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Sustainable Meat Consumption and Consumer Intentions: Evidence from Pakistan- An Emerging Country

Thesis submitted by

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Statement of Original Authorship

The work presented in this thesis has not been previously submitted to meet the requirements for the Degree of Doctor of Philosophy at James Cook University or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person. This thesis accurately cited and acknowledged the work of other authors. Every reasonable effort has been made to gain permission and acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.

Sadaf Zahra

Author

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Nature of Assistance	Contribution	Names, Titles and Affiliations of co-contributors
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Abstract

This thesis focuses on developing a scale of sustainable meat consumption intentions related to meat detachment, meat curtailment, and organic meat purchase. It presents empirical evidence that cognitions and values of meat consumers along with norms are factors that must be considered when promoting sustainable meat consumption, especially in an emerging country such as Pakistan. The rationale for, and motivation behind, this thesis is environmental degradation, which is accelerating rapidly, and effects are easily seen, such as air pollution, methane gas and CO_2 emissions in emerging economies. Therefore, policymakers need to be competent in developing strategies to mitigate climate change. Climate change mitigation requires changing consumer consumption habits and motivating people towards a sustainable diet. In response to consumers' demands, marketers are investing heavily in environmentally-friendly meat products such as organic meat and livestock marketers and social marketing practitioners are persuading consumers to think about sustainable meat consumption in order to protect the environment for future generations. The present thesis conducted two significant studies to answer three underlying research questions. The first study focuses on two research questions. The first research question, RQ1, develops and validates a scale to measure consumers' sustainable meat consumption intentions (SMCI) related to meat detachment, meat curtailment and organic meat purchase intentions in Pakistan. The second research question, RQ2, attempts to profile various consumers segments based on sustainable meat consumption intentions (SMCI) developed in RQ1. The second study emphasises the antecedents (identified in the literature) of SMCI, and three key factors are related to meat detachment, meat curtailment and organic meat purchase intention. An advanced theory of planned behaviour (TPB) is incorporated based on pro-environmental values from the values-belief norms theory and religiosity. This holistic model provides rich explanations for the newly developed SMCI scale.

Based on the scientific methodologies recommended in the literature for new scale development studies, the RQ1 developed a scale in four phases, following a mixed-methods approach. Phase 1 generated a pool of items through an extensive literature review and seven focus groups. Phase 2 established the face and content validity of the items. Phase 3 resulted in scale purification in study 1 (n=222), followed by study 2, using exploratory factor analysis (n=412) to derive an initial factor structure, along with reliability assessment and confirmatory factor analysis (n=310) to test the theoretical structure. Phase 4 validated the results (n=355).

The results reported in this thesis suggest that SMCI is a latent construct manifested in three underlying dimensions having 10-items: meat detachment intention, meat curtailment intention and organic meat purchase intention.

A market segmentation method utilised cluster and discriminant analysis to deal with RQ2 consumer profiling. The results revealed three consumer segments in the Pakistani food market based on SMCI related to purchasing eco-friendly organic meat or reducing a meat-based diet. The first segment, the meat lovers, are not concerned about environmental issues; on an emotional level, they appear to love eating meat and do not think about sustainable meat consumption. The second segment, the organic meat consumers, have a high value of perceived consumer effectiveness and want to play a significant role in protecting the environment; they belong to higher income groups and prefer organic meat consumption for the sake of environmental protection. Finally, the third and the largest segment (46.5%), the sustainable activists, are highly inclined towards sustainable meat consumption intentions related to purchasing organic meat or reducing meat from their diet. They strongly believe in religion and are highly conscious of environmental issues; therefore, they actively participate in sustainable meat consumption to reduce environmental degradation. The findings of Study 1 have implications for the livestock industry, policymakers and marketing practitioners. However, some conceptual and methodological limitations are underlined.

The results derived from Study 2, utilising the partial least square structural equation modelling (PLS-SEM) technique through SmartPLS software, indicate that the advanced TPB model found substantial evidence to predict SMCI in the context of an emerging economy, Pakistan. The results highlight that environmental concerns are strongly related to behavioural beliefs. The statistical analysis demonstrates that religiosity enhances the relationship between pro-environmental values and personal norms. Moreover, religiosity fails to enrich the relationship between personal norms towards SMCI. Results report that attitude towards the behaviour strongly affects organic meat purchase intentions. Subjective norms are statistically significant and predict meat detachment intention. Personal norms are also positively associated with SMCI. The mediated relationship between altruistic and egoistic values towards SMCI through personal norms is significant. However, biospheric values have an insignificant relationship with SMCI through personal norms.

Thus, the current study contributes to both theory and practice in relation to sustainable consumer intentions, i.e., the curtailment of a meat-based diet and the consumption of organic

meat. These contributions extend the academic literature on sustainable food marketing related to sustainable meat consumption intentions and provide marketing practitioners and policymakers with guidelines on influencing consumer behaviour. Furthermore, the study's findings are applied to the livestock industry and can be generalised to other food products. The first novel contribution of the research is to provide a holistic scale to measure the various facets of consumers' SMCI. The second contribution of the study is the profiling of meaningful segments of meat consumers. Thirdly, the present research adds to the literature by extending and modifying the theory of planned behaviour, such as adding personal norms as a mediator and religiosity as a moderator to increase the explanatory power of the existing theory. Given that the theory of planned behaviour has been criticised for underestimating the role of emotional factors associated with sustainable consumption, this thesis sought to include variables that capture the emotions surrounding meat production and consumption.

The study provides a practical lens for policymakers and marketing practitioners to formulate marketing strategies that persuade consumers to decrease meat consumption. Social marketers can promote sustainable meat consumption intentions in the sustainable activist segment through ethical messaging, emphasising the need for environmental protection for future generations. The present study also provides insights for the livestock industry, social marketers, and policymakers about the factors that effectively shape consumers' intentions related to meat detachment, meat curtailment, and organic meat purchase.

Keywords: Sustainable meat consumption intentions (SMCI), Egoistic values, Altruistic values, Biospheric values, Theory of planned behaviour (TPB), Religiosity, Meat curtailment, Organic meat purchase intention, Personal norms, Scale development, Consumer profiling, SmartPLS.

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List of Acronyms

AV	Altruistic Values
AVEs	Average Variance Explained
BV	Biospheric Values
CR	Composite Reliability
CI	Confidence Interval
GHG	Greenhouse Gases
HTMT	Hetrotrait-Monotrait
TPB	Theory of Planned Behaviour
SMCI	Sustainable Meat Consumption Intention
EFA	Exploratory Factor Analysis
PCA	Principal Component Analysis
PCE	Perceived Consumer Effectiveness
PAF	Principal Axis Factoring
SEM	Structural Equation Modelling
SPSS	Statistical Package for the Social Sciences
TRA	Theory of Reasoned Action
VIF	Variance Inflation Factor
KMO	Kaiser-Meyer-Olkin
PKR	Pak-Rupees
ISO	International Organization for Standardization
CFDA	China Food and Drug Administration

SFDA	Saudia Food and Drug Administration
EC	Environmental Concern
EK	Environmental Knowledge
VBN	Value Belief Norm
VAB	Value Attitude Behaviour

Chapter 1 Introduction and Research Background

"When we think about threats to the environment, we tend to picture cars and smokestacks, not dinner. But the truth is, our need for food poses one of the biggest dangers to the planet."
(Jonathan, 2014, p. 35)

1.1 Background

Food sustainability and security are getting global attention (Tucker, 2018). One of the United Nations Sustainable Development Goals (SDGs) is to produce healthy and nutritious food in a way that preserves the environment (FAO, 2019). Today, the value of a nutritious and sustainable diet is acknowledged in many regions of the world. Organic food is considered one of the most effective forms of healthy food (Ditlevsen et al., 2019). Therefore, the literature highlights that consumers' food choices are shifting beyond a sensory pleasure to a kind of nutritional revolution (Szakály et al., 2018), including environmental concerns (Hoek et al., 2017a). Consumers are encouraged to alter their food choices due to climatic change, population growth, increasing individual income, health concerns, high levels of food waste and inefficient resource use (Buttriss, 2011; Devlin, 2018; Gerbens-Leenes & Nonhebel, 2002; Godfray et al., 2010; Odegard & van der Voet, 2014; Tucker, 2018; York & Gossard, 2004).

Change in human consumption patterns is also important because food production and consumption significantly exploit the environment through resource use and waste production. Over the past decade, consumers' acceptability and quality of food products have been widely evaluated (Torrico et al., 2018). Food selection is a complex process. Factors that affect food choices can be divided into two broad classes: internal food effects, which cover sensory aspects and external non-food effects, such as psychological, social and cultural factors (Eertmans et al., 2005). Several studies have been conducted to explain and understand these factors from various perspectives (Szakály et al., 2018). However, the impact of environmental concern on food acceptance is still under-researched (Hoek et al., 2017a). People's food choices strongly impact environmental footprints (James et al., 2018; Mohr & Schlich, 2016). For instance, a vegetarian meal may reduce greenhouse gas emissions twice as much as a non-vegetarian cuisine because meat and dairy foods are resource-intensive (Jain, 2010; Muriel Verain et al., 2015). In this context, the literature on meat consumption can be separated into two main

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streams. The first stream explains the effect of meat consumption on human health (de Boer et al., 2014, 2017). The second stream focuses on the impact of the livestock industry on the planet and that it produces GHG emissions higher than that of the global transport industry (Francis Vergunst, 2017; Malek et al., 2018). Thus, dietary changes (e.g., sustainable meat consumption) can produce considerable sustainability benefits (de Boer et al., 2017; Lazzarini et al., 2018).

Food consumption provides nutrition and energy for the human body (Bogueva et al., 2017). Meat products are the key provider of protein that is very important for the human body and are often consumed above nutritional requirements (Australian Bureau of Statistics., 2018). Meat is linked with higher status, power and traditional food in Western culture (Mohr & Schlich, 2016; Rothgerber, 2013; M. Verain et al., 2015; Weibel et al., 2019). In the current era, it has been noticed that the consumption rate of animal-based food products (i.e. meat and milk) in developing countries is accelerating higher than in developed countries (Burnier et al., 2020; Delgado et al., 2001). The accelerating trend of a meat-based diet is grounded on increasing income, farm-based animal production, and the modern grocery market in middle-income countries (Grønhøj & Thøgersen, 2017; Mohr & Schlich, 2016; Pohjolainen et al., 2016; Säll & Gren, 2015; Tosun & Yanar Gürce, 2018; Vranken et al., 2014; Weibel et al., 2019).

The production of food from animals has accelerated during the last 100 years to meet consumers' growing demand. This trend is a global problem because meat production is a significant factor responsible for global warming and environmental degradation (Bschaden et al., 2020; Zur & Klöckner, 2014). The environmental impacts of excessive meat consumption can be encountered in various ways: firstly, land use: the livestock sector uses almost 70% of all agricultural land and contributes 30% of the planet's land surface (FAO, 2006). It affects used land due to two significant reasons: grazing fields and producing crops for farm-based animals. As a result, soil physical properties are adversely affected (Bell et al., 2011). Moreover, nearly 40% of harvested crops around the world are used to feed animals. Therefore, if people alter meat consumption and reduce industrial level farming, they would provide the starving people and solve world hunger problems (Francis Vergunst, 2017). Secondly, livestock and their by-products account for climate change and atmospheric emissions in the form of carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4), and ammonia (NH3) (Sanchez-Sabate & Sabaté, 2019; Vanhonacker et al., 2013). Thirdly, meat and dairy products consume an excessive amount of water that causes water depletion and pollution. Also, the livestock sector majorly contributes to water problems like dead zones in coastal areas, degradation of coral

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reefs through animal wastes, and use of pesticides, hormones, and fertilizers (FAO, 2006). Lastly, biodiversity loss through habitat changes, resources overexploitation, climate change, the spread of invasive species and infections is increasing due to the livestock industry (Zur & Klöckner, 2014).

Making diets more sustainable by reducing animal protein is crucial (Sanchez-Sabate & Sabaté, 2019), or eating more quality meat like organic and free-range. Sustainable meat consumption is a matter of food security and is linked to human health and environmental sustainability. A growing number of consumers reduce or avoid meat consumption due to the ecological footprint and health problems caused by eating excessive amounts of meat (Apostolidis & McLeay, 2019a; de Boer & Aiking, 2019; de Boer et al., 2017; Weibel et al., 2019). Globally, food companies and policymakers continuously explore ways to increase sustainable food consumption intention and inform consumers about food products' social, environmental, and economic value (Raggiotto et al., 2018; Wang & Somogyi, 2019). Therefore, further research is essential to identify those elements that lead consumers to reduce their meat consumption or switch to more sustainable organic meat consumption.

Changing consumer food behaviour is a great challenge. Many factors such as taste preferences, culinary traditions, habits, religion, and social norms improve food choices (Mohr & Schlich, 2016; Tosun & Yanar Gürce, 2018). Consumers primarily reduce meat consumption for the welfare of farms' animals and to maintain their health (Bogueva et al., 2017), reduce their environmental footprint (Friel et al., 2014), and take advantage of the availability of better options (Hoek et al., 2017b) like organic or free-range meat. Health concerns more frequently motivate consumers to reduce meat consumption than animal welfare concerns, while price concerns lead to meat avoidance (Malek et al., 2018). The food literature on protein transition and the environmental and nutritional benefits generally persuade consumers to select plant-based options. A study highlighted that people do not consume meat as protein; they think more about calories and consider food consumption in the context of their culture, habits, and the environment (de Boer & Aiking, 2017; Neupane et al., 2019; Nguyen et al., 2017). Cultural values shape consumers' buying intentions. In a collectivist culture, people are influenced by group goals which may influence people to prioritise the welfare of society over individual interest; on the other hand, in individualistic societies, people are used to placing personal goals ahead of in-group goals (Halder et al., 2020). Therefore, compelling and convincing messages from educational institutions, corporations, businesses, and government organisations to the

general public encourage them to consume sustainable or eco-friendly products to benefit their families, peers, and society in the long run (Nguyen et al., 2017).

Numerous dietary studies are based on European consumer markets, although the attitudes, perceptions, and consumption patterns of Asian consumers differ from those of the Western world. However, market research on Asian consumers is limited (Veeck & Veeck, 2000). In addition, culture, including the religion of a country, significantly influences consumers' mindsets (Anam et al., 2018; de Boer et al., 2017; Minton et al., 2018; Mullee et al., 2017).

1.2 Consumer Footprint: Responsible Consumption and Production

Food consumption accounts for almost one-third of households' total environmental impact (Funk et al., 2021) and is thus of prime importance. Therefore, ensuring sustainable food production and consumption by reducing food waste, promoting healthy and balanced nutrition, raising society's awareness of sustainable food consumption and developing policies related to sustainable food consumption. More specifically, excessive meat consumption increases the environmental externalities. The reduction of meat consumption is warranted to solve the systemic problems of the global food system underlined by the United Nations (UN) Sustainable Development Goals (SDGs). The United Nations (UN) is bringing together actors from all regions and sectors to encourage more sustainable modes of production and consumption, working on the "One Planet" project (United Nations, 2019). Significantly SDG #12 promotes sustainable consumption and production, and SDG #2 aims to end global hunger (Saari et al., 2021; Tekinbaş Özkaya et al., 2021).

1.3 The Rationale of the Study

Meat is increasingly being criticised as an unsustainable and unhealthy food choice. Health risks and environmental concerns can influence the whole decision-making process of consumers (Cliceri et al., 2018; de Boer & Aiking, 2019; de Boer et al., 2017; Wang et al., 2019; Weibel et al., 2019). Therefore, a substantial body of research seeks to understand consumers' sustainable food consumption intentions better. However, despite this, limited research focuses on meat choices and why people reduce meat consumption. Thus, no previous studies have identified the need for social marketing to deal with these burgeoning problems

(Bogueva et al., 2017; Krishnakumare & Niranjan, 2017). There is a need to identify the factors influencing sustainable meat consumption intentions (SMCI). The food market is characterised by a growing number of buyers interested in purchasing organic meat and environmentally friendly certified food items due to health or environmental protection causes.

However, an in-depth understanding of the meat market has faced many challenges, and policy interventions to foster such intentions depend on two key factors. First, there is a need to examine the associated demographic and psychographic variables, along with environmental knowledge and behavioural segments of consumers' meat consumption. Second, although multiple theories and models are proposed for enlightening consumers' sustainable food choices, the predictive power and generalisability of such proposals are still being debated (Anam et al., 2018; Apostolidis & McLeay, 2019a; Bogueva et al., 2017; Weibel et al., 2019). In this perspective, the Theory of Planned Behaviour (TPB) (Ajzen, 1991) has been found as a helpful lens covering different aspects in forecasting and elucidating individual intention to perform a particular behaviour. As individuals are considered rational actors able to plan actions required to attain a specific goal, behavioural intentions may predict human behaviour (Ajzen, 1991). Thus, according to the TPB, human behaviour may be explained by identifying predictors of behaviours, identified as a rational progression from intentions to behaviour, whereas attitudes, subjective norms, and perceived control influence the intentions to perform the particular behaviour. This approach is widely applied in consumer behaviour studies, where access to the actual data is challenging due to privacy issues (Norberg et al., 2007), negotiation over data ownership (Testa et al., 2019) or information simply not being available at a particular point in time.

Moreover, consumers overestimate their spending by self-estimating research measuring organic food purchases, ethical consumption, and sustainable consumer behaviour (Carrington et al., 2010; Vermeir & Verbeke, 2006). Therefore, the current study overcame this issue by estimating the sustainable consumption intention instead of actual behaviour. Also, the TPB permits the inclusion of other variables of interest to increase its explanatory value. Therefore, the new advanced theory should add value to research on consumer decision-making regarding sustainable meat consumption intentions.

1.4 The Context of the Study

This study is conducted in the Pakistani livestock industry context to understand better consumers' intentions related to reducing meat consumption and consuming organic meat for various reasons, such as environmental sustainability, human health, food safety, and animal welfare. The following section briefly explains the meat industry of Pakistan.

1.4.1 Pakistan's Livestock Industry

Pakistan is the fifth most populous country globally, with an estimated population of 233 million, as of July 2020, growing at a rate of 2% per annum (CIA, 2020). The contribution of the urban population is 37.2% of the total population, so the annual increment rate is almost 2.53% (CIA, 2020). The ongoing technological and industrial revolution significantly impacts the quality of life, particularly on lifestyle, food habits, environment, and society.

Specifically, there is a substantial change in people's food choices due to population growth, urbanisation, and rising per capita income. The demand for meat and meat products is increasing, as meat and meat products are an essential source of high-quality protein, iron, and vitamin (LDDP, 2016). In Pakistan, per capita, meat consumption has nearly tripled from 11.7 kg in 2000 to 32 kg in 2016. It will rise to 47 kg by 2020 (OECD, 2018).

Therefore, the livestock sector plays a very significant role in the agricultural-based economy of Pakistan. The livestock sector contributes about 60% to agriculture value-added and 11.7% to overall Gross Domestic Product (GDP), and 3.1% of Pakistan's export (Imam, 2020). Pakistani meat has a unique taste due to its organic nature, and exports are mainly to gulf markets in large quantities. The country is also generating revenue through the exports of live animals on Eid-ul-Azha (i.e. an Islamic holiday or festival) within a short period of just two weeks (Randhawa et al., 2018). In Pakistan, the meat comes from cows, buffaloes, goats, sheep, poultry, and camel. The meat export data is given in *Table 1.1*.

Table 1.1 Total Value of Meat Exports since the Fiscal Year 2013

Period	Value of meat exports
2013-2014	$211m
2014-2015	$230m
2015-2016	$243.5m
2016-2017	$269m
2017-2018	$221m
2018-2019	$189m

Source: Pakistan Bureau of Statistics

The meat export started to decline after 2017, Because Pakistani's largest meat buyers' market, the six-nation Gulf Cooperation Council (GCC), has begun to purchase meat from the USA and Australia. Another reason for the decline in meat exports was that domestic demand gradually increased with increased income levels and increased demand for meat-based fast food (Aazim, 2017, December 11). Pakistan's meat exports in this fiscal year will reach $250m due to certain factors. Firstly, the Halal certification process has become smoother than in the past. Secondly, the ability of the livestock industries to increase shipments of frozen meat and meat-based cooked products can give a further boost in the export of meat (Aazim, 2018, June 4). The Pakistan Meat Exporters and Processors Association (APMEPA) has registered more than 30 exporting companies in Pakistan. Some, such as Fauji Meat Ltd., Pak Livestock, Al-Shaheer Corporation, Punjab Agriculture & Meat Company, and Green Meadows, have their livestock-holding farms equipped with the latest and modern slaughtering and processing facilities (APMEPA, 2018).

Meat companies must register with national bodies and international agencies to obtain all necessary approvals, accreditations, and certifications to provide quality meat across the borders to fulfil the promise of fresh, nutritious, and wholesome food (Fauji Meat Limited, 2019). The following are the international agencies working in Pakistan that provide certification for meat products: HACCP (Australia), SFDA (Saudia Arabia), CFDA (China Food and Drug Administration), and ISO 22001 (Food Safety Management).

Due to scandals around the meat industry, the Halal certification label on packed meat ensures customers' best quality meat choices by delivering poultry, beef, mutton, and seafood

products with no- halal artificial additives (Space, 2018). In Pakistan, five different bodies are working for Halal Certification: Jamia Markaz-e- Uloom-e-Islamia, Halal Development Project, Madarse Dar-ul-Shia Institute, and Jamia Islamia Raudatul Quran (CEHA, 2019)

Meat demand is associated with higher incomes, urbanisation, and food consumption changes favouring increased proteins from animal sources in diets (OECD, 2018). Pakistan, an Islamic country with rich cultural, traditional, and religious festivities, has a higher demand for meat dishes than Western countries, especially in the festival season. Moreover, cultural values, economic status, and religious norms play an essential role in meat consumption (Sohaib & Jamil, 2017). Being a Muslim country, Pakistani celebrate Eid al-Adha on the 12th month of the Islamic lunar calendar in the memory of Prophet Hazrat Ibrahim and his son Hazrat Ismail. Muslims slaughter sheep, lamb, cows and camel in obedience to the will of God and share meat with friends, family and needy people (Azlan, 2021). In Pakistan, animals worth nearly 250 million dollars were sacrificed for the Eid-ul-Adha festival (Euromeat, 2021). In the collectivist culture of Pakistan, the meat diet is also considered one of the traditional foods and a symbol of richness and power. Rich Muslims donate meat as "Sadaqah" to the needy or poor people in society as it is a source of happiness, and not engaging in alms-giving would be seen as a religious taboo. Therefore, industrialised livestock farming is progressing in Pakistan to meet the current growing demand for meat.

The livestock industry has a significant environmental footprint. It exceeds the land and water deprivation, biodiversity loss, acid rain, coral reef deterioration, and deforestation (Francis Vergunst, 2017). The Environmental Protection Agency in Pakistan (PK-EPA) declared that air quality exceeds the safe levels recommended by the National Environmental Quality Standards. Consequently, there are reports of severe health effects, aggravating lung and heart diseases and causing respiratory effects in the general population (Omer, 2018).

There is scant government intervention or even social awareness campaigns and cause-related marketing messages in Pakistan to persuade consumers to alter their food choices to protect the environment (Rehman, 2018). To modify their food choices, people require knowledge of how their food choices harm environmental sustainability. Enhancing consumer knowledge of reducing their meat consumption and educating them about substitutes, such as organic meat, may help protect the environment and animal life and help them maintain their health.

1.5 Theoretical Frameworks and Research Gaps

Religious beliefs are key shapers of consumers' lifestyles, influencing their purchasing patterns, consumption behaviour (Muralidharan et al., 2018), and specifically sustainable food consumption intentions (Minton et al., 2018). Globally more than 70% of consumers follow some religious belief (PEW, 2017a). According to Western religious scriptures, God created nature and gave power to human beings to control nature. On the other hand, Eastern religious scripture is based on a pantheistic view that asserts that God is all around, including food; therefore, destroying nature means hurting part of God (William, 1902). Every religion has its own beliefs and guidelines about food consumption. Indeed, meat consumption is firmly regulated by religions (Raggiotto et al., 2018). For example, only halal meat can be eaten in Islam, while Hindus are forbidden to eat beef. Christianity, however, has no such obligation. The concept of sustainability is deeply rooted in Islam (Ghazali et al., 2018; Hassan, 2014; Islam & Chandrasekaran, 2016). Islam disapproves of human activities that jeopardise the natural environment and resources (Ghazali et al., 2018). Religious beliefs provide guidelines about meat consumption and production methods for their followers (Heiman et al., 2017). The impact of religion on consumer food choices is complex and under-researched (Mathras et al., 2016).

Moreover, most studies have revolved around Christianity and Buddhism. Other religious groups must be included to increase the authenticity of findings related to sustainable consumption (Raggiotto et al., 2018). Islam is the world's second-largest religion; 24% of the world's total population, or 1.8 billion people, are adherents (PEW, 2017a). Pakistan is the largest Muslim (97%) country in South Asia. Islamic food consumption laws are strict, although Muslims generally follow them (Anam et al., 2018). To enhance knowledge about religion's influence on consumer food consumption intentions requires more quantitative investigation and the development of advanced theory.

Moreover, organic food consumption is a pathway that leads towards sustainability. Organic food is associated with a specific value system based on lifestyle, attitudes, and consumption intention (Schifferstein & Oude Ophuis, 1998). The pro-environmental values consist of egoistic (self), altruistic (other people), and biosphere values (Biswas & Roy, 2015a) that are strongly interrelated with culture and region (Harrison & Huntington, 2000). Future research may explore individualist and collectivist cultures' combined effect to elucidate the relationships between values and attitudes for sustainable consumption (Shin et al., 2017).

In food marketing, organic food consumers have become a vital market segment. McCarthy et al. (2016) assert that a shift to organic production in the agro-food system can reduce environmental damage. Most research studies focus on attitudes towards sustainability and organic food (Laureti & Benedetti, 2018; Woo & Kim, 2019) in general, with a few rare exceptions in the literature (Hartmann & Siegrist, 2017). Also, the coronavirus outbreak (COVID 19) contributes to a transition into more sustainable meat consumption that pertains to a high level of quality and safety standards around the globe (Cohen, 2020; Yang, 2020). Aschemann-Witzel et al. (2015) state that sustainable consumer behaviour, mainly linked to food items like meat and seafood, requires further detailed examination. Evidence reported from emerging economies (Burnier et al., 2020; Nguyen et al., 2021) is limited in volume and scope due to contextual constraints around sustainable food choices.

Nevertheless, improvements in the economies of emerging countries have increased the potential for pro-environmental behaviours and the market for organic food. Therefore, a study investigating consumers' sustainable consumption intentions, such as the extent of their willingness to reduce meat consumption or switch to organic meat only, is important. Understanding cultural and religious factors that facilitate or impede such intentions in emerging markets are increasingly relevant as sustainable food consumption and environmental consciousness are context-specific (Paloviita, 2021; Pohjolainen et al., 2016). Noting the gaps identified in the literature, the current study is framed around three primary objectives: Sustainable Meat Consumption Intentions (SMCI) in an emerging economy. The research gaps are discussed below.

1.5.1 Research Gap 1: Instrument Measuring Consumers' Sustainable Meat Consumption Intentions

The concept of sustainable food was proposed at the start of the 1980s. A sustainable diet contains nutritional values for health and protects the ecosystem from biodiversity loss, which is culturally acceptable and affordable (FAO, 2010; Jones et al., 2016). Moreover, sustainable food consumption stimulates consumers to buy organic foods and adopt an environmentally friendly lifestyle that leads to buying less or better quality (McSpirit, 1998; Tekinbaş Özkaya et al., 2021; Yang, 2020).

One of the significant gaps in the literature is that most scales measure sustainable consumer behaviour related to industrial products alone; inadequate attention is paid to

sustainable food consumption intentions. Although attitudes are not necessarily transformed into actual behaviour (Roberts, 1996), knowing consumer intention is beneficial. According to Fishbein and Ajzen (2010), behavioural intention is the closest proxy to actual consumer behaviour. Moreover, consumption-related scales mainly originate in Western countries (Nair & Little, 2016; Qi & Ploeger, 2019; Weibel et al., 2019). In general, measurements are sensitive to cultural beliefs because context, culture, and consumption are inseparable (Dolan, 2002; Nair & Little, 2016; Sreen et al., 2018). Previous studies have argued that East Asians are more concerned about context and relations than Western societies (Kapelari et al., 2020; Masuda & Nisbett, 2001; Qi & Ploeger, 2019). Cultural values provide the basics to maintain environmental intentions, although these aspects were generally ignored when measuring behavioural intentions in most cross-cultural studies (Lee & T Green, 1991; Mancha & Yoder, 2015; Milfont et al., 2010). Nonetheless, these instruments may not yield valid results in countries like Pakistan, where the nature of SMCI may not be consistent with that associated with consumers belonging to developed countries.

Apart from the cultural differences, a review of existing measures on sustainable consumption intentions highlight that instruments are generally captured only organic food (Scalco et al., 2017), green hotels (Verma & Chandra, 2017), meat attachment (Graça et al., 2015) consciousness about sustainable consumption (Balderjahn et al., 2013) and modified food choice questionnaire (Szakály et al., 2018). Only a few studies measured sustainable meat purchase intention. Most studies explored the characteristics of food in general and consumers' willingness to move toward low-meat diets based on socio-demographic factors (Mohr & Schlich, 2016). Another study only identified the potential motives (health and environmental sustainability) to reduce meat in the diet via curtailment or meat substitutes (Malek et al., 2018; Taufik, 2018). Future studies required to measure the consumers' sustainable intentions related to meat consumption needed a broader framework that captures the animal welfare, cultural and socially acceptable factors (Paloviita, 2021).

These shortcomings suggest the need to develop a new culturally inspired instrument for measuring SMCI, related to the curtailment of meat and the purchase of organic meat. Therefore, the first research question of this study is presented as:

RQ$_1$: How can the impact of cultural (social) values, animal welfare, and environmental elements on consumers' intention related to meat curtailment and use of more quality meat be measured on one scale in an emerging economy?

1.5.2 Research Gap 2: Sustainable Consumer Segments

The segmentation of organic food consumers is a well-researched topic in developed markets (Chen et al., 2014; Gil et al., 2000; Verain et al., 2017a). However, research on segmentation in emerging economies is lacking (Sarti et al., 2018; Su et al., 2019). The success of a firms' marketing strategy relies on identifying and targeting the right customers (Dolnicar et al., 2018; Kotler et al., 2008). Knowledge of consumer segments is necessary to address the challenge of sustainability. Segmentation studies provide detailed consumer profiles that are essential for developing marketing policies. Recently, researchers have claimed that socio-demographic variables can extract valuable differentiation on sustainable food choices among the segments (Peschel et al., 2016; Pouta et al., 2010). For instance, high-income female consumers tend to reduce meat consumption for health or sustainability reasons (Apostolidis & McLeay, 2016; Grunert et al., 2014). A study conducted in China reported that rich young people with children who live in small households tend to be more eager to buy organic food (Liu et al., 2016). Another research project showed that eating a rich nutritious diet increases with age (Apostolidis & McLeay, 2019a). A study conducted in Italy suggests three types of segmentation: collectivism, individualism, and indifference. Consumers who are collectivistic purchased more eco-labelled products (Sarti et al., 2018). Further research is required for a specific food product like meat in an Asian country.

These variations suggest that it is valuable to study organic consumer segments in Pakistan from the perspective of 'sustainable meat consumption'. Unlike varying findings reported in the literature on demographic and behavioural profiles of consumers, the literature reports relatively consistent results on demographic segmentation. However, the literature on psychographic consumer profiles is diverse and presents no single set of similar characteristics. The diversity in psychographic variables and behavioural studies demands more investigation to account for the consumer market in an emerging economy like Pakistan.

Therefore, the present thesis aims to address the above shortcoming academically by attempting to answer the following research question:

RQ2: What are the demographic, psychographic, and behavioural characteristics of consumers in Pakistan who are conscious about meat sustainability, people who reduce meat in their diets or who prefer organic meat?

1.5.3 Research Gap 3: Driving Forces Behind Sustainable Meat Consumption Intentions

Meat consumption is strongly related to environmental impacts (Asher & Peters, 2020; Graça et al., 2020; Weibel et al., 2019), and this ecological degradation requires an exploration of consumers' consumption intention indicators. Moreover, people's values and perceptions about what is suitable for themselves, their families, and society also shape their consumption patterns. Therefore, it is vital to investigate how preferences are justified and negotiated to know sustainable food consumption intentions (Ditlevsen et al., 2019; Sultan et al., 2018).

Although research in these areas has been conducted in different contexts (Hajibaba et al., 2019; Sanchez-Sabate & Sabaté, 2019), contributed with various techniques for policy establishment, specific behavioural and contextual descriptions (relevant to the present study) are limited. The current research recommendations cultivate the significance of numerous socio-psychological theories that improve the model's explanatory power. These emerging markets provide an ideal environment with rich consumer heterogeneity in socioeconomic, demographic, cultural, and lifestyle characteristics to replicate and refine marketing theory (Biswas & Roy, 2015a; Burgess & Steenkamp, 2006). Urban markets are considered more crucial in emerging economies as they provide environmentally-friendly facilities in modern grocery stores with broad product lines than facilities available in rural areas (Taufique & Vaithianathan, 2018). Extension of evidence in other cultural contexts can bring new knowledge that can help to build more robust cross-cultural models of sustainable meat consumption intentions. These limitations justify addressing the final research question.

TPB captures significant factors that explain the behaviour towards a particular issue (Ajzen, 1991). It permits various related variables like environmental concern, environmental knowledge, cultural values, religion and uniqueness seeking a lifestyle that may significantly affect specific behaviour (Marija Ham and Ana Pap, 2018; Minton et al., 2018; Nguyen et al., 2017; Pham et al., 2019). TPB models' flexibility allows researchers to incorporate additional variables and/or replace constructs of the underlying theory with other variables of interest to clarify consumer behavioural intentions (Kumar et al., 2017). Therefore, the present study proposes an integrated and dynamic model based on a theory of planned behaviour (Ajzen,

1991) incorporated with pro-environmental values and religious factors. Also, the study uses pro-environmental values to identify the effect on sustainable meat consumption intention in an emerging economy, Pakistan.

RQ 3: To investigate the key driving forces such as religious and pro-environmental values behind sustainable meat consumption intention through an advanced TPB model in an emerging economy.

1.6 Research Design and Methodology

1.6.1 Logical Schema of the Study

The present study follows a three-step approach to answer three research questions established in earlier sections. Firstly, a new reliable and valid scale, sustainable meat consumption intentions (SMCI), was developed, including elements of meat detachment, meat curtailment intention, and organic meat purchase intention. Sustainable meat consumption intentions pertain to meat curtailment or purchasing more quality meat like organic and free-range meat. Curtailment of meat refers to reducing meat-based diet consumption. Organic meat purchase intention persuades consumers to consume more safe and eco-friendly meat produced free from pesticides with a reduction of GHG emissions produced during the production process. Meat detachment intention measures the consumers' dependency on a meat-based diet.

Secondly, the newly developed SMCI scale was used as a base to identify various consumer segments. The demographics, psychographics, and behavioural characteristics of consumers explain the profile of sustainable meat consumption segments.

Lastly, the Theory of Planned Behaviour (TPB), advanced with religious and personal norms, and based on biospheric, altruistic, and egoistic values, is used to develop a causal model of SMCI.

1.7 Methodological Approach

A multiple-method approach is used to explore the results of three research questions established in the previous sections of this chapter. Specifically, this thesis employs a qualitative (focus groups) and quantitative (an online survey) approach to answer the three research questions developed based on the gaps identified in the literature. For qualitative

analysis, the current study used software called Leximancer. For quantitative analysis, the more robust multivariate techniques structural equation modelling (SEM) is utilised to conduct statistical analysis to test the study's hypotheses. For this purpose, the SmartPLS software tool is employed. An overview of the research design is represented in *Figure 1.1 Overview of Research Design.*

Figure 1.1 Overview of Research Design

Study1- RQ1: Scale Development measuring Consumer's SMCI

Research Gap1
Scales on sustainable consumption intention are mostly developed in the Western societies and fail to address some key cultural perspectives and specific intentions related to meat reduction and organic meat consumption in various emerging economies.

Research Question1
How can the impact of cultural (social) values, animal welfare and environmental elements on consumers' intention related to meat curtailment and use of more quality meat be measured in one scale, in an emerging economy?

Research Methodology
Qualitative:
- Focus groups
- Literature review
Quantitative
- Online survey

Analysis Techniques
Qualitative analysis with Leximancer, structural equation modeling (EFA), and Structural equation modeling (SEM) with SmartPLS 3.2.2.

Study1-RQ2: Consumer profiling

Research Gap 2
Literature available on demographics, psychographic and behavioural characteristics of sustainable consumer presents inconsistent observations.

Research Question 2
What are the demographic, psychographic and behavioural characteristics of consumers in Pakistan who are conscious about meat sustainability and who reduce meat in their diets or prefer organic meat?

Research Methodology
Quantitative:
- Online survey

Analysis Techniques
EFA, Cluster and Discriminant analysis conducted with SPSS v25.2.2

Study2 Extended model of TPB

Research Gap 3
In emerging Asian countries, no holistic framework adequately explains sustainable food consumption intention under collectivist culture.

Research question 3
To investigate the key driving forces such as religious and pro-environmental values behind sustainable meat consumption intention through an advanced TPB model in an emerging economy.

Research Methodology
Quantitative
- Online survey

Analysis Techniques
Data cleaning, EFA run in SPSS v25.0 and **(EFA)** and SEM with SmartPLS v3.2.2.

1.8 Contributions of the Study

The present research makes three valuable contributions to the existing sustainable food marketing and pro-environmental behavioural literature encompassing consumers' sustainable meat consumption intentions. All three study's contributions provide policy suggestions for sustainable marketing practice.

1.8.1 Literature Contribution One: Scale Development Measuring Sustainable Meat Consumption Intentions (SMCI)

As a first contribution, this study adds to the sustainable food marketing literature by contributing a new measurement scale to capture sustainable meat consumption intentions (SMCI), including meat detachment, meat curtailment and organic meat consumption preference due to ecological sustainability and human health. Furthermore, the present study contributes to developing a new consolidated scale originating from a very different culture than earlier studies on sustainable meat consumption intentions. The population in Pakistan has diverse traits in culture, religion, and psychographics compared to Western Countries.

1.8.2 Literature Contribution Two: Consumer Segmentation Based on Sustainable Meat Consumption Intentions

The second contribution of this study is providing a detailed discussion on the demographic, psychographic, and behavioural segments of sustainable consumers based on the recommendations of Taufique and Vaithianathan (2018) and Weibel et al. (2019). Sustainable consumer profiles based on the stated criteria add to the segmentation literature.

1.8.3 Theoretical Contribution Three: Advanced Theory of Planned Behaviour Model Explaining Sustainable Meat Consumption Intentions:

This study's third and final contribution is developing an advanced model by incorporating religious and personal norms values in the theory of planned behaviour (TPB). This model includes various concepts, particularly in an emerging economy context, to yield a more robust model determining sustainable meat consumption intentions (SMCI). In addition, this model attempts to provide an integrated explanation of SMCI with better predictability compared with existing models.

1.8.4 Conceptual Contributions of the Study

Every research study aims to enhance the existing body of knowledge through conceptual contributions in a specific domain. The conceptualisation process of theoretical advancement refers to "abstract thinking involving the mental representation of an idea" (MacInnis, 2011, p. 140). In sustainable food marketing literature, this study contributes in three different ways:

1.8.4.1 Revising

The present study's first contribution is in the form of Revision. In Study 1, addressing RQ_1, the thesis revises the scales measured sustainable consumption in a particular domain of meat consumption in a specific socio-cultural environment. The process involves redefining sustainable intention perspectives in reducing and using organic meat and the resultant model empirically testing in an emerging economy. It is vital to develop this measurement scale, as existing scales are inadequate to capture the consumer intentions of sustainable meat consumption. Furthermore, the newly developed scale provides an alternate view of consumers' intention preferences from an emerging economy.

1.8.4.2 Delineating

The second conceptual contribution of this study can be express in the form of Delineating. This study illustrates the characteristics of sustainable meat consumers segments from demographic, psychographic, and behavioural perspectives to respond to the RQ2. This process primarily captures the associations between the roots and descriptors of sustainable meat consumption. Letter on describes each consumer segment's socio-demographic, psychographic, and behavioural profiles.

1.8.4.3 Integrating

Finally, this study's third conceptual contribution is in integrating with response to RQ3. The advanced theory of Planned Behaviour (TPB) model provides a paradigmatic explanation of SMCI concerning meat detachment, curtailment of a meat-based diet, and purchase of more quality, eco-friendly organic meat. This study accommodates the plurality of views about this advanced theory's effectiveness in predicting SMCI by incorporating constructs to extend the model.

1.8.5 Practical Contributions of the Study

Besides theoretical and conceptual contributions, this study exhibits several practical contributions as well. First, the newly developed SMCI scale will help marketers assess consumers' purchasing patterns and organic meat preferences. A significant contribution is that this study provides a comprehensive construct that organizations can use to design their sustainability and strategic business goals.

Second, this study provides a comprehensive understanding of organic consumers in Pakistan. Segmentation study will help marketers in meat industries use informational strategies related to food nutritional values by labelling their meat products. Thus, consumers can quickly identify the nutritional value for health, meat quality, environmental sustainability, and animal welfare. Religiosity also plays a crucial role to perform sustainability activities. Religious values stimulate consumers towards SMCI for the interest of the environment, health, and animal welfare. It will help social marketers that consumers may persuade SMCI to protect the environment from degradation through religious campaigns.

Finally, this study provides insights for marketing professionals, social marketers, policymakers and livestock industry practitioners with a comprehensive model to understand a motivational phase leading to sustainable behavioural intention. The proposed model is applied in an emerging economy perspective to provide an in-depth understanding of factors that affect consumers' sustainable meat consumption intentions. Moreover, this study understands consumers' dietary choices more effectively: it shows the effect of pro-environmental values and religiosity on meat sustainable consumption intentions in a South Asian developing country, Pakistan.

1.9 Limitations of the Study

Each study has certain boundaries that are set by the researcher and open the avenue for further research. For example, this study only captures the consumers' sustainable meat consumption intentions, not actual behaviour, due to time constraints and the study's cross-sectional nature. Also, in Pakistan, the organic food market is nascent, and sustainable meat choices are not readily available in the market. However, studies showed that consumers' sustainable consumption intentions and contextual variables empower consumers towards more responsible behaviour (Bauer et al., 2018; Nguyen et al., 2019).

1.10 Outline of the Thesis

This thesis is comprised of seven chapters (*Figure 1.2 Thesis Structure*)

Chapter 1: Introduction and Research Background

Chapter 2: Literature Review on Sustainable Food Consumption and Consumer Profiling –Study 1, this chapter establishes the theoretical foundation to support this study's first two research questions. In addition, this chapter reviews the existing measurement scales of sustainable consumption intentions. Moreover, it also reports the literature on consumer segmentation based on sustainable food consumption and meat curtailment intentions to justify the research objectives.

Chapter 3:– Pro-environmental Behaviour: Theoretical Framework and Hypotheses Development – this chapter provides the literature on TPB and additional variables like religiosity and personal norms based on pro-environmental values that are particularly noteworthy for predicting sustainable meat consumption intentions. Based on the extensive literature review, the research hypotheses are developed.

Chapter 4: Research Methodology: This chapter elaborates a multi-method approach for scale development and describes the various steps used to develop a new scale (RQ1). The scales and methods for profiling sustainable consumers based on socio-demographic, psychographic, and behavioural variables are also explained in this chapter to explain the methodology for RQ2. Furthermore, this chapter provides the research methodology for Study-2: measurement of the advanced TPB model. The relevant adopted scales of the constructs are discussed, the analysis techniques are explained in detail, and justification is provided for utilising variance-based structural equation modelling (SEM) by using the SmartPLS software.

Chapter 5: Results of Study 1: Scale Development and Consumer Profiling – this chapter report the results of RQ1 scale development for SMCI, explains the structure of the new construct and reports sustainable consumer profiling based on demographics, psychographics, and behavioural intentions.

Chapter 6: Results of Study 2: Analysis of Advanced Theory of Planned Behaviour Model – this chapter reports the results of RQ3 derived from structural equation modelling

analysis through SmartPLS software. This chapter reports exploratory factor analysis (EFA), measurement, and structural model analysis. This chapter also accounts for the hypotheses results derived based on various analyses.

Chapter 7: Discussion and Conclusion– this chapter concludes the whole thesis by discussing results derived from all three research questions raised in Chapter 1. The study's theoretical and practical contributions are deliberated in the same chapter. The subsequent section discusses the limitations of the study. This chapter ends with an outline of future research directions.

Figure 1.2 Thesis Structure

Chapter1
Introduction and Research Background

Chapter 2
Literature Review on Sustainable Food Consumption and Consumer Profiling

Chapter 3
Pro-environmental Behaviour, Theoretical Framework and Hypothesis Development

Chapter 4
Research Methodology

Chapter 5
Results of study 1: Scale Development and Consumer Profilling

Chapter 6
Results of study 2: Analysis of Advanced Theory of Planned Behaviour Model

Chapter 7
Discussion and Conclusion

1.11 Conclusion

Chapter 1 has established the foundation for this thesis by first explaining the topic's significance for marketers, environmentalists, non-governmental organizations (NGOs), and society. This chapter has identified valuable insights for strategic marketing practitioners belonging to the livestock industry. Further, it identified three significant research gaps on which the research design of this study was established. Each research gap arises a research question justified by the literature review. After that, the research design is presented with

related research gaps, research questions with an appropriate methodology, and analysis techniques for data analysis purposes. Finally, this chapter discusses the thesis's theoretical, conceptual, and practical contributions and ends with the study's limitations.

Chapter 2 Literature Review on Sustainable Food Consumption and Consumer Profiling

"The livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global"(FAO, 2006).

2.1 Introduction

Chapter 1 of the present thesis explains the background, research gaps, rationale of the study, and the scope of the study's research, implication, and delimitation. This chapter critically analyses the elements that affect consumer sustainable food consumption intentions. Also, it explains segmentation studies based on profiling green, organic or sustainable food consumers.

The present chapter, *Chapter 2,* is arranged into three main sections. The significance of the relevant measurement scales from food marketing research and their relevance to the thesis objectives discusses in the first section. This section also covered the explanations, similarities, differences of the sustainable consumption intention concept, critical analyses of the existing measurement scales related to sustainable consumption intention, and the importance of cultural perspectives in developing measurement scales in an emerging economy perspective. The second section introduces market segmentation and its impact, followed by reviewing the existing literature on sustainable consumer segments, the context, and studies research methodology, a summary of main findings, and a justification for the different research areas. Finally, this chapter summarises its findings and provides a way forward to this thesis's third chapter.

2.2 Sustainable Diet

The sustainable diet concept, first introduced more than three decades ago, focuses on maintaining long-term health, preserving natural resources, and avoiding environmental degradation (Jones et al., 2016). Currently, the Food and Agriculture Organization (FAO) and the United Nations (UN) are working together to motivate consumers on sustainable

consumption, providing them with adequate information through standards and labels on the products to achieve Sustainable Development Goals (SDGs). The FAO defines a sustainable diet as

> "Sustainable Diets have low environmental impacts that contribute to food and nutrition security and healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimising natural and human resources" (FAO, 2010, p. 10).

Another definition is presented in the EAT-Lancet Commission on healthy diets from sustainable food systems :

> "Sustainable food production practices safeguard Earth system processes, on which food production and human wellbeing depend. Farming and fishing practices are being developed to use ecosystem services such as pest control, pollination, water regulation, and nutrient cycling to achieve productivity and resilience in agricultural landscapes while reducing harmful environmental effects" (Willett et al., 2019, p. 461).

Every day, consumers make many decisions that revolve around food consumption and purchase decisions. The production and consumption of food may cause environmental degradation (Ditlevsen et al., 2019; Hoek et al., 2017a), particularly meat products (Poore & Nemecek, 2018). However, sustainable food consumption is a general term that captures consumers' intentions and decision-making by considering individual needs (i.e. taste, price and availability) along with economic, social and environmental factors (i.e. farmers' welfare, environmental safety, animal welfare and fair trade) (Ferraris et al., 2019; Hwang et al., 2020; Vainio et al., 2018). Changing consumers' food choices or protein transition is needed to decrease meat consumption's environmental impact (Hartmann & Siegrist, 2017; Taufik, 2018). Therefore, it is significant to know about consumers' insights or motives towards sustainable meat consumption in an emerging country.

2.3 Pro-environmental Behaviour Leads towards Sustainable Meat Consumption

Pro-environmental behaviour indicates "any action that enhances the quality of the environment, either resulting in or not resulting from pro-environmental intent" (Steg et al., 2014, p. 104). Pro-environmental behaviours stimulate consumers to purchase and consume eco-friendly products, including sustainable and organic food consumption, which appears to reduce environmental impairment significantly (Nguyen et al., 2017). Sustainable consumption behaviour is related to purchasing environmentally friendly products such as organic food.

Globally, organic agriculture has developed rapidly during the last decades in response to increasing concerns related to negative externalities associated with the effects of intensive farming systems on both human health and the environment (Xie et al., 2015). Organic food refers to the product obtained or made under the standards of organic agriculture that sustain and promote the welfare of soils, ecosystems and humans (Dahm et al., 2009). Similarly, animals raised free from antibiotics, growth hormones and have enough space for grazing produce organic meat and contribute less GHGs emissions (Burnier et al., 2021; Nguyen et al., 2021; Yu et al., 2020). Eventually, Pro-environmental behaviour drives towards sustainable meat consumption and pays attention to consuming eco-friendly organic meat.

2.4 Relating Culture, Health, Environment, and Religion with Sustainability

Consumer values, such as religion and culture, strongly impact the consumption of sustainability-related products and services. It can be critical to businesses, organisations, and policymakers' marketing plans to encourage sustainable practices (Dong et al., 2020; Geng et al., 2017; Minton et al., 2018). Core religious and cultural values reform attitudes and result in sustainable actions.

However, work to measure the health and environmental benefits of food concerning sustainability is still in progress, and there is a need for a standard metric (Garnett et al., 2015). Sustainable consumer consumption is measured with various scales like meat attachment questionnaire (MAQ) (Graça et al., 2015), behavioural intention (Minton & Rose, 1997), consciousness for sustainable consumption (Balderjahn et al., 2013), green purchase intention (Armitage & Conner, 1999), consumer pro-environmental behavioural intention (Mostafa,

2007). Usually, scales on sustainability capture the environmental (Gilg et al., 2005), social (Balderjahn et al., 2013), and economic (Huneke, 2005; Iwata, 2006) dimensions separately. However, sustainable consumption intention embraces a broader perspective explaining how the consumption decision can be taken under such norms that protect the environment, wildlife, animal welfare, and natural resources.

Cultural aspects that predict behavioural intentions are usually overlooked in cross-cultural cases, even though environmental intentions are based on cultural values (Lazzarini et al., 2018; Mancha & Yoder, 2015; Milfont et al., 2010; Weibel et al., 2019). Therefore, the choice of sustainable meat consumption includes three concepts: environmental, wildlife, or animal (on farms) welfare and cultural dimensions in one measurement scale.

In the following section, measurement scales focusing on environmental, social, and economic intentions are analysed.

2.5 Scales for the Measurement of Sustainable Consumption Intentions

The assessment of consumer intention requires valid and reliable instruments capable of capturing sustainable consumption intention elements. The viewpoint of food sustainability involves many behavioural intentions. Two core intention aspects are: (1) the reduction of meat consumption in one's everyday diet (2) the purchase of organic/ free-range meat only; organic meat comes from those animals that are raised without antibiotics or growth hormones. Also, organic animals have enough space to live and move around on farms. A decline in the meat-based diet may be achieved by following interventions such as promoting protein intake from other than meat sources and social awareness campaigns through government intervention by increasing the tax on meat products and promoting a meat-free day per week.

Numerous studies can be drawn in the literature that proposed measurement scales for explaining food choice from various perspectives. However, the current research aims to contribute to the existing body of sustainable food marketing literature by developing a scale for assessing sustainable meat consumption intention specific to organic meat and meat-based diet in a sustainable manner.

Existing studies have attempted to measure sustainable consumption intention from multiple perspectives. However, specific intentions related to reducing meat from diet or purchasing organic meat, which is the most critical environmental damage factor in growing

economies, are hardly captured in existing measurement scales. The detailed description of the four scales is given below, while other scales are covered in *Table 2.1 Sustainable Consumption and Related Measurement Scales.*

2.5.1 Consciousness for Sustainable Consumption (CSC)

Balderjahn et al. (2013) developed the consciousness of sustainable consumption (CSC) scale in Germany, having three dimensions: economic, social, and environmental, with 10, five, and four items, respectively. The CSC scale discusses sustainability at the broader prospect of sustainable use of industrial products. Firstly, the economic dimension compared the price with the product's simplicity, performance, and services. Secondly, fair compensation and human rights-related issues are elaborated in the social dimension. Thirdly, the environmental consciousness dimension is related to recycling and energy consumed during the production and consumption of the product. While the scale developed by Balderjahn et al. (2013) assesses the sustainable use of products, a more specific and comprehensive scale of sustainable intention is required; this would involve all key aspects of meat detachment and willingness to reduce meat consumption and the use of organic meat in the diet.

2.5.2 Intention to Green Purchase

Kanchanapibul et al. (2014) used the questionnaire to measure the concept of green purchase intention. This study used five items to measure the agreement of respondents towards green purchase intention. The first question asks the interviewee, "I avoid buying products which are potentially harmful to the environment", the second enquires, "I have changed my principal products for ecological reasons". The third question investigates, "When I have to choose between two similar products, I choose the one that is less harmful to the environment". The fourth item asks, "I make a special effort to buy paper and plastic products that are made from recycled materials", and the last question is reverse coded and examined "I will not consider the environment issue when making a purchase". All the items are measured on a 5-point Likert scale on strongly agree to strongly disagree.

The interview questionnaire focused only on the customer's intention to buy less harmful products to the environment and made with recycled material. This scale (intention to green purchase) is considered a shallow measurement instrument that fails to capture

sustainable meat consumption intentions in the current study. This study utilises the items specifically related to meat consumption like curtailment or eating more quality organic meat, including aspects related to the environment, health consciousness, and cultural factors in an emerging economy.

2.5.3 Meat Attachment Questionnaire (MAQ)

The meat attachment questionnaire (MAQ) was developed by Graça et al. (2015) in Portugal. Meat attachment refers to a positive attachment towards meat-based dishes and comprises four dimensions: hedonism, affinity, entitlement, and dependence. The first dimension captures meat consumption psychology, and hedonism refers to meat consumption as a source of pleasure and the view that a meal without meat is incomplete. The second dimension, affinity, measures the feelings towards killing animals, disrespecting the environment, and health concerns related to meat consumption. The third dimension, entitlement, concerns that it is the right of a person and natural practice to eat meat. Finally, the fourth dimension, dependence, shows attachment towards meat, for example, "there is no life without eating meat", "if I stop eating meat, I will feel sad", and experience "weakness in my body", etc. The MAQ is one of the most widely used scales that combines affective and cognitive elements of meat consumption. Furthermore, meat attachment negatively correlates with willingness and intention to reduce meat consumption and adopt a more plant-based diet.

The scale cannot empower practitioners and policymakers to work at an individual and societal level to change meat consumption habits. Moreover, the MAQ is used to build a theory of meat attachment from childhood to adolescence (Graça et al., 2015). Therefore, this scale is insufficient to measure the sustainable intention towards meat consumption.

2.5.4 Moral Disengagement in Meat Questionnaire (MDMQ)

The moral disengagement in meat questionnaire (MDMQ) scale was developed in Portugal by Graça et al. (2016). It consisted of five dimensions: two dimensions means-ends justifications and denial of negative consequences comprised of five and desensitisation compromised of four items. In addition, diffused responsibility and reduced perceived choice both have three items.

Compared to MAQ, MDMQ explains variables in terms of personality, values, behaviour, and context, which may help elicit or avoid the various reasons for moral

disengagement. The MDMQ scale provides reasons for eating meat and justifies those motives and intentions. The means-end justification dimension explains that eating meat is necessary for the human body; problems associated with meat consumption may be related to other food products. The second dimension, denial of negative consequences, asks the question: 'who is responsible for the suffering of animals, industries, or the people who eat meat?' The third dimension, desensitisation, measure the feeling (sympathy) for animals and whether it is unethical to slaughter them for food. The fourth dimension, diffused responsibility, consists of items including: 'it doesn't matter if I change my habits because problems will still exist'; 'I will consider changing my habits only if others also change theirs'. The last dimension reduced perceived choice, provides different ways to reduce meat, such as eating meat alternatives and adopting a meat-free diet.

Although MDMQ intends to measure a few aspects of meat consumption, such as the adverse effect of meat on human health, animal welfare, and the environment, it does not measure the religious and cultural impacts on meat consumption intention. Thus, it requires further empirical research in food-related considerations (Ong et al., 2015). Nonetheless, during the process of new scale development in the present study, a few items of the MDMQ may be used to reflect consumer intention towards sustainable meat consumption. Like unethical to slaughter the animals for food etc.

A summary of the overlap and similarities of existing measures with SMCI are mentioned in *Table 2.1*.

Table 2.1 Sustainable Consumption and Related Measurement Scales: Similarities and Differences

Scale Name	Setting	Scale Description	The domain of overlap with SMCI
Sustainable purchase intention (SPI)	Portugal	The 11-item scale comprised of two dimensions: Accessibility (8-items) and Trust (3-items). Accessibility defined that sustainable products must be available at an affordable price. Trust can be built on the products and retailers before purchasing (Carvalho et al., 2016).	Availability: sustainable food is available in more stores Economic: I would prefer to buy sustainable products if available at a lower price Labelling: Better understood

			sustainable products benefits
Green Purchase Intention (GPI)	China	A 3-items scale measuring the consumer purchase intention towards environmentally friendly products (Ling-Yee, 1997)	Sustainable consumption: Over the next month, I plan to switch to a green version of a product
Meat attachment questionnaire (MAQ)	Portugal	MAQ 16-item scale consisted of four dimensions: Hedonism, Affinity, Entitlement, and Dependence used to measure the consumer attachment towards meat (Graça et al., 2015)	Health issues; Meat reminds me of diseases Environmental concern: To eat meat is disrespectful towards life and the environment Eating meat is a natural and undisputable practice.
Food Environmental Behaviour (FEB)	Australia	This scale consisted of 6-items measuring consumer behaviour related to buying those products that are locally produced or less harmed to the environment (Lea & Worsley, 2008)	Eat less meat to protect the environment
Consciousness for sustainable consumption (CSC)	Germany	This scale consisted of 3 dimensions (Balderjahn et al., 2013)	
Intention to reduce meat consumption (IRMC)	UK	This scale consisted of 4-items measuring intention to reduce meat consumption (Povey et al., 2001)	It is likely that I will only eat premium (i.e. no fat; the high quality of the meat) types of meat once a week
Environmentally responsible consumption (ERC)	India	ERC consisted of 38-items having ten dimensions: PUR, Need, pack, Collaborative consumption (COLAB), Conscious consumption(CC), Handling and care (HNC), Repair and reuse (RNR), Give/donate/offer (GDO), Sell/Exchange/Trade(SET) and Disposing of waste (WAST)	Organic food Purchase intention: I will buy environmentally friendly products. I intended to buy products that are not harmful to the environment I will buy products that carry eco-labels, marks, or certifications

			I will buy products that do not pollute the environment
Green food consumption intention(GFCI)	China	GFCI consisted of a 7-items scale measuring intention to buy green food to reduce environmental damage and good health (Zhu et al., 2013).	I would like to pay more for green food for a high-quality life
			I would like to buy green food to avoid illness since unhealthy food may hurt my health
			I would like to buy green food to reduce environmental damage
			I would like to buy green food as a responsible consumer
Young consumer sustainable consumption behaviour (YCSCB $_{food}$)	Germany	YCSCB scale consisted of two dimensions Nutrition choices having 8-items, purchase choices consist of 7-items. This scale measured the food choices of consumers (Fischer et al., 2017).	I will buy organic food products.
Sustainable consumption behaviour (SCB)	Malaysia	SCB scale consisted of three dimensions: Quality of life 11-items, care for environmental well-being 7-items, and care for the future generation 3-items. SCB refers to a socially and environmentally concerned way of buying, using and disposing of goods and services (Quoquab et al., 2019).	I do care for the natural environment.
			I use eco-friendly products and services
			I purchase and use environmentally friendly products
			I often pay extra money to purchase environmentally friendly products (e.g., organic food)
Moral disengagement in meat questionnaire (MDMQ)	Portugal	MDMQ scale consisted of five dimensions: means-ends justification having five items, desensitization with four items, denial of negative consequences contained five items, diffused responsibility with three items and reduced perceived choice is having three items (Graça et al., 2016).	If I had to kill the animals myself, I would probably stop eating meat.
			By eating meat, I engage with industry responsible for significant damages

			Even if I change my habits, I don't make a difference by myself.
			It doesn't matter if I change my habits because problems will still exist.
			I will consider changing my habits only if others also change theirs.
			Nowadays, there are good alternatives to meat consumption.
			It's possible to have an adequate diet without eating meat.
Sustainable food behaviour (Food choice motives)(SFB)	Netherlands	Consisted of 9-items with two dimensions: product choice, curtailment(Muriel Verain et al., 2015)	Buying organic meat:
			Buying meat with a sustainability label
			Eating a smaller portion of meat
			One meat-free day a week

The following section will review the key consumer segmentation bases that are relevant to sustainable food consumption.

2.6 Market Segmentation and Sustainable Consumers

Market segmentation is a process that divides the entire market into small groups of consumers who share identical needs and wants (Liu & Shiue, 2014). The purpose of market segmentation is to explore how to better serve each subgroup's needs and wants effectively and efficiently; it also supports marketers in identifying and targeting appropriate market segments and serving specific products and brands for those segments (Kotler, 2013). Therefore, it seems like an organisation's strategic planning is impossible without market segmentation. In the current globalized world, consumers adopt diverse lifestyles (Verain et al., 2016). Therefore, the food system becomes more complex, and consumption behaviour becomes more heterogeneous (Funk et al., 2021). Therefore, a careful analysis of the

segmentation strategy, led by a product-market potential, is essential (Golob & Kronegger, 2019; Morden, 1984).

Today, further research is required to understand the mechanism behind consumer decisions about sustainable food products (Eberhart & Naderer, 2017). Sustainable meat consumption intentions towards meat curtailment and organic meat purchase are complex phenomena contingent upon multiple internal and external factors. Internal factors may include sensory aspects, pleasure, taste and external factors comprise psychological, social, and cultural elements (Eertmans et al., 2005).

Sustainable food consumption includes reducing the ecological footprint linked to carbon emissions, water, and energy use in the production and transportation of food, animal welfare, and fair trade (Hartmann & Siegrist, 2017; Lacroix & Gifford, 2019, 2020; Verain et al., 2017b). Sustainability demands a decline in an animal-based protein diet due to the environmental's higher negative impact than vegetable-based proteins (Burnier et al., 2021; Lamb et al., 2016; Leip et al., 2015; Nguyen et al., 2021). To eat organic meat only is another approach associated with sustainable meat consumption. Organic meat generally means that animals are raised free from growth hormones or medicines that promote fast growth.

To better understand the organic food consumption in novice markets and target the consumers more efficiently, it is vital to provide a detailed and valuable profile of organic food consumers. The most widely used and primitive method divides potential consumers into homogenous groups based on demographic variables, geographical location, and product purchase frequency. In the late 1990s, academia emphasised that personality traits and demographics are the basis of segmentation (Quinn et al., 2015). Organic food-marketing researchers realise the importance of segmentation. Most of the research on organic food market segmentation has been established in developed countries based on various segmentation criteria, such as demographic factors (gender, age, income), socioeconomic factors (a social class stage in the family life cycle), geographic factors, psychological factors (personality traits, lifestyle and food-related lifestyle), consumption patterns (heavy, moderate and light users), and perceptual factors (benefit segmentation, perceptual mapping). Thus, it is essential to understand the different organic consumer segments in an emerging Asian country where the sustainable food (organic) industry is at the initial stages of growth (Funk et al., 2021; Sultan et al., 2018; Taufique & Vaithianathan, 2018).

A comprehensive segmentation study meets the requirements of industries and marketers, builds on sound theoretical support, and defines consumer segments using the cultural lens (Wind, 1978). Wind's approach for methodological robustness requires using the latest data collection and analysis techniques to increase the data validity and reliability and in-depth interpretation of results to execute the segmentation strategy.

In the next section, a summary of previous studies on marketing segmentation has been presented.

2.7 Consumer Segments for Sustainable Meat Consumption

Sustainable consumer segments of food choices are identified based on a consumer's specific motives. For example, organic consumers are motivated or demotivated to buy organic food by the same factors: animal welfare, high quality, price, and personal and family health (Liu et al., 2016). Recent growth in the organic food market has caused a significant change in how organic foods are produced, packaged, promoted, priced and distributed. Given the breadth of this shift, marketers need to understand organic food consumers. A European study on organic food market segmentation claims that the consumer segment with favourable attitudes toward organic foods has a higher level of health orientation and socially responsible consumption behaviour (Nasir & Karakaya, 2014). Another study used the Theory of planned behaviour (TPB) model to compare food-related lifestyle (FRL) clusters related to organic food purchase. Results revealed that the enthusiastic food consumers segment frequently purchase organic food due to their willingness to adopt new products and promote environmentally friendly products to others (Liang, 2014).

In literature, most studies based on consumer segmentation used FRL as a segmentation factor in organic food markets (Aslihan Nasir & Karakaya, 2014; Liang, 2014). Based on FRL, a study conducted in an emerging country, Vietnam, explored three organic consumer segments: conservatives, trendsetters and unengaged. The trendsetter segment displayed food-related psychographics: they loved cooking, preferred local and organic and food paid attention to healthy food (Van Huy et al., 2019). However, these studies were based on organic food and found inconsistent findings. Therefore, it is interesting to know the bases of consumer segmentation related to sustainable meat consumption in an emerging country.

2.7.1 Demographic Correlates of SMCI

Most companies commonly use demographic segmentation to reach the target customers of a particular product. Studies on the organic food market frequently utilise age, gender, geographical location, education, income, ethnicity, and family size as demographic indicators (Escriba-Perez et al., 2017; Grubor & Djokic, 2016; Liu et al., 2016; Peštek et al., 2018). However, the literature is inconsistent concerning the impact of demographic variables on sustainable food consumption intention; therefore, more research is required.

2.7.1.1 Income and SMCI

In emerging countries, increasing income has a beneficial effect and helps redirect consumers towards nutritional and healthy food choices. For instance, a study conducted in China found that wealthy, educated consumers having young children prefer to buy organic food (Liu et al., 2016). Green or organic food products are highly affected by income status because those products are sold relatively at higher prices. Product demands are significantly affected by income status as green products are sold at somewhat higher prices. The price is a key factor affecting consumers' perceptions and purchase intention (Risius et al., 2017). High income supports the purchase of more sustainable products.

2.7.1.2 Gender and SMCI

Gender can be an influential demographic variable in the decision-making and choice of sustainable food. Females are generally much more conscious about the nutritional value of products, health and the environment, so they have a positive attitude towards a healthy diet. In addition, women are considered more responsible for family health and choose food very carefully to meet the whole family's nutritional values (Chen et al., 2014; Sanchez-Sabate & Sabaté, 2019). Existing studies have reported that most organic food buyers in Western countries are female (Gad Mohsen & Dacko, 2013; Nasir & Karakaya, 2014). However, a recent study in Australia negates the gender bias in food purchasing and shows an insignificant relationship between gender and organic food consumption (Sultan et al., 2018). Instead, both males and females have equal rights to buying food in a family and society. Another Chinese study revealed that females having children are more significant organic food buyers (Liu et

al., 2016). The current study, therefore, will examine the role of gender on SMCI in a male-dominant culture.

2.7.1.3 Age and SMCI

The young generation is more concerned about the impact of their food choices on the environment and health. As a result, several studies have shown that young Western consumers are more likely to buy organic food than old-aged consumers (Kriwy & Mecking, 2012; Onyango et al., 2006; Sultan et al., 2018). In contrast, another study in the United Kingdom highlights that interest in nutritional or organic food increases with age (Apostolidis & McLeay, 2019a).

2.7.1.4 Education and SMCI

Education is key to forming consumers' attitudes towards organic food consumption (Paul & Rana, 2012; Roitner-Schobesberger et al., 2008). Education level is the most potent antecedent of healthy and safe food consumption (Tsakiridou et al., 2008; Yang, 2020). Highly educated consumers agreed to pay extra for organic food. While one study found education turned the unaware consumer into a highly motivated organic supporter, armed with nutritional information (Krystallis & Chryssohoidis, 2005; McCarthy et al., 2016). Contrary to that, a study conducted in China revealed no significant relationship between education and organic food purchase intention (Chen et al., 2014).

2.7.1.5 Geographical Location and SMCI

A Spanish study showed that consumers' geographical area affects meat consumption, and more frequently consume in the East, Northeast, Central and Northwest sides of Spain (Escriba-Perez et al., 2017). Meat consumption differences may therefore be related to the consumer habits and traditional recipes of these geographic areas. A recent study conducted in Australia showed that consumers living in metro cities are more loyal to organic food consumption than regional consumers (Sultan et al., 2018).

2.7.2   Psychographic correlates with SMCI

Psychographic variables are noteworthy in profiling organic consumers compared with demographic variables (Robert & James, 1999). Psychographic segmentation engages customer values, attitudes, interests, lifestyles, social class, personality characteristics,

activities, and opinions, resulting in distinct groups with homogenous needs (Cahill, 1997; Kotler, 1997; Oates et al., 1996). For example, a study conducted in Australia on organic food buyers divides consumers into two groups: excitement and wellbeing. Consumers who belong to the "excitement" group enjoy new challenges and accept new cultural experiences, while others who belong to the "wellbeing" group are health and environment-conscious (Sultan et al., 2018). Literature shows the importance of personal characteristics in shaping attitudes that affect knowledge and behaviours regarding organic and local food among lifestyle segmentation of US food shoppers (Nie & Zepeda, 2011).

2.7.2.1 Perceived Consumer Effectiveness (PCE) and SMCI

Perceived consumer effectiveness can be explained as consumers' belief that their actions related to sustainable consumption can resolve environmental problems (Robert & James, 1999; Sarti et al., 2018). Consumers feel motivated if they see that their activities bring change in the food processing cycle and have intentions to change their purchasing patterns (Arvola et al., 2008). PCE is a significant factor that significantly stimulates consumers' intentions to purchase sustainable food products (Vermeir & Verbeke, 2006). A recent study conducted in China also supported the positive relationship between PCE and sustainable food consumption intentions (Syed Shah et al., 2020).

SMCI, which refers to purchasing more quality organic meat or meat curtailment, is a high-involvement activity that significantly affects human health and the environment. Therefore, consumers who believe that positive intentions related to organic meat purchase and meat curtailment consumption affect environmental sustainability may engage in SMCI.

2.7.2.2 Environmental Knowledge and SMCI

Environmental knowledge (EK) may affect consumers' sustainable consumption intentions. Therefore, Eco or sustainability-related labels promote sustainability; also, food labelling should be supported with information campaigns (Dangi et al., 2020; Sarti et al., 2018). The individuals with environmental knowledge give attention when buying meat products with nutritional labels, give importance to the eco-friendly certification that satisfies their responsible consumption. This study will open a new avenue in an emerging economy, Pakistan prospective, where consumers have less environmental knowledge than a developed country.

2.7.2.3 Environmental Concern and SMCI

Environmental concern (EC) refers to the consumers' extent to understand environmental problems and inclination to step forward to solve them (Dunlap & Jones, 2002). Environmental concerns promote consumers to consume organic meat reflect sustainability behaviour (Tandon et al., 2020). Highly environmentally concerned consumers have a strong attitude toward protecting the environment that motivates them to purchase organic food (Maichum et al., 2016). Hence the level of environmental concern influences the consumers' intention related to SMCI.

2.7.2.4 Religiosity and SMCI

Religiosity is defined as the person's belief in God and the promise to follow the guidelines and rules set by God (Weaver & Agle, 2002). More than two-thirds of the world's population's daily lives revolve around their religion (Biswas-Diener et al., 2011). Religion is the primary source of one's attitudes, perceptions, and actions (Amine & Hendaoui Ben Tanfous, 2012). Religious values are counted as one of the deepest rooted and broad-reaching values that influence consumers' consumption and non-consumption attitudes (Kahle et al., 2016; Mathras et al., 2016).

Every religion provides detailed guidelines and directions about food consumption (Raggiotto et al., 2018). Some food items, especially meat, are regulated by religions. Recent literature on food consumption suggests that meat products' consumption and production patterns are strongly followed by religious beliefs (Heiman et al., 2017). Another research study validates that religiosity varies from consumer to consumer (Anam et al., 2018) and subsequently has a varying effect on a Pakistani Muslim's purchase intention.

The latest study reports that individual beliefs about God's association with nature or care for the earth and other creatures of God (i.e. animal welfare or human health) motivate religious consumers to consume sustainably (Minton et al., 2018). Furthermore, consumers with strong religious beliefs consider protecting the environment and wildlife as their moral responsibility and prefer products that satisfy their moral urge. In other words, religious values may motivate consumers to purchase only organic meat or consume less meat, ensuring a more sustainable lifestyle.

2.7.3 Behavioural Correlates of SMCI

Behavioural segmentation provides beneficial insights into organic consumers (Pearson et al., 2011). The literature suggests that behavioural values divide consumers regarding awareness, non-awareness, commitment level, and purchase frequency. A recent study claimed that behavioural segmentation could bring valuable insights to the field of organic labelling (Sultan et al., 2018); this is because most studies rely on demographic variables to profile segments. Nasir and Karakaya (2014), in a survey of consumers living in an East-European city, identified three clusters based on behavioural beliefs towards organic food, favourable, unfavourable, and neutral.

According to the literature review, consumer profiling can only bring valuable insights regarding behavioural intention towards SMCI related to meat reduction and purchase of organic meat. Based on the literature review, the conceptual model derived for segmentation analysis adapted from the previous study conducted by González et al. (2015).

Figure 2.1 Conceptual Model for Segmentation Analysis

Observed Characteristics
- Age
- Gender
- Education
- Employment status
- Income
- Marital status
- City
- Province
- Household structure
- Frequency of organic meat purchase

Unobserved Characteristics
- Environmental concern
- Environmental knowledge
- Intrinsic religiosity
- Extrinsic religiosity
- Perceived consumer effectiveness

SMCI related to meat curtailment and organic meat consumption
- Meat curtailment intention
- Meat detachment intention
- Organic meat purchase intention

Segmentation Process

Consumer Profiling

40

2.8 Conclusion

This chapter reviews previous scales on sustainable consumption and concludes that some scales are conceptually irrelevant to measure the concept of sustainable meat consumption intentions in an emerging economy context. However, these studies provide general guidelines for scale development and items pool generation. Also, this chapter summarised the literature on sustainable and organic consumers segments and various demographic, behavioural and psychographic characteristics of those consumers who want to purchase organic food, especially meat and reduce consumption of meat for their health and environmental sustainability. The main objective of this study revolves around the concept of transition in protein consumption intentions among consumers from an emerging economy to protect the environment, for animal welfare and human health. However, strategic marketing requires a complete consumer profile analysis to predict intentions towards sustainable consumption (Kotler, 1997; Walker et al., 2015). Segmentation analysis provides a lens to critically evaluate the various factors that affect a particular consumer group. Eventually, organizations offer tailor-made products and design programs to serve each segment. The following chapter, *Chapter 3*, *Pro-environmental Behaviour: Theoretical Framework and Hypotheses Development,* encapsulates the theory of planned behaviour and relevant construct based on contextualization to predict SMCI.

Chapter 3 Pro-environmental Behaviour: Theoretical Framework and Hypotheses Development

3.1 Introduction

The previous chapter summarised the literature on measurement scales on sustainable consumption intentions and segmentation related to research questions RQ1 and RQ2 (study 1). The present chapter expands the discussion initiated in *Chapter 2*. *Chapter 3* frames an advanced theoretical model of SMCI explaining the reduction in meat consumption and increase in organic meat consumption in the context of an emerging economy, i.e. Pakistan. Furthermore, the motives behind sustainable meat consumption intentions are explained.

3.2 Model of Sustainable Meat Consumption Intention (SMCI)

Sustainable consumption and the reduced consumption of harmful products to protect the planet are emerging trends in the food market. The literature shows that consumers' sustainable intention can lead to a healthier and more sustainable diet (Verain et al., 2017b). Several models and theories from the social-psychological domain have been proposed to identify the intrinsic and extrinsic factors that lead to sustainable consumption. Qi and Ploeger (2019) argue several conceptual and methodological gaps in explaining consumer intentions towards specific food items. Most studies are conducted on organic food consumption in general, which calls for further research on certain food items like sustainable meat consumption.

The current study will use the advanced theory of planned behaviour (TPB) model to explore the motives behind SMCI. Personal norms will be added as a predictor of SMCI based on altruistic, biospheric and egoistic pro-environmental values. Religiosity is used as a moderator in the TPB model. The advanced TPB aims to understand whether moral or rational values generally influence consumers.

3.3 Psychological theories related to pro-environmental behavioural Intentions

Since dietary decisions are primarily under the individual's control, psychological and behavioural theories were chosen to identify the key motives contributing to sustainable meat consumption intentions. In environmental psychology, the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010), the theory of planned behaviour (Ajzen, 1991) and the value-belief-norms theory (Stern et al., 1999a) are most widely used.

In the following sections, a critical review of theories used in the literature to describe sustainable consumer behaviour is provided. Then justification is offered for choosing a specific theory to explain sustainable consumption intentions related to reducing meat-based diet and purchasing organic meat.

3.3.1 Theory of Reasoned Action

The theory of reasoned action (Ajzen & Fishbein, 1980) states that behavioural intention determines an individual's behaviour, and behavioural intention results from the attitude toward performing the behaviour and subjective norms of the individual. The two components vary in importance concerning individuals' behaviour, prevailing situation, and differences (Ajzen & Fishbein, 1980). Zhou et al. (2013) applied the theory of reasoned action to analyse consumers' intention towards organic food.

3.3.2 The Value-Belief-Norms Theory

The Value-Belief-Norms Theory (VBN) was proposed by Stern et al. (1999b). Values, beliefs and norms categorise the seven constructs of VBN. 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 primary 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.

A study used the VBN theory to predict consumers' willingness to buy mobile slaughter unit meat in the Netherlands (Hoeksma et al., 2017). A recent study conducted in an emerging country, India, found that altruistic and egoistic values significantly enhance young consumers' intentions to purchase products with green packaging (Prakash et al., 2019). A Western study applied VBN theory to measure the young graduates' sustainable behaviour and reports that biospheric and egoistic values significantly support personal norms towards sustainable behaviour (Whitley et al., 2018). Likewise, a USA study explored pro-environmental behaviour using values and personal norms and revealed a positive relationship between values and norms (Kim & Seock, 2019).

3.3.3 The Value Attitude Behaviour Theory (VAB)

The value-attitude-behaviour theory was proposed and tested by Pamela Homer and Lynn Kahle (Homer & Kahle, 1988). Values are fundamental in forming attitudes, which lead to a specific behaviour according to VAB theory. A value can be defined as a stable belief that facilitates an individual to conduct a particular action or achieve an end-state that they prefer (Rokeach, 1973). Previous research utilized the VAB theory to support the organic purchase intention (Shin et al., 2017; Zhou et al., 2013). Consumers' pro-environmental interest is closely correlated to the three general sustainability values: egoistic, altruistic, and biospheric (Biswas & Roy, 2015b; Stern & Dietz, 1994).

3.3.4 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) is derivative from the Theory of Reasoned Action (Fishbein & Ajzen, 2010), which recommends that an individual's intention is based on the rational assessment process. There are three variables: attitude defined as the degree of positive or negative evaluation, subjective norms is the perceived social pressure to accept or reject the product and perceived behavioural control shows that a particular intention is under one's control or not; collectively, these variables lead towards the behavioural intention (Ajzen, 1991).

TPB has proven a more appropriate and robust (Bamberg, 2003) technique to measure the pro-environmental behavioural intention across a broader eco-friendly perspective, such as organic food (Scalco et al., 2017), green hotels (Verma & Chandra, 2017), energy-efficient

products (Ha & Janda, 2012), and recycling behaviour (Park & Ha, 2014). TPB has been most widely used in predicting consumer food choices. Dowd and Burke (2013) used TPB in their research which showed significant results to purchase sustainably sourced food. However, TPB has been developed in the Western context and used to explain intention in western cultures. In the Eastern context, one study found young Indian consumers' attitudes towards pro-environmental behavioural intention is more or less the same as in developed countries (Taufique & Vaithianathan, 2018).

However, due to the sample's limited generalizability, young consumers behaved as per the individualistic perspective. This study suggests that the TPB can be supplemented with some more robust variables like culture, religion and tested with a more representative sample of other age groups. A study of Turkish Muslim immigrants in Germany was conducted to examine the determinants of muslim Halal meat consumption and behavioural intentions were studied by applying the advanced TPB model; it was found that habit and perceived behaviour control positively affect behavioural intention (Sherwani et al., 2018). In a Chinese study (Qi & Ploeger, 2019), instead of subjective norms, the cultural aspect was incorporated into the model; the improved explanatory power of the model of green food purchase intention was validated, verifying the statements of Li et al. (2009) and Malhotra and McCort (2001).

Also, a recent study by Çoker and van der Linden (2020) also bridges the gap between social psychological research and meat consumption as a dietary choice or form of health behaviour by using the TPB model.

3.4 Relationship of Constructs of TPB and VBN with SMCI related to Curtailment of Meat from Diet and Consumption of Organic Meat

The Theory of Planned Behaviour (TPB) is associated with SMCI is used to address the final research question. TPB provides the most comprehensive explanation of consumer intention. Ajzen (1991) reported that behavioural intention is the closest proxy of actual behaviour. Therefore, TPB is the most widely rational choice model for those studies where the primary objective is to elucidate behavioural intention or when actual behaviour is challenging to determine. This TPB features appropriate to propose the novel research about SMCI related to meat curtailment or organic meat consumption is usually reflected by consumers' behavioural intentions.

3.4.1 Background Factors and Beliefs Formation

According to TPB (Fishbein & Ajzen, 2010), a person's personality, demographic variables, and specific product information factors build a person's beliefs that vary from consumer to consumer. The current study measures the effect of informational factors on SMCI. However, demographic variables were used for the profiling of respondents.

3.4.2 Informational Factors and Beliefs

Information is defined as knowledge stored in the consumer's memory that plays an essential role while purchasing. Food packaging can deliver numerous messages related to the brand and product-specific benefits. Health-related labels are a valuable tool for those consumers who are conscious about nutritional values in their diet (Garnett et al., 2015; Hawkes et al., 2015). According to Hoek et al. (2017a), the impact of environmental knowledge (mentioned on the product label) on consumer food choice is less researched in consumer studies. However, knowledge about organic food and its impact on the environment is measured as the direct predictor of purchase intention in China's collectivist culture (Wang et al., 2019). In the food marketing literature, food labels provide reliable and valuable information that advocates for consumers to make inferences about the product quality (Apostolidis & McLeay, 2016; Grunert et al., 2014). One study found that information about fats on the meat label plays a significant role in the curtailment of meat (Apostolidis & McLeay, 2019a).

Moreover, Halal certification on meat confirms the customer's knowledge that the product is prepared according to Islamic guidelines. Alongside Halal certification, health is a consideration; for instance, in Pakistan, an Islamic country, people are still sceptical about purchasing meat without nutritional and Halal information due to the various meat scandals.

The current study will identify whether knowledge about nutritional values in meat, environmental factors, and the Halal logo assist in maintaining normative, control, and behavioural beliefs towards a sustainable attitude.

The following hypothesis emerged based on the above contextual knowledge *(Figure 3.1 Theoretical Model of the Study):*

H1$_{a,b,c}$: *Informational factors (environmental knowledge) are positively associated with behavioural (H1$_a$), normative (H1$_b$), and control beliefs (H1$_c$).*

H2$_{a,b,c}$: *Informational factors (environmental concern) are positively associated with behavioural (H2$_a$), normative (H2$_b$), and control beliefs (H3$_c$).*

The conceptual model of the study is presented in *Figure 3.1.*

Figure 3.1 Theoretical Model of the Study
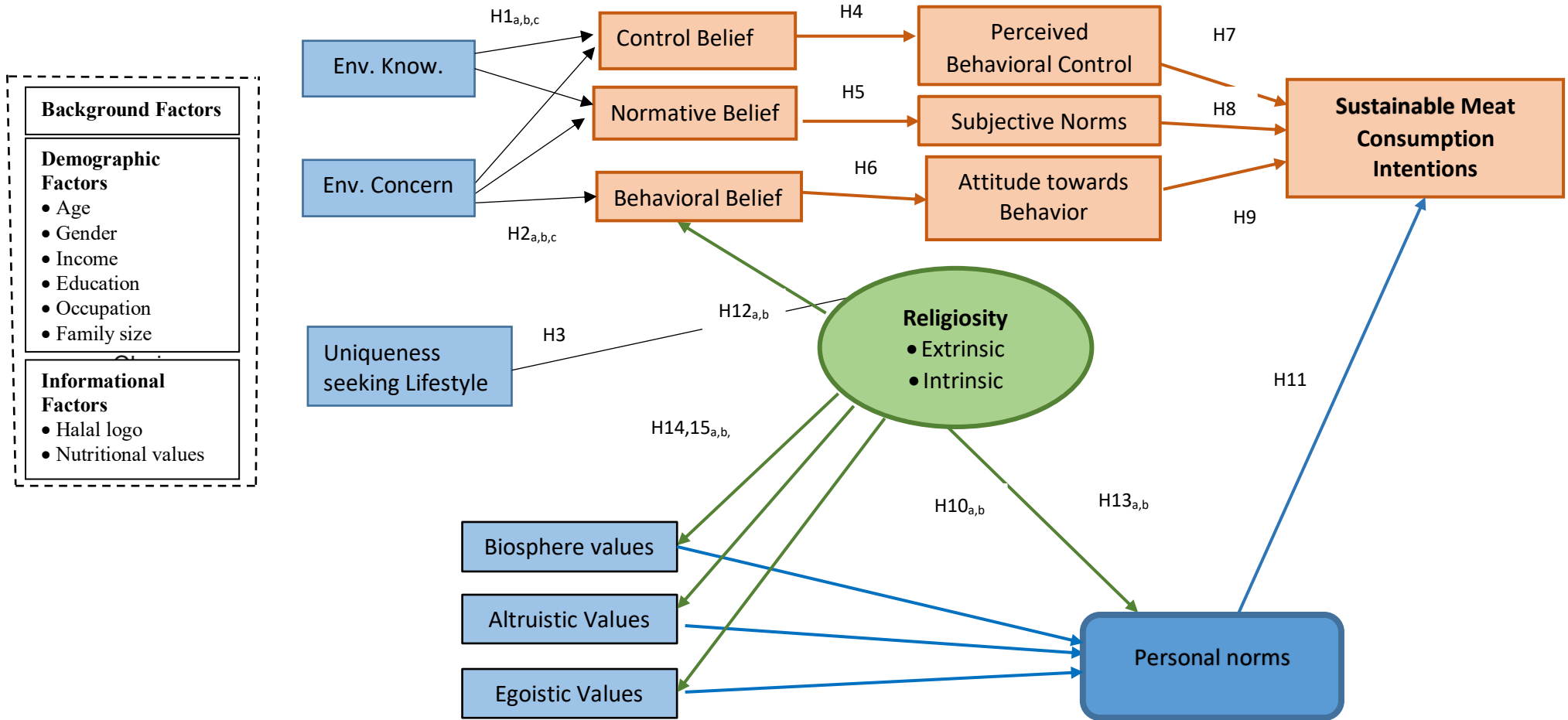
Notes: Constructs and paths shaded in orange are the original schematic presentation of the Theory of planned behaviour (TPB), while paths and constructs in blue and green are additional connections. Construct's conceptualization and measurement adapted from the literature, while these associations are the original contribution of the present research.

3.4.3 Uniqueness-seeking Lifestyle

People desire to look different and unique; therefore, they seek products that differentiate them from other consumers (Marija Ham and Ana Pap, 2018). Additionally, consumers prefer to buy unique products or brands that identify their association with a specific social group or class (Burnkrant & Cousineau, 1975; Goldsmith et al., 2003). Marketers have used this consumer desire for advertising purposes, product differentiation, and prestige pricing (Lynn & Harris, 2006). For example, many researchers studied the influence of different lifestyles on organic food purchase intention and found it significant (Chen et al., 2014; Irene Goetzke & Spiller, 2014; Marija Ham and Ana Pap, 2018; Nie & Zepeda, 2011). Individuals who wish to stand out do so with a different lifestyle or through a distinct personality and desire that other people follow their lifestyle; it is assumed that they generally prefer to buy sustainable (organic) meat or reduce meat from their diet.

Based on previous research, the following hypothesis has been developed:

H3: A uniqueness-seeking lifestyle is associated with positive attitudes towards behaviour and SMCI

3.4.4 Relationship between Beliefs and Perceived Behavioural Control, Subjective Norms and Attitude towards SMCI

Beliefs are described as "the subjective probability that an object (target behaviour) has a certain attribute" (Fishbein & Ajzen, 2010, p. 96). Thus, the TPB model presented that behavioural control and normative beliefs are associated with attitudes towards the behaviour, perceived behavioural control, and subjective norms, respectively.

Attitude is defined as the cognitive and affective assessment of the object or appraisal of the intention (Bamberg, 2003). The particular intention being under one's control or not comes under Perceived behavioural control. Subjective norms are connected with perceived social pressure to perform a specific behaviour. The TPB model is generally used to predict consumer intention in food choices (Wang et al., 2016; Yadav, 2016). Dowd and Burke (2013) highlighted that attitudes, subjective norms, and perceived behavioural control positively influenced sustainably sourced food purchase intention. Moreover, local Indian consumers have positive attitudes towards behavioural intentions related to staying in green hotels (Verma & Chandra, 2017; Yadav, 2016). In contrast, a study about Indian urban young consumers found

that the direct effect of subjective norms on behavioural intention, and the indirect effect on behaviour, are insignificant (Taufique & Vaithianathan, 2018).

Based on the theoretical explanation and literature evidence, the following hypotheses are proposed (*Figure 3.1 Theoretical Model of the Study*):

H4: *Control beliefs are positively associated with perceived behaviour control*
H5: *Normative beliefs are positively associated with subjective norms*
H6: *Behavioural beliefs are positively associated with the attitudes towards the behaviour*

Fishbein and Ajzen (2010) theorized that the motivation behind any intention is directly associated with the attitude towards behaviour, subjective norms, and perceived behavioural control. In the context of marketing and consumer behaviours, subjective norms served as a primary predictor of people's intentions, including technology-use intention (Baker et al., 2007), intention to purchase organic foods, and intention to revisit green hotels (Teng et al., 2015). A study conducted in China showed that attitude, perceived behavioural control, and subjective norms significantly influenced the consumer intentions to purchase green food products (Qi & Ploeger, 2019).

One of the underlying premises of the current study is that beliefs about the sustainability of meat update attitudes toward reduced meat consumption or eating organic meat only. Based on the TPB model, beliefs about how important others (related to consumers) feel about food sustainability should also influence the intention to purchase organic meat.

Based on these studies and TPB, the following hypotheses are suggested *(Figure 3.1 Theoretical Model of the Study)*:

H7: *Perceived behavioural control associated with SMCI*
H8: *Subjective norms lead to SMCI*
H9: *Attitudes towards behaviour associated with SMCI*

3.4.5 Relationship between Pro-environmental Values (Egoistic, Altruistic and Biosphere) and Personal Norms towards SMCI

Values play a significant role in one's life and guide principles towards desired goals (Schwartz, 1992). Several studies use pro-environmental, biospheric, altruistic, and egoistic values to explain consumers' sustainable intention, such as willingness to pay more for organic menus (Hoeksma et al., 2017; Shin et al., 2017). Although in Western countries, only a minority of consumers are willing to reduce meat in their diet for ecological concerns (Sanchez-Sabate & Sabaté, 2019).

Biospheric values promote personal norms that protect the earth from pollution and respect nature (Shin et al., 2017). For example, in Western countries, a minority of consumers are willing to reduce meat in their diet for an ecological concern (Sanchez-Sabate & Sabaté, 2019). However, in Asian countries, people with strong biospheric values prefer to purchase eco-friendly products (i.e., an electric car) to reduce the negative impacts of transportation on the environment (Saleem. et al., 2018).

The welfare of others, such as to protect their own family, children, or community, can be understood as altruistic in nature. Thus, consumers who purchased organic food instead of conventional food represent their concern for others and society's shared benefits (Kareklas et al., 2014; Thøgersen, 2011). Another study showed that environmentally conscious consumers have a positive attitude towards organic food, leading to purchase intention (Smith & Paladino, 2010).

Egoistic values are linked with one's welfare, like health-related issues (Stern, 2000b; Stern et al., 1999a). Health-related and safety concerns motivated people to purchase organic food (Hwang, 2016; Irene Goetzke & Spiller, 2014). Moreover, maintaining good health and well-being encourages consumers to build an organic food consumption attitude (Kareklas et al., 2014).

Personal norms also define whether a person should or should not engage in such intentions to prevent adverse outcomes. Personal norms are related to people's sense of responsibility towards the environment (Stern et al., 1999a). The last link of causal relationships in the advanced TPB framework describes how sustainability-related beliefs build personal norms that lead to sustainable consumption intention. In a study conducted in the Netherland, Hoeksma et al. (2017) reported that personal norms mediated the relationship between pro-environmental values and intention.

Based on the literature, the following hypotheses may suggest (*Figure 3.1 Theoretical Model of the Study):*

H10$_{a,b,c}$: *Pro-environmental values (biospheric, egoistic, altruistic) are associated with personal norms*

H11: *Personal norms are associated with SMCI*

3.4.6 Advanced Model of TPB incorporated Pro-environmental Values and Religiosity

The effectiveness of a theoretical explanation of sustainable intention using socio-psychological theories requires more investigation due to nature and contextual limitations. Food marketing demands a holistic approach to understanding consumer decision-making (Lazzarini et al., 2018; Qi & Ploeger, 2019; Weibel et al., 2019). There is increasing attention for less rational decision-making in healthy and sustainable diets (Garnett et al., 2015). Food choice decisions are made daily, and usually, people search for healthy food. TPB is the most widely used theory in food-related studies, but it fails to measure the detailed description of sustainable consumer intention related to a specific food item 'meat'.

TPB is used to measure the cognitive variable attitude, subjective norms, and perceived behaviour control. Even though influential variables such as values, emotions, and feelings also play a significant role in food choices. To overcome the inherent weakness of TPB, incorporated the construct of personal norms based on altruistic, egoistic, and biosphere values from VBN theory that lead to SMCI can be added.

This study intends to develop a holistic model to explain SMCI related to meat curtailment or switch to organic meat based on this advanced TPB model.

3.4.6.1 Religiosity and Sustainable Consumption Intentions

One's attitudes, perceptions, and actions are set under the guidelines of one's religion (Amine & Hendaoui Ben Tanfous, 2012). A 2015 survey reported that more than 86% of the world's population follows some kind of religious faith (PEW, 2017b). Therefore, to increase the model's acceptability and validity across the globe, it is worthwhile to include the impact of religiosity by extending the TPB model.

Religiosity is the key factor influencing purchase decisions in religious societies. Religious values are not only powerful influencers; they also have a track record of transforming communities and lifestyles (Ghazali et al., 2018). Current marketing literature illustrates that consumers' religious beliefs impact various marketing activities (Mathras et

al., 2016), like advertising (Minton & Cornwell, 2016), branding/retail evaluations (Tang & Li, 2015), and company features (Minton & Cornwell, 2016). Religious beliefs also impact consumer choices (Choi, 2010) related to sustainable consumption (Minton et al., 2018).

It is estimated that 1.8 billion (24.1%) Muslims are found worldwide, and in Western countries, Muslim followers are increasing rapidly (PEW, 2017b). With a 96.4% Muslim population, Pakistan is the second largest Muslim country globally (PEW, 2012). Of relevance to the relationship between Religiosity and SMCI in Pakistan is that most of the literature discusses religiosity's impact on purchasing "Halal" products. And Halal certification leads to every other attribute of the product selection process (Ahmed et al., 2019; Anam et al., 2018; Sherwani. et al., 2018; Wilkins et al., 2019). However, cases where products are not directly related to religion's core values and beliefs are currently less explored.

Moreover, only a few studies on sustainable food consumption intentions can be found in the literature conceptualising the relationship between religiosity and sustainable food consumption. Every religion provides guidelines and instructions related to food consumption (Raggiotto et al., 2018). Religious values influence attitudes and sustainable consumption. Recent research confirmed that religiosity varies from consumer to consumer, and subsequently, has various impacts on consumers' purchase intention belonging to Pakistan (Ahmed et al., 2019).

The following hypotheses may be proposed based on the above literature (*Figure 3.1 Theoretical Model of the Study):*

$H12_{a,b}$: *Religiosity(extrinsic, intrinsic) is associated with behavioural beliefs*

$H13_{a,b}$: *Religiosity(extrinsic, intrinsic) is associated with personal norms*

$H14,15_{a,b,c}$: *Religiosity(extrinsic, intrinsic) is associated with egoistic, altruistic and biosphere values*

3.5 Conclusion

This chapter summarised literature evidence and utilised the findings to conceptualise various theoretical constructs in Pakistani culture concerning SMCI related to reducing meat consumption or eating more quality eco-friendly organic meat. A comprehensive framework based on the Theory of planned behaviour and theory of value belief norms was proposed to address RQ3 of the present study. Accordingly, several hypotheses were established for analysing the consumers' sustainable meat consumption intentions. The next *Chapter 4* elaborated the research methodology for the analysis of Study 1 and study 2.

Chapter 4 Research Methodology

4.1 Introduction

The previous chapter, *Chapter 3* summarised the literature on the theory of planned behaviour (TPB) to capture behavioural intentions related to sustainable food consumption intentions. Hypotheses were established to address the research questions about demographic and psychographic features of sustainability-conscious consumers belonging to Pakistan's emerging Asian country. The current chapter, *Chapter 4* is divided into two major sections: the first section presents an overview of the overall research plan. Then, it outlines a methodology to answer the research questions RQ1 (Scale development SMCI), RQ2 (consumer profiling), and RQ3 (analysis of advanced TPB). The present chapter elaborates the philosophical paradigm underpinning the methodological approach for the scale development process and consumer profiling. After this, a detailed explanation of the research design and methodology for scale development (RQ1) and consumer profiling (RQ2) is provided. The research design section for Study-1, both for RQ1 and RQ2, comprises study design in detail, methodological approach justification, population, sampling design approach, and data collection techniques.

The second section of the present chapter explains the methodological approach adopted to answer the third research question (RQ3) pertaining to Study-2 of this thesis. An explanation of the survey design is then provided to associate it with this study's philosophical paradigm. A detailed description of the measurement instruments, data collection methods, and analysis techniques are then elaborated.

4.2 Philosophical Paradigm and Overall Research Plan

A research philosophy explains the set of beliefs about the nature of the reality being investigated (Bryman, 2012). Philosophical perspectives or paradigms, within which the scholarly research on environmental marketing sits, vary from objectivism, constructivism and positivism (Saunders et al., 2015). Objectivism is the principle drawn from positivism that the researcher should remain distanced from what they study. Hence, findings depend on the nature of the social phenomenon being studied, its various meanings and influences on other actors, rather than on the personal beliefs and values of the researcher. In contrast, Constructivism rejects the idea that there is objective knowledge to be found by the researcher in some external reality; instead the researcher's values influence the knowledge that is contructed through interaction with the participants in the study; each group or the observer creates the inherent

sense of each social phenomenon (Podsakoff et al., 2012). The term "interpretive research" refers to a research paradigm that sees social reality as being embedded within, and impossible to abstract from, their social settings; hence researchers "interpret" the reality through the sense-making process rather than a hypothesis testing process (Hammond & Wellington, 2020). According to the interpretivism approach, findings are associated with specific people, cultures and times and based on interactive engagement with participants.

In contrast, the positivism approach relies on responses gathered from structured measures and give generalizable results across various contexts and cultures (Hudson & Ozanne, 1988). The positivism paradigm is based on understanding human behaviour using quantitative techniques such as observation and experiments (Rechberg, 2018). The philosophy justifies the research methodology.

The nature of the phenomena being observed should influence the research design and the research methodology. The present research used the positivist paradigm, which assumes that "reality is real and apprehensible" (Guba & Lincoln, 1994, p. 108) and encompass theory testing based on quantitative data (Perry et al., 1999; Sobh & Perry, 2006). Briefly, this research primarily utilised quantitative methods to analyse the hypotheses with minimal use of qualitative tools to take input for further quantitative analysis.

Positivism underlies determinism, empiricism, parsimony, and generality rules (Cohen et al., 2011). These principles articulate a systematic approach to discovering social reality. This systematic approach suggests developing the causal relationship between causes of events, a group of provable facts to investigate these relationships, execution of the phenomenon in the utmost economical method, and systematic generalisation of outcomes to the population at large (Dash, 2005). One of the advantages of a positivist approach is that the researcher's role is limited and objective. The results are free from bias, observable, and quantified (Hersh & Tucker, 2005; Keuth, 2015). In the positivism approach, a methodology is established on quantitative assessments, experiments, and observation of the phenomenon that leads towards hypothesis analysis.

In the positivist paradigm, quantitative methods are utilised through a deductive approach to analyse relationships between measurable data and statistical investigation. The present study's hypotheses are established based on literature *(see Chapter 3)*. The quantitative approach was more appropriate for examining the complete data whether these relationships have significance or not in a specific context (Aaker et al., 2016). RQ1 conducted focus group discussions as a qualitative data collection technique, while quantitative data was collected through a structured questionnaire. The qualitative data analysis, collected via focus group

discussions and the literature review, was performed using Leximancer v. 5.0. Data collected through the quantitative survey were analysed using statistical tests, namely exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and correlation using statistical tools SmartPLS and SPSS v. 25.0. The present study utilised quantitative data to answer the RQ2. For this purpose, data is collected through a structured questionnaire via an online survey link generated with the software Qualtrics. Various statistical methods were employed to analyse the data, including EFA, Cluster Analysis, Multiple Discriminant Analysis (MDA), and Analysis of Variance (ANOVA).

Table 4.1 Overall Research Design and Methods

Study	Objective	Research Question	Methods
Study 1	To develop the SMCI scale related to meat curtailment and the use of more quality organic meat.	RQ1: How can the impact of cultural (social) values, animal welfare and environmental elements on consumers' intention related to meat curtailment and use of more quality meat be measured on one scale in an emerging economy?	Data Collection: Qualitative: Focus group discussions (FGDs), literature review Quantitative Survey Questionnaire Analysis: FGD transcripts were analysed to operationalize the scale domain and generate a pool of items by using Leximancer v. 5.0 EFA, CFA, Correlation Analysis and analysis of reliability (α) of the scale conducted through SPSS and SmartPLS
	To identify organic consumer segments and elucidate their various characteristics based on demographic, psychographic, and behavioural criteria	RQ2: What are the demographic, psychographic and behavioural characteristics of consumers in Pakistan who are conscious about meat sustainability and who reduce meat in their diets or prefer organic meat?	Data Collection: Data was collected through an online structured questionnaire. Data Analysis: Descriptive Analysis, EFA, Cluster Analysis, MDA and ANOVA.

Study 2	To identify those factors that influence SMCI related to meat curtailment and the use of more quality organic meat.	RQ3: To investigate the key driving forces such as religious and pro-environmental values behind sustainable meat consumption intention through an advanced TPB model in an emerging economy.	Data Collection: Data was collected through an online structured questionnaire. Data Analysis: SPSS v26 and SmartPLS 3.2.2 software were used for EFA, CFA, Analysis of reliability (α) of the measurement scales, Correlation Analysis and Path Analysis using

4.3 Research Design for RQ1- Scale Development of SMCI

Research questions established in Study 1 require adopting an empirical setting to develop a novel measurement scale (RQ1) and consumers' segmentation analysis (RQ2). The research methodology utilised in Study-1 is adopted from the recommendations given in the body of literature related to scale development (Churchill, 1979; Churchill et al., 1974; Clark & Watson, 1995; Netemeyer et al., 2003) and segmentation analysis (Dolnicar et al., 2018; Sarti et al., 2018; Sultan et al., 2018). Focus group discussions were held as a qualitative module to generate the pool of items for new scale development in RQ1. To answer the RQ1, data was collected on a quantitative survey based on a structured questionnaire in the next phase. The newly developed scale, generated from RQ1, was used in RQ2 to analyse sustainable consumers' segmentation analysis based on quantitative data.

4.4 SMCI Scale- Scale Development Process

Scale development is a rigorous scientific process and demands to consider several aspects carefully. A good measurement scale must establish reliability and validity (Zaltman, 1997). Several studies have successfully developed various measurement scales in the sustainable marketing literature (Gupta & Agrawal, 2018; Quoquab et al., 2019; Saleem et al., 2018a). This section describes the scale development process by following the established procedures advocated in the previous literature (Clark & Watson, 2019; Saleem et al., 2018a). Earlier studies also informed the research approach (e.g., Churchill, 1979; Netemeyer et al., 2003). The research design for RQ1 is presented in *Table 4.2*.

Table 4.2 The Research Design for RQ1- Scale Development

Phases	Details
Phase1- Conceptualization, and description of the domain of the construct	Deductive approach: a literature review of studies with scales related to sustainable consumption, meat reduction, or plant-based protein consumption.
	Inductive approach: seven focus groups sessions were conducted.
Phase2- Qualitative study:	78 items were generated after content analysis.
Items generation and expert review for content validity	Three experts from sustainable marketing research judge items for the content and face validity.
	70 items were retained after review.
Phase 3- Quantitative study: scale purification	Round 1 (n=222) Exploratory factor analysis (EFA) was conducted for further reduction of items. 38 items retained for the next step.
	Round 2 (n=722) was split into two, and (n1=412) was utilized to conduct EFA to reduce the number of items and explore the underlying structure.
	(n2= 310) used to run the confirmatory factor analyses (CFA) to access a newly developed scale's convergent and discriminant validity.
Phase 4- Finalization of scale	Round 3 survey (n= 355) utilized a structural model to test and establish the nomological validity of SMCI.

4.4.1 Phase 1- Conceptualization and Description of the Domain of the Construct

The first step of the scale development process starts with specifying the domain of the construct. The description of the proposed scale helps to ascertain potential sources for items pool generation. In this present study, seven focus group sessions were conducted to provide a comprehensive definition of the construct 'Sustainable Meat Consumption Intentions (SMCI) related to reducing meat consumption from the diet or consuming more quality (organic or free-range) meat. Focus groups were conducted in various metro cities in Pakistan via online video conferencing software, Zoom.

4.4.2 Phase 2- Generating Items Pool

The second step of the scale development process is to generate an items pool that captures all the aspects related to the construct. The main idea behind developing the items pool is to confirm the construct's content adequacy (Hinkin, 1995). The present study adopted a deductive scale development approach and conducted a literature review and focus group sessions on generating an initial items pool. The literature analysis involved only those studies

having scales to measure the sustainable consumption intentions concepts, for instance, consciousness for sustainable consumption (Balderjahn et al., 2013), meat attachment questionnaire (Graça et al., 2015), and moral disengagement in meat questionnaire (Graça et al., 2016). Seven FGDs were also conducted, involving six participants in each focus group. Participants for FGDs were recruited from academia, the livestock industry, and university students. The participants for focus groups were selected relying on purposive sampling principles. Lecturers were chosen, considering that academia has knowledge of sustainable consumption and awareness of environmental degradation due to excessive meat consumption. Managers in livestock industries and butchers were selected, since they are exposed to organic food campaigns, are part of the organic meat production sector and are experienced with dealing with consumers who may have concerns related to meat production. University students were invited to participate in the study, but only those who have an interest in sustainable food consumption research. Items generated at this stage were then reviewed by the research supervisor and three sustainable marketing experts (from academia).

4.4.3 Phase 3

4.4.3.1 Round 1-Scale Purification

After initial scrutiny of the items, the remaining items were used for Round 1 data collection. Data were collected through an online survey link generated by using the software, Qualtrics. Total 320 consumers were started to fill the survey from various metro cities.

Unfortunately, only 222 respondents completed the survey. This data set is used for correlation analysis and factor analysis to purify the measure before collecting the second data set. For this purpose, items having inter-item correlation near zero were removed before further data collection. Afterwards, exploratory factor analysis (EFA) was conducted to identify the dimensions of the construct by using the software called statistical package for social sciences (SPSSv 25.0).

4.4.3.2 Round 2- Assessment of Convergent, Discriminant Validity

Construct validity is another significant step in model assessment. It is referred to as an instrument's ability to measure what is meant to be measured (Clark & Watson, 1995) and split into two distinctive but correlated concepts: convergent and discriminant validity. Convergent validity specifies that a particular construct is reflected through its underlying factors or indicators. In contrast, discriminant validity demonstrated unrelated items (Churchill, 1979;

Henseler et al., 2015). In the literature, the average variance extracted (AVE) measure is used to assess convergent validity.

For discriminant validity assessment, the present study used the recently recommended technique, the Heterotrait-monotrait (HTMT) ratio of correlations among first-order constructs. HTMT compares the inter-correlations among the observed variables of a latent construct (monotrait-hetero method correlation) with correlations (HTMT) of indicators across the constructs (Amaro & Duarte, 2016; Henseler et al., 2015).

4.4.4 Phase 4- Round 3- Finalization of Scale: Measurement of Nomological Validity

The nomological validity of the construct states that the newly developed measure relates to other variables as expected. In other words, the association of the newly developed measurement scale or construct with other constructs, independent or dependent, should yield expected results. The nomological validity of the newly developed scale was evaluated in a theoretical model. And SMCI has a relationship with two independent variables environmental knowledge and environmental concern. The hierarchical component model (HCM), also called the higher-order construct, was utilized to measure nomological validity using the two-stage approach. The two-stage method is based on two steps: the embedded two-stage and the disjoint two-stage (Becker et al., 2012; Sarstedt et al., 2019).

4.5 Research Design for RQ2- Market Segmentation Analysis

For RQ2 of Study-1, segmentation analysis was conducted to describe the target population's demographic, psychographic, geographic, and behavioural characteristics. This analysis contributed to developing a new scale and addressed RQ1, that is, 'SMCI related to meat detachment, curtailment of meat from the diet or the eating of more quality organic meat.'

4.5.1 Survey Design

For the assessment of RQ2, the same sampling technique is utilised as in RQ1. A brief description of the target population, sampling design, and data collection technique is delineated in Section 4.7, respectively. The data collection instrument for constructs, however, is provided in the following sections.

4.5.2 Survey Instrument

The data collection survey comprised two major sections; the first section included items from the new scale development purified after reliability analysis. This section serves two purposes. The first section of the survey instrument comprised demographic, psychographic, geographic, and behavioural variables used for consumer profiles analysis. Second, data on the final scale items were treated as a dependent variable of research question RQ2.

4.5.2.1 Demographic Variables and SMCI

Demographic variables were pertinent to this study comprised gender, marital status, age, income, employment status, and education. These demographic variables were used as independent variables to establish a profile of consumers with SMCI. Data about respondents' age was captured using different age brackets, starting from 20 to 29 with ten years interval. The upper limit of the age group was 60 or above.

Data on income was collected on various income brackets starting from a monthly income less than 25,000 PKR with intervals of PKR 25,000, and the last limit was labelled as '175,000 and more'. Level of education was measured on different brackets, described as 'Primary' (Grade 5), 'Middle' (Grade 8), 'Matric' (Grade 10), 'Intermediate' (Grade 12), 'Bachelors' (Honours Degree), 'Masters,' 'MPhil,' 'PhD,' and professional education (e.g., MBBS, Engineers, etc.). The variable gender was measured by taking responses on options, 'Male 'and 'Female.' To end with, the variable 'employment status' was measured as 'landlord,' 'own business,' 'unemployed,' 'employed part-time,' 'employed, full-time' and student.

4.5.2.2 Psychographic Variables and SMCI

The current study measured psychographic variables in terms of 'perceived consumer effectiveness,' 'religiosity,' 'environmental knowledge,' and 'environmental concern.' The operational definition and measurement of these variables are given in the following sections.

4.5.2.2.1 Perceived Consumer Effectiveness (PCE)

Perceived consumer effectiveness refers to the individual's view of a particular action's capacity to influence their environment and solve the analysed problem (Antonetti & Maklan, 2014). Consumers with high PCE believe that they can alter their environment with their specific action, while having low PCE consider that they hardly change the environmental problem with their actions. Moreover, PCE is context-specific and varies according to the

problem and consumers' effort to solve it. This study utilised seven- items scale to measure PCE adapted from (Roberts, 1996). Response on items was taken on a 7-point Likert scale strongly agree (1) to strongly disagree (7).

4.5.2.2.2 Religiosity

Religiosity is defined as the person's belief in God and the promise to follow the guidelines and rules set by God (Weaver & Agle, 2002). This study adopted a two-dimensional scale to measure religiosity. The first dimension is intrinsic religiosity, having an 11-items scale given by Hills et al. (2005) and Lewis et al. (2001) scale. The second dimension, extrinsic religiosity, was measured by adopting the 6-items scale given by Hills et al. (2005) and Worthington et al. (2003). Responses were recorded on a 7-points Likert scale.

4.5.2.3 Behavioural Variables and SMCI

Behavioural variables included 'purchase frequency of organic meat' and 'grocery shopping responsibility. Purchase frequency of organic meat measured as 2-3 times per week to once per month or never. The behaviour of grocery shopping responsibility is rated as 'joint responsibility, 'sole responsibility, and 'no responsibility.

4.5.2.4 Geographic Variables and SMCI

Geographic variables incorporated consumers' province and place of living such as 'city', 'suburb', and 'countryside'.

4.6 Measurement Scales related to Theoretical Framework of the Study

TPB explains that people's intention to perform a specific behaviour is determined by their attitude, subjective norm, and perceived behavioural control (Ajzen, 1991). In the present study, the consumers who have a positive attitude toward sustainable meat consumption are referred to as buying organic meat or reducing meat consumption. Those who are perceived to be supported by their surroundings (subjective norm) and those who have faith in their capability to buy organic meat (perceived behavioural control) should have more significant sustainable meat consumption intention (SMCI).

The survey used in Study-2 comprised two main sections: the first section contained demographic information and the second section consisted of adapted measures of variables identified in the comprehensive conceptual framework. Demographic data included age,

gender, income, marital status, province, place of living, formal education, household structure, grocery shopping responsibility, employment status, and frequency of organic meat consumption. The following section described the operational definitions and the measurement scale of the constructs used in Study-2. To maintain the logical presentation of the Advanced TPB model, the constructs followed the same arrangement.

4.6.1 Environmental Knowledge

Environmental knowledge is considered an important factor that influences sustainable meat consumption in TPB literature. Previous studies verdict that environmental knowledge significantly affects consumers' intention to purchase organic food (Dangi et al., 2020; Mostafa, 2009; Wang et al., 2019). Accordingly, environmental knowledge revolves around people's information about the environment, and fundamental associations primarily lead to environmental aspects or impacts. An obligation of the "whole system" demanded collective efforts for sustainable development. The current study used perceived environmental knowledge from Mostafa (2007). The scale consisted of the following 5-items measured on a 7-point Likert scale strongly agree to strongly disagree.

1. I know that I buy organic food and packages that are environmentally safe.
2. I know more about recycling than the average person
3. I am very knowledgeable about environmental issues.
4. I understand the various phrases and symbols related to the environment on the product (meat) package
5. I know about those meat products and packages that reduce the amount of waste dumping

4.6.2 Environmental Concerns

Environmental concerns significantly influence the consumer's attitude towards sustainable meat consumption. Environmental concern is a degree to which people are motivated to modify their behavioural practices to attempt to lessen the environmental problem. Previous studies positively support the relationship between environmental concerns and purchase intention of a wide range of eco-friendly/organic products (Han et al., 2010; Mostafa, 2009; Yadav & Pathak, 2016). Therefore, this study adopted the following 5-items scale from Mostafa (2009) measured on a 7-points Likert scale.

1. The balance of nature is very delicate and can be easily upset
2. When humans interfere with nature, it often produces disastrous consequences
3. Humans must live in harmony with nature to survive
4. Mankind is severely abusing the environment
5. Mankind was created to rule over the rest of nature (R)

4.6.3 Uniqueness-Seeking Lifestyle

Consumers desire to look different and unique from others; thus, this urge persuades them to buy those products and services that identify them with a particular social class. Uniqueness theory elucidates that people usually want to be somewhat different in the group, which is more desirable than being drastically different (Fromkin & Snyder, 1980). Uniqueness-seeking lifestyle was measured through two items on a five-point Likert scale developed by Marija Ham and Ana Pap (2018).

1. Buying organic food enables me to be different and to emphasise my different lifestyle.
2. Buying organic food is an important part of my personality

4.6.4 Measurement of Control Beliefs and Perceived Behaviour Control (PBC)

Control beliefs refer to the probability of controlling the external and internal factors while performing a particular behaviour. At present, control beliefs were operationally conceptualized as the individuals' concerns about the meat curtailment from the diet or purchase or availability of high-quality organic meat. Thus, four items were developed to measure the control beliefs on seven points Likert scale.

1. I believe I have enough options to select from in protein choices (meat and pulses) while I choose to buy one
2. I believe I have organic meat options available if I consider buying
3. I believe I have enough information about sustainable meat consumption
4. Buying organic meat is expensive

Perceived behavioural control examines an individual's perceived ease or difficulty performing a specific action (Ajzen, 1991). In the current study, PBC operationally refers to consumers' perceived control over sustainable meat consumption, reducing meat from diet or eating more quality organic meat. This study utilized six items from Fishbein and Ajzen (2010)

and Han et al. (2010) to measure the consumers' capacity and autonomy to reduce meat consumption from diet or buy more quality environmentally friendly organic meat. Responses were gauged on a seven-point Likert scale of 1 (strongly agree) to 7 (strongly disagree).

1. I am confident that if I want, I can buy organic meat.
2. To buy or not to buy organic meat is entirely up to me.
3. It is inconvenient to purchase organic meat, although I have the purchase intention
4. I understand the environmental phrases and symbols on the product package.
5. I am very knowledgeable about environmental and social issues.
6. I know how to select products and packages that reduce the amount of waste ending up in landfills.

4.6.5 Measurement of Normative Beliefs and Subjective Norms

Subjective norms assess the perceived social pressure to perform or not to perform particular behaviour (Ajzen, 1991; Han et al., 2010). Subjective norm is the opinion of an individual that can influence one's decision making (Park, 2000).

Normative beliefs explore a person's beliefs related to whether other individuals believe that he or she performs according to specific standards or complies with social pressure (Park & Ha, 2014). According to TPB, normative beliefs constitute the basis for subjective norms (Ajzen, 1991). Normative beliefs were measured from three items adapted from Han et al. (2010), and subjective norms were measured by adapting a seven-item scale from Minton and Rose (1997). Both scales were measured on a seven-point Likert scale strongly agree (1) to strongly disagree (7).

Normative Beliefs
1. My family (or relatives) thinks I should buy organic meat when purchasing.
2. My friends think I should reduce the quantity of meat when eating.
3. My colleagues (or co-workers) think I should buy organic meat when purchasing.

Subjective Norms
1. Most of my friends think I should reduce meat consumption.
2. Most of my neighbours think I should eat organic meat.
3. Most of my neighbours think I should reduce meat consumption.
4. Most of my co-workers think I should eat organic meat.

5. Most of my co-workers think I should reduce meat consumption.

6. Most of my family members think I should eat organic meat.

7. Most of my family members think I should reduce meat consumption.

4.6.6 Measurement of Behavioural Beliefs and Attitude towards Behaviour

Behavioural beliefs explain the perceived advantages and disadvantages of performing a behaviour (Murnaghan et al., 2009). Behaviour belief measured on a seven-point Likert scale consisted of six adapted items (Han et al., 2010). Behavioural beliefs scale measured the consumers' belief that Sustainable meat consumption intention would enable me to:

1. Protect our environment.
2. Be more socially responsible.
3. Experience a healthy, environmentally friendly life.
4. Perform environmentally friendly practices.
5. Enjoy organic meat and a plant-based diet.
6. Eat fresh and healthy foods.

Behavioural beliefs reflect the Attitude towards specific behavioural intentions. Moreover, attitude can be defined as a psychological path that determines the favourability or unfavourability of particular actions taken by individuals (Eagly & Chaiken, 1993). TPB claims a more positive attitude towards a specific behaviour is the individual's chances to perform that behaviour (Ajzen, 1991). The current study measured the attitude towards behaviour via 4-items adapted from Wang et al. (2013) on seven-point Likert scales.

1. Buying organic meat is a good idea.
2. Buying organic meat is a wise choice.
3. I like the idea of buying organic meat.
4. Buying organic meat would be pleasant.

4.6.7 Measurement of Intentions

Behavioural intentions capture a person's willingness/readiness to perform (or refrain from) a particular behaviour. The present study used the SMCI scale developed in Study-1 of

the thesis to measure consumers' behavioural intentions related to meat detachment, meat curtailment, and purchase of more quality organic meat.

The SMCI construct is based on three dimensions: meat detachment intention (3-items) measured meat dependency of consumers. Meat curtailment intention (3-items) measured reducing a meat-based diet, and organic meat purchase intention (4-items) measured purchasing more quality and eco-friendly organic meat. The SMCI construct is measured on the following ten items measured on a seven-point Likert-based scale.

Meat Detachment Intention:

1. My meal is complete without meat
2. I am not attracted to meat dishes.
3. I will reduce meat from my diet.

Meat Curtailment Intention:

4. I will reduce meat consumption to protect the environment
5. By eating meat, I will engage with the industry responsible for significant environmental damage.
6. I will consider reducing the meat-based diet if other people also do.

Organic Meat Purchase Intention:

7. If I have a choice, I will buy organic meat
8. I will buy organic meat due to health concerns
9. I intend to buy organic meat, moving towards sustainability.
10. I am willing to pay more for organic meat for a quality life.

4.6.8 Measurement of Values

Values can be described as the individual codes of conduct to handle a situation, specifically personal judgement about right and wrong or what "ought" to be. In contrast, attitude is associated with the individual assessment of a person, physical object, and event (Rokeach, 1973). In the current study, Personal norms are based on three altruistic, egoistic, and biosphere values linked with personal health, animal welfare, and environmental protection.

4.6.8.1 Altruistic Values

Altruistic values are expressed in a situation when individuals 'act on others' benefits to overcome their benefits (Schwartz & Baehner, 1968; Schwartz, 1977). Environmental concern is considered altruistic and stimulates people to practice such attitudes that protect the natural environment without considering the personal benefits (Nguyen et al., 2021). Individuals who are altruistic in nature have strong environmental concerns that reflect their purchase decision; those consumers prefer to buy organic meat products due to eco-friendly certification.

Hence, altruistic values were measured through an 8-items scale developed by Roberts and Bacon (1997) and Schwartz (1992).

1. The balance of nature is very delicate and can be easily upset
2. Human beings are severely abusing the environment
3. Humans must maintain the natural balance to survive
4. Pollution generated here harms people all over the earth
5. 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)
6. The effects of pollution on public health are worse than we realise
7. Environmental protection will help people have a better quality of life
8. Environmental protection benefits everyone

4.6.8.2 Egoistic Values

Egoistic values are described as acting on behalf of oneself or removing the suffering and harm of oneself, i.e., personal benefits. Egoistic values refer to "concern for oneself about the environment"(Swami et al., 2010) and emphasize the importance of personal benefits over more extensive social or environmental interests. The desire for good health and well-being are considered primary concerns in a food market. Literature on sustainable food consumption suggests that health concerns and related issues are key drivers for evolving a positive attitude ((Smith & Paladino, 2010; Yadav, 2016) that leads towards organic food consumption intentions (Kareklas et al., 2014). In this study, Egoistic values were measured through 3-items scale developed by Tarkiainen and Sundqvist (2009) and five items from Schwartz (1992) on a seven-point Likert scale.

1. I chose food carefully to ensure good health.

2. I consider myself a health-conscious consumer

3. I often think about health-related issues

4. A clean environment provides me with better opportunities for recreation

5. Protecting the environment will threaten jobs for people like me(R)

6. Laws to protect the environment limit my choices and personal freedom (R)

7. Environmental protection is beneficial to my health

8. Environmental protection will provide a better world for my children and me

4.6.8.3 Biospheric Values

Biospheric values are specifically related to the environment (Rhead et al., 2015). People's beliefs about protecting nature, concern for non-human creatures like plants and animals reflect biospheric values (Kim & Seock, 2019; Stern, 2000a; Stern et al., 1999a). To measure the biosphere values on a 6-items scale adapted by Kim et al. (2015).

1. I believe it is important to harmonise with other species and nature.

2. I prefer to fit into nature rather than control nature.

3. I like to protect the environment.

4. I anticipate preserving nature.

5. I believe in protecting natural resources.

6. I consider the balance of nature is delicate and easily upset.

4.6.9 Personal Norms (PN)

Personal norms are related to people's sense of responsibility towards the environment (Stern et al., 1999a). PN refers to an individual's feelings about the moral duty to engage in a particular behaviour due to values and beliefs about sustainable meat consumption. This current study operationalises personal norms as individuals' moral obligation towards sustainable meat consumption intention related to meat detachment, meat curtailment, and purchase of more quality organic meat for environmental reasons, animal welfare, or personal health concerns. To measure the personal norms, a 6-items scale was adapted from Ibtissem (2010) on a seven-point Likert scale.

1. People like me should do everything they can to increase the welfare of animals' production.
2. I feel morally obliged to buy organic meat, regardless of what others do.
3. If organic meat is available on the market, then I would feel morally obliged to buy organic meat today.
4. I feel guilty when I buy meat from animals that are perceived at a high stress level before the animals are slaughtered.
5. I feel obliged to bear animal welfare in mind in my daily behaviour.
6. I would be a better person if I actively take into account welfare.

4.6.10 Measurement of Religiosity

Religiosity can be expressed as the individual belief in God and the commitment to live and perform according to those principles, which God sets (Weaver & Agle, 2002). The concept of sustainability is deeply connected with religion, specifically in Islam. Several Quranic verses and hadiths give importance to protecting the environment. In Islamic literature, humans are representatives of God, responsible for protecting the earth, and it is a primary aspect of their faith to preserve the environment. Religious values or symbols can play an important role in the daily transactions of society (Ghazali et al., 2018). This study examines the two dimensions, namely intrinsic and extrinsic religiosity.

4.6.10.1 Intrinsic Religiosity

Intrinsic religiosity refers to personal, inner spiritual objectives (Raggiotto et al., 2018). Therefore, the intrinsic follower takes religion as an end and carefully follows it in their food consumption decision. In the current study, intrinsic religiosity was measured through 11-items adapted from Hills et al. (2005) and Lewis et al. (2001).

1. My religious faith is extremely important to me.
2. I took my faith as providing purpose in my life.
3. My relationship with God is extremely important to me.
4. My faith impacts many of my decisions.
5. Religion is especially important to me because it answers many questions about the meaning of life.
6. I offer prayer five times a day with pleasure.
7. I make financial contributions to my religious organisation (e.g., zakat).
8. I always try to carry my religion over into all my other dealings in life.

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9. My religious beliefs are what lie behind my whole approach to life.

10. It is important for me to spend time to remember God.

11. I read literature about my faith

4.6.10.2 Extrinsic Religiosity

Extrinsic religiosity concerns the external, socially related meanings and objectives of individual religiousness. Therefore, people who exhibit extrinsic religiosity use religion for non-religious purposes, such as an instrument that provides security and solace, sociability and distraction, as well as status and self-justification (Cohen et al., 2005). Thus, extrinsic religiosity motivates people to practice their religion in order to gain relief from the stresses of everyday life. In this study, extrinsic religiosity is measured with a scale that has 6 items, adapted from Hills et al. (2005) and Worthington et al. (2003), using a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7).

1. I go to religious activities because it helps me to make friends.
2. I go to religious activities because I enjoy seeing people I know there.
3. I pray because I have been taught to pray.
4. What religion offers me most is comfort when sorrows arise.
5. The primary purpose of prayer is to gain relief and protection.
6. The purpose of prayer is to secure a peaceful life

4.7 Overall Research Methodology

4.7.1 Target Population and Sampling Design

The target population was comprised of individual meat consumers across four provinces Sindh, Punjab, Baluchistan, Khyber Pakhtunkhwa (KPK), and the federal capital of Pakistan.

4.7.1.1 Sampling Unit

A sampling unit is a subset of the whole population selected as a potential target respondent in the data collection process. Selecting the sampling units is crucial as they indicate the population elements included in the research process and those excluded (Zikmund et al., 2013). The current study's sampling unit was selected into three stages for both studies: In the first stage, for RQ1, initially, educated consumers were employed from universities, academia and students, and butchers' marketing managers were selected for focus groups. In the second

stage, individual meat consumers from eleven metro cities of four Pakistan provinces were selected as a target population for RQ1 and RQ2. The metro cities (*see Figure 4.1*) are as following Karachi, Hyderabad, Sukhar, Lahore, Faisalabad, Multan, Bhawalpur, Rawalpindi, Peshawar, Quetta, and Islamabad (Naeem., 2017).

Figure 4.1 The Map of Pakistan Represented Major Cities

Source: https://www.mapsofworld.com/pakistan/pakistan-political-map.html

These cities have modern shopping centres where frozen branded meat with eco-friendly and nutritional labels is available. Therefore, consumers have a choice to purchase either conventional meat or organic meat. This study emphasises individual consumers who are more liberal in their choices and consumption patterns. Middle, upper-middle, and upper-class consumers in urban cities usually visit modern shopping centres to purchase packaged food products in Pakistan (Ahmed., 2018). English is one of Pakistan's official languages, along with Urdu, due to the country's British colonial background (Haidar & Fang, 2019). Research often

requires surveys developed in the western world to be translated into the local language. However, in the university sector, English is the primary language of employment, and therefore there was no need to translate the focus group questions into the local language, Urdu. In addition, the literacy rate in the metropolitan area of Pakistan is 76% (PBS, 2020).

Furthermore, the literature shows that educated people are interested in pro-environmental and organic food consumption studies and seem well educated about environmental issues and sustainability (Liang, 2014; Pham et al., 2019; Yadav, 2016). Before asking any specific question related to research, it was confirmed that each respondent is at least partially responsible for the family's grocery shopping. Moreover, vegetarian or anti-meat consumers were excluded from the research.

At the third stage, data collected for RQ3 in Study 2 recruited meat consumers from all over Pakistan to respond to the survey.

4.7.1.2 Recruitment of Key Respondents

4.7.1.2.1 Focus Group Respondents- Study-1

The current study selected the key respondents into two stages. At the first stage, a focus group study design was chosen to get all the benefits of group dynamics (i.e. interactions between participants), allowing to observe better the consensus and disagreements between individuals (Belk et al., 2013; Shan et al., 2017). A maximum variation purposive sampling technique was used to maintain the homogeneity within-group and heterogeneity among the groups. Forty-two consumers were recruited from four provinces: Sindh, Punjab, Baluchistan and Khyber Pakhtunkhwa (KPK). The sample was drawn from seven metropolitan cities: Karachi, Hyderabad, Lahore, Multan, Quetta, Peshawar, and the federal capital, Islamabad. Consumers from each province have a traditional food culture, cooking style, food specialities, and choices that reflect the variation in their ethnicity and culture, making Pakistan such a diverse nation.

As evidenced in the environmental and sustainable consumerism literature, well-educated people can easily understand the sustainability concept and are capable of providing accurate data compared to those who are less-well formally educated (Diamantopoulos et al., 2003; Han & Kim, 2010; Hedlund, 2011; Mohr & Schlich, 2016). Also, education level can affect consumer preferences for sustainable or organic food products (Liu et al., 2016; Taufique & Vaithianathan, 2018). Nevertheless, sustainable consumption practices are very slow in developing countries due to various reasons; such as lack of awareness among the general public, absence of media involvement to educate the public about the importance of sustainable

consumption and the premium price that consumers need to bear for the environmental safety (Quoquab & Sukari, 2016). Therefore, each focus group consisted of six well-educated consumers: four university teachers and two marketing managers. Participants were recruited from two main channels: Firstly, academic departments (Management Sciences, Environmental Economics, Environmental Sciences, and Sociology) of tertiary education institutions of each province. Only those university teachers who know about environmental issues, food sustainability and can discuss the various aspects of sustainable meat consumption were contacted via email. Secondly, grocery store or butchers' marketing managers who have awareness and deal with consumers' concerns about sustainable livestock production, meat quality, and nutritional labels on the packaging were emailed. The primary researcher sent an email to the above-mentioned selected consumers, explained the purpose of the research, and offered a guarantee of confidentiality of identifiable data in publications. Respondents were then asked to confirm that they were responsible, to some extent, for their household's grocery shopping. Before conducting the focus groups, participants were asked to complete the consent and socio-demographic survey forms. Then, participants were connected via online video conferencing software, Zoom. Respondents joined the session at their respective universities, workplace, and homes, each focus group's duration from 45 to 60 minutes. The primary researcher moderated the discussion sessions and encouraged all participants to share their insights about the topic.

4.7.1.2.2 Survey Respondents for Study-1

At the second stage, the study utilised the purposive sampling technique to recruit potential respondents for data collection from eleven metro cities of Pakistan. This technique is beneficial for conducting a comparative market analysis to measure how consumers belonging to various age groups, socio-economic backgrounds, and gender dealt with a particular product purchase decision. It is also helpful for the effective representation of a population.

4.8 Overall Research Design for Study-2

The design of Study 2 of this thesis is quantitative. The rationale behind adopting a quantitative method is to validate the advanced TPB model based on the data from the Pakistani meat consumers; therefore, the deductive approach is more appropriate than an inductive method (Neuman, 2004). In the current study, an online survey method was used to collect the data. An online survey is one of the most widely used data collection techniques in emerging

economies. The recent studies indicate that researchers prefer to use online resources to collect data, for instance: China (Liu et al., 2016; Taufik, 2018; Wang et al., 2019), Malaysia, Turkey (Tosun & Yanar Gürce, 2018), India (Sreen et al., 2018; Taufique & Vaithianathan, 2018) and even in Pakistan. Therefore, the online purposive sampling technique is appropriate for this study and valuable for collecting data from the geographically wide area of Pakistan.

Furthermore, it is cost-effective to approach a demographically diverse population (Pearson et al., 2016). Secondly, the current research aims to understand consumer decisions about food sustainability in their natural environment. To achieve this, an online survey technique is considered the most suitable method (Pinsonneault & Kraemer, 1993; Ritter & Sue, 2007). A description of the questionnaire is given in section *4.6Measurement Scales related to* .

4.8.1 Sample Size – Study- 2

While calculating sample size, a general rule "higher the better " is recommended to increase the generalizability of the results (Cooper & Schindler, 2006). Literature suggests sample size based on the preferred data analysis techniques (Christopher Westland, 2010). Structural equation modelling (SEM), which is utilised for Study-2, requires large sample sizes for the reliability of results. According to Bentler and Chou (1987), SEM analysis requires five, seven, or ten cases per free parameter estimate for reliable results while SEM is applied. The current study utilised the PLS-SEM technique through SmartPLS v 3.2.2; this technique can provide reliable results even if the sample size is less than 200 (Hair et al., 2016).

The final survey of study 2 provided in *Appendix 3 Final Survey –Study 2 (Based on Advanced TPB Model)* consisted of 90 items to be measured (excluding demographics) as per stated criteria; 900 (90*10) cases are required for reliable results. However, the online response rate is very low compared to face-to-face and pen-paper surveys, and often less than 50% completed the entire survey (Sultan et al., 2018).

4.8.2 Survey Respondent for Study-2

At the third stage, the study utilised the purposive sampling technique to recruit potential respondents for data collection from Pakistan. At stage three of this study, to overcome the limitation faced at the second stage related to collecting data only from metro cities. Therefore, Survey respondents for Study-2 have represented all over Pakistan. Strategic marketing planning and tailor-based advertising of environmentally friendly meat required a detailed analysis of such data representing the vast geographical area. Consumers who belong to suburbs

have different choices and views about sustainable protein choices than those who live in metro cities. Therefore, the present study-2 was provided more valuable data for analysis and valuable results for livestock marketers, social marketers and policymakers.

4.8.3 Data Collection and Survey Procedure

The data collection was carried out to distribute the survey link following the same technique utilized in a study-1-Phase 2. The survey was carried out from 15ᵗʰ October 2020 to 15ᵗʰ December 2020. In Study 2, the main difference compared to Study 1 is the time frame of data collection. The research procedures adopted were like Study 1.

For data collection, a half-page article published on the following media sources explained the importance of the meat sustainable consumption project. The respondents were informed about the purpose of the research before the data collection. Their consent was taken by assuring them that their personal information would be kept safe and confidential and used for research purposes only. In the end, the researcher invited them to give their valuable opinions on this topic by following the given survey link:

- Social media pages (NUML/University Face-book Group)
- The websites of meat shops and grocery stores.

After completing the survey, the respondents can register to win a 32GB tablet in a lucky draw.

4.8.4 *Analysis Technique*

4.8.4.1 Study-1 for Consumer profiling-RQ2

Data were collected through survey instruments utilised to perform various statistical analyses to explore different consumer segments' demographic, psychographic, behavioural, and geographic characteristics. The SPSS v. 25.0 was used to conduct exploratory factor analysis (EFA), cluster analysis, multiple discriminant analysis, and ANOVA.

4.8.4.2 Data Analysis - PLS-SEM for Study-2

Several analysis techniques are used to analyse the collected data to attain the research objectives of Study-2. The structural equation modelling (SEM) technique is utilised for the analysis of data. SEM is one of the most leading research methods across various disciplines, mainly in psychology, international business, marketing, economics, and finance. SEM is an effective multivariate technique that helps to test complex research models involving

intervening effects in theory building and tested simultaneously (Richter et al., 2016). SEM is the most robust method to test both measurement and structural models (Byrne, 2013). Therefore, this technique is most suitable to employ for this current study (Study 2). The partial least square structural equation modelling (PLS-SEM) is the most rigorous analysis technique to provide valid and reliable results (Matthews et al., 2016; Sarstedt et al., 2016). Also, previous studies suggest that the use of PLS-SEM can overcome the data normality issues that generally appear in mostly business studies (Hair et al., 2012). A two-stage analysis approach, i.e., assessment of measurement and structural model, was employed using Smart PLS 3.2.2 (Becker et al., 2012; Ringle et al., 2015). The Measurement model is used to assess the validity and reliability. The structural model is used to test the hypotheses. The latest technique Bootstrapping approach (5000 re-sample), was employed (Hair et al., 2016) to measure the significance of path coefficients. The PLS path model's predictive accuracy assess by calculating the Q^2 value (Geisser, 1975) based on the blindfolding procedure. Q2 values should be greater than zero to indicate the predictive accuracy of the structural model for a specific endogenous construct. As a rule of thumb, Q2 values higher than 0, 0.25, 0.50 and 0.75 indicate the PLS-path model's small, medium, and large predictive relevance.

4.8.5 Construct Reliability and Validity

In survey-based research, reliability and validity tests are applied to the collected data to maintain the authenticity and effectiveness of instruments (Saunders et al., 2015). The measurement instrument (structured questionnaire) used in the current study is based on the scales adapted from the previous studies. Therefore, to maintain the generalizability of the study there is a need to establish the reliability and validity of each and overall instrument.

4.8.5.1 Reliability

Reliability is described as the ability of an instrument to measure the consistency of its intended and underlying concept (Nunnally, 1994). An instrument free from measurement errors is called a reliable scale. The scale's reliability is measured by testing the internal consistency, inter-item correlation, and Cronbach alpha (α) techniques for this purpose (Hair, 2010; C. J. Nunnally, 1978; Saunders et al., 2015). Literature supports that if a scale has an inter-item correlation greater than 0.30 and Cronbach alpha (α) value is 0.70 or greater is considered a reliable instrument (Hair, 2010). The reliability of the instruments adopted in the present study is presented in *Chapter 6 Results of Study2: Analysis of Advanced Theory of Planned Behaviour*.

4.8.5.2 Validity

The instrument's validity refers to that the scale successfully captures the underlying concept (Churchill et al., 1974; Nunnally, 1994). The validity of a scale has many types like face validity, content validity, factorial validity, criterion-related validity (or predictive validity), construct validity, concurrent validity, convergent validity, and divergent (or discriminant validity) (Fernandes, 2017). Before conducting the model/theory analysis, the present study established three important types of validity, i.e. convergent validity, discriminant validity, and criterion validity. *Chapter 6: Results of Study2: Analysis of Advanced Theory of Planned Behaviour* reported a detailed explanation of constructs validity aspects.

4.9 Conclusion

This chapter delineated the methodology for Study-1 to address RQ1 and RQ2 and Study-2 to answer the RQ3. Initially, an overall philosophical paradigm and research design were explained. After that, the scale development process was described to address RQ1 specifically. Then, the target population, sampling design, and a data collection procedure for study 1 were elaborated. Also, it expanded with the description of data collection instruments for RQ2. For Study-2, this chapter defines the measurement instrument followed by data collection strategy and an overview of the data analysis technique. The following chapter, *Chapter 5: Results of Study1: Scale Development and Consumer Profiling,* presents the findings of Study-1.

Chapter 5 Results of Study 1: Scale Development and Consumer Profiling

5.1 Introduction

Chapter 5 described the analysis and discussion on the results derived from Study 1, therefore, answering the first (RQ1) and the second research questions (RQ2) that are stated as:

How can the impact of cultural (social) values and environmental elements on consumers' intention related to meat curtailment and use of more quality meat be measured on one scale in an emerging economy (RQ1)?

What are the demographic, psychographic, and behavioural characteristics of consumers in Pakistan, consumers who are conscious about meat sustainability, who reduce meat in their diets or who prefer organic meat (RQ2)?

The present chapter starts with a detailed explanation of the 4-phases of the new scale development process to answer RQ1, followed by a segmentation analysis of consumers to respond to RQ2. This study provides input for assessing the holistic model of SMCI related to meat curtailment and the use of more quality meat (RQ3). The next *unit, 5.2,* reports the results for RQ1, and the following *section, 5.3*, explains the consumer profiling based on RQ2.

5.2 Study 1-RQ1: Measure of SMCI related to Meat Curtailment and Purchase of Organic Meat

For the RQ1 scale development, the current chapter followed the guidelines provided in the previous *Chapter 4*, Section 4.3 of this thesis and followed the four phases of the scale development process to answer RQ1.

5.2.1 Phase-1 Conceptualisation of SMCI

Sustainable consumption is viewed as an ethical consumption (Schaefer & Crane, 2005) that focuses on producing and consuming products based on social and environmental concerns (Kushwah et al., 2019). However, there is a lack of agreement on defining the sustainable consumption construct in the existing literature. For instance, Lee (2014) described sustainable consumption as an individual's concern towards those environmental aspects that influence individuals to make conscious choices in their particular consumption decision. On the other hand, Hornibrook et al. (2015) referred to sustainable consumption as the appropriate use of goods and services to meet basic needs. Again, Lim (2017) explained the sustainable consumption issue from responsible consumption, anti-consumption, and mindful consumption perspectives. In the same line, Quoquab et al. (2019) provided a holistic definition of sustainable consumption by capturing the three aspects of quality of life, protecting and preserving the environment, and protecting the natural resources for the future generation. Also, environmentally friendly consumption, referred to as sustainable consumption, strives to motivate consumers to buy organic food due to its significant healthy nourishing effects on one's life (Chang & Watchravesringkan, 2018).

In particular, food consumption is viewed as a social marker to construct social identities and a holistic move towards a new sustainable lifestyle (Muriel Verain et al., 2015). Sustainable meat consumption can be defined as decreasing per capita meat consumption (Austgulen, 2014). In literature, sustainable meat consumption can be achieved through three interlinked strategies. First, efficiency is the optimum use of resources (land, water) for animal feed. Second, sufficiency emphasizes individual consumers' responsibility to change the amounts consumed just enough for ideal health. Third, consistency is related to animal welfare (Allievi et al., 2015; Pohjolainen et al., 2016), replacing the whole product with plant-based protein.

Further research should develop a scale to measure behavioural intentions, including cultural norms, such as various foods' social and cultural significance to different social groups and societies (Cheah et al., 2020; Mohr & Schlich, 2016). Thus, the present research attempts to address the sustainable meat consumption issue from a broader perspective, illustrating how the consumption can be regulated by moral, cultural values, and norms to protect the environment and preserve natural resources.

Moreover, the SMCI scale contributes to long-term sustainability objectives. Reducing meat consumption or purchasing more quality organic meat and meat detachment intentions comprises socio-cultural, environmental, moral, and economic concepts. In isolation, no individual idea meets the sustainable meat consumption intention goal. Eventually,

sustainability, defined in terms of its impact on the environment and the systems in place in society, aims to ensure an in-depth understanding of consumer behavioural intentions.

5.2.1.1 Qualitative Study for Item Generation and Content Validity

The present research study followed both deductive and inductive methods to generate the initial pool of items. Initially, a deductive approach is used; the literature from 1990 to 2019 on sustainable consumption, ethical consumption, organic/green consumption, and the pro-environmental intention was used as a reference for further analysis. This time frame was chosen since sustainability-oriented research became popular in the early 1990s, and the current study started data collection in 2020. Articles were downloaded from several databases such as Science Direct, Emerald, Taylor & Francis, ProQuest, etc. We focused only on those studies that proposed a scale measuring meat consumption/attachment, sustainable consumption intention, and organic food purchase intention. As a result, the six most comparative studies were selected and analyzed (*see Table 5.1*). However, the relevant items were chosen in the scale development process of SMCI (Flatten et al., 2011) detailed description is given in *Chapter 2, Table 2.1 Sustainable Consumption and Related Measurement Scales*.

Table 5.1 Summary of Existing Measures of Sustainable Consumer Intentions

Sr.#	Scale Name	Developed by	Setting	Description	Remarks
1	Behavioural intention	(Minton & Rose, 1997)	South Carolina	Six items measure intentions towards environmentally friendly products	The focus is only on choosing, searching, and disposing of green products.
2	Green Purchase Intention	(Armitage & Conner, 1999)	United kingdom	This scale consists of three items that measure intention, planning, and purchase of green products.	Focus is only on purchase-related intention; it fails to measure sustainable purchase intention.
3	Consciousness for sustainable consumption	(Balderjahn et al., 2013)	Germany	The 19 items scale has three dimensions (i.e., economic, social, environmental having 10, five, four items, respectively)	All the items only measure the sustainable consumption of industrial products.
4	Meat attachment	(Graça et al., 2015)	Portugal	The 16 items scale consisted of four	Items are particular to measure the

				dimensions (*i.e.,* hedonism, affinity, entitlement, dependence). This scale supports three ways to understand meat consumption and substitution psychology: theory building, methodology improvement, practice, and policy modification.	positive bond towards meat and justification of meat-eating.
5	Moral disengagement in meat questionnaire	(Graça et al., 2016)	Portugal	The scale has five dimensions (i.e., means-end justification, desensitization, denial of negative consequences, diffused responsibility, and reduced perceived choice)	MDMQ justify eating or not eating meat but fails to measure the future intention about meat consumption
	Purchase intention	(Pham et al., 2019) and (Nguyen et al., 2017)	Vietnam	This scale based on 4-items measured intentions related to purchasing organic meat.	The focus of this scale only captured the organic meat purchase intentions but failed to measure the other aspect of sustainable meat consumption intentions like curtailment of meat from the diet.

Following the inductive approach, focus groups, one of the qualitative research methods was conducted. Exploratory qualitative research uncovers consumer behaviour, underlying motives, values, attitudes, and concerns towards a specific issue or product (Chambliss & Schutt, 2012; Hoek et al., 2017b). Qualitative studies are merely influential, wherein new themes and relationships can be constructed and verified through focus group participants (Birkinshaw et al., 2011). Firstly, a pre-test was conducted by generating the interview questions from the past literature and referring them to twenty-five consumers and five academic experts in sustainable marketing for further validation and review. The expert opinion was established for consideration, and necessary changes were made by adding some more questions and assuring more clarity on the questions asked. Once the pre-testing was completed,

three participants were recruited from various psychographic segments such as academic experts, market professionals, and university students. The pilot testing was conducted through an online ZOOM meeting wherein the participants reviewed the questions and provided their feedback. The key observation was the number of questions and clarity of a few concepts to the participants. Hence, the researcher followed the comments and made the necessary changes.

Once the questionnaire was finalised, the respective participants were recruited through purposive sampling. This sampling technique mainly demands a purpose to structure good communication between research objectives and sampling units (Bell & Bryman, 2007). The final participants were selected from three channels: first from academic departments (Management Sciences, Environmental Economics, Environmental Sciences, and Sociology) of tertiary education institutions of each province. Only those university teachers who know about environmental issues and food sustainability can discuss the various aspects of sustainable meat consumption. Secondly, those grocery stores or butchers' marketing managers were recruited who have awareness and deal with consumers' concerns about sustainable livestock production, meat quality, and nutritional labels on the packaging. Thirdly, university students who were interested in sustainable meat consumption research.

Moreover, the literature confirms that three to six focus groups were reached saturation and likely to identify 90% of the themes (Coenen et al., 2012; Guest et al., 2017). Therefore, the current study conducted seven focus groups between January-February 2020. Each focus group constituted six consumers. Total forty-two consumers were recruited from four provinces (*See Table 5.2*). Consumers from each region have a traditional food culture, cooking style, food specialities, and choices that reflect the variation in their ethnicity and culture, making Pakistan such a diverse nation.

Table 5.2 Total Number of the Focus Group by Region and Cities

Region	Cities	Number of Participants
Sindh	Karachi	6
	Hyderabad	6
Punjab	Lahore	6
	Multan	6
KPK	Peshawar	6
Baluchistan	Quetta	6
Federal Capital	Islamabad	6
Total	**7**	**42**

The primary researcher sent emails to the above-mentioned prospective participants on their official email addresses, explained the purpose of the research, and guaranteed confidentiality of identifiable data in publications. Respondents were then asked to confirm that they were responsible, to some extent, for their household's grocery shopping. Participants were asked to complete the consent form and socio-demographic survey forms before the discussion had started. Participants were connected via online video conferencing software, Zoom. Respondents joined the session at their respective universities, workplace, and homes. The duration of each focus group ranged from 45 to 60 minutes. A gift voucher was presented to all the participants as a token of appreciation for their valuable time and knowledge. The primary researcher moderated the discussion sessions and encouraged all participants to disclose their insights about the topic. Sample questions for discussion were as follows:

- What do you know about sustainability and sustainable meat consumption?
- Do you intend consuming meat more sustainably?
- Do you think that meat curtailment from the diet is socially acceptable in a traditional cultural environment?
- Do you think that your culture allows this change?
- What are your views about organic or free-range meat consumption, and do you think this leads to sustainability?

Focus groups were conducted in the English language, in general. However, where in-depth clarification was required, Urdu's native language was used to persuade the participants to discuss all underlying concepts related to sustainable meat consumption. Like, few participants

have no idea about different options of sustainable meat consumption intentions. In their native language, the researcher explained a few terms to clarify the meaning; for instance, eating locally produced meat without pesticides or curtailment means eating only a small portion of meat to maintain health.

All the sessions were audio-recorded and later transcribed carefully in the English language from an English/Urdu language expert for analysis purposes, following the translation/back-translation guidelines by Sousa and Rojjanasrirat (2011).

5.2.1.2 Demographic Profile of FGDs Participants

According to *Table 5.3*, 24 males and 18 females participated in the FGDs, representing a balanced sample of both genders. In addition, most of the respondents were married (64%). Concerning the academic qualification, 76% of participants were educated to bachelor's and masters' degree levels, which met the sample requirement of formally qualified respondents. In relation to grocery shopping responsibility within the household, 71 per cent of respondents indicated a joint decision.

Table 5.3 Focus Group Participants' characteristics

Characteristics	Attributes	Freq.	Sample (%)
Gender	Male	24	57.1
	Female	18	42.9
Marital Status	Single	15	36
	Married	27	64
Age (Years)	18-27	8	19
	28-37	14	33
	38-47	10	24
	48-57	7	17
	58 and above	3	7
Academic qualification	PhD	10	24
	Bachelor –Master	32	76
Household grocery shopping responsibility	Primary responsibility	5	12
	Joint responsibility	30	71
	No responsibility	7	17

Source: Developed by the author from FGDs findings

5.2.1.3 Textual Analysis

The focus groups transcript was analysed through Leximancer v. 4.5 (Smith & Humphreys, 2006). The concepts were then cross-matched and refined; then, the irrelevant concepts were deleted by comparing the literature review conducted in the deductive approach (Crofts & Bisman, 2010). Consequently, five themes: 'meat', 'consumption', 'buy', 'religion', and 'brand' emerged with several underlying concepts. The themes highlighted the significant aspects of SMCI, including core areas and linking concepts. For instance, the first theme, 'meat', includes concepts related to awareness of the adverse effect of excessive meat consumption on the environment, food preferences, health issues, eating habits, meat detachment and so forth. The second theme, 'consumption,' was associated with consumers' concerns about meat substitutes like vegetables and pulses and personal preferences for healthy meat consumption. Subsequently, the third theme, 'buy,' depicts the thoughts of those consumers who buy more amounts of animal-based food and prefer high-quality meat due to high income, taste, and attachment. After that, the fourth theme, 'religion', captures consumers' beliefs about divine power and how their faith influences meat consumption. Lastly, the fifth theme, the 'brand', revolves around the central idea of rising branded meat purchases among people.

Figure 5.1 Dominant Themes and Concepts Emerging from the Transcripts
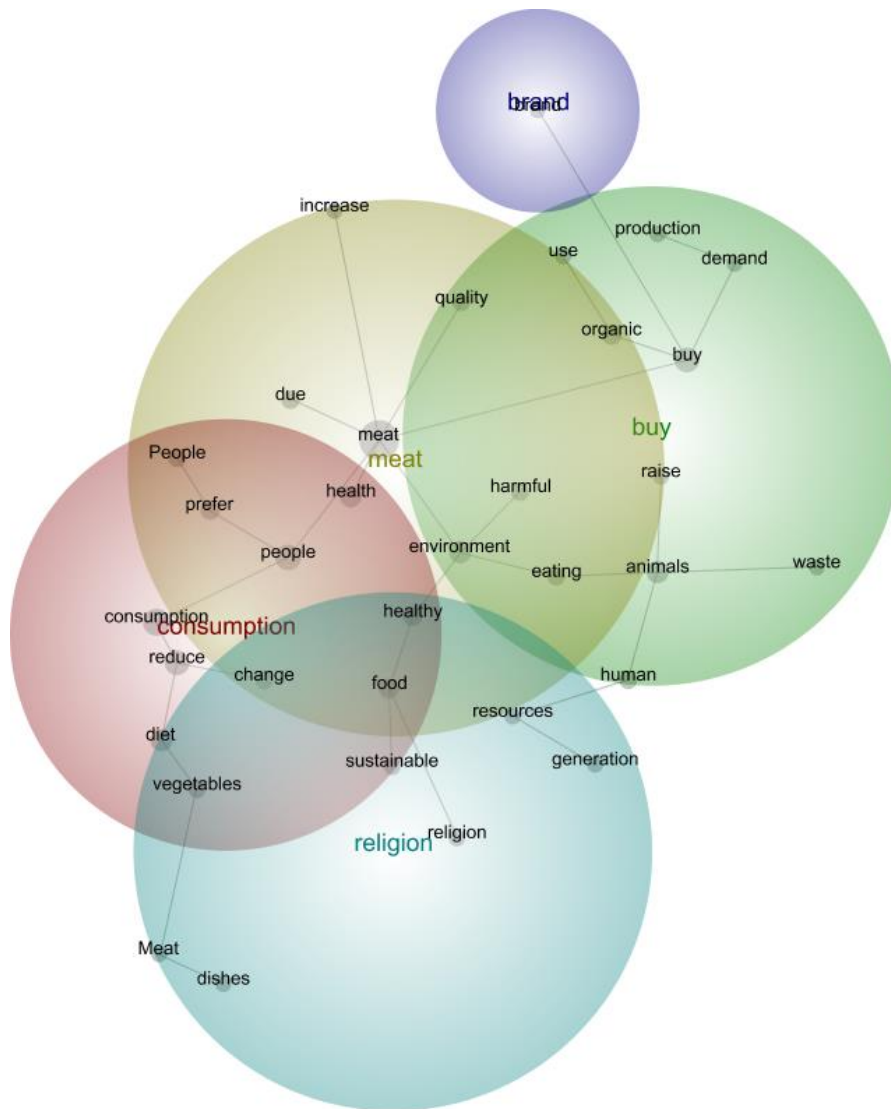
5.2.2 Phase-2 Items Pool Generation and Content Validity

A pool of 78 items was generated after qualitative analysis for the first round of data collection. Before data collection, the content validity of the derived items was checked for relevance and clarity of wording. Three experts from marketing (including one from academia having expertise in consumer behaviour and sustainable marketing) were called on to act as the content validity experts. The process led to minor revisions in the composition of some of the statements to remove vagueness, and eight items were deleted due to redundancy and colloquial ambiguity. As a result, a 70-items scale was finalized for the first round of data collection.

5.2.3 Phase-3

5.2.3.1 Round 1: Item Purification (Pilot Study)

Round-1 aimed to reduce the number of scale items to a manageable size before implementing the actual research. Therefore, the pilot study was conducted to a relatively small sample, and primary analyses were conducted to reduce the initial list of scale items. For data collection, the online survey for the pilot study consisted of 82-items (70 items plus 12 items related to respondents' descriptive information). The survey was generated through Qualtrics. In addition, the survey link was distributed on the websites of grocery and meat shops and through social media advertising (National University of Modern Languages (NUML) website page and University social media Facebook group). Respondents were invited to indicate on a 7-point Likert scale (1= "strongly agree" to 7 = "strongly disagree") the range on which respondent show their agreement about the statements related to curtailment, the purchase of more quality organic meat and meat detachment.

Analysis of the data was conducted using IBM SPSS 25.0. Out of the 320 surveys collected, 98 responses were incomplete, leaving 222 responses were used for statistical analysis. The online response rate was relatively low compared with those for pen-paper and face-to-face surveys, but this is in line with rates reported by other studies (Sultan et al., 2020; Taufique & Vaithianathan, 2018; Wang & Somogyi, 2019). Therefore, the completed responses were sufficient for SEM data analysis. Finally, 222 responses were used for analysis purposes. The descriptive analysis revealed that 58.1% were males and 41.9% were females, of which 51.4% were married, and 46.2 % were single. A total of 94.1% belongs to the age group 18-47 years old (44.6% were between 18-27 years old; 39.2% belonged to 28-37 years old and 10.4% between 38-47 years old). The majority of respondents were from a highly formally educated background, with 63.3 % having Master-MPhil degrees, corresponding to growing higher education trends (Khattak, 2018). In addition, 56.8% of respondents were jointly responsible for grocery shopping for their families. Maximum respondents, about 31.1%, lived in a joint family system.

After analyzing the demographics, the inter-item correlation of the initial pool of items was calculated. The process resulted in a final 38-items scale (*see Table 5.4*), with each item having satisfactory corrected item-total correlations greater than 0.40 (Hair et al., 2010).

Table 5.4 Corrected item-total Correlation – Pilot Study (n=222)

Item	Description	Corrected Item-Total Correlation		Status
		First iteration	**Final Iteration**	
SMCI1	I am willing to reduce the meat-based diet to save animals' lives.	0.324	-	Deleted
SMCI2	If I continue excessive meat consumption, animals will disappear from the world.	0.330	-	Deleted
SMCI3	I feel sympathy for the animals when the producer injects them with antibiotics to raise them fast.	0.319	-	Deleted
SMCI4	I cannot reduce the meat-based diet due to its nutritional values for a healthy body.	0.374	-	Deleted
SMCI5	My religion guides me to eat a sustainable (balanced) diet.	0.583	0.513	**Retained**
SMCI6	I do not care about the environment when buying meat; I know God will protect the environment. (R)	0.496	0.510	**Retained**
SMCI7	It is the responsibility of human beings to care for their environment for future generations.	0.349	-	Deleted
SMCI8	If I knew about the adverse effect of excessive meat consumption, I would reduce meat consumption.	0.427	0.418	**Retained**
SMCI9	I will reduce meat from my diet.	0.655	0.683	**Retained**
SMCI10	I will prefer to include vegetables in my diet	0.471	0.461	**Retained**

	since health is important to me.			
SMCI11	I know the importance of meat substitutes for good health	0.423	0.410	**Retained**
SMCI12	In my society, if a religious leader preaches, people alter their meat consumption habits.	0.330	-	Deleted
SMCI13	I am conscious of my fitness, so I plan to reduce meat from my diet	0.490	0.500	**Retained**
SMCI14	If my gym instructor or doctor told me to reduce meat from my diet, I would do so.	0.360	-	Deleted
SMCI15	Before purchasing meat, I will read the nutritional chart on the package.	0.483	0.513	**Retained**
SMCI16	I prefer (trust) to buy meat from a branded company	0.364	-	Deleted
SMCI17	I consider Halal certification on meat to be a confirmation of quality meat.	0.349	-	Deleted
SMCI18	I consider that it is ethical to slaughter animals just for the pleasure of eating.	0.359	-	Deleted
SMCI19	I have choices to buy organic or inorganic meat.	0.354	-	Deleted
SMCI20	In my country, organic meat is readily available.	0.326	-	Deleted
SMCI21	I do not trust the organic label; maybe it is only a label on the package to increase sales.	0.315	-	Deleted
SMCI22	I know organic meat consumption will keep me healthy and physically fit.	0.353	-	Deleted

SMCI23	The custom to serve traditional meat dishes like tikka, Saji, roast, steak etc. for guests would stop me from reducing meat consumption	0.488	0.519	**Retained**
SMCI24	If I intend to reduce meat consumption, people will consider me inferior.	0.543	0.543	**Retained**
SMCI25	I think a festival (celebration) is incomplete without meat dishes	0.301	-	Deleted
SMCI26	My society will not allow me to reduce meat from the diet.	0.459	0.463	**Retained**
SMCI27	Organic meat consumption will protect the environment for future generations.	0.494	0.477	**Retained**
SMCI28	Sustainable meat consumption can be achieved by adding vegetables and pulses in classic meat dishes like Haleem, potatoes.	0.321	-	Deleted
SMCI29	If I reduce meat consumption, the livestock industry will collapse.	0.396	-	Deleted
SMCI30	I do not prefer to reduce meat from the diet due to environmental reasons. (R)	0.355	-	Deleted
SMCI31	My parents force me to eat meat, to show their love and affection	0.499	0.497	**Retained**
SMCI32	It is the waste material from the livestock industry that pollutes the environment easily	0.334	-	Deleted
SMCI33	Sustainable meat consumption would	0.478	0.497	**Retained**

	help to control poverty			
SMCI34	I think organic meat is expensive, and I do not have enough resources to buy it.	0.324	-	Deleted
SMCI35	My meal is complete without meat.	.578	0.638	**Retained**
SMCI36	For the economic growth of my country, the industrial production of livestock is necessary.	0.385	-	Deleted
SMCI37	I will not attracted to meat dishes.	0.573	0.630	**Retained**
SMCI38	I am price conscious and hardly see the informational labels on meat packaging.	0.393	-	Deleted
SMCI39	There is a divine power that will care about the environment.	0.497	0.501	**Retained**
SMCI40	Food choice is a complex process.	0.361	-	Deleted
SMCI41	I am conscious of my food choices. Therefore, I will buy vegetables, pulses and nuts along with meat.	0.325	-	Deleted
SMCI42	I will reduce meat-based diet by adding meat substitutes to my diet	0.574	0.581	**Retained**
SMCI43	My faith also guides me to eat a sustainable (balanced) diet.	0.410	-	Deleted
SMCI44	I will reduce meat consumption if other people also do so.	0.446	0.483	**Retained**
SMCI45	If I have a choice, I prefer to buy organic meat	0.414	0.583	**Retained**
SMCI46	I will reduce meat consumption to	0.595	0.626	**Retained**

	protect the environment			
SMCI47	To avoid health problems (i.e. high blood pressure, heart disease, cancer, uric acid etc.), I reduce meat from my diet	0.412	0.422	**Retained**
SMCI48	I prefer to buy organic meat due to my health concerns	0.445	0.437	**Retained**
SMCI49	I intend to buy organic meat, moving towards sustainability.	0.477	0.471	**Retained**
SMCI50	Laws that ban selling meat three days a week will limit my choices and personal freedom	0.551	0.546	**Retained**
SMCI51	Reduction of industrial meat production will threaten jobs for people like me.	0.486	0.500	**Retained**
SMCI52	Sustainable meat consumption will provide a better place for my children and me.	0.511	0.515	**Retained**
SMCI53	I believe in a divine power, who will manage everything, so there is no need to reduce meat from the diet.	0.665	0.690	**Retained**
SMCI54	If meat substitutes were available at lower prices, I would prefer to buy those products instead of meat.	0.391	-	Deleted
SMCI55	I intend to eat such meat that comes from those animals who less pollute the environment.	0.493	0.495	**Retained**
SMCI56	I intend to change my diet patterns, but	0.482	0.531	**Retained**

	society will not accept me.			
SMCI57	To meet sustainable consumption, I prefer to add vegetables or pulses in meat dishes.	0.377	-	Deleted
SMCI58	By eating meat, I will engage with the industry responsible for significant environmental damage.	0.480	0.519	**Retained**
SMCI59	I intend to meat curtailment from diet if other people are practising the same.	0.531	0.574	**Retained**
SMCI60	Eating meat is a natural and undisputable practice.	0.331	-	Deleted
SMCI61	I am willing to pay more for organic meat for a quality life.	0.413	0.408	**Retained**
SMCI62	If I had to kill animals, or even see animals' blood or the killing process, then I will probably stop eating meat	0.508	0.557	**Retained**
SMCI63	I intend to buy organic meat as a responsible consumer.	0.570	0.579	**Retained**
SMCI64	I intend to reduce the quantity of meat from my plate to protect the environment for future generations.	0.476	0.523	**Retained**
SMCI65	I intend to buy meat with sustainability labels	0.562	0.579	**Retained**
SMCI66	By changing my food consumption habits, I will contribute to environmental solutions.	0.493	0.524	**Retained**
SMCI67	Animals are not ours to eat, kill or abuse in any way.	0.394	-	Deleted
SMCI68	Organic meat is safe.	0.381	-	Deleted

| SMCI69 | Organic meat is produced, packaged and transported in an environmentally friendly way. | 0.348 | - | Deleted |
| SMCI70 | I often talk about my food choices with my friends. | 0.388 | - | Deleted |

5.2.3.2 Round-2: Data Collection for Validity and Reliability Assessment

In round-2, data was collected from meat consumers across the metro cities of Pakistan. A purposive sampling technique was used to recruit the respondents. An online Qualtrics survey was used to collect the responses from respondents. Informed consent was obtained from the respondents, and background information on the project was given to them in the information sheet. The collection of data was carried out from March 27, 2020, to May 10, 2020.

The study survey consisted of three sections: the first section was based on demographic information having 11 questions; the second unit had 38 items related to the SMCI scale derived from the pilot study. The third section consisted of 10 items that measured two constructs environmental knowledge and environmental concern. Responses collected on subscales of environmental concerns and environmental knowledge were later helped to establish the SMCI scale's nomological validity, which is discussed in supplementary Phase-4.

A total of 1150 respondents started to fill the online questionnaire given in *Appendix 2 Survey (Round 2) –Study 1*, and 722 completed all questions (63% completion rate). Consumer responses were randomly split into two sub-samples using the random sample selection utility in SPSS 25.0. The data was used further to validate convergent and discriminant validity (Kumar, 2014; Pan et al., 2017). The first sub-sample of 412 respondents was utilized to perform EFA. The second subsample of 310 cases was used to confirm CFA. Before splitting the data into sub-samples, the respondents' characteristics were analyzed and summarized.

5.2.3.2.1 Test of Common Method Variance (CMV) and Non-Response Bias

The survey relied on self-reported data collected from a single source or consistent response scale-like Likert scale, so there was a chance of common method variance (CMV) bias (Podsakoff, MacKenzie, Lee, et al., 2003). Therefore, Harman's one-factor technique, recommended by Richardson Richardson et al. (2009) et al. (2009), was applied to assess the CMV bias. An un-rotated exploratory factor analysis (EFA) explained 21.3% variance of the

initial 38 items less than the majority (50%) of the variance, indicating no threat of CMV bias (Sreen et al., 2018; Yang, 2020).

To reduce the non-response bias issue in data, the researcher followed the following techniques: firstly, design a survey carefully and user-friendly; secondly, offer incentives to respond to the survey; and thirdly, assure the respondent that all the information is entirely confidential or used for the survey research purpose only. To verify that the sample data is free from non-response bias, the suggestion was given by Wagner and Kemmerling (2010), and Clottey and Grawe (2014) were followed. As the last round of the data collection process started in the last week of May 2020 and continued towards the end of July 2020, the responses were categorised as 'early' and 'late' based on the midpoint of this period, i.e. 15 June 2020. Accordingly, the data file was divided in SPSS – early respondents before 15th June, followed by late respondents. Comparison of early and late respondents on the initial 38-items confirms that there is no issue of non-response bias.

5.2.3.2.2 Demographic Characteristics of the Respondents

Demographic profiles are summarised in *Table 5.5 Demographic Statistics of the Respondents –Round 2 (n=722)*. Corresponding to the results of the pilot study, female consumers were more (55.5%) than males (44.5%), which was dissimilar as reported in national gender distribution (WorldoMeters, 2019): Although other results were showed that more than 50% of respondents took joint decisions about grocery shopping for their households. Additionally, 50.9% of respondents lived in a joint family (many generations live together) and a mature family (youngest child at home over 18 years).

Maximum respondents were married 58.7%, followed by singles, widowed, and divorced 32.7%, 4.8%, and 3.7%. Almost 84.5 per cent of the participants were between 18-47 years old (22.9% were between 18-27 years old; 39.9% were between 28-37 years old, and 21.7% were 38-47 years old), which relates to the overall demographic profile of the country (WorldoMeters, 2019).

About education level demographics showed that 45.2 per cent had completed their Master-PhD degrees, 28 per cent of the respondents had Inter-Bachelor's degrees, and 21.1% had professional education (MBBS, engineering, diplomas, etc.). The data represented that 52.7% of respondents earned less than one lac income, while 40.1% of consumers crossed the income level of one lac. And only 7.2% of respondents did not declare their income group. Also, 49.5% of respondents were employed full time, 22.2 per cent were students, and 10.6% did their own business. Besides, 34.1% purchased organic meat once per week, 23.1% bought

2-3 times per week, 2-3 times per month, and once per month purchased by 16.3 and 14.7 per cent respondents, respectively.

Table 5.5 Demographic Statistics of the Respondents –Round 2 (n=722)

Variable	Category	Distribution	
		Frequency	Percentage
Gender	Male	321	44.5
	Female	401	55.5
Marital status	Married	424	58.7
	Widowed	35	4.8
	Divorced	27	3.7
	Single	236	32.7
Age group	18-27	165	22.9
	28-37	288	39.9
	38-47	157	21.7
	48-57	89	12.3
	58-67	18	2.5
	68and above	5	0.7
Income per month in Pakistani Rupee (PKR)	Less than 25000	38	5.3
	25000-49,999	90	12.5
	50,000-74,999	114	15.8
	75,000-99,999	138	19.1
	100,000-124,999	109	15.1
	125,000-149,999	67	9.3
	150,000-174,999	47	6.5
	175,000 and more	67	9.3
	Prefer not to say	52	7.2
Education level	Primary (year 5)	9	1.2
	Middle- Matric (Year 10)	33	4.6
	Inter- Bachelors	202	28.0
	Master- PhD	326	45.2
	Professional education	152	21.1
Grocery shopping responsibility	Sole responsibility	190	26.3
	Joint responsibility	371	51.4
	No responsibility	161	22.3

Employment status	Landlord	23	3.2	
	Own business	80	11.1	
	Unemployed	56	7.8	
	Employed, part-time	49	6.8	
	Employed, full-time	358	49.6	
	Student	156	21.6	
Household structure	Adult household (living alone)	30	4.2	
	Adult household (living with spouse/no kids)	60	8.3	
	Adult household (kids have left home)	9	1.2	
	Young families (youngest child at home between the age of 0-5 years)	104	14.4	
	Middle families (youngest child at home between the age of 6-12 years)	109	15.1	
	Older families (youngest child at home between the age of 13-18 years)	43	6.0	
	Mature families (youngest child at home over the age of 18 years)	100	13.9	
	Joint Family system	267	37.0	
Purchase of organic meat	2-3 times per week	167	23.1	
	Once per week	246	34.1	
	2-3 times per month	118	16.3	
	Once per month	106	14.7	
	Never	85	11.8	

5.2.3.2.3 Geographical Detail of Respondents

According to *Table 5.6 Geographic Statistics of the Respondents – Round 2 (n=722)*, maximum respondents (54.8%) belonged to the five metro cities (Multan 24.9%, Lahore 9.1%, Rawalpindi 6.9, Faisalabad 5%, Bhawalpur 4.7%) of the province Punjab. On the other hand, Sindh compromised of 32.1% respondents lived in three urban cities Karachi 21.6%, Hyderabad 6% and Sukhar 4.6%. Furthermore, the federal capital Islamabad had 4.6% of respondents,

whereas Peshawar contributed by 4.7% of consumers from the province KPK, and finally, only 3.7% of respondents were from Quetta city of Baluchistan province.

Table 5.6 Geographic Statistics of the Respondents – Round 2 (n=722)

Variable	Category	Distribution	
		Frequency	Percentage
Provinces	Baluchistan	27	3.7
	Federal capital	33	4.6
	KPK	34	4.7
	Punjab	396	54.8
	Sindh	232	32.1
City Name	Quetta	27	3.7
	Islamabad	33	4.6
	Peshawar	34	4.7
	Multan	180	24.9
	Faisalabad	36	5.0
	Bahawalpur	34	4.7
	Lahore	66	9.1
	Rawalpindi	50	6.9
	Karachi	156	21.6
	Hyderabad	43	6.0
	Sukhar	33	4.6

5.2.3.2.4 Exploratory Factor Analysis (EFA) and Dimensionality Assessment

Exploratory factor analysis (EFA) is generally used to measure the facets of a new construct (Hair et al., 2010), such as SMCI. Since the underlying dimensions of SMCI might be correlated, a series of principal component analyses (PCA) with varimax rotation were iteratively processed, in line with similar studies (Gupta & Agrawal, 2018; Netemeyer et al., 2003; Saleem et al., 2019). First, the Kaiser-Meyer-Olkin (KMO) test was used to measure the sampling adequacy of 412 responses; the value of KMO was found to be 0.708, above the cut-off value of 0.05 (Kaiser, 1974). Next, Bartlett's Test of Sphericity, which assesses the correlations between the variables, was performed, indicating a significant result ($p < 0.001$). Initially, items were sequentially deleted based on communalities having less than the acceptable limit of 0.50 (Kaiser, 1960). Next, items were reduced further based on factor loading. Finally, items having a factor loading of less than 0.60 or a cross-loading greater than

0.50 were deleted one at a time to maintain the accuracy (Hair et al., 2010; Hair et al., 2012). After several iterations, a total of ten items converging on three factors endured in the SMCI scale. All these factors had Eigenvalues greater than one and explained 59.015% of the total variance, which exceeded the suggested criteria of 50% (Hair et al., 2010). Cronbach alpha (α) measures internal consistency within each dimension, and values for each factor above 0.70 determine the scale's reliability (Nunnally, 1994). *Table 5.7 Factorial Structure of the Proposed SMCI Scale* (n=412)* summarized the results of EFA. Examining the theoretical conceptualization of the scale for SMCI and items associated with each factor directed the name of each dimension as follows: organic meat purchase intention, meat detachment intention, and meat curtailment intention. The organic meat purchase intention comprises the items related to measuring the consumers' willingness to buy organic meat. The second dimension, meat detachment measured the consumers feelings about meat that their meal is complete without meat etc. The last third dimension, meat curtailment measured consumer intentions related to reduce the meat consumption if their social group also reducing meat intake.

Table 5.7 Factorial Structure of the Proposed SMCI Scale* (n=412)

Items	Description	Communalities	Factor 1	Factor 2	Factor 3
SMCI 48	I will buy organic meat due to health concerns	0.659	0.796		
SMCI 49	I intend to buy organic meat, moving towards sustainability.	0.614	0.751		
SMCI 61	I am willing to pay more for organic meat for a quality life.	0.540	0.720		
SMCI 45	If I have a choice, I will buy organic meat	0.513	0.703		
SMCI 35	My meal is complete without meat	0.757		0.869	
SMCI 37	I am not attracted to meat dishes.	0.728		0.844	
SMCI 9	I will reduce meat from my diet.	0.596		0.763	

Item	Statement			
SMCI 58	By eating meat, I will engage with the industry responsible for significant environmental damage.	0.783		0.871
SMCI 46	I will reduce meat consumption to protect the environment	0.665		0.812
SMCI 59	I will consider reducing the meat-based diet if other people also do.	0.551		0.728
Cronbach Alpha (α)		0.754	0.778	0.743
Eigen Values		3.015	1.947	1.530
Variance explained		21.305%	19.254%	18.456%
Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy				0.708
Bartlett's test				0.000
Total variance Explained				59.015%

Notes: *Principle component analysis conducted with Varimax Rotation

5.2.3.2.5 *Empirical Justification of Structure of SMCI Construct*

The literature shows that partial least squares-structural equation modelling (PLS-SEM) is a reliable technique to identify causal relationships between variables (which requires software such as SmartPLS 3.2.2) (Ringle et al., 2015; Sultan et al., 2020). For assessing the newly developed scale, the relationship between items and the respective latent variable is articulated in two ways. First, measurement models can be reflective or formative, depending on the nature of the construct, direction of causality, and the characteristics of indicators used to measure the construct (Coltman et al., 2008). A reflective structure means the items are a function of the latent variable, and indicators cause a change in their latent construct in a formative structure (Rodríguez-Entrena & Salazar-Ordóñez, 2013). Theoretically, the construct of SMCI was better explained in a reflective-formative structure: the three dimensions, meat consumption intention, meat curtailment intention, and organic meat purchase intention, were reflected through their respective items, and the SMCI was formative through underlying dimensions.

Moreover, change in any dimension tends to bring change in SMCI. In behavioural science literature, such conceptualization of higher-order constructs is very popular and proposed by many researchers (Flatten et al., 2011; Mas'ud et al., 2017; Saleem et al., 2018a).

Therefore, the PLS Algorithm technique was used to verify the reflective-formative structure of SMCI. The results indicated that items were linked with their respective dimensions (latent constructs), and latent variables were associated with SMCI, followed by the formative design.

Table 5.8 Properties of Higher-Order 10-items SMCI Model (n=310) (Reflective– Formative Model)

Latent variable	Indicators	Outer loading	AVEs	α	Path Coefficients	CR	A	B	C
A. Meat detachment intention (MAI)			0.698	0.784	0.411	0.874	*1.064*		
	SMCI_35	0.849							
	SMCI_37	0.867							
	SMCI_9	0.735							
B. Meat curtailment intention (MCI)			0.712	0.797	0.407	0.881	(0.085)		*1.14*
	SMCI_46	0.827							
	SMCI_58	0.883							
	SMCI_59	0.704							
C. Organic meat purchase intention (OMPI)			0.578	0.756	0.586	0.845	(0.314)	(0.442)	*1.207*
	SMCI_45	0.699							
	SMCI_48	0.732							
	SMCI_49	0.818							
	SMCI_61	0.746							

Notes: [a] Path Coefficients are all significant at $p < 0.01$; items on the diagonal in bold and italic are VIF values for the constructs; Values in parenthesis are HTMT estimates for discriminant validity; CR: Construct reliability; AVE: average variance explained; α: Cronbach alpha.

5.2.3.3 Convergent and Discriminant Validity

Construct validity is the next important step in model assessment. It is referred to as an instrument's ability to measure what is meant to be measured (Clark & Watson, 1995) and split into two distinctive but correlated concepts: convergent and discriminant validity. Convergent validity specifies that a particular construct is reflected through its underlying factors or indicators. In contrast, discriminant validity demonstrated that items are unrelated (Churchill, 1979; Henseler et al., 2015). In the literature, the average variance extracted (AVE) measure is used to assess convergent validity. AVEs values of the subscales of SMCI given in *Table 5.8 Properties of Higher-Order 10-items SMCI Model (n=310) (Reflective– Formative Model)* exceed the acceptable value of 0.50 that revealed satisfactory results (Clark & Watson, 1995; Flatten et al., 2011). Heterotrait-monotrait (HTMT) ratio of correlations among first-order

constructs was used to measure the discriminant validity. HTMT analysis compares the inter-correlations among the observed variables of a latent construct (monotrait-hetero method correlation) with correlations (HTMT) of indicators across the constructs. HTMT values met the acceptable criteria, being less than 0.85 (Amaro & Duarte, 2016; Henseler et al., 2015; Kline, 2011). Hence, the newly developed scale SMCI maintained discriminant validity.

5.2.3.4 Coefficients of Higher-Order Model

After the validity and reliability establishment, the higher-order model of SMCI measurement, showed that all three dimensions are statistically significant at $p < 0.010$ (meat detachment: $\beta = 0.411$, organic meat purchase: $\beta = 0.586$, and meat curtailment: $\beta = 0.407$). Model fit was established to meet the three standards. Firstly, standardized loading (>0.10) of first-order latent variables confirmed the theorized associations (a formative measure of SMCI) (Hair et al., 2010). Secondly, HTMT estimates were also established, and lastly, the variance inflation factor (VIF) was used to measure multicollinearity. All three subscales have VIF values between 1.064 and 1.207, and less than the cut-off value of 5 (Hair et al., 2012; Henseler et al., 2015). The results show that SMCI measured unique aspects through three subscales (dimensions) and VIF results also predict that multicollinearity is least likely to pose any problem for the results of the study (Hair et al., 2012; Henseler et al., 2015) *(see Figure 5.2 Higher-Order (Reflective-Formative) Model of SMCI)*.

Figure 5.2 Higher-Order (Reflective-Formative) Model of SMCI
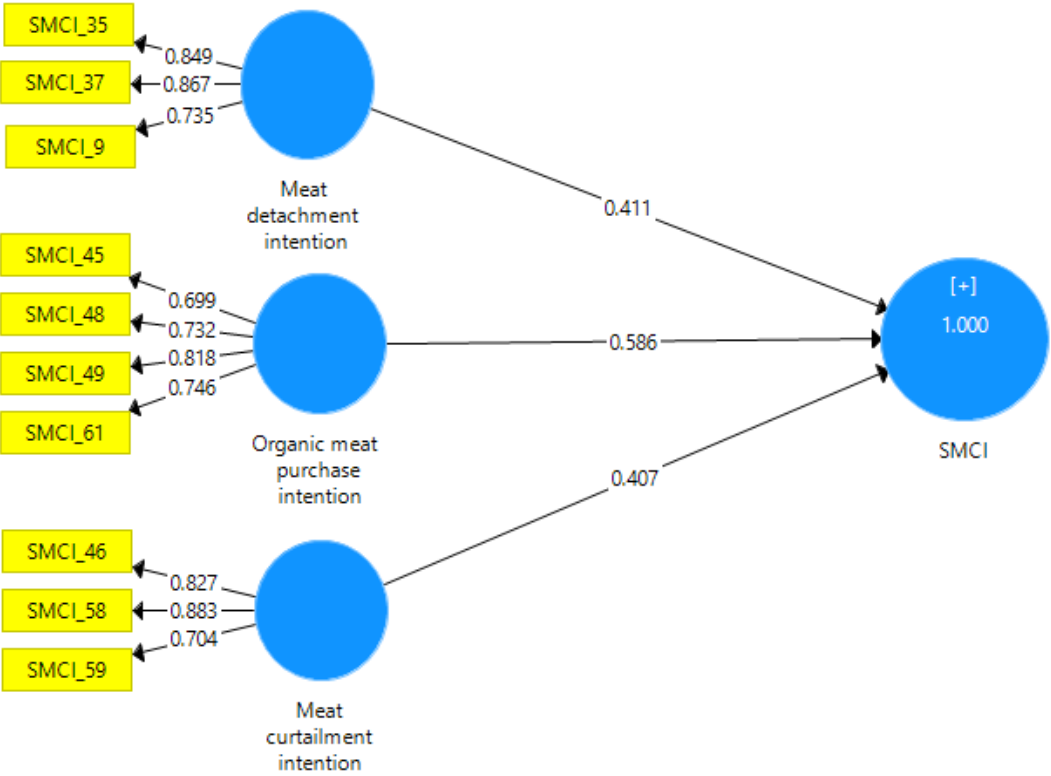
5.2.4 Phase-4 Round-3: Assessment of SMCI scale-Nomological Validity

Nomological validity explains 'the construct's behaviour within the realm of its nomological network and justifies that it performs as it is expected to behave' (Davis & Cernas Ortiz, 2017). For the assessment of nomological validity, data were collected from 355 consumers following the same criteria as in Phase 3 data collection. The survey contained ten additional items related to environmental concerns (EC) and environmental knowledge (EK). According to Fryxell and Carlos (2003), EK is defined as a person's knowledge about collective responsibilities necessary for sustainable development. EC can be elaborated as the degree to which individuals are motivated to change environmental protection behaviour (Mostafa, 2009). A hierarchical component model (HCM), also called a higher-order construct and was utilized through the two-stage approach. First, the measurement model was tested in terms of validity and reliability (*Table 5.9 Assessment of Measurement Model (First-Order)*), followed by the structural model to ensure nomological and predictive validity.

Table 5.9 Assessment of Measurement Model (First-Order)

Variable	Items	Loadings	AVEs	α	CRs	Env. Con	Env Know
Env. Con			0.723	0.872	0.912	*0.850*	
	EC_1	0.830					
	EC_2	0.882					
	EC_3	0.863					
	EC_4	0.823					
Env. Know			0.699	0.786	0.875	(0.226)	*0.836*
	EK_3	0.838					
	EK_4	0.852					
	EK_5	0.818					

Notes: AVE: Average variance explained; α: Cronbach alpha; CR: Composite reliability; Values in parenthesis is HTMT for discriminant validity; VIF: items on the diagonal in bold and italic.

5.2.4.1 The Embedded Two-Stage Approach

This stage was similar to the (advanced) repeated indicators approach; all indicators of the lower-order components are associated with the higher-order components (Lohmoller, 1989; Wold, 1982). The higher-order construct SMCI consists of three lower-order components: meat detachment, meat curtailment, and organic meat purchase having 3, 3, and 4 indicators, respectively. To specify the relationships between the antecedent constructs (EK, EC) and the lower-order components (meat detachment intention, meat curtailment intention, and organic meat purchase intention), SMCI was treated as a mediator. Instead of analyzing the direct relationship between the antecedent construct and the higher-order component, which is zero by design, scholars need to analyse the antecedent construct's total effect on the higher-order component. This total effect also includes all indirect effects of EK and EC on SMCI via the lower-order components, representing an accurate model of the antecedent construct's actual impact on the higher-order component (Becker et al., 2012; Cheah et al., 2018; Hair et al., 2018). *Figure 5.3 The Embedded Two-Stage (Advanced Repeated indicated) Model* illustrates that advanced repeated indicator method for reflective-formative type higher-order construct with two antecedent constructs.

Figure 5.3 The Embedded Two-Stage (Advanced Repeated indicated) Model
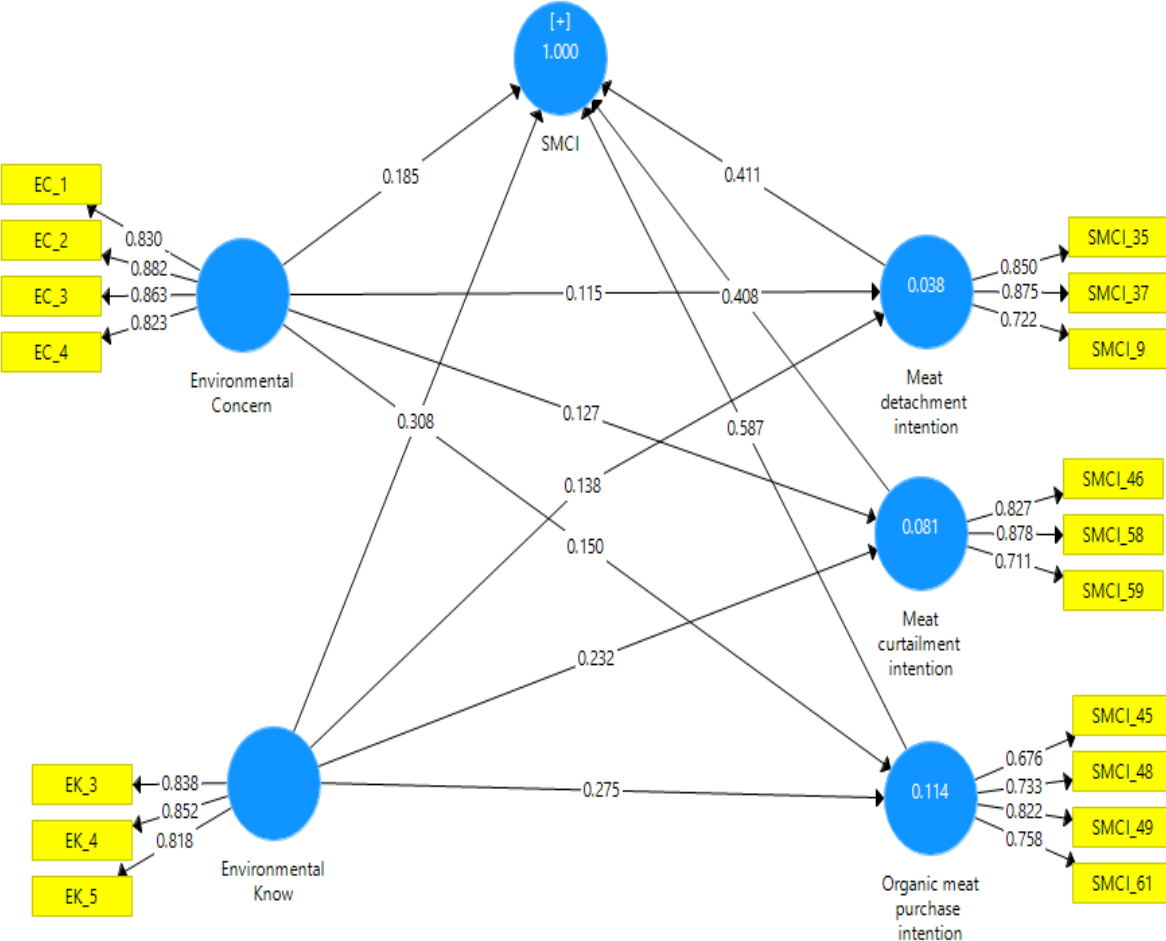
5.2.4.2 The Disjoint Two-Stage Approach

In stage two, the estimation and measurement model assess the lower-order components by drawing the direct relationships between the two antecedent constructs (EK and EC) and SMCI without the higher-order component (*Figure 5.4 The Disjoint Two-Stage Model*). In stage two, the latent variable scores (LVS) obtained from the repeated indicators approach (stage 1) used to create and estimate the model shown in LVS of the first-order constructs serves as manifest variables of the second-order construct. In essence, the measurement of the first-order constructs is reduced to single items. This reduction is helpful for statistical reasons to avoid multicollinearity among the indicators and for practical purposes to prevent "double-counting." Most importantly, the two-stage approach allows placing the second-order construct in an endogenous position within the structural model (Sarstedt et al., 2019; Van Riel et al., 2017).

Moreover, the bootstrapping method with 5000 resamples was employed to test the path coefficients' significance and loadings (Hair et al., 2014; Quoquab et al., 2019). The predictive relevance (Q2) was calculated by utilising the blindfolding procedure using a distance value of 7. Blindfolding is a measure that builds on a sample reuse technique, omitting a part of the data matrix, assessing the model parameters and predicting the omitted part using the estimations (Hair et al., 2012). Q2 value of 0.072 with two endogenous constructs, SMCI is greater than 0 (Fornell & Larcker, 1981) and confirmed that the model has sufficient predictive power.

Figure 5.4 The Disjoint Two-Stage Model
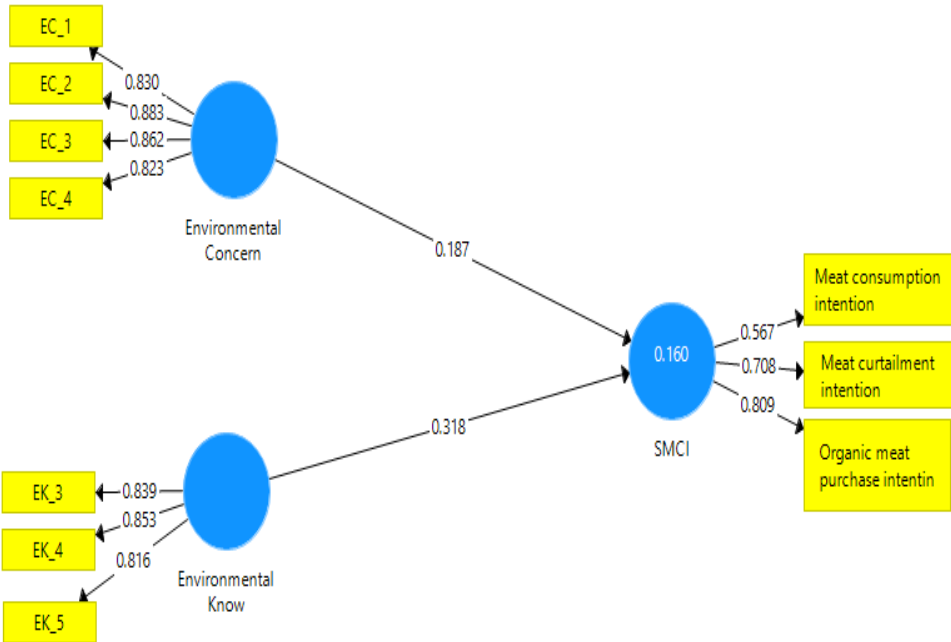
To identify the direct relationship between independent variables (EK, EC) and SMCI as a dependent variable. *Table 5.10 Nomological Validity (Higher-Order Level)* represented the P-values and t-Values with path coefficients. Results reported that EK and EC have a significant positive relationship with SMCI.

Table 5.10 Nomological Validity (Higher-Order Level)

Hypothesis	Path Coefficient(β)	SD	P-values	t values	Decision
EK-SMCI	0.318	0.048	0.000	6.593	Behaved as expected
EC-SMCI	0.187	0.052	0.000	3.587	Behaved as expected

5.3 Study 1- RQ2: Segmentation Analysis

The second research question of this study, RQ2, is about the profiles of consumers who prefer to reduce meat consumption or eat more quality organic meat and showed meat detachment intention. More specifically, the RQ2 of this study is stated as 'What are the demographic, psychographic and behavioural characteristics of consumers in Pakistan who are conscious about meat sustainability and who reduce meat in their diets or give preference to organic meat?' The following section discusses the approach adopted to address RQ2 and the results thereby obtained after data analysis.

Data analysis was conducted using SPSS v.25.0 and SmartPLS v3.2.2. Although measurement model characteristics have already been explained in the previous section 4.4.3.2, the process was repeated for two significant reasons: (1) a different subsample was utilised ($n = 412$) to provide split sample validity of the measurement model results (2) additional constructs were used in the measurement model which involves retesting of measurement characteristics. After establishing measurement model validity, a complete dataset ($n = 722$) was utilized for cluster analysis, ANOVA, and MDA. A Chi-square test (χ^2) was performed to measure the differences among clusters based on demographic information to describe clusters' observed characteristics.

5.3.1 Measurement Model Validity

In the first step, exploratory factor analysis (EFA) was performed to recognize the dimensionality of the measurement scales. Principal component analysis (PCA) with the Varimax rotation technique was utilised (Hair, 2010). The results revealed eight factors that explained 69.289% of the variance. Five items having factor loading less than 0.60 were iteratively removed before further analysis (Hair, 2010). Results verified the appropriateness of data in terms of sampling adequacy (KMO=.926) and inter-item correlation (Bartlett's test: $\chi^2 = 18927.308$, $p < 0.001$) (Kaiser, 1974).

Table 5.11 Measurement Model Values show the results of convergent and discriminant validity tests. The Cronbach's alpha (α) value is greater than 0.70, suggesting good internal consistency for each construct. Although, composite reliability (CR) values greater than 0.60 for all the constructs were satisfactory. The research argues that the α value is not always sufficient to assess the internal consistency of the measurement model since it can generate sensitive results related to the sample size and the scale used for a construct (Fornell & Larcker, 1981; Hair et al., 2014). Thus, an alternative measure has been suggested to use in the literature to align with α values called composite reliability (Fornell & Larcker, 1981). The results of both Cronbach's alpha (α) and composite reliability tests were satisfactory and maintained the internal consistency and reliability of the measures. Convergent validity was confirmed by examining the items' outer loadings (factor loadings) in each construct. The research proposes that an outer loading greater than 0.70 is acceptable, and values with less than 0.40 should always be eliminated (Hair et al., 2014). Results showed an outer loading for an item, 'I Know more about recycling than the average person (EK_2), is 0.665. And another item, 'The unfair industrial growth of the livestock industry is partly a consequence of my own consumption choices (PCE7)' has 0.666 factor loading. Which were lower than those for other items *Figure 5.5 Disjoint Two-Stage Model.*

The convergent validity of measurement instruments assess through an examination of average variance extracted (AVE) is the most widely used criteria in the literature, described as an AVE cut-off value of 0.5 or greater to reflect satisfactory convergent validity (Flatten et al., 2011).

Table 5.11 Measurement Model Values highlights that all subscales have AVE's values greater than the cut-off value; finally, the convergent validity is established. The discriminant validity is measured in the present study through the recently recommended criterion of heterotrait-monotrait (HTMT) ratio of correlations among lower-order constructs in a particular hierarchal component model (HCM) (Hair et al., 2018; Henseler et al., 2015). HTMT used to compare the inter-correlations among the observed variables of a latent construct (monotrait-heteromethod correlation) with correlations of indicators across the constructs (heterotrait- correlations) and recommends that the resultant ratio should be lower than the restrictive cut-off value, i.e., 0.85 (Amaro & Duarte, 2016; Cheah et al., 2018; Sarstedt et al., 2019). HTMT values reported in *Table 5.11 Measurement Model Values* showed that this condition is met; thus, the discriminant validity of the measurement model was also established.

Table 5.11 Measurement Model Values

Latent Variable	Indicators	Outer loading	AVEs	α	CR	A	B	C	D
A. Env. Concern			0.695	0.854	0.901	*0.834*			
	EC_1	0.795							
	EC_2	0.872							
	EC_3	0.850							
	EC_4	0.816							
B. Env. Knowledge			0.596	0.772	0.854	(0.227)	*0.772*		
	EK_2	0.665							
	EK_3	0.841							
	EK_4	0.804							
	EK_5	0.767							
C. Perceived consumer effectiveness			0.612	0.887	0.904	(0.089)	(0.068)	*0.782*	
	PCE2	0.809							
	PCE3	0.828							
	PCE4	0.855							
	PCE5	0.776							
	PCE6	0.744							
	PCE7	0.666							
D. Religiosity			0.777	0.893	0.872	(0.107)	(0.062)	(0.674)	*0.882*
	Ext Religiosity	0.996							
	Int Religiosity	0.750							

Notes: CR: Composite Reliability, α: Cronbach's alpha, AVE: Average Variance Extracted, Items on the diagonal in bold and italic are VIF values for the constructs; values in parenthesis are HTMT estimates for discriminant validity.

Figure 5.5 Disjoint Two-Stage Model
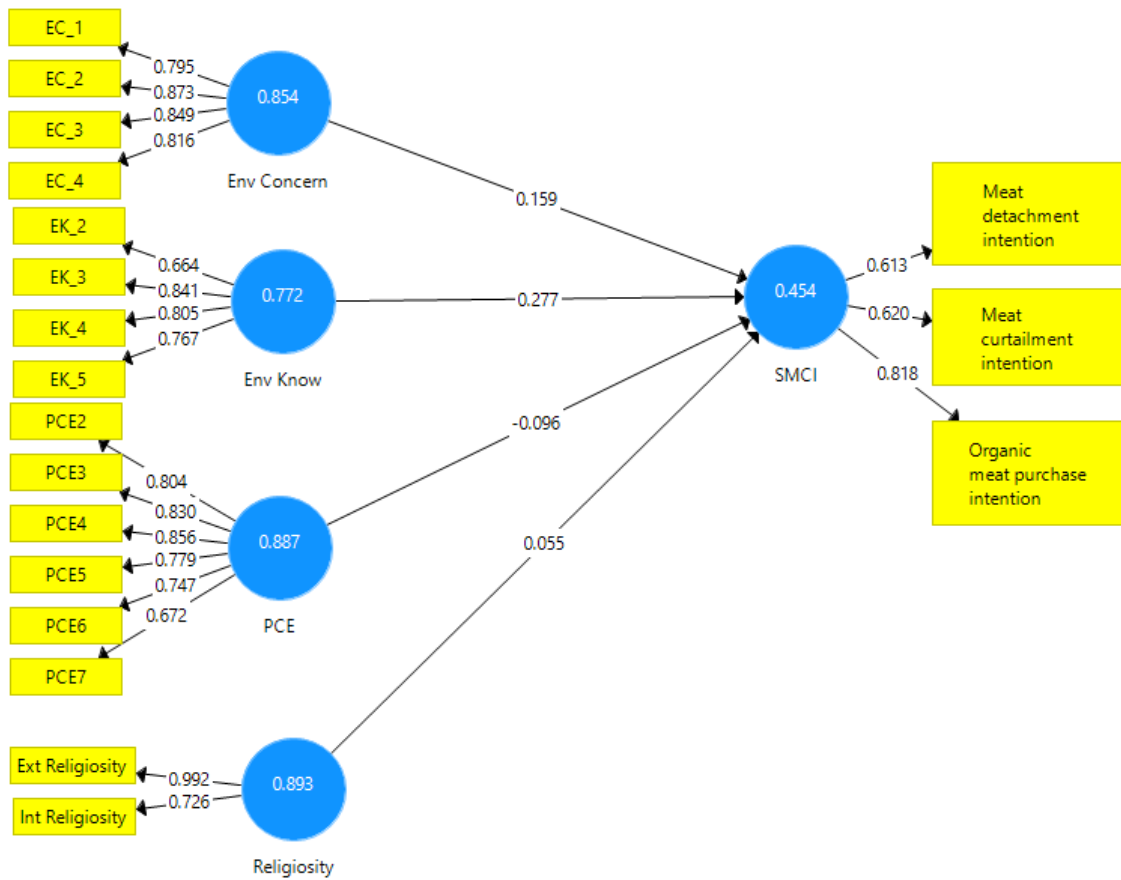
5.3.2 Cluster Analysis, ANOVA, and Multiple Discriminant Analysis (MDA)

Following the factor analysis, a hierarchical clustering approach was utilised to follow the recommendations of Punj and Stewart (1983). Several studies based on segmentation associated with sustainability-related behaviours utilised this approach (Funk et al., 2021; Saleem et al., 2018b). Hierarchical cluster analysis was applied in the present study with the Wards method for eight variables *(see Table 5.12 Results of Cluster Analysis and Test of Equality of Group Means)*. Squared Euclidean Distance was used as a measure of difference among the resulting clusters. Although there are no strict rules to define the exact number of clusters, literature identified the following approaches: 1: statistical stopping rules; 2: external material; 3: theoretical categorisation; and 4: heuristic sense-making (Everitt, 2011; Tapio,

2003). After identifying the optimal number of segments based on examining the agglomeration schedule and the increase in agglomeration coefficient, the clustering was adjusted employing the non-hierarchical K-means clustering method (Hair, 2010). The process resulted in a three or four-cluster solution considered optimal. A three-cluster solution was recognized as best elucidating the data based on a variable mean score, i.e., a 3-cluster solution signified a parsimonious balance between minimizing the number of clusters and minimizing variance within each cluster; b) cluster sizes, i.e., a 3-cluster solution provided the most substantial number of respondents in each group; and c) interpretability, i.e., a 3-cluster solution given the most accurate and interpretable results (Hair et al., 2009). Then, a K-means cluster analysis was executed with initial cluster centres resulting from the hierarchical procedure. The respective size and mean scores of the segments are reported in *Table 5.12 Results of Cluster Analysis and Test of Equality of Group Means*.

Several tests were carried out to identify any significant differences between the groups after performing the cluster analysis and achieving the optimal cluster solution. Analysis of variance (ANOVA) and multiple discriminant analysis (MDA) were conducted (Hair et al., 2012) to accomplish this purpose. Initially, the assumption of the equality of group means was verified. Results stated that the three groups were significantly different for all test variables.

Table 5.12 Results of Cluster Analysis and Test of Equality of Group Means

Variables	Wilks'	$F_{(5,082)}$	Sig.	Cluster1 n=239(33.1%)	Cluster2 n=147(20.4)	Cluster3 n=336(46.5%)
Environmental concern	.994	2.024	.133	2.02	2.00	1.89
Environmental knowledge	.934	25.465	.000	3.10	2.64	2.52
Extrinsic religiosity	.331	727.770	.000	2.63	5.51	2.11
Intrinsic religiosity	.327	738.328	.000	2.15	5.39	1.90
Perceived consumer effectiveness	.612	228.378	.000	3.04	4.91	2.69
Meat curtailment intention	.617	222.853	.000	4.6	3.14	2.82
Organic meat purchase intention	.883	47.444	.000	3.04	2.48	2.35

Meat detachment intention	.797	91.726	.000	3.77	3.20	2.43

Note: numbers against variables in each segment reflect mean score on a seven-point Likert scale,

The Wilks λ value for each variable highlighted that 'extrinsic religiosity' was the most influential variable distinguishing between the three groups (λ = 0.331, F (5,082) = 727.770, p<0.001) followed by 'intrinsic religiosity' (λ = 0.327, F (5,082) = 738.328, p<0.001), 'perceived consumer effectiveness' (λ = 0.612, F (5,082) = 228.378, p<0.001). The group differences based on 'environmental knowledge' (λ = 0.934, F (5,082) = 25.465, p<0.001) were least significance. The discriminant analysis identified two canonical discriminant functions explaining the differences between the three clusters. The results given in *Table 5.13 Wilks' Lambda Table* showed that function 2 explained a greater quotient of variation between the groups than function 1. In Wilks' lambda highlights that both discriminant functions were significant statistically (Z1: λ1 = 0.106, χ2 = 1606.238, p < 0.001; Z2: λ2 = 0.466, χ2 = 546.453, p < 0.001) (Hair, 2010).

Table 5.13 Wilks' Lambda Table

Test of functions	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	0.106	1606.238	16	0.000
2	0.466	546.453	7	0.000

Extrinsic religiosity and meat curtailment intentions are the best predictors represented in *Table 5.14 Standardised Canonical Discriminant Function Coefficients*. Function 1 showed meat curtailment intention, and function 2 expressed extrinsic religiosity as the most influential factor.

Table 5.14 Standardised Canonical Discriminant Function Coefficients

Constructs	Functions	
	1	2
Environmental concern	-0.114	-0.121
Environmental knowledge	-0.016	0.145
Extrinsic religiosity	0.529	0.057
Intrinsic religiosity	0.570	-0.187

Perceived consumer effectiveness	0.310	0.115
Meat curtailment intention	0.071	0.837
Organic meat purchase intention	-0.026	0.247
Meat detachment intention	0.227	0.552

Figure 5.6 Canonical Discriminant Functions for the Three Groups showed the difference between group centroids for both discriminant functions and confirms that difference among group centroids. It ensures that the first function's centroid values always explain the most variation in group differences (Cocozzelli, 1988).

Figure 5.6 Canonical Discriminant Functions for the Three Groups
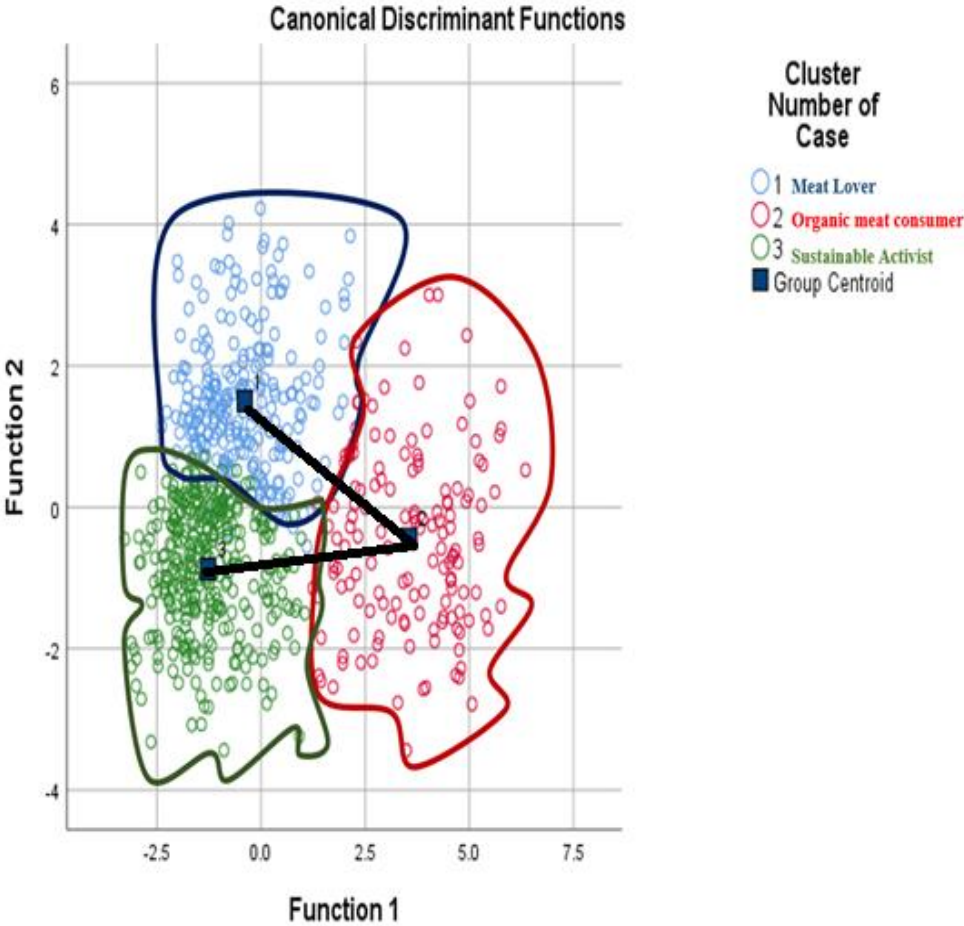
The structure matrix was analysed to examine further the contribution of each discriminant function for individual variables. *Table 5.15 Structure Matrix* elaborates the relative contribution of each of the variables to the discriminant functions. The structure matrix showed that extrinsic and intrinsic religiosity has the strongest correlation (r=0.771), followed

by perceived consumer effectiveness (r= 0.432) in the first function. While, in second function meat curtailment intentions (r= 0.735) and meat detachment intentions (r= 0.442) has high correlation.

Table 5.15 Structure Matrix

Variables	Function 1	Function 2
Environmental concern	.024	0.249[*]
Environmental knowledge	.003	0.056
Extrinsic religiosity	0.771[*]	-0.046
Intrinsic religiosity	0.771[*]	-0.177
Perceived consumer effectiveness	0.432[*]	-0.025
Meat curtailment intentions	.000	0.735[*]
Organic meat purchase intentions	.000	0.339[*]
Meat detachment intentions	.096	0.442[*]

*Largest absolute correlation between each variable and any discriminant function.

Table 5.16 Classification Matrix showed the classification of results reports that the number of individual cases correctly and incorrectly classified in clusters based on prior probabilities. The percentages of correctly classified cases can be observed on the diagonal (left to right). It represents that almost 96.1 per cent of the total cases were classified correctly in their respective clusters (cluster1: 92.9 per cent, cluster 2: 96.6 per cent, and cluster 3: 98.2 per cent).

Table 5.16 Classification Matrix

Original Group	Count	Predicted group membership*		
		Cluster1	Cluster2	Cluster3
Cluster1	239	222(92.9)	0(0)	17(7.1)
Cluster2	147	2(1.4)	142(96.6)	3(2)
Cluster3	336	6(1.8)	0(0)	330(98.2)
Total	722	230	142	350

Note: Figures in parentheses are percentages;[*] 96.1% of original grouped cases were correctly classified.

The derived segments were strengthened by distinguishing the clusters based on observed/demographic features with bivariate analysis, with cross-tabulation of numerous demographic variables with the segment membership. The Pearson's chi-square ($\chi 2$) test was used to measure the significance of the demographic variables to differentiate the four groups. Variables included in this analysis mentioned as gender, age, education, province, city, income, marital status, employment status, frequency of organic meat purchase, household pattern, and grocery shopping responsibility. The results of the bivariate analysis are summarised in *Table 5.17 Demographics by Segments (N=722)*. These results showed the significant difference between the segments for age ($\chi 2 = 27.291$, $p < 0.01$), city ($\chi 2 = 47.439$, $p < 0.01$), employment status ($\chi 2 = 28.590$, $p < 0.01$), income ($\chi 2 = 23.666$, $p < 0.01$), and how many times organic meat purchase ($\chi 2 = 24.941$, $p < 0.01$). Consumer profiles based on gender, grocery shopping responsibility, province, and marital status are not statistically dissimilar across the segments. Three-segment profiles are proposed, the indifferent, the organic meat consumer, and the sustainable activist based on the analysis of observed and unobserved characteristics. These segments are discussed below.

5.3.3 The Meat Lovers (Cluster 1)

In the light of observed characteristics, 'the meat lovers' segment (segment 1: 33.1%) has a considerably high number of young (18-27: 17.8 per cent) and middle age group of consumers (28-37: 47.8 per cent). More than half of 57.4 per cent of consumers in this segment are full-time employed regarding employment status. On the income scale, the individuals in this segment mainly (23.5 per cent) earned 75,000-99,000 PKR, followed by 20% earned 100,000- 124,999 PKR. Only 27.4 per cent of individuals purchase organic meat once per month. This figure is smaller compared to the other two segments *(see Table 5.17 Demographics by Segments (N=722))*.

The 'meat lovers' segment has almost neutral mean values on all unobserved characteristics: environmental concern (X= 2.02), environmental knowledge (X= 3.10), intrinsic religiosity (X=2.63), extrinsic religiosity (X= 2.15) and perceived consumer effectiveness (X= 3.04). Except for meat curtailment intentions (X= 4.6) is the strongest factor discriminating the three segments *(see Table 5.12 Results of Cluster Analysis and Test of Equality of Group Means)*. On a scale, '1' represented the 'strongly agree' and '7' showed 'strongly disagree' values. Individuals who belong to this segment seem unconcerned about sustainable meat consumption related to curtailment meat-based diet or organic meat consumption.

5.3.4 Organic Meat Consumers (Cluster 2)

Analysis of demographic characteristics of 'organic meat consumers' segment (segment 2: 20.4 per cent) shows that consumers in this segment mostly belonged to the middle age group (28-37: 31 per cent) followed by 28.2 per cent to 18-27 age group and 24.6 per cent associated with 38-47 age bracket. Most of the consumers, 47.2 per cent of this group, have their own business, and 21.8 per cent are students, respectively. Concerning income level, 28.9 per cent 'organic meat consumers' have income 150,000 and above PKR. The consumers belonged to this segment have a high-income bracket as compared to the other three segments.

The organic meat consumers showed asymmetrical values for unobserved variables like environmental concern (X= 2.00), environmental knowledge (X= 2.64), organic meat purchase intention (X=2.48), while extrinsic religiosity (X=5.51), intrinsic religiosity (X=5.39), and perceived consumer effectiveness (X=4.91). On a scale, '1' represented the 'strongly agree' and '7' showed 'strongly disagree' values. Therefore, it is evident that consumers in the 'organic meat consumers' segment have a deeply rooted environmental concern and lower religiosity and perceived consumer effectiveness. Consumers who belong to this segment are intended to purchase organic meat due to environmental concerns and play a positive role in protecting nature.

5.3.5 Sustainable Activist (Cluster 3)

The sustainable believer segment (segment 3: 46.5 per cent) comprises 38.3 per cent of young individuals within the age group 18-27, and 24.3 per cent of individuals lie between age groups 38-47. On the income scale, 17.4 per cent of 'the sustainable activist' have earned between 75,000 to 99,999 PKR and followed by 16 per cent of individuals who earned between 50,000 to 74.999 PKR. A maximum number of consumers who belonged to this segment lived in the Karachi and Lahore cities. Most of the individuals' associated with this segment employed full time (45.4 per cent) go along with a group of students (26.3 per cent). Sustainable activists purchase organic meat once per week (34.1 per cent), followed by 2-3 times per week (23.1 per cent).

'The sustainable activist' segment has the lowest mean values for all unobserved variables: environmental concern (X= 1.89), environmental knowledge (X= 2.52), extrinsic religiosity (X= 2.11), intrinsic religiosity (X= 1.90), perceived consumer effectiveness (X=

2.69), meat curtailment intention (X=2.82), organic meat purchase intention (X= 2.35) and meat consumption intention (X= 2.43). On a scale, '1' represented the 'strongly agree' and '7' showed 'strongly disagree' values. The statistics signified that individuals belonging to this group of highly sustainable consumers agree and are highly motivated to curtail meat from diet or purchase organic meat. Moreover, they have a high level of intrinsic and extrinsic religiosity and environmental concern and perceive that their sustainable consumption intentions can effectively change the environment.

Table 5.17 Demographics by Segments (N=722)

Variables	Segments			Total	χ2 (df)	Sig.
	Meat lovers	Organic meat consumer	Sustainable activist			
Gender					4.100(2)	0.129
Male	39.1	48.6	46.3	44.5		
Female	60.9	51.4	53.7	55.5		
Age					27.291ᵃ(10)	.002
18-27	17.8	28.2	38.3	28.1		
28-37	47.8	31	24	34.5		
38-47	16.1	24.6	24.3	21.7		
48-57	17	12	9.4	12.3		
58 and above	1.30	4.2	4	3.20		
*Total household income/month					23.666(16)	.007
Less than 25,000	4.80	6.30	5.10	5.30		
25,000-49,999	10.4	14.8	12.9	12.5		
50,000-74,999	14.8	7.7	16.0	12.8		
75,000-99,999	23.5	16.2	17.4	19.0		
100,000-124,999	20	9.9	14.0	15.1		
125,000-149,999	6.5	10.6	10.6	9.2		
150,000-174,999	7.4	16.9	5.4	9.5		
175.000 and more	8.3	12	8.9	9.3		
Prefer not to say	4.3	5.6	9.7	7.2		
Province					13.196(8)	.105
Baluchistan	2.2	6.3	3.7	3.7		

Federal Capital	4.8	6.3	3.7	4.6		
KPK	7	2.8	4	4.7		
Punjab	54.3	59.2	53.4	54.8		
Sindh	31.7	25.4	35.1	32.1		
City					47.439 (22)	.001
Bahawalpur	5.7	0	6	4.7		
Faisalabad	3	6.3	5.7	5		
Hyderabad	6.5	8.5	4.6	6		
Islamabad	4.8	6.3	3.7	4.6		
Jhang	4.3	3.5	4.3	4.2		
Karachi	20	14.8	25.4	20		
Lahore	8.7	9.9	19.1	12.4		
Multan	25.2	20.4	14.6	20		
Peshawar	7	2.8	4	4.7		
Queeta	2.2	6.3	3.7	3.7		
Rawalpindi	7.4	19.1	3.7	10.1		
Sukhar	5.2	2.1	5.1	4.6		
Grocery responsibility					5.547(4)	.236
Sole responsibility	29.1	31.0	22.6	26.3		
Joint Responsibility	50.9	47.9	53.1	51.4		
No responsibility	20	21.1	24.3	22.3		
Marital Status					5.640(6)	.465
Married	60.4	59.9	57.1	58.7		
Widowed	5.7	2.8	5.1	4.8		
Divorced	4.3	1.4	4.3	3.7		
Single	29.6	35.9	33.4	32.7		
Household pattern					20.850(14)	.106
Adult household (living alone)	3	6.3	4	4.2		
Adult household (living with spouse-no kids)	6.5	7	10	8.3		
Adult household (Kids left home)	.9	2.1	1.1	1.2		
Young families (youngest child at home	18.7	11.3	12.9	14.4		

between the age of 0-5 years)						
Middle families (youngest child at home between the age of 6-12 years)	16.1	16.9	13.7	15.1		
Older families (youngest child at home between the age of 13- 18 years)	5.2	9.9	4.9	6		
Mature families (youngest child home age over 18 years)	17	11.3	12.9	13.9		
Joint family system	32.6	35.2	40.6	37		
Education					9.154(8)	.329
Primary(Year 5)	0.9	0.7	1.7	1.2		
Middle-Matric(Year 10)	2.2	5.6	5.7	4.6		
Inter-bachelors	30.9	23.9	27.7	28		
Master-PhD	47.8	45.8	43.1	45.2		
Professional education Employment Status					28.590(10)	.001
Landlord	4.8	4.2	1.7	3.2		
Own Business	8.7	47.2	12.6	22.8		
Unemployment	10.4	9.2	5.4	7.8		
Employed, Part-time	4.3	6.3	8.6	6.8		
Employed, Full-time	57.4	11.3	45.4	38		
Student	14.3	21.8	26.3	21.6		
Frequency of organic meat purchase					24.941(8)	.002
2-3 times /week	20.9	17.6	26.9	23.1		
Once /week	27.4	31.7	39.4	34.1		
2-3 times /month	18.7	19	13.7	16.3		
Once/month	18.3	16.2	11.7	14.7		
Never	14.8	15.5	8.3	11.8		

*Income is given in Pakistani Rupee.

[a] Four cells have expected count less than 5.

5.4 Conclusion

The current chapter explained the quantitative outcomes from the research and addressed the first two research questions (RQ1 and RQ2) in study-1; thus providing a base of knowledge to analyse the third research question (RQ3). The research question (RQ1) was associated with developing the SMCI scale. This study conceptualised, developed, and validated the SMCI scale comprising three dimensions: meat curtailment intention, organic meat purchase intention, and meat detachment intention. The second research question (RQ2) is intended to identify consumer segments who prefer sustainable meat consumption in Pakistan's livestock market. The study found three different segments: meat lovers, organic meat consumers, sustainable activists. Interestingly, the sustainable activist segment included 49% of the total sample and declared that consumers are highly interested in sustainable meat consumption intentions. The next chapter, *Chapter 6*, presents the results of Study2-RQ3, an analysis of the advanced theory of planned behaviour model.

Chapter 6 Results of Study 2: Analysis of Advanced Theory of Planned Behaviour Model

6.1 Introduction

The purpose of Study 2 was to test the theoretical model of Sustainable Meat Consumption Intentions (SMCI) based on the advanced Theory of Planned Behaviour (TPB) derived from a literature review conducted and illustrated in *Chapter 3*. The current chapter presents the results that address the third research question: investigating the fundamental driving forces, such as religious and pro-environmental values, behind sustainable meat consumption intentions through an advanced TPB model in an emerging economy. This chapter starts with the data screening process; the following section describes the demographic details of the respondents, followed by the results of the hypotheses related to the advanced TPB through measurement and structural models.

6.2 Overview of the Sample

For the third research question, the data collection process followed the same techniques explained in the methodology section, *4.7 Research Methodology: Study 1 and Study 2* of the thesis. The survey link was published on the meat stores webpages and their social media platforms, with a short description of the importance of the study. Also, the survey link was posted on the NUML Facebook page and websites. Due to the COVID-19, the country faced a lockdown situation, and people preferred to place grocery orders online. This situation expedited the data collection process increased the response rate, and 1,705 consumers started to fill the survey. But only 860 respondents filled the complete questionnaire (50% completion rate). Thus, the online survey generally gets a low response rate (e.g., Sultan et al., 2018; Taufique & Vaithianathan, 2018).

6.3 Preliminary Data Screening

Initially, data screening was conducted before starting the primary analysis of the data. First of all, data were checked for missing values and outliers (Field, 2018). For quantitative studies comprised of survey methods, missing values analysis is a very crucial step. Analysis software SPSS v. 25. 0 was used to identify the missing values. The results declared no missing values in any items of the constructs. This was not surprising because the researcher applied the 'forced response' check at the survey development phase. Therefore, the respondent had a

choice to quit the survey but was unable to submit it as completed. Thus, such surveys showed the status as a 'survey in processes.'

The outliers are those values that seem different and dissimilar from the rest of the data set (Field, 2018). Outliers can generate serious bias in results estimates. Hence boxplot and Z-scores tests were applied to recognise outlier cases in the data. Thirteen cases were deleted one by one, and finally, the results showed that the data was free from extreme values and appropriate for further analysis. The survey relied on self-reported data collected from a single source, so there was a chance of common method variance (CMV) bias. To test for homogeneity of variance, several statistical tests can be used. The most common assessment for homogeneity of variance is measured through Levene's test. Levene's test uses an F-test to test the null hypothesis that the variance is equal across various groups. A p-value less than 0.010 indicates a violation of the assumption. If a violation occurs, conducting the non-parametric equivalent of the analysis is likely more appropriate (Foster, 2011). The results of the Levene tests are summarised in *Appendix 4 Test of Non-Response Bias Study 2*.

6.4 Descriptive Statistics

An overview of the sample profile (*see Table 6.1 Demographic Distribution of the Respondents (847)*) revealed that the sample comprised 460 males and 387 females. The results demonstrated that 34.5 per cent were single, followed by married, widowed and divorced, having values of 33.6 per cent, 30.8 per cent and 9 per cent, respectively. Most of the respondents, 38.1 per cent, belonged to the Sindh province; 36 per cent lived in Punjab, and 10.5 per cent resided in the Federal Capital, Islamabad. In comparison, less than 10 per cent lived in the remaining two provinces, Baluchistan and KPK, respectively. In terms of location, 66.2 per cent lived in a city, and 24.2 per cent lived in suburban areas. The results reported that 44.4 per cent of respondents were in the age bracket of 20-29 years, representing a young sample. Census data from Pakistan relating to the population's age distribution indicates that the median age in Pakistan is 22.8 years; therefore, the study's sample is representative of the population (Worldometers, 2021). The other major age groups were 30-39 years (29.2 per cent) and 40-49 years (18.4 per cent).

Most of the respondents (17.7 per cent) earned between 50,000-74,999 (Pakistani Rupee) income. The other major income categories were 25,000-49,999 (13.3 per cent) and 75,000-99,999 (11.6 per cent). The descriptive analysis also showed that 38.1 per cent of consumers had a Master-MPhil degree, followed by 34.6 per cent with an Inter-Bachelors' degree. The

sample's education level is high as compared to the general population. Still, the sample appears plausible, and representative of the population since 66.2 per cent of respondents belonged to cities, and cities are associated with higher literacy rates than rural or regional areas.

Concerning employment status, 32.6 per cent were students, 28.8 per cent were employed, full-time, and 13.3 per cent had their own business. Results showed that 38 per cent of respondents lived in a joint family system (extended family system in which many generations live together), followed by 18.7 per cent associated with mature families (youngest child over the age of 18). Moreover, the results revealed that 45.1 per cent have joint responsibility for grocery shopping and 30.3 per cent have no responsibility, while 24.6 per cent have sole responsibility. Moreover, 32 per cent of respondents purchased organic meat once per week, 31.3 per cent 2-3 times per week.

Table 6.1 Demographic Distribution of the Respondents (847)

Variable	Category	Distribution	
		Frequency	**Percentage**
Gender	Male	460	54.3
	Female	387	45.7
Marital Status	Married	285	33.6
	Widowed	261	30.8
	Divorced	9	1.10
	Single	292	34.5
Age	20-29	376	44.4
	30-39	247	29.2
	40-49	156	18.4
	50-59	41	4.80
	60 or above	11	1.30
	Prefer not to say	16	1.90
Income	Less than 25,000	58	6.80
	25,000-49,999	113	13.3
	50,000-74,999	150	17.7
	75,000-99,999	98	11.6
	100,000-124,999	88	10.4
	125,000-149,999	71	8.40
	150,000-174,999	92	10.9
	175,000 and above	72	8.50

	Prefer not to say	105	12.4
Education	Primary (Year 5)	47	5.50
	Middle-Matric (Year 10)	87	10.3
	Inter-Bachelors	293	34.6
	Master-MPhil	323	38.1
	PhD	21	2.50
	Professional education	76	9.00
Employment Status	Landlord	66	7.80
	Own Business	113	13.3
	Unemployed	85	10.0
	Employed, Part-time	63	7.40
	Employed, Full-time	244	28.8
	Student	276	32.6
Grocery Responsibility	Sole responsibility	208	24.6
	Joint responsibility	382	45.1
	No responsibility	257	30.3
Family Size	Adult household (living alone)	56	6.60
	Adult household (living with spouse-no kids)	52	6.20
	Young families (youngest child at home between the age of 0-5 years)	78	9.20
	Middle families (youngest child at home between the age of 6-12 years)	83	9.80
	Older families (youngest child at home between the age of 13- 18 years)	98	11.6
	Mature families (youngest child home age over 18 years)	158	18.6
	Joint family system	322	38.0
Province	Punjab	305	36.0
	Sindh	323	38.1
	Baluchistan	62	7.40
	KPK	68	8.00
	Capital city	89	10.5
Location	City	561	66.2

	Suburb	205	24.2
	Countryside	81	9.60
Frequency of organic meat purchase	2-3 times /week	265	31.3
	Once /week	271	32.0
	2-3 times /month	111	13.1
	Once/month	91	10.7
	Never	109	12.9

6.5 Results of Theoretical Model – Advanced Theory of Planned Behaviour

The extended theoretical TPB model was analysed following the procedure described in section 4.8.4.2 Data Analysis – PLS-SEM for study 2. The analytical process in theory testing starts with assessing the measurement model that established the validity of the theoretical constructs, followed by the structural model analyses. The advanced theory of planned behaviour model for SMCI is represented in *Figure 3.1 Theoretical Model of the Study*, highlighting the schematic representation of the constructs and their relationship. The results of the measurement and the structural model are discussed in the following section.

6.5.1 Measurement Model Properties

In the Structural Equation Modelling (SEM) analysis, the measurement model quantifies the association between observations obtained during research and theoretical constructs. The measurement model assesses the reliability and validity of the constructs of the theoretical model. Factor analytical approach is employed to estimate a measurement model that starts with a structural analysis of the constructs and their associated dimensions (Anna & Jason, 2005).

6.5.2 Principal Components Analysis (PCA)

According to various researchers, the aim of both exploratory factor analysis (EFA) and principal component analysis (PCA) are similar with slight variations. Yet, several simulation-based studies have confirmed that results drawn from PCA and EFA are nearly identical and may be utilised interchangeably (Field, 2018). For the current study, PCA was employed with the varimax rotation method. The main objective of performing PCA is to reduce the 96 items

of the constructs of the theoretical model into a manageable size. Also, PCA established the structure of latent constructs, their underlying dimensions, and corresponding observed variables in which measurements are exhibited (Yong & Pearce, 2013).

The results obtained after PCA were observed based on several criteria (Field, 2018; Kaiser, 1974). Firstly, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test for sufficient inter-item correlations, were examined. To ensure the data suitability for performing factor analysis. Second, the shared variance of items was assessed by observing the communalities. Third, the number of components were removed based on root mean or Kaiser's criterion (Eigenvalues) and examined factor variance. The final decision about constructs structure, retention and deletion of a specific item was crafted based on factor and cross-loadings.

Literature provides evidence that a KMO value greater than 0.50 is sufficient for factor analysis and sample adequacy (Adachi, 2016; Kaiser, 1960). The results reported in *Table 6.2 Measurement Model Properties* confirm sampling adequacy for the further analysis (KMO= 0.976), and the inter-item correlation is satisfactory (Bartlett's test: $\chi2 = 76364.401$, df = 4851, $p < 0.05$). Moreover, results showed that communalities of items ranged between 0.543-0.837, which showed that each item meets the criteria of shared variance (Kaiser, 1960). To determine the extracted number of components, eigenvalues were analysed, and those factors having eigenvalue one or beyond were retained. As a result, 13 factors were extracted, explaining an overall 69.416% variance greater than the threshold value of 50% (Podsakoff, MacKenzie, Podsakoff, et al., 2003). The subsequent analysis examined each factor loading and cross-loadings and deleted items with less than 0.40 loading for further analysis. According to Hair et al. (2010), items with loading less than 0.40 and cross-loading greater than 0.20 were deleted. Therefore, the current study sequentially deleted those items that failed to meet the criteria before further analysis. The whole process removed the ten items (USL_1, USL_2, Environmental concerns_5, Ctrl_belief_4, Int_Rel_1, Egoistic values_5, Egoistic values_6, Altruistic values 5, Subjective norms_5, subjective norms_7) until a clean structure was attained. The construct uniqueness seeking lifestyle has only two items and delete at the first step, EFA. Therefore, further results are unable to find based on the USL construct.

Table 6.2 shows only those items which were remained after conducting PCA with varimax rotation.

Table 6.2 Measurement Model Properties

Construct	Items	Comm.	Outer Loadings
Environmental Knowledge	EK_1	0.814	0.892
	EK_2	0.837	0.907
	EK_3	0.826	0.907
	EK_4	0.793	0.897
	EK_5	0.825	0.896
Environmental Concern	EC1	0.714	0.841
	EC2	0.798	0.895
	EC3	0.798	0.905
	EC4	0.771	0.886
Control Beliefs	Ctrl_belief_1	0.695	0.853
	Ctrl_belief_2	0.649	0.808
	Ctrl_belief_3	0.613	0.758
	Ctrl_belief_5	0.543	0.732
Normative Beliefs	NB1	0.684	0.764
	NB2	0.639	0.791
	NB3	0.660	0.855
Behavioural Beliefs		0.726	0.840
	BB2	0.804	0.896
	BB3	0.811	0.898
	BB4	0.808	0.903
	BB5	0.762	0.881
	BB6	0.775	0.877
Perceived Behavioural Control		0.672	0.818
	PBC2	0.674	0.793
	PBC3	0.633	0.717
	PBC4	0.694	0.833
	PBC5	0.720	0.837
	PBC6	0.669	0.821
Subjective Norms	SN1	0.695	0.774
	SN2	0.693	0.845
	SN3	0.714	0.823
	SN4	0.629	0.822
	SN5	0.767	0.819
Attitude towards Behaviour	ATT_1	0.778	0.888

	ATT_2	0.847	0.927
	ATT_3	0.823	0.929
	ATT_4	0.788	0.902
Intrinsic Religiosity	Int_Rel_2	0.810	0.878
	Int_Rel_3	0.820	0.891
	Int_Rel_4	0.781	0.871
	Int_Rel_5	0.844	0.906
	Int_Rel_6	0.668	0.792
	Int_Rel_7	0.691	0.814
	Int_Rel_8	0.797	0.887
	Int_Rel_9	0.770	0.859
	Int_Rel_10	0.805	0.869
	Int_Rel_11	0.695	0.771
Extrinsic Religiosity	Ext_Rel_1	0.795	0.775
	Ext_Rel_2	0.789	0.759
	Ext_Rel_3	0.729	0.870
	Ext_Rel_4	0.770	0.871
	Ext_Rel_5	0.720	0.873
	Ext_Rel_6	0.756	0.877
Biospheric Values	Bio_Val_1	0.703	0.846
	Bio_Val_2	0.776	0.915
	Bio_Val_3	0.802	0.915
	Bio_Val_4	0.755	0.903
	Bio_Val_5	0.828	0.908
	Bio_Val_6	0.749	0.855
Egoistic Values	EV1	0.744	0.849
	EV2	0.743	0.852
	EV3	0.745	0.858
	EV4	0.785	0.878
	EV7	0.773	0.858
	EV8	0.754	0.827
Altruistic Values	AV1	0.694	0.811
	AV2	0.721	0.843
	AV3	0.676	0.894
	AV4	0.724	0.860
	AV6	0.724	0.860
	AV7	0.785	0.893

	AV8	0.792	0.881
Personal Norms	PN1	0.698	0.830
	PN2	0.655	0.826
	PN3	0.678	0.796
	PN4	0.722	0.722
	PN5	0.727	0.831
	PN6	0.680	0.822
Meat detachment Intention	MDI1	0.715	0.850
	MDI2	0.779	0.905
	MDI3	0.704	0.849
Meat Curtailment Intention	MCurlInt_1	0.653	0.828
	MCurlInt_2	0.710	0.825
	MCurlInt_3	0.618	0.827
Organic Meat Purchase Intention	OMPI_1	0.639	0.820
	OMPI_2	0.737	0.879
	OMPI_3	0.763	0.889
	OMPI_4	0.743	0.863

6.6 Measurement of Advanced TPB Model's Validity

The most significant step after establishing the constructs' structure is to confirm the reliability and validity of the proposed model. There are two major validity concerns established for adapted measures: convergent and discriminant validity. The following section explains the convergent and discriminant validity of the constructs for the advanced TPB model. For this purpose, a measurement model was framed in SmartPLS 3.2.5 software to establish the convergent and discriminant validity of the model. The present study adopted the criteria of the factor loading, composite reliability (CR) (Nunnally, 1978) and the average variance extracted (AVE) (Fornell & Larcker, 1981) to assess the convergent validity. The heterotrait–monotrait (HTMT) ratio is used to measure the discriminant validity of the scale (Henseler et al., 2015).

6.6.1 The Two-Stage Approach

The evaluation of the measurement quality of higher-order constructs is highly challenging. Therefore, a repeated indicators approach or the two-stage approach is used to

estimate the advanced TPB model (Hair et al., 2018). The two-stage approach has two steps to estimate the model. Firstly, the embedded two-stage method (Sarstedt et al., 2019) is utilised to measure the reliability and validity of the model. Secondly, the disjoint two-stage approach is adopted to test the hypotheses through a structural model.

6.6.1.1 The Embedded Two-Stage Approach

The embedded two-stage approach assessment in PLS-SEM results evaluated all measurement models, including lower-order components. The lower-order components established discriminant validity among all the constructs in the model except higher-order constructs. The estimates of convergent and discriminant validity are reported in the succeeding sections.

Convergent Validity

The convergent validity can be described as the degree to which underlying measures of a factor reflect their respective construct (Churchill, 1979; Hair, 2010). Three distinct criteria can be used to evaluate the convergent validity:

- Factor Loadings

If factor loadings of the items are 0.60 or greater, then there is no issue of convergent validity (Churchill, 2018; Hair et al., 2017).

- Composite Reliability (CR)

CR must be lie between 0.60-0.90 to maintain the convergent validity (Nunnally, 1978).

- Average Variance Extracted (AVE)

The value of AVE must be greater than 0.5 to preserve the construct validity (Fornell & Larcker, 1981).

Moreover, factor loadings between 0.50 and 0.70 remain acceptable if CR and AVE values lie in the acceptable range, as explained above (Hair et al., 2018; Hair et al., 2019). *Table 6.3 Factor Loading* reports the factor loading of the items. Hence, all three assumptions to satisfy the convergent validity ($\lambda > 0.7$, $0.6 \leq CR \leq 0.9$ and AVEs > 0.5) are met.

Table 6.3 Factor Loading

Constructs	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Altruistic Values	0.943	0.953	0.746
Attitude towards_Behaviour	0.932	0.952	0.831
Behavioural Beliefs	0.943	0.955	0.779
Biosphere Values	0.948	0.958	0.793
Control Beliefs	0.797	0.868	0.622
Egoistic Values	0.926	0.942	0.729
Environmental _Concern	0.905	0.933	0.778
Environmental_Knowledge	0.942	0.955	0.81
Extrinsic Religiosity	0.916	0.934	0.704
Intrinsic_Religiosity	0.959	0.964	0.731
Meat Detachment_ Intention	0.836	0.902	0.754
Meat Curtailment_Intention	0.769	0.866	0.683
Normative Beliefs	0.726	0.846	0.647
Organic Meat _Purchase_Intention	0.886	0.921	0.745
Perceived _Behavioural Control	0.89	0.916	0.647
Personal Norms	0.892	0.917	0.649
Subjective Norms	0.875	0.909	0.667

6.6.1.2 Discriminant Validity

The discriminant validity (DV) indicates the extent to which a construct differs from other constructs within the model (Hair et al., 2009; Hair, 2010). The current study tests the discriminant validity through the Fornell- Larker test, cross-loading, and HTMT values.

- Fornell- Larker
- HTMT
- Cross-Loading

The results are shown in

Table 6.4 Discriminant Validity of Constructs using Fornell- Larker Estimates. The values confirmed that the square root of the AVE for each construct is greater than its correlation with all other constructs and met the first criteria of discriminant value. In addition, acceptable HTMT values must be lower than either 0.85 or 0.9 (Henseler et al., 2015).

Table 6.5 Discriminant Validity of Constructs using HTMT0.90 represented the values for all constructs are lies in the acceptable region. The third criterion is cross-loading to maintain the discriminant validity. This means that an indicator's loading on the associated construct should be higher than all of its cross-loadings with other constructs. Cross-loadings of all theoretical constructs is given in

Appendix 5 Cross Loading. To conclude, the advanced TPB model has established convergent and discriminant validity. Data can proceed further for structural modelling to assess the hypotheses specified in the theoretical model based on an advanced TPB model.

In the given model, religiosity and SMCI served as a second-order construct. For the assessment of the measurement model of composite constructs, two criteria must be met. Firstly, a variance inflation factor (VIF) less than 5 was used to identify multicollinearity (Hair et al., 2018). Secondly, the outer weight greater than 0.70 of the associated items of the composite constructs should be significant (Ali et al., 2018). Therefore, two items, 'intrinsic religiosity_3' and 'intrinsic religiosity_5' were deleted from the model because both exceeded the threshold value. *Table 6.6 VIF Values of the Advanced TPB* demonstrated that all the variables had VIF values within a given limit.

Figure 6.1 Measurement Model (Reflective-Formative Model)
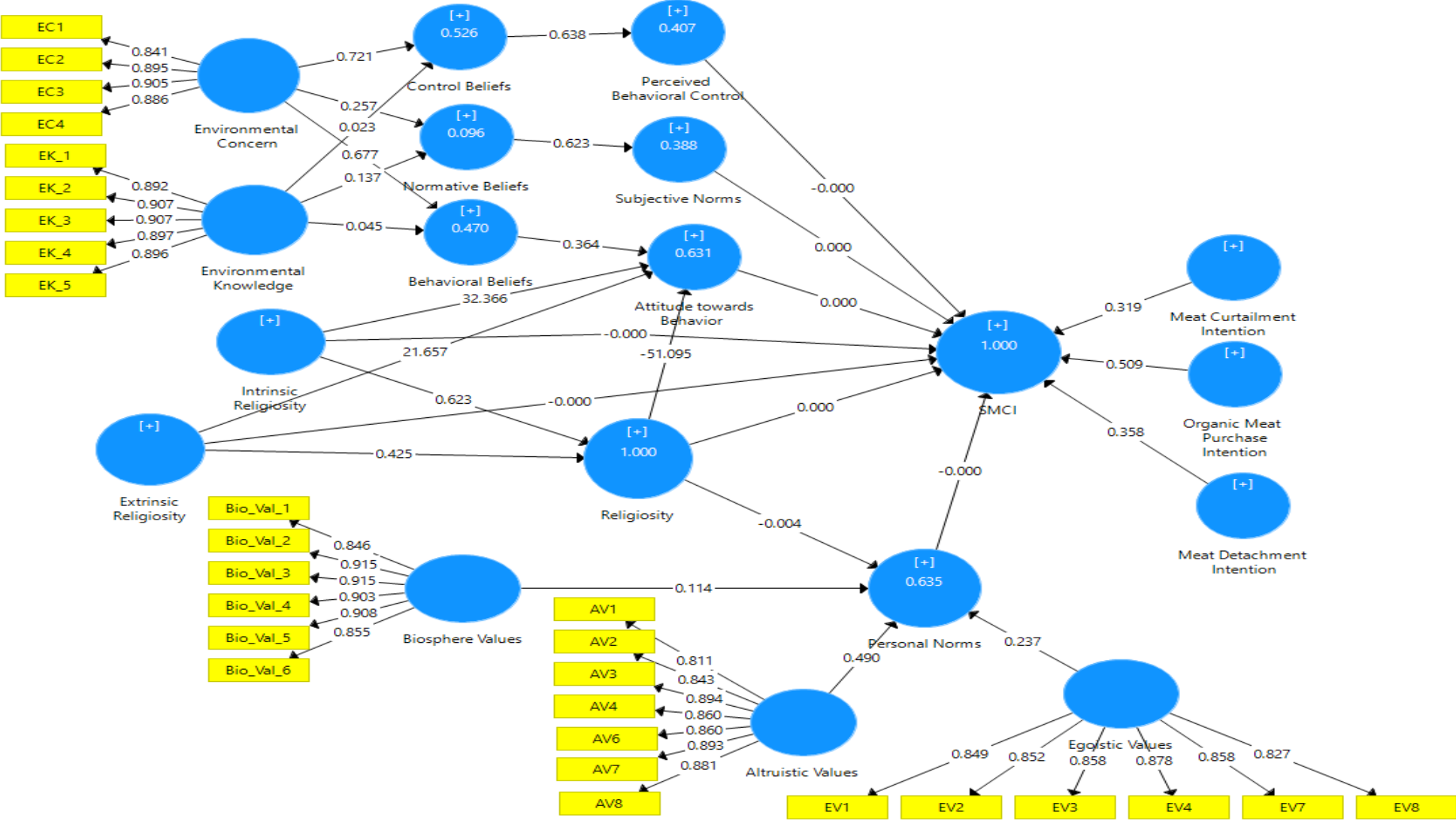
Table 6.4 Discriminant Validity of Constructs using Fornell- Larker Estimates

Constructs	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
A. Altruistic Values	**0.864**																
B. Attitude towards_Behaviour	0.585	**0.911**															
C. Behavioural Beliefs	0.605	0.708	**0.883**														
D. Biosphere Values	0.780	0.672	0.667	**0.891**													
E. Control Beliefs	0.512	0.596	0.678	0.557	**0.789**												
F. Egoistic Values	0.844	0.656	0.654	0.874	0.558	**0.854**											
G. Environmental _Concern	0.570	0.586	0.684	0.603	0.725	0.584	**0.882**										
H. Environmental_Knowledge	0.161	0.113	0.149	0.149	0.134	0.146	0.154	**0.900**									
I.Extrinsic Religiosity	0.666	0.591	0.600	0.788	0.509	0.765	0.519	0.122	**0.839**								
J.Intrinsic_Religiosity	0.703	0.759	0.710	0.824	0.597	0.782	0.615	0.105	0.804	**0.855**							
K. Meat Detachment_ Intention	0.407	0.306	0.299	0.360	0.298	0.396	0.232	0.109	0.376	0.335	**0.868**						
L. Meat Curtailment_Intention	0.419	0.311	0.302	0.412	0.293	0.445	0.257	0.155	0.400	0.354	0.572	**0.827**					
M. Normative Beliefs	0.252	0.394	0.434	0.266	0.453	0.294	0.279	0.177	0.273	0.278	0.282	0.279	**0.804**				
N. Organic Meat _purchase_Intention	0.725	0.548	0.485	0.629	0.463	0.688	0.441	0.138	0.562	0.576	0.547	0.561	0.323	**0.863**			
O. Perceived_Behavioural Control	0.568	0.651	0.764	0.631	0.638	0.626	0.61	0.176	0.585	0.646	0.328	0.324	0.444	0.494	**0.804**		
P. Personal Norms	0.779	0.547	0.552	0.702	0.489	0.749	0.472	0.159	0.608	0.608	0.493	0.566	0.338	0.730	0.549	**0.805**	
Q. Subjective Norms	0.206	0.338	0.396	0.244	0.355	0.269	0.221	0.128	0.262	0.225	0.309	0.333	0.622	0.288	0.499	0.302	**0.817**

Notes: Diagonal elements represent the square root of AVE. Off diagonal elements are simple bivariate correlations between the constructs

Table 6.5 Discriminant Validity of Constructs using HTMT0.90

Constructs	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A. Altruistic Values																
B. Attitude towards_Behaviour	0.622															
C. Behavioural Beliefs	0.641	0.755														
D. Biosphere Values	0.824	0.715	0.704													
E. Control Beliefs	0.584	0.686	0.778	0.636												
F. Egoistic Values	0.895	0.705	0.699	0.858	0.644											
G. Environmental _Concern	0.615	0.636	0.737	0.650	0.840	0.635										
H. Environmental_Knowledge	0.169	0.119	0.156	0.155	0.151	0.153	0.166									
I. Extrinsic Religiosity	0.700	0.628	0.634	0.831	0.584	0.819	0.555	0.130								
J. Intrinsic_Religiosity	0.738	0.801	0.745	0.864	0.678	0.828	0.656	0.109	0.847							
K. Meat Detachment_ Intention	0.457	0.345	0.336	0.402	0.364	0.445	0.266	0.121	0.434	0.374						
L. Meat Curtailment_Intention	0.482	0.361	0.350	0.476	0.365	0.517	0.303	0.181	0.478	0.408	0.713					
M. Normative Beliefs	0.306	0.479	0.526	0.322	0.600	0.363	0.346	0.215	0.343	0.335	0.364	0.371				
N. Organic Meat _purchase_Intention	0.793	0.603	0.530	0.686	0.547	0.753	0.491	0.149	0.615	0.625	0.634	0.669	0.405			
O. Perceived _Behavioural Control	0.616	0.708	0.828	0.682	0.749	0.684	0.673	0.187	0.637	0.693	0.381	0.388	0.555	0.553		
P. Personal Norms	0.836	0.594	0.595	0.753	0.570	0.808	0.518	0.172	0.657	0.648	0.569	0.684	0.425	0.814	0.606	
Q. Subjective Norms	0.223	0.367	0.430	0.263	0.422	0.295	0.243	0.136	0.298	0.242	0.358	0.402	0.775	0.322	0.564	0.339

Table 6.6 VIF Values of the Advanced TPB

Constructs	Subscales	Items	VIF values	Constructs	Items	VIF values
Altruistic values		AV1	2.324	Perceived Behaviour Control	PBC1	2.163
		AV2	2.707		PBC2	2.064
		AV3	3.794		PBC3	1.623
		AV4	2.941		PBC4	2.331
		AV6	2.984		PBC5	2.439
		AV7	3.983		PBC6	2.327
		AV8	3.508	Personal Norms	PN1	2.293
Egoistic Values		EV1	2.868		PN2	2.25
		EV2	3.067		PN3	2.069
		EV3	3.103		PN4	1.848
		EV4	3.228		PN5	2.441
		EV7	3.197		PN6	2.204
Biospheric values		Bio_Val_1	2.758		SN1	1.858
		Bio_Val_2	4.325		SN2	2.402
		Bio_Val_3	4.617		SN3	2.224

					SN4	2.86
		Bio_Val_4	3.785		SN5	2.173
		Bio_Val_5	4.432			
		Bio_Val_6	3.027	Normative Belief	NB1	1.362
Religiosity	Extrinsic Religiosity	Ext._Rel_1	2.854		NB2	1.427
		Ext._Rel_2	2.938		NB3	1.626
		Ext._Rel_3	2.933	Control Belief	Ctrl_belief_1	1.966
		Ext._Rel_4	3.717		Ctrl_belief_2	1.882
		Ext._Rel_5	3.782		Ctrl_belief_3	1.563
		Ext._Rel_6	3.933		Ctrl_belief_5	1.378
	Intrinsic Religiosity	Int_rel._10	3.868	Environmental Knowledge	EK_1	3.492
		Int_rel._11	2.58		EK_2	3.897
		Int_rel._2	3.93		EK_3	3.565
		Int_rel._4	3.698		EK_4	3.095
		Int_rel._6	2.449		EK_5	3.497
		Int_rel._7	2.669	Behaviour Belief	BB1	2.68
		Int_rel._8	4.288		BB2	3.841
		Int_rel._9	4.041		BB3	3.754

Sustainable meat consumption intentions	Meat Detachment intention	MDI1	1.854		BB4	3.859
		MDI2	2.573		BB5	3.437
		MDI3	1.901		BB6	3.173
	Meat curtailment intention	MCurI4	1.619	Environmental concern	EC1	2.193
		MCurI5	1.669		EC2	2.888
		MCurI6	1.473		EC3	3.058
	Organic meat purchase intention	OMPI1	1.901		EC4	2.77
		OMPI2	2.628	Attitude towards behaviour	ATT1	2.989
		OMPI3	2.872		ATT2	4.094
		OMPI4	2.432		ATT3	4.242
					ATT4	3.441

6.7 Structural Model Assessment and Hypotheses Testing

After the validity establishment in the measurement model, the next step is to analyse the hypotheses derived from the theoretical model. The following section reports the findings related to significant or non-significant hypotheses after statistical analysis.

6.7.1 The Disjoint Two-Stage Approach

For assessing the structural model, the two-stage approach was utilized. In this approach, the second stage disjoint two-stage method (Becker et al., 2012; Ringle et al., 2015; Sarstedt et al., 2019) used latent variable scores (LVS) derived from the first stage, the embedded two-stage for those constructs (SMCI, religiosity) having dimensions. Hence, researchers should assess the structural model based on embedded two-stage results (Sarstedt et al., 2019). The structural model reflects the model paths hypothesized in the study framework. For empirical analysis, assessing the model's quality is based on its ability to predict endogenous constructs. According to Hair et al. (2014), the following estimations of path coefficients (β) and their confidence intervals and coefficient of determination (R^2) facilitate the assessment.

Initially, the path significance of the structural model is tested. The acceptable value of the path coefficient is greater than 0.200; however, the β value is less than the threshold value that can be considered if zero does not fall into the confidence interval (Sarstedt et al., 2019). Bootstrapping was used to generate an analysis for the t-statistics and confidence intervals values (Hair et al., 2019). Bootstrapping was conducted with 5000 subsamples (Briones-Peñalver et al., 2020; Quoquab et al., 2019) and generated 95% bias-corrected bootstrap confidence intervals (Hair et al., 2016). Hence, the acceptance or rejection of the hypotheses based on t-values greater than 1.96, β-values, p-values, and confidence intervals are presented in the section below. Results of direct and indirect effects are reported in

Table 6.7 Hypotheses Testing: Direct Effects and Table 6.8 Hypothesis Testing: Indirect Effects

Figure 6.2 The Embedded Two-Stage (Advanced Repeated Indicator) model
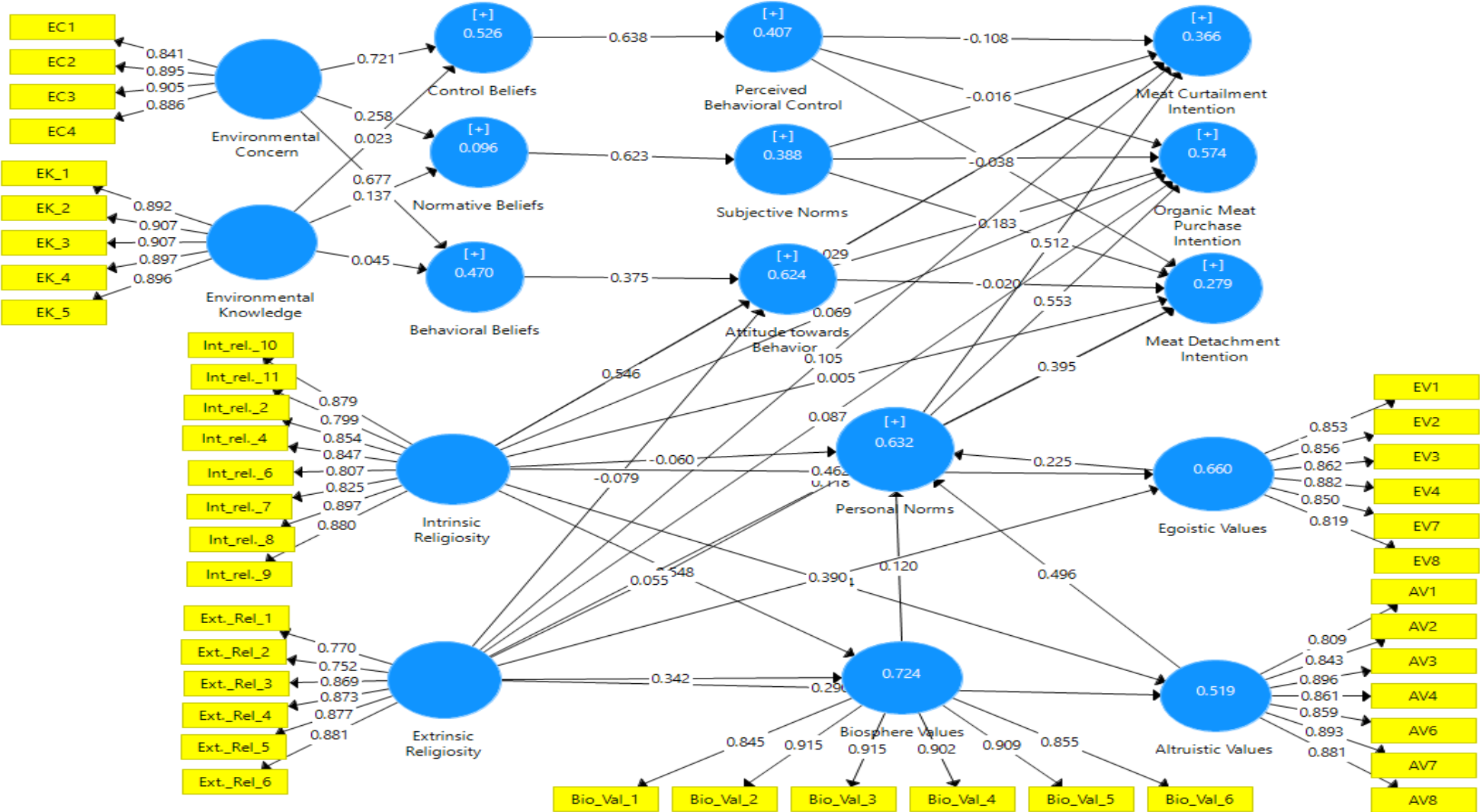
Figure 6.3 The Disjoint Two-Stage Model
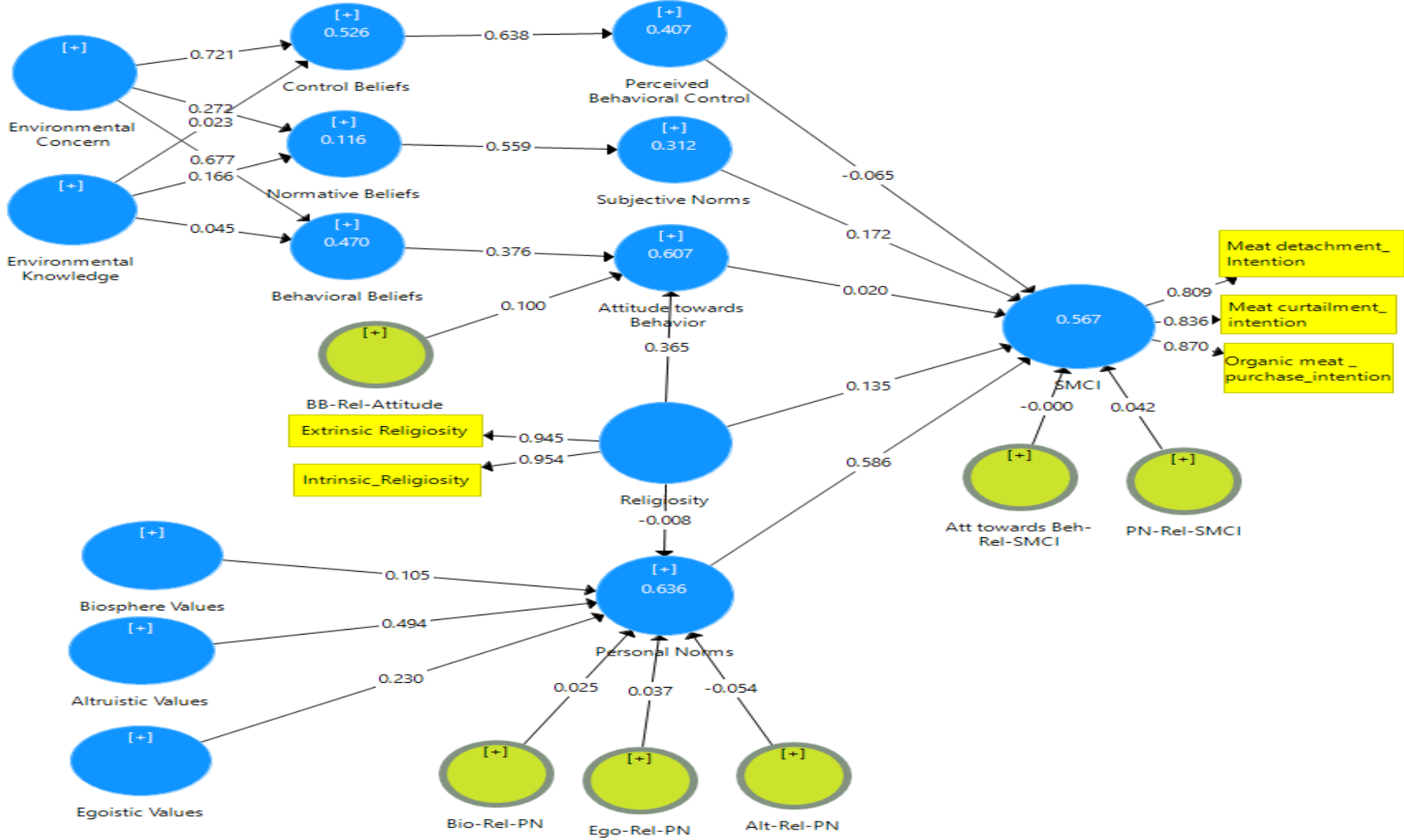
6.7.1.1 Estimates of Direct Effects

The results of direct effects pertaining to the analysis of advanced TPB model are reported in *Table 6.7 Hypotheses Testing: Direct Effects* of Advanced TPB Model. Results showed that environmental concern is positively associated with control beliefs, normative beliefs and behavioural beliefs (Environmental concern: $\beta_{control\ beliefs}$ = 0.721, p<0.05; $\beta_{normative\ beliefs}$ = 0.272, p< 0.05; $\beta_{behavioural\ beliefs}$ = 0.667, p<0.05). Results also reported that environmental knowledge is not associated with control beliefs, but have positive relation with normative beliefs and behavioural beliefs (Environmental knowledge: $\beta_{control\ belief}$ =0.023, p >0.05; $\beta_{normative\ beliefs}$ =0.166, p< 0.05; $\beta_{behavioural\ beliefs}$ =0.045, p<0.05). Likewise, control belief is positively associated with perceived behavioural control (β = 0.638, p < 0.05) normative beliefs with subjective norms (β = 0.559, p < 0.05) and behavioural beliefs with attitude towards the behaviour (β = 0.336, p < 0.05). Furthermore, perceived behavioural control (β = -0.064, p > 0.05) and attitude towards behaviour (β = 0.027, p > 0.05) has no significant relationship with SMCI but subjective norms (β = 0.169, p < 0.05) support the SMCI. Similarly, biosphere values and personal norms (β = 0.105, p > 0.05) has no relationship statistically while, altruistic values (β = 0.494, p < 0.05) and egoistic values (β = 0.230, p < 0.05) have significant relationship with personal norms. And personal norms are positively associated with SMCI (β =0.593, p < 0.05). Results highlighted that religiosity has a significant relationship with SMCI (β = 0.160, p < 0.05) and attitude towards the behaviour (β = 0.365, p < 0.05), although with personal norms (β = -0.008, p > 0.05) has no significant relationship.

In

Table 6.7 Hypotheses Testing: Direct Effects*,* the results also show the effect of multidimensional construct to deal as an independent construct in SmartPLS. The results reported that attitude towards the behaviour has no significant relationship with meat curtailment intention (β = -0.053, p > 0.05) and meat detachment intention (β = -0.020, p > 0.050). Although, attitude towards the behaviour has a positive relationship with organic meat purchase intention (β = 0.142, p < 0.05). Similarly, subjective norms show significant results with meat detachment intention (β = 0.183, p < 0.05) and meat curtailment intention (β = 0.218, p < 0.05). While subjective norms have no significant relationship with organic meat purchase intention (β = 0.040, p < 0.05). Perceived behavioural control shows a statistically positive association only with meat curtailment intention (β = -0.108, p < 0.05) and with meat detachment intention (β = -0.038, p > 0.05), and organic meat purchase intention (β = -0.016, p > 0.05) proved non- significant results. Statistical analysis also reported that personal norms are

positively associated with meat detachment intention (β = 0.512, p < 0.05), meat curtailment intention (β = 0.218, p < 0.05) and organic meat purchase intention (β = 0.553, p < 0.05).

6.7.1.2 Estimates of Total Indirect Effects

Estimates of indirect effects are given in *Table 6.8 Hypothesis Testing: Indirect Effects*. Results show that indirect paths leading from environmental concern to control beliefs and perceived behavioural control (β = 0.460, p <0.05) are significant. The control beliefs that lead to SMCI through perceived behaviour control have a negative relationship (β = -0.041, p <0.05). The relationship between environmental concern to normative beliefs and subjective norms (β = 0.152, p < 0.05) is statistically significant. Also, normative beliefs to subjective norms leading to SMCI has significant results (β = 0.095, p < 0.05). Also, the relationship between environmental knowledge to normative beliefs towards subjective norms has significant values (β = 0.093, p < 0.05). The link between environmental knowledge and attitude towards the behaviour through behavioural beliefs proved significant after statistical analysis (β = 0.017, p < 0.05). Similarly, the indirect path from altruistic values to personal norms to SMCI (β = 0.293, p < 0.05) and egoistic values to personal norms to SMCI (β = 0.137, p < 0.05) are reported with significant values.

However, results reported some insignificant paths also. The causal chain process between behavioural beliefs towards SMCI through attitude towards behaviour proved in-significant (β = 0.010, p > 0.05). The statistical analysis failed to establish the relationship between environmental knowledge and perceived behaviour control mediated through control beliefs (β = 0.015, p > 0.05). Also, biosphere values towards SMCI mediated through personal norms not proved statistically significant (β = 0.062, p > 0.05). However, the statistical analysis reported that religiosity has no moderating effect on the paths towards SMCI.

Table 6.7 Hypotheses Testing: Direct Effects

Relationships	β	t-values	p-values	STDEV	5.0%	95.0%	Status
Environmental _Concern -> Control Beliefs	0.721	40.139	0.000	0.018	0.689	0.748	Supported
Environmental _Concern -> Normative Beliefs	0.272	7.764	0.000	0.035	0.214	0.328	Supported
Environmental_Concern -> Behavioural Belief	0.667	26.107	0.000	0.026	0.632	0.717	Supported
Environmental_Knowledge -> Control Beliefs	0.023	0.990	0.161	0.023	-0.014	0.063	Not supported
Environmental _ Knowledge -> Normative Beliefs	0.166	5.136	0.000	0.032	0.111	0.219	Supported
Environmental _ Knowledge -> Behavioural Belief	0.045	1.938	0.026	0.023	0.006	0.083	Supported
Control Beliefs -> Perceived _Behavioural Control	0.638	24.005	0.000	0.027	0.592	0.680	Supported
Normative Beliefs -> Subjective Norms	0.559	20.027	0.000	0.028	0.509	0.601	Supported
Behavioural Beliefs -> Attitude towards_Behaviour	0.376	10.145	0.000	0.037	0.315	0.437	Supported
Perceived _Behavioural Control -> SMCI	-0.064	1.781	0.075	0.036	-0.124	-0.005	Not supported
Subjective Norms -> SMCI	0.169	5.731	0.000	0.030	0.121	0.217	Supported
Attitude towards_Behaviour -> SMCI	0.027	0.660	0.509	0.40	-0.036	0.096	Not supported
Biosphere Values -> Personal Norms	0.105	1.595	0.111	0.066	-0.002	0.217	Not supported
Altruistic Values -> Personal Norms	0.494	10.270	0.000	0.048	0.416	0.576	Supported

Egoistic Values -> Personal Norms	0.230	3.057	0.002	0.075	0.103	0.350	Supported
Personal Norms -> SMCI	0.593	17.081	0.000	0.035	0.533	0.647	Supported
Religiosity -> Attitude towards_Behaviour	0.365	7.836	0.000	0.047	0.286	0.439	Supported
Religiosity -> Personal Norms	-0.008	0.182	0.856	0.046	-0.084	0.065	Not supported
Religiosity -> SMCI	0.160	3.669	0.000	0.044	0.088	0.232	Supported
Attitude towards_Behaviour -> Meat Curtailment_Intention	-0.053	1.042	0.149	0.051	-0.138	0.030	Not supported
Attitude towards_Behaviour -> Meat Detachment_ Intention	-0.020	0.415	0.339	0.049	-0.100	0.061	Not supported
Attitude towards_Behaviour -> Organic Meat _purchase_Intention	0.142	3.247	0.001	0.044	0.071	0.217	Supported
Extrinsic Religiosity -> Altruistic Values	0.290	6.136	0.000	0.047	0.211	0.367	Not supported
Extrinsic Religiosity -> Attitude towards_Behaviour	-0.079	1.720	0.043	0.046	-0.15	-0.001	Not supported
Extrinsic Religiosity -> Biosphere Values	0.342	7.619	0.000	0.045	0.266	0.415	Supported
Extrinsic Religiosity -> Egoistic Values	0.390	8.200	0.000	0.048	0.309	0.466	Supported
Extrinsic Religiosity -> Meat Detachment_ Intention	0.118	2.153	0.016	0.055	0.027	0.206	Supported
Extrinsic Religiosity -> Meat Curtailment_Intention	0.105	1.835	0.033	0.057	0.011	0.199	Supported
Extrinsic Religiosity -> Organic Meat _purchase_Intention	0.087	1.774	0.038	0.049	0.007	0.168	Not supported
Extrinsic Religiosity -> Personal Norms	0.055	1.198	0.116	0.046	-0.023	0.131	Not supported
Intrinsic_Religiosity -> Altruistic Values	0.464	9.745	0.000	0.048	0.384	0.541	Supported

Intrinsic_Religiosity -> Attitude towards_Behaviour	0.546	10.511	0.000	0.052	0.461	0.633	Supported
Intrinsic_Religiosity -> Biosphere Values	0.548	12.288	0.000	0.045	0.473	0.620	Supported
Intrinsic_Religiosity -> Egoistic Values	0.462	9.747	0.000	0.047	0.383	0.539	Supported
Intrinsic_Religiosity -> Meat Detachment_ Intention	0.005	0.081	0.468	0.067	-0.104	0.119	Not supported
Intrinsic_Religiosity -> Meat Curtailment_Intention	0.029	0.424	0.336	0.068	-0.084	0.140	Not supported
Intrinsic_Religiosity -> Organic Meat _purchase_Intention	0.069	1.266	0.103	0.054	-0.022	0.158	Not supported
Intrinsic_Religiosity -> Personal Norms	-0.060	1.333	0.091	0.045	-0.132	0.014	Not supported
Perceived _Behavioural Control -> Meat Detachment_ Intention	-0.038	0.825	0.205	0.046	-0.114	0.036	Not supported
Perceived _Behavioural Control -> Meat Curtailment_Intention	-0.108	2.484	0.007	0.044	-0.182	-0.037	Supported
Perceived _Behavioural Control -> Organic Meat _purchase_Intention	-0.016	0.411	0.341	0.038	-0.079	0.047	Not supported
Personal Norms -> Meat Detachment_ Intention	0.395	8.844	0.000	0.045	0.320	0.469	Supported
Personal Norms -> Meat Curtailment_Intention	0.512	13.019	0.000	0.039	0.445	0.575	Supported
Personal Norms -> Organic Meat _purchase_Intention	0.553	14.570	0.000	0.038	0.488	0.613	Supported
Subjective Norms -> Meat Detachment_ Intention	0.183	4.729	0.000	0.039	0.120	0.247	Supported

Subjective Norms -> Meat Curtailment_Intention	0.218	6.353	0.000	0.034	0.160	0.273	Supported
Subjective Norms -> Organic Meat _purchase_Intention	0.040	1.314	0.094	0.031	-0.010	0.090	Not supported
Ego-Rel-PN-> SMCI	0.022	0.506	0.613	0.043	-0.046	0.094	Not supported
Alt-Rel-PN-> SMCI	-0.032	1.039	0.299	0.031	-0.087	0.013	Not supported
Bio-Rel-PN -> SMCI	0.015	0.353	0.724	0.042	-0.054	0.084	Not supported

Table 6.8 Hypothesis Testing: Indirect Effects

Relationships	β	t-values	p-values	STDEV	5.0%	95.0%	Status
Environmental _Concern -> Control Beliefs -> Perceived _Behavioural Control	0.460	18.769	0.000	0.025	0.418	0.498	Supported
Control Beliefs -> Perceived _Behavioural Control -> SMCI	-0.041	1.975	0.038	0.023	-0.080	-0.004	Supported
Environmental _Concern -> Normative Beliefs -> Subjective Norms	0.152	7.007	0.000	0.022	0.117	0.187	Supported
Normative Beliefs -> Subjective Norms -> SMCI	0.095	5.42	0.000	0.017	0.066	0.124	Supported
Environmental _Concern -> Behavioural Beliefs -> Attitude towards_Behaviour	0.254	9.157	0.000	0.028	0.212	0.302	Supported
Behavioural Beliefs -> Attitude towards_Behaviour -> SMCI	0.01	0.655	0.256	0.015	-0.013	0.036	Not supported
Environmental_Knowledge -> Control Beliefs -> Perceived _Behavioural Control	0.015	0.764	0.222	0.001	-0.009	0.040	Not supported
Environmental_Knowledge -> Normative Beliefs -> Subjective Norms	0.093	7.089	0.000	0.021	0.062	0.125	Supported
Environmental_Knowledge -> Behavioural Beliefs -> Attitude towards_Behaviour	0.017	1.978	0.030	0.009	0.002	0.032	Supported
Biosphere Values -> Personal Norms -> SMCI	0.062	1.610	0.107	0.039	-0.001	0.127	Not supported
Altruistic Values -> Personal Norms -> SMCI	0.293	7.996	0.000	0.037	0.235	0.357	Supported
Egoistic Values -> Personal Norms -> SMCI	0.137	3.058	0.002	0.045	0.063	0.214	Supported

Path							Result
BB-Rel-Attitude -> Attitude towards_Behaviour -> SMCI	0.003	0.635	0.526	0.004	-0.003	0.011	Not supported
BB-Rel -> Attitude towards_Behaviour	0.100	3.196	0.000	0.025	0.058	0.141	Supported
Religiosity -> Attitude towards_Behaviour -> SMCI	0.010	0.642	0.521	0.015	-0.012	0.038	Not supported
Alt-Rel-PN -> Personal Norms -> SMCI	-0.032	1.033	0.301	0.031	-0.087	0.015	Not supported
Bio-Rel-PN -> Personal Norms -> SMCI	0.015	0.350	0.726	0.043	-0.056	0.088	Not supported
Ego-Rel-PN -> Personal Norms -> SMCI	0.022	0.489	0.625	0.045	-0.049	0.098	Not supported
Religiosity -> Personal Norms -> SMCI	-0.005	0.181	0.856	0.027	-0.050	0.039	Not supported

Note: p-values estimated by bootstrapping with 5000 repetitions.

Table 6.9 Proposed Hypotheses Results

Hyp.	Description	Status
H1a	Environmental knowledge associated with behavioural beliefs	Supported
H1b	Environmental knowledge associated with normative beliefs	Supported
H1c	Environmental knowledge associated with control beliefs	Not supported
H2a	Environmental concern associated with behavioural beliefs	Supported
H2b	Environmental concern associated with normative beliefs	Supported
H2c	Environmental concern associated with control beliefs	Supported
H3	A uniqueness-seeking lifestyle is associated with positive attitudes towards behaviour and SMCI	Dropped in EFA
H4	Control beliefs are positively associated with perceived behaviour control	Supported
H5	Normative beliefs are positively associated with subjective norms	Supported
H6	Behavioural beliefs are positively associated with the attitudes towards the behaviour	Supported
H7	Perceived behavioural control associated with SMCI	Not supported
H8	Subjective norms lead to SMCI	Supported
H9	Attitudes towards behaviour associated with SMCI	Not supported
H10a	Biospheric values are associated with personal norms	Not supported
H10b	Egoistic values are associated with personal norms	Supported
H10c	Altruistic values are associated with personal norms	Supported
H11	Personal norms are associated with SMCI	Supported
H12a	Extrinsic religiosity is associated with attitude towards behaviour	Not supported
H12b	Intrinsic religiosity is associated with attitude towards behaviour	Supported
H13a	Extrinsic religiosity is associated with personal norms	Not supported
H13b	Intrinsic religiosity is associated with personal norms	Not supported
H14a	Extrinsic religiosity associated with egoistic values	Supported
H14b	Extrinsic religiosity associated with altruistic values	Not supported
H14c	Extrinsic religiosity associated with biospheric values	Supported
H15a	Intrinsic religiosity associated with egoistic values	Supported
H15b	Intrinsic religiosity associated with altruistic values	Supported

| H15c | Intrinsic religiosity associated with biospheric values | Supported |

6.7.1.3 Explanation of Moderating Effects

The moderating effects of religiosity on personal norms and attitude towards behaviour were assessed through the product indicator approach (Hair et al., 2014). The moderation effects were evaluated through a slop diagram. Moderation interaction graphs showed red, blue, and green lines that depict the moderators' high (+1 SD above the mean) and low (−1 SD below the mean) positions. *Figure 6.4 Moderating effects of Religiosity on the Altruistic Values and Personal Norms Relationship* showed a higher impact. In similar lines, *Figure 6.5 Moderating Effects of Religiosity on the Biosphere Values and Personal Norms Relationship* also exhibited a strong effect. Moreover, *Figure 6.6 Moderating Effects of Religiosity on the Egoistic Values and Personal Norms Relationship* positively affected. However, *Figure 6.7 Moderating effects of religiosity on the personal norms and SMCI relationship* revealed no relationship.

The moderating effect of religiosity on Behaviour belief and attitude towards behaviour proved insignificant results, as showed in *Figure 6.8*. Also, *Figure 6.9 Moderating Effects of Religiosity on the Attitude towards Behaviour and SMCI Relationship* highlighted no significant relationship.

Figure 6.4 Moderating effects of Religiosity on the Altruistic Values and Personal Norms Relationship
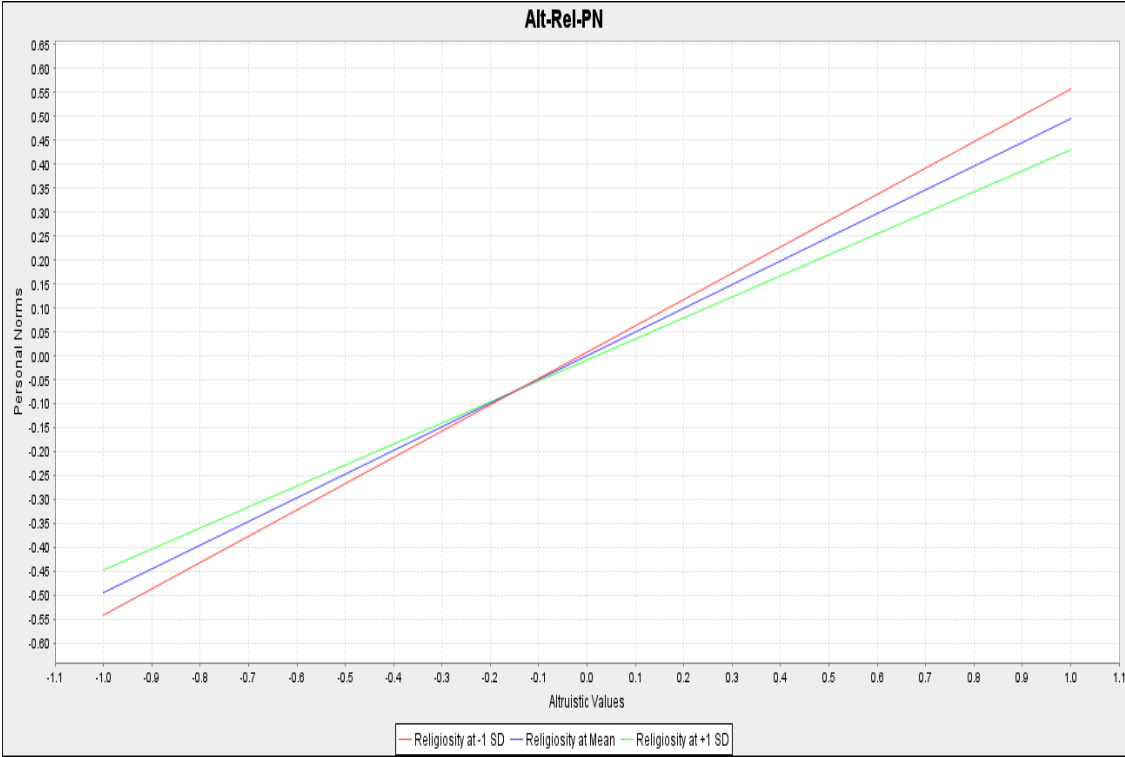
Figure 6.5 Moderating Effects of Religiosity on the Biosphere Values and Personal Norms Relationship
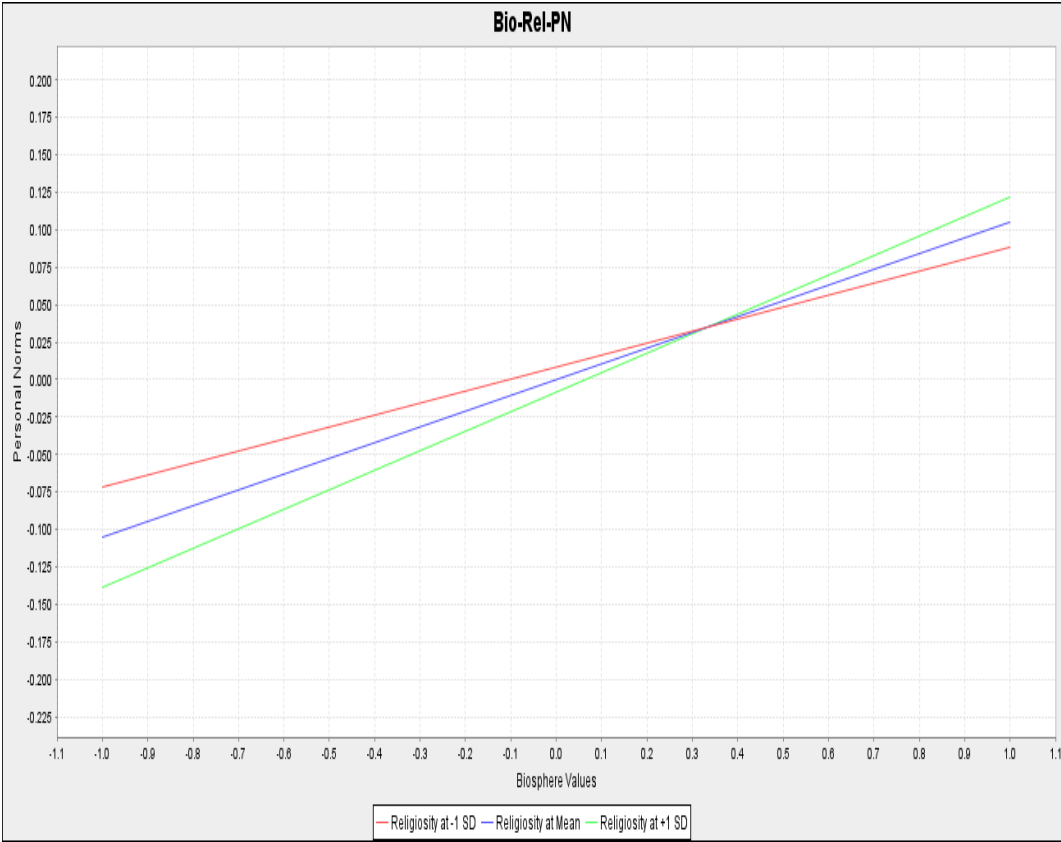
Figure 6.6 Moderating Effects of Religiosity on the Egoistic Values and Personal Norms Relationship
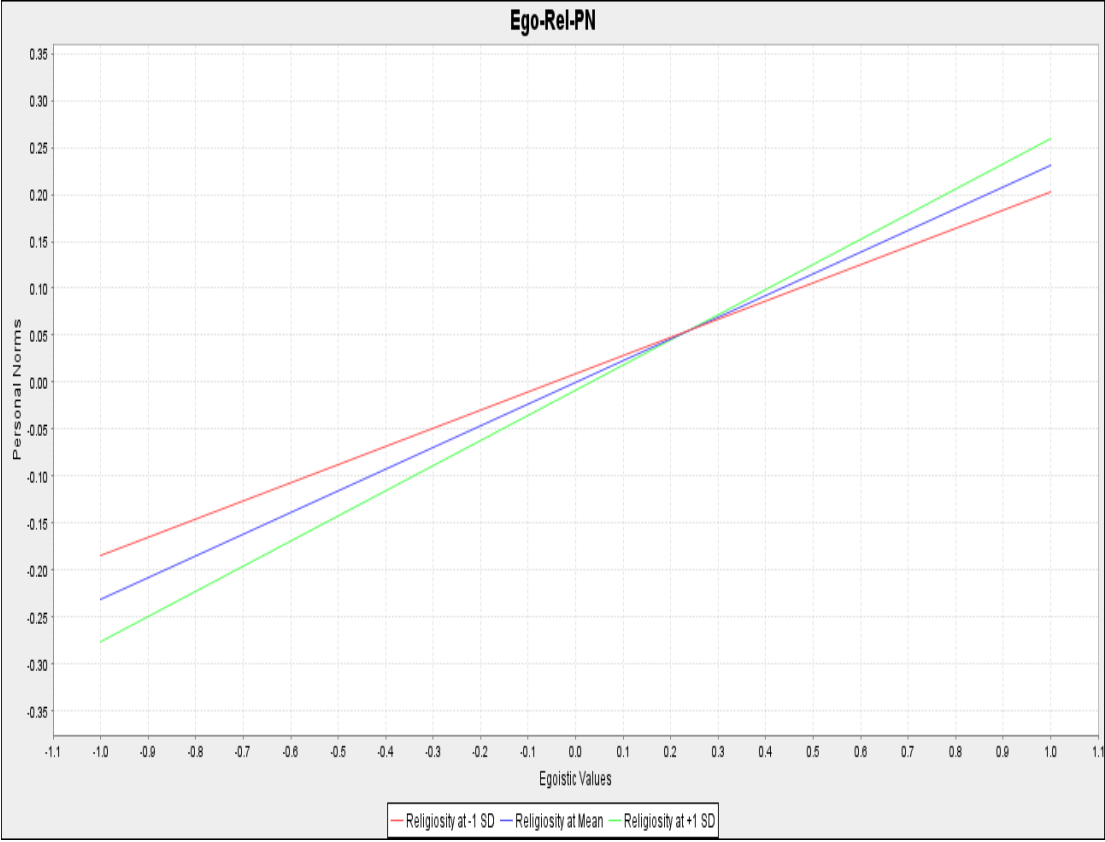
Figure 6.7 Moderating effects of religiosity on the personal norms and SMCI relationship
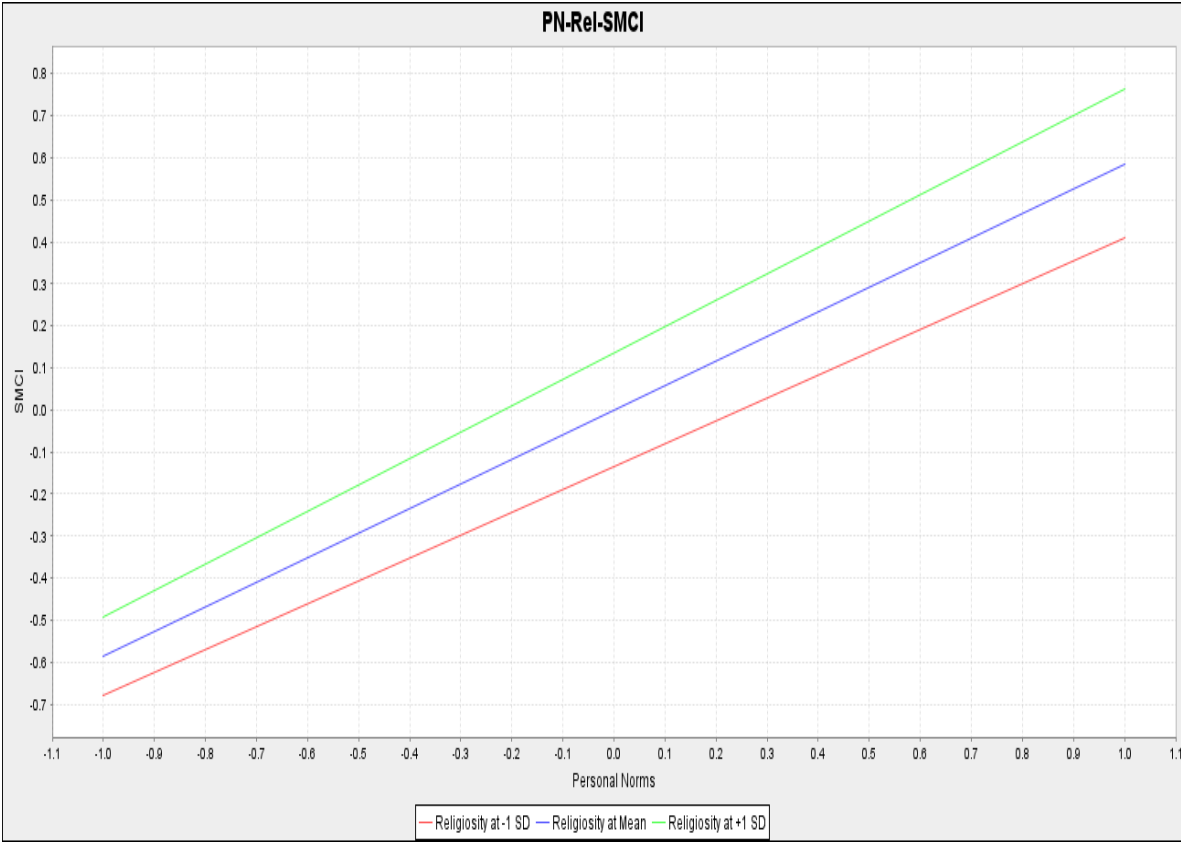
Figure 6.8 Moderating Effects of Religiosity on the Behavioural Beliefs and Attitude towards Behaviour Relationship
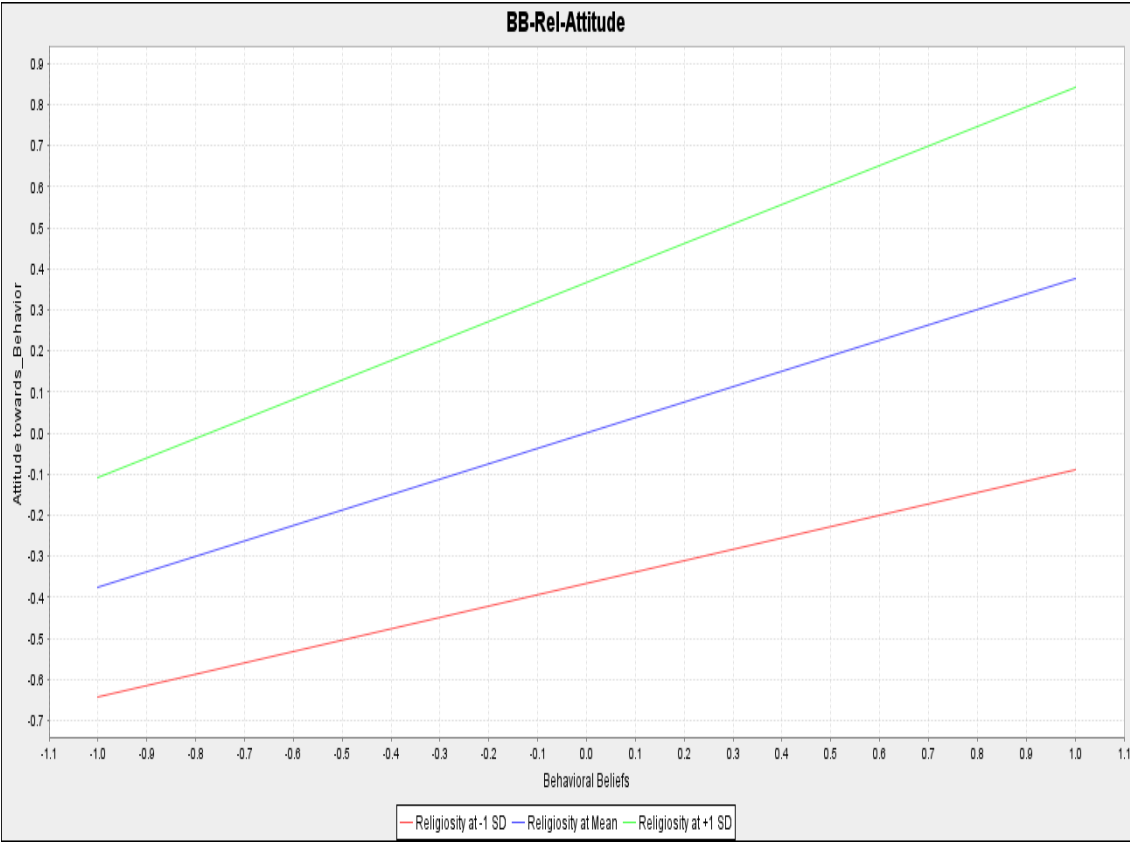
Figure 6.9 Moderating Effects of Religiosity on the Attitude towards Behaviour and SMCI Relationship
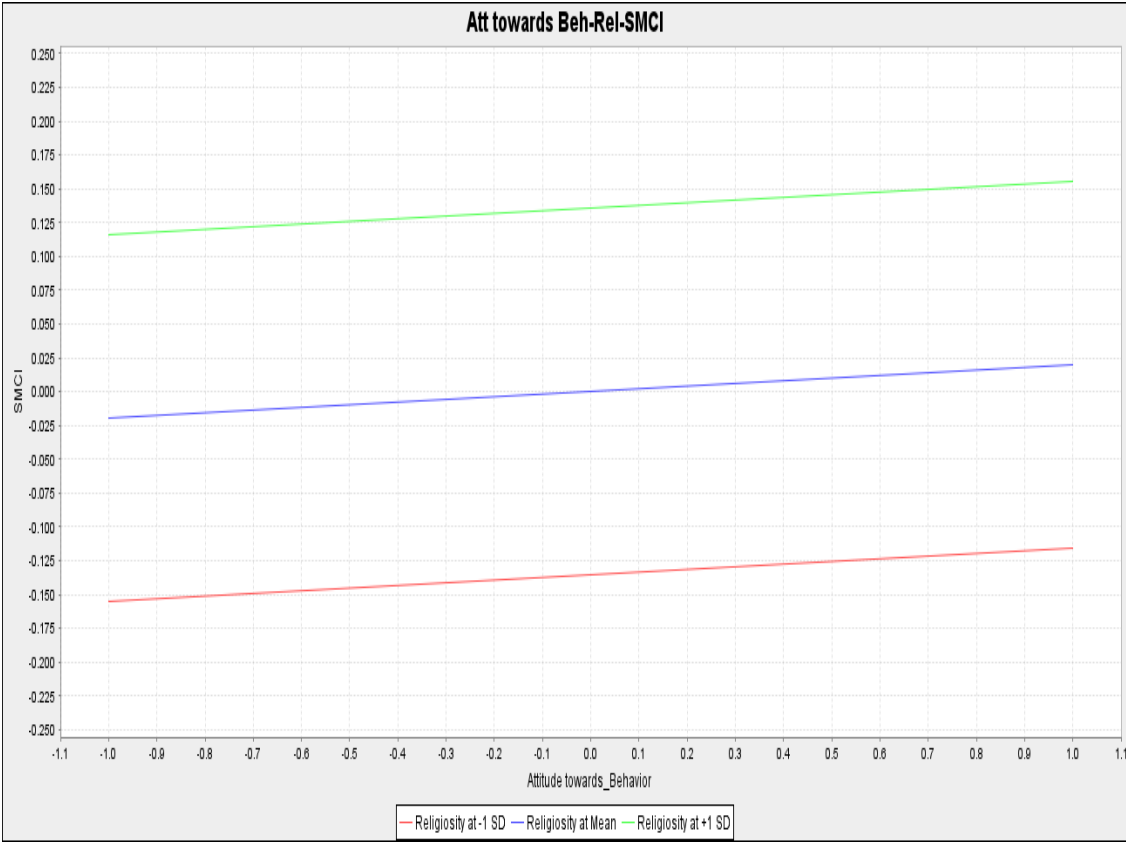
6.7.2 The Goodness of Model Fit

The strength of each structural path assessed the goodness of the model fit. The R^2, effect size f^2, and the predictive relevance Q^2 values were used to measure the model's predictive quality (Ringle et al., 2018). The model's predictive accuracy can be measured through R^2 values (Hair et al., 2014), and these values are used to measure the construct variance explained by the model. R^2 values having 0.75, 0.50, and 0.25 refer to substantial, moderate, or weak levels of predictive accuracy, respectively (Hair et al., 2011). Adjusted R^2 is a relative measure for sample size. The value of Stone–Geisser's Q^2 greater than zero established the model's predictive validity (Fornell & Larcker, 1981).

Currently, standardized root means square residual (SRMR) is considered an approximate measure for the model's fit; the threshold value of SRMR is 0.10 (Hair et al., 2017; Sarstedt et al., 2016). The SRMR value is the difference between the observed correlation and model implied correlation (Hair et al., 2018; Hair et al., 2016), thus calculating the average

number of inconsistencies between observed and expected correlations as an absolute measure of model fit criterion. Therefore, SRMR assists in indicating and correcting the model's potential misspecification (Hair et al., 2014). However, there are many other ways to assess the goodness of model fit, like the geodetic discrepancy (dG) or unweighted least squares discrepancy (dULS) (Henseler et al., 2015; Henseler & Sarstedt, 2013). The results obtained are shown in *Table 6.10 Goodness of Fit indices*, which suggests a good model fit.

Table 6.10 Goodness of Fit indices

Constructs	R^2	Adjusted R^2	Q^2
Attitude towards_Behaviour	0.607	0.606	0.497
Behavioural Beliefs	0.470	0.468	0.362
Control Beliefs	0.526	0.525	0.319
Normative Beliefs	0.116	0.114	0.085
Subjective Norms	0.312	0.312	0.201
Perceived _Behavioural Control	0.407	0.407	0.259
Personal Norms	0.636	0.633	0.403
SMCI	0.567	0.563	0.382
SRMR	0.049		
dULS	5.334		
dG	1.653		

6.8 Conclusion

Chapter 6 has reported the results of Study 2 comprising RQ3, the analysis of the advanced theory of planned behaviour (TPB) model. The data, collected through online survey methodology (n = 872), was utilised to assess the theoretical framework based on the advanced TPB model. The results supported testing the corresponding hypotheses of the theoretical model. The chapter identified the results using the advanced TPB model to predict consumers' SMCI related to meat curtailment, meat detachment, and purchase of organic meat. The following chapter (*Chapter 7*) discusses the results obtained from both studies, study 1 and study 2 and provides guidelines for policymakers, social marketers and marketing practitioners. The conceptual and methodological limitations pertained to both studies (Study 1 and Study 2) are delineated in this chapter, followed by future research directions.

Chapter 7 : Discussion and Conclusion

7.1 Introduction

The present research aims to elucidate the factors influencing individuals' Sustainable Meat Consumption Intentions (SMCI) related to meat detachment intention, meat curtailment intention and organic meat purchase preferences intention in an emerging economy, Pakistan. Three underlying research questions were derived from achieving this overarching purpose, and two studies were conducted to address the research objectives. The present thesis's Study 1 was established on the first (RQ1) and second research questions (RQ2), whereas the second study, Study 2, encompassed the research's third question (RQ3). All three research questions, based on the three research gaps identified in the literature, are outlined below:

RQ1: How can the impact of cultural (social) values, animal welfare, and environmental elements on consumers' intention related to meat curtailment and use of more quality meat be measured on one scale in an emerging economy?

RQ2: What are the demographic, psychographic, and behavioural characteristics of consumers in Pakistan, consumers who are conscious about meat sustainability and who reduce meat in their diets or who prefer organic meat?

RQ3: To investigate the key driving forces such as religious and pro-environmental values behind sustainable meat consumption intentions through an advanced TPB model in an emerging economy.

Study 1 results are explained in *Chapter 5 a*nd *Chapter 6*, covering the findings based on Study 2. The present chapter, *Chapter 7*, encapsulates the findings of all three research questions (RQ1, RQ2, and RQ3) of both studies (Study 1 and Study 2) and elaborates the research's theoretical and managerial implications. After that, a discussion of the study's limitations and future research directions are presented. Finally, the present chapter, *Chapter 7*, summarises the current research findings and recommendations for future research.

7.2 Discussion on RQ1 Scale Development - SMCI

Study 1 addresses the two research questions, RQ1 and RQ2. RQ1 focuses on the concept of sustainable meat consumption intentions and seeks to integrate meat detachment,

meat curtailment, and organic meat purchase intentions into one measurement scale. The following sections discuss the findings of RQ1, the theoretical and managerial implications, and conclude the section with the study's limitations.

7.2.1 RQ1: Understanding SMCI in the Pakistani Context

Chapter 5: Results of Study 1 (Scale development and consumer profiling) documents a series of supplementary sub-studies (4-Phases) used to develop and validate the SMCI scale in the specific socio-cultural context of an emerging economy. This study responds to the calls to expand the knowledge of consumer intentions related to willingness to reduce meat consumption and eat organic or free-range meat or meat substitutes (Dagevos & Voordouw, 2013; Graça et al., 2015). The current study fills the gap in the literature and has implications for policymakers, social marketers, and practitioners who wish to address one of the most pressing problems causing climate change, the purchase and increasing consumption of meat. For this purpose, both qualitative and quantitative methods were utilized. Based on the literature review and qualitative discussions (seven focus groups), 83 items were generated. Three subject experts validated this initial scale, and 70 items were retained after assessing the content validity. Followed by, face validity was maintained to evaluate the readability and clarity of the words and sentences. In phase 3, data collected in round 1 was used for the pilot study to purify the study items by reducing them into a manageable size. Finally, an exploratory factor analysis (EFA) was run on 222 consumers' responses, resulting in 38-items of the SMCI scale used for Round 2 data collection.

An online survey generated 722 complete responses for Round 2, which were used to run the analysis. The data set was split in half. The first half was utilized for EFA, and the rest of the data were used to test confirmatory factor analysis (CFA). The principal component analysis (PCA) was employed to understand the underlying structure of the construct by reducing the number of items. Consequently, three factors having ten items were obtained, namely: meat detachment (3-items), meat curtailment (3-items), and organic meat purchase (4-items) intentions. The results of CFA validate the reflective-formative model of SMCI. In the first order, items were a manifestation of their respective constructs and positively correlated. In the high-order model, organic meat purchase (β=0.586) was the most prominent factor creating SMCI, followed by meat curtailment (β=0.407) and meat detachment (β=0.411), respectively.

Due to health and environmental sustainability concerns, organic meat purchase intentions consisted of items focused on consumers' preferences regarding organic meat purchase, even at high prices. Meat curtailment intention dimension evinces that consumers are concerned

about their meat consumption habits, which harm the environment, and feel motivated to change their diet when they see other people reducing meat from their diet. Prior research supports the present study finding on consumers' beliefs that meat curtailment habits reduce environmental degradation (Taufik, 2018; Tucker, 2018).

One of the significant contributions of the current study is that it identifies and includes all relevant intentions related to meat reduction and organic meat purchase. These results show that the dimensions of the SMCI construct based on meat detachment intentions measure the consumer intention to avoid the meat-based dishes. This dimension contrasts with a previous study conducted in Portugal (Graça et al., 2015) to measure the consumers' meat attachment. Meat detachment elements seem to collectively show the relationship between consumers' intentions and avoidance of meat-based diet. There is adequate literature on sustainable meat consumption, the reduction of red meat consumption, or protein transition (Burnier et al., 2021; Cohen, 2020; Wang & Somogyi, 2019; Yang, 2020). Moving forward with these studies, the primary issue is why we can't reduce a meat-based diet. It can be investigated through sustainable meat consumption intentions by capturing consumers associations with meat and detachment level to the meat-based diet. Therefore, the newly developed SMCI scale measured the detachment feeling of a person with meat-based dishes. For instance: 'My meal is complete without meat.' It captures a sense of disgust, such as, 'I am not attracted to meat dishes.'

The dimension organic meat purchase intention items also corroborate the findings of previous literature. Such as "I prefer to buy organic meat due to my health concerns", this item is similar to the scale developed by Pham et al. (2019) related to organic food purchase and organic meat purchase intentions by Nguyen et al. (2021).

In a nutshell, the findings suggest that Pakistani consumer build their perception of SMCI on three dimensions, i.e., meat detachment intention, organic meat purchase intention, and meat curtailment intention. Furthermore, the nomological measure of the SMCI scale (Phase-4) with related constructs environmental knowledge and environmental concern showed a significant relationship. Hence, the present study asserts that SMCI is correlated with its associated environmental knowledge and environmental concerns constructs as expected in the literature (Quoquab et al., 2019).

7.2.2 Theoretical and Managerial Implications

In today's competitive marketplace, the importance of consumers' sustainable meat consumption intentions is noteworthy. The present study proposes a new, culturally sensitive scale (SMCI) and validates it in an emerging market, Pakistan, which may help mitigate the

negative impacts of meat consumption. The contribution of RQ1 of this study is threefold: first, this study used a rigorous scale development process; second, it advances the prior research on sustainable meat consumption and contributes to sustainable and organic food marketing literature, and uncovers the three distinct dimensions of SMCI. Third, validating the nomological model of the SMCI scale corroborates previous studies related to the significant effect of environmental concerns and environmental knowledge on SMCI. These findings extensively contribute to both theory and practice, which are elaborated on below.

7.2.2.1 Theoretical Implication

Theoretically, this study advances the literature on sustainable food consumption by developing and validating a new scale from a consumer perspective, SMCI, which measures sustainable meat consumption intentions. Unlike previous measures, which are mainly focused on general sustainable consumption, behavioural intentions, or green purchase intentions (Balderjahn et al., 2013; Graça et al., 2015; Quoquab et al., 2019), this scale specifically focuses on intentions related to meat detachment, meat curtailment and the organic meat purchase. The study provided empirical evidence to prove the relationship between the first-order and second-order components based on the theory of planned behaviour. The model of SMCI obtained provides a valuable basis for further research in different cultural contexts. The newly developed SMCI scale fills a significant gap in the literature; it provides a holistic scale for such studies with various research objectives, comprising the modelling of complex relationships among variables. Previously, researchers needed to use multiple scales to measure different facets of consumers' sustainable meat consumption intentions, behavioural intention to green product consumption by Chen et al. (2014) and Zhu et al. (2013), and intention to reduce meat consumption measured through Povey et al. (2001) on a single item yes or no. Hence, the newly constructed SMCI scale is more valid, reliable, comprehensive, and more extensively applicable in today's competitive environment. The existing scale covers sustainable meat consumption intentions from a broader perspective.

The SMCI scale captures patterns of behaviour that are broadly similar across emerging and developed markets. Organic meat purchase intention is the most significant dimension of SMCI. This result is promising from a sustainable food policy perspective, and it presents an opportunity for the livestock industry to invest in the organic food market. Previous studies have shown that knowledge about organic food and health consciousness indirectly affect purchase intentions in developing countries (Pacho, 2020; Xie et al., 2015). Furthermore, consumers concerned about the environment are likely to formulate positive attitudes towards

organic meat that eventually influence their purchase intentions (Nguyen et al., 2021). Organic food is generally highly valued for its perceived health benefits (Ditlevsen et al., 2019; Tandon et al., 2020). The newly developed scale corroborates the findings of other scholars, with items such as 'I prefer to buy organic meat due to my health concerns' and 'I know if I buy organic meat, it is a step towards sustainability'. Therefore, we tentatively conclude the factors that influence sustainable meat consumption are common to affluent, middle-class urban consumers across cultures, consistent with the citizen-consumers concept and fitting the cultural logic of globalisation (Grosglik, 2017).

7.2.2.2 Managerial Implications

This research has important implications for marketers, researchers, policymakers, consumers, government and non-government organizations (NGOs). The SMCI dimensions seem to be a significant element of a sustainable food marketing strategy. It illustrates the long-term social commitment and investment of top management to environmental strategies for cause-related marketing. Consumers can play a vital role in changing their meat-related dietary habits to protect the environment. Regarding policy implications, a focus on co-benefits, health and sustainability, and the use of organic meat certification labels may help nudge consumers towards meat curtailment and consumption of higher quality, organic meat. Hence, organic meat could be used as a 'sufficiency' solution (Pohjolainen et al., 2016). However, studies reported challenges in convincing people to reduce their meat consumption due to low willingness to eat a meatless diet (Hartmann & Siegrist, 2017). Consumers generally hold positive attitudes towards meat, which is seen as pleasurable, social, traditional, and a source of essential nutrients (Austgulen et al., 2018; Bogueva et al., 2017). Scholars highlight that consumers rationalise their meat consumption and use psychological defenses, such as the '4Ns', believing that eating meat is natural, normal, necessary, and nice (Piazza et al., 2015). Our scale captures some of these barriers, with items such as 'my meal is complete without meat', 'I am not attracted to meat dishes', and 'I can reduce meat from my diet. The findings suggest that decreasing meat consumption will be a challenge for some consumer segments, regardless of the level of economic development. This is an interesting finding, supporting the view that there is a remarkable diversity of eating patterns across countries (Newby & Tucker, 2004). Some countries are more meat-centred than others (Dagevos, 2016).

The newly developed scale SMCI captures the influence of social norms on behaviour, such as 'I feel motivated when I see that other people also reduce meat from their diet'. Social feedback is relevant in driving behavioural change (Nyborg et al., 2016). There is consensus in

the literature that taste, health, social influences, and ethical concerns are vital motives for eating or avoiding meat. A variety of marketing tactics, interventions, and policies are needed to transform consumers' meat consumption habits and achieve a more sustainable food system (Apostolidis & McLeay, 2019b; Elzerman et al., 2015; McBey et al., 2019; Stea & Pickering, 2018; Vainio et al., 2018). Concerning implications for practice, advertising campaigns that appeal to social norms may be needed to change entrenched dietary habits and reach broad target groups. To influence those consumer segments that like the taste of meat and have a strong bond with meat, government agencies could resort to 'hard' policy measures such as increasing taxes on meat products, as recommended in the literature (Bonnet et al., 2020). However, taxation is controversial and may face opposition from meat producers, politicians, and consumers (Edjabou & Smed, 2013).

Previous studies showed that environmental concerns play a significant role in consumer food choices (Cheah et al., 2020; Funk et al., 2021; Tucker, 2018). Providing information to consumers on the environmental benefits of eating less meat may influence consumers' behavioural intentions (Bschaden *et al.,* 2020). However, scholars argue that only a minority of the population express their concern (Sanchez-Sabate & Sabaté, 2019); meanwhile, only a few studies report a low level of environmental consciousness regarding meat (Paloviita, 2021; Pohjolainen et al., 2016). Our scale captures this external factor, with items such as 'By eating meat, I engage with an industry responsible for significant environmental damage' and 'I know my meat consumption habit harms the environment'. The presence of a relatively strong environmental consciousness within the scale is a promising sign. Surprisingly, animal welfare concerns do not feature in the final scale, which conflicts with studies highlighting ethical issues around current livestock systems, such as animal slaughter and factory farming, that influence consumers' choices (Graça et al., 2016; Hwang et al., 2020). Also, animal welfare is a convergent value across cultures (Estévez-Moreno et al., 2021). The present study suggests that moral appeals that are oriented towards animal welfare may not work well in the Pakistani consumer market because they prefer Halal meat. And justify that in Islam, there is no such compulsion. However, future studies should conduct cross-cultural comparative studies that examine factors that may amplify or reduce the effectiveness of cause-related campaigns, as recommended in the literature (Ditlevsen et al., 2019; Ferraris et al., 2019; Tucker, 2018). To conclude, livestock industries and Government agencies may coordinate and develop such infrastructure to produce organic meat free from hormones, pesticides, and artificial additives.

7.3 Limitations and Future Research Directions

Considering this is the first attempt to develop and validate a model of SMCI, the study has some limitations. First, the data were collected from the residents in metro cities only, so future researchers should consider including the non-urban population. Additionally, the data were collected from Pakistan. Sustainable meat consumption intentions are increasingly recognized as context-specific, with their unique characteristics and attributes in various cultures (Halder et al., 2020; Kapelari et al., 2020; Qi & Ploeger, 2019). Therefore, future research should consider utilizing the scale to collect data from different countries and cultures to increase the cross-cultural reliability and validity of the scale.

Second, purposive (non-probability) sampling was used to select respondents, and in the future, more robust sampling techniques could be utilized. Third, the study focused on intentions rather than behaviour, and intentions are likely to overestimate actual purchase tendency (Kyoko & Christine, 2010; Sudbury-Riley & Kohlbacher, 2016). It is recommended that future studies should focus on measuring and tracking behaviour using methods such as the food diary approach (Lacroix & Gifford, 2020) through a longitudinal study.

7.4 RQ2: Understanding Green Consumer Segments

The second research question (RQ2) was designed to understand better consumers characteristics belonging to various segments based on their sustainable meat consumption intentions in study 1. The cluster analysis identifies three distinct consumer segments: the meat lovers, the organic meat consumers, and the sustainable activists based on their sustainable meat consumption intentions. The subsequent section provides a detailed discussion on consumers' characteristics that belong to three segments and delineate some practical implications based on the research outcomes.

7.4.1 Comparative Discussion of the Three Segments

The configuration of three segments, the meat lovers, the organic meat consumers, and the sustainable activist, reveals that the 'sustainable activist' group consists of nearly half (46.5 per cent) of the total sample. The literature on segmentation studies showed that, on average, pro-environmental or sustainable segments constitute approximately 18%- 35% of the market (for instance, see Golob & Kronegger, 2019; Vanhonacker et al., 2013). Thus, the higher percentage (46.5%) value for the sustainable activist is a very significant segment for this study and in the context of other studies of sustainable food consumption. Furthermore, the results

demonstrate that consumers in an emerging economy now are concerned about reducing their meat-based diet due to environmental problems associated with meat production. Due to strong environmental concerns, they behave in an environmentally friendly way. They have strong intentions to buy organic meat if it is readily available in food markets. The results are aligned with a recent study in an emerging economy related to increasing intention related to purchasing organic food due to environmental impairments (Pham et al., 2019). As a result, it provides food marketers with an opportunity to promote organic meat brands with eco-sustainability labels to target environmentally-conscious consumers. This segment is consisted of a younger age group on average. Research shows that young people are more conscious about environmental issues (Funk et al., 2021; Yadav & Pathak, 2016). However, a study conducted in China on organic food segmentation revealed that older people prefer organic food due to health concerns (Chen et al., 2014).

The cluster analysis revealed that 'environmental knowledge' is one of the least significant factors separating the three segments. The result is consistent with another study conducted in the Netherlands reporting that consumers' intentions to reduce a meat-based diet would increase when sustainability knowledge was communicated (Kashif et al., 2020; Rana & Paul, 2017; Verain et al., 2017a). However, in terms of the most influential factor, 'intrinsic religiosity' differentiates the three segments significantly. According to Minton et al. (2018), religious consumers appear more sustainable than non-religious consumers. Because Eastern religious scripture believes in pantheism, the doctrine that God is manifested in the universe and all of 'His creatures'; therefore, destroying a part of nature is damaging to a part of God. Pakistan is a Muslim country; therefore, consumers who belong to 'the sustainable activist' segment believe in Allah firmly, and intrinsic and extrinsic religiosity values guide their behaviour. Their religion has some guidelines about meat consumption, and for the protection of nature, they are ready to reduce meat from their diet. Their religious faith provides dietary guidelines, specifically on meat consumption, and leads them to adopt responsible and ethical food consumption habits (Ghazali et al., 2018; Vranken et al., 2014).

Also, the results revealed an interesting finding related to religiosity: a segment labelled the 'organic meat consumer' shows a preference for the purchase of organic meat. However, they are not a strict follower of Islamic norms. Still, they prefer to buy organic meat due to environmental concerns and understand that human action adversely harms the environment. Subsequently, perceived consumer effectiveness (PCE) and intrinsic and extrinsic religiosity are crucial differentiating factors for the three segments. The study findings show that consumers in 'the sustainable activist' segment consider themselves capable of affecting the

environment by altering their meat consumption patterns. This finding is consistent with previous studies in the sustainable food consumption domain and environmental studies (See Saleem et al., 2018b; Vanhonacker et al., 2013; Vermeir & Verbeke, 2006). Although the other two segments, 'the meat lover' and 'the organic meat consumers', have low PCE, their meat consumption choices are insignificant to protect the environment. The consumers who belonged to the sustainable activists' segment have a strong belief in religiosity. This segment has high intrinsic (1.90) and extrinsic (2.11) religiosity values. Those people consider religion very important in their lives; they participate in religious activities and consider Islamic laws while making any purchase decision. These findings are consistent with other studies showing that religiosity may influence sustainable consumption decisions, and religion persuades consumers to protect the environment through sustainable consumption (Islam & Chandrasekaran, 2016; Minton et al., 2018; Park et al., 2020).

A comparison of the three dimensions of SMCI revealed that meat curtailment intention is the most critical aspect, followed by organic meat purchase. Meat curtailment is explained by economic motives. For the sustainable activist segment, meat reduction may be a motive to save some money (Mullee et al., 2017), sympathy for animals and concern about the slaughter of animals just for eating purposes (Khara et al., 2021), food neophobia and uniqueness seeking lifestyle (Sarti et al., 2018).

Therefore, the current study supports exploiting a niche market of organic meat products and plant-based protein in Pakistan's emerging economy. Since consumers' socio-demographics characteristics also affect sustainability and health-related purchase intentions, the present study finds age, city of residence, and employment status essential elements that significantly discriminated between the three identified segments. As noted in previous studies, age is a non-significant factor in distinguishing between sustainable or unsustainable consumers (Cerri et al., 2018; Sarti et al., 2018; Woo & Kim, 2019). Furthermore, results show that consumers who live in metro cities Lahore and Karachi belong to Sindh and Punjab province have more concerns about the environment and prefer to reduce their meat consumption. The result is consistent with another recent segmentation study based on Australian organic food consumers which showed that consumers who lived in the urban areas were highly environmentally conscious and ready to purchase eco-friendly organic food (Sultan et al., 2018).

This study also revealed that income level is a significant factor that persuades consumers towards sustainable consumption intentions. The consumers of the organic meat segment have a high-income level, i.e., 150,000 (PKR) and more (28.9%). These study findings

are aligned with previous studies on organic food consumers (Nasir & Karakaya, 2014; Van Huy et al., 2019), and consumers are trendsetters who love to eat organic food. In the emerging economy context, the high-income group wants other people to follow their eating pattern and prefer to buy organic food because it is expensive.

While 'the sustainable activist' earned between 75000 and 99,999 (17.4%). Due to the high-income level, this segment, the 'organic meat consumer', can afford to purchase organic meat and are willing to pay a premium price to buy high-quality certified packaged meat. This finding confirms the findings of existing segmentation studies in the context of organic food marketing and sustainable food, specifically in the meat consumption literature (Chen et al., 2014; González et al., 2015; Lentz et al., 2018).

7.4.2 Implications for Marketers and Policy Makers

The livestock industry is gradually picking up the pace with notable growth in an emerging economy, Pakistan. However, the increased consumption of meat-based products exacerbates environmental problems and adversely affects human health and animals' welfare. There is a growing consensus that human activities cause ecological risk and have adverse impacts. Deadly heatwaves in Southeast Asia are potentially due to global warming and increasing GHG emissions (Im et al., 2017; Omer, 2018). Therefore, environmentalists, policymakers, marketers, and researchers are interested in exploring those factors that persuade consumers to adopt more sustainable consumption habits (Nguyen et al., 2021; Sarti et al., 2018).

The present study is important since the findings on consumer behaviour may help reduce GHG emissions and environmental degradation due to the industrial farming of animals to meet the growing demand for meat. The profiling of the various segments should be of value to policymakers, the livestock industry, and strategic planning purposes. For instance, the size of the sustainable meat consumption segment, 'the sustainable activist' (46.5%), suggests a high involvement with climate change issues, strong environmental knowledge, and perceived consumer effectiveness (PCE) that motivates consumers to engage in sustainable consumption activities and purchase organic meat. To address consumers' health and environmental concerns, marketers could provide packaged organic meat with health or nutritional charts and eco-friendly labels (Apostolidis & McLeay, 2019a; Funk et al., 2021; Lentz et al., 2018). The marketers emphasise consumers' demographics and behavioural attributes who belong to 'the sustainable activist' segment and improve the product, price, and promotion strategies accordingly. For instance, to appeal to this segment, organic meat products could be marketed

to the high-income and well-educated class living in densely populated metro cities such as Karachi and Lahore. Promotional strategies for environmentally friendly organic meat may consider advertising appeals based on health, safety, and reduction in environmental emissions.

These findings are consistent with the Western segmentation studies that consider organic meat consumption or curtailment of meat a step towards sustainability (Burnier et al., 2021; Lacroix & Gifford, 2019; Ruiz de Maya et al., 2011). Considering that extensive meat consumption can lead to emissions and depletion of natural resources, social marketers could develop ethical campaigns with religious references to save the environment by reducing meat consumption. Religious values help form a person's character and have a role to play in transforming societies and changing behaviour (Bhuian & Sharma, 2017; Minton et al., 2018). Marketers should carefully use religiosity to promote the consumption of organic meat, such as Halal certification and the 'Prime life satisfaction' slogan. These approaches can be helpful because, in many emerging economies, Islamic norms and halal certification are recognized as clean, safe, and hygiene products, maintaining the balance of nature through sustainable consumption intentions (Minton et al., 2018; Mohd Suki & Mohd Suki, 2015; Sherwani et al., 2018).

7.4.3 Limitations Pertinent to the Findings of RQ2 and Future Research Directions

The current study has some limitations. First, this study was conducted in metro cities; future research must explore the consumers' segments in rural areas. Second, there is a need to perform similar segmentation research in other developing nations to assess the consumers' nature and inclination towards sustainable meat consumption. Finally, the study showed consumer profiling based on multiple dimensions of SMCI. This study measured intentions and not behaviour, and policymakers and practitioners are much more interested in the actual behaviour of consumers.

7.5 Discussion of the Results of Study 2

The second study of the present research thesis, Study 2, used the results derived from Study 1. Study-2 explored the explanation of SMCI using the advanced TPB model, thereby answering RQ3. The following sections discuss the results, implications based on findings, and limitations of the advanced TPB model based on pro-environmental values and religiosity.

7.5.1 RQ3: Theoretical Explanation of SMCI

The theory of planned behaviour is applied in various contexts, such as organic food consumption (Hoeksma et al., 2017; Honkanen & Young, 2015; Nguyen et al., 2017; Pacho, 2020). These studies indicate that TPB can be successfully applied to predict sustainable food consumption behavioural intentions. The theory of planned behaviour (TPB) is utilised to provide theoretical explanations of factors that affect SMCI. The following section discusses the results of the advanced TPB model.

7.5.2 Advanced Theory of Planned Behaviour Model

The present study is based on the advanced theory of planned behaviour model incorporated VBN theory and religiosity values to predict SMCI. The present integrated model result estimates are consistent with the current stream of research related to TPB application in various contexts. The following sections provide discussions of the results of the advanced TPB model.

7.5.2.1 Discussion on the Results of the advanced TPB Model

Consumers' excessive meat consumption habits strongly affect the environment (Austgulen et al., 2018; Taufik, 2018). Currently, consumers' SMCI is relatively low, and it is under-researched how consumers can be best persuaded towards meat reduced diet or purchase of more quality organic meat (Graça et al., 2019). The core constructs of the TPB model include control beliefs, normative beliefs, and behaviour beliefs. These beliefs link directly with their corresponding attitude set (perceived behavioural control, subjective norms, and attitude towards behaviour), leading to intentions (Fishbein & Ajzen, 2010). The present study adds constructs such as 'environmental concern' and 'environmental knowledge' as antecedents of attitude towards the behaviour, subjective norms and perceived behaviour control through control beliefs, normative beliefs and behavioural beliefs. The study also used personal norms as a mediator derived from egoistic, biosphere and altruistic values. The most significant contribution of the current research pertains to the interaction effects of religiosity on the relationship between behavioural belief and attitude towards the behaviour and personal norms towards SMCI.

Results highlighted that, as proposed, environmental concern is positively associated with control beliefs, normative beliefs, and behavioural beliefs. The findings are similar to those reported in the green product consumption literature (Maichum et al., 2016; Paul et al., 2016). Environmental knowledge is significantly associated with normative beliefs and behavioural

beliefs. Still, the statistical analysis fails to support the relationship between environmental knowledge and control beliefs. Consumers who have more knowledge about environmental problems are associated with green purchase intention (Kanchanapibul et al., 2014; Liobikienė et al., 2016). The individuals' beliefs are positively associated with perceived behaviour control, subjective norms, and attitude towards behaviour.

Moreover, present study results suggest that the targeted consumers' SMCI can be investigated through a causal chain process involving multiple intervening factors (mediators and moderators) (Fishbein & Ajzen, 2010). Results reported in *Table 6.8 Hypothesis Testing: Indirect Effects* reveal that normative beliefs about SMCI strongly associate with their respective causal chain constructs (normative belief – subjective norms - SMCI). In contrast, control beliefs and behavioural beliefs have no association in their causal chain relation that leads to SMCI. Control beliefs are the most vital trigger of SMCI at the initial level of a causal array of the study model and those who can influence what is happening or what will happen. But statistical results fail to prove their causal chain relationship towards SMCI with perceived behavioural control. Although consumers consider sustainable meat consumption healthy and environmentally friendly, people are still reluctant to perform a particular action. These findings align with other studies conducted in Iran and Pakistan related to the purchase of organic or sustainable food (Asif et al., 2018; Yazdanpanah & Forouzani, 2015). However, the indirect effect of normative beliefs is positively associated with SMCI through subjective norms. This finding strengthens the argument that SMCI is a complex decision based on the friends and family's expectations and preferences for environmentally friendly meat consumption. Also, an individual expects that their family members, friends, and relatives may also indulge in sustainable meat consumption and prefer to purchase organic meat. Eventually, the consumers' likelihood of SMCI related to organic meat purchase intention increases; the current study verified the positive relationship between normative beliefs and SMCI through subjective norms.

The results showed interesting findings concerning religiosity, significantly associated with attitude towards behaviour but are the weakest factor in the magnitude of association. In a religious society, this result is surprising as literature support that Muslims believe that God made the universe in perfect balance (Ghazali et al., 2018; Hassan et al., 2016) and human must respect the rights of plants and animals (Chan, 2001; Chan & Lau, 2000). However, sustainable meat consumption related to environmental sustainability has started a debate in Pakistan and divides the population into two groups. One who has a firm belief in Allah and considers everything is happening according to Gods' will. In contrast, the other group believes that they

are the representative of Allah and are accountable for protecting the natural world. Perhaps this is why religiosity interacts with behavioural beliefs and is positively linked to the attitude towards the behaviour, signifying that individuals still hold traditional religious values, such as a belief in the responsibility of humans to protect natural resources and ecosystems. This finding is consistent with some literature on religiosity and pro-environmental behaviours (Bhuian & Sharma, 2017; Islam & Chandrasekaran, 2016).

From a practical perspective, the present study justifies intervening the TPB with personal norms derived from egoistic, biospheric, and altruistic values towards sustainable consumption intentions (Kim et al., 2015; Kim & Seock, 2019). The results showed that egoistic and altruistic values positively impact personal norms, while Biosphere values have no significant relationship. The previous studies showed that consumers with strong altruistic values are more sensitive to eco-logical consumption (Kim, 2011; Snelgar, 2006). Recent research conducted in an Indian context showed similar findings that egoistic values positively impact consumers' eco-friendly or green products purchase intentions (Jaiswal & Kant, 2018; Prakash et al., 2019). Therefore, consumers who have egoistic values prefer sustainable consumption of meat due to personal benefit. Also, an individual has a strong relationship with SMCI. However, the indirect relationship between altruistic and egoistic values with SMCI through personal norms has significant results. Therefore, these results proved the partially mediated links. The statistical analysis showed that religiosity does not enhance the relationship between personal norms and SMCI. Personal norms underpin behaviour and are critical in shaping an individual's sense of responsibility to consume meat sustainably and engage in consumption that does not harm personal health and even society. The present research results revealed that religiosity strongly affects pro-environmental values but fails to enhance the relationship between personal norms to SMCI. The current study finding is contrary to the research of Hassan (2014), which reports a direct link between religious values and green purchase intentions.

7.5.3 Theoretical Implications of the Theoretical Model of the Study

The present study explored and validated the theoretical model given in *Figure 3.1 Theoretical Model of the Study* and contributes to the sustainable food marketing literature in several ways. Firstly, the application and validation of the advanced TPB model can be applied in other emerging countries similar to Pakistan, an emerging economy. Secondly, the study shows how individuals' sustainable consumption intentions can be generated through more concise notions like pro-environmental values that generate personal norms. A person's values

are formed over time and sometimes difficult to change, acting as underpinning influencers to reform an attitude towards a particular behavioural intention (Shin et al., 2017). However, prior studies have only concentrated on the correlations among egoistic, altruistic, and biosphere values (Prakash et al., 2019; Yadav, 2016) or investigated their direct impacts on outcome variables (Kim et al., 2015; Kim & Seock, 2019).

Interestingly, the results elaborated that religiosity influences the relationship between behavioural beliefs and attitudes towards a person's behaviour that guides SMCI. The results have a strong link in the literature on religion and sustainable consumption (Kahle et al., 2016; Mathras et al., 2016; Minton et al., 2018); religiosity served as one of the core influencers shape consumers lifestyles. It should therefore be taken into consideration when understanding consumer behavioural intentions. The present study contributes broadly to the notion that personal values do not directly moderate the relationship between personal norms and SMCI. As a result, religiosity shapes personal norms that have an impact on SMCI.

7.5.4 Implications for Marketers and Policymakers

The United Nations SDG-12 focuses on sustainable consumption and production and highlights that environmental degradation can be reduced by eating a sustainable diet. The present research findings support the effective promotion of organic meat. Organic meat is produced by applying more sustainable farming methods compared to conventional meat production. The theoretical model and the analysis provides several guidelines for marketing practitioners and policymakers to reduce global GHG emissions to achieve the SDG-12 in an emerging economy. The organic food market is nascent in Pakistan; marketers and livestock companies can target a sustainable consumer segment.

First, the results showed that consumers' environmental knowledge influences normative and behavioural beliefs. Also, environmental concern has a positive relationship with control, normative and behavioural beliefs. Therefore, marketers should target particular segments and educate consumers about the importance of environmental protection and reducing excessive meat consumption. Provide them information about the protein transition, which indirectly boosts SMCI and leads towards more quality organic meat consumption.

Second, the results suggest that integrating religious cues related to sustainable meat consumption in an advertisement can be a valuable tactic to build personal norms and facilitate eco-friendly organic meat purchase intention. The research highlights that various interpretations of religiosity can motivate an individual towards SMCI. Therefore, the livestock industry could target religious consumers, market the concept of healthy food, eco-friendly

organic meat or free-range meat, and emphasise the safety of society and the environment as a whole. These suggestions align with prior studies on sustainable or green consumption (Felix et al., 2018; Ghazali et al., 2018). Moreover, imam masjid can motivate people to slaughter animals raised in an environmentally friendly way at the Islamic Festival Eid ul Adha. It will help to reduce environmental degradation and contribute to planetary health in a social marketing context.

Third, to overcome the high price barriers perceived by consumers related to sustainable meat consumption when purchasing organic meat, firms should carefully adopt such strategies to reduce production costs. Also, the current research results supported that altruistic and egoistic values build personal norms that strongly impact SMCI. Therefore, marketers should convince consumers that it is worth paying for organic meat than conventional meat due to its adverse effect on the environment and human health. Moreover, it is a step towards a good cause to protect the environment for future generations (Ferraris et al., 2019) and support the concept of cause-related marketing.

Table 7.1 Overview of Thesis and its Contributions and Implications

Research Gap	Research Questions	Findings	Academic Contribution	Managerial Implication
Study 1				
RG1: Scales on sustainable consumption intention are primarily developed in Western societies and fail to address some key cultural perspectives and specific intentions related to meat reduction and organic meat consumption in various emerging economies.	RQ1: How can the impact of cultural (social) values, animal welfare, and environmental elements on consumers' intention related to meat curtailment and use of more quality meat be measured on one scale in an emerging economy?	Measurement scale of SMCI related to meat curtailment and purchase of organic meat intentions developed and validated in the context of Pakistan. SMCI consists of three facets: meat detachment, meat curtailment, and organic meat purchase intentions.	The current study adds to sustainable food marketing literature by providing a holistic scale to measure the various facets of consumers' SMCI.	The newly developed scale, SMCI, is culturally sensitive and assists policymakers in formulating marketing strategies to decrease meat consumption in an emerging market context.
RG2: Literature available on demographics, psychographics, and behavioural characteristics of sustainable consumers	RQ2: What are the demographic, psychographic, and behavioural characteristics of consumers in Pakistan	Consumer profiling based on SMCI and other variables reveals three distinct segments: first, meat lovers who love eating meat can't consider food	The present study used a theoretical framework of variables that have proven good predictors of sustainable meat consumption intentions to capture meaningful segments	Livestock marketers and policymakers can target the organic consumer and the sustainable activist segments based on demographic factors and tailor advertising messages

presents inconsistent observations.	who are conscious about meat sustainability and who reduce meat in their diets or prefer organic meat?	without meat dishes. Second, organic meat consumers prefer to purchase environmentally friendly organic meat due to environmental concerns. Finally, the sustainable activist segment is ready to reduce meta from their diet and prefer to purchase organic meat because of firm belief in religiosity and high perceived consumer effectiveness to reduce environmental issues.	of individuals—further profiling the consumers based on psychographic, demographic, and behavioural characteristics.	related to purchasing environmentally friendly organic meat. Social marketers can target these segments through ethical messaging to actively participate in sustainable consumption activities to protect the environment from degradation and future generations.
Study 2				
RG3: In emerging Asian countries, no holistic framework adequately explains sustainable food consumption intention under collectivist culture.	RQ3: To investigate the key driving forces such as religious and pro-environmental values behind sustainable meat consumption intention	The advanced TPB model based on religiosity and pro-environmental values increase the predictive power of the study model. Thus, the findings conclude that personal norms	The present research extends the literature by increasing the explanatory power of the existing TPB to add personal norms based on pro-environmental values as	The advanced TPB model provides novel insights for livestock marketers, social marketers, and policymakers about those elements that effectively shape consumers' sustainable intention related to

| | through an advanced TPB model in an emerging economy. | significantly affect SMCI. Additionally, the moderated effect of religiosity boosts the relationship between behavioural belief and attitude towards behaviour. Also, support building the personal norms of a consumer. | mediators and religiosity as moderating variables. | reducing meat from diet or eating more quality organic meat. |

7.6 Future Research Directions

However, the present study fills the research gap to extend the theory of the planned behaviour model by incorporating additional contextual variables like personal norms and religiosity to measure the SMCI. The sustainable consumption intentions of consumers related to meat are rapidly changing, particularly in Southeast Asian or emerging countries due to being more affluent. A longitudinal study is required to measure the consumers' actual behaviour over time instead of behavioural intentions. Accordingly, future research should explore more fine-grained and robust evidence regarding specific countries and religious associations.

Further, an important suggestion for future research relates to the role of culture in the relationship between religiosity and SMCI. Although the present study shows the impact of religiosity on the relationship between personal norms and SMCI, culture is an inherently complex issue. Thus, in future research, the representation of collectivist culture may be rightfully challenged (Felix et al., 2018; Qi & Ploeger, 2019). Therefore, the present research findings call future researchers to leverage more integrative approaches to investigate the more vital factors influencing SMCI.

7.7 Conclusion

In emerging economies, increasing population, economic stability, and modern lifestyle have increased meat-based diet consumption, threatening environmental stability. The current study offers novel insights and contributions by undertaking several studies to provide a holistic solution towards unsustainable meat consumption. Firstly, by defining the SMCI by developing a measurement scale from an emerging economy perspective. Secondly, consumers profiling based on SMCI showed a growing trend of the sustainable activist segment in an emerging economy. Thirdly, the theoretical explanation of those antecedents affecting SMCI. *Table 7.1 Overview of Thesis and its Contributions and Implications* summarises the thesis's important theoretical and practical implications.

The present research findings show that meat consumers in Pakistan acknowledge the concept of sustainable meat consumption and are willing to purchase organic meat and practice the curtailment of a meat-based diet from their menu. A significantly large proportion of the sample is inclined towards the SMCI, and this finding is promising for the organic meat industry and policy-oriented towards eco-friendly meat consumption. Furthermore, the current research provides an approach to address the increasing environmental degradation problem that intensifies global warming, biodegradation, and climate change by significantly altering

consumer behavioural intentions to change their food choices. The advanced theory of planned behaviour (TPB) model applied in the current research can be further advanced to include various cultural-specific factors to increase the explanation of SMCI.

Appendixes

Appendix 1 Pilot Study Survey –Study 1

Section 1: Background Information

1. **What is your age group?**

   ☐ 18-27   ☐ 28-37   ☐ 38-47   ☐ 48-57   ☐ 58 and above ☐ Prefer not to say

2. **What is your Gender?**

   ☐ Male   ☐ Female   ☐ Other

3. **What is your total household income per month (PKR)?**

   ☐ Less than 25000 ☐ 25,000-49,999   ☐ 50,000-74,999 ☐   75,000-99,999

   ☐ 100,000-124,999 ☐ 125,000-149,999   ☐ 150,000-174,999

   ☐ 175,000 and more ☐ Prefer not to say

4. **Please indicate from which province you belong:**

   ☐ Punjab   ☐   Sindh ☐ Baluchistan   ☐ Khyber Pakhtunkhwa
   ☐ Other

5. **Please indicate from which city you live:**

   ☐ Kharchi ☐ Hyderabad ☐ Sukhar ☐ Lahore ☐ Multan

   ☐ Faisalabad ☐ Rawalpindi ☐ Bahawalpur ☐ Peshawar

   ☐ Quetta   ☐ Islamabad

6. **Are you responsible for grocery shopping for your family?**

   ☐ Sole responsibility ☐ Joint responsibility   ☐ No-responsibility

7. **What is your marital status?**

   ☐ Married   ☐ Widowed ☐ Divorced   ☐ Single

8. **How would you describe your household?**

   ☐ Adult household (Living alone)

   ☐ Adult Household (Living with partner/spouse-No kids)

   ☐ Adult household (Kids have left home)

   ☐ Young families (youngest child at home between the age of 0-5 years)

   ☐ Middle families (youngest child at home between the age of 6-12 years)

   ☐ Older families (youngest child at home between the age of 13-18 years)

   ☐ Mature Families (youngest child at home between aged over 18 years)

   ☐ Joint Family system

   ☐ Another Classification applies

9. What is your highest level of education?

☐ Primary (year 5) ☐ Middle-Matric (year 10) ☐ Inter-Bachelors

☐ Master-MPhil ☐ Professional education

10. What is your employment status?

☐ Landlord ☐ Own Business ☐ Unemployed ☐ Employed, Part-time

☐ Employed, Full-time ☐ Student

11. How many times do you purchase organic meat?

☐ 2-3 times per week ☐ Once per week ☐ 2-3 times per month

☐ Once per month ☐ Never

Section 2: Theoretical construct

Response Scale:
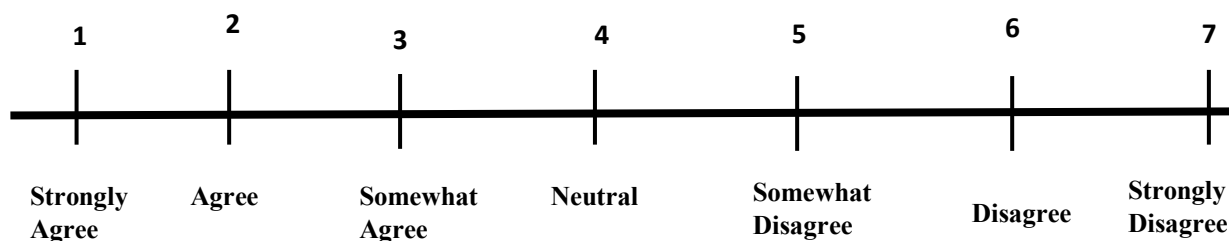
1.	I am willing to reduce the meat-based diet to save animals' lives.
2.	If I continue excessive meat consumption, animals will disappear from the world.
3.	I feel sympathy for the animals when the producer injects them with antibiotics to raise them fast.
4.	I will not reduce the meat-based diet due to its nutritional values for a healthy body.
5.	My religion guides me to eat a sustainable (balanced) diet.
6.	I do not care about the environment when buying meat; I know God will protect the environment. (R)
7.	It is the responsibility of human beings to care for their environment for future generations.
8.	If I knew about the adverse effect of excessive meat consumption, I would reduce meat consumption.
9.	I will reduce meat from my diet.
10.	I would prefer to include vegetables in my diet since health is important to me.

11.	I know the importance of meat substitutes for good health
12.	In my society, if a religious leader preaches, people will alter their meat consumption habits.
13.	I am conscious of my fitness, so I intend to reduce meat from my diet
14.	If my gym instructor or doctor told me to reduce meat from my diet, I would do so.
15.	Before purchasing meat, I read the nutritional chart on the package.
16.	I prefer (trust) to buy meat from a branded company
17.	I consider Halal certification on meat to be a confirmation of quality meat.
18.	I consider that it is ethical to slaughter animals just for the pleasure of eating.
19.	I have choices to buy organic or inorganic meat.
20.	In my country, organic meat is readily available.
21.	I do not trust the organic label; maybe it is only a label on the package to increase sales.
22.	I know organic meat consumption will keep me healthy and physically fit.
23.	The custom to serve traditional meat dishes like tikka, sajji, roast, steak etc., for guests would stop me to reduce meat consumption.
24.	If I intend to reduce meat consumption, people will consider me inferior.
25.	I think a festival (celebration) is incomplete without meat dishes
26.	My society will not allow me to reduce meat from the diet.
27.	Organic meat consumption will protect the environment for future generations.
28.	By adding vegetables and pulses in classic meat dishes like Haleem, potatoes, sustainable meat consumption can be achieved.
29.	If I reduce meat consumption, the livestock industry will collapse.
30.	I will not prefer to reduce meat from the diet due to environmental reasons. (R)
31.	My parents force me to eat meat, to show their love and affection
32.	It is the waste material from the livestock industry that pollutes the environment easily
33.	Sustainable meat consumption would help to control poverty

34.	I think organic meat is expensive and I do not have enough resources to buy it.
35.	My meal is complete without meat.
36.	For the economic growth of my country, the industrial production of livestock is necessary.
37.	I am not attracted to meat dishes.
38.	I am price conscious and hardly see the informational labels on meat packaging.
39.	There is a divine power that will care about the environment.
40.	Food choice is a complex process.
41.	I am conscious of my food choices. Therefore, I buy vegetables, pulses and nuts along with meat.
42.	I will reduce meat-based diet by adding meat substitutes to my diet
43.	My faith also guides me to eat a sustainable (balanced) diet.
44.	I will reduce meat consumption if other people also do so.
45.	If I have a choice, I will buy organic meat
46.	I will reduce meat consumption to protect the environment
47.	To avoid health problems (i.e. high blood pressure, heart disease, cancer, uric acid etc.), I will reduce meat from my diet
48.	I will buy organic meat due to health concerns
49.	I intend to buy organic meat, moving towards sustainability.
50.	Laws that ban selling meat three days a week will limit my choices and personal freedom
51.	Reduction of industrial meat production will threaten jobs for people like me.
52.	Sustainable meat consumption will provide a better place for my children and me.
53.	I believe in a divine power, who will manage everything, so there is no need to reduce meat from the diet.
54.	If meat substitutes were available at lower prices, I would prefer to buy those products instead of meat.
55.	I intend to eat such meat that comes from those animals who less pollute the environment.
56.	I intend to change my diet patterns, but society will not accept me.
57.	To meet sustainable consumption, I prefer to add vegetables or pulses in meat dishes.

58.	By eating meat, I will engage with the industry responsible for significant environmental damage.
59.	I intend to meat curtailment from diet if other people are practising the same.
60.	Eating meat is a natural and undisputable practice.
61.	I am willing to pay more for organic meat for a quality life.
62.	If I had to kill animals, or even see animals' blood or the killing process, then I will probably stop eating meat
63.	I intend to buy organic meat as a responsible consumer.
64.	I intend to reduce the quantity of meat from my plate to protect the environment for future generations.
65.	I intend to buy meat with sustainability labels
66.	By changing my food consumption habits, I will contribute to environmental solutions.
67.	Animals are not ours to eat, kill or abuse in any way.
68.	Organic meat is safe.
69.	Organic meat is produced, packaged and transported in an environmentally friendly way.
70.	I often talk about my food choices with my friends.

Appendix 2 Survey (Round 2) –Study 1

Section 1: Background Information

1. **What is your age group?**

   ☐ 18-27　☐ 28-37　☐ 38-47　☐ 48-57　☐ 58 and above ☐ Prefer not to say

2. **What is your Gender?**

   ☐ Male　　　　☐ Female　　　　☐ Other

3. **What is your total household income per month (PKR)?**

   ☐ Less than 25000 ☐ 25,000-49,999　☐ 50,000-74,999 ☐ 75,000-99,999

   ☐ 100,000-124,999 ☐ 125,000-149,999　☐ 150,000-174,999

   ☐ 175,000 and more ☐ Prefer not to say

4. **Please indicate from which province you belong:**

   ☐ Punjab　☐　Sindh ☐ Baluchistan　☐ Khyber Pakhtunkhwa
   ☐ Other

5. **Please indicate from which city you live:**

   ☐ Kharchi ☐ Hyderabad ☐ Sukhar ☐ Lahore ☐ Multan

   ☐ Faisalabad ☐ Rawalpindi ☐ Bahawalpur ☐ Peshawar

   ☐　Quetta　☐ Islamabad

6. **Are you responsible for grocery shopping for your family?**

   ☐　Sole responsibility ☐ Joint responsibility　☐ No-responsibility

7. **What is your marital status?**

   ☐　Married　　☐ Widowed　☐ Divorced　☐ Single

8. **How would you describe your household?**

   ☐ Adult household (Living alone)

   ☐ Adult Household (Living with partner/spouse-No kids)

   ☐ Adult household (Kids have left home)

   ☐ Young families (youngest child at home between the age of 0-5 years)

   ☐ Middle families (youngest child at home between the age of 6-12 years)

   ☐ Older families (youngest child at home between the age of 13-18 years)

   ☐　Mature Families (youngest child at home between aged over 18 years)

   ☐ Joint Family system

   ☐ Another Classification applies

9. **What is your highest level of education?**

☐ Primary (year 5) ☐ Middle-Matric (year 10) ☐ Inter-Bachelors

☐ Master-MPhil ☐ Professional education

10. **What is your employment status?**

☐ Landlord ☐ Own Business ☐ Unemployed ☐ Employed, Part-time

☐ Employed, Full-time ☐ Student

11. **How many times do you purchase organic meat?**

☐ 2-3 times per week ☐ Once per week ☐ 2-3 times per month

☐ Once per month ☐ Never

Section 2: Theoretical Constructs

Response Scale:

1	2	3	4	5	6	7
Strongly Agree	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree	Strongly Disagree

Environmental concern	
EV1	The balance of nature is very delicate and can be easily upset.
EV2	When humans interfere with nature, it often produces disastrous consequences.
EV3	Humans must live in harmony with nature in order to survive.
EV4	Mankind is severely abusing the environment.
EV5	Mankind was created to rule over the rest of nature (R).
Environmental Knowledge	
EK1	I know that I buy products and packages that are environmentally safe
EK2	I know more about recycling than the average person.
EK3	I am very knowledgeable about environmental issues.
EK4	I understand the various phrases and symbols related to the environment on the product package.

EK5	I know how to select products and packages that reduce the amount of waste dumping.

Sustainable meat consumption Intentions

SMCI 5	My religion guides me to eat a sustainable (balanced) diet.
SMCI 6	I do not care about the environment when buying meat; I know God will protect the environment. (R)
SMCI 8	If I know about the adverse effect of excessive meat consumption, I will reduce meat consumption.
SMCI 9	I will reduce meat from my diet.
SMCI 10	I would prefer to include vegetables in my diet since health is important to me.
SMCI 11	I know the importance of meat substitutes for good health
SMCI 13	I am conscious of my fitness, so I intend to reduce meat from my diet
SMCI 15	Before purchasing meat, I will read the nutritional chart on the package.
SMCI 23	The custom to serve traditional meat dishes like tikka, sajji, roast, steak etc., for guests would stop me to reduce meat consumption.
SMCI 24	If I intend to reduce meat consumption, people will consider me inferior.
SMCI 26	My society will not allow me to reduce meat from the diet.
SMCI 27	Organic meat consumption will protect the environment for future generations.
SMCI 31	My parents force me to eat meat, to show their love and affection
SMCI 33	Sustainable meat consumption would help to control poverty
SMCI 35	My meal is complete without meat
SMCI 37	I am not attracted to meat dishes.
SMCI 39	There is a divine power that will care about the environment.
SMCI 42	I will reduce meat-based diet by adding meat substitutes to my diet
SMCI 44	I will reduce meat consumption if other people also do so.
SMCI 45	If I have a choice, I will buy organic meat
SMCI 46	I will reduce meat consumption to protect the environment
SMCI 47	To avoid health problems (i.e. high blood pressure, heart disease, cancer, uric acid etc.), I will reduce meat from my diet
SMCI 48	I will buy organic meat due to health concerns
SMCI 49	I intend to buy organic meat, moving towards sustainability.
SMCI 50	Laws that ban selling meat three days a week will limit my choices and personal freedom
SMCI 51	Reduction of industrial meat production will threaten jobs for people like me.

SMCI 52	Sustainable meat consumption will provide a better place for my children and me.
SMCI 53	I believe in a divine power, who will manage everything, so there is no need to reduce meat from the diet.
SMCI 55	I intend to eat such meat that comes from those animals who less pollute the environment.
SMCI 56	I intend to change my diet patterns, but society will not accept me.
SMCI 58	By eating meat, I will engage with the industry responsible for significant environmental damage.
SMCI 59	I intend to meat curtailment from diet if other people are practising the same.
SMCI 61	I am willing to pay more for organic meat for a quality life.
SMCI 62	If I had to kill animals, or even see animals' blood or the killing process, then I will probably stop eating meat
SMCI 63	I intend to buy organic meat as a responsible consumer.
SMCI 64	I intend to reduce the quantity of meat from my plate to protect the environment for future generations.
SMCI 65	I intend to buy meat with sustainability labels
SMCI 66	By changing my food consumption habits, I will contribute to environmental solutions.

Intrinsic religiosity

IntRel1	My religious faith is extremely important to me.
IntRel2	I took my faith as providing purpose in my life.
IntRel3	My relationship with God is extremely important to me.
IntRel4	My faith impacts many of my decisions.
IntRel5	Religion is especially important to me because it answers many questions about the meaning of life.
IntRel6	I offer prayer five times a day with pleasure.
IntRel7	I make financial contributions to my religious organisation (e.g., zakat).
IntRel8	I always try to carry my religion over into all my other dealings in life.
IntRel9	My religious beliefs are what lie behind my whole approach to life.
IntRel10	It is important for me to spend time to remember God.
IntRel11	I read literature about my faith

Extrinsic religiosity

ExtRel1	I go to religious activities because it helps me to make friends.
ExtRel2	I go to religious activities because I enjoy seeing people I know there.

ExtRel3	I pray because I have been taught to pray.
ExtRel4	What religion offers me most is comfort when sorrows arise.
ExtRel5	The primary purpose of prayer is to gain relief and protection.
ExtRel6	The purpose of prayer is to secure a peaceful life
Perceived consumer effectiveness	
PCE1	Through my personal choices, I can contribute to the solution of environmental issues.
PCE2	My actions are too insignificant to affect environmental problems (R)
PCE3	Environmental issues are affected by my individual choices
PCE4	Ecological degradation is partly a consequence of my own consumption choices.
PCE5	My individual consumption choices can contribute to the promotion of fairer working conditions
PCE6	My actions can influence companies' decision to pay all their employees a fair wage
PCE7	The unfair industrial growth of the livestock industry is partly a consequence of my own consumption choices

Appendix 3 Final Survey –Study 2 (Based on Advanced TPB Model)

Section 1: Background Information

1. **What is your age group?**

   ☐ 18-27   ☐ 28-37   ☐ 38-47 ☐ 48-57 ☐ 58 and above ☐ Prefer not to say

2. **What is your Gender?**

   ☐ Male   ☐ Female   ☐ Other

3. **What is your total household income per month (PKR)?**

   ☐ Less than 25000 ☐ 25,000-49,999   ☐ 50,000-74,999 ☐ 75,000-99,999

   ☐ 100,000-124,999 ☐ 125,000-149,999   ☐ 150,000-174,999

   ☐ 175,000 and more ☐ Prefer not to say

4. **Please indicate from which province you belong:**

   ☐ Punjab   ☐   Sindh ☐ Baluchistan   ☐ Khyber Pakhtunkhwa
   ☐ Other

5. **Place of leaving:**

   ☐   City   ☐   Suburbs   ☐ Countryside

6. **Are you responsible for grocery shopping for your family?**

   ☐ Sole responsibility ☐ Joint responsibility   ☐ No-responsibility

7. **What is your marital status?**

   ☐ Married   ☐ Widowed   ☐ Divorced   ☐ Single

8. **How would you describe your household?**

   ☐ Adult household (Living alone)

   ☐ Adult Household (Living with partner/spouse-No kids)

   ☐ Adult household (Kids have left home)

   ☐ Young families (youngest child at home between the age of 0-5 years)

   ☐ Middle families (youngest child at home between the age of 6-12 years)

   ☐ Older families (youngest child at home between the age of 13-18 years)

   ☐ Mature Families (youngest child at home between aged over 18 years)

   ☐ Joint Family system

   ☐ Another Classification applies

9. **What is your highest level of education?**

☐ Primary (year 5)   ☐ Middle-Matric (year 10)   ☐ Inter-Bachelors

☐ Master-MPhil   ☐ Professional education

10. **What is your employment status?**

☐ Landlord   ☐ Own Business   ☐ Unemployed   ☐ Employed, Part-time

☐ Employed, Full-time   ☐ Student

11. **How many times do you purchase organic meat?**

☐ 2-3 times per week   ☐ Once per week   ☐ 2-3 times per month

☐ Once per month   ☐ Never

Section 2: Theoretical Constructs

Response Scale:

1	2	3	4	5	6	7
Strongly Agree	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree	Strongly Disagree

Environmental Concern	
EC1	The balance of nature is very delicate and can be easily upset
EC 2	humans interfere with nature, it often produces disastrous consequences
EC 3	Human must live in harmony with nature to survive
EC 4	Mankind is severely abusing the environment
EC 5	Mankind was created to rule over the rest of nature(R)
Environmental Knowledge	
EK1	I know that I buy organic food and packages that are environmentally safe.
EK 2	I know more about recycling than the average person
EK 3	I am very knowledgeable about environmental issues.
EK 4	I understand the various phrases and symbols related to the environment on the product package

EK 5	I know how to select products and packages that reduce the amount of waste dumping
Availability of organic meat	
AOM1	I do not know where organic/free-range meat is sold
AOM2	Organic/free-range meat is not sold at stores close to where I live
AOM3	I cannot easily find Organic/free-range meat unless I look for them carefully
Uniqueness seeking lifestyle	
USL1	Buying organic food enables me to be different and to emphasise my different lifestyle
USL2	Buying organic food is an important part of my personality
Control Belief	
CtrlB1	I believe I have enough options to select from in protein choices (meat and pulses) while I choose to buy one
CtrlB2	I believe I have organic meat options available if I consider buying
CtrlB3	I believe I have enough information about sustainable meat consumption
CtrlB4	I believe I have ways to reduce meat consumption for environmental reasons
CtrlB5	Buying organic meat is expensive
Normative Belief	
NB1	My family (or relatives) thinks I should buy organic meat when purchasing.
NB2	My friends think I should reduce the quantity of meat when eating.
NB3	My colleagues (or co-workers) think I should buy organic meat when purchasing.
Behavioural Beliefs	
Sustainable meat consumption would enable me to	
BB1	protect our environment
BB2	Be more socially responsible.
BB3	Experience a healthy environmental friendly life.
BB4	Perform environmental friendly practices
BB5	Enjoy organic meat and a plant-based diet.
BB6	Eat fresh and healthy foods.

Perceived behaviour control	
PBC1	I am confident that if I want, I can buy organic meat.
PBC2	To buy or not to buy organic meat is entirely up to me.
PBC3	It's inconvenient to purchase organic meat, although I have the purchase intention
PBC4	I understand the environmental phrases and symbols on the product package.
PBC5	I am very knowledgeable about environmental and social issues.
PBC6	I know how to select products and packages that reduce the amount of waste ending up in landfills
Subjective norms	
SN1	Most of my friends think I should reduce meat consumption
SN2	Most of my neighbours think I should eat organic meat
SN3	Most of my neighbours think I should reduce meat consumption
SN4	Most of my co-workers think I should eat organic meat
SN5	Most of my co-workers think I should reduce meat consumption
SN6	Most of my family members think I should eat organic meat
SN7	Most of my family members think I should reduce meat consumption
Attitude	
ATT1	Buying organic meat is a good idea.
ATT2	Buying organic meat is a wise choice.
ATT3	I like the idea of buying organic meat.
ATT4	Buying organic meat would be pleasant.
Intrinsic religiosity	
IntRel1	My religious faith is extremely important to me.
IntRel2	I took my faith as providing purpose in my life.
IntRel3	My relationship with God is extremely important to me.
IntRel4	My faith impacts many of my decisions.
IntRel5	Religion is especially important to me because it answers many questions about the meaning of life.
IntRel6	I offer prayer five times a day with pleasure.
IntRel7	I make financial contributions to my religious organisation (e.g., zakat).
IntRel8	I always try to carry my religion over into all my other dealings in life.

IntRel9	My religious beliefs are what lie behind my whole approach to life.
IntRel10	It is important for me to spend time to remember God.
IntRel11	I read literature about my faith
Extrinsic religiosity	
ExtRel1	I go to religious activities because it helps me to make friends.
ExtRel2	I go to religious activities because I enjoy seeing people I know there.
ExtRel3	I pray because I have been taught to pray.
ExtRel4	What religion offers me most is comfort when sorrows arise.
ExtRel5	The primary purpose of prayer is to gain relief and protection.
ExtRel6	The purpose of prayer is to secure a peaceful life
Biosphere values	
BioVal1	I believe it is important to harmonise with other species and nature.
BioVal2	I prefer to fit into nature rather than control nature.
BioVal3	I like to protect the environment.
BioVal4	I anticipate preserving nature.
BioVal5	I believe in protecting natural resources.
BioVal6	I consider the balance of nature is delicate and easily upset.
Egoistic values	
EgoVal1	I chose food carefully to ensure good health.
EgoVal2	I consider myself a health-conscious consumer
EgoVal3	I often think about health-related issues
EgoVal4	A clean environment provides me with better opportunities for recreation
EgoVal5	Protecting the environment will threaten jobs for people like me (R)
EgoVal6	Laws to protect the environment limit my choices and personal freedom (R)
EgoVal7	Environmental protection is beneficial to my health
EgoVal8	Environmental protection will provide a better world for my children and me
Altruistic values	
AltVal1	The balance of nature is very delicate and can be easily upset.
AltVal2	Human beings are severely abusing the environment.
AltVal3	Humans must maintain the natural balance to survive
AltVal4	Pollution generated here harms people all over the earth

AltVal5	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)
AltVal6	The effects of pollution on public health are worse than we realise
AltVal7	Environmental protection will help people have a better quality of life
AltVal8	Environmental protection benefits everyone

	Personal Norms
PN1	People like me should do everything they can to increase the welfare of animals' production.
PN2	I feel morally obliged to buy organic meat, regardless of what others do.
PN3	If organic meat is available on the market, then I would feel morally obliged to buy organic meat today.
PN4	I feel guilty when I buy meat from animals which perceived a high-stress level before the animals are slaughtered.
PN5	I feel obliged to bear animal welfare in mind in my daily behaviour.
PN6	I would be a better person if I actively take into account the welfare

	Perceived consumer effectiveness
PCE1	Through my personal choices, I can contribute to the solution of environmental issues.
PCE2	My actions are too insignificant to affect environmental problems(R)
PCE3	Environmental issues are affected by my individual choices
PCE4	Ecological degradation is partly a consequence of my own consumption choices.
PCE5	My individual consumption choices can contribute to the promotion of fairer working conditions
PCE6	My actions can influence companies' decision to pay all their employees a fair wage
PCE7	The unfair industrial growth of the livestock industry is partly a consequence of my own consumption choices

Sustainable meat consumption intentions

Meat detachment intention

MDI1	My meal is complete without meat
MDI2	I am not attracted to meat dishes.
MDI3	I will reduce meat from my diet.

	Meat curtailment intentions
MCurlI1	By eating meat, I will engage with the industry responsible for significant environmental damage.
MCurlI2	I will reduce meat consumption to protect the environment
MCurlI3	I will consider reducing the meat-based diet if other people also do.
	Organic meat purchase intentions
OMPI1	I will buy organic meat due to health concerns
OMPI2	I intend to buy organic meat, moving towards sustainability.
OMPI3	I am willing to pay more for organic meat for a quality life.
OMPI4	If I have a choice, I will buy organic meat

Appendix 4 Test of Non-Response Bias Study 2

		Levene Statistic	df1	df2	Sig.
SN5	Based on Mean	2.639	1	535	0.105
	Based on Median	1.411	1	535	0.235
	Based on Median and with adjusted df	1.411	1	530.594	0.235
	Based on trimmed mean	2.387	1	535	0.123
SN6	Based on Mean	0.022	1	535	0.882
	Based on Median	0.312	1	535	0.577
	Based on Median and with adjusted df	0.312	1	529.563	0.577
	Based on trimmed mean	0.135	1	535	0.713
SN7	Based on Mean	0.192	1	535	0.662
	Based on Median	0.358	1	535	0.550
	Based on Median and with adjusted df	0.358	1	529.244	0.550
	Based on trimmed mean	0.273	1	535	0.601
ATT1	Based on Mean	4.515	1	535	0.034
	Based on Median	4.830	1	535	0.028
	Based on Median and with adjusted df	4.830	1	502.191	0.028
	Based on trimmed mean	4.128	1	535	0.043
ATT2	Based on Mean	2.151	1	535	0.143
	Based on Median	1.472	1	535	0.226
	Based on Median and with adjusted df	1.472	1	494.455	0.226
	Based on trimmed mean	1.893	1	535	0.169
PCE5	Based on Mean	0.709	1	535	0.400
	Based on Median	0.076	1	535	0.783
	Based on Median and with adjusted df	0.076	1	534.283	0.783

	Based on trimmed mean	0.352	1	535	0.554
PCE6	Based on Mean	0.192	1	535	0.661
	Based on Median	0.029	1	535	0.864
	Based on Median and with adjusted df	0.029	1	534.616	0.864
	Based on trimmed mean	0.103	1	535	0.749
PCE7	Based on Mean	0.085	1	535	0.771
	Based on Median	0.001	1	535	0.972
	Based on Median and with adjusted df	0.001	1	534.912	0.972
	Based on trimmed mean	0.006	1	535	0.939
MCI1	Based on Mean	0.134	1	535	0.715
	Based on Median	0.095	1	535	0.758
	Based on Median and with adjusted df	0.095	1	532.241	0.758
	Based on trimmed mean	0.157	1	535	0.692
MCI2	Based on Mean	0.033	1	535	0.857
	Based on Median	0.016	1	535	0.901
	Based on Median and with adjusted df	0.016	1	533.652	0.901
	Based on trimmed mean	0.014	1	535	0.906
MCI3	Based on Mean	0.989	1	535	0.320
	Based on Median	0.389	1	535	0.533
	Based on Median and with adjusted df	0.389	1	529.268	0.533
	Based on trimmed mean	1.122	1	535	0.290
MCurI4	Based on Mean	0.001	1	535	0.977
	Based on Median	0.103	1	535	0.749
	Based on Median and with adjusted df	0.103	1	534.992	0.749
	Based on trimmed mean	0.017	1	535	0.895
MCurI5	Based on Mean	0.311	1	535	0.577

	Based on Median	1.045	1	535	0.307
	Based on Median and with adjusted df	1.045	1	530.814	0.307
	Based on trimmed mean	0.449	1	535	0.503
MCurI6	Based on Mean	0.894	1	535	0.345
	Based on Median	1.906	1	535	0.168
	Based on Median and with adjusted df	1.906	1	531.529	0.168
	Based on trimmed mean	1.116	1	535	0.291
OMPI1	Based on Mean	2.939	1	535	0.087
	Based on Median	2.015	1	535	0.156
	Based on Median and with adjusted df	2.015	1	530.619	0.156
	Based on trimmed mean	3.569	1	535	0.059
OMPI2	Based on Mean	1.053	1	535	0.305
	Based on Median	0.739	1	535	0.391
	Based on Median and with adjusted df	0.739	1	532.146	0.391
	Based on trimmed mean	1.486	1	535	0.223
OMPI3	Based on Mean	0.270	1	535	0.604
	Based on Median	0.532	1	535	0.466
	Based on Median and with adjusted df	0.532	1	533.812	0.466
	Based on trimmed mean	0.521	1	535	0.471
OMPI4	Based on Mean	0.001	1	535	0.976
	Based on Median	0.061	1	535	0.805
	Based on Median and with adjusted df	0.061	1	534.553	0.805
	Based on trimmed mean	0.017	1	535	0.896

Appendix 5 Cross Loading

	AV	Att. to_ Beh.	BB	BV	CB	EV	EC	EK	Ext- Rel	Int- Rel	MAI	MCI	NB	OMPI	PBC	PN	Rel	SMCI	SN
ATT1	0.51	0.888	0.645	0.592	0.538	0.570	0.515	0.133	0.533	0.683	0.257	0.275	0.376	0.472	0.595	0.465	0.659	0.427	0.309
ATT2	0.53	0.927	0.625	0.621	0.506	0.60	0.517	0.090	0.546	0.696	0.270	0.284	0.320	0.502	0.584	0.496	0.673	0.450	0.278
ATT3	0.559	0.929	0.659	0.636	0.562	0.633	0.560	0.103	0.555	0.722	0.311	0.306	0.362	0.528	0.596	0.527	0.693	0.485	0.311
ATT4	0.531	0.902	0.65	0.601	0.568	0.588	0.543	0.085	0.522	0.663	0.278	0.268	0.38	0.496	0.599	0.506	0.641	0.445	0.334
AV1	0.811	0.463	0.46	0.652	0.387	0.685	0.439	0.163	0.542	0.543	0.415	0.428	0.224	0.610	0.458	0.661	0.569	0.601	0.190
AV2	0.843	0.453	0.508	0.632	0.392	0.689	0.477	0.150	0.534	0.553	0.338	0.351	0.193	0.600	0.441	0.627	0.573	0.546	0.185
AV3	0.894	0.534	0.557	0.711	0.456	0.776	0.533	0.149	0.638	0.668	0.376	0.369	0.213	0.666	0.526	0.674	0.689	0.601	0.180
AV4	0.86	0.505	0.528	0.669	0.445	0.728	0.511	0.136	0.561	0.615	0.331	0.350	0.168	0.597	0.497	0.642	0.624	0.543	0.148
AV6	0.86	0.496	0.492	0.648	0.443	0.698	0.442	0.121	0.557	0.578	0.326	0.322	0.253	0.611	0.471	0.671	0.598	0.540	0.166
AV7	0.893	0.526	0.533	0.674	0.477	0.738	0.507	0.121	0.589	0.626	0.353	0.358	0.224	0.641	0.503	0.701	0.642	0.576	0.169
AV8	0.881	0.549	0.572	0.723	0.485	0.782	0.532	0.137	0.601	0.657	0.320	0.355	0.242	0.656	0.529	0.722	0.667	0.573	0.208
BB1	0.509	0.610	0.84	0.543	0.567	0.544	0.559	0.151	0.505	0.574	0.290	0.285	0.419	0.413	0.634	0.472	0.576	0.409	0.367
BB2	0.534	0.605	0.896	0.575	0.606	0.571	0.605	0.130	0.532	0.613	0.277	0.262	0.396	0.442	0.681	0.49	0.611	0.413	0.359
BB3	0.532	0.622	0.898	0.583	0.604	0.573	0.603	0.137	0.512	0.627	0.265	0.269	0.388	0.434	0.666	0.492	0.614	0.407	0.331
BB4	0.536	0.625	0.903	0.607	0.606	0.585	0.606	0.121	0.540	0.642	0.277	0.289	0.384	0.431	0.677	0.495	0.634	0.415	0.376
BB5	0.537	0.636	0.881	0.602	0.597	0.587	0.609	0.135	0.526	0.618	0.253	0.260	0.383	0.440	0.683	0.506	0.613	0.404	0.368
BB6	0.553	0.647	0.877	0.616	0.610	0.601	0.637	0.118	0.558	0.682	0.227	0.236	0.334	0.410	0.701	0.47	0.668	0.371	0.298
Bio_Val_1	0.636	0.579	0.568	0.846	0.497	0.723	0.519	0.178	0.68	0.698	0.312	0.368	0.255	0.545	0.555	0.617	0.725	0.513	0.230
Bio_Val_2	0.698	0.610	0.605	0.915	0.503	0.78	0.541	0.149	0.719	0.760	0.337	0.387	0.235	0.579	0.587	0.631	0.781	0.547	0.243
Bio_Val_3	0.735	0.616	0.616	0.915	0.503	0.805	0.553	0.122	0.726	0.776	0.331	0.364	0.229	0.588	0.585	0.646	0.795	0.542	0.205
Bio_Val_4	0.674	0.596	0.586	0.903	0.493	0.767	0.528	0.122	0.708	0.723	0.312	0.364	0.245	0.549	0.566	0.640	0.753	0.515	0.210
Bio_Val_5	0.744	0.629	0.630	0.908	0.516	0.833	0.568	0.099	0.712	0.767	0.328	0.359	0.257	0.588	0.577	0.640	0.783	0.540	0.219
Bio_Val_6	0.680	0.559	0.554	0.855	0.462	0.763	0.513	0.128	0.662	0.676	0.304	0.362	0.200	0.510	0.497	0.571	0.703	0.491	0.195
Ctrl_belief_1	0.434	0.527	0.571	0.482	0.853	0.488	0.679	0.149	0.46	0.518	0.245	0.238	0.374	0.401	0.553	0.418	0.521	0.373	0.284
Ctrl_belief_2	0.38	0.448	0.523	0.383	0.808	0.422	0.548	0.062	0.363	0.435	0.223	0.203	0.364	0.363	0.475	0.357	0.429	0.335	0.283

Ctrl_belief_3	0.327	0.400	0.460	0.397	0.758	0.372	0.443	0.144	0.372	0.409	0.230	0.205	0.361	0.306	0.466	0.356	0.415	0.306	0.293
Ctrl_belief_5	0.458	0.491	0.574	0.483	0.732	0.465	0.586	0.067	0.398	0.506	0.242	0.273	0.333	0.381	0.510	0.406	0.49	0.372	0.263
EC1	0.441	0.457	0.540	0.488	0.578	0.458	0.841	0.173	0.408	0.476	0.198	0.231	0.255	0.352	0.490	0.384	0.473	0.329	0.192
EC2	0.509	0.523	0.599	0.530	0.642	0.524	0.895	0.114	0.453	0.552	0.219	0.216	0.238	0.372	0.540	0.432	0.541	0.342	0.172
EC3	0.526	0.564	0.673	0.567	0.685	0.547	0.905	0.136	0.503	0.597	0.212	0.227	0.259	0.416	0.581	0.425	0.59	0.367	0.219
EC4	0.530	0.516	0.591	0.540	0.645	0.525	0.886	0.124	0.460	0.536	0.191	0.236	0.234	0.411	0.537	0.423	0.533	0.360	0.195
EK_1	0.130	0.095	0.109	0.110	0.107	0.126	0.104	0.892	0.100	0.069	0.079	0.121	0.158	0.129	0.148	0.144	0.084	0.133	0.098
EK_2	0.138	0.092	0.104	0.118	0.109	0.115	0.116	0.907	0.084	0.078	0.089	0.145	0.149	0.103	0.143	0.137	0.084	0.130	0.104
EK_3	0.177	0.122	0.155	0.187	0.147	0.169	0.192	0.907	0.154	0.129	0.126	0.159	0.149	0.139	0.172	0.155	0.144	0.166	0.124
EK_4	0.153	0.113	0.157	0.143	0.14	0.137	0.130	0.897	0.114	0.110	0.10	0.157	0.185	0.137	0.181	0.161	0.117	0.156	0.142
EK_5	0.118	0.078	0.136	0.100	0.091	0.102	0.142	0.896	0.089	0.078	0.090	0.108	0.149	0.104	0.137	0.111	0.086	0.120	0.100
EV1	0.654	0.568	0.545	0.758	0.467	0.849	0.503	0.145	0.660	0.646	0.323	0.376	0.293	0.531	0.554	0.591	0.683	0.512	0.263
EV2	0.625	0.533	0.533	0.737	0.478	0.852	0.460	0.122	0.660	0.633	0.329	0.392	0.278	0.532	0.509	0.592	0.674	0.519	0.247
EV3	0.666	0.538	0.560	0.75	0.462	0.858	0.495	0.111	0.655	0.649	0.303	0.371	0.242	0.529	0.531	0.594	0.683	0.503	0.217
EV4	0.705	0.614	0.611	0.811	0.498	0.878	0.524	0.097	0.697	0.723	0.303	0.370	0.253	0.578	0.550	0.630	0.748	0.529	0.207
EV7	0.822	0.566	0.551	0.722	0.478	0.858	0.503	0.148	0.640	0.675	0.377	0.385	0.226	0.676	0.534	0.726	0.694	0.612	0.232
EV8	0.815	0.540	0.550	0.706	0.473	0.827	0.500	0.122	0.610	0.670	0.378	0.380	0.224	0.646	0.525	0.678	0.68	0.595	0.216
Ext._Rel_1	0.403	0.368	0.395	0.520	0.345	0.513	0.317	0.104	0.775	0.548	0.362	0.382	0.266	0.384	0.411	0.442	0.661	0.446	0.283
Ext._Rel_1	0.403	0.368	0.395	0.520	0.345	0.513	0.317	0.104	0.775	0.548	0.362	0.382	0.266	0.384	0.411	0.442	0.661	0.446	0.283
Ext._Rel_2	0.365	0.356	0.361	0.472	0.330	0.469	0.269	0.122	0.759	0.491	0.342	0.379	0.264	0.356	0.383	0.397	0.616	0.424	0.289
Ext._Rel_2	0.365	0.356	0.361	0.472	0.330	0.469	0.269	0.122	0.759	0.491	0.342	0.379	0.264	0.356	0.383	0.397	0.616	0.424	0.289
Ext._Rel_3	0.532	0.474	0.498	0.631	0.438	0.629	0.431	0.069	0.870	0.647	0.294	0.326	0.249	0.451	0.487	0.492	0.762	0.443	0.233
Ext._Rel_3	0.532	0.474	0.498	0.631	0.438	0.629	0.431	0.069	0.870	0.647	0.294	0.326	0.249	0.451	0.487	0.492	0.762	0.443	0.233
Ext._Rel_4	0.673	0.611	0.591	0.758	0.504	0.744	0.546	0.090	0.871	0.788	0.310	0.327	0.22	0.534	0.567	0.581	0.857	0.495	0.199
Ext._Rel_4	0.673	0.611	0.591	0.758	0.504	0.744	0.546	0.090	0.871	0.788	0.310	0.327	0.22	0.534	0.567	0.581	0.857	0.495	0.199
Ext._Rel_5	0.654	0.565	0.570	0.745	0.464	0.712	0.490	0.134	0.873	0.740	0.300	0.310	0.225	0.524	0.537	0.560	0.825	0.480	0.184
Ext._Rel_5	0.654	0.565	0.570	0.745	0.464	0.712	0.490	0.134	0.873	0.740	0.300	0.310	0.225	0.524	0.537	0.560	0.825	0.480	0.184
Ext._Rel_6	0.652	0.547	0.552	0.773	0.447	0.723	0.497	0.103	0.877	0.771	0.309	0.320	0.175	0.538	0.526	0.554	0.848	0.494	0.172
Ext._Rel_6	0.652	0.547	0.552	0.773	0.447	0.723	0.497	0.103	0.877	0.771	0.309	0.320	0.175	0.538	0.526	0.554	0.848	0.494	0.172

Int_rel._10	0.652	0.627	0.591	0.786	0.490	0.734	0.530	0.095	0.791	0.869	0.278	0.327	0.206	0.525	0.55	0.561	0.882	0.479	0.170
Int_rel._10	0.652	0.627	0.591	0.786	0.490	0.734	0.530	0.095	0.791	0.869	0.278	0.327	0.206	0.525	0.55	0.561	0.882	0.479	0.170
Int_rel._11	0.567	0.515	0.49	0.689	0.441	0.642	0.411	0.086	0.739	0.771	0.324	0.356	0.216	0.509	0.482	0.510	0.797	0.494	0.218
Int_rel._11	0.567	0.515	0.49	0.689	0.441	0.642	0.411	0.086	0.739	0.771	0.324	0.356	0.216	0.509	0.482	0.510	0.797	0.494	0.218
Int_rel._2	0.625	0.749	0.687	0.704	0.567	0.669	0.595	0.085	0.662	0.878	0.259	0.276	0.272	0.484	0.594	0.520	0.838	0.435	0.190
Int_rel._2	0.625	0.749	0.687	0.704	0.567	0.669	0.595	0.085	0.662	0.878	0.259	0.276	0.272	0.484	0.594	0.520	0.838	0.435	0.190
Int_rel._3	0.624	0.711	0.679	0.724	0.554	0.695	0.597	0.095	0.674	0.891	0.252	0.269	0.221	0.489	0.583	0.520	0.852	0.433	0.161
Int_rel._3	0.624	0.711	0.679	0.724	0.554	0.695	0.597	0.095	0.674	0.891	0.252	0.269	0.221	0.489	0.583	0.520	0.852	0.433	0.161
Int_rel._4	0.597	0.686	0.633	0.691	0.539	0.646	0.551	0.093	0.636	0.871	0.26	0.273	0.222	0.487	0.551	0.488	0.824	0.436	0.166
Int_rel._4	0.597	0.686	0.633	0.691	0.539	0.646	0.551	0.093	0.636	0.871	0.26	0.273	0.222	0.487	0.551	0.488	0.824	0.436	0.166
Int_rel._5	0.627	0.719	0.657	0.708	0.528	0.688	0.586	0.074	0.672	0.906	0.269	0.276	0.214	0.496	0.558	0.525	0.861	0.445	0.147
Int_rel._5	0.627	0.719	0.657	0.708	0.528	0.688	0.586	0.074	0.672	0.906	0.269	0.276	0.214	0.496	0.558	0.525	0.861	0.445	0.147
Int_rel._6	0.511	0.567	0.527	0.599	0.461	0.581	0.422	0.106	0.622	0.792	0.307	0.329	0.268	0.448	0.526	0.479	0.767	0.447	0.230
Int_rel._6	0.511	0.567	0.527	0.599	0.461	0.581	0.422	0.106	0.622	0.792	0.307	0.329	0.268	0.448	0.526	0.479	0.767	0.447	0.230
Int_rel._7	0.590	0.642	0.635	0.685	0.551	0.674	0.572	0.114	0.644	0.814	0.312	0.310	0.297	0.482	0.597	0.547	0.789	0.461	0.266
Int_rel._7	0.590	0.642	0.635	0.685	0.551	0.674	0.572	0.114	0.644	0.814	0.312	0.310	0.297	0.482	0.597	0.547	0.789	0.461	0.266
Int_rel._8	0.587	0.666	0.616	0.707	0.503	0.668	0.493	0.066	0.693	0.887	0.316	0.306	0.28	0.497	0.567	0.523	0.857	0.470	0.235
Int_rel._8	0.587	0.666	0.616	0.707	0.503	0.668	0.493	0.066	0.693	0.887	0.316	0.306	0.28	0.497	0.567	0.523	0.857	0.470	0.235
Int_rel._9	0.618	0.580	0.537	0.746	0.459	0.679	0.477	0.091	0.746	0.859	0.300	0.317	0.185	0.505	0.507	0.521	0.859	0.472	0.151
Int_rel._9	0.618	0.580	0.537	0.746	0.459	0.679	0.477	0.091	0.746	0.859	0.300	0.317	0.185	0.505	0.507	0.521	0.859	0.472	0.151
MCI1	0.361	0.244	0.257	0.316	0.263	0.332	0.188	0.115	0.343	0.277	0.850	0.505	0.238	0.460	0.303	0.421	0.315	0.686	0.285
MCI1	0.361	0.244	0.257	0.316	0.263	0.332	0.188	0.115	0.343	0.277	0.850	0.505	0.238	0.460	0.303	0.421	0.315	0.686	0.285
MCI2	0.402	0.311	0.302	0.372	0.285	0.398	0.236	0.098	0.359	0.348	0.905	0.508	0.253	0.518	0.304	0.468	0.369	0.738	0.262
MCI2	0.402	0.311	0.302	0.372	0.285	0.398	0.236	0.098	0.359	0.348	0.905	0.508	0.253	0.518	0.304	0.468	0.369	0.738	0.262
MCI3	0.292	0.239	0.218	0.244	0.226	0.297	0.178	0.071	0.274	0.243	0.849	0.477	0.245	0.442	0.247	0.391	0.267	0.666	0.257
MCI3	0.292	0.239	0.218	0.244	0.226	0.297	0.178	0.071	0.274	0.243	0.849	0.477	0.245	0.442	0.247	0.391	0.267	0.666	0.257
MCurI4	0.339	0.251	0.227	0.329	0.213	0.343	0.201	0.140	0.316	0.263	0.524	0.828	0.196	0.417	0.249	0.459	0.296	0.654	0.226
MCurI4	0.339	0.251	0.227	0.329	0.213	0.343	0.201	0.140	0.316	0.263	0.524	0.828	0.196	0.417	0.249	0.459	0.296	0.654	0.226
MCurI5	0.225	0.190	0.202	0.261	0.181	0.270	0.150	0.134	0.26	0.229	0.450	0.825	0.207	0.369	0.222	0.395	0.252	0.601	0.285

MCurl5	0.225	0.19	0.202	0.261	0.181	0.27	0.15	0.134	0.26	0.229	0.45	0.825	0.207	0.369	0.222	0.395	0.252	0.601	0.285
MCurl6	0.454	0.319	0.31	0.419	0.321	0.472	0.276	0.113	0.402	0.373	0.445	0.827	0.282	0.584	0.323	0.536	0.402	0.721	0.313
MCurl6	0.454	0.319	0.31	0.419	0.321	0.472	0.276	0.113	0.402	0.373	0.445	0.827	0.282	0.584	0.323	0.536	0.402	0.721	0.313
NB1	0.279	0.354	0.361	0.271	0.442	0.294	0.276	0.226	0.273	0.261	0.241	0.246	0.764	0.325	0.38	0.348	0.278	0.332	0.412
NB2	0.136	0.222	0.304	0.15	0.287	0.18	0.158	0.066	0.178	0.17	0.225	0.212	0.791	0.175	0.292	0.203	0.181	0.235	0.542
NB3	0.197	0.373	0.382	0.224	0.37	0.24	0.242	0.14	0.211	0.241	0.218	0.218	0.855	0.281	0.399	0.27	0.242	0.292	0.542
OMPI1	0.561	0.391	0.353	0.454	0.349	0.52	0.305	0.099	0.42	0.419	0.478	0.51	0.314	0.82	0.373	0.582	0.44	0.758	0.292
OMPI1	0.561	0.391	0.353	0.454	0.349	0.52	0.305	0.099	0.42	0.419	0.478	0.51	0.314	0.82	0.373	0.582	0.44	0.758	0.292
OMPI2	0.649	0.503	0.437	0.55	0.424	0.598	0.408	0.115	0.491	0.516	0.469	0.502	0.278	0.879	0.428	0.668	0.532	0.788	0.232
OMPI2	0.649	0.503	0.437	0.55	0.424	0.598	0.408	0.115	0.491	0.516	0.469	0.502	0.278	0.879	0.428	0.668	0.532	0.788	0.232
OMPI3	0.649	0.49	0.457	0.593	0.435	0.64	0.414	0.146	0.513	0.523	0.478	0.468	0.289	0.889	0.452	0.652	0.544	0.787	0.253
OMPI3	0.649	0.49	0.457	0.593	0.435	0.64	0.414	0.146	0.513	0.523	0.478	0.468	0.289	0.889	0.452	0.652	0.544	0.787	0.253
OMPI4	0.644	0.506	0.426	0.574	0.391	0.613	0.393	0.116	0.513	0.528	0.462	0.455	0.234	0.863	0.451	0.617	0.548	0.764	0.218
OMPI4	0.644	0.506	0.426	0.574	0.391	0.613	0.393	0.116	0.513	0.528	0.462	0.455	0.234	0.863	0.451	0.617	0.548	0.764	0.218
PBC1	0.49	0.601	0.677	0.538	0.576	0.546	0.527	0.159	0.485	0.567	0.276	0.253	0.391	0.457	0.818	0.486	0.563	0.418	0.384
PBC2	0.428	0.487	0.57	0.493	0.488	0.491	0.44	0.139	0.452	0.516	0.3	0.257	0.354	0.408	0.793	0.426	0.516	0.401	0.404
PBC3	0.373	0.403	0.488	0.373	0.409	0.385	0.371	0.097	0.358	0.361	0.272	0.268	0.403	0.318	0.717	0.359	0.377	0.345	0.487
PBC4	0.45	0.496	0.609	0.506	0.5	0.482	0.483	0.166	0.479	0.507	0.248	0.244	0.331	0.399	0.833	0.424	0.521	0.374	0.386
PBC5	0.496	0.616	0.688	0.571	0.584	0.555	0.581	0.159	0.536	0.606	0.255	0.281	0.35	0.396	0.837	0.474	0.609	0.387	0.408
PBC6	0.487	0.506	0.627	0.541	0.499	0.539	0.518	0.118	0.496	0.528	0.238	0.263	0.323	0.39	0.821	0.463	0.541	0.372	0.361
PN1	0.729	0.467	0.487	0.64	0.448	0.693	0.425	0.155	0.562	0.573	0.435	0.433	0.26	0.643	0.484	0.83	0.596	0.627	0.225
PN2	0.629	0.479	0.469	0.581	0.423	0.63	0.396	0.13	0.496	0.509	0.446	0.486	0.309	0.627	0.474	0.826	0.529	0.639	0.276
PN3	0.612	0.447	0.398	0.535	0.35	0.57	0.314	0.137	0.459	0.444	0.383	0.464	0.29	0.591	0.421	0.796	0.471	0.591	0.236
PN4	0.442	0.33	0.326	0.403	0.274	0.436	0.277	0.127	0.354	0.335	0.356	0.483	0.266	0.443	0.318	0.722	0.358	0.507	0.24
PN5	0.589	0.41	0.458	0.567	0.401	0.589	0.397	0.118	0.492	0.472	0.417	0.515	0.275	0.566	0.455	0.831	0.503	0.605	0.277
PN6	0.709	0.486	0.499	0.622	0.435	0.656	0.439	0.102	0.538	0.558	0.342	0.381	0.243	0.625	0.47	0.822	0.577	0.57	0.213
SN1	0.147	0.23	0.295	0.179	0.279	0.194	0.18	0.081	0.2	0.166	0.21	0.248	0.516	0.17	0.376	0.205	0.187	0.238	0.774
SN2	0.209	0.338	0.384	0.243	0.334	0.273	0.204	0.139	0.255	0.233	0.255	0.278	0.555	0.289	0.485	0.305	0.253	0.327	0.845
SN3	0.152	0.173	0.246	0.163	0.225	0.199	0.118	0.068	0.191	0.126	0.26	0.254	0.457	0.221	0.383	0.241	0.157	0.284	0.823

SN4	0.216	0.369	0.407	0.257	0.339	0.267	0.244	0.132	0.261	0.248	0.312	0.317	0.526	0.298	0.463	0.288	0.265	0.362	0.822
SN5	0.104	0.242	0.26	0.135	0.256	0.151	0.139	0.094	0.147	0.125	0.215	0.256	0.477	0.18	0.309	0.177	0.14	0.247	0.819

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