase intentions through attitude towards behaviour. The indirect of attitude towards behaviour is stronger for ESCCB-conservation as compared to ESCCB-purchase intention. Similarly, behavioural beliefs leading to actual ESCCB through ESCCB-purchase intentions receive a positive significant but a very weak indirect effect as compared to the relationship leading through ESCCB-conservation intention. This is plausible as ESCCB-purchase intention is a high-involvement behavioural intention and requires more complex analyses as compare to ESCCB-conservation, (Jansson et al., 2010; Nayeem & Casidy, 2013; Oliver & Lee, 2010), hence, weakly associated with actual ESCCB. Similar results appear in more conclusive ways when normative injunctive beliefs are found positively associated with ESCCB-conservation intentions and actual ESCCB through a causal chain of injunctive norms, but the relationship with ESCCB-purchase intentions and with actual ESCCB through ESCCB-purchase intentions, in the similar causal chain as above, is not statistically significant. These findings further strengthen the arguments that ESCCB-purchase intentions involve complex decisions and therefore are not simply based on the beliefs that important family or friends expect one to buy an environment-

friendly car. A similar pattern of indirect association is evident in the causal chain process of control beliefs with ESCCB-purchase intention through perceived behavioural control, and with actual ESCCB through perceived behavioural control and ESCCB-purchase intention. Again, actual behavioural controls also lead to positive ESCCB-conservation intentions through perceived behavioural control, and to actual ESCCB through perceived behavioural control and ESCCB-conservation intention but the pattern of results for ESCCB-purchase intentions is no different from control and injunctive beliefs' causal chain reported above. However, when individuals expect that their family, friends and important others may also engage in buying an environment-friendly car (descriptive beliefs), their likelihood of ESCCB-purchase intentions increases – evinced by a statistically significant indirect positive association of normative injunctive beliefs with ESCCB-purchase intentions through injunctive norms and actual ESCCB through injunctive norms and ESCCB-purchase intentions.

The discussion of results presented above shows that the TPB model receives full support for a relatively low involvement behaviour, i.e., ESCCB-conservation, as compared to a high-involvement behaviour, i.e., ESCCB-purchase. The only distinctive factors are highly positively beliefs about ESCCB-purchase and individuals' expectations that other people will also engage in ESCCB-purchase.

8.5.2.2 *Discussion of results of TPB model-Multi-group analysis (MGA)*

In addition to core constructs and original causal chain processes of the TPB model, an extended TPB model was also tested in this thesis, involving some background factors. Demographic factors were tested in a multi-group model and the discussion of findings is presented in this section while the discussion on factors including lifestyle and environmental knowledge is presented in the succeeding section.

Based on the extended model of Fishbein and Ajzen (2010a, p. 22), age, income, gender and education are included as background social factors in the extended model of TPB. Results of multi-group analysis based on gender show that in case of males, ESCCB-conservation and purchase intentions are more strongly associated with actual ESCCB as compared to females and the difference in effects is statistically significant. A similar pattern holds for the relationship of subjective descriptive norms and ESCCB-purchase intentions. No other paths have statistically significant differences when the male and female groups are compared. Hence, the results suggest that males are more susceptible to descriptive norms in forming ESCCB-purchase intentions and that their

purchase and conservation intentions are more likely to convert into actual ESCCB as compared to females. The differential of indirect effects between male and female groups suggests that in the case of males, attitudes towards behaviour, behavioural beliefs, normative descriptive beliefs, religiosity and descriptive norms more strongly associate with actual ESCCB through their causal chain, as compared to females. The causal association of behavioural and descriptive beliefs with ESCCB-purchase intentions through their respective constructs is also stronger for males as compared to females. It can thus be inferred that, although there exist very minor differences of path estimates between male and female groups in the TPB model, where these differences exist, males are found more sensitive as compared to females to the theoretical explanation of ESCCB through the TPB proposal.

For MGA based on age, respondents were distributed into two groups for simplicity of analyses: young and mature. Quite consistent to the findings related to gender, the results show that very few differences exist in direct and indirect effects of the TPB model between young and mature respondent groups. It is found that the direct estimates of paths from attitude towards behaviour and subjective descriptive norms to ESCCB-purchase intentions are stronger for mature as compared to young respondents and the difference in estimates is statistically significant. Similarly, the path from ESCCB-purchase intentions to eco-socially conscious consumer behaviour also finds a stronger estimate for mature respondents as compared to young respondents, and the differential in estimate is statistically significant. The indirect effects model shows that the indirect estimate in the causal chain of religiosity to ESCCB-conservation is stronger for mature respondents as compared to young respondents. Similarly, the indirect effect caused by the causal chain constructs between subjective descriptive norms and eco-socially consumer behaviour is also stronger for mature respondents as compared to young respondents. In conclusion, it is evident that there are very few differences between young and mature respondents related to the performance of the TPB model and where these differences exist, mature respondents seem to be more sensitive as compared to young consumers in performing ESCCB through the causal chain of the TPB model.

The MGA based on education and income are more complex as compared to age and gender. The reason is that there are more group categories (three) in income and education variables. First, the MGA related to income was conducted by dividing the respondents in low, medium and high-income groups. The results reveal the direct effect

estimates of the relationship of attitude towards behaviour, perceived behavioural control and subjective descriptive norms with ESCCB-purchase intentions are stronger for high-income group respondents as compared to medium income group respondents. Similarly, the estimate of direct effect between attitude towards behaviour and ESCCB-conservation is also stronger for high income group respondents as compared to medium income group respondents. Also, ESCCB-purchase and perceived behavioural control are more strongly associated with eco-socially conscious consumer behaviour for high-income group respondents as compared to medium income group respondents. A similar pattern is evident in the comparison of high- and low-income group respondents. The estimates for relationships of attitude towards behaviours with ESCCB-purchase intention and eco-socially conscious consumer behaviour, and perceived behavioural control with ESCCB-purchase intentions and eco-socially conscious consumer behaviour also have stronger estimates for the high-income group as compared to the low-income group. Interestingly, comparison of low- and medium-income groups shows that the low-income group is more sensitive as compared to medium-income group when it comes to various direct-effect relationships between constructs of the TPB. For instance, the estimate of relationship between attitude towards behaviour and ESCCB-conservation intentions is stronger for the low-income group as compared to medium income and the differential is statistically significant. The same pattern follows for the estimates of relationship between subjective descriptive norms and ESCCB-purchase intentions, religiosity and attitude towards behaviour, perceived behavioural control and eco-socially conscious consumer behaviour, injunctive beliefs and injunctive norms, and ESCCB-purchase intentions and eco-socially conscious consumer behaviour. In conclusion, the results indicate that those in very high and very low-income groups are more sensitive as compared to medium-income group members. The reason why high-income group members are more sensitive to environmental cause is the availability of resources to spend on eco-innovations and ESCCB related behaviours as also reported in literature (Poortinga, Steg, & Vlek, 2004; Shen & Saijo, 2008). On the other side, those who are in the low-income group are more interested in ESCCB-conservation intention and actual ESCCB behaviour as compared to ESCCB-purchase intention owing to the fact that they lack resources. The reason for the sensitivity of low-income group respondents towards the environmental cause is their increased vulnerability to environmental problems which increases their awareness of such issues (Cottrell, 2003; Scott, 2006).

Finally, for MGA based on education, the respondents are divided in three groups: Bachelor's degree holders, Master's degree holders and Professional degree holders. Results showed that Bachelor's degree holders are more sensitive to Master's degree holders for paths between attitude towards behaviour and ESCCB-purchase intention, and control beliefs and perceived behavioural control. Similarly, the estimates of paths between control beliefs and perceived behavioural control, perceived behavioural control and ESCCB-conservation, and subjective descriptive norms and ESCCB-purchase intentions are stronger for Bachelor's degree holders as compared to professional degree holders. At the end, the estimates of paths between injunction beliefs and injunctive norms, descriptive norms and ESCCB-conservation intention, and descriptive norms and ESCCB-purchase intentions are found stronger for Master's degree holders as compared to professional degree holders. In conclusion, those who hold Bachelor's degrees are more sensitive to environmental problems and willing to engage in eco-social purchase and conservation related behaviours as compared to Masters or Professional degree holders. Though the literature stream on the relationship of education to pro-environmental behaviours states that higher levels of education are more strongly associated with pro-environmental behaviours (Chan, 2000; Finisterra do Paco et al., 2009), some evidence suggests that a very high level of education may also give rise to environmental scepticism (Jain & Kaur, 2006). It is therefore argued that the Bachelor's degree holders are aware of environmental problems and are more enthusiastic as compared to Master's or Professional degree holders, to change the environmental conditions by involving in pro-environmental behaviours.

8.5.2.3   *Discussion of Results of the TPB Model with Background Factors*

The other set of background factors besides demographic variables are lifestyle and environmental knowledge, linked with belief set of the TPB proposal. Therefore, the distinctive path coefficient of the extended TPB model relates to how lifestyle and environmental knowledge shape the belief sets and the overall specific indirect effects based on these background factors. The direct effect estimates reported in Table 7.7, show that knowledge about environmental problems is positively associated with behavioural, control, descriptive and injunctive beliefs. Interestingly, the individuals who are aware of environmental issues are more likely to believe that their family and friends will also engage in ESCCB, thus, the relationship between environmental knowledge and descriptive beliefs is stronger followed by those between environmental knowledge and

behavioural beliefs, environmental knowledge and injunctive beliefs, and environmental knowledge and control beliefs. On the other side, individuals who care about GhG emissions in their daily life are found to have very strong positive associations with injunctive beliefs followed by behavioural, control and descriptive beliefs. Similarly, those who lead a healthy lifestyle have strong positive beliefs towards ESCCB, believe that their friends and family will engage in ESCCB, believe that their engaging in ESCCB can affect the environment, and hold that their important others expect them to engage in ESCCB. Along with direct association of these background factors, specific indirect effects are also produced. Results follow the same pattern as that evident in direct effects of background factors and indirect effects without background factors. It is clear that most of the indirect effects' relationships leading to ESCCB-purchase intentions and further leading to eco-socially conscious consumer behaviour through ESCCB-purchase fail to receive support from the data. However, the relationships towards ESCCB-conservation intentions and through conservation intentions to further eco-socially conscious consumer behaviour are all well supported.

8.5.2.4 *Theoretical Implications of the TPB Model*

The proposal and validation of the TPB models in this thesis contributes to the relevant literature in several ways. First, application of the TPB model in the context of an emerging economy and its receiving full support testifies that the TPB proposal is equally applicable in the emerging economies as well and can be applied to various other cultural contexts of similar nature to Pakistan. Second, the behavioural context of ESCCB is another unique contribution to the TPB model. While curtailment and efficiency behaviours have been validated in some past studies in isolation (Jansson et al., 2010; Jansson, Marell, & Nordlund, 2011), the current TPB model of ESCCB is the first of its kind to propose an integrated measure of ESCCB including curtailment, efficiency and eco-innovation adoption behaviours. The third contribution to the model of TPB is the divergent analysis of injunctive and descriptive norms instead of a combined subjective norms construct, which has not been very common in extant literature of the TPB (Dewberry & Jackson, 2018; Macovei, 2015; Maichum, Parichatnon, & Peng, 2016; Morten, Gatersleben, & Jessop, 2018). Finally, the extended model of TPB including a complete MGA and inclusion of frequently cited background factors provide another holistic dimension to the explanatory power of this proposal. The background factors associated with the TPB proposal were suggested by Fishbein and Ajzen (2010b) and

have been tested by several studies in past as well (Adnan, Md Nordin, Rahman, & Noor, 2017; de Leeuw, Valois, Ajzen, & Schmidt, 2015), however, the nature of background factors and level of evidence thereon provided differs significantly from this current study. This provides an addition to a variety of background factors that can affect the original constructs of the TPB proposal.

8.5.2.5 *Implications for Marketers and Policy Makers*

The estimated model of the TPB (with and without background factors) provides several guidelines for marketers and the policy makers. First, building on the original guidelines of Fishbein and Ajzen (2010b), this study suggests developing an appropriate persuasive message aimed changing the personal car use behaviours of customers in the context of Pakistani culture. The TPB model tested here clearly shows that the ESCCB-conservation intentions and eco-socially conscious consumer behaviour are clearly supported through the causal chain process of the TPB constructs, and an appropriate intervention may be designed and implemented to promote sustainable transport choice behaviours. For instance, results clearly show that the subjective, injunctive and descriptive norms are more strongly associated with ESCCB-conservation intentions, and communication messages targeted to promote conservation related behaviours might feature endorsement of opinion leaders that they are also involved in conservation related behaviours. Similarly, a positive attitude towards behaviour and sense of perceived behavioural control may also be evoked to facilitate customers' engagement in conservation related behaviours. As a fundamental proposition of the TPB is that triggering behaviour-specific beliefs can help to elicit specific targeted behaviours, it is important to understand the bases of these beliefs for development of a useful intervention. As the results of the TPB models indicate that knowledge about environmental problems is an important factor that can activate beliefs supporting ESCCB related behavioural intentions and behaviours, it may be instrumental to develop a persuasive communication that highlights the environmental problems and their effects on human life. Additionally, it is important to understand that knowledge is an important factor to reduce consumers' ambiguities about environmental claims of organisations and hence reduces consumers' scepticism, which is a major reason why environmental behavioural intentions don't translate into actual behaviour (Suku, Michael, John, & Shadwell, 2006).

Finally, reducing actual behavioural controls may also prove an important factor in facilitating ESCCB related behaviours. For instance, availability of public transport, on road facilities for cycling, regulator measures including car park pricing and peak hour tax, and investment in infrastructure facilities to promote AFVs, may prove valuable.

8.5.2.6 *Limitations Pertinent to the TPB Model and Future Research Directions*

As for many other studies, the TPB model proposal and estimation also has some limitations. First, the background factors included in the extended TPB model are limited to sociographic, lifestyle and informational factors, ignoring some important individual factors including personality, mood, emotions, values, perceived risk and past behaviours. These elements were originally proposed in the model proposed by Fishbein and Ajzen (2010b). Future studies may consider including these factors in the TPB model of ESCCB and test whether these have any significant contribution in prediction ESCCB. Another limitation of this study originates from the editorial of Sniehotta, Presseau, and Araújo-Soares (2014) who emphasised that TPB may be tested in a longitudinal design by measuring objective behaviours instead of self-reports, and by pursuing experimental designs instead of correlational studies. While it is important to argue that the TPB model used in this current study only informs knowledge about how different constructs of the model are interlinked and leaves it up to practitioners to use this information for designing an appropriate intervention to promote ESCCB, it is noted that a longitudinal design and measurement of targeted behaviour using others reports or objective measures provide a useful future research avenue.

8.5.3   Value-Beliefs-Norms Theory

The VBN theory has been widely utilised in academic literature to explain pro-environmental behaviours, therefore it was utilised in this current study to provide a theoretical explanation of ESCCB. The results obtained are discussed in the following sections along with the implications for marketers, and limitations and future research directions.

8.5.3.1 *Discussion of Results of the VBN Model*

In this thesis, the VBN theory was tested for the first time not only in the cultural context of a major developing economy, Pakistan, but also for the behavioural context of ESCCB. The original value orientations (altruistic, egoistic and biospheric) are

empirically analysed in their causal association. The results indicate that the three value sets are idiosyncratically unique and relate well to their causal chain variable, i.e., AC. The measurement of other causal chain variables (AC, AR, and PN) is also specifically carried out in the light of target behaviours (eco-social purchase, eco-social use, ESCCB).

The results reveal that the VBN theory received full support in the cultural and behavioural context of this study. The study finds that egoistic, altruistic and biospheric values are all positively associated with the NEP construct, thus emphasising that individuals with personal gains linked with environmental protection, concern for environment and ecology and induced with helping behaviour tend to hold pro-environmental worldviews consistent with NEP, which states that humans are not exempt from the natural rules of mutual existence of all natural elements. These results are consistent with findings from some existing studies (Jansson et al., 2011; Jansson et al., 2017). Interestingly, it was found that egoistic values are much stronger than biospheric and altruistic values when it comes to association with NEP. It is plausible given the reasoning provided in the literature that egoistic values strongly relate to pro-environmental behaviours if aligned well with personal gains (De Groot & Steg, 2009). Among the major environmental problems caused by excessive use of personal cars in Pakistan are air pollution and road congestion, which, as noted in the literature review, result in respiratory diseases and stress that are among the growing health issues for individuals (Hoehne & Chester, 2017; Ramanathan & Feng, 2009). The behaviours related to curtailment in personal car use and purchase of environmentally friendly cars can provide an indirect solution to health problems arising out of air pollution (Wu & Zhang, 2017), hence align well with personal gains (egoistic values).

The direct effects model further revealed that a significant positive association exists between NEP and AC, AC and AR and that of AR with introjected and integrated personal norms, thus, corroborating with the most of extant literature on the VBN theory (Fornara et al., 2016; Rhead et al., 2015; Steg et al., 2005). Consequently, both integrated and introjected norms are found to be linked positively with eco-socially conscious consumers' purchase and conservation intentions as well as actual ESCCB. However, the results showed that the magnitude of association of introjected and integrated personal norms with the three targeted behaviours is not similar. Personal introjected norms associated strongly with actual ESCCB behaviour followed by ESCCB-purchase and then ESCCB-conservation. This demonstrates that those influenced by the feelings of guilt and

pride are more prone to actually performing curtailment and efficiency behaviours, followed by intentions to purchase an eco-friendly personal car and intentions of resources conservation in use of the personal car. Contrarily, those who are induced with a moral obligation towards eco-friendly behaviours are inclined more towards intentions of resource conservation than actually performing curtailment and efficiency behaviours and purchase and eco-friendly personal car. This varying influence of introjected and integrated norms on targeted behaviours holds critical importance for suggesting guidelines to policymakers and marketers of the automobile industry.

The specific indirect effects estimated and reported in the context of analyses of the VBN theory are also of particular importance. The results show that the role of NEP to moderate the relationships between the values and AC is stronger for egoistic values, followed by altruistic and biospheric values. A similar pattern follows when the relationships between values and AR are jointly mediated by NEP and AC, and when relationships between values and personal norms are mediated together by NEP, AC and AR. Similarly, the pattern exists for all of the consequential indirect relationships reported in Table 7.16, and as a result, biospheric values appear to be the most important factor leading to ESCCB-purchase, ESCCB-conservation and eco-socially conscious consumer behaviour via an array of causal relationships of the VBN theory, followed by altruistic and biospheric values. These results are different from some other studies where biospheric values are mostly the predominant factor leading to pro-environmental behaviours, followed by altruistic and egoistic values (Fornara et al., 2016; Hiratsuka et al., 2018; Ünal, Steg, & Gorsira, 2017). Nevertheless, a line of logic can be drawn from Snelgar (2006) who argued that the behaviours directly effecting self-interest are more strongly motivated by egoistic values than altruistic or biospheric. More recently, Ojea and Loureiro (2007) confirmed that altruistic and egoistic values are stronger determinants of willingness to pay for wildlife as compared to biospheric values.

8.5.3.2   *Theoretical Implications of the VBN Model*

Sustainability-related behaviours are long researched in literature in various cultural contexts. Theoretical models of eco-driving (Ünal et al., 2017), eco-innovation adoption (Jansson et al., 2011; Yusof et al., 2013) and curtailment behaviours (Hiratsuka et al., 2018) related to personal car use are also well documented. Nevertheless, theoretical models conceptualising personal car purchase and use, and resource (fuel) conservation from the lens of eco-social behaviour, and explaining the factors effecting

such behaviours in an integrated model, are rare. The development and analysis of the ESCCB model using the VBN theory is motivated by this opportunity. The VBN theory driven model of ESCCB proposes eco-socially conscious consumer behaviour in line with curtailment (eco-scoail use), efficiency (eco-social conservation) and adoption innovation (eco-social purchase) behaviours. The constructs of the VBN theory (values, beliefs and norms) are built in line with the specificity requirements of the targeted behaviour, i.e. ESCCB related to choice and use of personal cars. This model provides an opportunity for further critical appraisal of behaviours mentioned above in various cultures following the outcomes of this current study.

Further to specifying a multifaceted behaviour (ESCCB), the VBN theory was tested in a context that is culturally different from those of existing studies. This approach is strongly recommended in the literature (Hiratsuka et al., 2018). In so doing, the survey was administered to a respondent base comprised of actual customers of the automobile industry scattered across eight major cities of the country, thereby accounting for any cultural differences that might affect the behavioural measurement (Crotts & Erdmann, 2000; Hofstede, 2011). The test of the VBN theory in a developing country (Pakistan) context provides an opening to utilise the same model in neighbouring contexts with cultural similarities in individuals' values orientation.

Like many other studies (Hiratsuka et al., 2018; Steg et al., 2014; Ünal et al., 2017), the results of the VBN theory reported in this thesis provide support for the uniqueness of the three distinct value sets, i.e., egoistic, altruistic and biospheric values. Additionally, the results provide support for the argument that, in case of high-involvement decisions and where personal gains are more strongly associated with targeted behaviours, the influence of egoistic values on targeted behaviours is not only positive but also stronger than biospheric and altruistic values.

8.5.3.3 *Implications for Marketers and Policy Makers*

Together with the theoretical contributions, the VBN theory-driven model of ESCCB provides several guidelines for policymakers and marketers of the automobile industry. As the results highlight the effectiveness of activated pro-environmental norms to get support for eco-socially conscious consumers' behavioural intentions and actual behaviour, it is suggested that policymakers may design appropriate interventions to generate altruistic, egoistic and biospheric values to gain support for pro-environmental

behaviours (especially for ESCCB). A critical consideration concerning this strategy is to link the effects of engaging in ESCCB related behaviours with personal gains of the target audience (customers). This may be done by several ways, one being associating ESCCB related behaviours with individuals' health and wellbeing.

The results of the estimated VBN model show that both introjected and integrated personal norms significantly lead to ESCCB-purchase and conservation intention as well as eco-socially conscious consumer behaviour, yet the magnitude of these estimates provides some unique guidelines. For instance, development of communication messages to promote conservation behaviours may be aimed at developing a sense of moral obligation towards fuel consumption as integrated personal norms are stronger in predicting ESCCB-conservation. However, the persuasive messages to stimulate general curtailment and efficiency behaviours may intend to evoke the feeling of guilt about deteriorating environmental conditions.

Automobile marketers intending to promote AFVs may consider developing marketing messages that aim to generate a sense of pride in customers for having an alternative fuel vehicle and contributing to the environmental cause. Literature strongly recommends that success of environmentally friendly products is manifested in creating non-financial environmental-value (Polonsky, 2011), that may come through a sense of pride in holding AFVs, as evident from the findings of this current study. As the estimates of indirect effects in the causal chain of the VBN theory reveal that egoistic values are a stronger predictor of ESCCB-purchase, automobile marketers may highlight the economic value of buying an alternative fuel vehicle by linking it with overall health effects as well as reduced operating costs of using AFVs.

8.5.3.4 *Limitations Pertinent to the VBN Theory and Future Research Directions*

Although considerable attention was paid to the conceptual and methodological rigour of in developing and testing the VBN theory driven model of ESCCB, like many other scientific investigations, there are some limitations in this model as well. First, as the targeted behaviours are linked with the purchase of AFVs as well as curtailment and efficiency behaviours, there is a possibility that lack of infrastructural factors and limited choices available in the local market might impede the engagement of customers in such behaviours. These factors have not been accounted for in the development of the model. Future research studies might consider including some control variables based on infrastructure and choices to validate the model.

Another limitation is the exclusion of the impact of specific brand image on consumer pro-environmental behaviour. While AFVs are offered by several brands (Toyota, Honda and Suzuki), the consumers usually have a preconceived brand image based on their past experiences (Hasan, 2008; Nyadzayo & Khajehzadeh, 2016). These prejudices may bias consumers' opinion towards AFVs. Analysing the impact of brand image as a control variable may prove an interesting future research avenue.

Finally, the literature reports instances of social desirability bias in this kind of studies (Chao & Lam, 2011; Grimm, 2010; Randall & Fernandes, 1991). Future research could employ the VBN theory-driven model of ESCCB by incorporating the measures to estimate and minimise the effect of social desirability bias to improve the validity of the results.

8.5.4 Integrated Model of ESCCB

The final integrated model ESCCB includes both the TPB and the VBN theory converged together. The reason for this convergence emerged from some commonalities between the two theories which provided useful links to connect various constructs of the both theoretical models. As a result, the explanatory and predictive power of the new model is enhanced. Results of the integrated model are discussed in the following sections leading to theoretical and practical implications.

8.5.4.1 *Discussion of the Results of the Integrated model*

The distinctive component of the integrated model lies in interlinking constructs of the TPB and the VBN model which augment each other. The individual contribution of each model (TPB and VBN) has been discussed in the preceding sections. To avoid redundancy of arguments, only those results are discussed here which are unique to the integrated model. The conceptual proposal of the integrated model shows that there is a link from value orientations (the construct of the VBN theory) with attitude towards behaviour (the construct of the TPB) and the estimates confirm that biospheric, egoistic and altruistic values strongly associate with attitude towards behaviour. This means that the individuals who care for the environment and for helping others, and are induced with their self-interest associated with ESCCB, tend to develop positive attitude towards ESCCB. In their extended model, Fishbein and Ajzen (2010b) also argued that personal

values trigger beliefs towards behaviours, but this study augments that the values also positively link with the attitude towards behaviour directly. On the other side, the link from subjective norms (construct of the TPB) to personal norms (construct of the VBN theory) is developed considering that normative influence of others bring about change in individuals' personal norms before normative influence can cause an involvement in behavioural intentions or an actual behaviour. Interestingly, the results highlighted that others' expectations from individuals (injunctive norms) neither arouse any guilt or pride, nor lead to development of sense of moral obligation towards ESCCB. However, if individuals expect that their friends and family will also be indulged in ESCCB, they tend to feel guilt for not being engaged in ESCCB and develop moral obligation towards ESCCB. This description clearly shows that the personal norms which are a stronger immediate antecedent of behavioural intentions (and actual behaviour) in the VBN theory, are influenced by descriptive not injunctive norms. Another component that connected both theories is the construct of religiosity. The results highlighted that religiosity is positively associated with behavioural beliefs (the construct of the TPB) and all of the constructs of the VBN theory (altruistic, egoistic and biospheric values, personal integrated norms and personal introjected norms).

The comparison of the three models (the TPB model, the VBN theory model and the integrated model) show that the integrated model reflects better model fit indices and explanatory power than the other two model. The explanatory power of the integrated model for ESCCB-conservation intentions (49.5%) is greater than the TPB (46.5%) and the VBN model (26.6%). Similarly, the integrated model showed high explanation in ESCCB-purchase (14.4%) as compared to the TPB (12.2%) and the VBN model (10.7%). Finally, the integrated model was better than the VBN model in explaining ESCCB (31.4% vs 15.6%) but was slightly weaker than the TPB model (33.1%). However, overall of the integrated model outperforms the both models (the TPB and the VBN model).

Table 8.1: Summary of Contributions of the Thesis

RQ1	**Research Gap 1:** Measurement of eco-socially conscious consumer behavior related to the choice and use of personal cars in the cultural context of Pakistan is rare to find in literature.	**Contribution to Literature 1:** Measurement scale of ESCCB related to choice and use of personal cars proposed, developed and validated in the context of actual population of automobile customers. ESCCB consists of ESCCB-purchase, ESCCB-use and ESCCB-conservation.	**Practical Contribution 1:** Marketers of alternative fuel vehicles (AFVs) can use the ESCCB scale to understand what attributes of AFVs are attractive for customers (ESCCB-purchase). Social marketers and policy makers can develop persuasive messages to promote ethical use of personal cars (ESCCB-use) and conservation of fuel (ESCCB-conservation).

Study1

RQ2	**Research Gap 2:** No evidence available on green consumer segments in the automobile industry of Pakistan.	**Contribution to Literature 2:** Segmentation analyses based on several variables reveals that three distinct segments exist: The Conservatives who are skeptical about ESCCB, The Indifferents, who are unconcerned, and The Enthusiasts who are positively inclined towards ESCCB related to choice and use of personal cars.	**Practical Contribution 2:** Marketers of AFVs can target the enthusiasts and on the basis of theory demographic, and psychographic characteristics develop marketing message to promote AFVs. Social marketers and policy makers can pursue the enthusiasts for not only ESCCB related behaviours but also other pro-environmental behaviors as the enthusiasts are sensitive to environmental problems.

Study2

RQ3	**Research Gap 3:** Factors affecting ESCCB related to choice and use of personal cars are unknown, especially in the context of an emerging economy, Pakistan.	**Contribution to Literature 3:** The theory of planned behaviour and the value belief norms theory received full support in explaining ESCCB related to choice and use of personal cars and an integrated model of both theories was stronger in predictive power than the individual theories.	**Practical Contribution 3:** Constructs of the TPB and the VBN theory provide important information to commercial marketers, policy makers and social marketers about the factors which are more affective in shaping consumers' eco-socially conscious consumer behaviour.

Theoretical Contributions:

The integrated model of ESCCB related to choice and use of personal cars, based on the TPB and the VBN theory, shows some important links to modify the both theories for an improved predictive power of the individual theories,
1. The VBN framework can be improved by adding paths from subjective norms (construct of TPB) towards personal norms
2. The TPB framework can be improved by adding paths from the three value orientations, i.e., altruistic, egoistic and biospheric values (constructs of the VBN theory), towards attitude towards behaviour.

247

8.5.4.2 Theoretical Implications

The results of the integrated model provide some useful theoretical contributions. First, the model informs that religiosity is an important construct that can be instrumental in activating the values (altruistic, egoistic, and biospheric) supporting environmental causes or promoting pro-environmental products. Also, religiosity has a strong positive influence on the attitude towards ESCCB. These linkages support the assertion that at the individual level the religious beliefs can be associated with pro-environmental or prosocial behaviours. Moving further on, the integrated model suggests that environmental specific values of VBN theory have a very strong association with the attitude towards ESCCB which is not only theoretically plausible but also very useful finding for future studies. Initially, the traditional values and lifestyle inventory was considered in some past studies (Chen, 2014; Fraj & Martinez, 2006) and original theoretical proposal of the TPB (Fishbein & Ajzen, 2010b) to be associated with beliefs, however, the integrated model presented in this thesis argues that specific environmental values are more strongly associated with attitude towards ESCCB. Finally, the link between subjective social norms and personal norms developed in the integrated model offers a new dimension of how personal norms can be established with the help of social norms. More specifically, the relationship of descriptive norms with introjected and integrated personal norms proposes that as a composite variable the relationship of social norms with personal norms is not as strong as is the individual effect of each facet of social norms with individual dimensions of personal norms. These links provide an extension in the literature discussing the associations of social and personal norms.

8.5.4.3 Implications for Marketers and Policy Makers

There are multiple guidelines for policymakers and marketers of the automobile industry based on the results of the integrated model. First, the concept of religiosity can be utilised to promote ESCCBs. Careful attention will be required to understand the specific religious beliefs associated with ESCCB and the development of messages that do not over emphasise religious beliefs as this is expected to result in a psychologic defence mechanism. The attitude towards ESCCB can be favourably moulded with the help of prompting environmental values. Again, the communication messages featuring the benefits of using public transport, conserving fuel and advantages of AFVs to personal and other's health and environment can help to develop positive attitude towards ESCCB-

conservation and purchase intentions as well as actual ESCCB. Finally, to trigger the pro-environmental personal norms, an important aspect can be providing evidence or others being involved in ESCCB thus persuading the individuals as well to support ESCCB.

8.6 Conclusion

Eco-socially conscious consumer behaviours related to purchase and use of personal cars are an area for environmental protection and reduction of GhG emission especially in emerging economies where population growth, economic stability and an increased trend towards purchase of personal cars is posing an emerging threat to the quality environment. This thesis has undertaken a number of studies to provide a holistic solution of the problem by first defining the ESCCB in the emerging economy perspective, then providing evidence of whether there exists any green consumer segment and finally the theoretical explanation of factors affecting ESCCB. The key theoretical and practical contributions of this thesis are summarised in Table 8.1: Summary of Contributions of the Thesis.

The findings of this thesis show that customers of the automobile industry in Pakistan not only acknowledge the importance of the concepts that underpin ESCCB but are also willing to engage in ESCCB-purchase and conservation intentions. A significantly large segment of the sample is inclined towards the ESCCB that is very encouraging in the perspective of promoting AFVs in Pakistan and persuading people to mould their behaviours towards more environment-friendly ones.

Alternative fuel vehicles (AFVs) will play an increasing role in the future of an environment-friendly era and are indisputably a great innovation of recent times. However, solving environmental problems requires more than just technology. This thesis provides an approach to address the problem of GhG emissions, that is causing global warming and climate change, by focusing on technology and behaviour together. The theoretical models presented in this thesis can be further expanded to include different culture-specific factors to better explain ESCCB.

Appendix I: *Summary of Research Describing Consumers' Demographic Profile*

	Dependent Variable		Relationship of Demographic Characteristics with Dependent Variable				
Study	Setting	Construct	Age	Gender	Education	Income	Occupation
(Balderjahn, 1988a)	Germany	Home insulating behaviour	+	NT	+	+	NT
(Roberts, 1996)	USA	ECCB	+	S	+	-	NS
(Robert & James, 1999)	USA	ECCB	+	S	+	+	NT
(Chan, 2000)	Hong Kong	Green consumerism knowledge, Perception about environmentally friendly products	NS	NS	+	+	S
(Jain & Kaur, 2006)	India	Environmental knowledge, environmental concern, Environmental activities, Environmental awareness, Environmental attitude, Environmental behaviour	NS	NS	-	+	S
(D'Souza et al., 2007)	Australia	Environmental labelling awareness and satisfaction	+	NS	NT	+	S
(Finisterra do Paco et al., 2009)	Portugal	PCE, Environmentally friendly buying behaviour, Recycling, Environmental activism, Resource saving, Economic factor, Environmental concern and Scepticism towards environmental claims	+	NT	+	+	S
(Finisterra do Paço & Raposo, 2010)	Portugal	Environment-friendly buying, Perceived efficiency, Recycling, sensitivity to resource saving	+	NS	+	+	S
(Thompson et al., 2010)	USA	Knowledge of environmental issues, Willingness to pay, Knowledge of certification, ECCB, Environmental concern, PCE	-	NT	NS	NS	NT

Study		Setting	Particular/general environmental behaviour	Segments revealed	

(Schwepker & Cornwell, 1991)	USA	Purchase intentions towards ecologically packaged products	Two segments: 'Low PI' and 'high PI'
(Chan, 2000)	Hong Kong	Purchase of environmentally friendly products, disposable items, aerosol sprays	Three segments: 'light green consumers', 'medium green consumers', 'heavy green consumers'
(Singh, 2011)	India	Ecological Consumer behaviour	Four segments: 'Economically Concerned', 'comfort zone', 'true environmentalists', 'undeciders'
(Barber, 2014)	USA	Preferences for green hotels	Four segments: 'hunter green', 'green', 'light green', and 'not green at all'
(Park & Lee, 2014)	USA	Conspicuous Environmentalism, Importance of CSR, Perceived Quality of Green Products	Four Clusters
(Yilmazsoy et al., 2015)	China, Germany and Turkey	Recycling, Less packaging, public transport,	Four segments: from 'greenest' to 'least green'
(Lavelle et al., 2015)	Ireland	Household consumption (buying organic food, conserving water)	Two segments: 'Habitual consumers' and 'occasional consumers'

Appendix II: *Summary of Research Describing Consumers' Behavioural Profile*

Study	Setting	Particular/general environmental behaviour	Segments revealed
(Schwepker & Cornwell, 1991)	USA	Purchase intentions towards ecologically packaged products	Two segments: 'Low PI' and 'high PI'
(Chan, 2000)	Hong Kong	Purchase of environmentally friendly products, disposable items, aerosol sprays	Three segments: 'light green consumers', 'medium green consumers', 'heavy green consumers'
(Singh, 2011)	India	Ecological Consumer behaviour	Four segments: 'Economically Concerned', 'comfort zone', 'true environmentalists', 'undeciders'
(Barber, 2014)	USA	Preferences for green hotels	Four segments: 'hunter green', 'green', 'light green', and 'not green at all'
(Park & Lee, 2014)	USA	Conspicuous Environmentalism, Importance of CSR, Perceived Quality of Green Products	Four Clusters
(Yilmazsoy et al., 2015)	China, Germany and Turkey	Recycling, Less packaging, public transport,	Four segments: from 'greenest' to 'least green'
(Lavelle et al., 2015)	Ireland	Household consumption (buying organic food, conserving water)	Two segments: 'Habitual consumers' and 'occasional consumers'

252

Appendix III: *Summary of Studies Proposing Measurement Scales of Pro-Environmental Behaviours*

Sr. #	Scale Name	Developed by	Setting	Description
1	New Environmental Paradigm (NEnvP)	(Dunlap, 2008)	USA	The 12-item 'New Environmental Paradigm scale' is Unidimensional. It demonstrated satisfactory internal reliability as well as predictive, content and construct validities among two samples i.e. GPS and EOS. The items of the scale reflected the inherent concepts of balance of nature, limits to growth and human domination
2	ECOSCALE	(Stone et al., 1995)	USA	ECOSCALE is 31-items measure of environmentally conscious consumer. The seven dimensions of ECOSCALE include: opinion and beliefs, awareness, willingness to act, attitude, action taken, ability to act and knowledge.
3	SRCB	(Roberts, 1995, 1996)	USA	A 26-items scale consisting of two dimensions: ECCB (18-items) and socially conscious consumer behaviour (SCCB) (8-items). The scale measured both ecological and social perspectives of consumer behaviour in relation to environment.
4	Environmental Behaviour (EB)	(Karp, 1996)	USA	A 13-item scale consisting of three dimensions: Good Citizen, Activist, Healthy Consumer was developed which reflected satisfactory internal consistency.
5	New Ecological Consciousness scale	(Ellis & Thompson, 1997)	USA	A 10-item unidimensional measurement of environmental consciousness yielded satisfactory internal reliability and validity
	Motivation Towards Environment Scale (MTES)	(Pelletier et al., 1998)	Canada	A 20-item measure of motivation act pro-environmentally revealed five dimensions: intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation and motivation.
6	GEB	(Kaiser, 1998)	Switzerland	A 38-item measure with seven dimensions including, prosocial behaviour, ecological garbage removal, water and power conservation, ecologically aware consumer behaviour, garbage inhibition, volunteering in nature

				protection activities and ecological automobile use, was tested om Swiss transportation associations which yielded satisfactory score on reliability and validity.
7	NEP-Revised	(Dunlap et al., 2000)	USA	The original multi-faceted NEP or Worldview consisted of three dimensions: balance of nature, limits to growth and human domination of nature, initially. Later on, one-factor 15-item revised NEP measure was introduced having satisfactory internal reliability. The 'NEP-Revised' consisted of 15-items measuring the endorsement of ecological worldview.
8	GEB- Revised	(Kaiser & Wilson, 2000)	USA	The original GEB scale was modified from 38-items to 51-itmes scale on same seven dimensions and was tested in USA to assess cross-cultural validity. Scale yielded satisfactory reliability and validity.
9	ERB	(Iwata, 2001)	Japan	A 25-items unidimensional ERB scale measured various pro-environmental behaviours including recycling, water conservation, electricity conservation, environmental protection, pro-environmental purchases and use of eco-labelled products.
10	ECCB	(Roberts, 1991; Tilikidou, 2001)	USA	The construct primarily consisted of three key dimensions, i.e. cognitive dimension, affective dimension and behavioural dimension. Cognitive dimension was measured by Environmental knowledge, affective dimension by pro-environmental attitudes and recycling attitudes, and behavioural dimension by pro-environmental purchase behaviour, pro-environmental post-purchase behaviour and pro-environmental activities.
11	NR Scale	(Nisbet et al., 2009)	Canada	A 21-item scale measured human nature relation on three distinct dimensions: NR-Self, NR-Perspective and NR- Experience
12	PPEB	(Walton & Austin, 2011)	USA	PPEB was 6-item unidimensional self-report scale measuring perspectives of transportation energy conservation, natural resources conservation, recycling and purchase of environmentally friendly products.
13	SCCBS	(Armel et al., 2011)	USA	A 97-item survey consisting of four major climate-relevant behavioural categories i.e. Transportation, Food, Waste and Electricity, was established with 10 sub categories.
14	Pro-environmental Behavioural Scale (PEB)	(Markle, 2013)	USA	A 19-item scale consisting of four subscales: Conservation, Environmental Citizenship, Food and transportation was developed having satisfactory internal reliability and validity. Test-retest correlations proved that the scale was reliable in measuring the underlying concepts.

| 15 | EMCB | (Sudbury-Riley & Kohlbacher, 2016) | UK, Germany, Hungary, Japan | EMCB 10-items scale consisted of five distinct dimensions: Ecobuy, Ecoboycott, Recycle, Paymore, and CSRboycott, incorporating items from ecological and social perspectives based on self-report actual behaviours. The construct showed consistency across five nations' sample. |

Appendix IV: *Summary of Studies in Green Consumer Segments Domain*

Study	Setting	Segmentation Type		Problem Definition		Research Design	Data Collection Method		Analysis		Findings
		Practical Vs Theoretical Perspective	Large Scale Vs Small Scale	Model Specification (Basis and Descriptors)	Traditional (a priori or clustering) or Contemporary (Flexible or Componential)	Primary Vs Secondary	Conventional (e.g. Personal Interviews and Mail Questionnaires) Vs Newer Procedures (Telephone Interviews)				
(Poortinga & Darnton, 2016)	Wales	Socio-Demographic, psychographic and behavioural	Sustainable development model for public policy	Segment level analysis	Human values Climate change Energy security	Clustering	Primary	Face-to-face interviews	Cluster analysis		Six segments were derived
(López-Sánchez & Pulido-Fernández, 2016)	Spain	Psychographic and behavioural	Sustainable tourism model	Segment level analysis	Measures of sustainable intelligence	Latent class analysis	Primary	Personal interviews	Multino mial logistic analysis		Three segments were derived
(McCarthy et al., 2016)	China	Demographic and behavioural	Green food purchase model	Segment level analysis	Demographic measures and willingness to pay premium	Clustering	Primary	Online survey	ANOVA, Probit model, Cluster analysis		Three segments were derived
(Yilmazsoy et al., 2015)	China, Germany, Turkey	Psychographic and behavioural	General green attitudes	Cross-national large scale	Psychographic measures and environmental concern	Clustering	Primary and secondary	Personal survey	Cluster analysis and factor analysis		Four Clusters were revealed
(Tanford & Malek, 2015)	USA	Psychographic and behavioural	Green hotels loyalty model	Segment level analysis	Reward program	Clustering	Primary	Email survey	EFA, CFA, Discrimi		Six clusters

					Theoretical	Method		Data collection	Analysis	Findings
					loyalty and green attitude				nant Analysis, Cluster Analysis	were revealed
(Rypakova et al., 2015)	Slovakia	Socio-demographic and cultural	Energy saving in electrical equipment and vehicles	Large Scale national level	Hofstede cultural dimensions	Sample difference in environmental behaviour through chi-square	Primary	Email survey	Chi-square	Masculinity and pragmatism differentiate Slovak society
(González et al., 2015)	Mexico	Demographic, psychographic and behavioural	General pro-environmental behaviours	Segment level analysis	Social values and consumer effectiveness	Clustering	Primary	Research agency administered survey	Cluster analysis	Five segments were identified
(Lavelle et al., 2015)	Ireland	Demographic, psychographic and behavioural	Habitual and occasional pro-environmental behaviour model	Segment level analysis	Behaviours like recycling, energy-efficient appliances and car, renewable energy use	Factor analytic approach	Primary	Self-administered questionnaire based survey	Principal component analysis	Occasional pro-environmental behaviour significantly differ from habitual. Four segments revealed in occasional behaviour
(Whitson, Ozkaya, & Roxas, 2014)	USA	Behavioural segmentation	Eco-labelled laundry detergent preference	Segment level analysis	Behaviours regarding detergent preference	Flexible design and clustering	Primary	Self-administered questionnaire	Conjoint analysis and cluster analysis	Three different clusters were identified

(Park & Lee, 2014)	USA	Psychographic	General pro-environmental behaviour	Segment level analysis	Media usage, Response to media initiatives	Clustering	Secondary	National consumer study (NCS) data	Cluster analysis ANOVA	Four segments were revealed
(Fürst, 2014)	Germany, Austria and Switzerland	Behavioural Segmentation	Environmental friendly transportation model	Large scale national study	Consumer attributes and environment-friendly transportation	Clustering	Primary	Online survey	PCA, Cluster Analysis, ANOVA	Six clusters were revealed
(Burke, Eckert, & Davis, 2014)	Australia	Behavioural Segmentation	Ethical consumption model	Segment level analysis	Ethical purchases and best worst choices	Clustering	Primary	Online survey	Cluster Analysis, Multinomial Regression	Three clusters were revealed
(Tabi et al., 2014)	Switzerland	Latent class segmentation analysis	Green electricity adoption model	Segment level analysis	Willingness to pay for green electricity	Choice experiment, Conjoint analysis	Secondary	Existing '*Project Seco*' data	Stated preference choice experiment	Three clusters were revealed
(Barber, 2014)	USA	Psychographic segmentation	Green hotels preferences model	Segment level analysis	Behavioural intentions towards green hotels	Clustering	Primary	Online survey	Cluster analysis, ANOVA, MANOVA	Four distinct clusters revealed
(John et al., 2013)	Kenya	Psychographic segmentation	Agrifood preference model	Segment level analysis	Consumer values with food preference	Clustering	Primary	Random survey intercept	Factor analysis, Cluster analysis, MANOVA	Four distinct cluster revealed
(Zhang & Wu, 2012)	China	Demographic	Willingness to pay (WTP) for green	Segment level analysis	WTP for GE and	Contingent valuation model	Primary	Self-administered	MLogit model	Demographically WTP fog

			electricity (GE) model		demographic variables			Survey research		GE differs across various level of variables
(Akehurst et al., 2012)	Portugal	Socio-demographic and psychographic	Green purchase behaviour model	Overall analysis	PCE, Altruism, GPB and ECCB	SEM	Primary	Online survey	Path analysis and Multiple linear regression	PCE and Altruism are key factors dividing customers in green or non-green segments
(Sütterlin et al., 2011)	Switzerland	Psychosocial and behavioural	Energy saving behaviour model	Segment level analysis	Various energy saving behaviours including those in household, car use and purchase and general curtailment	Clustering	Primary	Mail survey	Cluster analysis	Six clusters were revealed
(Singh, 2011)	India	Behavioural	Ecological consumer behaviour model	Larger Level Analysis	Ecologically Conscious behaviour	Clustering	Primary	Self-administered questionnaire	Cluster analysis, ANOVA	Four clusters were revealed
(Awad, 2011)	Bahrain	Demographic and psychographic	ECCB Model	Segment level	ECCB,PCE, EC	Clustering	Primary	Self-administered questionnaire	Factor analysis, Cluster analysis	Four clusters were identified
(Thompson et al., 2010)	USA	Demographics and psychographics	Model of WTP premium for eco-labelled forest products	Segment level	WTP, ECB	Flexible	Primary	Mail survey and intercept approach	Conjoint analysis, ANOVA	Females and people informed of eco-labelling

259

										were prone to pay extra for eco-labelled forest products
(Finisterra do Paço & Raposo, 2010)	Portugal	Demographic and behavioural	Demographic distribution of Portugal customers on environmental variables	Large scale	Various environmental dimensions against demographics	Clustering	Primary	Direct survey	Factor Analysis, Cluster Analysis, Discriminant analysis	Four clusters were revealed
(Mostafa, 2009)	Kuwait	Psychographic and cognitive	Model of Environmental values knowledge and environmental concern	Segment level	Altruistic values, Environmental concern and knowledge	Self-Organising maps	Primary	The drop-off, pick-up method	SOM-Ward Clustering	Four clusters were revealed
(Lee & Liao, 2009)	Hong Kong	Demographic	Model of green purchasing behaviour (GPB)	Large scale	Gender differences in GPB	Regression analysis	Primary	Survey by group-administered questionnaire	Simultaneous multiple regression analysis	Females scored high on environmental dimensions
(Carrillat, Riggle, Locander, Gebhardt, & Lee, 2009)	USA	Cognitive segmentation				Repertory grid and trait implication procedures				
(D'Souza et al., 2007)	Australia	Demographics	Satisfaction towards environmental labelling	Large scale	Demographics and environmental labelling satisfaction	Testing for mean differences	Primary	Telephone-administered questionnaire	Levene's test, ANVOA, Post Hoc	Demographic variable were associated

Reference	Country		Model	Scale	Focus	Method	Data	Collection	Analysis	Findings
									Tukey HSD	with environmental labels
(Jain, 2006)	India	Socio-demographics	Environmental consciousness model through socio-demographics	Segment level	Socio-demographics and environmental consciousness	Regression analysis	Primary	self-administered questionnaire	Correlation analysis, regression analysis	Gender, education and income significantly differentiated on various environmental criteria
(Diamantop oulos, Schlegelmil ch, Sinkovics, & Bohlen, 2003)	UK	Socio-demographics	Environmental consciousness model through socio-demographics	Large Scale	Environmental consciousness, knowledge and socio-demographics	Regression analysis	Primary	Mail survey	Correlation and regression analysis	Marital status and gender significantly differentiated for environmental consciousness
(Chan, 2000)	Hong Kong	Demographics	Model of recycling and reusability of products	Segment level	Demographics and green purchase behaviour	Clustering	Primary	Personal interviews	Stepwise discriminant analysis, chi-square analysis	Two segments were revealed
(Robert & James, 1999)	USA	Demographics and psychographic	Ecologically conscious consumer model	Segment level	Demographics and dimensions of ecologically conscious consumer	Regression analysis	Primary	Self-administered questionnaire	Correlation analysis, Stepwise regressio	Altruism, liberalism, PCE and demograph ic variables

261

									n analysis	significantly associated with ECCB
(Roberts, 1996)	USA	Demographics and Behavioural	Ecologically conscious consumer behaviour model	Large scale nationwide study	Demographics and attitudinal variables and ECCB	Regression analysis	Primary	Mail survey	Factor analysis and regression analysis	Certain demographic as well as attitudinal variables were found significant predictors of ECCB

Appendix V: *Summary of Studies Employing Various Theories in Pro-Environmental Behaviour Research*

Study	Setting	Criterion Variable	Independent Variable	Theory	Findings
(Chekima et al., 2016)	Malaysia	Green purchase intentions (GPI)	Environmental attitude, eco-label and cultural value (man - nature orientation) – Education, Gender and Price as Moderators	TPB	Environmental attitude, eco-label and cultural value (man - nature orientation) effect GPI. Females and educated consumers are more attracted to GPI, however, income is not associated at all.
(Kanchanapibul et al., 2014)	UK	Green Involvement and Green Purchase Behaviour	Ecological affect, Ecological knowledge	TPB	Ecological affect and ecological knowledge lead to green involvement and ultimately green purchase behaviour
(Huang et al., 2014a)	Taiwan	Reuse of bed sheet or towels	Environmental protection consciousness, Cash discount incentives, Environmental protective alternatives	ICT	Environmental protection consciousness lead to green consumer behaviour whereas cash discounts have no effect on such behaviours
(Qu et al., 2014)	China	Purchase of SDCs	Environmental attitude, subjective norm, self-image and environmental knowledge	TPB	All predictors effect purchase of SDCs directly as well as partially mediated through SDC purchase intention. Economic incentives moderates intention-behaviour relationship
(López-Mosquera et al., 2015)		Recycling, car use and environment-friendly purchases	Environmental attitudes and beliefs, socio-demographic factors, economic characteristics, environmental sensitivity	TPB	Environmental activism, environmental attitudes and beliefs and environmental information appeared to be potentially important factors in determining the three pro-environmental behaviours

(Ramayah et al., 2010)	Malaysia	Purchase intentions of cloth diapers	Individual consequences: Effort and Convenience, Environmental Consequences, Conservation value, self-transcendence value, self-enhancement values	TRA	Individual consequences are negatively related to GPI, Environmental consequences are not related to GPI,
(Yusof et al., 2013)	Malaysia	Environment-friendly cars purchase intentions	Responsibility, values, knowledge, perception of product, perception of advertisement	VBN	Perception of environment-friendly vehicle has an effect on purchase intentions of environment-friendly vehicle while advertisement has no such effect. Environment responsibility feeling and values affect both perceptions about advertisement and product whereas environmental knowledge has no effect on advertisement.
(Hartmann & Apaolaza-Ibáñez, 2012)	Spain	Purchase intentions towards green energy brands	Psychological benefits including warm glow, self-expressive benefits and nature experiences	TRA	Warm glow and nature experiences are strong predictors of attitude and GPIs
(Zhao et al., 2014)	China	Purchasing, using and recycling behaviours	Personal influence, knowledge of green consumption, attitudes, environmental concern	TRA, TPB	Using behaviour is mainly affected by perceived consumer effectiveness, income and age, while recycling is influenced by 'using behaviour'
(Arpita, 2015)	India	General pro-environmental behaviour	Personal norms, social environmental norms, peer influence, green self-identity, past green behaviour and attitude	TPB	Green self-identity, environmental personality traits, peer influence and past green buying behaviour strongly influence general pro-environmental behaviour

(do Paço, Alves, Shiel, & Filho, 2013)	England, Spain, Portugal, Germany	Green buying behaviour	Man nature orientation, generativity, environmental concern, conserving behaviour	Theory of generativity	All variables followed conceptually mediated path and were significant
(Khare, 2014)	India	ECCB (ecologically conscious purchase behaviour and green attitude)	Customer susceptibility to interpersonal influence (CSII) (normative and informative)	NAT	Both facets of CSII significantly affect ecologically conscious purchase behaviour
(Albayrak et al., 2013)	Turkey	Green purchase behaviour (e-invoice subscription)	Environmental Concern (Egoistic, Altruistic, Biospheric) and scepticism (disbelief and speciousness), subjective norm, perceived behavioural control, attitude	TPB	Consumers with high level of environmental concern and low scepticism were high on positive subjective norm and perceived behavioural control and reflected greater intentions towards e-invoice subscription
(Rahbar & Wahid, 2011)	Malaysia	Energy saving bulbs purchase behaviour (Actual not intention)	Green marketing tools (Eco brand, Eco Label, Environmental advertisement) and trust in eco label and eco brand	Not identified	Eco label and environmental advertisements were insignificant in predicting the purchase behaviour whereas trust in eco label and eco brand, and Eco-brand were positively associated with green purchase behaviour
(Jansson et al., 2010)	Sweden	Willingness to adopt eco-friendly car (Alternative fuel vehicle) and curtail car use	Values, beliefs, norms and habit strength,	VBN	Biospheric values, ascription to responsibility, personal norms and car habit strength were significantly associated with curtailment behaviours. However, ascription to responsibility was not significantly associated to adoption behaviour

(Polonsky, Kilbourne, & Vocino, 2014)	China, Taiwan, Hong Kong, Singapore	General pro-environmetnal behaviour (Direct and Indirect)	DSP, environmental concern, Materialistic values,	Balance Theory	Unexpectedly, DSP associated positively with EC however, all other relationships were significant and were as per hypotheses
(Dagher & Itani, 2014)	Lebanon	General green purchasing behaviour	Perceived seriousness of environmental problems, perceived environmental responsibility, perceived effectiveness of environmental behaviour and concern for self-image	Not identified	Except perceived effectiveness of green purchase behaviour all other factors associated significantly and positively with green purchasing behaviour
(Huang, Yang, & Wang, 2014b)	Taiwan	GPI	Green brand knowledge (GBK), green brand positioning (GBP), attitude towards green brand (AGB)	Brand theory	GBK and GBP positively lead to GPI, both directly as well through AGB
(Chen, 2012)	Taiwan	Green purchase intentions	Green perceived value, green trust and green perceived risk	Perceived risk theory	Green perceived value positively while green perceived risk negatively affect trust and GPIs both directly and through mediation
(Eze & Ndubisi, 2013)	Malaysia	Green buying behaviour	Environmental attitude, pro-environmental behaviour, values, eco-literacy, low price sensitivity and social influence	Stimulus Response (S-R) model	Low price sensitivity, social influence, eco-literacy and consumer values were significantly associated with green buying behaviour
(Ramayah & Rahbar, 2013)	Malaysia	Recycling behaviour	Perceived value, awareness, actual gains, attitude towards recycling, resistance to change, compatibility	TRA	Except compatibility and resistance to change all other variable were significantly associated with recycling behaviour

Appendix VI: *Summary of Studies Discussing Sustainable Car Choice and Use Behaviours*

Study	Setting	Criterion Variable (s)	Independent Variable (s)	Theory	Findings
(Oliver & Lee, 2010)	USA and Korea	Hybrid Car Purchase Intentions	Social value specific, Social values general, Self-image, self-efficacy	Culture theory, Psychological reactance theory	US consumers differ from Korean consumers in many perspectives
(Afroz et al., 2015)	Malaysia	Purchase intentions of electric vehicles	Values, individual consequences, environmental consequences,	TRA	Individual Consequences – Cost, convenience and self-enhancement values have negative association on environmental friendly purchase intentions. Environmental consequences are insignificant
(Hahnel, Ortmann, Korcaj, & Spada, 2014)	Germany	Electric vehicle price sensitivity	'Universalism' as higher-order value with 'protecting environment' and 'unity with nature' as subordinate, and Sustainable product information	Values theory	Activation of environmental values leads to reduced price sensitivity in case of electrical vehicles
(Nordlund & Garvill, 2003)	Sweden	Willingness to reduce personal Car use	Value orientation, problem awareness and personal norms	NAT and VBN theory	Value and problem awareness affected reduced use of personal car through personal norms as mediator
(Knez et al., 2014)	Slovenia	Low Emission Car Purchase	Seven different factors were tested including current financial considerations, future financial considerations, fuel and performance, exterior of the vehicle, interior, load space and environmental considerations	Game Theory Approach	Mileage, safety, body shape, style, price, fuel economy, repair cost, value for money, were most important attribute in purchase decision.

| (Bamberg & Schmidt, 2003) | Germany | Car use | Personal norm, ascription of responsibility, awareness of consequences, beliefs, behavioural control, car use habit, intention to actual sustainable car use | TPB, theory of interpersonal behaviour, norms activation model | Certain factors from each theory establish their significance in predicting reduced car use among university students. Role beliefs and car use habits were the most significant variables however, the personal norm variables was insignificant |

Appendix VII: *Studies Explaining Intention-Behaviour Gap in Green Consumer Behaviour*

Study	Setting	Behaviour type	Gap reason	Findings
(Miniero et al., 2014)	Italy	Car sharing service	Regulatory focus and time horizon	Prevention type individuals are more prone to green behaviour both in short and long-term
(Johnstone & Tan, 2014)	Australia	Green consumption behaviour	Green stigma, green reservation and difficulty of performing green behaviour impede actual green behaviour	Through a qualitative survey the researchers found that consumer's green perceptions included the concepts of green stigma, difficulty of performing an action and green reservation that impeded their intentions to convert in actual behaviour
(Carrington et al., 2014)	Australia	Green purchase behaviour	Prioritisation of ethical concerns, formation of plans/habits, willingness to commit and sacrifice, and modes of shopping behaviour	Through qualitative interpretative approach four major themes were identified namely, prioritisation of ethical concerns, formation of plans/habits, willingness to commit and sacrifice, and modes of shopping behaviour
(Carrington et al., 2010)	Australia	Green Buying behaviour	Implementation intentions, actual behavioural control and situational context	Consumers showing intentions to behave ethically are less certain about their implementation plan face unseen negative behavioural controls (internal-both control and self-efficacy) and behaviour impeding situational context (external impeding factors in environment including physical and social surroundings, temporal perspective and task definition, and antecedent states)
(Johnstone & Tan, 2015)	Australia	Non-green purchase behaviour	Protecting one's sense of self and attachment to exiting brand	Consumers justification non-green consumer behaviour actually revolves around strong attachment to a non-green brand and protecting one's sense of self

Do you want to participate in this survey?

کیا آپ اس سروے میں حصہ لینا چاہتے ہیں ☐ Yes ہاں ☐ No نہیں

Section 1: Background Information

پس منظر کی معلومات

1. What is your age?

آپ کی عمر کیا ہے؟

☐ 19-26 ☐ >26-33 ☐ >33-40 ☐ >40-47 ☐ >47-54 ☐ >54-61 ☐ above 61

2. What is your gender? *(Please tick)* ☐ Male ☐ Female

آپ کی جنس کیا ہے؟ مرد   عورت

3. What is your Income? *(Please tick)*

آپ کی آمدن کیا ہے؟

☐ 45000 - 55000 ☐ >55000 – 65000 ☐ >65000 – 75000 ☐ >75000 – 85000 ☐ >85000 – 95000

☐ >95000 – 105000 ☐ > 105000 and above _____

4. Please mention your city/district:

براہِ کرم اپنے شہر / ضلع پر نشان لگائیں

☐ Lahore	☐ Karachi	☐ Quetta	☐ Hyderabad	☐ Peshawar	☐ Islamabad
☐ Multan	☐ Faisalabad	☐ Mardan	☐ Sargodha	☐ Rawalpindi	☐ Other

5. Where do you live? *(Please tick)* ☐ City ☐ Suburb ☐ Village

آپ کہاں رہتے ہیں   شہر   مضافات   گاؤں

6. Do you have a car? ☐ Yes ☐ No ☐ About to have one in next three months

آپ کی پاس کار ہے؟ ہاں نہیں

7. What formal education/degree do you possess ? *(Please tick)*

آپ کی تعلیمی قابلیت کیا ہے؟

☐ No formal education at all	☐ Primary (year 5)	☐ > Primary - Middle (year 8)
☐ > Middle – Matric (year 10)	☐ > Matric – Inter (year 12)	☐ DAE (Diploma)
☐ > inter – Bachelors (14 year)	☐ > inter – Bachelors (16 year)	☐ > Bachelors – Masters (16 year)
☐ > Masters – MPhil (17.5-18 year)	☐ MBBS or BDS	☐ DVM
☐ Bachelor of Engineering (BE)	☐ others	

8. What is your marital status? *(Please tick)*

☐ Single ☐ Married ☐ Divorced ☐ Widowed

آپ کی ازدواجی حیثیت کیا ہے؟   شادی شدہ   طلاق یافتہ   رنڈوہ

9. What is your occupation?

آپ کا پیشہ کیا ہے

☐ Landlord ☐ Private Job ☐ Government Job ☐ Armed Forces ☐ Business Man

Section 2: Theoretical Constructs

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 Neutral	5 Somehow Agree	6 Agree	7 Strongly Agree
10. I feel I can help solve natural resource problem by conserving water and energy میں محسوس کرتا ہوں کہ میں پانی اور توانائی کو بچا کو قدرتی وسائل کے ضیاع کے مسئلے کو حل کو سکتا ہوں	1 Strongly Disagree بالکل غیر متفق	2 Disagree غیر متفق	3 Somehow Disagree کچھ حد تک غیر متفق	4 Neutral غیر جانبدار	5 Somehow Agree کچھ حد تک متفق	6 Agree متفق	7 Strongly Agree بالکل متفق
11. Through my personal choices I can contribute to the solution of environmental issues میں اپنی ذاتی انتخاب کے زریعے ماحولیاتی مسئلے کے حل میں اپنا کردار ادا کر سکتا ہوں	1 Strongly Disagree بالکل غیر متفق	2 Disagree غیر متفق	3 Somehow Disagree کچھ حد تک غیر متفق	4 Neutral غیر جانبدار	5 Somehow Agree کچھ حد تک متفق	6 Agree متفق	7 Strongly Agree بالکل متفق
12. I feel capable of helping solve environmental problems میں خود کو ماحولیاتی مسائل حل کرنے کے قابل محسوس کرتا/کرتی ہوں	1 Strongly Disagree بالکل غیر متفق	2 Disagree غیر متفق	3 Somehow Disagree	4 Neutral غیر جانبدار	5 Somehow Agree	6 Agree متفق	7 Strongly Agree بالکل متفق

			کی حد تک متفق		کی حد تک متفق		
13. I can protect the environment by buying products that are friendly to the environment میں ماحول دوست مصنوعات خریدکر ماحول کی حفاظت کو سکتا/سکتی ہوں	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
14. What I purchase as a consumer has an effect on the nation's environmental problems بطور صارف میں جو خریدتا ہوں اسکا قومی سطح پر ماحولیاتی مسائل پر اثر ہوتا ہے	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
15. There is not much that any one individual can do about the environment (R) انفرادی سطح پر کوئی ایک فرد ماحول کے بہتری کے لئے کچھ زیادہ نہیں کر سکتا	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
16. The conservation efforts of one person are useless as long as other people refuse (R) جبتک کوسی ایک کو بچانے کے لئے اجتماعی کوششں نہ کی جائے انفرادی کوششیں بے کار ہیں	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
17. A clean environment provides me with better opportunities for recreation ایک صاف ماحول مجھے تفریح کے بہتر مواقع فراہم کرتا ہے	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
18. Protecting the environment will threaten jobs for people like me (R) ماحولی تحفظ کے لئے کیے جلے والے اقدامات مجھ جیسے لوگوں کے لئے بے روزگاری کا سبب بن سکتے ہیں	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
19. Laws to protect the environment limit my choices and personal freedom (R) ماحولیاتی تحفظ کے قوانین میرے انتخاب اور ذاتی آزادی کو محدود کر دیں گے	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
20. Environmental protection is beneficial to my health ماحولیاتی تحفظ میری صحت کے لئے فائدہ مند ہے	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
21. Environmental protection will provide a better world for me and my children ماحولیاتی تحفظ مجھے اور میرے بچوں کے لئے ایک بہتر ماحول فراہم کرے گا	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کی حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کی حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق

	1 Strongly Disagree بالکل غیر متفق	2 Disagree غیر متفق	3 Somehow Disagree کسی حد تک غیر متفق	4 Neutral غیر جانبدار	5 Somehow Agree کسی حد تک متفق	6 Agree متفق	7 Strongly Agree بالکل متفق
22. Pollution generated here harms people all over the earth یہاں پر پیدا ہوئی آلودگی پوری دھرتی کے لوگوں کو نقصان پہنچاتی ہے							
23. We don't need to worry about the environment because future generations will be better able to deal with these problems than we are now (R) ہمیں ماحول کے بارے میں فکر کرنے کی ضرورت نہیں ہے کیونکہ مستقبل کی نسلیں ہماری نسبت ان مسائل سے بہتر انداز میں نمٹنے کے قابل ہوگی							
24. The effects of pollution on public health are worse than we realise عوامی صحت پر آلودگی کے اثرات ہماری سوچ سے بھی بدتر ہیں							
25. Environmental protection will help people have a better quality of life ماحول کی حفاظت لوگوں کو بہتر معیار زندگی مہیا کرنے میں مدد کرے گی							
26. Environmental protection benefits everyone ماحول کی حفاظت سب کے لیے فائدہ مند ہے							
27. Modern development threatens wildlife جدید ترقیاتی منصوبے جنگلی حیات کے لیے خطرہ ہیں							
28. Over the next several decades, thousands of species of plants and animals will become extinct اگلی کئی دہائیوں کے دوران پودوں اور جانوروں کی ہزاروں نسلوں کا خاتمہ ہو جائے گا							
29. Claims that we are changing the climate are exaggerated (R) یہ دعوے کہ ہم ماحول میں تبدیلی کا باعث بن رہے ہیں محض مبالغہ آرائی ہے							
30. While some local plants and animals may have been harmed by environmental degradation, over the whole earth there has been little effect (R) شاید ماحول کی تباہی سے مقامی پودوں اور جانوروں کے نقصان ہوا ہو گر عالمی سطح پر اسکے اثرات نہ ہونے کے برابر ہیں							

	1 Strongly Disagree بالکل غیر متفق	2 Disagree غیر متفق	3 Somehow Disagree کسی حد تک غیر متفق	4 Neutral غیر جانبدار	5 Somehow Agree کسی حد تک متفق	6 Agree متفق	7 Strongly Agree بالکل متفق
31. The balance of nature is delicate easily upset فطرت کا نازک توازن انسانی سے غیر متوازن ہو سکتا ہے							
32. There is a unifying force (in the universe) through which all life is brought together in one great whole. • کائنات میں ایک کلی سی روحانی (قوت موجود ہے جو کل حیات کو ایک محور میں متحد کیے ہوئے ہے							
33. There is a mysterious link, beyond the purely physical, that connects all human beings with each other and with the entire natural world. تمام انسان ایک دوسرے سے اور بقی تمام قدرتی فنا سے ایک کیپو اسرار روحانی (تعلق) سے جڑے ہوئے ہیں جو مافیت سے بھی بڑھ کر ہے							
34. A vital thread of life joins all objects and beings in the universe زندگی کی ایک کرنگ رنیر روحانی دھاگہ تمام اشیا اور مخلوق کو کائنات میں جوڑے ہوئے ہے							
35. Human beings and nature are both part of a vast symphony of life directed by a single life-force انسان اور فطرت ایک مضبوط طرز حیات سے نسبل رکھتے ہیں جس کا خالق ایک ہی ہے							
36. The peace and happiness of humankind is founded on being in harmony with the rhythm of the universe بنی نوع انسان کی امن اور خوشی کا انحصار کائنات کے نظام کے ساتھ ہم آہنگی میں ہے							
37. All existence in the universe forms one great unified life system کائنات میں تمام وجود ایک مکبر عظیم متحد زندگی کا نظام بناتے ہیں							
38. The natural world does not consist merely of physical phenomena but contains spiritual and emotional elements as well قدرتی فنا محض طبعی مظاہر پر مشتمل نہیں بلکہ اس کے ساتھ ساتھ روحانی اور جذباتی عناصر بھی شامل ہے							

273

Statement	1 Strongly Disagree بالکل غیر متفق	2 Disagree غیر متفق	3 Somehow Disagree کسی حد تک غیر متفق	4 Neutral غیر جانبدار	5 Somehow Agree کسی حد تک متفق	6 Agree متفق	7 Strongly Agree بالکل متفق
39. Every living and nonliving thing is an expression of the fundamental life-force of the entire cosmos ہر جاندار اور بے جان ذرہ اس پوری خلق کائنات کا مظہر ہے							
40. The entire cosmos is linked together by complicated and intricate physical laws پوری کائنات پیچیدہ طبعی قوانین کے تحت ایک دوسرے کے ساتھ جڑی ہے							
41. All parts of the universe—both living and nonliving—are composed of the same fundamental materials کائنات کی تمام اشیا جاندار اور بے جان ایک ہی بنیادی مادے سے بنی ہیں							
42. All living beings are connected because they are produced and nourished by the same diverse forces, such as the pull of gravity in the universe, the flow of energy from the sun, and the web of life in the natural world. تمام جاندار ایک ہی قوتوں سے پیدا اور نشوونما پاتے ہیں جیسے کشش ثقل، سورج سے توانائی کا بہاؤ اور قدرتی حیات کا جڑا ہونا کے ہو ہون ہیں							
43. I select a car with a high rear axle ration for that produces least friction and save energy میں اونچے ایکسل والی گاڑی چنتا ہوں کیونکہ وہ کم رگڑ پیدا کرتی ہے اور توانائی بچاتی ہے							
44. I avoid wide thread tires for that cause road friction and consumes more fuel میں چوڑے ٹائر گول سے گریز کرتا ہوں کیونکہ اس سے زیادہ رگڑ پیدا ہوتی ہے اور اضافی ایندھن خرچ ہوتا ہے							
45. I consider using radial tires for that help to preserve fuel resource میں ان دھن کی بچت کے لیے ریڈیل ٹائر کا استعمال کرتا ہوں							
46. If I have multiple car choices available, given all other factors same, I choose the one with better environmental performance							

	1	2	3	4	5	6	7
گر میرے پاس مطلوبہ گاڑی تیل سے چلنے والی ہو تو میں وہ استعمال کرتا ہوں جس کی ماحولیاتی کارکردگی بہتر ہو							
47. I avoid purchasing car with power consuming accessories to save energy resource میں ایسی گاڑی نہیں خریدتا جس میں زیادہ توانائی استعمال کرنے والے پرزہ جات لگے ہوں تاکہ توانائی کی بچت ہو سکے	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
48. I prefer buying a car with automatic transmission at it consumers less petrol میں خودکار گیئر بدلنے والی گاڑی خریدنا پسند کرتا ہوں کیونکہ یہ کم ایندھن خرچ کرتی ہیں	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
49. I prefer to buy the brand which considers environmental protection in manufacturing process میں وہ برانڈ خریدنا پسند کرتا ہوں جس کی تیاری میں ماحول کا خیال رکھا گیا ہو	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
50. I would buy an electric vehicle if the quality is lower than a conventional car میں کسی قیمتی گاڑی کو خریدنے کو ترجیح دوں گا چلے اسکا معیار روایتی گاڑی سے کم ہی کیوں نہ ہو	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
51. I would buy an electric vehicle even if the performance is lower than a conventional car میں کسی قیمتی گاڑی کو خریدنے کو ترجیح دوں گا چلے اسکی کارکردگی روایتی گاڑی سے کم ہی کیوں نہ ہو	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
52. I would buy an electric vehicle even if it has a less appealing design میں کسی قیمتی گاڑی کو خریدنے کو ترجیح دوں گا چلے اسکا ڈیزائن کم پرکشش ہی کیوں نہ ہو	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
53. While buying a car, I take into consideration the emission levels میں کار کر خریداری کرتے ہوئے سورس کے اخراج کی سطح کو مدنظر کوہتا ہوں	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
54. I plan to buy a Small Displacement Car (SDC) میں ایک چھوٹی نقل مکن والی گاڑی خریدنے کا ارادہ کوہتا ہوں	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق
55. I would like to buy an SDC as a responsible consumer میں چھوٹی نقل مکن والی گاڑی خریدنی پر ضامند ہوں کیونکہ میں زمہ دل صارف ہوں	**1** Strongly Disagree بالکل غیر متفق	**2** Disagree غیر متفق	**3** Somehow Disagree کچھ حد تک غیر متفق	**4** Neutral غیر جانبدار	**5** Somehow Agree کچھ حد تک متفق	**6** Agree متفق	**7** Strongly Agree بالکل متفق

	1	2	3	4	5	6	7
56. I wouldn't buy a car that I expect will damage the environment میں ایسی گاڑی نہیں خریدتا جو ماحول کو نقصان پہنچائے	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
57. Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing speed limits میں گاڑی کی حدِ رفتار کا پابند رہتا ہوں کیونکہ میں جانتا ہوں کہ زیادہ رفتار غیر موثر ہے اور گاڑی کو روکنے میں زیادہ توانائی صرف ہوتی ہے	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
58. Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing steady pace میں گاڑی کو رفتار میں توازن کے ساتھ چلاتا ہوں کیونکہ میں جانتا ہوں کہ زیادہ رفتار غیر موثر ہے اور گاڑی کو روکنے میں زیادہ توانائی درکار ہوتی ہے	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
59. I avoid using air-conditioning as much as possible to save fuel for environmental reasons میں گاڑی میں ائیر کنڈیشنر جتنا ممکن ہو کم سے کم استعمال کرتا ہوں تاکہ ماحول کے لئے ایندھن کی بچت ہو	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
60. I avoid using unnecessary brakes to avoid fuel loss میں ایندھن کے ضیاع سے بچنے کے لئے غیر ضروری بریکوں کے استعمال سے اجتناب کرتا ہوں	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
61. I often use telephonic communication to avoid transportation use for environmental reasons میں ماحول کے تحفظ کے لئے نقل و حمل کی بجائے اکثر فون کے ذریعے رابطے کو ترجیح دیتا ہوں	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
62. I always consider fuel economy while driving ڈرائیونگ کے دوران میں ہمیشہ ایندھن کی بچت کا خیال رکھتا ہوں	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
63. I try to keep my car as ecologically sound as possible میں اپنی گاڑی کو جتنا ممکن ہو ماحول دوست رکھنے کی کوشش کرتا ہوں	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق
64. Even on freeways I drive under 60 to conserve fuel بے شک سڑک خالی ہو میں ایندھن کے تحفظ کے لئے 60 کلو میٹر کی رفتار سے کم پر گاڑی چلاتا ہوں	Strongly Disagree بالکل غیر متفق	Disagree غیر متفق	Somehow Disagree کسی حد تک غیر متفق	Neutral غیر جانبدار	Somehow Agree کسی حد تک متفق	Agree متفق	Strongly Agree بالکل متفق

Section 1: Background Information

Do you want to participate in this survey? ☐ Yes ☐ No

Section 1: Background Information

1. What is your age?
☐19-26 ☐ >26-33 ☐ >33-40 ☐ >40-47 ☐ >47-54 ☐ >54-61 ☐ above 61

2. What is your gender? *(Please tick)* ☐ Male ☐ Female

3. What is your Income? *(Please tick)*
☐ 45000 - 55000 ☐ >55000 – 65000 ☐ >65000 – 75000 ☐ >75000 – 85000 ☐ >85000 – 95000
☐ >95000 – 105000 ☐ > 105000 and above _____

4. Please mention your city/district:

☐ Lahore	☐ Karachi	☐ Quetta	☐ Hyderabad	☐ Peshawar	☐ Islamabad
☐ Multan	☐ Faisalabad	☐ Mardan	☐ Sargodha	☐ Rawalpindi	☐ Other

5. Where do you live? *(Please tick)* ☐ City ☐ Suburb ☐ Village

6. Do you have a car? ☐ Yes ☐ No ☐ About to have one in next three months

7. What formal education/degree do you possess ? *(Please tick)*

☐ No formal education at all	☐ Primary (year 5)	☐ > Primary - Middle (year 8)
☐ > Middle – Matric (year 10)	☐ > Matric – Inter (year 12)	☐ DAE (Diploma)
☐ > inter – Bachelors (14 year)	☐ > inter – Bachelors (16 year)	☐ > Bachelors – Masters (16 year)
☐ > Masters – MPhil (17.5-18 year)	☐ MBBS or BDS	☐ DVM
☐ Bachelor of Engineering (BE)	☐ others	

8. What is your marital status? *(Please tick)*

☐ Single ☐ Married ☐ Divorced ☐ Widowed

9. What is your occupation?

☐ Landlord
☐ Business Man
☐ Private Job
☐ Government Job
☐ Armed Forces

Section 2: Theoretical Constructs

Environmental Knowledge (Flamm, 2006)						
1. Personal cars pollute the environment for each mile driven	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
2. Personal cars are not an important source of air pollution	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
3. Personal cars are source of gases that many scientists believe are warming Earth's climate	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
4. Government rules require personal cars to meet the emissions standard	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
5. Exhaust from cars create air pollution	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

6. Personal cars are source of noise pollution	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
7. Exhaust from personal cars are important source of smog	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
8. Exhaust from personal cars are an important source of pollution that cause asthma	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Green Lifestyle (Ragas et al., 2017)							
Green health and environmental development							
9. I participate in Fun Runs, tree planting projects and other eco-friendly activities in the community	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
10. I plant trees, flowers or other plants in my backyard	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
11. I decorate my house with short plants	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
12. I segregate my trashes to biodegradable and non-biodegradable	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
13. I collect rain water or use rain barrels for watering plants etc.	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
14. I buy food smartly by reading labels and Nutrition facts	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
15. I exercise regularly	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Greenhouse gas emission reduction							
16. I perform regular vehicle (car) maintenance to check its gas emission	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
17. I usually combine errands when going out to save has and reduce gas emission	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
18. I turn off my vehicle if I expect to be idle for more than a minute	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Subjective normative belief (Han et al., 2016; Moons & De Pelsmacker, 2015; Nayum et al., 2013)							
19. People who are important to me will support me when I drive environment-friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
20. People who are important to me try to convince me to drive and environment-friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
21. Most people who are important to me think I should buy an environment-friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
22. People whose opinion I value would prefer me to use public	Strongly Disagree	Disagree 2	Somehow Disagree	Neutral 4	Somehow Agree	Agree 6	Strongly Agree

transport instead of personal car for commuting	1		3		5		7
23. People whose opinion I value would prefer me to do carpooling whenever possible for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
24. Many of the people that are important to me insinuated that I should consider environmental protection while buying a car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Motivations to Comply							
25. When it comes to buying a car, I want to choose one which most of people who are important to me think I should choose	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
26. I want to choose mode of transportation which most of people who are important to me think I should choose	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
27. When it comes to fuel economic ways of driving a car, I want to follow what people important to me think I should do	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
28. Considering environmental reasons, while I choose tyres for my car I want to consider the advice of people who are important to me	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Control beliefs							
29. I believe have enough options to select from in electric car categories while I choose to buy one	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
30. I believe I have public transportation options available if I consider to use	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
31. I believe I have enough information about fuel economic way of driving personal cars	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
32. I believe I have ways to reduce the use of personal car for environmental reasons	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Behavioural belief strength							
33. My selecting a car with high rear axle ration will help reduce negative impacts of personal cars on environment	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
34. If I avoid using radial tires, it will help conserve fuel	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
35. If I abide by speed limits, it will help me reduce fuel consumption	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
36. If I buy electric vehicles, it will help me protect environment from car exhausts	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

37. If I reduce personal car use, it will help conserve fuel	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
38. If I reduce personal car use, it will help protect environment	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

<table>
<tbody>
<tr><td colspan="8" align="center">Outcome evaluation belief</td></tr>
</tbody>
</table>

39. Environmental protection for future generations is logical	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
40. Resources conservation for environmental reasons is wise	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
41. Reducing use of personal car is logical	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
42. Abiding by the speed limits is good for fuel economy	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
43. Using electric vehicle is good for environment	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

Subjective norms (Han et al., 2016; Moons & De Pelsmacker, 2015; Nayum et al., 2013) Descriptive Norms

44. Most of the people that are important to me own environment-friendly cars	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
45. I believe that most of the people that are important to me are considering to buy environmentally friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
46. Most of the people that are important to me do carpooling for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
47. Most of the people that are important to me prefer using public transport for commuting instead of personal cars	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

Perceived behavioural control (Han et al., 2016; Moons & De Pelsmacker, 2015; Nayum et al., 2013)

48. It was mostly up to me whether I would buy and environmentally friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
49. If I wanted, I could buy an environmentally friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
50. It was mostly up to me whether I would prefer public transport instead of personal car for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
51. It was mostly up to me whether I would do carpooling for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
52. If I wanted, I could use public transport for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
53. If I wanted, I could do carpooling for commuting	Strongly Disagree	Disagree 2	Somehow Disagree	Neutral 4	Somehow Agree	Agree 6	Strongly Agree

	1		3		5		7
Attitude Towards the Behaviour (Han et al., 2016; Moons & De Pelsmacker, 2015; Nayum et al., 2013)							
54. For me buying an environmentally friendly car is logical	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
55. For me buying an environmentally friendly car is a wise decision	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
56. For me using public transport instead of personal car is rational	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
57. For me using public transport instead of personal car is a wise decision	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
58. For me carpooling instead of using personal car is rational	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
59. For me carpooling instead of using personal car is a wise decision	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
ESCCB intentions (Saleem, Eagle, & Low, 2017)							
60. I select a car with a high rear axle ration for that produces least friction and saves energy	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
61. I avoid using wide thread tires for that cause road friction and consume more fuel	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
62. I consider using radial tires for that help to preserve fuel resource	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
63. If I have multiple car choices available, given all other factors same, I choose the one with better environmental performance	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
64. Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing speed limits	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
65. Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing steady pace	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
66. I would buy an electric vehicle even if its quality is lower than a conventional car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
67. I would buy an electric vehicle even if its performance is lower than a conventional car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
68. I would buy an electric vehicle even if it has a less appealing design	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Actual Behavioural Control							
69. I have time, resources and opportunity to buy an environment-friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

70. I have opportunity to use public transport for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
71. I have opportunity to do carpooling for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
72. I have availability of environmentally friendly cars in the town to choose from.	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
ESCCB actual Behaviour (Saleem et al., 2017)							
73. The environmental performance of the car I currently hold is satisfactory	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
74. In selecting my car (the most recent you purchased), I considered the element of friction in its design	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
75. In selecting tyres for my car (the most recent you purchased), I avoided wide threads to avoid extra road friction and fuel consumption	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
76. In my most recent trip, I preferred to use the car which has better environmental performance	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
77. During last 3 months, I have paid considerate attention to speed limits during driving for that helps to save fuel	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
78. During my last car purchase, I considered the option of electric vehicle	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
79. During my last car purchase I considered the option of hybrid car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Values (Schwartz, 1992)							
Altruistic Values							
80. Pollution generated here harms people all over the earth	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
81. We don't need to worry about the environment because future generations will be better able to deal with these problems than we are now (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
82. The effects of pollution on public health are worse than we realise	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
83. Environmental protection will help people have a better quality of life	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
84. Environmental protection benefits everyone	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Biospheric Values							

85. Modern development threatens wildlife	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
86. Over the next several decades, thousands of species of plants and animals will become extinct	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
87. Claims that we are changing the climate are exaggerated (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
88. While some local plants and animals may have been harmed by environmental degradation, over the whole earth there has been little effect (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
89. The balance of nature is delicate easily upset	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Egoistic values							
90. A clean environment provides me with better opportunities for recreation	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
91. Protecting the environment will threaten jobs for people like me (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
92. Laws to protect the environment limit my choices and personal freedom (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
93. Environmental protection is beneficial to my health	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
94. Environmental protection will provide a better world for me and my children	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
NEP (Dunlap et al., 2000)							
95. We are approaching the limit of the number of people the Earth can support	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
96. When humans interfere with nature it often produces disastrous consequences.	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
97. Human ingenuity will insure that we do not make the Earth unliveable (R).	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
98. Humans are seriously abusing the environment	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
99. Plants and animals have as much right as humans to exist	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
100. Despite our special abilities, humans are still subject to the laws of nature	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
101. The Earth is like a spaceship with very limited room and resources	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

102. Humans were meant to rule over the rest of nature (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
103. Humans will eventually learn enough about how nature works to be able to control it (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
104. If things continue on their present course, we will soon experience a major ecological catastrophe	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
• **Beliefs of VBN (Han, 2015; Han et al., 2016; Steg et al., 2005)**							
Awareness of Consequences							
105. Use of personal cars causes pollution	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
106. Use of personal cars causes climate change	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
107. Use of personal cars causes exhaustion of natural resources	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
108. Global warming is a problem for society	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
109. Using environment-friendly cars help reduce global warming	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
110. Reduction in use of personal cars help to curtail global warming	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
111. The exhaustion of fossil fuels is a problem	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
112. Using environment-friendly cars help reduce exhaustion of fossil fuels	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
113. Reduction in use of personal cars help to curtail exhaustion of fossil fuels	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
114. Quality of environment will improve if we use environmental friendly cars	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
115. Quality of environment will improve if we reduce use of personal cars	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
Ascription of responsibility							
116. I believe that I am jointly responsible for environmental pollution by use of personal cars	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
117. I feel jointly responsible for exhaustion of fossil fuels due to use of personal cars	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
118. I feel jointly responsible for global warming	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

119. Along with government and industry, I am also responsible for climate change	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
120. I feel, at individual level, one can not help to reduce environmental problems caused by use of personal cars (R).	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

Personal Norms (integrated)

121. I feel an obligation to choose environment-friendly car instead of traditional one	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
122. I feel personally obliged to use personal car as less as possible	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
123. Regardless of what others do, I feel it my moral obligation to use environment-friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
124. Regardless of what others do, I feel it my moral obligation to use car as less as possible for commuting	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
125. I feel that it is important to ensure that negative effects of use of personal cars on environment are as less as possible	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
126. People like me should do everything possible to mitigate the negative effects of personal car use on environment	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
127. I feel it obligatory to bear the environment and nature in mind in my daily life behaviour	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

Personal Norms (Introjected) (Doran & Larsen, 2016)

128. I sometimes have a bad conscience because I do not own an environmentally friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
129. I would sometimes have a bad conscience if I didn't own an environmentally friendly car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
130. I sometimes have a bad conscience because I use personal car excessively when I can avoid it	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
131. I sometimes have a bad conscience that I own a powerful and spacious car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
132. I would sometimes have a bad conscience if I owned a powerful and spacious car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
133. I sometimes have a bad conscience that I use personal car while I can use public transport	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
134. I sometimes have a bad conscience that I use personal car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

while I could walk for short distances							
Religiosity (Liu & Koenig, 2013) (Hoge and DUREL)							
135. My faith involves all of my life	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
136. In my life, I experience the presence of the Divine (i.e., God)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
137. Although I am a religious person, I refuse to let religious considerations influence my everyday affairs (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
138. Nothing is as important to me as serving God as best as I know how	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
139. My faith sometimes restricts my actions	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
140. My religious beliefs are what really lie behind my whole approach to life	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
141. I try hard to carry my religion over into all my other dealings in life	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
142. One should seek God's guidance when making every important decision	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
143. Although I believe in religion, I feel there are many more important things in life (R)	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
144. It does not matter so much what I believe as long as I lead a moral life	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7

Appendix X: *Final Survey of Study 2 - Translated*

Section 1: Background Information

1. What is your age?   آپ کی عمر کیا ہے

☐19-26   ☐ >26-33   ☐ >33-40   ☐ >40-47   ☐ >47-54   ☐ >54-61   ☐ above 61

2. What is your gender? *(Please tick)*   ☐ Male   ☐ Female

آپ کی جنس کیا ہے   عورت   مرد

3. What is your Income? *(Please tick)*   آپ کی آمدن کیا ہے

☐ 45000 - 55000 ☐ >55000 – 65000 ☐ >65000 – 75000 ☐ >75000 – 85000 ☐ >85000 – 95000

☐ >95000 – 105000 ☐ > 105000 and above _____

4. Please mention your city/district: برائے کرم اپنے شہر / ضلع پر نشان لگائیں

☐ Lahore	☐ Karachi	☐ Quetta	☐ Hyderabad	☐ Peshawar	☐ Islamabad
☐ Multan	☐ Faisalabad	☐ Mardan	☐ Sargodha	☐ Rawalpindi	☐ Other

5. Where do you live? *(Please tick)*   ☐ City   ☐ Suburb ☐ Village

آپ کہاں رہتے ہیں   شہر   مضافات   گاؤں

6. Do you have a car? ☐ Yes   ☐ No ☐ About to have one in next three months

کیا آپ کے پاس کار ہے   ہاں   نہیں   تین ملک بعد خریدنے کا ارادہ ہے

7. What formal education/degree do you possess? *(Please tick)*

آپ کی رسمی تعلیم / ڈگری کیا ہے

☐ No formal education at all	☐ Primary (year 5)	☐ > Primary - Middle (year 8)
☐ > Middle – Matric (year 10)	☐ > Matric – Inter (year 12)	☐ DAE (Diploma)
☐ > inter – Bachelors (14 year)	☐ > inter – Bachelors (16 year)	☐ > Bachelors – Masters (16 year)
☐ > Masters – MPhil (17.5-18 year)	☐ MBBS or BDS	☐ DVM
☐ Bachelor of Engineering (BE)	☐ others	

8. What is your marital status? *(Please tick)*

آپ کی ازدواجی حیثیت کیا ہے

☐ Single   ☐ Married   ☐ Divorced   ☐ Widowed

غیر شادی شدہ   شادی شدہ   طلاق یافتہ   بیوہ/رنڈوا

9. What is your occupation?

آپ کا پیشہ کیا ہے

☐ Landlord   ☐ Business Man   ☐ Private Job   ☐ Government Job   ☐ Armed Forces

Section 2: Theoretical Constructs

	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
10. Personal cars pollute the environment for each mile driven ہر میل چلنے پر نجی گاڑیوں ماحول کو آلودہ کرتی ہے	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
11. Personal cars are not an important source of air pollution فضائی آلودگی میں نجی گاڑیوں کا کوئی خاص کردار نہیں	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
12. Personal cars are source of gases that many scientists believe are warming Earth's climate نجی گاڑیاں ایک ایسی گیسوں کے سورس کے خراج باعث ہیں جن کے بارے میں بہت سائنسدانوں کا خیال ہے کہ وہ زمین کے موسم کو گرم کر رہی ہے	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
13. Government rules require personal cars to meet the emissions standard	Strongly Disagree	Disagree 2	Somehow Disagree	Neutral 4	Somehow Agree	Agree 6	Strongly Agree

Statement	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
سرکاری ضروری اسباب اتکنل انکورکلرت ے ورکمہ ٹائی گاٹیوں یں اخراج گی سورکے (سطح لیک حتک رہمے	1 بلکل غیر مفتق	غیر مفتق	3 کچھ حتک غیر مفتق	غیر جالب دار	5 کچھ حتک مفتق	مفتق	7 بلکل مفتق
14. Exhaust from cars create air pollution گاٹیوں کا دھوا فضائ آلوگ ییدیدکتا ہے	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
15. Personal cars are source of noise pollution ٹای گاٹی ارش ورکی آلوگ ییدیدکتی یں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
16. Exhaust from personal cars are important source of smog ٹای گاٹیوں سے دھوکا اخراج دھورکی دییدپیدا کوتلایے	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
17. Exhaust from personal cars are an important source of pollution that cause asthma ٹای گاٹیوں سے نگلنمے دھوارایسی آلوگ ییدیدپیدا کوتامے جو دمکبلاعثیتی ہے	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
18. I participate in Fun Runs, tree planting projects and other eco-friendly activities in the community میرفتیح دوڑروں، درختلگلن یکمے فضویوں اور ییگر ماحول وستسرگرمیوں یں حنلیتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
19. I plant trees, flowers or other plants in my backyard میرپان یگھرک نپچھوواڑے یں درختپھول اور وسرر ییپودلگلتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
20. I decorate my house with short plants میرپان یگھرکو چھٹ ییپودوس سسجاتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
21. I segregate my trashes to biodegradable and non-biodegradable میرپان یگھرک یکوڑاکمٹکوتخلیپفر علمرر کمیھوباپر لگ لگکرلیتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
22. I collect rain water or use rain barrels for watering plants etc. میربار شکلپلی جمعرلیتا ہوریا اسکے ذریعے پودورکی آنپاش یکرتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
23. I buy food smartly by reading labels and Nutrition facts کھنے کی اشیاء خریتے وئے یں غظیتکی مھو ماتپرڑھاہوں اور انکے مطلب چھنیں خویتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
24. I exercise regularly میربقاعگیسے ورزشکرتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق
25. I perform regular vehicle (car) maintenance to check its gas emission میرگاڑی کے اخراجیمرنظر رکھنے کے لیے اسرکا بقاعگیسے معلن کرتا ہوں	Strongly Disagree 1 بلکل غیر مفتق	Disagree 2	Somehow Disagree 3 کچھ حتک غیر مفتق	Neutral 4 غیر جالب دار	Somehow Agree 5 کچھ حتک مفتق	Agree 6 مفتق	Strongly Agree 7 بلکل مفتق

26. I usually combine errands when going out to save has and reduce gas emission میں عموماً چھوٹے چھوٹے کاموں کو ایندھن کی بچت کے لئے گاڑی کا استعمال کم تا ہوں تاکہ پیٹرول کی بچت ہو اور گیسوں کا اخراج کم ہو	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
27. I turn off my vehicle if I expect to be idle for more than a minute میں گاڑی کا انجن بند کر دیتا ہوں اگر مجھے ایک منٹ سے زیادہ گاڑی کے کھڑی کرنی ہو	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
28. People who are important to me will support me when I drive environment-friendly car جو لوگ میرے لئے اہم ہیں وہ میرے ماحول دوست گاڑی چلانے کی حمایت کریں گے	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
29. People who are important to me try to convince me to drive and environment-friendly car جو لوگ میرے لئے اہم ہیں وہ مجھے ماحول دوست گاڑی چلانے پر قائل کرتے ہیں	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
30. Most people who are important to me think I should buy an environment-friendly car جو لوگ میرے لئے اہم ہیں ان میں سے زیادہ تر یہ خیال کرتے ہیں کہ مجھے ماحول دوست گاڑی خریدنی چاہئے	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
31. People whose opinion I value would prefer me to use public transport instead of personal car for commuting جن لوگوں کی رائے کا میں احترام کرتا ہوں وہ اس بات کو ترجیح دیں گے کہ میں ذاتی گاڑی کے بجائے آنے جانے کے لئے عوامی نقل و حمل کے ذرائع کا استعمال کروں	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
32. People whose opinion I value would prefer me to do carpooling whenever possible for commuting جن لوگوں کی رائے کا میں احترام کرتا ہوں وہ اس بات کو ترجیح دیں گے کہ جب ممکن ہو میں سفر کے لئے گاڑی کا اشتراک کروں	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
33. Many of the people that are important to me insinuated that I should consider environmental protection while buying a car بہت سے لوگ میرے لئے اہم ہیں کا اصرار ہے کہ میں گاڑی خریدتے وقت ماحولیاتی تحفظ کو ذہن میں رکھوں	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
34. When it comes to buying a car, I want to choose one which most of people who are important to me think I should choose جب گاڑی خریدنے کا معاملہ آتا ہو تو میں ایسی گاڑی چنتا ہوں جو بہت سے لوگ جو میرے لئے اہم ہیں سمجھتے ہیں مجھے چننی چاہئے	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
35. I want to choose mode of transportation which most of people who are important to me think I should choose میں سفر کے وہ ذرائع اختیار کرتا ہوں جو میرے نزدیک اہم لوگوں کے خیال میں مجھے اختیار کرنے چاہیں	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
36. When it comes to fuel economic ways of driving a car, I want to follow what people important to me think I should do	Strongly Disagree 1	Disagree 2 غیر متفق	Somehow Disagree 3	Neutral 4 غیر جانب دار	Somehow Agree 5	Agree 6 متفق	Strongly Agree 7 بالکل متفق

جب طلند ہنک یبیچنگکرنے ولا یگاڑی چ ولے طریقہ اختیاکرنے یکبات ہوتو ہں انلوگوں کی طریقہ احیارکوتا ہ و جو ہ رلیے اہمیں	بلکل غِر ہمبق		کچھ حدتک غِر ہمبق		کچھ حدتک ہمبق		
37. Considering environmental reasons, while I choose tyres for my car I want to consider the advice of people who are important to me ماحطیاتی وجوہاتکو منظر کے ہوئے جب ہں ہلنی گاڑی یکلیے ٹائر مِتا ہورتو انلوگوں کی رصیح تکا خیال کھتا ہوں جو ہ رلیے اہمیں	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
38. I believe have enough options to select from in electric car categories while I choose to buy one جببرقی گاڑی خریدنے کی بات ہوتو ہں سمجھہلوں ہ ریپاسبرقیگاڑیوںکے یہمتسارے آپشن موجودہں	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
39. I believe I have public transportation options available if I consider to use ہں سمجھہا ہوں کہ اگر ہں عوامی نقل وحملکے ذرائع استعمالکرنا چاہوں تو ہ سے عبہآ سٹی ذرائع موجودہں	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
40. I believe I have enough information about fuel economic way of driving personal cars ہں سمجھہا ہوںکہ ہ ریپاسگاڑی چ نے کے طریقے جنسے طلند ہنک یوبچت ہوکہ یا رے ہ رکفی ملومات ہں	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
41. I believe I have ways to reduce the use of personal car for environmental reasons ہں یقین کھہلوںکہ ماحولکیبہتر یکلیے ہ نی کارکے استعمالکوکمکرنے کے ہ ریپاسکئی طریقے ہں	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
42. My selecting a car with high rear axle ration will help reduce negative impacts of personal cars on environment ہ را یسیگاڑی چ نا جس ہں ریبر ہی ایکسلکا تناسب زیادہ ہونئیگاڑی یکے استعمالکے ماحولپر ہ ی ٹراتکوکمکر یگا۔	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
43. If I use radial tires, it will help conserve fuel گر ہں ریڈیلٹائر استعمالکروتو ہں طلند ہنک یکی بچتکر سکتا ہوں۔	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
44. If I abide by speed limits, it will help me reduce fuel consumption گر ہں حوفتارکویپابندیکرودیکرورتو اس سے طلند ہن کیکھپتکمکرنے ہں مدد لے یگی۔	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
45. If I buy electric vehicles, it will help me protect environment from car exhausts گر ہں برقی یکار خریدوں تو یہ ماحولکوگاڑیوں کے دھوئیں سے بچنے ہں ہ ریکاوشوں ہں لم سرنگ ہلمثابت ہوگا۔	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
46. If I reduce personal car use, it will help conserve fuel گر ہں نئیگاڑیکا استعمالکم کر دورتو اس سے طلند ہنبچنے ہں مدد لے یگی	Strongly Disagree 1 بلکل غِر ہمبق	Disagree 2 غِر ہمبق	Somehow Disagree 3 کچھ حدتک غِر ہمبق	Neutral 4 غِر جانب دار	Somehow Agree 5 کچھ حدتک ہمبق	Agree 6 ہمبق	Strongly Agree 7 بلکل ہمبق
47. If I reduce personal car use, it will help protect environment	Strongly Disagree	Disagree 2	Somehow Disagree	Neutral 4	Somehow Agree	Agree 6	Strongly Agree

Statement	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
گر میں نئی گاڑی کی استعمال کو کم کر دوں تو اس سے ماحول کی آلودگی سے حفاظت کرنے میں مدد ملے گی۔	1 بلکل غیر منطقی	غیر منطقی	3 کچھ حد تک غیر منطقی	غیر جانب دار	5 کچھ حد تک منطقی	منطقی	7 بلکل منطقی
48. Environmental protection for future generations is logical آنے والی نسلوں کے لیے ماحول کا تحفظ کرنا ایک منطقی بات ہے۔	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
49. Resources conservation for environmental reasons is wise ماحولیاتی وجوہات کی بنا پر وسائل کی بچت ایک عقل مندانہ قدم ہے۔	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
50. Reducing use of personal car is logical نئی کار کے استعمال کو کم کرنا ایک منطقی بات ہے۔	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
51. Abiding by the speed limits is good for fuel economy حد رفتار کی پابندی کرنے سے ایندھن کی بچت ہوتی ہے۔	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
52. Using electric vehicle is good for environment برقی کار کا استعمال ماحول کے لئے اچھا ہے۔	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
53. Most of the people that are important to me own environment-friendly cars بہت سے لوگ جو میرے لیے اہم ہیں ماحول دوست گاڑیاں رکھتے ہیں	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
54. I believe that most of the people that are important to me are considering to buy environmentally friendly car میں یقین رکھتا ہوں کہ جو لوگ میرے لئے اہم ہیں ماحول دوست گاڑیاں خریدنے کا سوچ رہے ہیں	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
55. Most of the people that are important to me do carpooling for commuting بہت سے لوگ جو میرے لیے اہم ہیں سفر کے لیے گاڑی کا اشتراک کرتے ہیں	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
56. Most of the people that are important to me prefer using public transport for commuting instead of personal cars بہت سے لوگ جو میرے لیے اہم ہیں سفر کے لیے عوامی نقل و حمل کے ذرائع استعمال کرنے کو ترجیح دیتے ہیں	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
57. It was mostly up to me whether I would buy and environmentally friendly car میں ماحول دوست گاڑی خریدنے میں کامل طور پر با اختیار ہوں	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
58. If I wanted, I could buy an environmentally friendly car گر میں چاہتا تو میں ماحول دوست گاڑی خرید سکتا تھا	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی
59. It was mostly up to me whether I would prefer public transport instead of personal car for commuting یہ مجھ پر منحصر تھا کہ میں سفر کرنے کے لیے نئی کار پر عوامی نقل و حمل کے ذرائع کو ترجیح دیتا ہوں	Strongly Disagree 1 بلکل غیر منطقی	Disagree 2	Somehow Disagree 3 کچھ حد تک غیر منطقی	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک منطقی	Agree 6 منطقی	Strongly Agree 7 بلکل منطقی

#	Statement	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
60.	It was mostly up to me whether I would do carpooling for commuting یہ مجھ پر منحصر تھا کہ میں سفر کے لیے گاڑی کا اشتراک کروں گا	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
61.	If I wanted, I could use public transport for commuting اگر میں چاہتا تو سفر کے لیے عوامی نقل و حمل کے ذرائع استعمال کر سکتا تھا	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
62.	If I wanted, I could do carpooling for commuting اگر میں چاہتا تو سفر کے لیے گاڑی کا اشتراک کر سکتا تھا	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
63.	For me buying an environmentally friendly car is logical میری نظر میں ماحول دوست گاڑی خریدنا منطقی بات ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
64.	For me buying an environmentally friendly car is a wise decision میری نظر میں ماحول دوست گاڑی خریدنا ایک دانشمندانہ فیصلہ ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
65.	For me using public transport instead of personal car is rational میری نظر میں ذاتی گاڑی کی بجائے عوامی نقل و حمل کے ذرائع استعمال کرنا منطقی بات ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
66.	For me using public transport instead of personal car is a wise decision میری نظر میں ذاتی گاڑی کی بجائے عوامی نقل و حمل کے ذرائع استعمال کرنا دانشمندانہ فیصلہ ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
67.	For me carpooling instead of using personal car is rational میری نظر میں ذاتی گاڑی کی بجائے سفر کے لیے گاڑی کا اشتراک کرنا منطقی ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
68.	For me carpooling instead of using personal car is a wise decision میری نظر میں ذاتی گاڑی کی بجائے سفر کے لیے گاڑی کا اشتراک کرنا دانشمندانہ فیصلہ ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
69.	I select a car with a high rear axle ration for that produces least friction and saves energy میں ایسی گاڑی چنتا ہوں جس میں پچھلے ایکسل کا تناسب زیادہ ہو کم سے کم رگڑ پیدا ہوتی ہے اور توانائی بچتی ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
70.	I avoid using wide thread tires for that cause road friction and consume more fuel میں چوڑے ٹائر استعمال کرنے سے گریز کرتا ہوں کیونکہ اس سے سڑک کی رگڑ پیدا ہوتی ہے اور زیادہ ایندھن کی کھپت بڑھ جاتی ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
71.	I consider using radial tires for that help to preserve fuel resource میں ریڈیل ٹائر استعمال کرنے کا سوچتا ہوں کیونکہ اس سے ایندھن بچانے میں مدد ملتی ہے	بلکل غیر متفق	غیر متفق	کچھ حد تک غیر متفق	غیر جانب دار	کچھ حد تک متفق	متفق	بلکل متفق
72.	If I have multiple car choices available, given all other factors same, I	Strongly Disagree	Disagree 2	Somehow Disagree	Neutral 4	Somehow Agree	Agree 6	Strongly Agree

choose the one with better environmental performance گر میرے پاس مطفی فگاڑیاں ہوں اور باقی تمام عوامل ایک جیسے ہوں تو میں وہ استعمال کرلوں گا جس کی ماحولیاتی کارکردگی بہتر ہو	1 بلکل غیر متفق	غیر متفق	3 کچھ حد تک غیر متفق	غیر جانب دار	5 کچھ حد تک متفق	متفق	7 بلکل متفق
73. Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing speed limits یہ جانتے ہوئے کہ زیادہ رفتار رنا مطلب ہے اور گاڑی رکنے میں زیادہ توانائی صرف ہوتی ہے میں حدِ رفتار کی پابندی کرتا ہوں	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
74. Knowing that excessive speed is inefficient and requires more energy to stop the car, I consider observing steady pace یہ جانے ہوئے کہ زیادہ رفتار ناموزاب ہے اور گاڑی رکنے میں زیادہ توانائی صرف ہوتی ہے میں مستحکم رفتار اختیار کرتا ہوں	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
75. I would buy an electric vehicle even if its quality is lower than a conventional car میں برقی کار خریدوں گا بلے اسکا معیار روایتی گاڑی سے کم تر ہو	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
76. I would buy an electric vehicle even if its performance is lower than a conventional car میں برقی کار خریدوں گا بلے اسکی کارکردگی روایتی کار سے کم ہو	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
77. I would buy an electric vehicle even if it has a less appealing design میں برقی کار خریدوں گا بلے اسکا ڈزائن روایتی گاڑی سے کم پُرکشش ہو	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
78. I have time, resources and opportunity to buy an environment-friendly car میرے پاس وقت وسائل اور موقع ہے کہ میں ماحول دوست گاڑی خرید سکوں	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
79. I have opportunity to use public transport for commuting میرے پاس عوامی نقل و حمل کے ذرائع موجود ہیں	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
80. I have opportunity to do carpooling for commuting میرے پاس سفر کے لیے گاڑی ایک سے زیادہ افراد کے ساتھ استعمال کرنے کے ذرائع موجود ہیں	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
81. I have availability of environmentally friendly cars in the town to choose from. میرے شہر میں موجود ماحول دوست گاڑیاں خریدنے کے لیے آپشن موجود ہیں	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
82. The environmental performance of the car I currently hold is satisfactory جو گاڑی اس وقت میرے زیرِ استعمال ہے اسکی ماحولیاتی کارکردگی اطمینان بخش ہے	Strongly Disagree 1 بلکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بلکل متفق
83. In selecting my car (the most recent you purchased), I considered the element of friction in its design	Strongly Disagree 1	Disagree 2 غیر متفق	Somehow Disagree 3	Neutral 4 غیر جانب دار	Somehow Agree 5	Agree 6 متفق	Strongly Agree 7 بلکل متفق

293

میں نے گاڑی کیلۓ ٹائرخریکرتے ہوئے)جو حال ہی میں آپ نے خریدی ہو(اسکے موٹرزٹائن میں گیپکے عواملکا خیا ل رکھتاتھا	بالکل غیر متفق		کچھ حدتک غیرمتفق		کچھ حدتک متفق		
84. In selecting tyres for my car (the most recent you purchased), I avoided wide threads to avoid extra road friction and fuel consumption میں نے گاڑی کیلۓ ٹائرخریکرتے ہوئے)جو حال ہی میں آپ نے خریدی ہو(اس میں چوڑی ٹائرزلگوانے سے اجتنابکیا تاکہ اس سے اضافی گرڑپیدا ہوتی ہے اور زیادہ ایندھن خرچ ہوتا ہے	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
85. In my most recent trip, I preferred to use the car which has better environmental performance میرے حالیہ سفر میں میں نے اس گاڑی کی ترجیح دی جسکی ماحولیاتی کارکردگی بہتر ہو	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
86. During last 3 months, I have paid considerate attention to speed limits during driving for that helps to save fuel گزشتہ تین ماہ کے دوران میں گاڑی چلاتے ہوئے حدفتار کو خاص طورپر مدنظر رکھتا ہوں اس سے ایندھن کی بچت ہوتی ہے	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
87. During my last car purchase, I considered the option of electric vehicle میرے حالیہ گاڑی کی خریداری کے دوران میں نے برقی گاڑی خریدنے پر غورکیا	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
88. During my last car purchase I considered the option of hybrid car میری حالیہ گاڑی کی خریداری کے دوران میں نے ہائبرڈ گاڑی کی انتخاب پربھی غورکیا ۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
89. Pollution generated here harms people all over the earth یہاں کی پیداکردہ آلودگی پوری وئے زمین کے لوگوں کیلۓ نقصان دہ ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
90. We don't need to worry about the environment because future generations will be better able to deal with these problems than we are now (R) ہمیں ماحول کے بارے میں پریشان ہونے کی ضرورت نہیں کیونکہ آنے والی نسلیں ماحولیاتی مسائل سے ہم سے بہتر انداز میں نمٹ سکیں گی۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
91. The effects of pollution on public health are worse than we realise ماحولیاتی آلودگی کے صحت عامہ پر اثرات ہماری سوچ سے زیادہ بدتر ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
92. Environmental protection will help people have a better quality of life ماحولیاتی تحفظ سے لوگوں کو بہتر معیار زندگی کے حصول میں مدد ملے گی۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
93. Environmental protection benefits everyone ماحولیاتی تحفظ کا ہر کسی کو فائدہ ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
94. Modern development threatens wildlife جدید ترقی جنگلی حیاتک لیۓ خطرہ ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حدتک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حدتک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق

95. Over the next several decades, thousands of species of plants and animals will become extinct آنے والے چند عشروں میں جانوروں اور پودوں کی کئی انواع نایاب ہو جائیں گی۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
96. Claims that we are changing the climate are exaggerated (R) یہ دعوے کہ ہم آب و ہوا پر اثر ڈال رہے ہیں مبالغہ آمیز ہیں	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
97. While some local plants and animals may have been harmed by environmental degradation, over the whole earth there has been little effect (R) گر چہ ماحولیاتی خرابی سے کچھ مقامی جانوروں اور پودوں پر اثر پڑا ہے، مگر عمومی طور پر پوری زمین پر اس کا کچھ زیادہ اثر نہیں ہوا۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
98. The balance of nature is delicate easily upset فطرت کا توازن نازک ہے اور آسانی سے بگڑ سکتا ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
99. A clean environment provides me with better opportunities for recreation صاف ماحول مجھے بہتر تفریح کے مواقع فراہم کرتا ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
100. Protecting the environment will threaten jobs for people like me (R) ماحول کی حفاظت اقدامات سے مجھ جیسے لوگوں کے روزگار کو خطرہ لاحق ہو سکتا ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
101. Laws to protect the environment limit my choices and personal freedom (R) ماحول کی حفاظت کے قوانین میری ذاتی آزادی اور انتخاب محدود کر سکتے ہیں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
102. Environmental protection is beneficial to my health ماحول کی حفاظت میری صحت کے لیے فائدہ مند ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
103. Environmental protection will provide a better world for me and my children ماحول کی حفاظت مجھے اور میرے بچوں کو ایک بہتر دنیا فراہم کرے گی۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
104. We are approaching the limit of the number of people the Earth can support ہم زمین پر رہنے والوں کی حد کی آبادی کے قریب ہیں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
105. When humans interfere with nature it often produces disastrous consequences. جب انسان فطرت کے معاملات میں مداخلت کرتے ہیں تو اکثر اس کے نہایت نقصان دہ نتائج نکلتے ہیں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
106. Human ingenuity will insure that we do not make the Earth unliveable (R). انسان کی قابلیت یقین دہانی کرائے گی کہ اسباب کی ضمانت ہیں کہ ہم زمین کو ناقابل رہائش نہیں بنائیں گے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق

Statement	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
107. Humans are seriously abusing the environment بنی نوع انسان ماحول کی سنگین خرابی میں ملوث ہیں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
108. Plants and animals have as much right as humans to exist پودوں اور جانوروں کا زندہ رہنے کا اتنا ہی حق ہے جتنا انسان کا۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
109. Despite our special abilities, humans are still subject to the laws of nature ہماری خصوصی صلاحیتوں کے باوجود انسان فطرت کے قوانین کا پابند ہوتا ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
110. The Earth is like a spaceship with very limited room and resources کرہ زمین ایک خلائی جہاز کی طرح ہے جس کے وسائل اور جگہ محدود ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
111. Humans were meant to rule over the rest of nature (R) بنی نوع انسان فطرت کی باقی اشیاء پر حکمرانی کے لیے بنے ہیں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
112. Humans will eventually learn enough about how nature works to be able to control it (R) بنی نوع انسان فطرت کے اسرار سے اس حد تک واقف ہو جائیں گے کہ اس کو قابو کر سکیں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
113. If things continue on their present course, we will soon experience a major ecological catastrophe اگر معاملات اسی طرح چلتے رہے تو ہم جلد ہی کسی بڑی قدرتی آفت کا سامنا کریں گے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
114. Use of personal cars causes pollution ذاتی گاڑی کا استعمال آلودگی پھیلاتا ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
115. Use of personal cars causes climate change ذاتی گاڑی کا استعمال ماحولیاتی تبدیلی کا باعث ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
116. Use of personal cars causes exhaustion of natural resources ذاتی گاڑی کے استعمال سے قدرتی وسائل کی زیادتی ضیاع ہوتا ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
117. Global warming is a problem for society عالمی درجہ حرارت کا بڑھنا معاشرے کے لیے مسئلہ ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
118. Using environment-friendly cars help reduce global warming ماحول دوست گاڑی کے استعمال سے عالمی درجہ حرارت کم کرنے میں مدد مل سکتی ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیر متفق	Somehow Disagree 3 کچھ حد تک غیر متفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
119. Reduction in use of personal cars help to curtail global warming	Strongly Disagree 1	Disagree 2 غیر متفق	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6 متفق	Strongly Agree 7

نئی گاڑیوں کے استعمال سے فضا میں درجہ حرارت کو کم کیا جا سکتا ہے۔	بالکل غیر مطابق		کچھ حد تک غیر مطابق	غیر جانبدار	کچھ حد تک مطابق		بالکل مطابق
120. The exhaustion of fossil fuels is a problem توانائی کے ذخائر کی تیزی سے ختم ہونے کا عمل ایک مسئلہ ہے۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
121. Using environment-friendly cars help reduce exhaustion of fossil fuels ماحول دوست گاڑیوں کا استعمال توانائی کے ذخائر کی تیزی سے ختم ہونے کے عمل کو روک سکتا ہے۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
122. Reduction in use of personal cars help to curtail exhaustion of fossil fuels نئی گاڑیوں کا استعمال کم کر کے توانائی کے ذخائر کی تیزی سے ختم ہونے کے عمل کو سست کیا جا سکتا ہے۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
123. Quality of environment will improve if we use environmental friendly cars ماحول کا معیار بہتر کیا جا سکتا ہے اگر ہم ماحول دوست گاڑیوں کا استعمال کریں۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
124. Quality of environment will improve if we reduce use of personal cars ماحول کا معیار بہتر کیا جا سکتا ہے اگر ہم نئی گاڑیوں کا استعمال کم کر دیں۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
125. I believe that I am jointly responsible for environmental pollution by use of personal cars میں یقین کرتا ہوں کہ نئی گاڑیوں کے استعمال سے ہونے والی ماحولیاتی آلودگی میں میں بھی برابر کا ذمہ دار ہوں۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
126. I feel jointly responsible for exhaustion of fossil fuels due to use of personal cars میں نئی گاڑیوں کے استعمال کے نتیجے میں سے ختم ہونے والی توانائی کے ذخائر کے معاملے میں خود کو بھی برابر کا ذمہ دار سمجھتا ہوں۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
127. I feel jointly responsible for global warming میں عالمی درجہ حرارت کے بڑھاؤ کے مسئلہ میں خود کو بھی برابر کا ذمہ دار سمجھتا ہوں	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
128. Along with government and industry, I am also responsible for climate change حکومت اور صنعت کاروں کے ساتھ ساتھ میں خود کو بھی عالمی موسمیاتی تبدیلیوں کا ذمہ دار سمجھتا ہوں۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
129. I feel, at individual level, one can not help to reduce environmental problems caused by use of personal cars (R). میں یہ سوچتا ہوں کہ نئی گاڑی کے استعمال سے ہونے والی ماحولیاتی مسائل کو کم کرنے میں ایک فرد زیادہ کردار ادا نہیں کر سکتا۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق
130. I feel an obligation to choose environment-friendly car instead of traditional one میں سمجھتا ہوں کہ روایتی گاڑی کی بجائے ماحول دوست گاڑی کو منتخب کرنا میری ذمہ داری ہے۔	Strongly Disagree 1 بالکل غیر مطابق	Disagree 2 غیر مطابق	Somehow Disagree 3 کچھ حد تک غیر مطابق	Neutral 4 غیر جانبدار	Somehow Agree 5 کچھ حد تک مطابق	Agree 6 مطابق	Strongly Agree 7 بالکل مطابق

297

	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
131. I feel personally obliged to use personal car as less as possible میں جہاں تک ممکن ہو سکے ذاتی کار کا کم سے کم استعمال مجھ پر واجب ہے۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
132. Regardless of what others do, I feel it my moral obligation to use environment-friendly car اس سے قطع نظر کہ دوسرے کیا کرتے ہیں، میں جہاں تک ممکن ہو کسے ہوئے یہ میری اخلاقی ذمہ داری ہے کہ ماحول دوست گاڑی کا استعمال کروں۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
133. Regardless of what others do, I feel it my moral obligation to use car as less as possible for commuting اس سے قطع نظر کہ دوسرے کیا کرتے ہیں، میں جہاں تک ممکن ہو کسے ہوئے یہ میری اخلاقی ذمہ داری ہے کہ سفر کے لیے کم سے کم ذاتی گاڑی استعمال کروں۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
134. I feel that it is important to ensure that negative effects of use of personal cars on environment are as less as possible میں سمجھتا ہوں کہ کسے ہوئے یہ یقینی بنانا ضروری ہے کہ ذاتی کار کے استعمال سے ماحول پر کم سے کم منفی اثرات ہوں	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
135. People like me should do everything possible to mitigate the negative effects of personal car use on environment مجھ جیسے لوگوں کو ہر ممکن کوشش کرنی چاہئے کہ ذاتی کار کے استعمال سے ہونے والے منفی اثرات کو کم کیا جا سکے۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
136. I feel it obligatory to bear the environment and nature in mind in my daily life behaviour میں اسباب کو خود پر لازم سمجھتا ہوں کہ روزمرہ کے معاملات میں ماحول اور فطرت کے مسائل کا خیال رکھوں۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
137. I sometimes have a bad conscience because I do not own an environmentally friendly car بعض اوقات مجھے احساس ہوتا ہے کہ میرے پاس ماحول دوست گاڑی نہیں ہے۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
138. I would sometimes have a bad conscience if I didn't own an environmentally friendly car اگر میرے پاس ماحول دوست گاڑی نہ ہوتی تو میرا ضمیر مجھے ملامت کرتا۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
139. I sometimes have a bad conscience because I use personal car excessively when I can avoid it بعض اوقات میرا ضمیر مجھے ملامت کرتا ہے کہ غیر ضروری طور پر ذاتی گاڑی کا استعمال کرتا ہوں۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
140. I sometimes have a bad conscience that I own a powerful and spacious car بعض اوقات مجھے برا محسوس ہوتا ہے کہ میرے پاس غیر ضروری طور پر بڑی گاڑی ہے۔	بالکل غیر مُتفق	غیر مُتفق	کچھ حد تک غیر مُتفق	غیر جانب دار	کچھ حد تک مُتفق	مُتفق	بالکل مُتفق
141. I would sometimes have a bad conscience if I owned a powerful and spacious car	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4 غیر جانب دار	Somehow Agree 5	Agree 6 مُتفق	Strongly Agree 7 بالکل مُتفق

298

Statement	Strongly Disagree 1	Disagree 2	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6	Strongly Agree 7
گر یاپاسبڑی اور طاقتورگاڑی ہوتی تو مجھے برا محسوس ہوتا۔	بالکل غیر متفق		کچھ حد تک غیرمتفق		کچھ حد تک متفق		
142. I sometimes have a bad conscience that I use personal car while I can use public transport مجھے بعض اوقات نئی گاڑی کا استعمال کرنے پر برا محسوس ہوتا ہے جبکہ میں عوامی نقل و حمل کے ذرائع استعمال کر سکتا ہوں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
143. I sometimes have a bad conscience that I use personal car while I could walk for short distances بعض اوقات میں راضی ہر مجھے نئی گاڑی استعمال کرنے پر برا محسوس ہوتا ہے جبکہ میں تھوڑ فاصلہ پیدل چل کر بھی طے کر سکتا ہوں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
144. My faith involves all of my life میرا ایمان ہی میری کل کائنات ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
145. In my life, I experience the presence of the Divine (i.e. God) میں ہر لمحہ اپنی زندگی میں خدا کی موجودگی کو محسوس کرتا ہوں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
146. Although I am a religious person, I refuse to let religious considerations influence my everyday affairs (R) گرچہ میں مذہبی انسان ہوں، لیکن میں اپنی روزمرہ معاملات میں مذہب کو دخل دینے نہیں دیتا ہوں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
147. Nothing is as important to me as serving God as best as I know how میرے لیے کسی چیز کی اتنی اہمیت نہیں جتنی اس بات کی کہ میں خدا کی خدمت بہتر سے بہتر میں کروں جتنا میں جانتا ہوں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
148. My faith sometimes restricts my actions میرا ایمان کبھی کبھار میرے اعمال پر قدغن لگاتا ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
149. My religious beliefs are what really lie behind my whole approach to life زندگی سے متعلق میرے کل نقطہ نظر کے پیچھے میرا مذہبی اعتقاد ہے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
150. I try hard to carry my religion over into all my other dealings in life میں ہر ممکن کوشش کرتا ہوں کہ میں روزمرہ معاملات میں دین کو مدنظر رکھوں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
151. One should seek God's guidance when making every important decision انسان کو ہر اہم فیصلہ کرتے وقت خدا سے رہنمائی طلب کرنی چاہئے۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
152. Although I believe in religion, I feel there are many more important things in life (R) گرچہ میں دین میں یقین رکھتا ہوں، گر میں محسوس کرتا ہوں کہ زندگی میں دین سے بڑھ کے کئی اور اہم چیزیں بھی ہیں۔	Strongly Disagree 1 بالکل غیر متفق	Disagree 2 غیرمتفق	Somehow Disagree 3 کچھ حد تک غیرمتفق	Neutral 4 غیر جانب دار	Somehow Agree 5 کچھ حد تک متفق	Agree 6 متفق	Strongly Agree 7 بالکل متفق
153. It does not matter so much what I believe as long as I lead a moral life	Strongly Disagree 1	Disagree 2 غیرمتفق	Somehow Disagree 3	Neutral 4	Somehow Agree 5	Agree 6 متفق	Strongly Agree 7

بلکل غلط		کچھ حد تک غلط	غلط جلب دار	کچھ حد تک ٹھیک		بلکل ٹھیک
بلکل غلط		کچھ حد تک غلط	غلط جلب دار	کچھ حد تک ٹھیک		اس سے کوئی فرق نہیں پڑتا کہ میرا ٹھیکہ کیا ہے جب تک میں یہ اتنی ذمہ داری پر اپنی زندگی گزارتا رہوں۔

Test of Non-Response Bias – Study 2

		Sum of Squares	df	Mean Square	F	Sig.
ANOVA estimates						
ESCCBActBeh1_82	Between Groups	1.304	1	1.304	.505	.478
	Within Groups	3542.214	1370	2.586		
	Total	3543.519	1371			
ESCCBActBeh2_83	Between Groups	1.005	1	1.005	.345	.557
	Within Groups	3989.194	1370	2.912		
	Total	3990.198	1371			
ESCCBActBeh3_84	Between Groups	.027	1	.027	.010	.919
	Within Groups	3616.314	1370	2.640		
	Total	3616.341	1371			
ESCCBActBeh4_85	Between Groups	.056	1	.056	.021	.885
	Within Groups	3676.693	1370	2.684		
	Total	3676.749	1371			
ESCCBActBeh5_86	Between Groups	.198	1	.198	.078	.781
	Within Groups	3495.534	1370	2.551		
	Total	3495.732	1371			
ESCCBActBeh6_87	Between Groups	.114	1	.114	.037	.847
	Within Groups	4175.679	1370	3.048		
	Total	4175.793	1371			
ESCCBActBeh7_88	Between Groups	.090	1	.090	.029	.866
	Within Groups	4319.062	1370	3.153		
	Total	4319.152	1371			
PersNrmIntg1_130	Between Groups	.023	1	.023	.010	.921
	Within Groups	3241.734	1370	2.366		
	Total	3241.757	1371			
PersNrmIntg2_131	Between Groups	.089	1	.089	.039	.844
	Within Groups	3155.144	1370	2.303		
	Total	3155.233	1371			
PersNrmIntg3_132	Between Groups	.004	1	.004	.002	.965
	Within Groups	3131.847	1370	2.286		
	Total	3131.851	1371			
PersNrmIntg4_133	Between Groups	.008	1	.008	.004	.952
	Within Groups	2936.765	1370	2.144		
	Total	2936.773	1371			
PersNrmIntg5_134	Between Groups	.206	1	.206	.094	.760
	Within Groups	3023.782	1370	2.207		
	Total	3023.988	1371			
PersNrmIntg6_135	Between Groups	.129	1	.129	.055	.814
	Within Groups	3191.369	1370	2.329		
	Total	3191.499	1371			
PersNrmIntg7_136	Between Groups	.008	1	.008	.003	.960
	Within Groups	4491.796	1370	3.279		
	Total	4491.805	1371			
PersNrmIntro1_137	Between Groups	1.105	1	1.105	.464	.496
	Within Groups	3265.705	1370	2.384		
	Total	3266.810	1371			

PersNrmIntro2_138	Between Groups	.476	1	.476	.173	.678
	Within Groups	3773.358	1370	2.754		
	Total	3773.834	1371			
PersNrmIntro3_139	Between Groups	.790	1	.790	.291	.590
	Within Groups	3721.545	1370	2.716		
	Total	3722.335	1371			
PersNrmIntro4_140	Between Groups	.054	1	.054	.019	.889
	Within Groups	3825.205	1370	2.792		
	Total	3825.259	1371			
PersNrmIntro5_141	Between Groups	.770	1	.770	.267	.605
	Within Groups	3949.087	1370	2.883		
	Total	3949.857	1371			
PersNrmIntro6_142	Between Groups	.304	1	.304	.102	.749
	Within Groups	4073.133	1370	2.973		
	Total	4073.437	1371			
PersNrmIntro7_143	Between Groups	.038	1	.038	.014	.906
	Within Groups	3782.752	1370	2.761		
	Total	3782.790	1371			
ESCCBESCInt1_69	Between Groups	.038	1	.038	.013	.910
	Within Groups	4062.857	1370	2.966		
	Total	4062.895	1371			
ESCCBESCInt2_70	Between Groups	.572	1	.572	.226	.635
	Within Groups	3468.667	1370	2.532		
	Total	3469.239	1371			
ESCCBESCInt3_71	Between Groups	.007	1	.007	.003	.956
	Within Groups	3252.783	1370	2.374		
	Total	3252.790	1371			
ESCCBESUInt1_72	Between Groups	.294	1	.294	.113	.736
	Within Groups	3559.496	1370	2.598		
	Total	3559.790	1371			
ESCCBESUInt2_73	Between Groups	.011	1	.011	.004	.949
	Within Groups	3523.922	1370	2.572		
	Total	3523.932	1371			
ESCCBESPInt1_75	Between Groups	.239	1	.239	.087	.768
	Within Groups	3759.204	1370	2.744		
	Total	3759.443	1371			
ESCCBESPInt2_76	Between Groups	.039	1	.039	.013	.908
	Within Groups	3946.807	1370	2.881		
	Total	3946.845	1371			
ESCCBESPInt3_77	Between Groups	.536	1	.536	.172	.679
	Within Groups	4277.866	1370	3.123		
	Total	4278.402	1371			

Multi-group analysis (MGA) based on Gender - Direct effects

Relationships	Estimates				Group differences		Status
	Male		Female		Path coefficients difference (Male-Female)	Significance of path difference (Male vs Female)	
	Path coefficients	*p*	Path coefficients	*p*	Δβ	*p*	
Actual Behavioural Control -> ESCCB	0.195	0.000	0.292	0.000	0.080	0.891	NS
Actual Behavioural Control -> Perceived Behavioural Control	0.363	0.000	0.331	0.000	0.031	0.280	NS
Attitude towards Behaviour -> ESCCB –Conservation	0.202	0.000	0.214	0.000	0.011	0.583	NS
Attitude towards Behaviour -> ESCCB-Purchase	0.204	0.000	-0.111	0.020	0.313		NS
Behavioural Beliefs -> Attitude towards Behaviour	0.261	0.000	0.272	0.000	0.010	0.569	NS
Control Beliefs -> Perceived Behavioural Control	0.312	0.000	0.307	0.000	0.003	0.482	NS
ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.212	0.000	0.061	0.221	0.156	0.012	Significant
ESCCB-Conservation*PBC -> Eco-Socially Conscious Consumer behaviour	0.045	0.268	-0.005	0.987	0.111	0.206	NS
ESCCB-conservation * actual behavioural control -> Eco-Socially Conscious Consumer Behaviour	0.032	0.484	0.027	0.231	0.015	0.549	NS
ESCCB-purchase *PBC -> Eco-Socially Conscious Consumer Behaviour	-0.002	0.232	0.036	0.901	0.186	0.176	NS
ESCCB-purchase*actual behavioural control -> Eco-Socially Conscious Consumer Behaviour	0.108	0.184	-0.034	0.311	0.280	0.141	NS
ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.249	0.000	0.042	0.144	0.164	0.003	Significant
Normative Descriptive Beliefs -> Subjective Descriptive Norms	0.433	0.000	0.490	0.000	0.059	0.864	NS
Normative Injunctive Beliefs -> Subjective Injunctive Norms	0.581	0.000	0.584	0.000	0.006	0.555	NS
Perceived Behavioural Control -> ESCCB -Conservation	0.213	0.000	0.151	0.001	0.062	0.149	NS
Perceived Behavioural Control -> ESCCB-Purchase	-0.101	0.035	0.223	0.000	0.325	1.000	NS
Perceived Behavioural Control -> ESCCB	0.125	0.015	0.314	0.000	0.193	0.999	NS
Religiosity -> Attitude towards Behaviour	0.277	0.000	0.218	0.000	0.052	0.204	NS
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour	-0.103	0.000	-0.130	0.006	0.015	0.383	NS
Subjective Descriptive Norms -> ESCCB -Conservation	0.186	0.000	0.190	0.000	0.004	0.537	NS

Notes: NS = not significant

Appendix XIII: *Multi-group analysis (MGA) based on Gender - Indirect effects*

Relationships	Estimates				Group differences		Status
	Male		Female		Path coefficients difference (Male-Female)	Significance of path difference (Male vs Female)	
	Path coefficients	*p*	Path coefficients	*p*	Δβ	*p*	
Actual Behavioural Control -> ESCCB –Conservation	0.077	0.000	0.050	0.002	0.027	0.121	NS
Actual Behavioural Control -> ESCCB-Purchase	-0.036	0.030	0.074	0.000	0.111	1.000	NS
Actual Behavioural Control -> ESCCB	0.053	0.012	0.110	0.000	0.060	0.986	NS
Attitude towards Behaviour -> ESCCB	0.094	0.000	0.008	0.586	0.086	0.000	Significant
Behavioural Beliefs -> ESCCB –Conservation	0.053	0.000	0.058	0.000	0.005	0.597	NS
Behavioural Beliefs -> ESCCB-Purchase	0.053	0.000	-0.030	0.026	0.082	0.000	Significant
Behavioural Beliefs -> ESCCB	0.024	0.000	0.002	0.606	0.022	0.001	Significant
Control Beliefs -> ESCCB -Conservation	0.066	0.000	0.047	0.006	0.020	0.184	NS
Control Beliefs -> ESCCB-Purchase	-0.031	0.045	0.068	0.000	0.100	1.000	NS
Control Beliefs -> ESCCB	0.045	0.005	0.102	0.000	0.059	0.993	NS
Normative Descriptive Beliefs -> ESCCB -Conservation	0.080	0.000	0.093	0.000	0.013	0.677	NS
Normative Descriptive Beliefs -> ESCCB-Purchase	0.172	0.000	0.085	0.002	0.087	0.006	Significant
Normative Descriptive Beliefs -> ESCCB	0.060	0.000	0.010	0.098	0.046	0.000	Significant
Normative Injunctive Beliefs -> ESCCB -Conservation	0.154	0.000	0.207	0.000	0.054	0.923	NS
Normative Injunctive Beliefs -> ESCCB-Purchase	0.020	0.399	-0.006	0.783	0.026	0.233	NS
Normative Injunctive Beliefs -> ESCCB	0.038	0.000	0.013	0.272	0.025	0.066	NS
Perceived Behavioural Control -> ESCCB	0.020	0.176	0.018	0.086	0.002	0.523	NS
Religiosity -> ESCCB –Conservation	0.056	0.000	0.047	0.000	0.008	0.335	NS
Religiosity -> ESCCB-Purchase	0.057	0.000	-0.024	0.048	0.081	NA	NS
Religiosity -> ESCCB	0.026	0.000	0.002	0.594	0.024	0.000	Significant
Religiosity*Behavioural Beliefs -> ESCCB -Conservation	-0.021	0.003	-0.028	0.009	0.004	0.355	NS
Religiosity*Behavioural Beliefs -> ESCCB-Purchase	-0.021	0.008	0.014	0.099	0.033	0.999	NS
Religiosity*Behavioural Beliefs -> Eco-Socially Conscious Consumer Behaviour	-0.010	0.007	-0.001	0.643	0.008	0.992	NS

Notes: NS = not significant

Appendix XIV: *Multi-group analysis (MGA) based on Income -Direct effects*

Relationships	Path Coefficients			Difference in path coefficients		
	High income (β_1)	Medium income (β_2)	Low income (β_3)	High income - Medium income ($\beta_1 - \beta_2$)	High income - Low income ($\beta_1 - \beta_3$)	Low income - Medium income ($\beta_3 - \beta_2$)
Actual Behavioural Control -> ESCCB	0.174 ***	0.382 ***	0.171 ***	0.195 ns	0.007 ns	0.187 ns
Actual Behavioural Control -> Perceived Behavioural Control	0.335 ***	0.334 ***	0.330 ***	0.002 ns	0.003 ns	0.001 ns
Attitude towards Behaviour -> ESCCB -Conservation	0.262 ***	0.056 ns	0.228 ***	0.209 ***	0.033 ns	0.175 ***
Attitude towards Behaviour -> ESCCB-Purchase	0.264 ***	-0.070 ns	0.035 ns	0.333 ***	0.231 ***	0.102 ns
Behavioural Beliefs -> Attitude towards Behaviour	0.334 ***	0.159 **	0.249 ***	0.176 **	0.078 ns	0.099 ns
Control Beliefs -> Perceived Behavioural Control	0.303 ***	0.416 ***	0.304 ***	0.114 ns	0.002 ns	0.112 ns
ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	-0.092 ns	0.178 **	0.279 ***	0.308 ns	0.353 ns	0.045 ns
ESCCB-Conservation*PBC -> Eco-Socially Conscious Consumer Behaviour	-0.012 ns	0.032 ns	0.035 ns	0.083 ns	0.079 ns	0.162 ns
ESCCB-conservation * actual behavioural control -> Eco-Socially Conscious Consumer Behaviour	0.091 ns	-0.150 **	0.076 ns	0.315 ns	0.103 ns	0.212 **
ESCCB-purchase *PBC -> Eco-Socially Conscious Consumer Behaviour	0.309 ***	-0.111 ns	-0.101 ns	0.400 ***	0.388 ***	0.012 ns
ESCCB-purchase*actual behavioural control -> Eco-Socially Conscious Consumer Behaviour	0.031 ns	-0.071 ns	0.105 ns	0.057 ns	0.202 ns	0.259 ns
ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.277 ***	-0.056 ns	0.158 ***	0.337 ***	0.150 **	0.187 ***
Normative Descriptive Beliefs -> Subjective Descriptive Norms	0.465 ***	0.401 ***	0.474 ***	0.074 ns	0.006 ns	0.080 ns
Normative Injunctive Beliefs -> Subjective Injunctive Norms	0.520 ***	0.514 ***	0.656 ***	0.000 ns	0.138 ns	0.138 ***
Perceived Behavioural Control -> ESCCB -Conservation	0.273 ***	0.273 ***	0.093 **	0.005 ns	0.181***	0.176 ns
Perceived Behavioural Control -> ESCCB-Purchase	0.185 ***	-0.047 ns	-0.092 ns	0.231 **	0.277 ***	0.046 ns
Perceived Behavioural Control -> ESCCB	0.336 ***	0.032 ns	0.198 ***	0.316 ***	0.150 **	0.166 **
Religiosity -> Attitude towards Behaviour	0.103 ns	0.263 ***	0.380 ***	0.175 ns	0.292 ns	0.117 **
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour	-0.078 ns	-0.163 ***	-0.058 ns	0.115 ns	0.220 ns	0.104 **
Subjective Descriptive Norms -> ESCCB -Conservation	0.148 **	0.241 ***	0.226 ***	0.092 ns	0.075 ns	0.017 ns
Subjective Descriptive Norms -> ESCCB-Purchase	0.400 ***	0.109 ns	0.282 ***	0.292 ***	0.119 ns	0.173 **
Subjective Injunctive Norms -> ESCCB -Conservation	0.233 ***	0.295 ***	0.330 ***	0.069 ns	0.102 ns	0.033 ns
Subjective Injunctive Norms -> ESCCB-Purchase	-0.173 ***	0.316 ***	0.091 **	0.490 ns	0.266 ns	0.223 ns

Notes: ns = not significant; *** = significant at $p < .01$; ** = significant at $p < .05$

Appendix XV: *Multi-group analysis (MGA) based on Income -Indirect effects*

Relationships	Path Coefficients			Difference in path coefficients		
	High income (β_1)	Medium income (β_2)	Low income (β_3)	High income - Medium income ($\beta_1 - \beta_2$)	High income - Low income ($\beta_1 - \beta_3$)	Low income - Medium income ($\beta_3 - \beta_2$)
Actual Behavioural Control -> ESCCB -Conservation	0.092 ***	0.092 ***	0.031 **	0.002 ns	0.061 ***	0.058 ns
Actual Behavioural Control -> ESCCB-Purchase	0.062 ***	-0.015 ns	-0.029 ns	0.077 **	0.092 ***	0.015 ns
Actual Behavioural Control -> ESCCB	0.121***	0.028 ns	0.069 ***	0.094 ***	0.055 **	0.039 ns
Attitude towards Behaviour -> ESCCB	0.049 ns	0.012 ns	0.070 ***	0.035 ns	0.014 ns	0.049 ***
Behavioural Beliefs -> ESCCB -Conservation	0.088 ***	0.010 ns	0.057 ***	0.078 ***	0.029 ns	0.049 ***
Behavioural Beliefs -> ESCCB-Purchase	0.088 ***	-0.010 ns	0.008 ns	0.097 ***	0.078 ***	0.019 ns
Behavioural Beliefs -> ESCCB	0.017 ns	0.002 ns	0.017 ***	0.014 ns	0.000 ns	0.014 ***
Control Beliefs -> ESCCB -Conservation	0.083 ***	0.114 ***	0.029 **	0.029 ns	0.054 **	0.083 ns
Control Beliefs -> ESCCB-Purchase	0.055 ***	-0.021 ns	-0.028 ns	0.074 **	0.083 ***	0.009 ns
Control Beliefs -> ESCCB	0.110 ***	0.036 ns	0.064 ***	0.074 **	0.049 **	0.025 ns
Normative Descriptive Beliefs -> ESCCB -Conservation	0.069 ***	0.097 ***	0.107 ***	0.025 ns	0.036 ns	0.012 ns
Normative Descriptive Beliefs -> ESCCB-Purchase	0.186 ***	0.043 ns	0.133 ***	0.143 ***	0.054 ns	0.090 **
Normative Descriptive Beliefs -> ESCCB	0.046 ***	0.016 ns	0.051 ***	0.027 ns	0.000 ns	0.027 ns
Normative Injunctive Beliefs -> ESCCB -Conservation	0.121 ***	0.151 ***	0.217 ***	0.035 ns	0.098 ns	0.063 ns
Normative Injunctive Beliefs -> ESCCB-Purchase	-0.090 ***	0.162 ***	0.060 **	0.252 ns	0.150 ns	0.102 ns
Normative Injunctive Beliefs -> Eco-Socially Conscious Consumer Behaviour	-0.036 ***	0.017 ns	0.070 ***	0.060 ns	0.100 ns	0.040 **
Perceived Behavioural Control -> ESCCB	0.025 ns	0.052 **	0.011 ns	0.034 ns	0.014 ns	0.048 ns
Religiosity -> ESCCB -Conservation	0.027 ns	0.014 ns	0.087 ***	0.009 ns	0.064 ns	0.073 ***
Religiosity -> ESCCB-Purchase	0.027 ns	-0.018 ns	0.014 ns	0.041 ns	0.011 ns	0.031 ns
Religiosity -> ESCCB	0.005 ns	0.003 ns	0.027 ***	0.000 ns	0.020 ns	0.020 ***
Religiosity*Behavioural Beliefs -> ESCCB -Conservation	-0.019 ns	-0.009 ns	-0.013 ns	0.063 ns	0.059 ns	0.004 ns
Religiosity*Behavioural Beliefs -> ESCCB-Purchase	-0.019 ns	0.012 ns	-0.002 ns	0.083 ns	0.071 ns	0.013 ns
Religiosity*Behavioural Beliefs -> Eco-Socially Conscious Consumer Behaviour	-0.004 ns	-0.002 ns	-0.004 ns	0.011 ns	0.010 ns	0.001 ns
Subjective Descriptive Norms -> ESCCB	0.098 ***	0.040 ns	0.108 ***	0.051 ns	0.002 ns	0.049 ns
Subjective Injunctive Norms -> Eco-Socially Conscious Consumer Behaviour	-0.069 ***	0.033 ns	0.107 ***	0.116 ns	0.167 ns	0.052 ns

Notes: ns = not significant; *** = significant at $p < .01$; ** = significant at $p < .05$

306

Appendix XVI: *Multi-group analysis (MGA) based on Age - Direct effects*

Relationships	Estimates				Group differences		Status
	Young		Mature		Path coefficients difference (Mature - Young)	Significance of path difference (Mature vs Young)	
	Path coefficients	*p*	Path coefficients	*p*	Δβ	*P*	
Actual Behavioural Control -> ESCCB	0.298	0.000	0.182	0.006	0.111	0.932	NS
Attitude towards Behaviour -> ESCCB -Conservation	0.210	0.000	0.122	0.091	0.087	0.874	NS
Attitude towards Behaviour -> ESCCB-Purchase	0.049	0.208	0.208	0.000	0.159	0.009	Significant
Behavioural Beliefs -> Attitude towards Behaviour	0.271	0.000	0.201	0.007	0.061	0.762	NS
Control Beliefs -> Perceived Behavioural Control	0.438	0.000	0.421	0.000	0.026	0.683	NS
ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.335	0.000	0.007	0.943	0.338	1.000	NS
ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.136	0.000	0.322	0.000	0.197	0.004	Significant
Eco-social purchase*actual behavioural control -> Eco-Socially Conscious Consumer Behaviour	-0.008	0.418	0.275	0.000	0.350	0.000	Significant
Normative Descriptive Beliefs -> Subjective Descriptive Norms	0.508	0.000	0.241	0.009	0.281	1.000	NS
Normative Injunctive Beliefs -> Subjective Injunctive Norms	0.602	0.000	0.518	0.000	0.088	0.948	NS
Perceived Behavioural Control -> ESCCB -Conservation	0.230	0.000	0.016	0.872	0.218	0.991	NS
Perceived Behavioural Control -> ESCCB-Purchase	0.043	0.309	-0.008	0.827	0.056	0.778	NS
Religiosity -> Attitude towards Behaviour	0.240	0.000	0.300	0.000	0.047	0.261	NS
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour	-0.104	0.000	-0.102	0.356	0.085	0.810	NS
Subjective Descriptive Norms -> ESCCB -Conservation	0.203	0.000	0.239	0.012	0.043	0.332	NS
Subjective Descriptive Norms -> ESCCB-Purchase	0.209	0.000	0.569	0.000	0.359	0.000	Significant
Subjective Injunctive Norms -> ESCCB -Conservation	0.273	0.000	0.351	0.000	0.065	0.235	NS
Subjective Injunctive Norms -> ESCCB-Purchase	0.060	0.088	-0.078	0.228	0.134	0.975	NS
eco-social conservation * actual behavioural control -> ESCCB	0.026	0.192	0.131	0.314	0.078	0.122	NS

Notes: NS = not significant

Appendix XVII: *Multi-group analysis (MGA) based on Age - Indirect effects*

Relationships	Estimates				Group differences		Status
	Young		Mature		Path coefficients difference (Mature - Young)	Significance of path difference (Mature vs Young)	
	Path coefficients	*p*	Path coefficients	*p*	Δβ	*p*	
Attitude towards Behaviour -> ESCCB	0.077	0.000	0.069	0.003	0.007	0.615	NS
Behavioural Beliefs -> ESCCB -Conservation	0.057	0.000	0.026	0.205	0.031	0.904	NS
Behavioural Beliefs -> ESCCB-Purchase	0.013	0.208	0.043	0.035	0.030	0.093	NS
Behavioural Beliefs -> ESCCB	0.021	0.000	0.014	0.059	0.006	0.772	NS
Control Beliefs -> ESCCB -Conservation	0.101	0.000	0.008	0.876	0.096	0.989	NS
Control Beliefs -> ESCCB-Purchase	0.019	0.305	-0.003	0.831	0.024	0.784	NS
Control Beliefs -> ESCCB	0.036	0.000	0.000	0.838	0.039	0.999	NS
Normative Descriptive Beliefs -> ESCCB -Conservation	0.103	0.000	0.055	0.067	0.047	0.937	NS
Normative Descriptive Beliefs -> ESCCB-Purchase	0.106	0.000	0.137	0.013	0.022	0.256	NS
Normative Descriptive Beliefs -> ESCCB	0.049	0.000	0.045	0.021	0.006	0.638	NS
Normative Injunctive Beliefs -> ESCCB -Conservation	0.164	0.000	0.183	0.001	0.009	0.446	NS
Normative Injunctive Beliefs -> ESCCB-Purchase	0.036	0.093	-0.040	0.234	0.074	0.977	NS
Normative Injunctive Beliefs -> ESCCB	0.060	0.000	-0.012	0.513	0.073	0.999	NS
Perceived Behavioural Control -> ESCCB	0.083	0.000	-0.001	0.832	0.090	1.000	NS
Religiosity -> ESCCB -Conservation	0.050	0.000	0.035	0.105	0.015	0.737	NS
Religiosity -> ESCCB-Purchase	0.012	0.231	0.062	0.005	0.048	0.013	Significant
Religiosity -> ESCCB	0.019	0.000	0.021	0.012	0.002	0.449	NS
Religiosity*Behavioural Beliefs -> ESCCB -Conservation	-0.022	0.000	-0.012	0.465	0.001	0.626	NS
Subjective Injunctive Norms -> ESCCB	0.100	0.000	-0.022	0.505	0.126	0.998	NS

Notes: NS = not significant

Appendix XVIII: *Multi-group analysis (MGA) based on Education -Direct effects*

Relationships	Path Coefficients			Difference in path coefficients		
	Bachelors degree or less (β_1)	Masters Degree (β_2)	Professional degree (β_3)	Bachelors degree or less - Masters degree ($\beta_1 - \beta_2$)	Bachelors degree or less - Professional degree ($\beta_1 - \beta_3$)	Masters degree - Professional degree ($\beta_3 - \beta_2$)
Actual Behavioural Control -> ESCCB	0.233 ***	0.234 ***	0.303 ***	0.031 ns	0.109 ns	0.078 ns
Attitude towards Behaviour -> ESCCB -Conservation	0.195 ***	0.200 ***	0.297 ***	0.001 ns	0.102 ns	0.101 ns
Attitude towards Behaviour -> ESCCB-Purchase	0.241 ***	-0.031 ns	0.086 ns	0.275 ***	0.160 ns	0.115 ns
Behavioural Beliefs -> Attitude towards Behaviour	0.067 ns	0.310 ***	0.328 ***	0.260 ns	0.278 ns	0.018 ns
Control Beliefs -> Perceived Behavioural Control	0.559 ***	0.422 ***	0.379 ***	0.136 ***	0.181 ***	0.044 ns
ESCCB -Conservation -> Eco-Socially Conscious Consumer Behaviour	0.305 ***	0.283 ***	0.299 ***	0.019 ns	0.006 ns	0.013 ns
ESCCB-Purchase -> Eco-Socially Conscious Consumer Behaviour	0.033 ns	0.132 ***	0.251 ***	0.060 ns	0.200 ns	0.140 ns
Eco-social purchase*actual behavioural control -> ESCCB	0.285 ***	0.052 ns	-0.064 ns	0.214 **	0.351 ***	0.137 ns
Normative Descriptive Beliefs -> Subjective Descriptive Norms	0.411 ***	0.494 ***	0.415 ***	0.090 ns	0.010 ns	0.080 ns
Normative Injunctive Beliefs -> Subjective Injunctive Norms	0.526 ***	0.646 ***	0.553 ***	0.123 ns	0.030 ns	0.094 **
Perceived Behavioural Control -> ESCCB -Conservation	0.265 ***	0.167 ***	0.101 ns	0.098 ns	0.165 **	0.068 ns
Perceived Behavioural Control -> ESCCB-Purchase	-0.146 ns	0.074 ns	0.061 ***	0.222 ns	0.214 ns	0.008 ns
Religiosity -> Attitude towards Behaviour	0.260 ***	0.252 ***	0.263 ***	0.006 ns	0.010 ns	0.016 ns
Religiosity*Behavioural Beliefs -> Attitude towards Behaviour	-0.334 ***	-0.089 ***	-0.067 ns	0.240 ns	0.280 ns	0.040 ns
Subjective Descriptive Norms -> ESCCB -Conservation	0.161 ***	0.252 ***	0.122 ***	0.089 ns	0.040 ns	0.129 **
Subjective Descriptive Norms -> ESCCB-Purchase	0.411 ***	0.305 ***	0.171 ***	0.111 ns	0.248 ***	0.137 **
Subjective Injunctive Norms -> ESCCB -Conservation	0.345 ***	0.289 ***	0.294 ***	0.051 ns	0.050 ns	0.001 ns
Subjective Injunctive Norms -> ESCCB-Purchase	0.028 ns	-0.013 ns	0.109 ns	0.034 ns	0.087 ns	0.121 ns
eco-scoail conservation * actual behavioural control -> Eco-Socially Conscious Consumer Behaviour	-0.074 ns	0.079 ns	0.065 ns	0.133 ns	0.203 ns	0.070 ns

Notes: ns = not significant; *** = significant at $p < .01$; ** = significant at $p < .05$

Appendix XIX: *Multi-group analysis (MGA) based on Education -Indirect effects*

Relationships	Path Coefficients			Difference in path coefficients		
	Bachelors degree or less (β_1)	Masters Degree (β_2)	Professional degree (β_3)	Bachelors degree or less - Masters degree $(\beta_1 - \beta_2)$	Bachelors degree or less - Professional degree $(\beta_1 - \beta_3)$	Masters degree - Professional degree $(\beta_3 - \beta_2)$
Attitude towards Behaviour -> ESCCB	0.069^{**}	0.052^{***}	0.111^{***}	0.021^{ns}	0.038^{ns}	0.059^{ns}
Behavioural Beliefs -> ESCCB -Conservation	0.013^{ns}	0.062^{***}	0.098^{***}	0.051^{ns}	0.088^{ns}	0.037^{ns}
Behavioural Beliefs -> ESCCB-Purchase	0.016^{ns}	-0.010^{ns}	0.029^{ns}	0.022^{ns}	0.016^{ns}	0.037^{ns}
Behavioural Beliefs -> ESCCB	0.005^{ns}	0.016^{***}	0.037^{***}	0.013^{ns}	0.033^{ns}	0.020^{ns}
Control Beliefs -> ESCCB -Conservation	0.148^{***}	0.071^{***}	0.038^{ns}	0.077^{**}	0.110^{***}	0.033^{ns}
Control Beliefs -> ESCCB-Purchase	-0.082^{ns}	0.031^{ns}	0.023^{ns}	0.113^{ns}	0.107^{ns}	0.006^{ns}
Control Beliefs -> ESCCB	0.042^{***}	0.024^{***}	0.017^{**}	0.017^{ns}	0.023^{ns}	0.006^{ns}
Normative Descriptive Beliefs -> ESCCB -Conservation	0.066^{**}	0.125^{***}	0.050^{**}	0.059^{ns}	0.015^{ns}	0.073^{***}
Normative Descriptive Beliefs -> ESCCB-Purchase	0.168^{***}	0.150^{***}	0.071^{***}	0.017^{ns}	0.098^{**}	0.081^{**}
Normative Descriptive Beliefs -> ESCCB	0.026^{**}	0.056^{***}	0.033^{***}	0.024^{ns}	0.003^{ns}	0.021^{ns}
Normative Injunctive Beliefs -> ESCCB -Conservation	0.181^{***}	0.186^{***}	0.163^{***}	0.010^{ns}	0.017^{ns}	0.027^{ns}
Normative Injunctive Beliefs -> ESCCB-Purchase	0.015^{ns}	-0.008^{ns}	0.060^{ns}	0.020^{ns}	0.048^{ns}	0.068^{ns}
Normative Injunctive Beliefs -> ESCCB	0.056^{***}	0.051^{***}	0.065^{***}	0.002^{ns}	0.008^{ns}	0.010^{ns}
Perceived Behavioural Control -> ESCCB	0.075^{***}	0.058^{***}	0.045^{**}	0.017^{ns}	0.027^{ns}	0.010^{ns}
Religiosity -> ESCCB -Conservation	0.051^{**}	0.050^{***}	0.078^{***}	0.001^{ns}	0.029^{ns}	0.030^{ns}
Religiosity -> ESCCB-Purchase	0.063^{**}	-0.008^{ns}	0.023^{ns}	0.071^{***}	0.040^{ns}	0.030^{ns}
Religiosity -> ESCCB	0.018^{ns}	0.013^{***}	0.029^{***}	0.006^{ns}	0.011^{ns}	0.017^{ns}
Religiosity*Behavioural Beliefs -> ESCCB -Conservation	-0.065^{**}	-0.018^{**}	-0.020^{ns}	0.047^{ns}	0.050^{ns}	0.003^{ns}
Religiosity*Behavioural Beliefs -> ESCCB-Purchase	-0.081^{**}	0.003^{ns}	-0.006^{ns}	0.083^{ns}	0.076^{ns}	0.007^{ns}
Religiosity*Behavioural Beliefs -> Eco-Socially Conscious Consumer Behaviour	-0.023^{**}	-0.005^{**}	-0.007^{ns}	0.020^{ns}	0.019^{ns}	0.001^{ns}
Subjective Descriptive Norms -> ESCCB	0.063^{**}	0.113^{***}	0.080^{***}	0.035^{ns}	0.006^{ns}	0.029^{ns}
Subjective Injunctive Norms -> ESCCB	0.107^{***}	0.079^{***}	0.116^{***}	0.024^{ns}	0.009^{ns}	0.033^{ns}

Notes: ns = not significant; *** = significant at $p < .01$; ** = significant at $p < .05$

Group	Distribution of Categories				Group Distribution	
	Category	Sub categories	Frequency	Percentage	Frequency	Percentage
Education Group	*Bachelors' Degree or less*	No formal education	12	0.9%	250	18.22%
		Primary	6	0.4%		
		>primary-Middle	2	0.1%		
		>Middle-SSC	2	0.1%		
		>SSC-HSSC	66	4.8%		
		>HSSC-Bachelors	162	11.8%		
	Masters' Degree	>Bachelors-Masters	182	13.3%	642	46.79%
		>Masters-Mphil	460	33.5%		
	Professional	MBBS or BDS	372	27.1%	480	34.98%
		DVM	36	2.6%		
		BE	6	0.4%		
		Other professional	66	4.8%		
Age Group	*Young*	19-26	872	63.6%	872	63.56%
	Mature	>26-33	256	18.7%	500	36.44%
		>33-40	156	11.4%		
		>40-47	12	0.9%		
		>47-54	44	3.2%		
		>54-61	24	1.7%		
		>61	8	0.6%		
Gender	*Male*	-	764	55.7%	764	55.7%
	Female	-	608	44.3%	608	44.3%
Income	*High Income*	>85000-95000	114	8.3%	378	27.55%
		>95000-105000	100	7.3%		
		>105000	164	12.0%		
	Medium Income	>55000-65000	130	9.5%	456	33.24%
		>65000-75000	232	16.9%		
		>75000-85000	94	6.9%		
	Low Income	45000-55000	538	39.2%	538	39.2%

References

Aaker, A. A., Kumar, V., Leone, R., & Day, G. S. (2016). *Marketing Research* (12th ed.): John Wiley & Sons.

Abdul-Matin, I. (2010). *Green Deen - What Islam Teaches About Protecting the Planet*. San Fransisco, California: Berrett-Koehler Publishers, Inc.

Abraham, J., Pane, M. M., & Chairiyani, R. P. (2015). An Investigation on Cynicism and Environmental Self-Efficacy as Predictors of Pro-Environmental Behavior. *Psychology & Marketing, 6*, 234-242.

Adachi, K. (2016). *Matrix-Based Introduction to Multivariate Data Analysis*: Springer Singapore.

Adams, J., Khan, H. T. A., Raeside, R., & White, D. (2007). Sampling. In *Research Methods for Graduate Business and Social Science Students*. California, CA: Sage Publications Inc.

Adnan, N., Md Nordin, S., Hadi Amini, M., & Langove, N. (2018). What make consumer sign up to PHEVs? Predicting Malaysian consumer behavior in adoption of PHEVs. *Transportation Research Part A: Policy and Practice, 113*, 259-278. doi:https://doi.org/10.1016/j.tra.2018.04.007

Adnan, N., Md Nordin, S., Rahman, I., & Noor, A. (2017). Adoption of green fertilizer technology among paddy farmers: A possible solution for Malaysian food security. *Land Use Policy, 63*, 38-52. doi:https://doi.org/10.1016/j.landusepol.2017.01.022

Adnan, N., Nordin, S. M., & bin Abu Bakar, Z. (2017). Understanding and facilitating sustainable agricultural practice: A comprehensive analysis of adoption behaviour among Malaysian paddy farmers. *Land Use Policy, 68*, 372-382. doi:https://doi.org/10.1016/j.landusepol.2017.07.046

Afroz, R., Rahman, A., Masud, M. M., Akhtar, R., & Duasa, J. B. (2015). How Individual Values and Attitude Influence Consumers' Purchase Intention of Electric Vehicles—Some Insights from Kuala Lumpur, Malaysia. *Environment and Urbanization Asia, 6*(2), 193-211. doi:10.1177/0975425315589160

Afsar, B., Badir, Y., & Kiani, U. S. (2016). Linking spiritual leadership and employee pro-environmental behavior: The influence of workplace spirituality, intrinsic motivation, and environmental passion. *Journal of Environmental Psychology, 45*, 79-88. doi:http://dx.doi.org/10.1016/j.jenvp.2015.11.011

Aftab, M. (2016). Pakistan auto industry rides a high. Retrieved from www.khaleejtimes.com/business.auto.pakistan-auto-rides-a-high

Ailawadi, K. L., Neslin, S. A., Luan, Y. J., & Taylor, G. A. (2014). Does retailer CSR enhance behavioral loyalty? A case for benefit segmentation. *International Journal of Research in Marketing, 31*(2), 156-167. doi:http://dx.doi.org/10.1016/j.ijresmar.2013.09.003

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi:http://dx.doi.org/10.1016/0749-5978(91)90020-T

Akehurst, G., Afonso, C., & Gonçalves, H. M. (2012). Re-examining green purchase behaviour and the green consumer profile: new evidences. *Management Decision, 50*(5), 972-988. doi:doi:10.1108/00251741211227726

Al-Khatib, J. A., Stanton, A. D. A., & Rawwas, M. Y. A. (2005). Ethical segmentation of consumers in developing countries: a comparative analysis. *International Marketing Review, 22*(2), 225-246. doi:doi:10.1108/02651330510593287

Albayrak, T., Aksoy, Ş., & Caber, M. (2013). The effect of environmental concern and scepticism on green purchase behaviour. *Marketing Intelligence & Planning, 31*(1), 27-39. doi:doi:10.1108/02634501311292902

Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology, 5*(4), 432-443. doi:10.1037/h0021212

Amaro, S., & Duarte, P. (2016). *Modelling formative second order constructs in PLS. .* Paper presented at the European Conference on Research Methodology for Business and Management Studies. https://search.proquest.com/docview/1803829824?accountid=16285

Anadol, Y., Youssef, M. A., & Thiruvattal, E. (2015). Consumer reaction towards corporate social responsibility in United Arab Emirates. *Social Responsibility Journal, 11*(1), 19-35. doi:doi:10.1108/SRJ-07-2013-0081

Annika, M. N., & Jörgen, G. (2002). Value Structures behind Proenvironmental Behavior. *Environment and Behavior, 34*(6), 740-756. doi:10.1177/001391602237244

Aqill, M., Aziz, S. F., Dilshad, M., & Qadeer, S. (2014). Critical Analysis of Pakistan Automobile Industry from 1995-2005. *IOSR Journal of Economics and Finance, 2*(2), 21-26.

Armel, K. C., Yan, K., Todd, A., & Robinson, T. N. (2011). The Stanford Climate Change Behavior Survey (SCCBS): assessing greenhouse gas emissions-related behaviors in individuals and populations. *Climatic Change, 109*(3), 671-694. doi:10.1007/s10584-011-0031-y

Arne, H., Matthias, H., & Cathy, M. (2015). Analysis of Effects Resulting from Improved Vehicle Fuel Efficiency and Fuel Price Changes Applied to the Berlin City Network. In *Sustainable Urban Transport* (Vol. 7, pp. 229-249): Emerald Group Publishing Limited.

Arpita, K. (2015). Antecedents to green buying behaviour: a study on consumers in an emerging economy. *Marketing Intelligence & Planning, 33*(3), 309-329. doi:10.1108/MIP-05-2014-0083

Arrow, K. J. (1990). Economic Theory and the Hypothesis of Rationality. In J. Eatwell, M. Milgate, & P. Newman (Eds.), *Utility and Probability* (pp. 25-37). London: Palgrave Macmillan UK.

Auger, P., & Devinney, T. M. (2007). Do What Consumers Say Matter? The Misalignment of Preferences with Unconstrained Ethical Intentions. *Journal of Business Ethics, 76*(4), 361-383. doi:10.1007/s10551-006-9287-y

Awad, T. A. (2011). Environmental segmentation alternatives: buyers' profiles and implications. *Journal of Islamic Marketing, 2*(1), 55-73. doi:doi:10.1108/17590831111115240

Balderjahn, I. (1988a). Personality variables and environmental attitudes as predictors of ecologically responsible consumption patterns. *Journal of Business Research, 17*(1), 51-56. doi:http://dx.doi.org/10.1016/0148-2963(88)90022-7

Balderjahn, I. (1988b). Special Issue on Marketing ResearchPersonality variables and environmental attitudes as predictors of ecologically responsible consumption patterns. *Journal of Business Research, 17*(1), 51-56. doi:http://dx.doi.org/10.1016/0148-2963(88)90022-7

Baloglu, S., Weaver, P., & McCleary, K. W. (1998). Overlapping product-benefit segments in the lodging industry: a canonical correlation approach. *International Journal of Contemporary Hospitality Management, 10*(4), 159-166. doi:doi:10.1108/09596119810222122

Bamberg, S., Hunecke, M., & Blöbaum, A. (2007). Social context, personal norms and the use of public transportation: Two field studies. *Journal of Environmental Psychology, 27*(3), 190-203. doi:https://doi.org/10.1016/j.jenvp.2007.04.001

Bamberg, S., & 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. doi:10.1177/0013916502250134

Barbarossa, C., Beckmann, S. C., De Pelsmacker, P., Moons, I., & Gwozdz, W. (2015). A self-identity based model of electric car adoption intention: A cross-cultural comparative study. *Journal of Environmental Psychology, 42*, 149-160. doi:https://doi.org/10.1016/j.jenvp.2015.04.001

Barber, N. A. (2014). Profiling the Potential "Green" Hotel Guest: Who Are They and What Do They Want? *Journal of Hospitality & Tourism Research, 38*(3), 361-387. doi:10.1177/1096348012451462

Baris, Y., Harald, S., & Angi, R. (2015). Green segmentation: a cross-national study. *Marketing Intelligence & Planning, 33*(7), 981-1003. doi:10.1108/MIP-12-2013-0201

Baruch, Y. (1999). Response Rate in Academic Studies-A Comparative Analysis. *Human Relations, 52*(4), 421-438. doi:doi:10.1177/001872679905200401

Beane, T. P., & Ennis, D. M. (1987). Market Segmentation: A Review. *European Journal of Marketing, 21*(5), 20-42. doi:doi:10.1108/EUM0000000004695

Beavers, A. S., Lounsbury, J. W., Richards, J. K., Huck, S. W., Skolits, G. J., & Esquivel, S. L. (2013). Practical Considerations for Using Exploratory Factor Analysis in Educational Research *Practical Assessment, Research & Evaluation, 18*(6), 1-13.

Beck, M. J., Rose, J. M., & Hensher, D. A. (2013). Consistently inconsistent: The role of certainty, acceptability and scale in choice. *Transportation Research Part E: Logistics and Transportation Review, 56*, 81-93. doi:http://dx.doi.org/10.1016/j.tre.2013.05.001

Bellé, N. (2015). Performance-Related Pay and the Crowding Out of Motivation in the Public Sector: A Randomized Field Experiment. *Public Administration Review, 75*(2), 230-241. doi:10.1111/puar.12313

Belz, F.-M., & Peattie, K. (2012). *Sustainability Marketing*. Chichester, United Kingdom: John Wiley & Sons, Ltd

Beretti, A., Figuières, C., & Grolleau, G. (2013). Using Money to Motivate Both 'Saints' and 'Sinners': a Field Experiment on Motivational Crowding-Out. *Kyklos, 66*(1), 63-77. doi:10.1111/kykl.12011

Bertrandias, L., & Elgaaied-Gambier, L. (2014). Others' environmental concern as a social determinant of green buying. *Journal of Consumer Marketing, 31*(6/7), 417-429. doi:doi:10.1108/JCM-05-2014-0966

Bhuian, S., & Sharma, S. K. (2017). Predicting Consumer Pro-Environmental Behavioral Intention: The Moderating Role of Religiosity. *Review of International Business and Strategy, 27*(3), 352-368. doi:10.1108/ribs-03-2017-0022

Bickman, L., & Rog, D. J. (2009). *The SAGE Handbook of Applied Social Research Methods* (2nd ed.). USA: SAGE Publications, Inc.

Bishop, M., & Barber, N. (2012). A market segmentation approach to esteem and efficacy in information search. *Journal of Consumer Marketing, 29*(1), 13-21. doi:doi:10.1108/07363761211193019

Bowen, N. K., & Guo, S. (2012). *Structural Equation Modeling*: Oxford University Press, USA.

Brand, C., Anable, J., & Tran, M. (2013). Accelerating the transformation to a low carbon passenger transport system: The role of car purchase taxes, feebates, road taxes and scrappage incentives in the UK. *Transportation Research Part A: Policy and Practice, 49*, 132-148. doi:http://dx.doi.org/10.1016/j.tra.2013.01.010

Bridges, C. M., & Wilhelm, W. B. (2008). Going Beyond Green: The "Why and How" of Integrating Sustainability Into the Marketing Curriculum. *Journal of Marketing Education, 30*(1), 33-46. doi:10.1177/0273475307312196

Burke, P. F., Eckert, C., & Davis, S. (2014). Segmenting consumers' reasons for and against ethical consumption. *European Journal of Marketing, 48*(11/12), 2237-2261. doi:doi:10.1108/EJM-06-2013-0294

Burns, A. C., Veeck, A., & Bush, R. F. (2016). *Marketing Research*: PEARSON EDUC.

Byrne, B. M. (2013). *Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming, Second Edition*: Taylor & Francis.

Cahill, D. J. (1997). Target marketing and segmentation: valid and useful tools for marketing. *Management Decision, 35*(1), 10-13. doi:doi:10.1108/00251749710160133

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81-105. doi:10.1037/h0046016

Canever, M. D., Trijp, H. v., & Lans, I. v. d. (2007). Benefit-feature segmentation: a tool for the design of supply-chain strategy. *Marketing Intelligence & Planning, 25*(5), 511-533. doi:doi:10.1108/02634500710774978

Carrillat, F. A., Riggle, R. J., Locander, W. B., Gebhardt, G. F., & Lee, J. M. (2009). Cognitive segmentation: Modeling the structure and content of customers' thoughts. *Psychology and Marketing, 26*(6), 479-506. doi:10.1002/mar.20284

Carrington, M. J., Neville, B. A., & Whitwell, G. J. (2010). Why Ethical Consumers Don't Walk Their Talk: Towards a Framework for Understanding the Gap Between the Ethical Purchase Intentions and Actual Buying Behaviour of Ethically Minded Consumers. *Journal of Business Ethics, 97*(1), 139-158. doi:10.1007/s10551-010-0501-6

Carrington, M. J., Neville, B. A., & Whitwell, G. J. (2014). Lost in translation: Exploring the ethical consumer intention–behavior gap. *Journal of Business Research, 67*(1), 2759-2767. doi:http://dx.doi.org/10.1016/j.jbusres.2012.09.022

Chairy. (2012). Spirituality, Self Transcendence, and Green Purchase Intention in College Students. *Procedia - Social and Behavioral Sciences, 57*, 243-246. doi:http://dx.doi.org/10.1016/j.sbspro.2012.09.1181

Chan, K. (2000). Market Segmentation of Green Consumers in Hong Kong. *Journal of International Consumer Marketing, 12*(2), 7-24. doi:10.1300/J046v12n02_02

Chang, C. S., & Chang, H. C. (2009). Perceptions of internal marketing and organizational commitment by nurses. *Journal of Advanced Nursing, 65*(1), 92-100. doi:10.1111/j.1365-2648.2008.04844.x

Chao, Y.-L., & Lam, S.-P. (2011). Measuring Responsible Environmental Behavior: Self-Reported and Other-Reported Measures and Their Differences in Testing a

Behavioral Model. *Environment and Behavior, 43*(1), 53-71. doi:10.1177/0013916509350849

Cheah, I., & Phau, I. (2011). Attitudes towards environmentally friendly products: The influence of ecoliteracy, interpersonal influence and value orientation. *Marketing Intelligence & Planning, 29*(5), 452-472. doi:10.1108/02634501111153674

Chekima, B., Syed Khalid Wafa, S. A. W., Igau, O. A., Chekima, S., & Sondoh Jr, S. L. (2016). Examining green consumerism motivational drivers: does premium price and demographics matter to green purchasing? *Journal of Cleaner Production, 112, Part 4*, 3436-3450. doi:http://dx.doi.org/10.1016/j.jclepro.2015.09.102

Chen, H.-Y., Chang, Y.-M., & Chang, H.-C. (2016). A numerical definition-based systematic design approach for coupling consumers ' image perception with product form. *Journal of Engineering, Design and Technology, 14*(1), 134-159. doi:doi:10.1108/JEDT-11-2013-0075

Chen, K. K. (2014). Assessing the effects of customer innovativeness, environmental value and ecological lifestyles on residential solar power systems install intention. *Energy Policy, 67*, 951-961. doi:http://dx.doi.org/10.1016/j.enpol.2013.12.005

Chen, M.-F., & Lee, C.-L. (2015). The impacts of green claims on coffee consumers' purchase intention. *British Food Journal, 117*(1), 195-209. doi:doi:10.1108/BFJ-07-2013-0196

Chen, M. F. (2012). Segmentation of Taiwanese consumers based on trust in the food supply system. *British Food Journal, 114*(1), 70-84. doi:doi:10.1108/00070701211197374

Chen, S.-Y. (2016). Using the sustainable modified TAM and TPB to analyze the effects of perceived green value on loyalty to a public bike system. *Transportation Research Part A: Policy and Practice, 88*, 58-72. doi:http://dx.doi.org/10.1016/j.tra.2016.03.008

Chertow, M. R. (2000). The IPAT Equation and Its Variants. *Journal of Industrial Ecology, 4*(4), 13-29. doi:10.1162/10881980052541927

Chmielewski, D., Bove, L. L., Lei, J., Neville, B., & Nagpal, A. (2012). A new perspective on the incentive–blood donation relationship: partnership, congruency, and affirmation of competence. *Transfusion, 52*(9), 1889-1900. doi:10.1111/j.1537-2995.2011.03545.x

Christopher Westland, J. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications, 9*(6), 476-487. doi:https://doi.org/10.1016/j.elerap.2010.07.003

Chua, K. B., Quoquab, F., Mohammad, J., & Basiruddin, R. (2016). The mediating role of new ecological paradigm between value orientations and pro-environmental personal norm in the agricultural context. *Asia Pacific Journal of Marketing and Logistics, 28*(2), 323-349. doi:doi:10.1108/APJML-09-2015-0138

Churchill, G. A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research, 16*(1), 64-73. doi:10.2307/3150876

Churchill, G. A., Ford, N. M., & Walker, O. C. (1974). Measuring the Job Satisfaction of Industrial Salesmen. *Journal of Marketing Research, 11*(3), 254-260. doi:10.2307/3151140

CIA. (2015). The World Factbook-Pakistan. Retrieved from www.cia.gov/library/publications/the-world-factbook/geos/pk.html

CIA. (2017). The World Factbook - Pakistan. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/geos/pk.html

Cialdini, R. B., Kallgren, C. A., & 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): Academic Press.

Cialdini, R. B., Reno, R. R., & 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), 1015-1026. doi:10.1037/0022-3514.58.6.1015

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309-319. doi:10.1037/1040-3590.7.3.309

Claycamp, H. J., & Massy, W. F. (1968). A Theory of Market Segmentation. *Journal of Marketing Research, 5*(4), 388-394. doi:10.2307/3150263

Cleveland, M., Kalamas, M., & Laroche, M. (2005). Shades of green: linking environmental locus of control and pro-environmental behaviors. *Journal of Consumer Marketing, 22*(4), 198-212. doi:doi:10.1108/07363760510605317

Cleveland, M., Kalamas, M., & Laroche, M. (2012). "It's not Easy Being Green": Exploring Green Creeds, Green Deeds, and Internal Environmental Locus of Control. *Psychology & Marketing, 29*(5), 293-305. doi:10.1002/mar.20522

Cleveland, M., Papadopoulos, N., & Laroche, M. (2011). Identity, demographics, and consumer behaviors: International market segmentation across product categories. *International Marketing Review, 28*(3), 244-266. doi:doi:10.1108/02651331111132848

Clottey, T. A., & Grawe, S. J. (2014). Non-response bias assessment in logistics survey research: use fewer tests? *International Journal of Physical Distribution & Logistics Management, 44*(5), 412-426. doi:doi:10.1108/IJPDLM-10-2012-0314

Coad, A., de Haan, P., & Woersdorfer, J. S. (2009). Consumer support for environmental policies: An application to purchases of green cars. *Ecological Economics, 68*(7), 2078-2086. doi:http://dx.doi.org/10.1016/j.ecolecon.2009.01.015

Cohen, L., Manion, L., & Morrison, K. (2011). *Research Methods in Education* (7th ed.). London: Routledge.

Cooksey, R. W. (2014). *Illustrating Statistical Procedures: Finding Meaning in Quantitative Data*: Tilde Publishing and Distribution.

Cooper, D. R., & Schindler, P. S. (2006). *Business Research Methods*: McGraw-Hill Irwin.

Costello, A. B., & Osborne, J. W. (2005). Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis. *Practical Assessment, Research and Evaluation, 10*(7), 1-9.

Cotgrove, S. F. (1982). *Catastrophe Or Cornucopia: The Environment, Politics, and the Future*. New York: Wiley.

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. doi:10.1177/0013916503035003003

Coulter, K. S., & assistant, U. o. C. i. a. (2004). THE EFFECTS OF COGNITIVE RESOURCE REQUIREMENTS, AVAILABILITY, AND ARGUMENT QUALITY ON BRAND ATTITUDES : A Melding of Elaboration Likelihood and Cognitive Resource Matching Theories. *Journal of Advertising, 33*(4), 53-64. doi:10.1080/00913367.2004.10639177

Countrymeters. (2017). Demographics of Pakistan 2016. Retrieved from http://countrymeters.info/en/Pakistan

Cresswell, J. W., & Clark, V. L. P. (2011). *Designing and Conducting Mixed Methods Research*. OH USA: Sage Publications, Inc.

Crotts, J. C., & Erdmann, R. (2000). Does national culture influence consumers' evaluation of travel services? A test of Hofstede's model of cross-cultural differences. *Managing Service Quality: An International Journal, 10*(6), 410-419. doi:doi:10.1108/09604520010351167

Crowe, J. L. (2013). Transforming Environmental Attitudes and Behaviours through Eco-spirituality and Religion. *International Electronic Journal of Environmental Education, 3*(1), 75-88.

Curcuruto, M., Mearns, K. J., & Mariani, M. G. (2016). Proactive role-orientation toward workplace safety: Psychological dimensions, nomological network and external validity. *Safety Science, 87*, 144-155. doi:https://doi.org/10.1016/j.ssci.2016.03.007

D'Souza, C., Taghian, M., & Lamb, P. (2006). An empirical study on the influence of environmental labels on consumers. *Corporate Communications: An International Journal, 11*(2), 162-173. doi:doi:10.1108/13563280610661697

D'Souza, C., & Taghian, M. (2005). Green advertising effects on attitude and choice of advertising themes. *Asia Pacific Journal of Marketing and Logistics, 17*(3), 51-66. doi:doi:10.1108/13555850510672386

D'Souza, C., Taghian, M., Lamb, P., & Peretiatko, R. (2007). Green decisions: demographics and consumer understanding of environmental labels. *International Journal of Consumer Studies, 31*(4), 371-376. doi:10.1111/j.1470-6431.2006.00567.x

Dagher, G. K., & Itani, O. (2014). Factors influencing green purchasing behaviour: Empirical evidence from the Lebanese consumers. *Journal of Consumer Behaviour, 13*(3), 188-195. doi:10.1002/cb.1482

Dahlstrom, R. (2010). *Green Marketing Management*. Mason, OH: South-Western College Pub.

Das, G. (2014). Linkages of retailer awareness, retailer association, retailer perceived quality and retailer loyalty with purchase intention: A study of Indian food retail brands. *Journal of Retailing and Consumer Services, 21*(3), 284-292. doi:https://doi.org/10.1016/j.jretconser.2014.02.005

Dash, N. K. (2005). Selection of the Research Paradigm and Methodology. Retrieved from http://www.celt.mmu.ac.uk/researchmethods/Modules/Selection_of_methodology/

Davis, M. A., & Cernas Ortiz, D. A. (2017). Revisiting the structural and nomological validity of the Zimbardo time perspective inventory. *Personality and Individual Differences, 104*, 98-103. doi:https://doi.org/10.1016/j.paid.2016.07.037

De Groot, J. I. M., & Steg, L. (2008). Value Orientations to Explain Beliefs Related to Environmental Significant Behavior: How to Measure Egoistic, Altruistic, and Biospheric Value Orientations. *Environment and Behavior, 40*(3), 330-354. doi:10.1177/0013916506297831

De Groot, J. I. M., & Steg, L. (2009). Mean or green: which values can promote stable pro-environmental behavior? *Conservation Letters, 2*(2), 61-66. doi:10.1111/j.1755-263X.2009.00048.x

de Leeuw, A., Valois, P., Ajzen, I., & Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: Implications for educational interventions. *Journal of Environmental Psychology, 42*, 128-138. doi:10.1016/j.jenvp.2015.03.005

de Richter, R. K., Ming, T., Caillol, S., & Liu, W. (2016). Fighting global warming by GHG removal: Destroying CFCs and HCFCs in solar-wind power plant hybrids producing renewable energy with no-intermittency. *International Journal of Greenhouse Gas Control, 49*, 449-472. doi:http://dx.doi.org/10.1016/j.ijggc.2016.02.027

Dewberry, C., & Jackson, D. J. R. (2018). An application of the theory of planned behavior to student retention. *Journal of Vocational Behavior, 107*, 100-110. doi:https://doi.org/10.1016/j.jvb.2018.03.005

Diamantopoulos, A., Schlegelmilch, B. B., Sinkovics, R. R., & Bohlen, G. M. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business Research, 56*(6), 465-480. doi:http://dx.doi.org/10.1016/S0148-2963(01)00241-7

Dibb, S. (1998). Market segmentation: strategies for success. *Marketing Intelligence & Planning, 16*(7), 394-406. doi:doi:10.1108/02634509810244390

Dibb, S., & Simkin, L. (1991). TARGETING, SEGMENTS AND POSITIONING. *International Journal of Retail & Distribution Management, 19*(3), null. doi:doi:10.1108/09590559110143800

do Paço, A., Alves, H., Shiel, C., & Filho, W. L. (2013). Development of a green consumer behaviour model. *International Journal of Consumer Studies, 37*(4), 414-421. doi:10.1111/ijcs.12009

Doran, R., & Larsen, S. (2016). The Relative Importance of Social and Personal Norms in Explaining Intentions to Choose Eco-Friendly Travel Options. *International Journal of Tourism Research, 18*(2), 159-166. doi:10.1002/jtr.2042

Druckman, J. N., & Cam, C. D. (2009). *Students as Experimental Participants: A Defense of the "Narrow Data Base"*. Working Papers Series. Evanston, IL. Retrieved from http://www.ipr.northwestern.edu/publications/docs/workingpapers/2009/IPR-WP-09-05.pdf

Dunlap, R. E. (2008). The New Environmental Paradigm Scale: From Marginality to Worldwide Use. *The Journal of Environmental Education, 40*(1), 3-18. doi:10.3200/JOEE.40.1.3-18

Dunlap, R. E., & Van Liere, K. D. (1978). The "New Environmental Paradigm". *The Journal of Environmental Education, 9*(4), 10-19. doi:10.1080/00958964.1978.10801875

Dunlap, R. E., & Van Liere, K. D. (2008). The "New Environmental Paradigm". *The Journal of Environmental Education, 40*(1), 19-28. doi:10.3200/JOEE.40.1.19-28

Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). 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. doi:10.1111/0022-4537.00176

Eagle, L., & Dahl, S. (2015). *Marketing Ethics and Society*. London, UK: Sage Publications Ltd.

Ehrlich, P., & Holdren, J. (1972). A bulletin dialogue on the 'Closing Circle': Critique: One dimensional ecology. *Bulletin of Atomic Scientists, 28*(5), 16-27.

Ellen, P. S., Wiener, J. L., & Cobb-Walgren, C. (1991). The Role of Perceived Consumer Effectiveness in Motivating Environmentally Conscious Behaviors. *Journal of Public Policy & Marketing, 10*(2), 102-117.

Ellis, R. J., & Thompson, F. (1997). Culture and the Environment in the Pacific Northwest. *The American Political Science Review, 91*(4), 885-897. doi:10.2307/2952171

Esch, F. R., Langner, T., Schmitt, B. H., & Geus, P. (2006). Are brands forever? How brand knowledge and relationships affect current and future purchases. *Journal of Product & Brand Management, 15*(2), 98-105. doi:doi:10.1108/10610420610658938

Espinosa, J. A., & Ortinau, D. J. (2016). Debunking legendary beliefs about student samples in marketing research. *Journal of Business Research, 69*(8), 3149-3158. doi:http://dx.doi.org/10.1016/j.jbusres.2015.12.003

Eze, U. C., & Ndubisi, N. O. (2013). Green Buyer Behavior: Evidence from Asia Consumers. *Journal of Asian and African Studies, 48*(4), 413-426. doi:10.1177/0021909613493602

Faizan, A., Mostafa, R. S., Marko, S., M., R. C., & Kisang, R. (2018). An assessment of the use of partial least squares structural equation modeling (PLS-SEM) in hospitality research. *International Journal of Contemporary Hospitality Management, 30*(1), 514-538. doi:doi:10.1108/IJCHM-10-2016-0568

Feather, N. T., & Newton, J. W. (1982). Values, expectations, and the prediction of social action: An expectancy-valence analysis. *Motivation and Emotion, 6*(3), 217-244. doi:10.1007/BF00992246

Felix, R., & Braunsberger, K. (2016). I believe therefore I care: The relationship between religiosity, environmental attitudes, and green product purchase in Mexico. *International Marketing Review, 33*(1), 137-155. doi:doi:10.1108/IMR-07-2014-0216

Field, A. (2017). *Discovering Statistics Using IBM SPSS Statistics: North American Edition*: SAGE Publications.

Finisterra do Paco, A. M., Barata Raposo, M. L., & Filho, W. L. (2009). Identifying the green consumer: A segmentation study. *J Target Meas Anal Mark, 17*(1), 17-25.

Finisterra do Paço, A. M., & Raposo, M. L. B. (2010). Green consumer market segmentation: empirical findings from Portugal. *International Journal of Consumer Studies, 34*(4), 429-436. doi:10.1111/j.1470-6431.2010.00869.x

Fischer, J. (2016). Markets, religion, regulation: Kosher, halal and Hindu vegetarianism in global perspective. *Geoforum, 69*, 67-70. doi:http://dx.doi.org/10.1016/j.geoforum.2015.12.011

Fishbein, M. (1963). An Investigation of the Relationships between Beliefs about an Object and the Attitude toward that Object. *Human Relations, 16*(3), 233-239. doi:10.1177/001872676301600302

Fishbein, M., & Ajzen, I. (2010a). *Predicting and Changing Behavior - The Reasoned Action Approach*. New York, NY: Psychology Press.

Fishbein, M., & Ajzen, I. (2010b). *Predicting and Changing Behavior: The Reasoned Action Approach*. New York, NY: Psychology Press.

Fishbein, M., & Ajzen, I. (2011). *Predicting and Changing Behavior: The Reasoned Action Approach*. New York, NY: Taylor & Francis.

Fishbein, M. E., & Ajzen, I. (1975). *Belief, Attitude, intention and Behavior: An Introduction to Theory and Research*. Reading MA: Addison-Wesley.

Flamm, B. (2009). The impacts of environmental knowledge and attitudes on vehicle ownership and use. *Transportation Research Part D: Transport and Environment, 14*(4), 272-279. doi:https://doi.org/10.1016/j.trd.2009.02.003

Flamm, B. J. (2006). *Environmental Knowledge, Environmental Attitudes, and Vehicle Ownership and Use* University of California, Berkeley. California. Retrieved from http://uctc.berkeley.edu/research/diss138.pdf

Flatten, T. C., Engelen, A., Zahra, S. A., & Brettel, M. (2011). A measure of absorptive capacity: Scale development and validation. *European Management Journal, 29*(2), 98-116. doi:http://dx.doi.org/10.1016/j.emj.2010.11.002

Foltz, R., Denny, F. M., & Baharuddin, A. H. (2003). *Islam and ecology: a bestowed trust*: Center for the Study of World Religions, Harvard Divinity School.

Fornara, F., Pattitoni, P., Mura, M., & Strazzera, E. (2016). Predicting intention to improve household energy efficiency: The role of value-belief-norm theory, normative and informational influence, and specific attitude. *Journal of Environmental Psychology, 45*, 1-10. doi:http://dx.doi.org/10.1016/j.jenvp.2015.11.001

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*(1), 39-50. doi:10.2307/3151312

Fournier, S. (1991). A Meaning-Based Framework for the Study of Consumer-Object Relations. *Advances in Consumer Research, 18*(1), 736-742.

Fraj, E., & Martinez, E. (2006). Environmental values and lifestyles as determining factors of ecological consumer behaviour: an empirical analysis. *Journal of Consumer Marketing, 23*(3), 133-144. doi:doi:10.1108/07363760610663295

Fransson, N., & Garling, T. (1999). Environmental Concern: Conceptual definitions, measurement methods and research findings. *Journal of Environmental Psychology, 19*(4), 369-382. doi:http://dx.doi.org/10.1006/jevp.1999.0141

Frey, B. (2012). Crowding Out and Crowding In of Intrinsic Preferences. In E. Brousseau, T. Dedeurwaerdere, & B. Siebenhuner (Eds.), *Reflexive Governance for Global Public Goods*. Cambridge, MA: The MIT Press.

Frey, B. S., & Jegen, R. (2001). Motivation Crowding Theory. *Journal of Economic Surveys, 15*(5), 589-611. doi:10.1111/1467-6419.00150

FTSE. (2016). FTSE Country Classification. Retrieved from http://www.ftse.com/products/downloads/March_2016_Country_Classification_Update.pdf

Fürst, E. (2014). Making the way to the university environmentally sustainable: A segmentation approach. *Transportation Research Part D: Transport and Environment, 31*, 1-12. doi:http://dx.doi.org/10.1016/j.trd.2014.05.017

Gabay, G., Flores, L., Moskowitz, H., & Maier, A. (2010). Creating technology-based merchandising ideas for hair coloring through weak signals, concept optimization and mind-set segmentation. *Journal of Consumer Marketing, 27*(3), 211-223. doi:doi:10.1108/07363761011038284

Galvin, R. (2016). Rebound effects from speed and acceleration in electric and internal combustion engine cars: An empirical and conceptual investigation. *Applied Energy, 172*, 207-216. doi:http://dx.doi.org/10.1016/j.apenergy.2016.03.120

Gao, L., Wang, S., Li, J., & Li, H. (2017). Application of the extended theory of planned behavior to understand individual's energy saving behavior in workplaces. *Resources, Conservation and Recycling, 127*, 107-113. doi:https://doi.org/10.1016/j.resconrec.2017.08.030

Garfield, A. M., Drwecki, B. B., Moore, C. F., Kortenkamp, K. V., & Gracz, M. D. (2014). The Oneness Beliefs Scale: Connecting Spirituality with Pro-Environmental Behavior. *Journal for the Scientific Study of Religion, 53*(2), 356-372. doi:10.1111/jssr.12108

Garver, M. S., Williams, Z., & LeMay, S. A. (2010). Measuring the importance of attributes in logistics research. *The International Journal of Logistics Management, 21*(1), 22-44. doi:doi:10.1108/09574091011042160

Gatersleben, B., Steg, L., & Vlek, C. (2002). Measurement and Determinants of Environmentally Significant Consumer Behavior. *Environment and Behavior, 34*(3), 335-362. doi:10.1177/0013916502034003004

Gaur, J., Amini, M., Banerjee, P., & Gupta, R. (2015). Drivers of consumer purchase intentions for remanufactured products: A study of Indian consumers relocated to the USA. *Qualitative Market Research: An International Journal, 18*(1), 30-47. doi:doi:10.1108/QMR-01-2014-0001

Germar, M., Schlemmer, A., Krug, K., Voss, A., & Mojzisch, A. (2014). Social Influence and Perceptual Decision Making: A Diffusion Model Analysis. *Personality and Social Psychology Bulletin, 40*(2), 217-231. doi:10.1177/0146167213508985

Giles, D. C. (2002). *Advanced Research Methods in Psychology*. New York, NY: Routledge.

González, A. G. (2015). Service Quality and Repurchase Behaviour in the Spanish Automotive After Sales Business. *Journal of Relationship Marketing, 14*(3), 239-267. doi:10.1080/15332667.2015.1069456

González, E. M., Felix, R., Carrete, L., Centeno, E., & Castaño, R. (2015). Green Shades: A Segmentation Approach Based on Ecological Consumer Behavior in an Emerging Economy. *Journal of Marketing Theory and Practice, 23*(3), 287-302. doi:10.1080/10696679.2015.1032395

Grant, D., Jorgenson, A. K., & Longhofer, W. (2016). How organizational and global factors condition the effects of energy efficiency on CO2 emission rebounds among the world's power plants. *Energy Policy, 94*, 89-93. doi:http://dx.doi.org/10.1016/j.enpol.2016.03.053

Grimm, P. (2010). Social Desirability Bias. In *Wiley International Encyclopedia of Marketing*: John Wiley & Sons, Ltd.

Guba, E. G., & Lincoln, Y. S. (1994). Competing Paradigms in Qualitative Research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 105-117). Thousand Oaks, CA: Sage Publications.

Güçdemir, H., & Selim, H. (2015). Integrating multi-criteria decision making and clustering for business customer segmentation. *Industrial Management & Data Systems, 115*(6), 1022-1040. doi:doi:10.1108/IMDS-01-2015-0027

Guritno, A. D., Schlich, E., Pawelzik, E., & Ismoyowati, D. (2015). International Conference on Agro-industry (IcoA): Sustainable and Competitive Agro-industry for Human Welfare Yogyakarta-INDONESIA 2014Halal Food Marketing: A Case Study on Consumer Behavior of Chicken-based Processed Food Consumption in Central Part of Java, Indonesia. *Agriculture and Agricultural Science Procedia, 3*, 169-172. doi:http://dx.doi.org/10.1016/j.aaspro.2015.01.033

Hahnel, U. J. J., Ortmann, C., Korcaj, L., & Spada, H. (2014). What is green worth to you? Activating environmental values lowers price sensitivity towards electric vehicles. *Journal of Environmental Psychology, 40*, 306-319. doi:http://dx.doi.org/10.1016/j.jenvp.2014.08.002

Hair, J. F. (2010). *Multivariate Data Analysis*: Prentice Hall.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*: SAGE Publications.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science, 40*(3), 414-433. doi:10.1007/s11747-011-0261-6

Hamid, M. R. A., Sami, W., & Sidek, M. H. M. (2017). Discriminant Validity Assessment: Use of Fornell & Larcker criterion versus HTMT Criterion. *Journal of Physics: Conference Series, 890*(1), 012163.

Han, H. (2014). The norm activation model and theory-broadening: Individuals' decision-making on environmentally-responsible convention attendance. *Journal of Environmental Psychology, 40*, 462-471. doi:http://dx.doi.org/10.1016/j.jenvp.2014.10.006

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. doi:http://dx.doi.org/10.1016/j.tourman.2014.09.014

Han, H., Hwang, J., Kim, J., & Jung, H. (2015). Guests' pro-environmental decision-making process: Broadening the norm activation framework in a lodging context. *International Journal of Hospitality Management, 47*, 96-107. doi:http://dx.doi.org/10.1016/j.ijhm.2015.03.013

Han, H., jae, M., & Hwang, J. (2016). Cruise travelers' environmentally responsible decision-making: An integrative framework of goal-directed behavior and norm activation process. *International Journal of Hospitality Management, 53*, 94-105. doi:http://dx.doi.org/10.1016/j.ijhm.2015.12.005

Hartmann, M., Heinen, S., Melis, S., & Simons, J. (2013). Consumers' awareness of CSR in the German pork industry. *British Food Journal, 115*(1), 124-141. doi:doi:10.1108/00070701311289911

Hartmann, P., & Apaolaza-Ibáñez, V. (2012). Consumer attitude and purchase intention toward green energy brands: The roles of psychological benefits and environmental concern. *Journal of Business Research, 65*(9), 1254-1263. doi:http://dx.doi.org/10.1016/j.jbusres.2011.11.001

Hartmann, P., Apaolaza, V., & D'Souza, C. (2018). The role of psychological empowerment in climate-protective consumer behaviour: An extension of the value-belief-norm framework. *European Journal of Marketing, 52*(1/2), 392-417. doi:doi:10.1108/EJM-01-2017-0080

Hasan, T. (2008). *Influence of Brand Name on Consumer Decision in Car Choice.* (Masters), Umeå School of Business and Economics (USBE), Retrieved from https://www.diva-portal.org/smash/get/diva2:141583/FULLTEXT01.pdf

Hawcroft, L. J., & 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, 30*(2), 143-158. doi:http://dx.doi.org/10.1016/j.jenvp.2009.10.003

Hayduk, L., Cummings, G., Boadu, K., Pazderka-Robinson, H., & Boulianne, S. (2007). Testing! testing! one, two, three – Testing the theory in structural equation models! *Personality and Individual Differences, 42*(5), 841-850. doi:https://doi.org/10.1016/j.paid.2006.10.001

Heath, Y., & Gifford, R. (2002). Extending the Theory of Planned Behavior: Predicting the Use of Public Transportation. *Journal of Applied Social Psychology, 32*(10), 2154-2189. doi:doi:10.1111/j.1559-1816.2002.tb02068.x

Hennessey, S., Yun, D., & Macdonald, R. (2012). Segmenting the market of first-time visitors to an island destination. *International Journal of Culture, Tourism and Hospitality Research, 6*(2), 154-172. doi:doi:10.1108/17506181211233081

Henry, P. J. (2008). College Sophomores in the Laboratory Redux: Influences of a Narrow Data Base on Social Psychology's View of the Nature of Prejudice. *Psychological Inquiry, 19*(2), 49-71. doi:10.1080/10478400802049936

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135. doi:10.1007/s11747-014-0403-8

Herring, H., & Sorrell, S. (2009). Energy Efficiency and Sustainable Consumption: The Rebound Effect. *International Journal of Sustainability in Higher Education, 10*(3), null. doi:doi:10.1108/ijshe.2009.24910cae.004

Hersh, M. A., & Tucker, W. D. (2005). ETHICS AND MONO-DISCIPLINARITY: POSITIVISM, INFORMED CONSENT AND INFORMED PARTICIPATION. *IFAC Proceedings Volumes, 38*(1), 52-59. doi:http://dx.doi.org/10.3182/20050703-6-CZ-1902.02317

Higgs, B., & Ringer, A. C. (2007). *Trends in Consumer Segmentation* Paper presented at the ANZMAC, Dunedin, New Zealand.

Hine, D. W., Reser, J. P., Morrison, M., Phillips, W. J., Nunn, P., & Cooksey, R. (2014). Audience segmentation and climate change communication: conceptual and methodological considerations. *Wiley Interdisciplinary Reviews: Climate Change, 5*(4), 441-459. doi:10.1002/wcc.279

Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management, 21*(5), 967-988. doi:http://dx.doi.org/10.1016/0149-2063(95)90050-0

Hiratsuka, J., Perlaviciute, G., & Steg, L. (2018). Testing VBN theory in Japan: Relationships between values, beliefs, norms, and acceptability and expected effects of a car pricing policy. *Transportation Research Part F: Traffic Psychology and Behaviour, 53*, 74-83. doi:https://doi.org/10.1016/j.trf.2017.12.015

Hoehne, C. G., & Chester, M. V. (2017). Greenhouse gas and air quality effects of auto first-last mile use with transit. *Transportation Research Part D: Transport and Environment, 53*, 306-320. doi:https://doi.org/10.1016/j.trd.2017.04.030

Hoek, J., Gendall, P., & Esslemont, D. (1996). Market segmentation: A search for the Holy Grail? *Journal of Marketing Practice: Applied Marketing Science, 2*(1), 25-34. doi:doi:10.1108/EUM0000000000005

Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture, 2*(1), 1-26.

Hoge, R. (1972). A Validated Intrinsic Religious Motivation Scale. *Journal for the Scientific Study of Religion, 11*(4), 369-376.

Hollywood, L. E., Armstrong, G. A., & Durkin, M. G. (2007). Using behavioural and motivational thinking in food segmentation. *International Journal of Retail & Distribution Management, 35*(9), 691-702. doi:doi:10.1108/09590550710773246

Holmstrom, S. J. M. (2015). *The Influence of Neuroticism on Proenvironmental Behavior.* (Student paper), Örebro University,

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. *Electronic Journal of Business Research Methods, 6*(1), 53-60.

Hope, A. L. B., & Jones, C. R. (2014). The impact of religious faith on attitudes to environmental issues and Carbon Capture and Storage (CCS) technologies: A mixed methods study. *Technology in Society, 38*, 48-59. doi:http://dx.doi.org/10.1016/j.techsoc.2014.02.003

Howell, A. J., & Buro, K. (2017). Other-oriented hope: Initial evidence of its nomological net. *Personality and Individual Differences, 106*, 104-110. doi:https://doi.org/10.1016/j.paid.2016.10.027

Hsu, C.-L., & Lin, J. C.-C. (2016). Effect of perceived value and social influences on mobile app stickiness and in-app purchase intention. *Technological Forecasting and Social Change, 108*, 42-53. doi:http://dx.doi.org/10.1016/j.techfore.2016.04.012

Huang, H.-C., Lin, T.-H., Lai, M.-C., & Lin, T.-L. (2014a). Environmental consciousness and green customer behavior: An examination of motivation crowding effect. *International Journal of Hospitality Management, 40*, 139-149. doi:http://dx.doi.org/10.1016/j.ijhm.2014.04.006

Huang, Y.-C., Yang, M., & Wang, Y.-C. (2014b). Effects of green brand on green purchase intention. *Marketing Intelligence & Planning, 32*(3), 250-268. doi:doi:10.1108/MIP-10-2012-0105

Hughes, P., Luksetich, W., & Rooney, P. (2014). Crowding-Out and Fundraising Efforts. *Nonprofit Management and Leadership, 24*(4), 445-464. doi:10.1002/nml.21102

IEA. (2009). Transport Energy and CO2. Retrieved from https://www.iea.org/publications/freepublications/publication/transport2009.pdf

IEA. (2015). CO2 emissions from fuel combustion-Highlights. Retrieved from https://www.iea.org/publications/freepublications/publication/CO2EmissionsFromFuelCombustionHighlights2015.pdf

Ifinedo, P. (2016). Applying uses and gratifications theory and social influence processes to understand students' pervasive adoption of social networking sites: Perspectives from the Americas. *International Journal of Information Management, 36*(2), 192-206. doi:http://dx.doi.org/10.1016/j.ijinfomgt.2015.11.007

Ilyas, S. Z. (2007). A Review of Transport and Urban Pollution in Pakistan. *Journal of Applied Science and Environment Management, 11*(2), 113-121.

IMF. (2016). Overview of the World Economic Outlook Projections. Retrieved from http://www.imf.org/external/pubs/ft/weo/2016/update/01/

IPCC. (2004). Transport and its infrastructure. Retrieved from https://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter5.pdf

Isaac, C., & Ian, P. (2011). Attitudes towards environmentally friendly products: The influence of ecoliteracy, interpersonal influence and value orientation. *Marketing Intelligence & Planning, 29*(5), 452-472. doi:10.1108/02634501111153674

Islam, T., & Chandrasekaran, U. (2015). Religiosity and Ecologically Conscious Consumption Behaviour. *Asian Journal of Business Research, 5*(2). doi:10.14707/ajbr.150014

Ismoyowati, D. (2015). Halal Food Marketing: A Case Study on Consumer Behavior of Chicken-based Processed Food Consumption in Central Part of Java, Indonesia. *Agriculture and Agricultural Science Procedia, 3*, 169-172. doi:http://dx.doi.org/10.1016/j.aaspro.2015.01.033

Iwata, O. (2001). ATTITUDINAL DETERMINANTS OF ENVIRONMENTALLY RESPONSIBLE BEHAVIOR. *Social Behavior and Personality, 29*(2), 183-190. doi:DOI 10.2224/sbp.2001.29.2.183

Jacobs, S., Sioen, I., De Henauw, S., Rosseel, Y., Calis, T., Tediosi, A., . . . Verbeke, W. (2015). Marine environmental contamination: public awareness, concern and perceived effectiveness in five European countries. *Environmental Research, 143, Part B*, 4-10. doi:http://dx.doi.org/10.1016/j.envres.2015.08.009

Jacobsen, C. B., Hvitved, J., & Andersen, L. B. (2014). COMMAND AND MOTIVATION: HOW THE PERCEPTION OF EXTERNAL INTERVENTIONS RELATES TO INTRINSIC MOTIVATION AND PUBLIC SERVICE MOTIVATION. *Public Administration, 92*(4), 790-806. doi:10.1111/padm.12024

Jacobson, R. P., Jacobson, K. J. L., & Hood, J. N. (2015). Social norm perceptions predict citizenship behaviors. *Journal of Managerial Psychology, 30*(8), 894-908. doi:doi:10.1108/JMP-12-2013-0408

Jain, S. C. (2006). *Emerging Economies and the Transformation of International Business: Brazil, Russia, India and China (BRICs)*. Northampton, MA, USA: Edward Elgar Publishing.

Jain, S. K., & Kaur, G. (2006). Role of Socio-Demographics in Segmenting and Profiling Green Consumers. *Journal of International Consumer Marketing, 18*(3), 107-146. doi:10.1300/J046v18n03_06

Jansson, J. (2011). Consumer eco-innovation adoption: assessing attitudinal factors and perceived product characteristics. *Business Strategy and the Environment, 20*(3), 192-210. doi:10.1002/bse.690

Jansson, J., Marell, A., & Nordlund, A. (2009). Elucidating green consumers : a cluster analytic approach on proenvironmental purchase and curtailment behaviors. *Journal of Euromarketing, 18*(4), 245-267. doi:10.1080/10496480903364242

Jansson, J., Marell, A., & Nordlund, A. (2010). Green consumer behavior: determinants of curtailment and eco-innovation adoption. *Journal of Consumer Marketing, 27*(4), 358-370. doi:doi:10.1108/07363761011052396

Jansson, J., Marell, A., & Nordlund, A. (2011). Exploring consumer adoption of a high involvement eco-innovation using value-belief-norm theory. *Journal of Consumer Behaviour, 10*(1), 51-60. doi:10.1002/cb.346

Jansson, J., Nordlund, A., & Westin, K. (2017). Examining drivers of sustainable consumption: The influence of norms and opinion leadership on electric vehicle adoption in Sweden. *Journal of Cleaner Production, 154*(Supplement C), 176-187. doi:https://doi.org/10.1016/j.jclepro.2017.03.186

Jekria, N., & Daud, S. (2016). Environmental Concern and Recycling Behaviour. *Procedia Economics and Finance, 35*, 667-673. doi:https://doi.org/10.1016/S2212-5671(16)00082-4

Jevons, W. S. (1906). *The coal question: An inquiry concerning the progress of the nation, and the probable exhaustion of our coal-mines*. London: Macmillan.

Jiang, K., Ling, F., Feng, Z., Wang, K., & Shao, C. (2017). Why do drivers continue driving while fatigued? An application of the theory of planned behaviour. *Transportation Research Part A: Policy and Practice, 98*, 141-149. doi:https://doi.org/10.1016/j.tra.2017.02.003

John, M., Ray, C., & Tim, S. (2013). Value-based consumer segmentation: the key to sustainable agri-food chains. *British Food Journal, 115*(9), 1313-1328. doi:doi:10.1108/BFJ-09-2011-0215

Johnson, L. W., Ringham, L., & Jurd, K. (1991). Behavioural Segmentation in the Australian Wine Market Using Conjoint Choice Analysis. *International Marketing Review, 8*(4), null. doi:doi:10.1108/EUM0000000001541

Johnstone, M.-L., & Tan, L. P. (2014). Exploring the Gap Between Consumers' Green Rhetoric and Purchasing Behaviour. *Journal of Business Ethics, 132*(2), 311-328. doi:10.1007/s10551-014-2316-3

Johnstone, M.-L., & Tan, L. P. (2015). Exploring the Gap Between Consumers' Green Rhetoric and Purchasing Behaviour. *Journal of Business Ethics, 132*(2), 311-328. doi:10.1007/s10551-014-2316-3

Joireman, J. A., Lasane, T. P., Bennett, J., Richards, D., & Solaimani, S. (2001). Integrating social value orientation and the consideration of future consequences within the extended norm activation model of proenvironmental behaviour. *British Journal of Social Psychology, 40*(1), 133-155. doi:10.1348/014466601164731

Jöreskog, K. G. (1967). A GENERAL APPROACH TO CONFIRMATORY MAXIMUM LIKELIHOOD FACTOR ANALYSIS. *ETS Research Bulletin Series, 1967*(2), 183-202. doi:10.1002/j.2333-8504.1967.tb00991.x

Kabaday, E. T., Dursun, İ., Alan, A. K., & Tuğer, A. T. (2015). Green Purchase Intention of Young Turkish Consumers: Effects of Consumer's Guilt, Self-monitoring and Perceived Consumer Effectiveness. *Procedia - Social and Behavioral Sciences, 207*, 165-174. doi:http://dx.doi.org/10.1016/j.sbspro.2015.10.167

Kaiser, F. G. (1998). A General Measure of Ecological Behavior. *Journal of Applied Social Psychology, 28*(5), 395-422. doi:10.1111/j.1559-1816.1998.tb01712.x

Kaiser, F. G., & Gutscher, H. (2003). The Proposition of a General Version of the Theory of Planned Behavior: Predicting Ecological Behavior1. *Journal of Applied Social Psychology, 33*(3), 586-603. doi:10.1111/j.1559-1816.2003.tb01914.x

Kaiser, F. G., & Wilson, M. (2000). Assessing People's General Ecological Behavior: A Cross-Cultural Measure1. *Journal of Applied Social Psychology, 30*(5), 952-978. doi:10.1111/j.1559-1816.2000.tb02505.x

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*, 141-151. doi:10.1177/001316446002000116

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*(1), 31-36. doi:10.1007/bf02291575

Kaiser, H. F., & Rice, J. (1974). Little Jiffy, Mark Iv. *Educational and Psychological Measurement, 34*(1), 111-117. doi:10.1177/001316447403400115

Kalafatis, S. P., Pollard, M., East, R., & Tsogas, M. H. (1999). Green marketing and Ajzen's theory of planned behaviour: a cross-market examination. *Journal of Consumer Marketing, 16*(5), 441-460. doi:doi:10.1108/07363769910289550

Kalamas, M., Cleveland, M., & Laroche, M. (2014). Pro-environmental behaviors for thee but not for me: Green giants, green Gods, and external environmental locus of control. *Journal of Business Research, 67*(2), 12-22. doi:http://dx.doi.org/10.1016/j.jbusres.2013.03.007

Kanchanapibul, M., Lacka, E., Wang, X., & Chan, H. K. (2014). An empirical investigation of green purchase behaviour among the young generation. *Journal of Cleaner Production, 66*, 528-536. doi:http://dx.doi.org/10.1016/j.jclepro.2013.10.062

Kara, A., & Kaynak, E. (1997). Markets of a single customer: exploiting conceptual developments in market segmentation. *European Journal of Marketing, 31*(11/12), 873-895. doi:doi:10.1108/03090569710190587

Karp, D. G. (1996). Values and their Effect on Pro-Environmental Behavior. *Environment and Behavior, 28*(1), 111-133. doi:10.1177/0013916596281006

Kates, R. W. (2000). Population and Consumption: What We Know, What We Need to Know. *Environment: Science and Policy for Sustainable Development, 42*(3), 10-19. doi:10.1080/00139150009604872

Kates, R. W., Clark, W. C., Corell, R., Hall, J. M., Jaeger, C. C., Lowe, I., . . . Svedin, U. (2001). Sustainability Science. *Science, 292*(5517), 641-642. doi:10.1126/science.1059386

Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing, 57*(1), 1-22. doi:10.2307/1252054

Kelly, B. C. (2003). *Environmental Attitudes and Behaviors: The Issue and its Dimensions.* (Master of Arts Thesis), University of Central Florida, Orlando, Florida. Retrieved from http://etd.fcla.edu/CF/CFE0004393/Thesis_Proposal-FinalRevision.pdf (CFE0004393)

Keuth, H. (2015). Logical Positivism and Logical Empiricism A2 - Wright, James D. In *International Encyclopedia of the Social & Behavioral Sciences (Second Edition)* (pp. 313-318). Oxford: Elsevier.

Khalek, A. A. (2014). Young Consumers' Attitude towards Halal Food Outlets and JAKIM's Halal Certification in Malaysia. *Procedia - Social and Behavioral Sciences, 121*, 26-34. doi:http://dx.doi.org/10.1016/j.sbspro.2014.01.1105

Khan, A. S. (2015). Fuel-efficient' hybrid vehicles in vogue. *Dawn* Retrieved from https://www.dawn.com/news/1178072

Khare, A. (2014). Consumers' susceptibility to interpersonal influence as a determining factor of ecologically conscious behaviour. *Marketing Intelligence & Planning, 32*(1), 2-20. doi:doi:10.1108/MIP-04-2013-0062

Khare, A. (2015). Antecedents to green buying behaviour: a study on consumers in an emerging economy. *Marketing Intelligence & Planning, 33*(3), 309-329. doi:doi:10.1108/MIP-05-2014-0083

Kilbourne, W. E., Beckmann, S. C., & Thelen, E. (2002). The role of the dominant social paradigm in environmental attitudes: a multinational examination. *Journal of Business Research, 55*(3), 193-204. doi:http://dx.doi.org/10.1016/S0148-2963(00)00141-7

King, J. N. (2015). *Deterimental Determinants: The impact of neoliberalism on pro-environmental behaviors.* (Master of Arts Thesis), University of Missouri-Kansas City, Kansas City Missouri. Retrieved from https://hdl.handle.net/10355/46330

Kinnear, T. C., Taylor, J. R., & Ahmed, S. A. (1974). Ecologically Concerned Consumers: Who Are They? *Journal of Marketing, 38*(2), 20-24. doi:10.2307/1250192

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling*: Guilford Publications.

Knez, M., Jereb, B., & Obrecht, M. (2014). Factors influencing the purchasing decisions of low emission cars: A study of Slovenia. *Transportation Research Part D: Transport and Environment, 30*, 53-61. doi:http://dx.doi.org/10.1016/j.trd.2014.05.007

Koenig, H. G., & Büssing, A. (2010). The Duke University Religion Index (DUREL): A Five-Item Measure for Use in Epidemological Studies. *Religions, 1*(1), 78-85.

Kok, R. (2015). Six years of CO2-based tax incentives for new passenger cars in The Netherlands: Impacts on purchasing behavior trends and CO2 effectiveness. *Transportation Research Part A: Policy and Practice, 77*, 137-153. doi:http://dx.doi.org/10.1016/j.tra.2015.04.009

Kolk, A., Dolen, W. v., & Ma, L. (2015). Consumer perceptions of CSR: (how) is China different? *International Marketing Review, 32*(5), 492-517. doi:doi:10.1108/IMR-03-2014-0091

Kotler, P. (1997). *Marketing management: Analysis, planning, implementation, and control*. Upper Saddle River, NJ: Prentice Hall.

Kristofferson, K., White, K., & Peloza, J. (2014). The Nature of Slacktivism: How the Social Observability of an Initial Act of Token Support Affects Subsequent Prosocial Action. *Journal of Consumer Research, 40*(6), 1149-1166. doi:10.1086/674137

Kumar, P. (2014). Greening retail: an Indian experience. *International Journal of Retail & Distribution Management, 42*(7), 613-625. doi:doi:10.1108/IJRDM-02-2013-0042

Lam, S.-P. (1999). Predicting Intentions to Conserve Water From the Theory of Planned Behavior, Perceived Moral Obligation, and Perceived Water Right1. *Journal of Applied Social Psychology, 29*(5), 1058-1071. doi:doi:10.1111/j.1559-1816.1999.tb00140.x

Lam, S.-P. (2006). Predicting Intention to Save Water: Theory of Planned Behavior, Response Efficacy, Vulnerability, and Perceived Efficiency of Alternative Solutions1. *Journal of Applied Social Psychology, 36*(11), 2803-2824. doi:doi:10.1111/j.0021-9029.2006.00129.x

Lance, C. E., Butts, M. M., & Michels, L. C. (2006). The Sources of Four Commonly Reported Cutoff Criteria:What Did They Really Say? *Organizational Research Methods, 9*(2), 202-220. doi:10.1177/1094428105284919

LaRose, R., & Tsai, H.-y. S. (2014). Completion rates and non-response error in online surveys: Comparing sweepstakes and pre-paid cash incentives in studies of online behavior. *Computers in Human Behavior, 34*, 110-119. doi:https://doi.org/10.1016/j.chb.2014.01.017

Lau, J. L., Hashim, A. H., Samah, A. A., & Salim, A. S. S. (2016). Understanding the environmental worldviews of Malaysian project managers. *Smart and Sustainable Built Environment, 5*(4), 307-324. doi:doi:10.1108/SASBE-06-2016-0012

Lavelle, M. J., Rau, H., & Fahy, F. (2015). Different shades of green? Unpacking habitual and occasional pro-environmental behavior. *Global Environmental Change, 35*, 368-378. doi:http://dx.doi.org/10.1016/j.gloenvcha.2015.09.021

Lee, C. W., & Liao, C. S. (2009). The effects of consumer preferences and perceptions of Chinese tea beverages on brand positioning strategies. *British Food Journal, 111*(1), 80-96. doi:doi:10.1108/00070700910924254

Lee, H. H., & Kim, J. (2008). The effects of shopping orientations on consumers' satisfaction with product search and purchases in a multi-channel environment. *Journal of Fashion Marketing and Management: An International Journal, 12*(2), 193-216. doi:doi:10.1108/13612020810874881

Lee, Y.-k., Kim, S., Kim, M.-s., & Choi, J.-g. (2014). Antecedents and interrelationships of three types of pro-environmental behavior. *Journal of Business Research, 67*(10), 2097-2105. doi:http://dx.doi.org/10.1016/j.jbusres.2014.04.018

Lin, C.-Y., Broström, A., Nilsen, P., & Pakpour, A. H. (2018). Using extended theory of planned behavior to understand aspirin adherence in pregnant women. *Pregnancy Hypertension, 12*, 84-89. doi:https://doi.org/10.1016/j.preghy.2018.04.001

Lin, C.-Y., Updegraff, J. A., & Pakpour, A. H. (2016). The relationship between the theory of planned behavior and medication adherence in patients with epilepsy.

Epilepsy & Behavior, 61, 231-236. doi:https://doi.org/10.1016/j.yebeh.2016.05.030

Lin, Y. C. (2013). Evaluation of co-branded hotels in the Taiwanese market: the role of brand familiarity and brand fit. *International Journal of Contemporary Hospitality Management, 25*(3), 346-364. doi:doi:10.1108/09596111311311017

Lind, H. B., Nordfjærn, T., Jørgensen, S. H., & Rundmo, T. (2015). The value-belief-norm theory, personal norms and sustainable travel mode choice in urban areas. *Journal of Environmental Psychology, 44*, 119-125. doi:https://doi.org/10.1016/j.jenvp.2015.06.001

Linda., S., & Judith., G. (2010). Explaining prosocial intentions: Testing causal relationships in the norm activation model. *British Journal of Social Psychology, 49*(4), 725-743. doi:doi:10.1348/014466609X477745

Lindenberg, S., & Steg, L. (2013). Goal-framing Theory and Norm-Guided Environmental Behavior. In H. C. M. V. Trip (Ed.), *Encouraging Sustainable Behavior* (pp. 37-54). New York: Psychology Press.

Liu, E. Y., & Koenig, H. G. (2013). Measuring Intrinsic Religiosity: scales for use in mental health studies in China – a research report. *Mental Health, Religion & Culture, 16*(2), 215-224. doi:10.1080/13674676.2012.672404

López-Mosquera, N., Lera-López, F., & Sánchez, M. (2015). Key factors to explain recycling, car use and environmentally responsible purchase behaviors: A comparative perspective. *Resources, Conservation and Recycling, 99*, 29-39. doi:http://dx.doi.org/10.1016/j.resconrec.2015.03.007

López-Sánchez, Y., & Pulido-Fernández, J. I. (2016). In search of the pro-sustainable tourist: A segmentation based on the tourist "sustainable intelligence". *Tourism Management Perspectives, 17*, 59-71. doi:http://dx.doi.org/10.1016/j.tmp.2015.12.003

Luzio, J. P. P., & Lemke, F. (2013). Exploring green consumers' product demands and consumption processes: The case of Portuguese green consumers. *European Business Review, 25*(3), 281-300. doi:doi:10.1108/09555341311314825

Ma, J., Hipel, K. W., Hanson, M. L., Cai, X., & Liu, Y. (2018). An analysis of influencing factors on municipal solid waste source-separated collection behavior in Guilin, China by Using the Theory of Planned Behavior. *Sustainable Cities and Society, 37*, 336-343. doi:https://doi.org/10.1016/j.scs.2017.11.037

MacInnis, D. J. (2011). A Framework for Conceptual Contributions in Marketing. *Journal of Marketing, 75*(4), 136-154. doi:10.1509/jmkg.75.4.136

MacKenzie, S. B., Podsakoff, P. M., & Podsakoff, N. P. (2011). Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques. *MIS Quarterly, 35*(2), 293-334.

Macovei, O.-I. (2015). Applying the Theory of Planned Behavior in Predicting Proenvironmental Behaviour: The Case of Energy Conservation. *Acta Universitatis Danubius. OEconomica*(11(4)), 15-32.

Maichum, K., Parichatnon, S., & Peng, K.-C. (2016). Application of the Extended Theory of Planned Behavior Model to Investigate Purchase Intention of Green Products among Thai Consumers. *Sustainability, 8*(10), 1-20.

Mannberg, A., Jansson, J., Pettersson, T., Brännlund, R., & Lindgren, U. (2014). Do tax incentives affect households' adoption of 'green' cars? A panel study of the Stockholm congestion tax. *Energy Policy, 74*, 286-299. doi:http://dx.doi.org/10.1016/j.enpol.2014.08.029

Manning, C. (2009). Psychology of sustainable behavior. Retrieved from https://www.pca.state.mn.us/sites/default/files/p-ee1-01.pdf

Marc, P., & Barbara, C. (2013). An exploration of factors influencing car purchasing decisions. *International Journal of Retail & Distribution Management, 41*(10), 738-764. doi:doi:10.1108/IJRDM-02-2012-0017

Markle, G. L. (2013). Pro-Environmental Behavior: Does It Matter How It's Measured? Development and Validation of the Pro-Environmental Behavior Scale (PEBS). *Human Ecology, 41*(6), 905-914. doi:10.1007/s10745-013-9614-8

Martin, W. C., & Bateman, C. R. (2014). Consumer religious commitment's influence on ecocentric attitudes and behavior. *Journal of Business Research, 67*(2), 5-11. doi:http://dx.doi.org/10.1016/j.jbusres.2013.03.006

Maruyama, T., Sato, Y., Nohara, K., & Imura, S. (2015). Increasing Smartphone-based Travel Survey Participants. *Transportation Research Procedia, 11*, 280-288. doi:https://doi.org/10.1016/j.trpro.2015.12.024

Marylyn, C., & Ahmad, A. (2001). The myth of the ethical consumer – do ethics matter in purchase behaviour? *Journal of Consumer Marketing, 18*(7), 560-578. doi:10.1108/07363760110410263

Mas'ud, A., Manaf, N. A. A., & Saad, N. (2017). Validating a second-order model for oil and gas projects' investment climate scale. *International Journal of Energy Sector Management, 11*(1), 65-79. doi:doi:10.1108/IJESM-08-2015-0003

Maslow, A. H. (1969). *Motivation and Personality*. New York: Harper and Row, Publishers, Inc.

Mathras, D., Cohen, A. B., Mandel, N., & Mick, D. G. (2016). The effects of religion on consumer behavior: A conceptual framework and research agenda. *Journal of Consumer Psychology, 26*(2), 298-311. doi:https://doi.org/10.1016/j.jcps.2015.08.001

Matthews, L. M., Sarstedt, M., Hair, J. F., & Ringle, C. M. (2016). Identifying and treating unobserved heterogeneity with FIMIX-PLS: Part II – A case study. *European Business Review, 28*(2), 208-224. doi:doi:10.1108/EBR-09-2015-0095

McCarthy, B., Liu, H.-B., & Chen, T. (2016). Innovations in the agro-food system: Adoption of certified organic food and green food by Chinese consumers. *British Food Journal, 118*(6), 1334-1349. doi:doi:10.1108/BFJ-10-2015-0375

McCarty, J. A., & Shrum, L. J. (1994). The recycling of solid wastes: Personal values, value orientations, and attitudes about recycling as antecedents of recycling behavior. *Journal of Business Research, 30*(1), 53-62. doi:http://dx.doi.org/10.1016/0148-2963(94)90068-X

McDaniel, C., & Gates, R. (2014). *Marketing Research*: Wiley.

Mealing, N. M., Banks, E., Jorm, L. R., Steel, D. G., Clements, M. S., & Rogers, K. D. (2010). Investigation of relative risk estimates from studies of the same population with contrasting response rates and designs. *BMC Medical Research Methodology, 10*, 26-26. doi:10.1186/1471-2288-10-26

Michael Jay, P., Romana, G., & Stacy Landreth, G. (2011). Western consumers' understanding of carbon offsets and its relationship to behavior. *Asia Pacific Journal of Marketing and Logistics, 23*(5), 583-603. doi:10.1108/13555851111183048

Milbrath, L. W. (1984). *Environmentalists, Vanguard for a New Society*. Albany, NY: University of New York Press.

Miles, H., & Louis, Y. (1988). Expectancy-Value Models of Attitude: Measurement and Combination of Evaluations and Beliefs1. *Journal of Applied Social Psychology, 18*(11), 958-971. doi:doi:10.1111/j.1559-1816.1988.tb01186.x

Miniero, G., Codini, A., Bonera, M., Corvi, E., & Bertoli, G. (2014). Being green: from attitude to actual consumption. *International Journal of Consumer Studies, 38*(5), 521-528. doi:10.1111/ijcs.12128

Mohayidin, M. G., & Kamarulzaman, N. H. (2014). Consumers' Preferences Toward Attributes of Manufactured Halal Food Products. *Journal of International Food & Agribusiness Marketing, 26*(2), 125-139. doi:10.1080/08974438.2012.755720

Mohr, L. A., Webb, D. J., & Harris, K. E. (2001). Do Consumers Expect Companies to be Socially Responsible? The Impact of Corporate Social Responsibility on Buying Behavior. *Journal of Consumer Affairs, 35*(1), 45-72. doi:10.1111/j.1745-6606.2001.tb00102.x

Montag, J. (2015). The simple economics of motor vehicle pollution: A case for fuel tax. *Energy Policy, 85*, 138-149. doi:http://dx.doi.org/10.1016/j.enpol.2015.05.020

Moons, I., & De Pelsmacker, P. (2015). An Extended Decomposed Theory of Planned Behaviour to Predict the Usage Intention of the Electric Car: A Multi-Group Comparison. *Sustainability, 7*(5), 6212-6245. doi:10.3390/su7056212

Morden, A. R. (1984). Market Segmentation — A Strategic Necessity? *Marketing Intelligence & Planning, 2*(1), 21-36. doi:10.1108/eb045693

Morden, A. R. (1987). Market Segmentation and Corporate Control. *Management Decision, 25*(6), 36-40. doi:doi:10.1108/eb001472

Morland, J. K., & Williams, J. E. (1969). Cross-Cultural Measurement or Racial and Ethnic Attitudes by the Semantic Differential. *Social Forces, 48*(1), 107-112. doi:10.2307/2575474

Morris, M. W., Hong, Y.-y., Chiu, C.-y., & Liu, Z. (2015). Normology: Integrating insights about social norms to understand cultural dynamics. *Organizational Behavior and Human Decision Processes, 129*, 1-13. doi:https://doi.org/10.1016/j.obhdp.2015.03.001

Morten, A., Gatersleben, B., & Jessop, D. C. (2018). Staying grounded? Applying the theory of planned behaviour to explore motivations to reduce air travel. *Transportation Research Part F: Traffic Psychology and Behaviour, 55*, 297-305. doi:https://doi.org/10.1016/j.trf.2018.02.038

Morton, S. M. B., Bandara, D. K., Robinson, E. M., & Carr, P. E. A. (2012). In the 21st Century, what is an acceptable response rate? *Australian and New Zealand Journal of Public Health, 36*(2), 106-108. doi:doi:10.1111/j.1753-6405.2012.00854.x

Mostafa, M. M. (2009). Shades of green: A psychographic segmentation of the green consumer in Kuwait using self-organizing maps. *Expert Systems with Applications, 36*(8), 11030-11038. doi:http://dx.doi.org/10.1016/j.eswa.2009.02.088

Mourad, M., & Ahmed, Y. S. E. (2012). Perception of green brand in an emerging innovative market. *European Journal of Innovation Management, 15*(4), 514-537. doi:doi:10.1108/14601061211272402

MSCI. (2016). Market Clasification. Retrieved from https://www.msci.com/market-classification

Nayeem, T., & Casidy, R. (2013). The role of external influences in high involvement purchase behaviour. *Marketing Intelligence & Planning, 31*(7), 732-745. doi:doi:10.1108/MIP-02-2013-0030

Nayum, A., Klöckner, C. A., & Mehmetoglu, M. (2016). Comparison of socio-psychological characteristics of conventional and battery electric car buyers. *Travel Behaviour and Society, 3*, 8-20. doi:10.1016/j.tbs.2015.03.005

Nayum, A., Klöckner, C. A., & Prugsamatz, S. (2013). Influences of car type class and carbon dioxide emission levels on purchases of new cars: A retrospective analysis of car purchases in Norway. *Transportation Research Part A: Policy and Practice, 48*, 96-108. doi:10.1016/j.tra.2012.10.009

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scaling Procedures: Issues and Applications*: SAGE Publications.

Neuman, W. L. (2004). *Basics of Social Research: Qualitative and Quantitative Approaches*: Pearson.

Newman, D. A. (2003). Longitudinal Modeling with Randomly and Systematically Missing Data: A Simulation of Ad Hoc, Maximum Likelihood, and Multiple Imputation Techniques. *Organizational Research Methods, 6*(3), 328-362. doi:10.1177/1094428103254673

Newton, J. D., Tsarenko, Y., Ferraro, C., & Sands, S. (2015). Environmental concern and environmental purchase intentions: The mediating role of learning strategy. *Journal of Business Research, 68*(9), 1974-1981. doi:https://doi.org/10.1016/j.jbusres.2015.01.007

Nguyen, T. N., Lobo, A., & Greenland, S. (2017). The influence of Vietnamese consumers' altruistic values on their purchase of energy efficient appliances. *Asia Pacific Journal of Marketing and Logistics, 29*(4), 759-777. doi:10.1108/APJML-08-2016-0151

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The Nature Relatedness Scale: Linking Individuals' Connection With Nature to Environmental Concern and Behavior. *Environment and Behavior, 41*(5), 715-740. doi:10.1177/0013916508318748

Nordlund, A. M., & Garvill, J. (2002). Value Structures behind Proenvironmental Behavior. *Environment and Behavior, 34*(6), 740-756. doi:10.1177/001391602237244

Nordlund, A. M., & 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. doi:http://dx.doi.org/10.1016/S0272-4944(03)00037-9

Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: what can be done? *Assessment & Evaluation in Higher Education, 33*(3), 301-314. doi:10.1080/02602930701293231

Nunnally, C. J. (1978a). *Psychometric Theory*. New York: McGraw-Hill.

Nunnally, J. C. (1978b). *Psychometric Theory* (2nd ed.). New York: McGraw Hill.

Nunnally, J. C. (1994). *Psychometric theory*: McGraw-Hill.

Nyadzayo, M. W., & Khajehzadeh, S. (2016). The antecedents of customer loyalty: A moderated mediation model of customer relationship management quality and brand image. *Journal of Retailing and Consumer Services, 30*, 262-270. doi:http://dx.doi.org/10.1016/j.jretconser.2016.02.002

Oates, B., Shufeldt, L., & Vaught, B. (1996). A psychographic study of the elderly and retail store attributes. *Journal of Consumer Marketing, 13*(6), 14-27. doi:doi:10.1108/07363769610152572

Obeng, E. A., & Aguilar, F. X. (2018). Value orientation and payment for ecosystem services: Perceived detrimental consequences lead to willingness-to-pay for

ecosystem services. *Journal of Environmental Management, 206*, 458-471. doi:https://doi.org/10.1016/j.jenvman.2017.10.059

OICA. (2016). WORLD MOTOR VEHICLE PRODUCTION BY COUNTRY AND TYPE. Retrieved from http://www.oica.net/wp-content/uploads//Cars-2015-Q4-March-16.pdf

Ojea, E., & Loureiro, M. L. (2007). Altruistic, egoistic and biospheric values in willingness to pay (WTP) for wildlife. *Ecological Economics, 63*(4), 807-814. doi:http://dx.doi.org/10.1016/j.ecolecon.2007.02.003

Oliver, J. D., & Lee, S. H. (2010). Hybrid car purchase intentions: a cross-cultural analysis. *Journal of Consumer Marketing, 27*(2), 96-103. doi:doi:10.1108/07363761011027204

Oliver, J. D., & Rosen, D. E. (2010). Applying the Environmental Propensity Framework: A Segmented Approach to Hybrid Electric Vehicle Marketing Strategies. *Journal of Marketing Theory and Practice, 18*(4), 377-393. doi:10.2753/MTP1069-6679180405

Onwezen, M. C., Antonides, G., & 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. doi:http://dx.doi.org/10.1016/j.joep.2013.07.005

Onwezen, M. C., Bartels, J., & Antonides, G. (2014). Environmentally friendly consumer choices: Cultural differences in the self-regulatory function of anticipated pride and guilt. *Journal of Environmental Psychology, 40*, 239-248. doi:http://dx.doi.org/10.1016/j.jenvp.2014.07.003

Özşahin, M., Kabadayı, E. T., Dursun, İ., Alan, A. K., & Tuğer, A. T. (2015). Green Purchase Intention of Young Turkish Consumers: Effects of Consumer's Guilt, Self-monitoring and Perceived Consumer Effectiveness. *Procedia - Social and Behavioral Sciences, 207*, 165-174. doi:http://dx.doi.org/10.1016/j.sbspro.2015.10.167

Oztekin, C., Teksöz, G., Pamuk, S., Sahin, E., & Kilic, D. S. (2017). Gender perspective on the factors predicting recycling behavior: Implications from the theory of planned behavior. *Waste Management, 62*, 290-302. doi:https://doi.org/10.1016/j.wasman.2016.12.036

Pace, S. (2013). Does Religion Affect the Materialism of Consumers? An Empirical Investigation of Buddhist Ethics and the Resistance of the Self. *Journal of Business Ethics, 112*(1), 25-46. doi:10.1007/s10551-012-1228-3

Paço, A. d., & Raposo, M. (2009). "Green" segmentation: an application to the Portuguese consumer market. *Marketing Intelligence & Planning, 27*(3), 364-379. doi:doi:10.1108/02634500910955245

Pakistan Bureau of Statistics. (2013). Pakistan Employment Trends, 2013. Retrieved from http://www.pbs.gov.pk/sites/default/files/Labour%20Force/publications/Pakistan_Employment_2013.pdf

Pakistan Bureau of Statistics. (2016). Social Statistics. Retrieved from http://www.pbs.gov.pk/social-statistics-tables

Palmer, D. A., & Siegler, E. (2017). *Dream Trippers: Global Daoism and the Predicament of Modern Spirituality*: University of Chicago Press.

PAMA. (2015). Production and Sales of Vehicles. Retrieved from http://www.pama.org.pk/images/stories/pdf/five-years.xls

Pan, L., Zhang, M., Gursoy, D., & Lu, L. (2017). Development and validation of a destination personality scale for mainland Chinese travelers. *Tourism Management, 59*, 338-348. doi:https://doi.org/10.1016/j.tourman.2016.08.005

Park, J. S., & Lee, J. (2014). Segmenting Green Consumers in the United States: Implications for Green Marketing. *Journal of Promotion Management, 20*(5), 571-589. doi:10.1080/10496491.2014.946202

Peattie, K., & Crane, A. (2005). Green marketing: legend, myth, farce or prophesy? *Qualitative Market Research: An International Journal, 8*(4), 357-370. doi:doi:10.1108/13522750510619733

Pelletier, L. G., Tuson, K. M., Green-Demers, I., Noels, K., & Beaton, A. M. (1998). Why Are You Doing Things for the Environment? The Motivation Toward the Environment Scale (MTES)1. *Journal of Applied Social Psychology, 28*(5), 437-468. doi:10.1111/j.1559-1816.1998.tb01714.x

Perino, G., Panzone, L. A., & Swanson, T. (2014). MOTIVATION CROWDING IN REAL CONSUMPTION DECISIONS: WHO IS MESSING WITH MY GROCERIES? *Economic Inquiry, 52*(2), 592-607. doi:10.1111/ecin.12024

Perrea, T., Grunert, G. K., Krystallis, A., Zhou, Y., Huang, G., & Hue, Y. (2014). Testing and validation of a hierarchical values-attitudes model in the context of green food in China. *Asia Pacific Journal of Marketing and Logistics, 26*(2), 296-314. doi:doi:10.1108/APJML-09-2013-0106

Perry, C., Riege, A., & Brown, L. (1999). Realism's role among scientific paradigms in marketing research. *Irish Marketing Review, 12*(2), 16-23. doi:http://hdl.handle.net/10072/33384

Persson, J. (2010). Misconceptions of positivism and five unnecessary science theoretic mistakes they bring in their train. *International Journal of Nursing Studies, 47*(5), 651-661. doi:http://dx.doi.org/10.1016/j.ijnurstu.2009.12.009

Pew Forum. (2012). The Global Religious Landscape. Retrieved from http://www.pewforum.org/2012/12/18/global-religious-landscape-exec/

Pirages, D. C., & Ehrlich, P. R. (1974). *ARK II: Social Response to Environmental Imperatives*. San Francisco, CA: W.H.Freeman & Co Ltd.

Plombon, E. (2011). Factors Affecting Pro-Environmental Attitudes. *UW-L Journal of Undergraduate Research, 14*, 1-14.

Plummer, J. T. (1974). The Concept and Application of Life Style Segmentation. *Journal of Marketing, 38*(1), 33-37. doi:10.2307/1250164

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903. doi:10.1037/0021-9010.88.5.879

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of Method Bias in Social Science Research and Recommendations on How to Control It. *Annual Review of Psychology, 63*(1), 539-569. doi:10.1146/annurev-psych-120710-100452

Polites, G. L., Roberts, N., & Thatcher, J. (2012). Conceptualizing models using multidimensional constructs: a review and guidelines for their use. *European Journal of Information Systems, 21*(1), 22-48. doi:10.1057/ejis.2011.10

Polonsky, M., Kilbourne, W., & Vocino, A. (2014). Relationship between the dominant social paradigm, materialism and environmental behaviours in four Asian economies. *European Journal of Marketing, 48*(3/4), 522-551. doi:doi:10.1108/EJM-07-2011-0351

Polonsky, M. J. (2011). Transformative green marketing: Impediments and opportunities. *Journal of Business Research, 64*(12), 1311-1319. doi:https://doi.org/10.1016/j.jbusres.2011.01.016

Polonsky, M. J., Vocino, A., Grau, S. L., Garma, R., & Ferdous, A. S. (2012). The impact of general and carbon-related environmental knowledge on attitudes and behaviour of US consumers. *Journal of Marketing Management, 28*(3-4), 238-263. doi:10.1080/0267257X.2012.659279

Poortinga, W., & Darnton, A. (2016). Segmenting for sustainability: The development of a sustainability segmentation model from a Welsh sample. *Journal of Environmental Psychology, 45*, 221-232. doi:http://dx.doi.org/10.1016/j.jenvp.2016.01.009

Poortinga, W., Steg, L., & Vlek, C. (2004). Values, Environmental Concern, and Environmental Behavior:A Study into Household Energy Use. *Environment and Behavior, 36*(1), 70-93. doi:10.1177/0013916503251466

Potard, C., Kubiszewski, V., Camus, G., Courtois, R., & Gaymard, S. (2018). Driving under the influence of alcohol and perceived invulnerability among young adults: An extension of the theory of planned behavior. *Transportation Research Part F: Traffic Psychology and Behaviour, 55*, 38-46. doi:https://doi.org/10.1016/j.trf.2018.02.033

Prati, G., Albanesi, C., & Pietrantoni, L. (2015). The interplay among environmental attitudes, pro-environmental behavior, social identity, and pro-environmental institutional climate. A longitudinal study. *Environmental Education Research*, 1-16. doi:10.1080/13504622.2015.1118752

Punj, G., & Stewart, D. W. (1983). Cluster Analysis in Marketing Research: Review and Suggestions for Application. *Journal of Marketing Research, 20*(2), 134-148. doi:10.2307/3151680

Qian, L., & Soopramanien, D. (2011). Heterogeneous consumer preferences for alternative fuel cars in China. *Transportation Research Part D: Transport and Environment, 16*(8), 607-613. doi:http://dx.doi.org/10.1016/j.trd.2011.08.005

Qian, L., & Soopramanien, D. (2015). Incorporating heterogeneity to forecast the demand of new products in emerging markets: Green cars in China. *Technological Forecasting and Social Change, 91*, 33-46. doi:http://dx.doi.org/10.1016/j.techfore.2014.01.008

Qu, Y., Liu, Y., Zhu, Q., & Liu, Y. (2014). Motivating small-displacement car purchasing in China. *Transportation Research Part A: Policy and Practice, 67*, 47-58. doi:http://dx.doi.org/10.1016/j.tra.2014.06.002

Ragas, S. F. P., Tantay, F. M. A., Chua, L. J. C., & Sunio, C. M. C. (2017). Green lifestyle moderates GHRM's impact on job performance. *International Journal of Productivity and Performance Management, 66*(7), 857-872. doi:doi:10.1108/IJPPM-04-2016-0076

Rahbar, E., & Wahid, N. A. (2011). Investigation of green marketing tools' effect on consumers' purchase behavior. *Business Strategy Series, 12*(2), 73-83. doi:doi:10.1108/17515631111114877

Ramanathan, V., & Feng, Y. (2009). Air pollution, greenhouse gases and climate change: Global and regional perspectives. *Atmospheric Environment, 43*(1), 37-50. doi:http://dx.doi.org/10.1016/j.atmosenv.2008.09.063

Ramayah, T., Lee, J. W. C., & Mohamad, O. (2010). Green product purchase intention: Some insights from a developing country. *Resources, Conservation and*

Recycling, 54(12), 1419-1427. doi:http://dx.doi.org/10.1016/j.resconrec.2010.06.007

Ramayah, T., & Rahbar, E. (2013). Greening the environment through recycling: an empirical study. *Management of Environmental Quality: An International Journal, 24*(6), 782-801. doi:doi:10.1108/MEQ-07-2012-0054

Rana, S. (2016). Auto policy approved, door wide open for new entrant. Retrieved from http://tribune.com.pk/story/1068402/long-awaited-auto-policy-approved-door-wide-open-for-new-entrant/

Randall, D. M., & Fernandes, M. F. (1991). The Social Desirability Response Bias in Ethics Research. *Journal of Business Ethics, 10*(11), 805-817.

Redd, T. C. (2012). *The Interpersonal Determinants of Green Purchasing: An assessment of the empirical record.* (Master Dissertation, Arizona State University, USA), Retrieved from https://repository.asu.edu/attachments/97706/content//tmp/package-GrSuP7/Redd_asu_0010N_12375.pdf

Reece, M., Herbenick, D., Hollub, A. V., Hensel, D. J., & Middlestadt, S. E. (2010). A Psychometric Assessment of the Multi-Factor Attitude Toward Condoms Scale (MFACS). *International Journal of Sexual Health, 22*(2), 119-129. doi:10.1080/19317610903526097

Rezvani, Z., Jansson, J., & Bodin, J. (2015). Advances in consumer electric vehicle adoption research: A review and research agenda. *Transportation Research Part D: Transport and Environment, 34*, 122-136. doi:http://dx.doi.org/10.1016/j.trd.2014.10.010

Rhead, R., Elliot, M., & Upham, P. (2015). Assessing the structure of UK environmental concern and its association with pro-environmental behaviour. *Journal of Environmental Psychology, 43*, 175-183. doi:https://doi.org/10.1016/j.jenvp.2015.06.002

Richardson, H. A., Simmering, M. J., & Sturman, M. C. (2009). A Tale of Three Perspectives. *Organizational Research Methods, 12*(4), 762-800. doi:10.1177/1094428109332834

Richter, N. F., Sinkovics, R. R., Ringle, C. M., & Schlägel, C. (2016). A critical look at the use of SEM in international business research. *International Marketing Review, 33*(3), 376-404. doi:doi:10.1108/IMR-04-2014-0148

Rimal, R. N., & Real, K. (2003). Understanding the Influence of Perceived Norms on Behaviors. *Communication Theory, 13*(2), 184-203. doi:10.1111/j.1468-2885.2003.tb00288.x

Robert, D. S., & James, A. R. (1999). Environmental segmentation alternatives: a look at green consumer behavior in the new millennium. *Journal of Consumer Marketing, 16*(6), 558-575. doi:10.1108/07363769910297506

Roberts, J. A. (1991). *Development of a profile of the socially responsible consumer for the 1990s and its marketing management and public policy implications.* (PhD Dissertation), University of Nebraska - Lincoln, Retrieved from http://digitalcommons.unl.edu/dissertations/AAI9200149 (Paper AAI9200149)

Roberts, J. A. (1995). Profiling Levels of Socially Responsible Consumer Behavior: A Cluster Analytic Approach and Its Implications for Marketing. *Journal of Marketing Theory and Practice, 3*(4), 97-117.

Roberts, J. A. (1996). Green consumers in the 1990s: Profile and implications for advertising. *Journal of Business Research, 36*(3), 217-231. doi:http://dx.doi.org/10.1016/0148-2963(95)00150-6

Robertson, T. S., & Barich, H. (1992). A successful approach to segmenting industrial markets. *Planning Review, 20*(6), 4-48. doi:doi:10.1108/eb054386

Rogers, R. W. (1975). A Protection Motivation Theory of Fear Appeals and Attitude Change. *The Journal of Psychology, 91*(1), 93-114.

Rouven, D., & Svein, L. (2016). The Relative Importance of Social and Personal Norms in Explaining Intentions to Choose Eco-Friendly Travel Options. *International Journal of Tourism Research, 18*(2), 159-166. doi:doi:10.1002/jtr.2042

Rypakova, M., Stefanikova, Ľ., & Moravcikova, K. (2015). Suggestion of Green Customer Segmentation in Slovakia. *Procedia Economics and Finance, 26*, 359-366. doi:http://dx.doi.org/10.1016/S2212-5671(15)00865-5

Saharan, T., & Singh, N. (2015). Are values driving Indian consumers to support firms' CSR initiatives? *DECISION, 42*(4), 379-391. doi:10.1007/s40622-015-0110-4

Said, M., Hassan, F., Musa, R., & Rahman, N. A. (2014). Assessing Consumers' Perception, Knowledge and Religiosity on Malaysia's Halal Food Products. *Procedia - Social and Behavioral Sciences, 130*, 120-128. doi:http://dx.doi.org/10.1016/j.sbspro.2014.04.015

Saleem, M. A., Eagle, L., & Low, D. (2017). *Climate Change Behaviors Related to Purchase and Use of Personal Cars: Development and Validation of Eco-Socially Conscious Consumer Behavior (ESCCB) Scale* Manuscript submitted for publication.

Saleem, M. A., Eagle, L., & Low, D. (2018). Market segmentation based on eco-socially conscious consumers' behavioral intentions: Evidence from an emerging economy. *Journal of Cleaner Production, 193*, 14-27. doi:https://doi.org/10.1016/j.jclepro.2018.05.067

Samdahl, D. M., & Robertson, R. (1989). Social Determinants of Environmental Concern: Specification and Test of the Model. *Environment and Behavior, 21*(1), 57-81.

Sarstedt, M., Hair, J. F., Ringle, C. M., Thiele, K. O., & Gudergan, S. P. (2016). Estimation issues with PLS and CBSEM: Where the bias lies! *Journal of Business Research, 69*(10), 3998-4010. doi:https://doi.org/10.1016/j.jbusres.2016.06.007

Sasmita, J., & Suki, N. M. (2015). Young consumers' insights on brand equity: Effects of brand association, brand loyalty, brand awareness, and brand image. *International Journal of Retail & Distribution Management, 43*(3), 276-292. doi:doi:10.1108/IJRDM-02-2014-0024

Saunders, H. D. (1992). The Khazzoom-Brookes Postulate and Neoclassical Growth. *The Energy Journal, 13*(4), 131-148.

Saunders, M., Lewis, P., & Thornhill, A. (2015). *Research Methods for Business Students*: Pearson Education.

Schuitema, G., Anable, J., Skippon, S., & Kinnear, N. (2013). The role of instrumental, hedonic and symbolic attributes in the intention to adopt electric vehicles. *Transportation Research Part A: Policy and Practice, 48*, 39-49. doi:https://doi.org/10.1016/j.tra.2012.10.004

Schultz, P. W. (2000). Empathizing with nature: The effects of perspective taking on concern for environmental issues. *Journal of Social Issues, 56*(3), 391-406. doi:10.1111/0022-4537.00174

Schultz, P. W. (2001). The structure of environmental concern: concern for self, other people and the biosphere. *Journal of Environmental Psychology, 21*(4), 327-339. doi:https://doi.org/10.1006/jevp.2001.0227

Schultz, P. W., Gouveia, V. V., Cameron, L. D., Tankha, G., Schmuck, P., & Franěk, M. (2005). Values and their Relationship to Environmental Concern and Conservation Behavior. *Journal of Cross-Cultural Psychology, 36*(4), 457-475. doi:10.1177/0022022105275962

Schultz, P. W., & Zelezny, L. C. (1998). Values and Proenvironmental Behavior: A Five-Country Survey. *Journal of Cross-Cultural Psychology, 29*(4), 540-558. doi:10.1177/0022022198294003

Schwartz, S. H. (1977a). Normative Influences on Altruism. In B. Leonard (Ed.), *Advances in Experimental Social Psychology* (Vol. Volume 10, pp. 221-279): Academic Press.

Schwartz, S. H. (1977b). Normative Influences on Altruism. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 10, pp. 221-279): Academic Press.

Schwartz, S. H. (1992). Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. *25*, 1-65. doi:10.1016/s0065-2601(08)60281-6

Schwartz, S. H. (2006). A Theory of Cultural Value Orientations: Explicaiton and Applications. *Comparative Sociology, 2*(2-3), 137-182.

Schwepker, C. H., & Cornwell, T. B. (1991). An Examination of Ecologically Concerned Consumers and Their Intention to Purchase Ecologically Packaged Products. *Journal of Public Policy & Marketing, 10*(2), 77-101.

Scott, L. (2006). *Chronic Poverty and the Environment: a Vulnerability Perspective*. Retrieved from https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/3429.pdf.

Sears, D. O. (1986). College sophomores in the laboratory: Influences of a narrow data base on social psychology's view of human nature. *Journal of Personality and Social Psychology, 51*(3), 515-530.

Sellen, A. J., & Harper, R. (2002). *The Myth of the Paperless Office*. Cambridge, MA: MIT Press.

Shah, A. (2015, 02/02/2015). Environmental Issues. Retrieved from http://www.globalissues.org/issue/168/environmental-issues

Shao, W., Ross, M., & Grace, D. (2015). Developing a motivation-based segmentation typology of Facebook users. *Marketing Intelligence & Planning, 33*(7), 1071-1086. doi:doi:10.1108/MIP-01-2014-0014

Shen, J., & Saijo, T. (2008). Reexamining the relations between socio-demographic characteristics and individual environmental concern: Evidence from Shanghai data. *Journal of Environmental Psychology, 28*(1), 42-50. doi:https://doi.org/10.1016/j.jenvp.2007.10.003

Siddiqui, I. (2015). Govt mulls reducing duty on hybrid cars. Retrieved from http://www.thenews.com.pk/print/42972-govt-mulls-reducing-duty-on-hybrid-cars

Singh, D. P. (2011). Indian Ecological Consumer Market Profile. *Global Business Review, 12*(3), 447-457. doi:10.1177/097215091101200307

Snelgar, R. S. (2006). Egoistic, altruistic, and biospheric environmental concerns: Measurement and structure. *Journal of Environmental Psychology, 26*(2), 87-99. doi:http://dx.doi.org/10.1016/j.jenvp.2006.06.003

Sniehotta, F. F., Presseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review, 8*(1), 1-7. doi:10.1080/17437199.2013.869710

Sobh, R., & Perry, C. (2006). Research design and data analysis in realism research. *European Journal of Marketing, 40*(11/12), 1194-1209. doi:doi:10.1108/03090560610702777

Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice, 17*(2), 268-274. doi:10.1111/j.1365-2753.2010.01434.x

Steenkamp, J.-B. E. M., & Ter Hofstede, F. (2002). International market segmentation: issues and perspectives. *International Journal of Research in Marketing, 19*(3), 185-213. doi:http://dx.doi.org/10.1016/S0167-8116(02)00076-9

Steg, L., Bolderdijk, J. W., Keizer, K., & 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. doi:http://dx.doi.org/10.1016/j.jenvp.2014.01.002

Steg, L., De Groot, J. I. M., Dreijerink, L., Abrahamse, W., & Siero, F. (2011). General Antecedents of Personal Norms, Policy Acceptability, and Intentions: The Role of Values, Worldviews, and Environmental Concern. *Society & Natural Resources, 24*(4), 349-367. doi:10.1080/08941920903214116

Steg, L., Dreijerink, L., & Abrahamse, W. (2005). Factors influencing the acceptability of energy policies: A test of VBN theory. *Journal of Environmental Psychology, 25*(4), 415-425. doi:10.1016/j.jenvp.2005.08.003

Steren, A., Rubin, O. D., & Rosenzweig, S. (2016). Assessing the rebound effect using a natural experiment setting: Evidence from the private transportation sector in Israel. *Energy Policy, 93*, 41-49. doi:http://dx.doi.org/10.1016/j.enpol.2016.02.038

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999a). A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Human Ecology Review, 6*(2), 81-97.

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999b). A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Research in Human Ecology, 6*(2), 81-97.

Stern, P. C., Dietz, T., & Guagnano, G. A. (1998). A Brief Inventory of Values. *Educational and Psychological Measurement, 58*(6), 984-1001. doi:10.1177/0013164498058006008

Stern, P. C., Dietz, T., & Kalof, L. (1993). Value Orientations, Gender, and Environmental Concern. *Environment and Behavior, 25*(5), 322-348. doi:10.1177/0013916593255002

Stern, P. C., Kalof, L., Dietz, T., & Guagnano, G. A. (1995). Values, Beliefs, and Proenvironmental Action: Attitude Formation Toward Emergent Attitude Objects. *Journal of Applied Social Psychology, 25*(18), 1611-1636. doi:10.1111/j.1559-1816.1995.tb02636.x

Stone, G., Barnes, J. H., & Montgomery, C. (1995). Ecoscale: A scale for the measurement of environmentally responsible consumers. *Psychology and Marketing, 12*(7), 595-612. doi:10.1002/mar.4220120704

Story, J., & Hess, J. (2006). Segmenting customer-brand relations: beyond the personal relationship metaphor. *Journal of Consumer Marketing, 23*(7), 406-413. doi:doi:10.1108/07363760610712948

Straughan, R. D., & Roberts, J. A. (1999). Environmental segmentation alternatives: a look at green consumer behavior in the new millennium. *Journal of Consumer Marketing, 16*(6), 558-575. doi:doi:10.1108/07363769910297506

Streiner, D. L. (2003). Being Inconsistent About Consistency: When Coefficient Alpha Does and Doesn't Matter. *Journal of Personality Assessment, 80*(3), 217-222. doi:10.1207/S15327752JPA8003_01

Sudbury-Riley, L., & Kohlbacher, F. (2015). Ethically minded consumer behavior: Scale review, development, and validation. *Journal of Business Research.* doi:http://dx.doi.org/10.1016/j.jbusres.2015.11.005

Sudbury-Riley, L., & Kohlbacher, F. (2016). Ethically minded consumer behavior: Scale review, development, and validation. *Journal of Business Research, 69*(8), 2697-2710. doi:http://dx.doi.org/10.1016/j.jbusres.2015.11.005

Suku, B., Michael, P., John, C., & Shadwell, F. (2006). Environmentally sustainable food production and marketing: Opportunity or hype? *British Food Journal, 108*(8), 677-690. doi:10.1108/00070700610682355

Sushandoyo, D., & Magnusson, T. (2014). Strategic niche management from a business perspective: taking cleaner vehicle technologies from prototype to series production. *Journal of Cleaner Production, 74*, 17-26. doi:http://dx.doi.org/10.1016/j.jclepro.2014.02.059

Sütterlin, B., Brunner, T. A., & Siegrist, M. (2011). Who puts the most energy into energy conservation? A segmentation of energy consumers based on energy-related behavioral characteristics. *Energy Policy, 39*(12), 8137-8152. doi:http://dx.doi.org/10.1016/j.enpol.2011.10.008

Swinford, S. (2017). Diesel and petrol car ban: Plan for 2040 unravels as 10 new power stations needed to cope with electric revolution. *The Telegraph.* Retrieved from http://www.telegraph.co.uk/news/2017/07/25/new-diesel-petrol-cars-banned-uk-roads-2040-government-unveils/

Szmigin, I., Carrigan, M., & McEachern, M. G. (2009). The conscious consumer: taking a flexible approach to ethical behaviour. *International Journal of Consumer Studies, 33*(2), 224-231. doi:10.1111/j.1470-6431.2009.00750.x

Tabi, A., Hille, S. L., & Wüstenhagen, R. (2014). What makes people seal the green power deal? — Customer segmentation based on choice experiment in Germany. *Ecological Economics, 107*, 206-215. doi:http://dx.doi.org/10.1016/j.ecolecon.2014.09.004

Tadajewski, M., & Wagner-Tsukamoto, S. (2006). Anthropology and consumer research: qualitative insights into green consumer behavior. *Qualitative Market Research: An International Journal, 9*(1), 8-25. doi:doi:10.1108/13522750610640521

Tan, R. (Producer). (2015). Industrial Revolution & Environment Impact. [Video File] Retrieved from https://www.youtube.com/watch?v=WING_0jKsDU

Tanford, S., & Malek, K. (2015). Segmentation of Reward Program Members to Increase Customer Loyalty: The Role of Attitudes Towards Green Hotel Practices. *Journal of Hospitality Marketing & Management, 24*(3), 314-343. doi:10.1080/19368623.2014.907759

Tanwar, K., & Prasad, A. (2017). Employer brand scale development and validation: a second-order factor approach. *Personnel Review, 46*(2), 389-409. doi:doi:10.1108/PR-03-2015-0065

Taufique, K. M. R., & Vaithianathan, S. (2018). A fresh look at understanding Green consumer behavior among young urban Indian consumers through the lens of

Theory of Planned Behavior. *Journal of Cleaner Production, 183*, 46-55. doi:https://doi.org/10.1016/j.jclepro.2018.02.097

Taufique, K. M. R., Vocino, A., & Polonsky, M. J. (2017). The influence of eco-label knowledge and trust on pro-environmental consumer behaviour in an emerging market. *Journal of Strategic Marketing, 25*(7), 511-529. doi:10.1080/0965254X.2016.1240219

The World Bank. (2014). Data Pakistan. Retrieved from data.worldbank.org/country/Pakistan

Theotokis, A., & Manganari, E. (2015). The Impact of Choice Architecture on Sustainable Consumer Behavior: The Role of Guilt. *Journal of Business Ethics, 131*(2), 423-437. doi:10.1007/s10551-014-2287-4

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, A. M., & Kaminski, P. F. (1993). Psychographic and lifestyle antecedents of service quality expectations: a segmentation approach. *Journal of Services Marketing, 7*(4), 53-61. doi:doi:10.1108/08876049310047742

Thompson, D. W., Anderson, R. C., Hansen, E. N., & Kahle, L. R. (2010). Green segmentation and environmental certification: insights from forest products. *Business Strategy and the Environment, 19*(5), 319-334. doi:10.1002/bse.647

Thompson, E. R., & Phua, F. T. T. (2005). Reliability among Senior Managers of the Marlowe-Crowne Short-Form Social Desirability Scale. *Journal of Business and Psychology, 19*(4), 541-554.

Tilikidou, I. (2001). *Ecologically Conscious Consumer Behavior: A research project conducted in Thessaloniki, Greece.* (PhD Unpublished Dissertation), University of Sunderland, UK.

Tilikidou, I. (2002). The measurement instrument of ecologically-conscious consumer behaviour *New Medit, 1*(4), 46-53.

Tilikidou, I. (2013). Evolutions in the ecologically conscious consumer behaviour in Greece. *EuroMed Journal of Business, 8*(1), 17-35. doi:doi:10.1108/EMJB-05-2013-0022

Tomarken, A. J. (1995). A psychometric perspective on psychophysiological measures. *Psychological Assessment, 7*(3), 387-395. doi:10.1037/1040-3590.7.3.387

Triandis, H. C. (1979). Values, attitudes, and interpersonal behavior. *Nebraska Symposium on Motivation, 27*, 195-259.

Trivedi, R. H., Patel, J. D., & Savalia, J. R. (2015). Pro-environmental behaviour, locus of control and willingness to pay for environmental friendly products. *Marketing Intelligence & Planning, 33*(1), 67-89. doi:doi:10.1108/MIP-03-2012-0028

UN Documents. (1987). Report of the World Commission on Environment and Development: Our Common Future. Retrieved from http://www.un-documents.net/our-common-future.pdf

Ünal, A. B., Steg, L., & Gorsira, M. (2017). Values Versus Environmental Knowledge as Triggers of a Process of Activation of Personal Norms for Eco-Driving. *Environment and Behavior*, 0013916517728991. doi:10.1177/0013916517728991

USEPA. (2015). Overview of Greenhouse Gases. Retrieved from https://www3.epa.gov/climatechange/ghgemissions/gases/co2.html

Valaei, N., & Jiroudi, S. (2016). Job satisfaction and job performance in the media industry. *Asia Pacific Journal of Marketing and Logistics, 28*(5), 984-1014. doi:10.1108/apjml-10-2015-0160

van der Werff, E., & Steg, L. (2015). One model to predict them all: Predicting energy behaviours with the norm activation model. *Energy Research & Social Science, 6*, 8-14. doi:http://dx.doi.org/10.1016/j.erss.2014.11.002

van der Werff, E., Steg, L., & Keizer, K. (2013). The value of environmental self-identity: The relationship between biospheric values, environmental self-identity and environmental preferences, intentions and behaviour. *Journal of Environmental Psychology, 34*, 55-63. doi:http://dx.doi.org/10.1016/j.jenvp.2012.12.006

Varshneya, G., & Das, G. (2017). Experiential value: Multi-item scale development and validation. *Journal of Retailing and Consumer Services, 34*, 48-57. doi:https://doi.org/10.1016/j.jretconser.2016.09.010

Vehicles in use | OICA. (2016). Retrieved from http://www.oica.net/category/vehicles-in-use/

Verbeke, W., Rutsaert, P., Bonne, K., & Vermeir, I. (2013). Credence quality coordination and consumers' willingness-to-pay for certified halal labelled meat. *Meat Science, 95*(4), 790-797. doi:http://dx.doi.org/10.1016/j.meatsci.2013.04.042

Vitell, S. J. (2009). The Role of Religiosity in Business and Consumer Ethics: A Review of the Literature. *Journal of Business Ethics, 90*(2), 155-167. doi:10.1007/s10551-010-0382-8

Vocino, A., Polonsky, M., & Dolnicar, S. (2015). Segmenting Australian online panellists based on volunteering motivations. *Asia Pacific Journal of Marketing and Logistics, 27*(1), 4-22. doi:doi:10.1108/APJML-03-2014-0036

Walton, T., & Austin, D. M. (2011). PRO-ENVIRONMENTAL BEHAVIOR IN AN URBAN SOCIAL STRUCTURAL CONTEXT. *Sociological Spectrum, 31*(3), 260-287. doi:10.1080/02732173.2011.557037

Wan, M., & Toppinen, A. (2016). Effects of perceived product quality and Lifestyles of Health and Sustainability (LOHAS) on consumer price preferences for children's furniture in China. *Journal of Forest Economics, 22*, 52-67. doi:http://dx.doi.org/10.1016/j.jfe.2015.12.004

Wan Rashid, W. E., Muda, M., Wibowo, M. W., & Ahmad, F. S. (2016). The Fifth International Conference on Marketing and Retailing (5th INCOMaR) 2015Non-Muslim Consumers' Halal Food Product Acceptance Model. *Procedia Economics and Finance, 37*, 276-283. doi:http://dx.doi.org/10.1016/S2212-5671(16)30125-3

Wang, S.-T. (2014). Consumer characteristics and social influence factors on green purchasing intentions. *Marketing Intelligence & Planning, 32*(7), 738-753. doi:doi:10.1108/MIP-12-2012-0146

Wedel, M., & Kamakura, W. (2002). Introduction to the Special Issue on Market Segmentation. *International Journal of Research in Marketing, 19*(3), 181-183. doi:http://dx.doi.org/10.1016/S0167-8116(02)00075-7

White, K. M., Smith, J. R., Terry, D. J., Greenslade, J. H., & 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. doi:10.1348/014466608X295207

Whitson, D., Ozkaya, H. E., & Roxas, J. (2014). Changes in consumer segments and preferences to green labelling. *International Journal of Consumer Studies, 38*(5), 458-466. doi:10.1111/ijcs.12103

Wind, Y. (1978). Issues and Advances in Segmentation Research. *Journal of Marketing Research, 15*(3), 317-337. doi:10.2307/3150580

Wixom, B. H., & Watson, H. J. (2001). An Empirical Investigation of the Factors Affecting Data Warehousing Success. *MIS Quarterly, 25*(1), 17-41. doi:10.2307/3250957

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias, and Solution Propriety. *Educational and Psychological Measurement, 76*(6), 913-934. doi:10.1177/0013164413495237

World Population Review. (2017). Pakistan Population 2017. Retrieved from http://worldpopulationreview.com/countries/pakistan-population/

Wright, B. D., Huber, M., O'Neill, T., & Linacre, J. M. (2000). The Problem of Measurement Invariance. *Rasch Measurement Transactions, 14*(2), 743-754.

Wu, Y., & Zhang, L. (2017). Can the development of electric vehicles reduce the emission of air pollutants and greenhouse gases in developing countries? *Transportation Research Part D: Transport and Environment, 51*, 129-145. doi:https://doi.org/10.1016/j.trd.2016.12.007

Yang, Y., & Huan, S. (2018). Religious Beliefs and Environmental Behaviors in China. *Religions, 9*(3), 1-12.

Yilmazsoy, B., Schmidbauer, H., & Rösch, A. (2015). Green segmentation: a cross-national study. *Marketing Intelligence & Planning, 33*(7), 981-1003. doi:doi:10.1108/MIP-12-2013-0201

Yong, A. G., & Pearce, S. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis *Tutorials in Quantitative Methods for Psychology, 9*(2), 79-94. doi:10.20982/tqmp.09.2.p079

York, R. (2006). Ecological Paradoxes: William Stanley Jevons and the Paperless Office. *Research in Human Ecology, 13*(2), 143-147.

Yusof, J. M., Singh, G. K. B., & Razak, R. A. (2013). Purchase Intention of Environment-Friendly Automobile. *Procedia - Social and Behavioral Sciences, 85*, 400-410. doi:http://dx.doi.org/10.1016/j.sbspro.2013.08.369

Zaltman, G. (1997). Rethinking Market Research: Putting People Back In. *Journal of Marketing Research, 34*(4), 424-437. doi:10.2307/3151962

Zaman, M. Q. u. (2008). Valuing Environmental Costs due to Automobile Pollution in Pakistan. *The Lahore Journal of Economics, 4*(1), 23-40.

Zhang, L., & Wu, Y. (2012). Market segmentation and willingness to pay for green electricity among urban residents in China: The case of Jiangsu Province. *Energy Policy, 51*, 514-523. doi:http://dx.doi.org/10.1016/j.enpol.2012.08.053

Zhang, Y., Wang, Z., & Zhou, G. (2013). Antecedents of employee electricity saving behavior in organizations: An empirical study based on norm activation model. *Energy Policy, 62*, 1120-1127. doi:http://dx.doi.org/10.1016/j.enpol.2013.07.036

Zhang, Y., Zhang, H.-L., Zhang, J., & Cheng, S. (2014). Predicting residents' pro-environmental behaviors at tourist sites: The role of awareness of disaster's consequences, values, and place attachment. *Journal of Environmental Psychology, 40*, 131-146. doi:http://dx.doi.org/10.1016/j.jenvp.2014.06.001

Zhao, H.-h., Gao, Q., Wu, Y.-p., Wang, Y., & Zhu, X.-d. (2014). What affects green consumer behavior in China? A case study from Qingdao. *Journal of Cleaner Production, 63*, 143-151. doi:http://dx.doi.org/10.1016/j.jclepro.2013.05.021

Zhu, Z., Wang, J., Wang, X., & Wan, X. (2016). Exploring factors of user's peer-influence behavior in social media on purchase intention: Evidence from QQ.

Computers in Human Behavior, 63, 980-987. doi:http://dx.doi.org/10.1016/j.chb.2016.05.037

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). Sampling Designs and Sampling Procedures. In *Business Research Methods* (9th ed.). Mason, OH: Cengage Learning.