MOTIVATION AND BEHAVIOUR IN GREEN CONSUMERISM: EMPIRICAL EVIDENCE FROM CHINA

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MOTIVATION AND BEHAVIOUR IN GREEN CONSUMERISM: EMPIRICAL EVIDENCE FROM CHINA

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Abstract

In light of an increasing demand for environmentally friendly and safe food products and the growing market for green products, there is a need for research that examines how Chinese consumers view and make decisions about buying green food products. Despite the growth in green consumerism, few studies have explored Chinese consumers' green purchase intentions and real buying behaviour.

The purpose of this study is to develop and test a conceptual model that explains the constructs that influence consumers' real buying behaviour and intention to purchase green products. The data for this study was gathered via a self-completed questionnaire that sought to capture the perception of 720 Chinese consumers located in Beijing and Xi'an. Confirmatory factor analysis and structural equation modelling have been used to analyse this primary data.

The findings reveal that consumers' attitudes towards green purchases, subjective norms, moral obligation, and ecological affects have significant positive influence on their purchase intention for green foods, while only purchase intention and consumers' subjective knowledge have significant positive impact on their actual purchase behaviour for green food.

This study fills in knowledge gaps to focus on Chinese green consumption through applying goal-framing theory to examine consumer behaviour towards green foods. This research's findings emphasize consumers' subjective knowledge about green consumption which extends goal-framing theory and theory of planned behaviour applying to green food consumerism in the context of China. Meanwhile, this study examined the goal-framing theory's external validity and testing this theory's assumptions. This study also provided justification for using the TPB model in explaining the green food buying behaviour. So, the empirical results and findings from this study will be helpful in making a contribution to further expand research in consumers' behaviour in relation to food consumption. Through better understanding consumer purchase intention and actual buying behaviour toward green food products, the results offered more practical information to policy makers and business leaders to better promote the idea of a green market programme.

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Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Newcastle Business School's Ethics Committee at Northumbria University in March 2013.

I declare that the Word Count of this Thesis is 71,629 words.

Name: HUI JIN

Signature:

Date: September 2016

List of abbreviations

Abbreviation	Description
AGFI	Adjusted goodness of fit index
ASV	Average shared variance
ATT	Attitude
AVE	Average variance extracted
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CMB	Common method bias
CR	Construct reliability
EA	Ecological affects
EFA	Exploratory factor analysis
FIML	Full information of maximum-likelihood
GFI	Goodness of fit index
GPB	Green purchase behaviour
GPI	Green purchase intention
IFI	Incremental fit index
KMO	Kaiser-Meyer-Olkin
MI	Modification indices
MO	Moral obligation
MSV	Maximum shared variance
NAM	Norm-activation model
NAT	Norm activation theory
PA	Positive affects
PBC	Perceived behaviour control
PCA	Principal components analysis
RMSEA	Root mean square error of approximation
SEM	Structural equation modelling
SN	Subjective norms
SK	Subjective knowledge
SRMR	Standardized root mean square residual
TLI	Tucker Lewis index
TPB	Theory of planned behaviour
TRA	Theory of reasoned behaviour

Chapter One: Introduction

1.0 Chapter overview

This chapter first seeks to introduce the present research through providing a brief background of the study, and the current state of the green market in China. Problems in green consumption and existing research gaps are then discussed. Thereafter, the research objectives and research questions are presented, highlighting the potential contributions of this study. Afterwards, the research strategy this study uses for data analysis is provided. Finally, an overview of the structure of the whole thesis is given.

1.1 Background

The world faces pressing environmental challenges which increase awareness among the general public of the critical role of personal consumption in environmental degradation (M. Huang & Rust, 2011; Tang & Chan, 1998; Yilmazsoy, Schmidbauer, & Rösch, 2015). A sharp rise in environmental awareness, in matters such as water and air pollution, has been linked with consumption of everyday items including food, clothing and transport (Tang & Chan, 1998). Governments and marketers increasingly recognise both the demand and the value of green marketing (Tang & Chan, 1998). Over the years, a majority of consumers have realized that their purchasing behaviour has a direct impact on many ecological problems (Laroche, Bergeron, & Barbaro-Forleo, 2001). The most convincing evidence

supporting the growth of ecologically favourable consumer behaviour is the increasing number of individuals who are willing to pay more for environmentally friendly products (Laroche, Bergeron, & Barbaro-Forleo, 2001). In 1997, Chinese consumers were only willing to pay 4.5% more for green products (Chan, 1999). In 2007, Shen (2012) conducted a web-based survey in mainland China, and found 76.6% of his sample agreed to pay 8.71% - 9.51% more on average for the corresponding products awarded the China Environmental Label.

Food consumption is an important and unavoidable part of everyday life and is one of the most commonly-discussed issues in the consumer literature (Dowd & Burke, 2013). Moreover, green food consumption patterns, associated with pro-environmental behaviour, have become a global issue (Spaargaren & Mol, 2008; Qinghua Zhu, Li, Geng, & Qi, 2013). A study conducted by Tobler, Visschers, and Siegrist (2011) in England shows that green food consumption, including consumers' beliefs, willingness and real behaviours about green food consumption, is an important way to protect environments. That is, consumers can contribute to environmental protection through their green consumption. Consumers' decisions to buy environmentally friendly products or services may not only directly contribute to the reversal of environmental deterioration, but also may be translated into a powerful incentive for companies to improve their environmental performances (X. Liu, Wang, Shishime, & Fujitsuka, 2012). Thus, this study focuses on green food – a general term that includes food safety and sustainability which are two important dimensions in food quality, meaning

green or organic food with fewer chemical residuals (Sirieix, Kledal, & Sulitang, 2011; Yin, Wu, Du, & Chen, 2010; Yu, Gao, & Zeng, 2014).

China as the research context for this study is of critical importance, especially after a series of severe food safety scandals. In China, “safe food” and “green food” have special certification requirements, which are managed by the *China Green Food Development Centre* under the Ministry of Agriculture in China. According to different food standards, there are mainly three levels of certification for food production (Yu et al., 2014): “hazard free food” which means harmful or toxic residues are controlled within limits set by national standards; “green food” which means from the choice of materials to production every stage of the production process must meet specified standards of environmental protection; “organic food” means the prohibition in the production process of artificially synthesized fertilizers, pesticides, growth regulators, livestock and poultry feed additives and genetically engineered technology (R. Liu, Pieniak, & Verbeke, 2013). This research will use the term green food as a unified concept that includes all three types of food.

1.2 **Green food and green food market in China**

1.2.1 History of green food in China

Food has always played an important role in Chinese society, from banquets marking the birth of a child to celebrations of regional or national importance.

The common greeting in China is not “How are you?” but “Have you eaten yet?” although this question dates back to times when food was in short supply. However, the concept of food-safety labels applying to all food categories has a short history in China. Green-labelled food first appeared in 1992 when China’s Ministry of Agriculture (MOA) started its green food programme. Meanwhile, China established the Green Food Development Centre (CGFDC) to draft green-label qualification standards, coordinate inspections, review applications, and award certificates of compliance (Paull, 2008). Under the programme product inspections are conducted on a yearly basis and products which pass the tests are awarded a green label.

China’s first organic standards were developed by the Organic Food Development Center (OFDC), which was established in 1994, and is a subsidiary of the Ministry of Environmental Protection (MEP). In 2004, the government shifted organic policymaking and standard setting authority from MEP to the Certification and Accreditation Administration (CNCA, under AQSIQ). The OFDC, therefore, no longer holds this authority. Since April 1, 2005, China has had national organic standards that encompass organic production, processing, distribution, and retailing (USDA, 2010).

Since 2000, food safety and eco-labelled products are the major themes in delegates’ proposals at every session of the People’s Congress and Chinese People’s Political Consultative Conference (CPPCC). A Law on Agricultural Food Safety has been issued by the Committee of the People’s Congress and was implemented on November 1, 2006 (Qiao, 2011). Three relevant

milestones for organic regulations have occurred recently (Qiao, 2011). In 2001, SEPA issued Organic Food Certification and Management Measures. The National Regulation of the People's Republic of China on Certification and Accreditation was put into effect on November 1, 2003. All certification and accreditation bodies including ISO 9000, ISO 14000, HACCP, as well as organic certifiers must follow this regulation in their certification activities (Willer & Kilcher, 2011; Z. Zhou, 2005). In 2003, CNCA issued guidelines of accreditation for organic product certification agents. In 2005, the Chinese National Organic Product Standards were issued and became effective on April 1st. At the same time, the Organic Product Certification Management Rule and Organic Products Certification Administrative Methods came into effect. China's harsh new food safety law officially takes effect on October 1st, 2015. Politicians hope that it will signal a new direction for the food industry in China by holding manufacturers accountable for food additives and introducing harsh fines for safety violations. For investors in food business, the law will mean more stringent requirements for product regulation and certification, especially for organic and health food products (Wright, 2015).

China does not recognise foreign organic standards, and currently no organic product equivalency agreement exists between China and the United States. Local law prohibits the translation of United States Department of Agriculture (USDA) organic labels into Chinese. Therefore, promoting and selling products as organic without an official Chinese organic label is illegal.

In order to sell organic products legally in China, all products (whether domestically or internationally produced) are required to obtain Chinese organic certification. Even products with an international organic label, such as USDA organic, must acquire a Chinese organic label. If the applicant is located abroad, the applicant must pay for the certifier to travel to the producing country, as well as pay a certification fee which, according to contacts from the China Organic Foods Certification Centre (COFCC), does not exceed $3,000. Certification is available for field crops, livestock, aquaculture, wild plants, honey, fungus, processed foods, fertilisers, and pesticides (USDA, 2010).

Different entities certify organic production. In 2002, MOA appointed the Chinese Organic Food Certification Centre (COFCC) to certify and promote the organic food sector. The COFCC currently certifies roughly 30% of China's organic production (USDA, 2010). However, other certification bodies such as the COFDC and third party certifying centres, private firms, and NGOs, also provide certification. In total, China has 20 to 30 domestic certifiers, all which must be accredited by the CNCA (USDA, 2010). The CNCA also grants licenses to individual organic inspectors hired by certifiers and issues the official Chinese organic label (via certifiers). According to sources, applicants must employ at least ten licensed organic inspectors and comply with the 2005 Chinese National Organic Products Standard (CNOPS). Applications may be approved in as little as one month.

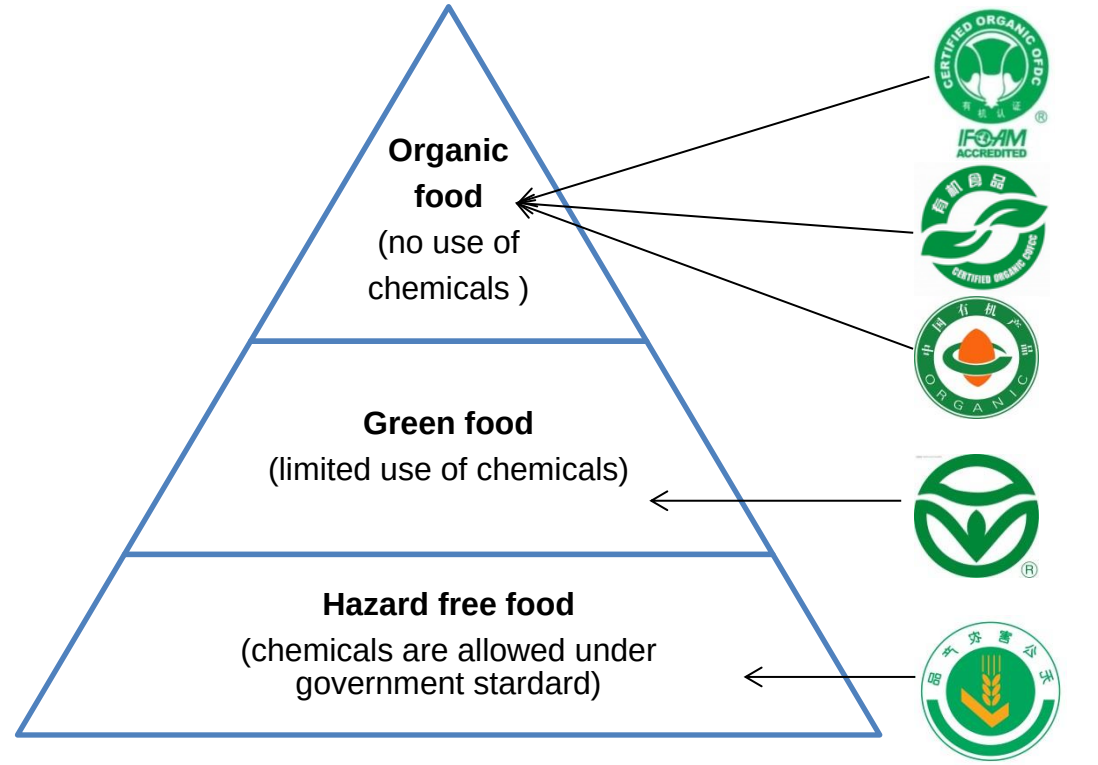
In addition to domestic certifying bodies, roughly ten international firms and NGOs also partner with domestic certifiers to grant Chinese organic certification. International certifiers currently include ECOCERT (France), BCS (Germany), IMO (Switzerland), JONA and OMIC (both Japan). These foreign certifiers will also inspect Chinese organic production for export.

In addition to organic certification, two other labels exist in the Chinese food system: “green” foods and “Hazard free food” foods. In comparison to organic foods, “green” foods and “Hazard free food” foods have a higher tolerance for synthetic chemicals and residues. In 2008, more than 15,000 products held a green foods label, only available for food items that had their own set of standards, supervision policies, and fees regulated by the Chinese Green Foods Office. While most Chinese have little knowledge of these alternate, more affordable labels, one organic producer has found that “green” food labels have become substantially more common than in the past. The Ministry of Agriculture is the “green” certifying authority, and local MOAs are responsible for extending management of “green” certification. Similar to organic certification, “green” certifiers include both government affiliated institutions and private firms.

As shown in Figure 1.1, there are three kinds of food that have been widely and legally defined in China according to standards of safety ranking, gradually increasing from “Hazard free food”, “green food” to “organic food”. “Hazard free food”, is characterised as being of good quality, nutritious and safe: harmful or toxic residues, such as fertilisers, pesticides, heavy metals,

and nitrates are controlled within limits set by national standards (G. Huang, Wu, Rong, You, & Jiang, 1999). “Green Food” is a Chinese innovation and dates from 1990. Certification for Green Food production involves the regulation of inputs, with the objective of reduced use of pesticides, the oversight of production, and residue testing of the produce. “Organic food”, a more sustainable alternative to conventional food (Thøgersen, 2010), is a Western invention (Lockeretz, 2007). Since 2005, the Chinese government has also advocated organic food due to its beneficial environmental properties and alleged market potential, so the Chinese national organic standard and national organic logo were established in this year (Y. Zhou, Thøgersen, Ruan, & Huang, 2013).

Figure1. 1 Food certification systems in China



Source: Compiled by the author

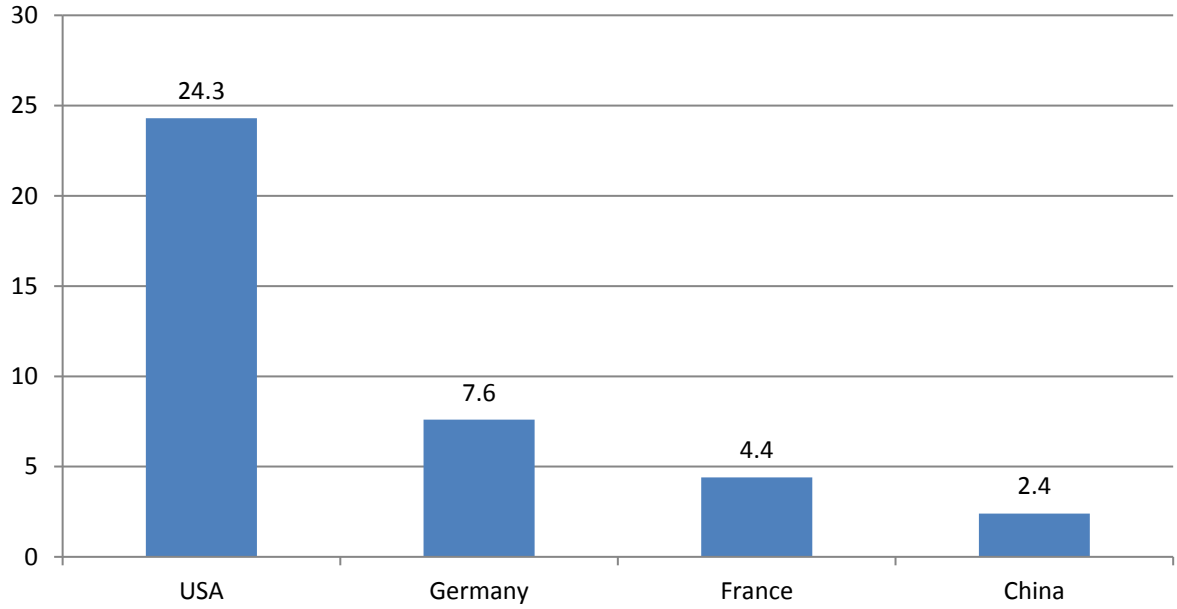
1.2.2 Green market

In recent years, green marketing is one of the emerging notions in the field of marketing, and its concept has been widely accepted and applied in practice (Y. S. Chen, 2010). Green marketing has also been called environmental marketing, ecological marketing, social marketing, and sustainability marketing (Qingyun Zhu & Sarkis, 2015). In addition, green marketing is a much broader concept which encompasses all marketing activities that are developed to stimulate and to sustain consumers' environmentally friendly

attitudes and behaviour (Jain & Kaur, 2004). In this section, the development of global and Chinese green markets will be outlined.

With the global green market growing, organic agriculture has developed worldwide during the last few years and is now practiced in 164 countries (IFOAM, 2014). Market research company Organic Monitor estimates the global market for organic products in 2013 to have reached approximately 55 billion euros (IFOAM, 2013). According to the annual report issued by IFOAM (2014), at the end of 2013, the United States is the leading market with 24.3 billion euros, followed by Germany (7.6 billion euros) and France (4.4 billion euros). In 2013, International Federation of Organic Agriculture Movements (IFOAM) official market data was for the first time ever published for China (2.4 billion euros), making the country the fourth biggest organic market in the world, see Figure 1.2 below. The highest per capita spending was in Switzerland (210 euros) and Denmark (163 euros). Reaching a new all-time high, two million organic producers were reported in 2013. As in previous years, the countries with the highest number of producers were India (650,000), Uganda (189,610) and Mexico (169,703).

Figure1. 2 Organic market value in countries in 2013 (billion euros)



Source: Summarised by the author based on IFOAM Report, 2014.

According to IFOAM (2014), a total of 43.1 million hectares were organic at the end of 2013, representing a growth of almost six million hectares compared to the previous survey. In Oceania, organic land increased by 42%, which was mainly due to rangeland areas shifting to organic production in Australia. Australia is the country with the largest organic agricultural area (17.2 million hectares, with 97% of that area used as grazing), followed by Argentina (3.2 million hectares) and the United States of America (2.2 million hectares). 40% of the global organic agricultural land is in Oceania (17.3 million hectares), followed by Europe (27%; 11.5 million hectares), and Latin America (15%; 6.6 million hectares).

China is rapidly adopting, adapting and developing green technology and ideas. Now China is a world leader in organic production and this has

implications for world food production (Paull, 2008). While not a mainstay for most Chinese farmers, in the last few years organic production has grown steadily. As of 2007, 3.6 million hectares were used to produce organic foods, and 158,000 hectares were in the process of being converted to organic farming. Because the conventional-to-organic conversion process generally takes three years, by 2010 close to 3.8 million hectares could be used for organic production (USDA, 2010).

The global organic food market has developed rapidly during the past six years with organic food and beverage sales reaching USD $7.2 billion in 2008, an increase of more than 140% from the former $3 billion record in 2003 (USDA, 2010). China's participation is on the rise. Some analysts expect domestic sales of organic products in China to be as high as $3.6-8.7 million by 2015 (USDA, 2010). However, China's organic food market is still in the early stages of development. Three facets are outlined below to explain some characteristics of the Chinese green market.

1.2.2.1 Production in China

Organic farms in China are generally small-scale, and many are concentrated near cities and regions that have a diverse consumer base (e.g. suburban Beijing and Tianjin). The limited shelf life of organic products makes location critical. However, organic production is not solely concentrated near first tier cities and urbanised areas. Less developed provinces such as Xinjiang, Inner Mongolia, Ningxia, and Gansu have begun

to focus on organic animal husbandry. In the last three years, Chinese policies have concentrated on developing western China, and these efforts may continue to provide residents with the opportunity to earn higher incomes (USDA, 2010).

China's three north-eastern provinces (Liaoning, Jilin, and Heilongjiang), support the largest organic production nationally in terms of output, volume, and area. Most organic farms located in northern China (e.g. Shandong and Liaoning) supply organic vegetables and fruits to nearby cities. In addition, they export some product to Japan, South Korea, Europe, and the United States. For example, one of the largest organic farming operations in the area produces organic strawberries and already has IMO (EU), NOP (USA), and JAS (JAPAN) organic certifications. The farm annually exports 1,500 MT of organic frozen strawberries, more than 40% of which is sold to the United States (USDA, 2010).

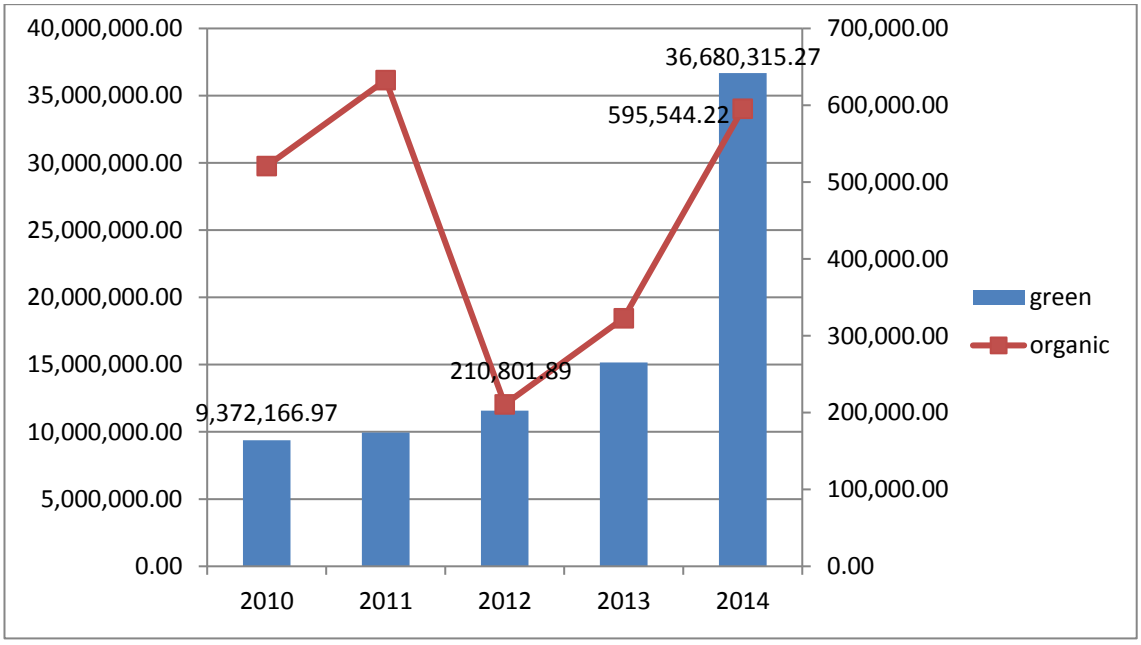
In addition, wealthy consumers also dabble in organic production. For example, some Chinese investors lease land to grow organic produce for their friends and family members. Some individuals and families will pool their money to create cooperative organic farms.

As mentioned in the last section, besides organic products, there is another ecological product named 'green products' in China. According to the green food year book issued by China Green Food Development Centre, the output of green food in China increased from 2010 to 2015, see Figure 1.3 below.

Although in 2012 the output of organic food dropped to 210,801.89 tons, in the following two year the output rose to 595,544.22 tons in 2014, which is more than double the output of 2012.

The Ministry of Agriculture (MOA) of China has been a key player in the development of environmentally friendly agricultural production, launching a campaign for green food and pollution free agricultural products in the 1990s (Willer & Kilcher, 2011). Organic food, which is a Western invention (Thøgersen & Zhou, 2012), has been promoted since the 2000s (Willer & Kilcher, 2011). Thus, it is no surprise that the production of green food is much higher than organic food.

Figure1. 3 The total output of green and organic food in China by year (/tons)



Source: China Green Food Development Centre – green food year book (2010-2014), compiled by the author

1.2.2.2 Trade: export

In 1990, China exported its first organic product, certified organic tea, to Europe. Today, domestic production of Chinese certified organic foods is primarily for export, serving international markets in North America, Europe, and Japan (Willer & Kilcher, 2011). Products include honey, soy powder, beans, sesame, walnuts, pumpkin seeds, grains, oil, vegetables, fruits, beverages, dairy, poultry, and aquaculture. From 1995 to 2006, the export value of organic foods rose from $300,000 to $350 million, with an annual growth rate of 30% (Willer & Kilcher, 2011). In 2007, more than 2,500 organic enterprises produced and sold organic products domestically and for export (Willer & Kilcher, 2011). According to MOA, in 2007 China's total exports of organic products were valued at $304 million, and accounted for 0.8% of the country's total agricultural exports (USDA, 2010). China's primary organic exports are soybeans, rice, vegetables, and tea (USDA, 2010). According to a 2007 report by MOA, organic crops accounted for the largest organic export by value ($120 million). The second largest export category was aquaculture products, totalling $50 million, followed by honey ($22.7 million), processed products ($21.2 million), wild plants ($20 million), livestock products ($19.7 million), and fungus ($14.8 million). Specifically, vegetables compose the largest share of China's organic exports, followed by field crops and tea (USDA, 2010).

A study from China Agricultural University (CAU) projected that the export value of organic products may reach $1-3.7 billion in 2015. MOA, meanwhile,

estimates that organic exports may account for 1.5% of total agricultural exports by 2017 (USDA, 2010). However, the organic sector is still in its preliminary stages, and most exports are in raw form with minimal processing. In the last two years, a few highly processed products, such as organic chocolates, beverages, cleansers, and personal care products, have entered the domestic market. While the majority of Chinese organic products are exported, domestic demand is increasing (Willer & Kilcher, 2011).

1.2.2.3 Domestic consumption

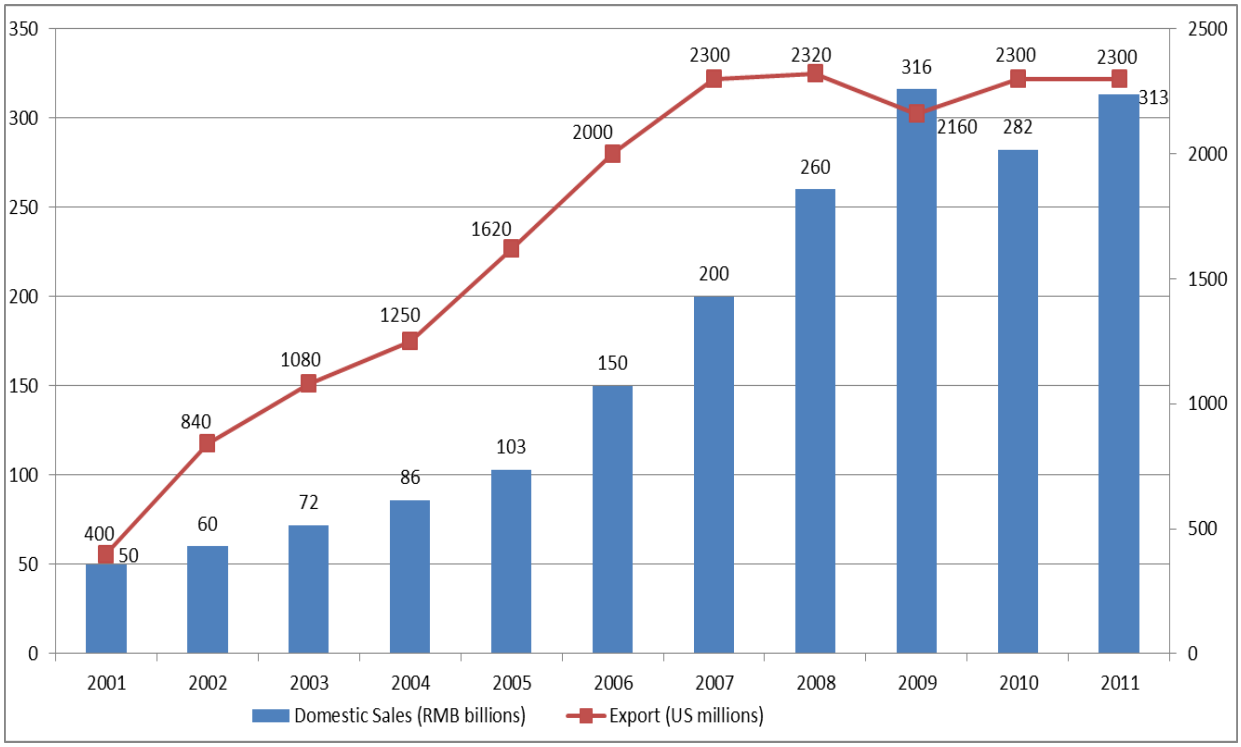
The development of organics and similar ecologic foods in China has been largely state-led, driven by growing concerns around domestic environmental degradation and food safety, and by the potential for making profits through international and domestic markets (Sanders, 2006; Thiers, 2005). Especially, food safety and environmental issues related to food planting, process and production in China have become common concerns. For example, P. Li et al. (2009) conducted a large-scale survey of public environmental awareness in China, and found that 53.1% of total respondents chose water pollution, 49.3% chose food pollution as their top environmental concerns.

Green food-certified goods are grown and processed throughout the country, and according to Sanders (2006) it is not difficult to go shopping in China without coming across the Green Food Logo. By contrast, the Chinese organic market is still in its early infancy. ‘Green Food’ is well known and

readily available, while ‘Organic’ is still poorly understood in the Chinese domestic market (Klein, 2009; Paull, 2008).

Food safety is a top concern for Chinese shoppers, especially regarding such produce as vegetables, meat, seafood, grain, cooking oils and dairy goods. According to the China Green Food Development Centre (greenfood.org.cn), a governmental agency, China’s domestic sales of green food increased at a compound annual growth rate of 20.1% from RMB50 billion in 2001 to RMB313 billion in 2011, and China’s exports of green food increased at a compound annual growth rate of 19.1%, from US$400 million in 2001 to US$2.3 billion in 2011 (see Figure 1.4). China’s domestic market for green food will continue to expand as individual purchasing power grows in China. The newest report issued by the China Green Food Development Centre showed that in 2014 China’s domestic sales and exports of green food increased to RMB548 billion and US$2480 million separately, both hitting new peaks again.

Figure1. 4 The total values of green food sales in China by year (2001-2011)



Source: China Green Food Development Centre – green food year book (2011), compiled by the Author.

Overall organic market share is small. Although according to Paull (2008), 28% of China's arable land – just over 34 million hectares – is devoted to "eco-foods", a designation that includes organic certification as well as China's unique "green" and "hazard-free" categories of food. Total purchases account for roughly only 0.01% of China's total food consumption. That is, green and organic farming in China is largely an export-oriented industry. However, as consumers become wealthier, some analysts contend that within ten years annual organic consumption growth may reach 30 to 50% (USDA, 2010).

Consumption of green and organic food was triggered by hundreds of food safety issues in China. There is a growing demand for organic foods driven by consumers' perceptions of the quality and safety of these foods and by the positive environmental impact of organic agricultural practices (Vindigni, Janssen, & Jager, 2002). Vegetables, beans, and rice comprise the majority of domestically consumed green and organic products. In 2000, organic food products became available for domestic consumers; organic animal production has only recently begun. Domestically produced organic vegetables generally sell for prices much higher than their conventional counterparts. Therefore, middle to high income classes are the primary consumers of organic products (USDA, 2010).

As most Chinese consumers cannot afford the high prices of green and organic food products, a relatively recent phenomenon, available mainly in metropolitan markets, online shopping and home delivery services generally offer a less expensive opportunity to purchase organic products, as they eliminate the middleman and bypass retail costs. Web-based stores have begun to flourish in more developed cities, each organised with photos, product captions, and prices. Customers are able to pay on delivery or even online. Larger online stores can provide delivery services outside of cities, and may also deliver organic products such as dried foods or non-food items. Many online stores have one small physical location where they can showcase and advertise their products to new customers. Consumer direct purchasing targets families with newborn babies, pregnant women born after 1980, and young couples concerned about health and convenience.

According to D. A. Taylor (2008), China needs to increase its domestic consumption of goods and services to achieve balanced economic growth. In this regard, it is reasonable to expect that growth in the green and organic markets could be economically as well as environmentally beneficial, and green food may be the gateway to popularising the stricter organic market. Organic food products are now available in upscale supermarkets in East and South-East China metropolises such as Shanghai, Beijing and Guangzhou (Yin et al., 2010). Hence, there seems to be an emerging market in China for this type of food. This makes green and organic food a useful case to study in order to obtain much-needed insights into consumer responses to 'green' innovations in China.

1.3 Conceptual and empirical gaps in existing research

In China, rapid growth has been driven by fast economic expansion and consumption. This follows an increase in income and higher standards of living for many in Chinese society, thus a growing middle class (Starmass, 2014). Meanwhile, speedy development also results in an unsustainable level of resource usage (Anderlini, 2010) and ecologically unsound practices (Martinsons, 1996), which increase consumer attention on environmental issues (McEwen, Fang, Zhang, & Burkholder, 2006; Perrea et al., 2014; Shen & Saijo, 2008). Food safety is a pressing social issue in China today, particularly after a series of ethical scandals. A recent report on snack foods consumption by Nielsen (Nielsen, 2014) shows that 45% of Chinese

consumers care about whether foods are organic or not, which is higher than the international average of 34%. Meanwhile sustainability and fair trade are also key factors of concern (62%) when Chinese consumers purchase snack food, compared to a worldwide average of only 35%. However, there are limited studies on green consumption and even fewer studies concentrating on green food consumption in China. Thus, a thorough understanding of how to promote green food consumption among consumers in China will provide timely policy and management input for the industry (Qinghua Zhu et al., 2013).

Various scholars have integrated concepts and variables from different theoretical frameworks, showing that behaviour results from multiple motivations (Bamberg, Ajzen, & Schmidt, 2003; Harland, Staats, & Wilke, 1999; Heath & Gifford, 2002; Shaw, 2000). For example, feeling morally obligated to contribute to a good environment (Kahneman & Knetsch, 1992) and economic incentives (von Weizsacker & Jesinghaus, 1992) can both motivate people to engage in pro-environmental behaviour. Steg and Vlek (2009) elaborated three lines of research that focus on individual motivations to engage in environmental behaviour, which respectively are perceived cost and benefits, moral and normative concern, and affect. They also discussed that although all three perspectives proved to be predictive of at least some types of environmental behaviour, it is not clear which perspective is most useful in which situation. Stern (2000) found that moral and normal

frameworks appear to be more successful in explaining low-cost behaviour[1] and actions with environmental intent. However, systematic research on the range of application of each theoretical perspective is lacking. Moreover, the three theoretical perspectives (i.e. cost and benefits, moral and normative concern, and affect) are not mutually exclusive. However, little is known about the way in which motives interact and how they influence individual orientation for environmental behaviour, and more especially for green food consumption (Lindenberg & Steg, 2007).

Consumer knowledge has an important role in explicating consumer behaviour (Park, Mothersbaugh, & Feick, 1994). Consumer knowledge is a relevant and significant consumer construct that influences how consumers gather and organize information, and ultimately, what products they buy and how they use them (Alba & Hutchinson, 1987; Cordell, 1997; Jung, Kim, & Oh, 2014). In an attempt to better understand why people perform eco-friendly acts, Maloney and Ward (1973) advocate the importance of determining consumers' knowledge of the environment, how they feel about the environment (ecological affect), and what commitment they are willing to make (intention) to developing eco-friendly behaviour. Researchers following this paradigm further assert that an individual's ecological behaviour is highly dependent upon his or her ecological knowledge, affect and intention (Chan, 2001; Chan & Yam, 1995). Such views are consistent with the classic behavioural proposition that cognition, affect and conation are three essential

[1] Diekmann and Preisendörfer (2003) mention that recycling and shopping behaviour are qualified as typical low-cost domains, and energy and mobility behaviour are qualified as typical high-cost domains

components in determining corresponding behaviour (Bagozzi, Tybout, Craig, & Sternthal, 1979; Breckler, 1984; Chan, 2001).

The results from a meta-analysis by Bamberg and Möser (2007) underline the role of knowledge with regard to environmental problems as an important indirect determinant of pro-environmental behaviour. Aertsens, Mondelaers, Verbeke, Buysse, and Huylenbroeck (2011) found that knowledge is associated with the internal attribution of responsibility, social norms and feelings of guilt. Thøgersen (2010) showed that issue relevant knowledge has a positive influence on the adoption of new eco-labels. The study by Gleim, Smith, Andrews, and Cronin (2013) demonstrate that consumers' lack of knowledge of products appears to be a significant impediment to green purchasing behaviour. Whilst several studies argue that knowledge may be a very important factor in increasing green consumption, few have explored the mechanisms behind it. Meanwhile, the exact relationships between the factors that contribute to green purchasing behaviour are still unclear (Chan, 2001; Chan & Yam, 1995). In addition, their relationships with Chinese personal norms have not been explored. Apparently, empirical findings on consumer knowledge are far from clear in the field of green food purchase behaviour. There is a substantial gap between theory and practical application in establishing green purchasing behaviour through knowledge, affect and norms building in green food consumption.

1.4 Objectives of the study

Based on the research gaps discussed in the previous section, this study aims to investigate green consumption buying behaviour for green food in mainland China. In the present study, a conceptual model is developed and tested based on the goal-framing theory (Lindenberg, 2001, 2001b, 2006), which is to integrate the theory of planned behaviour (TPB) model (Ajzen, 1988, 1991), norm activation theory (NAT) model (Schwartz, 1977; Schwartz & Howard, 1981), affect theories and consumers' knowledge, within the context of consumers' consumption decisions. The model proposes to examine the relationships between consumers' knowledge, attitude, norms, affects, purchase intention and actual purchase behaviour toward green food. Consumer demographics will be control variables in the model.

Thus, the objective of this study is to understand the factors that affect consumers' intentions and their actual purchase behaviour in buying green food. The specific objectives of this research are:

1. To identify the relative influence of factors affecting consumers' intentions to purchase green food.
2. To determine factors affecting consumers' actual purchase behaviour for green food.
3. To propose and operationalise a conceptual model integrating relative variables.

1.5 Significance of the study

This study will provide several potential conceptual and theoretical contributions to the literature, as well as practical contributions for the food industry and government environmental policy.

Firstly, this research will add new knowledge to the literature by:

a) Applying goal-framing theory, which integrates the theory of planned behaviour (TPB) model, norm activation theory (NAT) model and affect theories, to examine consumer behaviour towards green goods use, so as to fill in knowledge gaps to focus on Chinese green consumerism.

b) Adding consumers' subjective knowledge construct into the integrated model as a dependent variable in this study. Previous studies have not adequately adopted consumer knowledge to predict behavioural intention for food consumption, and have not understood how it works to influence other factors and intention to purchase. This study will provide important insights into the role of consumer knowledge in green food purchase behaviour, through adopting it as a new variable in the integrated model and distinguishing between the concepts both conceptually and empirically.

c) Examining actual behaviour to provide empirical evidence concerning the relative importance of each of these determinants on consumers' actual purchase behaviour. There have been many studies investigating behavioural intention and behaviour, and most of these

studies attempt to predict people's behaviour through behavioural intention. However, this study will not only predict behaviour through behavioural intention, but also directly examine actual behaviour. As such, the results may offer more practical information to policy makers and retailers.

Secondly, this research will deepen understanding of existing knowledge by:

a) Probing the goal-framing theory's external validity and testing this theory's assumptions, because the goal-framing theory has not been tested in the green food domain. Thus, the empirical results and findings from this study will be helpful in making a contribution to further expand research in consumer behaviour in relation to food consumption.
b) Providing justification for using the TPB model in explaining the green food buying behaviour of Chinese consumers, so as to further extend food consumption studies.

Thirdly, the results of this research will highlight important managerial and policy implications.

a) Findings from this research will provide insights for developing appropriate government policies and legislation to foster favourable conditions for green food production and consumption.
b) Findings from this research will help generate guidelines about how to encourage active and meaningful consumer engagement in pro-

environmental initiatives, and further contribute to the sustainability of the country's economic development.

c) Insights gained through this research will help businesses, including multinational companies and domestic firms in China, as well as firms outside the country who sources supplies from China to develop effective marketing strategies.

1.6 Research strategy

This research adopts the quantitative method which is in the form of a survey questionnaire distributed to individual respondents in two mainland China cities. For the empirical results, the data analysis technique Structural Equation Modelling (SEM) is employed. According to Hair (1998), SEM is particularly useful when one desires to simultaneously examine a series of dependent relationships and to identify possible structural relationships between constructs. SEM is used to investigate causal relationships among consumers' knowledge, attitude, subjective norms, perceived behaviour control, moral obligation, ecological affect, anticipated positive affect, purchase intention and actual purchase behaviour.

1.7 Structure of the thesis

This thesis is composed of six chapters. The first chapter presents an introduction to the research background, identifies existing research gaps in the field, and provides the objectives of the research. Chapter 2 focuses on

literature review regarding consumers' knowledge, attitude, subjective norms, perceived behavioural control, moral obligation, affects (ecological affects, anticipated positive affects), purchase intention and actual purchase behaviour. The relevant research hypotheses and the conceptual framework are presented as well. Chapter 3 provides the research methodology of the present study. This chapter will describe the epistemological aspects and research theoretical perspectives that govern the present study. The methodological design, the data collection methods, and the process of generating and testing the measurement items are also included in this chapter. Chapter 4 presents the data analysis and findings of this study. This chapter discusses data examination and provides a profile of respondents. The empirical results and analysis related to testing the proposed hypotheses are then presented. Chapter 5 discusses the main results of the study. This chapter investigates the similarity and differences between existing related literatures and the current study, which is in relation to the research purpose and objectives. Chapter 6 concludes this study and highlights the theoretical and practical contribution of this research, points out its limitations and makes suggestions for future research.

Chapter Two: Literature Review

2.0 Chapter overview

In this chapter, theories relevant to green or pro-environment behaviour are reviewed and a theoretical framework is developed to be tested in China's green consumption context. First, the goal-framing theory is introduced, and linked with several social-psychological theories and empirical research into pro-environmental behaviour. Then, the influence of knowledge on stimulating the adoption of green purchase behaviour is explored. After that, alternative theoretical approaches related to consumer behaviour are discussed. In Section 2.5, relevant hypotheses based on the theories but ignored by other studies are developed, and then, a framework model is set up. Finally, the chapter summary is presented.

2.1 Goal-framing theory

Goal-framing theory (Lindenberg, 2001, 2001b, 2006) is most strongly affected by research in cognitive social psychology about influences of goals on cognitive processes although it emerged from different origins (Lindenberg & Steg, 2007). This theory supposes that goals govern or "frame" the way people process information and act upon it. When a goal is activated (that is, when it is the "focal" goal or "goal-frame"), it influences what a person thinks of at the moment, what information she/he is sensitive to, what alternatives she/he perceives, and how she/he will act. Since this theory is

based on insights from motivation cognitive social psychology, Lindenberg (2001, 2001b, 2001c, 2006) pointed out that goal-framing theory is very helpful for environmental psychology research.

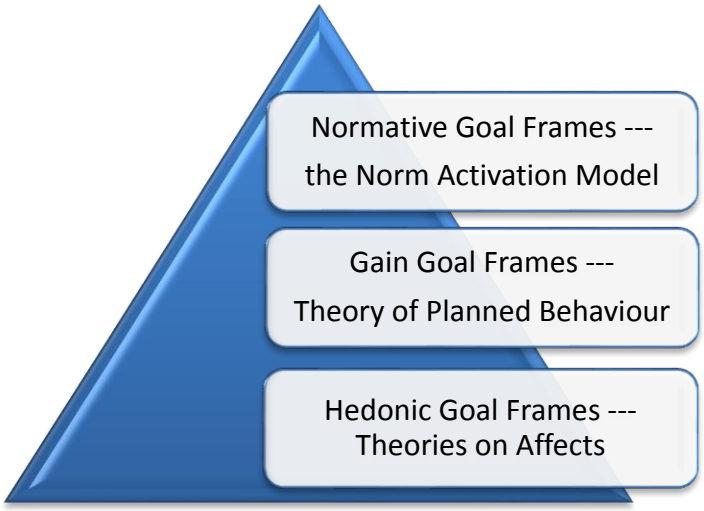
There are three certain goals that have been identified by Lindenberg and Steg (2007) in goal-framing theory, which are the hedonic goal – “to feel better right now”, the gain goal – “to guard and improve one’s resources”, and the normative goal – “to act appropriately”. In detail, a hedonic goal frame makes people sensitive to what raises and reduces their pleasure and affects their mood, which activates subgoals to improve one’s feelings in a particular situation (Lindenberg & Steg, 2007), such as looking for pleasure, improvement in self-esteem, excitement etc. or avoiding effort, negative events and uncertainty etc.. A gain goal frame makes people quick to detect or respond to slight changes in their personal resources. A normative goal-frame makes people sensitive to what they think one ought to do, which activates all kinds of subgoals associated with rightness, that is behaving the right way (Lindenberg & Steg, 2007). According to both self or others, and what a person notices other people doing, a person is sensitive to ‘ought’ simply because it is the right thing to do. Thus, normative is the important aspect in green food consumption.

The goal-framing theory explicitly acknowledges that behaviour results from multiple motivations, and also postulates that motivations are rarely homogeneous, usually they are mixed. One goal is focal and influences information processing the most (that is, it is a goal-frame), while other goals

are in the background and increase or decrease the strength of the focal goal. Thus, multiple goals are active in any given situation. When background goals are compatible with the goal-frame, they strengthen it. But when the goal-frame and background goals are in conflict, the latter weaken the strength of the goal-frame. Section 2.2.4 further discusses how the goals may interact to motivate people to engage in buying green food.

Lindenberg and Steg (2007) first attempt to apply goal-framing theory to the environment in light of this theory. In their study, the three goal-frames remarkably coincide with the three theoretical frameworks commonly used in environmental psychology (see Figure 2.1), that is, theories and models on affect focus on hedonic goal-frames, the TPB is focused on gain goal frames, while the NAM and research on environmental concern focus on normative goal frames. Thus, goal-framing theory seems also to be suitable as an integrative framework for understanding environmental behaviour, such as green food purchase behaviour. In the next section, the relationships between goal-framing theory and relevant theories of green consumption are discussed individually in detail.

Figure 2. 1 Key components of goal-framing theory



Source: Lindenberg and Steg (2007), compiled by the author

2.2 Goal frames and social psychological theories

Essentially, the three goal frames coincide with some widespread theories and models within environmental psychology (Lindenberg & Steg, 2007). For example, a normative goal frame is relevant to the NAM (Schwartz, 1977; Schwartz & Howard, 1981) applied to environmental situations, which focuses on factors that make people behave appropriately, such as pro-environmentally. A gain goal frame is relevant to the TPB (Ajzen, 1988, 1991), which supposes that people's self-interest motivates their action. People always choose alternatives with the highest benefits against lowest costs, although social norms influence their choice through positive and negative supports from other significant people. A hedonic goal frame is relevant to theories on affect which focus on what action makes people feel good. Since these theories and models typically are relevant to only one motivation, that is, the different motives are explored separately, thus the

predictive power of these theories has hardly been compared. It is, therefore, not clear under which conditions which theory is the most powerful in explaining green purchase behaviour.

In the following section, those studies relevant to each of the three goal frames are reviewed, and to what extent various theories have been successful in explaining green purchase behaviour is discussed. Further, it is suggested under which conditions each of the three goal frames may mainly affect green purchase behaviour. Finally, possible conflicts among different motives in green purchase behaviour are traced.

2.2.1 Hedonic goal frames and theories on affect

When a hedonic goal frame is the focal goal, people focus on how to improve their feelings, and they are very sensitive to factors that affect mood, energy level (tired or energetic), social atmosphere etc. (Lindenberg & Steg, 2007). Essentially, these factors play an important role in theories on affect. In research on consumer behaviour and risk perception, the role of emotions and affect in influencing behaviour has been well established (e.g. Finucane, Alhakami, Slovic, & Johnson, 2000; Pfister & Böhm, 1992; Rozin, Lowery, Imada, & Haidt, 1999). However, relationships between affect and green purchase behaviour have only been addressed in a few studies (e.g. Y. K. Lee, Choi, Kim, Ahn, & Tally, 2012; Pelletier, Tuson, Green-Demers, Noels, & Beaton, 1998; Perugini & Bagozzi, 2001; Smith, Haugtvedt, & Petty, 1994).

Generally, emotions are defined as positive or negative affective reactions to perception situations in the psychology literature. In the pro-environment context, there are some studies to explore the relationships between positive affect and pro-environmental behaviour. For example, emotional affinity for nature has a positive influence for nature protection behaviour (Kals, Schumacher, & Montada, 1999). Smith et al. (1994) found that affect was significantly related to recycling behaviour, even when attitudes were controlled for, and especially when the attitudes were weak. Steg (2005) showed that commuter car use was predicted better by affect, and not by instrumental motives, such as costs. The study by Pelletier et al. (1998) demonstrated people are more likely to behave environmentally when they feel pleasure and satisfaction from doing pro-environmental actions, compared to when they act under moral or pro-environmental norms, especially when the behaviour is relatively difficult. De Young (2000) further explains that people do some environmental actions because their personal and internal satisfaction is stimulated through engaging in these actions. These findings suggested that when hedonic goal frames play a dominant role, that is hedonic goals are strongest, concerns with gain and normative frames will hardly be considered. Thus, there is reason to believe that consumers' positive affect towards buying green food could positively influence their green purchase behaviour.

For the negative affective reaction, emotional reactions to environmental problems also appear to be related to pro-environmental behaviour. For example, the more intense the emotions are with which people react to

environmental problems, the more they are likely to engage in environmental protection behaviour (Grob, 1995; J. A. Lee & Holden, 1999). Comparatively, more consistent empirical evidence has been found to support a positive relationship between ecological affect and behaviour (L. Y. Li, 1997). In the environment context, Benton (1994) has termed such affect ecological concern, which represents an individual's degree of emotional attachment to ecological issues. Kinnear and Taylor (1973) emphasize that the level of ecological concern a person demonstrates will be a function of both his/her attitude and behaviour.

2.2.2 Gain goal frames and the theory of planned behaviour

In a gain goal frame, people focus on how to improve their personal resources, so they are very sensitive to information about incentives, that is, scarce resources such as money, time, and status (Lindenberg & Steg, 2007). The theory of planned behaviour (TPB) (Ajzen, 1991; Ajzen & Fishbein, 1980) assumes that behaviour results from this motive.

The TPB assumes that individuals' self-interests stimulate their actions, and seeks to provide an explanation of behaviour, and links attitudes, subjective norms (SN), perceived behaviour control (PBC), behaviour intention and behaviour in a fixed causal sequence (Harrison, Newholm, & Shaw, 2005). That is, green purchase behaviour results from the intention to perform this behaviour, which in turn is influenced by attitudes towards the behaviour, subjective norms and perceived behaviour control.

Lindenberg and Steg (2007) explain TPB's variables individually under the green consumption context. Attitude is an individual's positive or negative assessment of buying green products, which reflects the overall evaluation of engaging in the behaviour and is based on beliefs about the likely costs and benefits of behaviour. Subjective norms (SN) are an individual's perception of social pressure from significant others to consume green products, which is based on beliefs about expectations of relevant reference groups concerning the behaviour. Thus, norms reflect social costs and benefits (Lindenberg & Steg, 2007). Perceived behaviour control (PBC) is an individual's perception of difficulties in and obstacles to buying green products, that is, the perceived possibility of performing the behaviour. PBC is dependent on beliefs about the presence of factors that may facilitate or hinder behaviour.

Ajzen's TPB is a prominent approach within the attitude-behaviour paradigm in social psychology, and has been applied to a variety of behaviour phenomena (Armitage & Conner, 2001; Shaw, 2000), e.g. in the managerial, social, and health sciences (review: Armitage & Conner, 2001). In particular, the TPB has been used to explain various types of green behaviour successfully, such as travel mode choice (Bamberg & Schmidt, 2003; Harland et al., 1999; Heath & Gifford, 2002), household recycling, composting (Mannetti, Pierro, & Livi, 2004; S. Taylor & Todd, 1995), and the purchase of energy-saving light bulbs, unbleached paper use, water use (Harland et al., 1999). There are also some studies which explore food

consumption through the TPB, such as ready-to-eat meals (Olsen, Sijtsema, & Hall, 2010), organic food (J. Chen & Lobo, 2012; M. F. Chen, 2007; Dean, Raats, & Shepherd, 2012), sustainably sourced foods (Dowd & Burke, 2013), green food (Qinghua Zhu et al., 2013), healthy food (Cho et al., 2015), and meat (Harland et al., 1999). In these cases, attitudes contributed most strongly to the explanation of pro-environmental intention or behaviour. These findings suggest that people are more likely to behave environmentally if they think this kind of action has positive consequences for themselves, that is, benefits exceed costs associated with green purchase behaviour (Lindenberg & Steg, 2007).

A study by Bamberg and Schmidt (2003) revealed that TPB is far more successful in explaining mode choice than is a model that focused on activation of moral norms (the norm activation model, see next section). However, Ozcaglar-Toulouse, Shiu, and Shaw (2006) and Shaw (2000) found ethical obligation (understood as an individual's internalized ethical rules, which reflect his/her personal beliefs about right and wrong) can increase the predictive power of the TPB in the fair trade food context. This kind of food choice refers to consumer choices based on social, non-traditional components of products (Auger, Burke, Devinney, & Louviere, 2003) and personal and moral beliefs (Carrigan, Szmigin, & Wright, 2004). Thus the TPB may not directly apply to pro-environmental or ethical behaviour since internalized moral or personal norms appear to play an important role for such behaviours (Stern, Dietz, & Black, 1985; Thøgersen,

1996). Thus, in the following section, the influence of normative goal frames on green consumption will be explored.

2.2.3 Normative goal frames and the norm activation model

A normative goal frame generally implies buying green products without paying close attention to costs or personal feelings. Thøgersen (1996) mentioned that environmentally relevant behaviours should be classified as belonging to the domain of moral behaviour rather than economic behaviour. Furthermore, instead of measuring personal costs and benefits, people evaluate environmentally relevant behaviours in terms of right and wrong (Harland et al., 1999; Harland, Staats, & Wilke, 2007). Thøgersen (1999) found that personal moral concerns are significant predictors of the intention to choose environmentally friendly packaging, while the perceived cost of this behaviour is not. Similarly, Hendrickx and Nicolaij (2004) found that ethical concerns play a prominent role in the evaluation of environmental risks. Dawes and Messick (2000) argued that one of the reasons why people may not act in their own interest when individual and common interests are at odds is that they want to behave “appropriately”. Dawes (1980) said people must think about and come to understand the nature of social dilemma, so that moral, normative, and altruistic concerns can affect behaviour. Thus, when people are aware of environmental problems, normative goal frames are stronger, which raise the probability of acting on green purchase intentions.

The norm-activation model (NAM) (Schwartz, 1977; Schwartz & Howard, 1981) has been developed and successfully tested in the domain of prosocial behaviour, where other people are directly affected by the consequences of one's behavioural choice (Gärling, Fujii, Gärling, & Jakobsson, 2003; Schultz & Zelezny, 1998; Thøgersen, 1999), although it was originally developed to measure the performance of altruistic behaviour. According to this model, people are motived to engage in green buying efforts when they hold personal norms that are favourable to these efforts, that is, feelings of moral obligation. In addition, these personal norms are a result of two factors: (1) awareness that performing the particular behaviour (or not) has certain consequences and (2) feelings of responsibility for carrying out the behaviour. That is, personal norms are activated when individuals are aware of adverse consequences of behaviour to others or the environment (awareness of consequences, AC) and they think they can avert these consequences (ascription of responsibility, AR).

Moral obligation has also been shown to have an independent effect on food choice, especially when it comes to intention to purchase a range of products that are encapsulated by the umbrella terms of ethical or green food. These include fair trade grocery products (Shaw, Shiu, & Clarke, 2000), organic foods (Arvola et al., 2008), ready-to-eat meals (Olsen et al., 2010), ethically-branded meat (McEachern, Schröder, Willock, Whitelock, & Mason, 2007), and toward genetic engineering (Sparks, Shepherd, & Frewer, 1995).

However, when behaviour change is costly in effort, inconvenience, money or time, that is it presents some strong constrains on behaviour, the NAM will have less explanatory power (Bamberg et al., 2003; Hunecke, Blöbaum, Matthies, & Höger, 2001). Diekmann and Preisendörfer (2003) used a hypothesis by Kirchgässner (1992), which states that concerns with gain will quickly displace concerns with norms when costs increase. Although their result showed rather weak correlations between environmental concerns and behaviour, it does not mean normative and environmental concerns do not affect behaviour at all, but these concerns play a less important role than other considerations, such as costs, efforts and convenience.

2.2.4 Integrating multiple motives

All of the above results suggest that green purchase behaviour results from multiple motives. Essentially, these motives may interact in influencing behaviours; no matter whether they are conflictive or compatible.

Many green purchase behaviours, such as buying of organic food, require people to inhibit their egoistic tendencies in order to benefit the environment (Dawes, 1980; Samuelson, 1990). From an individual point of view, although for example, buying cheap (non-organic) food is attractive to act in one's own interest because of the many individual advantages in the short term, in the long term, if individuals act pro-environmentally, society would be better. Thus, it means that multiple conflicting motives may play a particular role in

green purchasing behaviour (De Young, 2000; Kaplan, 2000; Lindenberg & Steg, 2007).

Meanwhile, several researchers have also examined the different motives that might be related to green food purchasing behaviour. In the organic food literatures, motivations for purchase of those products have been widely researched in many different countries. For example, studies by Magnusson, Arvola, Hursti, Åberg, and Sjödén (2003), and Shepherd, Magnusson, and Per-Olow (2005) found that in Sweden, egoistic motives (i.e. benefits the individual or his/her family) are better predictors of the purchase of organic food than are altruistic motives (i.e. benefits society rather than the individual). Similar findings are also revealed in Australia (Dowd & Burke, 2013; Lockie, Lyons, Lawrence, & Grice, 2004). Although there is no unambiguous evidence that organic foods are healthier than conventional foods (Torjusen, Lieblein, Wandel, & Francis, 2001), consumers perceive foods labelled as organic to be healthier than conventional foods (Magnusson, Arvola, Hursti, Åberg, & Sjödén, 2001; Torjusen et al., 2001). Human health, with the naturalness of food and the sensory and emotional experience of eating, and convenience together compose the major egoistic motives of increasing levels of organic consumption (M. F. Chen, 2007; Dowd & Burke, 2013; Lindeman & Väänänen, 2000; Lockie et al., 2004; Shepherd et al., 2005). In addition, several studies also found altruistic motives behind personal food choice decisions, such as animal welfare, environmental protection, political values and religion (M. F. Chen, 2007; Lindeman & Väänänen, 2000; Lockie et al., 2004). Thus, it seems hedonic,

gain and normative goals can be compatible and together positively influence people in buying green food.

2.3 Usefulness of goal-framing theory to understand consumer green purchase behaviour

The goal-framing theory supposes that goals govern the way people process information and act upon it (Lindenberg & Steg, 2007). Therefore, when a goal is to activate, it influences what a person thinks of at the moment, what information she/he is sensitive to, what alternatives she/he perceives, and how she/he will act. Furthermore, linking to motivations (goal frames) the goal-framing theory seeks to obtain a deeper understanding of how the goals interact to motivate people to engage in buying green products. Hence, it is a useful tool that demonstrates the cognitive linkages between motivation, consumer knowledge and buying behaviour (Lindenberg, 2001, 2001b, 2001c, 2006). One the other hand, using goal-framing theory is advantageous compared to other models of consumer decision making as this theory explicitly acknowledges that behaviour results from multiple motivations which usually are mixed (Lindenberg & Steg, 2007).

From a marketing point of view, the goal-framing theory provides marketers with an insight into cognition, affect and conation connections obtained from consumer decisions to purchase green products. These insights are extremely useful for marketers not only to obtain a deeper understanding of consumer behaviour, but it also assists in generating guidelines about how to

encourage active and meaningful consumer engagement in pro-environmental initiatives.

2.4 The role of consumer knowledge

In an attempt to better understand why people perform eco-friendly acts, Maloney and Ward (1973) advocate the importance of determining consumers' knowledge of the environment, how they feel about the environment (ecological affect), and what commitment they are willing to make (intention) to developing eco-friendly behaviour. Such views are consistent with the classic behavioural proposition that cognition, affect and conation are three essential components in determining corresponding behaviour (Bagozzi et al., 1979; Breckler, 1984; Chan, 2001). Researchers following this paradigm further assert that an individual's ecological/green behaviour is highly dependent upon his or her ecological knowledge, affect and intention (Chan, 2001; Chan & Yam, 1995).

Lazarus and Smith (1988) point out that knowledge, whether concrete and primitive or abstract and symbolic, consists of cognitions about the way things are and how they work. (Laroche, Bergeron, & Barbaro-Forleo, 2001), such as, how consumers gather and organize information (Alba & Hutchinson, 1987), how much information is used in decision making (Brucks, 1985), and how consumers evaluate products and services (Murray & Schlacter, 1990). More sepcifically, Lindenberg and Steg (2007) suggest knowledge plays two important roles in their green purchase behaviour.

2.4.1 Strengthening normative goal frames

When normative goal frames are dominant, and when people know what kind of action is right in a given situation, the normative goals will influence actions most strongly. However, when the action costs are quite high, moral norms will be pushed into the background, which means the norms need strong supports. Furthermore, norms will not work if people are unknowing even if they are motivated to behave morally.

Lindenberg and Steg (2007) suggest that there are two factors that may lead to people acting against their moral norms. First, people may not have sufficient knowledge of environmental problems (Staats, Wit, & Midden, 1996). Meinhold and Malkus (2005) found that when environmental knowledge is higher, the relationships between environmental attitude and behaviour are stronger, which suggests that environmental knowledge encourages people to behave in accordance with normative goal frames. Second, people may not realise the consequences of the environmental impacts of their behaviour, and not know exactly what kind of action would be the most environmentally friendly. Thus, in order to overcome this inhibition factor, increasing green food knowledge impacts associated with their buying behaviour may be helpful.

Abrahamse, Steg, Vlek, and Rothengatter (2005) demonstrate that tailored information seems to be more helpful in promoting environment protection

behaviour than non-tailored messages and mass media campaigns. Similarly, Thøgersen (1999) finds people will notice the labels when they trust them, have a pro-environmental attitude, and think they can help to protect the environment. Thus, environmental labelling may be helpful to translate smart norms into action. However, as mentioned in the introduction section, there are three different standard labels used in China, and few Chinese consumers claim to use the information from labels (see R. Liu et al., 2013 for a review). Therefore, in this study, it is more crucial to examine the influence of green food knowledge rather than knowledge about labelling.

2.4.2 Making gain and hedonic goals more compatible with normative goals

Green purchase behaviour is often associated with higher behavioural costs (e.g. money, time, effort, inconvenience) and also no fun (see McKenzie‐Mohr, 2000). For example, organic food is usually much more expensive, and not many products can be chosen in China. In this situation, consumers would act pro-environmentally only when a normative goal frame is stronger than hedonic or gain goals which are in the background. Lindenberg and Steg (2007) point out that interventions could be aimed at making gain and hedonic background goals less incompatible or even compatible with normative goals, that is, making environmentally friendly behaviour more attractive or pleasurable by the use of incentives, and/or behaviour with negative environmental impact less attractive or pleasurable by the use of disincentives.

In this study, consumers' knowledge is explored as this kind of intervention. For example, when hedonic goals are dominant, green products should make people feel good when they buy. This requires knowledge that influences people's mood. However, little is known about effective ways to promote positive or reduce negative feelings associated with green purchase behaviour.

2.5 Alternative theoretical approaches related to consumer behaviour

Many basic facts about consumer behaviour are easily discovered by simple observation. However, the increased complexity which environmental concerns can bring to consumer behaviour highlights the need to gain an improved understanding of the process of consumer green decision-making. A number of different approaches have been adopted in the study of consumer decision making. Different consumer behaviour models have been designed to be effective under different behavioural conditions. In the area of green consumer behaviour a lack of consideration has been given to the issue of how environmental concerns impact consumer purchase decision. Existing consumer behaviour models are not wholly effective in aiding understanding of consumers' green choices. This section will critique different typological classifications of these works with another three major approaches, which have provided a foundation for much experimental work, demonstrate the direction of work, and act as a basic baseline for the current study. They will briefly be introduced in turn.

2.5.1 Research theoretical approaches related to consumer behaviour

2.5.1.1 Economic approaches

Early work approached consumer decision making from an economic perspective, and focused solely on the act of purchase (Loudon & Della Bitta, 1993). The models of how people make decisions are referred to as classical decision theory, e.g. the Utility Theory, Satisficing Theory and Prospect Theory.

Early economists, led by Nicholas Bernoulli, John von Neumann, and Oskar Morgenstern, started to examine the basis of consumer decision making, which was called Utility Theory. In this model developed by McFadden (1974), consumers were regarded as rational decision makers who are only concerned with self-interest, making decisions based upon the ability to maximise utility whilst expending minimum effort (Richarme, 2007; Shi & Hodges, 2015). According to this approach, in order to behave rationally in the economic sense, a consumer would have to be aware of all the available consumption options, be capable of correctly rating each alternative and be available to select the optimum course of action (Schiffman, Kanuk, & Wisenblit, 2010). However, these steps are no longer seen to be a realistic account of human decision making, as consumers rarely have adequate information, motivation or time to make such a ‘perfect’ decision and are often acted upon by less rational influences such as social relationships and

values (Simon, 1997). Furthermore, Herbert Simons' Satisfactory Theory highlighted that individuals are often described as seeking satisfactory rather than optimum choices (Simon, 1997), in which consumers get approximately where they want to go and then stop the decision-making process. Following Simon, two leading psychologists, Daniel Kahneman and Amos Tversky, developed the Prospect Theory, which embrace bounded rationality (Simon, 1991). In this theory, two major elements are value, which provides a reference point and evaluates both gains and losses from the reference point, and endowment, in which an item is more precious if one owns it than if someone else owns it (Richarme, 2007).

According to the above demonstration of the three main models of Classical Decision Theory, instrumental rationality is focused on consumer decision making. In reality, people constantly make choices or decisions in an uncertain world: should I buy life insurance, marry, change jobs? In the context of green purchasing decisions, rationality may not be a sufficient criterion for pro-environmental choice, but it is necessary, although rational choice is popularly identified with rational self-interest. Generally, the action of buying green products is based on consumers' perceptions of whether their consumption will cause harm to the environment. In this concern there is 'a merging of the self-interested and altruistic aspects of morality' (Newholm, Shaw, & Harrison, 2005, p. 17).

Traditional purchase behaviour can be described as people normally choosing the cheapest product, but only if they are confident this its 'utility' is

as good as slightly more expensive options available (Newholm et al., 2005). Thus, to be rational, a consumer must find a balance between information gathering and action that he/she can reasonably believe maximises the utility that results (Hooker, 2010). In the context of green purchase behaviour, consumers are not ignoring price and quality, but applying some additional (and sometimes prior) criteria in the decision-making process (Newholm et al., 2005). Thus, consumers must find a practical trade-off between moral concern and traditional criteria, such as price, quality, availability, etc. Meanwhile, consumers also need information gathering and relevant knowledge to assist them to make choice, which is consistent with traditional decision-makings.

In reality, individuals make choices between alternative courses of action that will maximise their expected utility (Andorfer & Liebe, 2012). Regarding the purchase of products, the basic economic model in consumer theory concentrates primarily on product price and consumer budget restriction. Within their budget restrictions, consumers choose the product alternative that gives them the highest expected utility per cost unit. In deciding which product to consume, a person's preferences are revealed (Andorfer & Liebe, 2012; Sugden, 2001).

Modelling consumer preferences according to the Characteristics Theory of Value (Lancaster, 1966) and the Random Utility Theory (McFadden, 1974), it is assumed that utility is derived from the characteristics of goods (not from the goods per se) and that the utility of product alternatives is a latent

construct that only exists in the minds of individual consumers. Researchers are not able to observe this directly (Andorfer & Liebe, 2012). Yet, indirect measurement techniques can be used to explain a significant part of the latent utility construct.

The estimation of consumers' willingness to pay (WTP) a premium for the pro-environmental features of products is a prevalent research objective of studies based on economic explanations. Consumers buying more expensive ethical products reveal their preferences for the pro-environmental features of a product and, consequently, these consumers gain additional utility from these characteristics. The studies mostly focus on the estimation of consumers' WTP for fair trade coffee (Carlsson, García, & Löfgren, 2010; Cranfield, Henson, Northey, & Masakure, 2010), sweatshop-free clothing (Hustvedt & Bernard, 2010; Rode, Hogarth, & Le Menestrel, 2008), and organic food (Yu et al., 2014). In addition, some studies explicitly investigate the effect of product information transmitted via ethical labels on the amount consumers are willing to pay extra for ethical products (Hustvedt & Bernard, 2010).

Researchers soon noticed that human decision making is more complex than even this theory implies. Moreover, contemporary research on consumer behaviour considers a wide range of factors influencing consumers, and acknowledges a broad range of consumption activities beyond purchasing, such as need recognition, information search, evaluation of alternatives, the building of purchase intention, the act of purchasing, consumption and finally

disposal (Solomon, 2010). Therefore, Classical Decision Theory is not wholly effective in aiding understanding of consumers' green choices.

2.5.1.2 Psychodynamic approaches

The psychodynamic approach is largely based on the work of Sigmund Freud (1856-1939). Specifically, three fundamental psyche facets specified by Freud (1923) consist of the Id, (responsible for instincts and pleasure-seeking); the Ego, (which is the conscious part of the brain that mediates between reality and unconscious), and finally the Super Ego, (which attempts to obey the rules of parents and society) (Arnold & Randall, 2010).

The basis of this view is that individual human behaviour and psychological functioning is subject to biological influence through the operation of instinctive forces, many of which exert their effect outside our consciousness (Arnold & Randall, 2010), that is, behaviour is the result of motives, drives, needs and conflicts (Albright, 2011). This approach focuses on the unconscious inner conflicts as people strive to achieve their goals (O'Shaughnessy, NetLibrary, & O'Shaughnessy, 2004). These unconscious processes influence the things to which we attend and how we feel (Pervin & Cervone, 2010). As a result, people's unconscious thoughts and feelings direct much of their emotional life and guide their decisions (Albright, 2011).

Some of these unconsciously-made shopping choices are highly habitualised and based on attitudes that are automatically activated on the perception of

product (Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005). Here, some information processing may have taken place, but not right before the consumer picked a product, e.g. consumers did not have to think about buying some their favorite products. Generally, when people buy groceries when very hungry, they usually end up buying considerably more than under normal circumstances. Some consumer choices are likely made without any information processing at all, neither just before they pick a product, nor earlier (Dijksterhuis et al., 2005). For example, North, Hargreaves, and McKendrick (1999) showed that French music played in a store led to an increase in sales of French wine, whereas German music led customers to buy more German wine. This kind of impulse choices are usually strongly affected by subtle cues in the environment.

Consumers' green buying behaviour, however, is under lots of information processing and concerns. Human welfare, human rights, environmental sustainability and corporate responsibility combine, overlap, conflict and vie for attention (Newholm et al., 2005). It should be noticed that people's some unconscious shopping behavior, such as traditional purchasing habits, may impede them in buying green products.

The main objective of this study is to determine the relative influence of factors affecting Chinese consumers' intention to purchase green food and identify factors affecting their actual purchase behaviour for green food. Therefore, considering the nature of objectives of the study, psychodynamic approaches are not adopted as a basic approach method in the current study.

2.5.1.3 Behaviourist approach

Behaviourism makes no inferences whatever about what is going on inside the organism, and it is concerned only with observable behaviour and the conditions (situations) that elicit particular behaviours (Arnold & Randall, 2010). That is to say, essentially behaviourism is a family of philosophies stating that behaviour is explained by external events, and that all things that organisms do, including actions, thoughts and feelings, can be regarded as behaviour (Bray, 2008).

In contrast to the psychodynamic framework, in extreme application behaviourists discount the internal workings of the mind, or psyche, as an area of study. Only that which can be observed and measured, i.e. overt behaviour, receives attention (Jennings & Wattam, 1994). The behaviourist approach views experience within the social and physical environment as being the primary or sole determinant of behaviour. Thus biological or innate causes are rejected as explanatory factors (Jennings & Wattam, 1994).

The primary tenet of behaviourism is that psychology should concern itself with the observable behaviour of people and animals, not with unobservable events that take place in their minds (Skinner, 1984). A leading advocate of this position was Skinner (1904-1990), who put forward Radical Behaviourism. He and other learning theorists argued that human behaviour is environmentally controlled. Skinner used the concept of reinforcement to

refer to any favourable outcome of behaviour. Such an outcome reinforces that behaviour, i.e. makes it more likely to occur again in a similar situation. Radical Behaviourism is intended to contribute to the prediction and control of behaviour rather than its understanding, which links behaviour (always the dependent variable) to the independent (environmental) variables that control its rate of emission (Foxall, 1995).

Radical Behaviourism acknowledges the existence of feelings and states of mind and introspection, however still regards these factors as epiphenomenal (Bray, 2008). It is said to replace cognitive and other mentalistic explanations in terms of personality traits, attitudes, purpose and intention (Skinner, 1988). Nevertheless, consumers' green decision-making is quite complex, which lies in the fact that at the onset of the process consumers have to make internal and personal decisions about the particular environmental issues they are interested in and will act upon during the evaluation of their purchasing criteria, leading to more cognitive approaches.

2.5.1.4 Cognitive approach

The Cognitive approach is derived in large part from Cognitive Psychology which can trace its roots back to early philosophers. In contrast to the foundations of Behaviourism, the cognitive approach ascribes observed action to intrapersonal cognition. The individual is viewed as an 'information processor'. This intrapersonal causation clearly challenges the explicative power of environmental variables suggested in Behavioural approaches,

however the influential role of the environment and social experience is acknowledged, with consumers actively seeking and receiving environmental and social stimuli as informational inputs aiding internal decision making (Stewart, 1994). Contemporary Cognitive Psychology has identified and developed a wide range of factors which are thought fundamental to these intrapersonal processes including: perception, learning, memory, thinking, emotion and motivation (Sternberg, 2003).

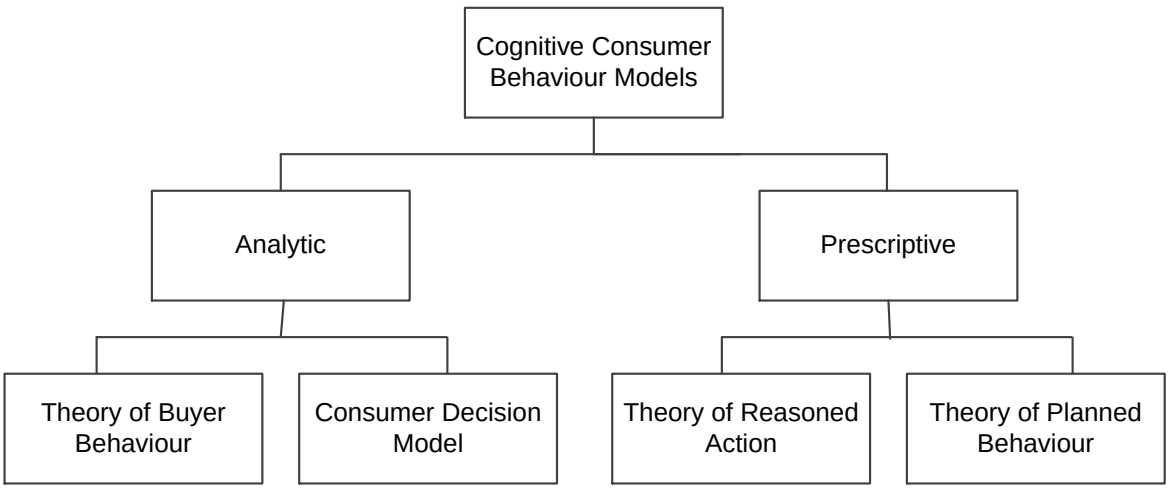
Despite coming from a Radical Behavioural perspective, (Foxall, 2010) identifies four key strengths of Cognitivism as a means of explaining consumer behaviour:

- Its closeness to the common-sense explanations of everyday discourse make it an intuitively attractive means of offering explanations of everyday behaviours such as purchasing and consuming;
- The ability of consumers to describe their experiences in terms of their attitudes, wants, needs and motives ensures that an explanation proceeds in the same terms as the description of what is explained;
- It brings a measure of unity and consensus to a still young field of inquiry;
- The extensive use made by other social science and humanity disciplines of cognitive explanation has assisted the conceptual development of this line of consumer research by making possible the borrowing of theoretical and methodological inputs.

Furthermore, Cognitivism has the capacity to explain complex behaviours, an acknowledged deficiency of the competing Behavioural perspective where it is impossible to ascertain the contingencies that control response (Foxall, 2010).

A cognitive approach is more appropriate in the examination of green purchasing behaviour. Firstly, the complexity of such actions cannot be accommodated through behavioural models and secondly, the benefits of green consumption are largely vicarious in nature, requiring extensive intrapersonal evaluation (Bray, 2008). Key existing studies into green purchase have all accepted the role of intrapersonal examination (Nicholls & Lee, 2006; Ozcaglar-Toulouse et al., 2006). Two major types of Cognitive models can be discerned, as outlined in Figure 2.2 below.

Figure 2. 2 Cognitive Consumer Behaviour Models



Source: Fawcett and Downs (1992)

Analytical models provide a framework of the key elements that are purported to explain the behaviour of consumers. These models identify a plethora of influencing factors, and intimate the broad relationships between factors in consumer decision making (Solomon, 2010). Typically they tend to follow the traditional five step classification outlining problem recognition, information search, alternative evaluation, choice and outcome evaluation as the key stages in consumer decision processes. The Theory of Buyer Behaviour (Howard & Sheth, 1969) and the Consumer Decision Model (Blackwell, Engel, & Miniard, 2006) are two of the most widely cited analytical models. However, the complexity of the model has meant that it has been difficult for most researchers to test. Thus, there is widespread questioning of the model's validity due to the lack of empirical work, employing 'scientific' methods, examining the organisation of the model and the inclusion of individual constructs (Hunt & Pappas, 1972). Further, due to the unobservable nature of many of the intervening variables explicit measurement is difficult (Loudon & Della Bitta, 1993). The model may be more applicable for high risk purchase, and appears too complex for relatively low risk routine grocery purchasing, where the unspecified exogenous factors, such as price and availability may exert a large influence on the purchase decision (Shaw, 2000). Such a suggestion renders this model limited in the context of the present study.

Prescriptive models provide guidelines or frameworks to organise how consumer behaviour is structured (Moital, 2006). These models include the order in which elements should appear and prescribe the effect that should

be observed given certain causal factors. As such they promise to be useful to practitioners who can ‘measure’ what stimuli should be modified or emphasised to attract a certain consumer response. The most widely referenced and used prescriptive models are the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (Ajzen, 1988).

Prescriptive Cognitive Models were first developed in the 1960s when marketing researchers increasingly focused on beliefs and attitudes as determinants of consumer buying behaviour (Ahtola, 1975). The most influential work in this area was forwarded by Martin Fishbein who proposed a model of attitude formation that became known as the ‘Fishbein Model’. This model stated that a person’s overall attitude toward an object is derived from his beliefs and feelings about various attributes of the object (Loudon & Della Bitta, 1993), which is expressed algebraically in Figure 2.3 below.

Figure 2. 3 Fishbein Model

$$A_0 = \sum_{I=1}^{N} B_i a_i$$

Where:

A_0 = the person’s overall attitude towards object 0

B_i = the strength of belief that the product possesses attribute i

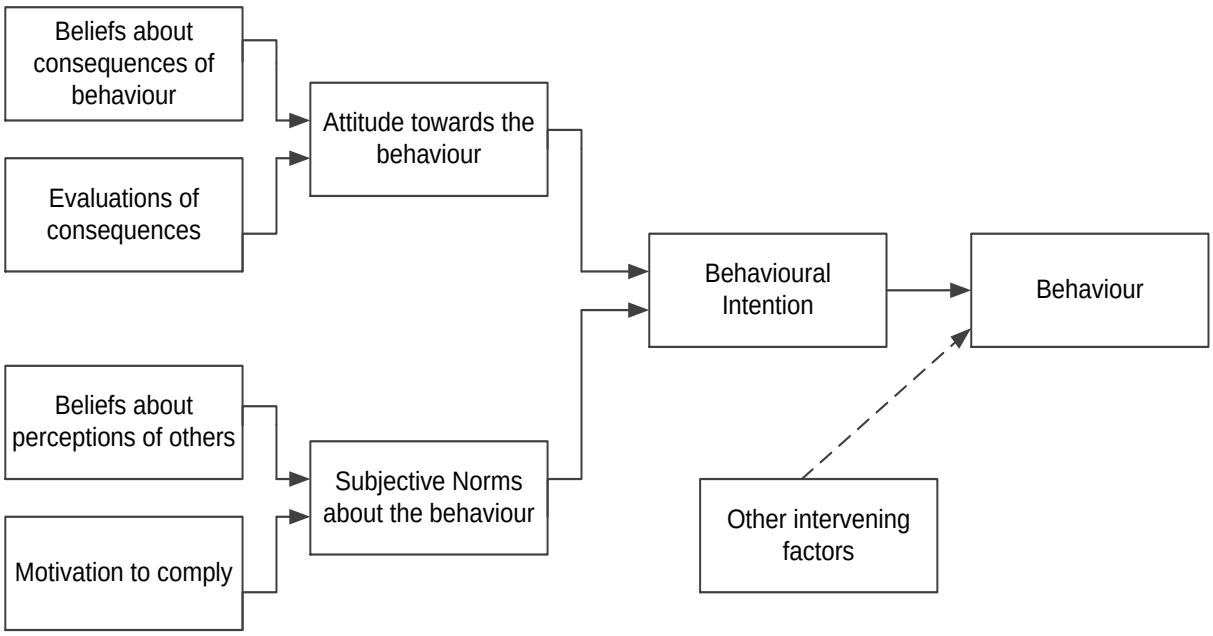
A_i = the evaluation or intensity of feeling (liking or disliking) toward attribute i

N = the number of relevant beliefs considered by that person

Source: Fishbein, 1963

While this model provided a significant contribution in the area, it was developed further, and significantly extended, to not only assess attitudes, but behaviour (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). This revised model became known as the Theory of Reasoned Action (TRA), which is depicted in Figure 2.4 below.

Figure 2. 4 Theory of Reasoned Action

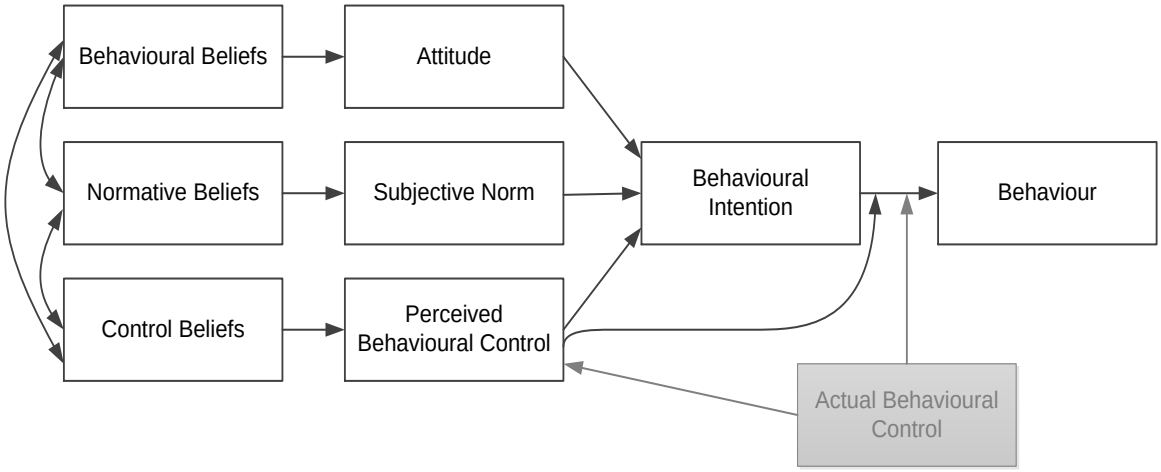


Source: Fishbein and Ajzen (1975); Loudon and Della Bitta (1993)

Behaviour is said to be approximately equal to behaviour intention, which can be derived from a combination of the consumer's attitude toward purchasing the product and the subjective norms of the behaviour.

The Theory of Planned Behaviour (depicted in its simplified form in Figure 2.5 below) is simply an extension of TRA which seeks to address the seeming over reliance on intentions to predict behaviours.

Figure 2. 5 Theory of Planned Behaviour



Source: Ajzen (2006)

In the TPB, behavioural intention is controlled by a dynamic mix of the attitude, subjective norm and perceived behavioural control variables. Actual behaviour is again derived largely from behavioural intention, but is mediated to some degree by perceived behavioural control (Ajzen, 2006).

The TPB has become the dominant expectancy-value theory, and has been applied in a wide variety of behaviour domains (Shaw, 2000). In particular, the TPB has been used in past research as a measurement

tool for green consumer decision-making (Ozcaglar-Toulouse et al., 2006; Shaw et al., 2000) and has been retained as the consumer investigative vehicle for this particular study in both the ethical and value clothing contexts. Thus, the application of this theoretical framework in the present study enables the examination of key factors in consumer green decision-making, and their relationships and impacts within an operational model of intention to purchase green products.

2.5.2 Alternative methodological techniques related to consumer behaviour

There are many methodological techniques to identify consumers' purchase intentions. Amongst these techniques, two of the most widely used are discussed here: willingness to pay, means-end chain (S. C. Grunert & Juhl, 1995).

2.4.2.1 Willingness to pay

Willingness to pay (WTP) refers to the maximum price a buyer is willing to pay for a product in relation to how much that buyer values the product (Didier & Lucie, 2008; Kalish & Nelson, 1991; Voelckner, 2006; Wertenbroch & Skiera, 2002). Each buyer would be eager to buy a product at a price less than his or her WTP, would refuse to buy the product at a price more than his or her WTP, and would be indifferent about buying the product at a price exactly equal to his or her WTP. Thus, an individual's attitude and intention for a product can be measured by their WTP (Mankiw, 2014).

In the international literature, one can find a large body of research regarding consumers' willingness to pay a premium price for environmental friendliness and/or quality/safety in food production (Didier & Lucie, 2008; Kaya, Florkowski, Yen, & Suh, 2013; Krystallis & Chryssohoidis, 2005), as well as for non-food products (Hamzaoui Essoussi & Linton, 2010; Laroche, Bergeron, & Barbaro-Forleo, 2001; Vlosky, Ozanne, & Fontenot, 1999).

An increase in WTP for environmentally friendly products may be just based on the price range that customers feel is fair for a product. An alternative explanation is that consumer perception of price and quality for environmentally friendly products is critical. Kahneman and Knetsch (1992) suggest that WTP estimates are not a measure of the economic value of the goods, but are expressions of a willingness to acquire a sense of moral satisfaction. The marketing practice of selling an elite product at a cost level above that of its competition is in order to make it appeal to more exclusive and wealthy consumers. One key reason consumers are willing to pay such a premium is to ensure product quality (Rao & Bergen, 1992).

The contingent valuation method (CVM) is a widely used method to measure WTP which provides an individual with hypothetical opportunities to purchase public goods in the absence of existing information pertaining to a real market. The aim of CVM is to measure consumers' surplus value for a product. It is a direct survey approach that can be used to provide acceptable measures of the economic value of a product (Loomis & Walsh, 1997). There

are some advantages of using the CVM. First, CVM is able to assess not only an individual's WTP for the present condition of a product, but it also measures their WTP with hypothetical changes to the product. Second, the researcher can develop a hypothetical market for the participating company to make an economic decision. In addition, the method is simple because it is a direct valuation approach which aims at drawing preferences out from questionnaires and experiments (C. K. Lee & Han, 2002). The major criticism of CVM has been that stated WTP is a poor indicator of actual WTP (Diamond & Hausman, 1994). The CVM is based on a hypothetical market in which respondents are not actually required to make the contributions they claim to be willing to pay (Foster, Bateman, & Harley, 1997).

With the CVM, respondents are asked to directly state their WTP for the product or service, which is a relatively easy method. In green consumption, the CVM as an approach has been used in previous studies for the evaluation of a consumer's WTP for different product attributes, such as water quality improvement (Raje, Dhobe, & Deshpande, 2002), valuation of genetically modified food (Lusk, Jamal, Kurlander, Roucan, & Taulman, 2005), and organic agricultural products (Gil, Gracia, & Sanchez, 2000; Sakagami & Haas, 2012) as well as recycled products (Hamzaoui Essoussi & Linton, 2010). However, measuring the consumers' WTP using a self-administrated survey can be challenging (Franke & Piller, 2004; Sichtmann & Stingel, 2007). Meanwhile, it is very difficult to check the validity of the WTP responses by comparing WTP with actual payments. Wertenbroch and Skiera (2002) and Franke and Piller (2004) suggest that this method is

subject to the risk of overestimating actual WTP so as to limit the external validity of this method.

In conclusion, the most important problem with using the CVM is that measured WTP tends to be different to actual WTP in the real market. Because one of the main objectives of this study is to find the influential factors affecting consumers' actual purchase behaviour of green food, it is meaningless to use this approach if the difference between intention and actual behaviour is due to using the approach.

2.4.2.2 Means-end-chain (MEC)

Means-end-chain theory (MEC), frequently operating as laddering (Reynolds & Gutman, 1988), seeks to understand how consumers mentally link products to personally relevant consequences, and how a product facilitates the achievement of desired end states (S. C. Grunert & Juhl, 1995; Gutman, 1982). This suggests that consumers associate different meanings which are personally relevant with products or services (Ha & Jang, 2013). Consumers may also utilise personally relevant meanings in selecting products or services to satisfy their different needs (Ha & Jang, 2013). Overall, the MEC theory focuses on the links between Means, the Subsequent consequences for the consumer and the End (Audenaert & Steenkamp, 2012). Means are product or service attributes in which people engage; Ends are personal

values that consumers desire through products or services, such as happiness, security and accomplishment (Reynolds & Gutman, 1988).

Originally, MEC theory was applied to marketing and advertising research (Gutman, 1982) and Olson and Reynolds (2001) revised the framework, which enabled marketers to understand consumer decision making. According to Olson and Reynolds (2001), marketers can apply MEC to understand the criteria consumers use to evaluate alternative product offerings and the criteria used to differentiate them. Moreover, this also helps to determine why consumers find the choice criteria to be important or self-relevant.

The MEC approach is developed based on two fundamental assumptions about consumer behaviour. First, values defined as desirable end-states of existence play an important role in guiding choice patterns for a product. Second, consumers deal with the tremendous diversity of products that are potential satisfiers of their values by grouping them into sets or classes, so as to reduce the complexity of choice (Gutman, 1982). This suggests that, in addition to the product-class type, consumers are capable of creating categories based on product functions. It is important for consumers to reduce the complexity inherent in the multitude of alternatives with which they are faced. Although grouping is determined by the product or service attributes, the choice to be made is influenced by values (Gutman, 1982).

According to Walker and Olson (1991), MEC consists of a hierarchical cognitive structure that relates consumers' product knowledge to their self-knowledge. The lower levels of a means-end hierarchy contain relatively concrete knowledge about product attributes and their perceived linkages to the functional consequences of product use. These functional consequences may be associated with more abstract knowledge about the psychological and social consequences of product use. Therefore, MEC connects these psychological consequences to abstract self-knowledge about the consumer's life goals and values. Consumers see products as more involving, to the extent that their product knowledge about attributes and functional consequences are connected, through Means-end-chain, to their self-knowledge about desirable psychological consequences and values (Walker & Olson, 1991).

Laddering techniques have been the most popular method for discovering means-end-chains, which are used to develop an understanding of how consumers translate the attributes of products into personally meaningful associations (Reynolds & Gutman, 1988). There are two methods of laddering, using questionnaires (called "hard" laddering), and interviews (called "soft" laddering) (C. G. Russell et al., 2004). Soft laddering, which utilises individual, face-to-face, semi-structured interviews to elicit consumers' MEC, is the original and, to date, the most commonly used laddering method for researchers (C. G. Russell et al., 2004). In the context of a soft laddering interview, consumers are prompted to 'ladder' their way up MEC to reveal in-depth information about the connections between products

or product attributes and the consequences and values attributable to those products (Audenaert & Steenkamp, 2012). On the other hand, hard laddering is a quantitative approach. In hard laddering, a structured questionnaire is used to gather data on consumer MEC (C. G. Russell et al., 2004; Valette-Florence & Rapacchi, 1991). The hard laddering method uses a prior list pertaining to four levels of abstraction – attributes, physical consequences, psychosocial consequences and values – from which participants are required to choose appropriate constructs (Audenaert & Steenkamp, 2012; Fotopoulos, Krystallis, & Ness, 2003; Valette-Florence & Rapacchi, 1991).

Means-end-chain theory and the laddering technique have been used to understand consumers' behaviour in relation to food. One of the earliest studies to apply MEC to the context of marketing was the study by Reynolds and Gutman (1988) which investigated consumer orientations towards beverages. Since then, various studies have also been conducted focusing on different products such as food hazards (Bieberstein & Roosen, 2015), vegetable consumption (Kirchhoff, Smyth, Sanderson, Sultanbawa, & Gething, 2011), yogurt (Vriens & Ter Hofstede, 2000), breakfast items (Manyiwa & Crawford, 2002), snacks (Dibley & Baker, 2001), and organic wine (Fotopoulos et al., 2003).

Although many studies have used the MEC approach to explore consumers' decision-making in food choice, there have some criticisms of the MEC theory. First, in soft laddering, interviews are very time consuming, labour intensive, and very costly. In addition, much of the time spent on research is

reading the transcripts from the interviews, and coding and analysis of the data. Thus, laddering interviews are impossible to use in large-scale consumer studies (Langbroek & De Beuckelaer, 2007). Second, a limitation of the hard laddering methods is that they only allow the identification of consumers' means-end-chain based on a very limited number of product attributes, usually the three most important product attributes can be identified by consumers (C. G. Russell et al., 2004). Finally, consumers may have serious misconceptions about the links between food product attributes and consumption consequences because their expert knowledge on food is limited. K. G. Grunert, Beckman, and Sorensen (2001) suggest that consumers' cognitive structures regarding existing products can provide only a glimpse of how they would perceive a truly innovative product.

Therefore, the means-end-chain approach will not be adopted in this study because it may have limited use in academic research needing a large sample and large number of variables (Bieberstein & Roosen, 2015; Gutman, 1991).

2.6 Hypothesis development

2.6.1 Attitude-Intention towards green purchase behaviour

In this study, TPB (Ajzen, 1991; Ajzen & Fishbein, 1980) will be applied to explore the gain goal frame in green consumption. According to TPB, attitude towards behaviour is determined by salient behavioural beliefs, which links

the behaviour to a certain outcome, or to some other attribute such as the cost incurred by performing the behaviour. That is, the attitude towards behaviour is determined by the person's evaluation of the outcomes associated with the behaviour and by the strength of these associations.

Attitudes are important to the study of consumer behaviour, which indicates how consumers think, feel and act about specific phenomena. People's attitudes can be or should be divided into three classes --- cognition, affect and behaviour (Eagly & Chaiken, 1993). The cognitive category contains thoughts that people have about the attitude objective. The affective category consists of feelings or emotions that people have in relation to the attitude object. The behavioural category encompasses people's actions with respect to the attitude object.

Evaluative responses of the cognitive type are thoughts or ideas about the attitude object. These thoughts are often conceptualised as beliefs where beliefs are understood as various attributes (Fishbein & Ajzen, 1975). In general, people who evaluate an attitude object favourably are likely to associate it with positive attributes and unlikely to associate it with negative attributes, whereas people who evaluate an attitude object unfavourably are likely to associate it with negative attributes and unlikely to associate it with positive attributes (Eagly & Chaiken, 1993).

Evaluative responses of the affective type consist of feelings, mood, emotions and sympathetic nervous system activity that people experience in

relation to attitude objects (Eagly & Chaiken, 1993). In general, people who evaluate an attitude object favourably are likely to experience positive affective reactions in conjunction with it and are unlikely to experience negative affective reactions; people who evaluate an attitude object unfavourably are likely to experience negative affective reactions and are unlikely to experience positive affective reactions. Social psychologists have sometimes regarded affect as isomorphic with evaluation itself and used the terms interchangeably (e.g. Fishbein & Ajzen, 1975). In agreement with some more recent treatments of attitude (e.g. Dowd & Burke, 2013) and in recognition of the growing body of research on affect and emotion (e.g. Junaedi, 2007), this research prefers to regard evaluation and affect as conceptually distinct. Thus, evaluation is treated as an intervening state that accounts for the covariation between classes of stimuli and the evaluative responses elicited by the stimuli, and affects are treated as one type of responding by which people may express their evaluations, discussed in more detail in Section 2.5.5.

Evaluative responses of the behavioural (or conative) type consist of the overt actions that people exhibit in relation to the attitude object. In general, people who evaluate an attitude object favourably tend to engage in behaviours that foster or support it, and people who evaluate an attitude object unfavourably tend to engage in behaviours that hinder or oppose it. Behavioural responses also can be regarded as encompassing intentions to act that are not necessarily expressed in overt behaviour. Not surprisingly,

positive evaluations are related to holding supportive intentions in relation to attitude object, and negative evaluations to holding non-supportive intentions.

Although based on the debate of the three dimensions of attitude, there are hundreds of attitude definitions which have extended over time, a central core of all of them follows from the assumption that attitudes are fundamentally concerned with evaluation (Albarracin, Johnson, & Zanna, 2005). Breckler and Wiggins (1989) presented findings suggesting that cognitive and affective facets of attitudes are more consistent to the extent that attitude domains are familiar and likely to be thought about frequently (Eagly & Chaiken, 1993). Thus, for example, an attitude

> *represents an evaluative integration of cognitions and affects experienced in relation to an object. Attitudes are the evaluative judgments that integrate and summarize these cognitive/affective reactions. These evaluative abstractions vary in strength, which in turn has implications for persistence, resistance, and attitude-behaviour consistency. (Prislin & Crano, 2008, p. 347)*

Eagly and Chaiken (1993, p. 1) provided what may be the most conventional contemporary definition, specifically, an "attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour". In marketing studies, attitude is defined as 'an individual tendency to carry out an action or towards an object or an idea' (Kotler, 1999; Testa, Iraldo, Vaccari, & Ferrari, 2013). It could be innate or built by experience and information, and it can be influenced by individual beliefs and by attributes that a product possesses (Mowen & Minor, 2001). Attitudes

contribute to the definition of a person's behavioural model and, as a consequence, of her/his choices (Testa et al., 2013).

Generally, if a person believes that performing a given behaviour will lead to mostly positive outcomes, he/she will hold a favourable attitude toward exhibiting that behaviour; in contrast, if a person believes that the behaviour will lead to mostly negative outcomes, he/she will hold an unfavourable attitude. Following TPB, attitudes towards green purchase are hypothesised to influence green purchase behaviour via the mediating variable of green purchase intention. That is, consumers are more likely to buy green food if they think this kind of action has positive consequences for themselves. Many studies have already proved it in the food context (e.g. Cho et al., 2015; Dowd & Burke, 2013; Hustvedt & Bernard, 2010; Olsen et al., 2010). Thus, the following hypothesis is proposed:

H1: Consumer attitudes towards green food purchases are positively related to green food purchase intention.

Investigation and analysis of green food purchase and consumption is well documented in the literature on consumer behaviour. Most studies in consumer behaviour rely on self-reports in response to questionnaire items. Although some studies revealed that self-reports are adequate indicators of actual behaviour (e.g. Fuj, Hennessy, & Mak, 1985; Warriner, McDougall, & Claxton, 1984), others reported low correlations between self-reported and observed behaviour (e.g. Corral-Verdugo, 1997). For example, respondents

claiming their willingness to spend more for green products may not actually do so in reality (Laroche, Bergeron, & Barbaro-Forleo, 2001). A study by Pearce (1990) found customers claimed they wanted to buy ecologically compatible products, but supermarkets were overstocked with products that the same consumers later explained were too expensive (Pearce, 1990). Thus, as the measurement of people's actual behaviour may not always be feasible, ways to collect valid and reliable measurements of self-reported behaviour should be studied in more detail (see Vining & Ebreo, 2002).

This research used two ways to improve the measurement of actual behaviour. First, valid behavioural measures are needed to decide which (group of) individuals should be targeted, and whether target group specific interventions may be worthwhile (Steg & Vlek, 2009) (see more discussion in the next chapter's measurement section). Second, composite behavioural measurements of green food purchase behaviour will be adopted based on a well-defined set of specific behaviours (e.g. see Abrahamse et al., 2005; Gatersleben, Steg, & Vlek, 2002). This approach implies that respondents first indicated which goods they bought (e.g. organic vegetables, fruit, etc.), how often they bought them, and how much they spend on green foods. Based on this approach, feedback may be provided on which behaviour has been most effective in motivational variables, and which has not. More details will be proved in the next chapter.

Following TPB, green purchase intention is hypothesised to influence actual green purchase behaviour. Empirical studies have also demonstrated a

significant positive relationship between ecological intention and behaviour (L. Y. Li, 1997; Qinghua Zhu et al., 2013). Chan's (2001) findings also supported the classic behavioural proposition for Chinese consumers that intention is the most immediately relevant predictor of corresponding behaviour. Thus:

H2: Green purchase intention is positively related to green purchase behaviour

2.6.2 Subjective norms

Subjective norm (SN) is the second determinant of purchase intention in the TPB. According to this theory, SN deals with perceived normative prescriptions, and is the person's perception of social pressure to perform or not to perform the behaviour under consideration. Pedersen, Grønhøj, and Thøgersen (2014) suggest that a person's behaviour is not the product of personal motivation alone, but also learned through observing the behaviour of others and influenced by perceived social pressure. For food consumption behaviour, Higgs (2014) points out that people follow eating norms because it enhances affiliation with a social group and being liked, and it also results in eating that is correct (Deutsch & Gerard, 1955).

Generally, people who believe that most referents with whom they are motivated to comply think they should perform the action will perceive social pressure to do so. Conversely, people who believe that most referents with whom they are motivated to comply would disapprove of their performing the

action will have a subjective norm that puts pressure on them to avoid performing the action. That is to say, the implied compliance processes are based on one's need for approval. It should be stressed that felt normative pressure captures one type of social process: namely, one form of interpersonal process (Xie, Bagozzi, & Østli, 2013).

Empirical evidence does not always support the relationships between SN and purchase intentions. Sparks et al. (1995) point out that subjective norms are proposed to have similar origins in a combination of people's perceptions that important others think they should or should not perform the behaviour in question and their motivation to comply with others' wishes. A study crossing eight EU countries by Dean et al. (2012), found attitude and SN were good predictors of purchase intention towards organic food. However, there are some completely different findings. For example, Vermeir and Verbeke (2008) found that most respondents did not really experience high social norms in relation to purchasing sustainable products. Bagozzi and Kimmel (1995) found that subjective norms did not significantly predict intentions under TPB (also see, Ajzen, 1991; Beale & Manstead, 1991; Madden, Ellen, & Ajzen, 1992; Yazdanpanah & Forouzani, 2015; Y. Zhou et al., 2013). For the Chinese market, Teng and Wang (2015) found that SN influence the intention to purchase organic food, although the research by M. F. Chen (2007) and Y. Zhou et al. (2013) demonstrated that there are no significant relationships between Chinese consumer subjective norms and their purchase intention towards organic food. Therefore, the relationships

between SN and purchase intentions need be further examined. In this study, according to TPB the following hypothesis is proposed:

H3: Consumer subjective norms are positively related to green food purchase intention.

2.6.3 Perceived control behaviour

Ajzen (1988, 1991) introduced the theory of planned behaviour (TPB), adding a measure of perceived control to the basic structure of the theory of reasoned behaviour (TRA), which applies specifically to volitional behaviours (Ajzen, 1988). This modification was advanced in order to extend the domains of behaviour covered by the TRA to include behaviours that are not totally under a person's control.

The TPB does not deal directly with the amount of control a person actually has in a given situation; instead, it considers the possible effects of perceived behavioural control on achievement of behavioural goals (Ajzen, 1988). To the extent that perceptions of behavioural control (PBC) correspond reasonably well to actual control, they should provide useful information over and above expressed intentions. In a similar fashion to attitude and subjective norms, control beliefs are assumed to provide the basis for perceived behavioural control. It is proposed that the measure of PBC will be valuable in the context of green consumption, where problems of control may exist.

There are two important features of PBC in the TPB. First, it assumes that PBC has motivational implications for intentions. People who believe that they have neither the resources nor the opportunities to exhibit a certain behaviour are unlikely to form strong behavioural intentions to engage in it even if they hold favourable attitudes towards the behaviour and believe that important others would approve of their exhibiting it. In this situation, Ajzen (1991) has discussed that it is a non-volitional source of influence because the direct effect of PBC to behaviour represents actual control over opportunities or resources. Second, PBC can influence behaviour indirectly, via intentions, and it can also be used to predict behaviour directly because it may be considered a partial substitute for a measure of actual control. Ajzen (1991) has discussed that this indirect effect of PBC on behaviour is obviously a volitional process, because it captures the motivational influence of control on behaviour through the instigation of intention formation or activation.

Empirical applications supporting the use of this extended model have subsequently appeared in the literature (see, Ajzen, 1991; Shaw et al., 2000; Sparks et al., 1995). Perceived behavioural control has been found to influence intentions for such actions as playing video games, problem drinking, various leisure activities, election participation, and voting behaviour (Ajzen, 1991), attending class, cheating, shoplifting, lying (Beck & Ajzen, 1991), and limiting infants' sugar intake (Beale & Manstead, 1991). In another comparison of the TRA and TPB, Madden et al. (1992) examined 10

behaviours which exhibited a range of control from low to high. They combined these behaviours into three categories to increase the stability of prediction, and found that PBC significantly predicted intentions for all categories and predicted behaviour only for the category containing three behaviours lowest in perceived control, which includes sleeping, shopping and exercising. For the China market, the findings of the effect of PBC for the food consumption are also inconformity. For example, Chen (2007) found PBC significantly influence the purchase intention towards organic food.

However, recently some empirical studies show that PBC has no significant effect on the intention to buy. For example, Dean, Raats, and Shepherd (2008) found that PBC was not a significant predictor for intention to buy organic pizza. In Yazdanpanah and Forouzani (2015)'s study, they explored Iranian students' intention to purchase organic food, and also found that PBC has no significant effects on their purchase intention. Thus, the role of PBC in the theory of planned behaviour is not congruent. According to the TPB, the following hypotheses are proposed:

H4a: Perceived behaviour control has a negative impact on green purchase intention.

H4b: Perceived behaviour control has a negative impact on green purchase behaviour.

2.6.4 Consumers' moral obligation

Although TPB details the determinants of an individual's decision to enact a particular behaviour (Jung et al., 2014), it may not directly apply to pro-environmental or green purchase behaviour, because green purchase decision making is often based on social, non-traditional components of products (Auger et al., 2003) and personal and moral beliefs (Carrigan et al., 2004). The internalized moral or personal norms appear to play an important role for such behaviours (Stern & Oskamp, 1987; Thøgersen, 1996). As Thøgersen (1996) mentioned, environmentally relevant behaviours should be classified as belonging to the domain of moral behaviour rather than economic behaviour. As a consequence, instead of balancing personal costs and benefits, people evaluate environmentally relevant behaviours in terms of right and wrong (Harland et al., 1999). That is to say, in this situation, a normative goal frame, or people's moral norms, generally implies buying green products.

In the NAT, Schwartz (1977) attempts to conceptualize moral norms' impact on behaviour which describes the relationship between activators, personal norms, and behaviour. According to this theory, norm activation refers to a process in which people construct self-expectations regarding prosocial behaviour. These behavioural self-expectations are termed 'personal norms' and are experienced as feelings of moral obligation. It is likely that many individuals adopt specific behaviours by conviction, that is, because they feel a moral obligation to adopt them. Schwartz (1977) proposed that these

personal norms are not experienced as intentions, but as feelings of moral obligation, and so can directly influence behaviour. Activated personal norms are experienced as feelings of moral obligation, not as intentions. The more likely individuals are to perceive situations in terms of the consequences their own behaviour has for others, the more likely are such individuals to attend to those of their values and norms which relate to these interpersonal consequences and hence to generate feelings of obligation expressive of these norms.

In consumer behaviour research, moral norm has often been operationalised identically to Schwartz's (1977) concept of personal norms as perceived moral obligation. The concepts of moral norms, personal norms and moral obligations have been used interchangeably in the literature (Arvola et al., 2008; Olsen et al., 2010). In this study, a consumer's moral obligation is defined as a feeling of obligation that individuals hold internally, rooted in their personal beliefs on the degree of incorrectness (or correctness) of a behaviour in the context of larger society and/or the natural environment (Conner & Armitage, 1998; Peluso, 2015; Sparks et al., 1995).

In many instances the addition of personal norms or moral obligation has been found to improve the explanation of intention (Raats, Shepherd, & Sparks, 1995). Parker, Stradling, and Manstead (1996) indicated that moral considerations are an important additional normative influence on intention- and often more influential than subjective norms. Sparks et al. (1995) used the TPB as a framework to explore attitudes towards the use of gene

technology in food production and found that the ethical obligation has a significant independent predictive effect. Hustvedt and Bernard (2010) found that consumers, who had positive attitudes towards social responsibility, were willing to pay more for fair trade products. Similarly, Dowd and Burke (2013) found that consumers' positive moral attitude significantly increased the predictive model measuring intention to purchase sustainably sourced food. Moreover, it is possible that intentions that are more aligned with one's moral norm are closer to the core self than intentions which are more aligned with one's attitudes (Sheeran & Orbell, 1999). Dean et al. (2012) and Guido, Prete, Peluso, Maloumby-Baka, and Buffa (2010) found that moral norms added significantly to the prediction of intention over and above the other TPB variables. Empirical evidence also reveals that holding strong feelings of obligation for others does impact consumers' purchase choices (Shaw & Clarke, 1999). Ajzen (1991) points out that perceived moral obligation is independent of effects for attitude, subjective norm, and perceived behaviour control. And such a measure represents an individual's internalised ethical rules, which reflect their personal beliefs about right and wrong (Harrison et al., 2005). Although there are some studies to reveal the effects of moral norns on purchase behaviour, it is lack studies to explore how Chinese consumers' moral norms influence their green products purchase. Thus, two hypotheses are proposed as follows:

H5a: Consumer moral obligation is positively related to green purchase intention.

H5b: Consumer moral obligation is positively related to green purchase

behaviour.

2.6.5 Affect

Consumer affect could be an important determinant of consumer action. In the psychology literature, emotions[2] are generally defined as positive or negative affective reactions to a given situation, which have important implications for behaviour (Plutchik, 1984; Verhoef, 2005). That is, positive and negative affect are "ever present in the experience of emotions" (Laros & Steenkamp, 2005; D. Watson, Wiese, Vaidya, & Tellegen, 1999). Schwarz (2000) points out that appraisal models of emotions can be fruitfully applied to predict which outcomes are likely to elicit which emotions under which conditions.

Decisions can be viewed as a channel through which emotions, or affect more generally, guide everyday attempts at avoiding negative feelings (e.g. regret, anger and fear) and increasing positive feelings (e.g. pride and happiness), even when they do so without awareness (Keltner & Lerner, 2010; Lerner, Li, Valdesolo, & Kassam, 2015). Many psychological scientists now assume that emotions are, for better or worse, the dominant driver of

[2] According to King and Meiselman (2010), distinguishing moods and emotions is easier in theory than in practice. In theory one can distinguish at least three different affective behaviours: (1) attitudes which include an evaluative component (e.g. "I like steak."), (2) emotions, which are brief, intense, and focused on a referent (e.g. "The comment made him angry"), and (3) moods, which are more enduring, build up gradually, are more diffuse, and not focused on a referent (e.g. "I am happy").

most meaningful decisions in life (Keltner & Lerner, 2010; Lerner et al., 2015; Oatley, Keltner, & Jenkins, 2006). Thus, a more detailed approach is required to understand relationships between emotions and decisions (Lerner et al., 2015; Mellers, Schwartz, & Cooke, 1998).

Laros and Steenkamp (2005) analysed 10 seminal studies in psychology on emotions and emotion words, and classified all emotion words as either a positive or negative affect. Based on 33 specific emotions for one (randomly assigned) type of food (genetically modified food, functional food, organic food, or regular food), they measured emotions at a general, product-type level of categorization. Their results show that in the negative affect, participants do not feel sad or ashamed, but are very angry and fearful, which are emotions elicited by situations caused by others or circumstances. Positive affect includes contentment and happiness, yet contentment has very low values for organic food compared to functional and regular food. Thus, in this study, two kinds of affect will be explored: a positive anticipated affect - happiness (Laros & Steenkamp, 2005; Perugini & Bagozzi, 2001), and a negative ecological affect (Benton, 1994) including anger and fear.

2.6.5.1 Anticipated positive affect

Anticipated affects are behavioural belief, which is about the likely affective consequences of performing a behaviour (Ajzen & Sheikh, 2013). Buying organic food could be driven by expected positive consequences for the self and for others. Several studies in Europe and USA have shown that buying

organic food is stimulated by beliefs about healthiness, better taste, benefit for the environment and animal welfare (Arvola et al., 2008; S. Baker, Thompson, & Engelken, 2004). Arvola et al. (2008) argue that it is more appropriate to explore anticipated positive feelings of “doing the right thing” but not the negative feelings of guilt, since consumers do not typically treat buying organic food as being a moral imperative. In other words, green food purchases might be motivated more by positive feelings than by the negative moral consequences.

In the environmental context, only a few studies have explored the relationships between affect and environmental behaviour. Perugini and Bagozzi (2001) tested an adapted and extended form of TPB, and found that anticipated emotions have significant and important influence on desires, which determine intentions, which in turn influence (goal-directed) behaviour. Smith et al. (1994) found that affect is significantly related to recycling, even when attitudes were controlled for. Pelletier et al. (1998) also found that when people obtain pleasure and satisfaction from acting pro-environmentally, they are more likely to do so. Thus, it is meaningful to examine the role of affective motives in green food domains. Two hypotheses are proposed as follows:

H6a: Consumer anticipated positive affect is positively related to green purchase intention.

H6b: Consumer anticipated positive affect is positively related to green purchase behaviour.

2.6.5.2 Ecological affect

Ecological affect in the green consumption context, is termed ecological concern, which represents an individual's degree of emotional attachment to ecological issues (Benton, 1994; Y. K. Lee et al., 2012; Satterfield, 2001). Maloney and Ward (1973) advocate the importance of determining these people's knowledge of the environment, how they feel about it (ecological affect), what commitment they are willing to make (intention). Researchers following this paradigm further assert that an individual's ecological behaviour is higher dependent upon his/her ecological knowledge, affect and intention (Chan, 2001; Chan & Yam, 1995). Such a view is consistent with the classic behavioural proposition that cognition, affect and conation are three essential components in determining corresponding behaviour (Bagozzi et al., 1979; Breckler, 1984; Chan, 2001). Kinnear and Taylor (1973) emphasize that the level of ecological concern a person demonstrates will be a function of both his/her attitude and behaviour.

Emotions and affect are crucially important in consumers' decisions to be responsible for the environment (Chan, 2001). Some consistent empirical evidence has been found to support a positive relationship between ecological affect and behaviour (L. Y. Li, 1997). Xu and Wu (2010) found that the more dissatisfied consumers feel with food safety conditions, the more likely they are to purchase and to pay extra for certified traceable food. Verhoef (2005) found that emotions can determine organic meat buying

behaviour, and among fear, guilt and empathy, fear in particular impacts on consumers' purchase decisions. This result is not surprising because fear is driven by uncertainty (Lerner & Keltner, 2000; L. Watson & Spence, 2007). Similarly, due to the recent food crises in the meat industry, consumers may feel that their health is at risk when consuming it (Abbott, 2001; Aertsens, Verbeke, Mondelaers, & Huylenbroeck, 2009; Pennings, Wansink, & Meulenberg, 2002; Verbeke, 2001). The study by R. Liu et al. (2013) evaluated Chinese consumers' decision-making processes in relation to hazard free, green and organic food. Their findings show that Chinese consumers have a high awareness of safe food. Chan (1999) surveyed environmental behaviour of consumers in China and found that Chinese people with a higher degree of environmental effect will have a stronger environmental intention. In this study, the hypotheses are proposed as follows:

H7a: Consumers ecological affects have positive impact on their green purchase intention.

H7b: Consumers ecological affects have positive impact on their green purchase behaviour.

2.6.6 Knowledge

To understand the relationships between attitudes and behaviours in a pro-environmental context, however, uncertainty in terms of information available to aid decision-making and of the consequences of decisions must be

considered (Newholm & Shaw, 2007). If consumer behaviour is to avoid this uncertainty, it is crucial that consumers make consumption choices based on certain standards such as product knowledge and environmental belief (Jung et al., 2014).

The study by Brucks (1985) is the one of the few to have explored the mechanisms of relationships between knowledge and behaviour. He makes a distinction between three categories of consumer knowledge relevant to consumer behaviour: subjective knowledge (i.e. what individuals perceived that they know, also indicated as perceived or self-rated knowledge); objective knowledge (i.e. what an individual actually knows); and prior experience. The difference between subjective knowledge and objective knowledge occurs when people do not accurately perceive how much or little they actually know (Brucks, 1985; Selnes & Gronhaug, 1986). It is likely that subjective and objective knowledge related to information search and decision-making behaviour in different ways (Brucks, 1985). Experience is related more with subjective knowledge than objective knowledge (Packard & Wooten, 2013), and through accumulation of experience, consumers can develop knowledge (Lin & Filieri, 2015).

Following Brucks (1985) study, several authors stress the importance of knowledge for the further development of the green market. In general, the behavioural literature reports a positive relationship between knowledge and behaviour (Chan, 2001; Park et al., 1994). Selnes and Gronhaug (1986) and Park et al. (1994) mentioned that subjective knowledge is a stronger

motivation for purchase-related behaviours than objective knowledge. In line with this, House et al. (2004) found that subjective knowledge is positively related to the willingness of consumers to eat genetically modified food, whilst they did not observe this relationship for objective knowledge. Ellen (1994) found that subjective knowledge is positively associated with commitment to recycling, source reduction, and political action, whilst objective knowledge is only significantly related to recycling. In the green food context, Chryssochoidis (2000) and Gracia and de Magistris (2008) observed that the intention to purchase organic food is positively influenced by a higher level of subjective knowledge. This is the case because knowledge is the only instrument that consumers have to differentiate the attributes of organic from conventional products and to form positive attitudes toward these products (Gracia & de Magistris, 2008).

These findings indicate that subjective knowledge has a stronger positive relationship with intention towards an action. The reason probably is, as Brucks (1985) explained, that subjective knowledge incorporates the individual's degree of confidence in his/her own knowledge, and a low level resulting from a lack of confidence in current knowledge may motivate the research for additional information, while a high level of subjective knowledge increases reliance on previously stored information. Similarly, Park and Lessig (1981) argued that subjective knowledge is a combination of knowledge and self-confidence. Furthermore, Selnes and Gronhaug (1986) propose that objective measures are preferable when research is focused on

ability differences, whilst subjective measures should be used when concentrating on motivational aspects of product knowledge.

These explanations are also confirmed by several studies. For example, Thøgersen (2007) found that uncertainty has a direct negative impact on the intention to buy organic food and on the translation from intention into actual purchase of organic food. Aertsens et al. (2011) found objective knowledge has no direct effect on organic food consumption, in contrast to subjective knowledge, which incorporates an aspect of self-confidence that may help to translate attitude and motivations more strongly into intention and behaviour. In addition, consumers' less knowledge could make it more difficult for them to evaluate products. As a result, less knowledge would cause consumer confusion with respect to green claims, so as to increase the obstacles to buying green products, that is, to add perceived behavioural control.

Furthermore, objective knowledge usually cannot be easily and accurately measured in the research. Rolston and di Benedetto (1994) warned researchers since even experts cannot agree on a product's effects on the environment, it may be unrealistic to expect the average consumer to make the right choice (Laroche, Bergeron, & Barbaro-Forleo, 2001). Additionally, the close-ended items (true–false answers) used to measure objective knowledge are in general more likely to facilitate guessing of the correct answer (Laroche, Bergeron, & Barbaro-Forleo, 2001). Hence, it can be expected that such objective knowledge scores contain greater bias resulting from possible guessing (Carlson, Vincent, Hardesty, & Bearden, 2009;

Vanhuele & Drèze, 2002). Thus, this research will explore the influence of subjective knowledge, which has typically been measured by subjects' self-reports of their knowledge of a product category or domain (Brucks, 1985; Raju & Reilly, 1980; Rao & Monroe, 1988).

Also as discussed in Section 2.3, increasing knowledge of green food may be successful in stimulating the adoption of green buying behaviour through strengthening normative goal frames and/or making gain and hedonic goals more compatible with normative goals. Carrington, Neville, and Whitwell (2010), in their discussion of consumer moral decisions, observed that people are more aware of the value of ethical consumption than previous generations, but a change in actual purchasing is still not very apparent. When are altruistic norms activated in consumer decisions? The formation as well as the activation of a moral norm is probably based on the interplay of cognitive, emotional, and social factors (Bierhoff, 2002). In the field of Chinese green purchase behaviour, the awareness of and knowledge about environmental problems are probably the most important cognitive preconditions for developing moral norms. Lindenberg and Steg (2007) suggest that insufficient knowledge of environmental problems may lead people to act against their moral norms. Meinhold and Malkus (2005) found that when levels of environmental knowledge are high, the relationships between environmental attitudes and behaviour are stronger, which suggests that environmental knowledge encourages people to behave in accordance with normative goals (Lindenberg & Steg, 2007).

Subsequently, consumer knowledge of the environment influences the emotional level towards the environment. The literature shows that environmental knowledge and environmental affect operate in distinct ways and have separate influences on behavioural responses (Chan & Lau, 2000; Y. K. Lee et al., 2012). Some studies showed that Chinese individuals with little knowledge about the environment may still exhibit strong emotional attachment to environmental issues (Y. K. Lee et al., 2012; L. Y. Li, 1997). However, Junaedi (2007) points out that green-product consumers who have an understanding of the environmental problems will be sensitive to environmental issues that contribute to environmental degradation.

Thus, the hypotheses will be proposed as followed:

H8a: Consumers' subjective knowledge positively relates to their green purchase intention.

H8b: Consumers' subjective knowledge positively relates to their green purchase behaviour.

H8c: Consumers' subjective knowledge positively relates to their attitudes towards green food purchase behaviour.

H8d: Consumers' subjective knowledge positively relates to their perceived behaviour control.

H8e: Consumers' subjective knowledge positively influences moral obligation.

H8f: Consumers' subjective knowledge positively influences anticipated positive affect.

H8g: Consumers' subjective knowledge positively influences ecological affect.

Additionally, Research by Farragher, Wang, and Worsley (2016) demonstrated that the food knowledge was positively associated with age, female gender, as well as negatively related to the total number of vegetables per day. That is, consumers' subjective knowledge would mediate the relationships between the demographic variables and the intention to purchase and actual purchase behaviour. Demographics include aspects such as age, gender, education and income, which can be a major influencing factor for green food purchasing (more details are discussed in the section 2.6.8 below). In this study, the role of mediation of subjective knowledge will also be explored.

2.6.7 Intention to purchase

It is very important to understand consumer intention to purchase because consumer behaviour can be predicted by their intention (Ajzen, 1991; Hwang, 2016). Different from attitudes, intentions represent "the person's motivation in the sense of his or her conscious plan to exert effort to carry out a behaviour" (Eagly & Chaiken, 1993, p. 168). Intentions are the single best predictor of planned behaviour and intentions are also an unbiased predictor of action (Bagozzi & Yi, 1989). Behavioural intention models, such as the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behaviour (Ajzen, 1991), propose that intentions serve as the critical determinants of behaviour. Empirical studies have demonstrated a significant positive relationship between ecological intention and behaviour (Li, 1997).

Chan's (2001) findings also supported the classic behavioural proposition that intention is the most immediately relevant predictor of corresponding behaviour.

Intentions are also hypothesized to mediate the effect of other cognitive, affective, and contextual variables for the prediction of behaviour in behavioural intention models (Westaby, 2005). That is, the effect of such variables on behaviour is presumed to be funnelled through intentions, which directly drive behaviour. This hypothesis has been confirmed in numerous behavioural domains (Ajzen, 2001; Wanberg, Glomb, Song, & Sorenson, 2005). Thus, the role of mediation of intention to purchase will be explored in this study.

2.6.8 Demographic characteristics

Demographics include aspects such as age, gender, education and income. Demographic characteristics can be a major influencing factor for green food purchasing. In this study, they will be inserted in the model as control variables.

2.6.7.1 Gender

Gender could have some influence on food choice and eating behaviour (Ares & Gámbaro, 2007). Regarding green product consumers, these are mainly women, who buy larger quantities and more frequently than men.

Lockie et al. (2004) indicated that women and those who take responsibility for shopping are most likely to be motivated by sensory and emotional appeal. Women are more likely to choose organic food that made the respondent feel good, physically and emotionally, as well as to the enjoyment of the act of eating itself. This is consistent with the findings of Lawrence, Norton, and Vanclay (2001) that women were more likely to consume organic food and more likely to express concerns about genetically modified food. The difference between the two genders is observed to be slight with regard to their willingness to pay price premiums for organic food (Davies, Titterington, & Cochrane, 1995). Forty-one percent of men would pay more compared to 44 percent of women. These rates are close to those reported by Lockie et al. (2004) for Australia. There was a clear gender dimension to organic consumption with 44.1% of women respondents claiming to have consumed certified organic food compared to only 33.8% of men. Reicks, Splett, and Fishman (1997) report that, however, males were more likely to indicate that they had purchased organic products six months prior to the survey.

2.6.7.2 Age

There were several reasons to justify a division into age groups for food choice behaviour. People differ in cognitive styles and abilities at different ages. Thus, looking across age groups provides the possibility for detection of possible cohort effects and developmental trends for food choice (Lavin & Lawless, 1998). In terms of green food choice, the age factor plays an

important role. According to Reicks et al. (1997) younger people seem slightly more willing to buy (more and expensive) due to a greater environmental consciousness, which, however, does not translate into demand because of their lower purchasing power. Research in Australia found a different result. Lea and Worsley (2008) examined Australians' food-related environmental beliefs and behaviours. Older people were more likely to perform food-related environmental behaviours. They were more likely to purchase local foods and purchase organic foods.

2.6.7.3 Education

Education plays a central role in shaping food selection. Binkley and Golub (2007) compared grocery purchase patterns of regular and diet soft drink consumers and investigated whether differences in purchased quantity of diet soft drinks were associated with differences in purchases of other food categories. Results indicated that consumers of diet soda tended to have somewhat more education and to have higher incomes. The more highly educated consumers were more interested in healthiness for their eating behaviour. Lappalainen, Kearney, and Gibney (1998) explored the degree of variability which exists geographically in peoples' attitudes towards and beliefs about nutrition and health and their perceptions of a healthy diet. Results indicated that respondents with lower education level mentioned resistance to change more often as a barrier compared to those with higher education levels (university background). Those with higher education levels, more frequently gave barriers related to lack of time, self-control and food

preparation as answers, but level of education was not associated with the categories, cost of food, unpleasant foods, influences of other people, knowledge or expert consensus and selection influences. Education had a more consistent impact on organic food consumption (Lockie et al., 2004). The number of people consuming organic food increased with both general and science education.

2.6.7.4 Income

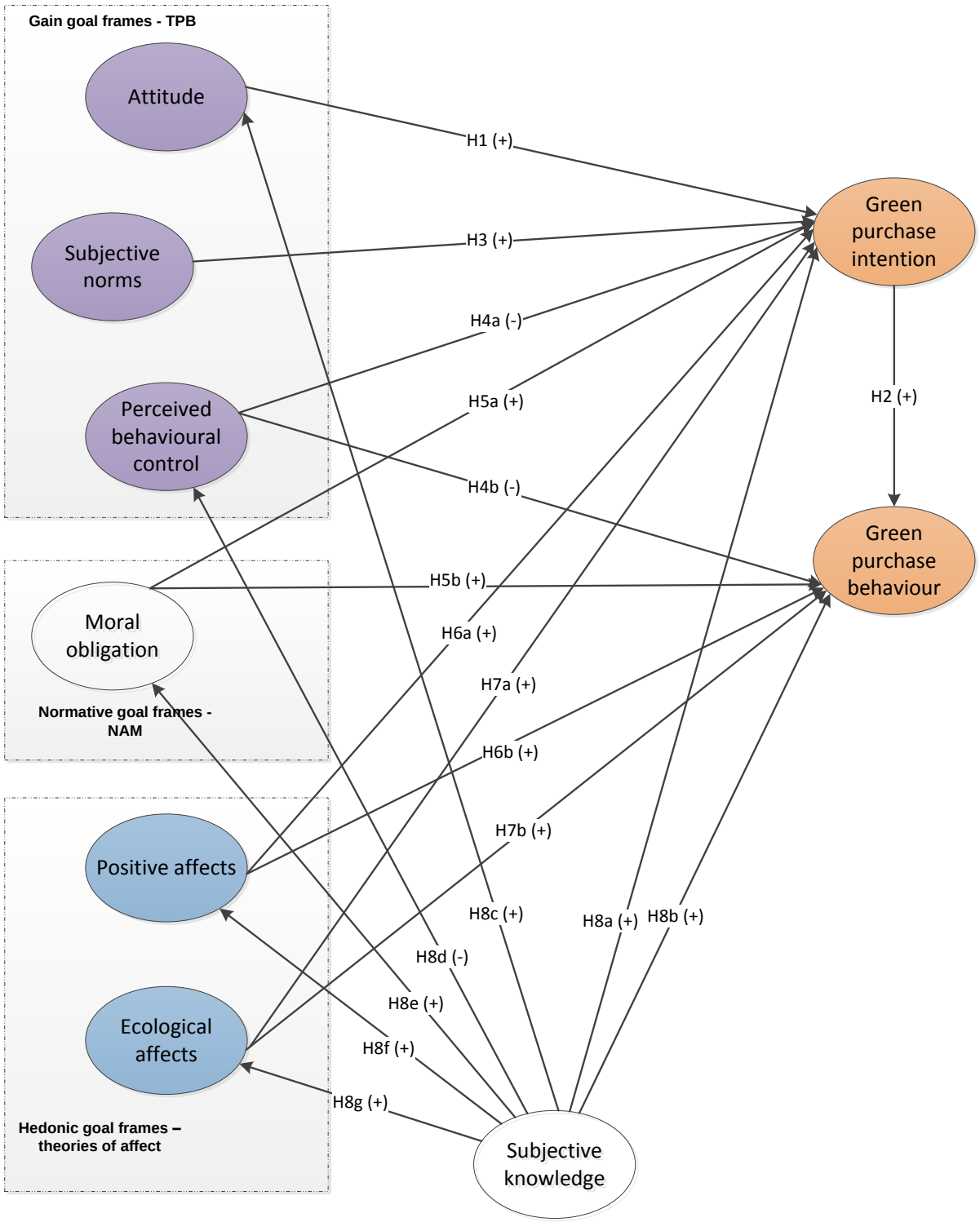
Income affects mainly the quantity of organic products bought and not the general willingness to buy (Finch, 2006). Finch (2006) examined the nature of the consumption values that differentiate organic food buyers from non-buyers. Each group indicated that they would reduce their consumption of organic food if the family faced a significant decline in household income. However, despite high price premiums for organic food, higher household incomes do not necessarily indicate a higher likelihood of organic purchases. Some lower income segments seem to be more entrenched buyers (Krissoff, 1998). Lockie et al. (2004) found a similar result for organic food consumption amongst Australian consumers. They stated that income had an effect, but not enough to confirm the “organic consumer as yuppie stereotype”. The number of people consuming organic food did increase with income, but only until income reached about A$ 35,000 (GBP 17,567) per annum. A third of those earning less than A$ 20,000 (GBP 10,038) per annum still consumed organic food. This suggested that while the premiums associated with organic food may make them less affordable for low income

earners, low income earners are not necessarily less interested in consuming organic food.

2.7 Framework model

Based on the theories and hypotheses discussed above, a framework is set up below in Figure 2.6, which describes the proposed relationships between consumers' attitude, norms, affects, knowledge, purchase intention and actual purchase behaviour toward green food.

Figure 2. 6 Conceptual model – green consumption behaviour



2.8 Chapter summary

This research is based on goal-framing theory, integrating the theory of planned behaviour, the norm activation theory, affect theories and knowledge, to try to develop a new conceptual model, so as to explore green food consumption in China. In this chapter, previous empirical studies were reviewed to support supposed hypotheses. Relevant constructs were also defined.

The goal-framing theory adds three important things to the body of literature in environmental psychology, especially in the green buying context. First, the theory defines three general goal frames (or goals, hedonic, gain and normative frames) that steer decision making and behaviour. Second, goal-framing theory proposes an integrated theory that explicates how motives may interact in influencing green buying behaviour, and which motives are dominant in this specific situation. That is, in order to improve green food purchase behaviour, normative goal frames should be focal, and hedonic and gain frames should be compatible with it. Third, goal-framing theory links behavioural motivations to consumer knowledge, that is, it is proposed subjective knowledge may be especially effective in promoting pro-environmental behaviour given variations in goal frame strength. The next chapter reviews the research methods used in the research.

Chapter Three: Research Methodologies and Methods

3.0 Chapter overview

This chapter is devoted to reveal the process and methods used to conduct the present research. Based on the research problem and objectives stated earlier in Chapter 1, this section starts with an explanation of the researcher's epistemological stance, the philosophical key components on which the research process is based, and the leading approaches used in the investigations. Subsequently, the discussion moves to a thorough description of the context and setting of the study, sampling procedure, the data collection process, the response rate achieved, as well as an examination of the various issues encountered during the survey execution, and the statistical methods used for the analysis of the data. In simple terms, this chapter provides an overview of the direction followed in the research data collection and its analysis, the outcome of which is the identification of research findings that relate to the research's original aims and objectives. As a result of choosing this paradigm this research tests the theory through deductive approaches.

3.1 Research philosophy

Research philosophy relates to the development of knowledge and the nature of that knowledge. Crotty (2009) explains that the philosophy of

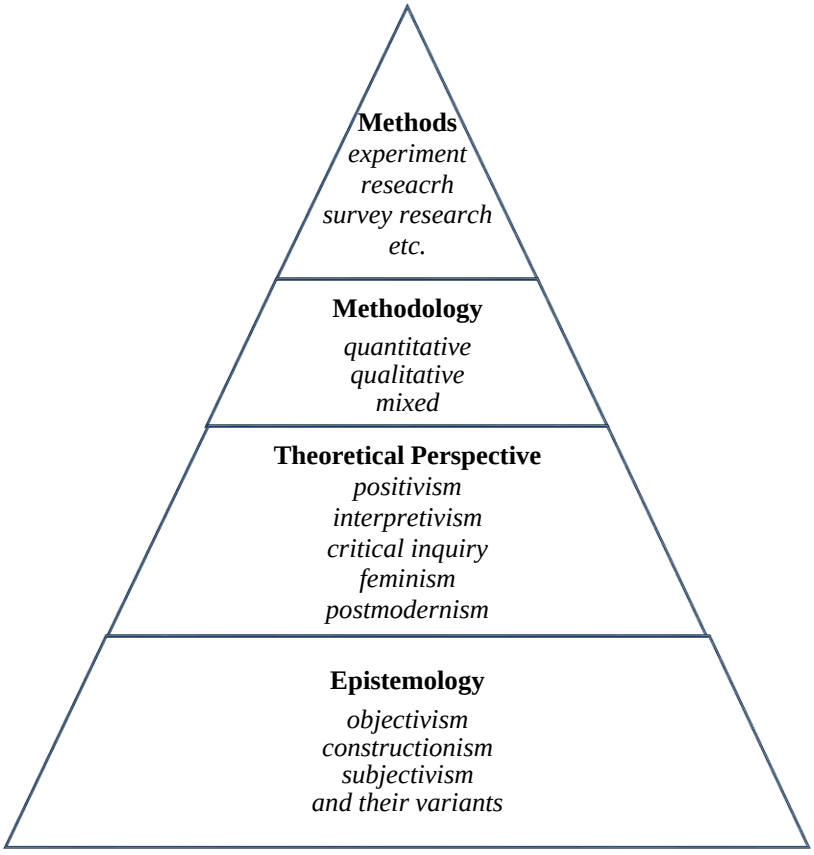
science deals with the issue of how to move from theory in its meaning as a system of related statements to scientific findings. The main questions are what epistemology informs the theoretical perspective, what theoretical perspective lies behind the methodology, what methodology governs the choice as well as use of methods, and what methods are proposed to be used (Crotty, 2009). That is, the method and technique chosen is largely determined by a researcher's understanding of what constitutes acceptable knowledge, or what is termed the researcher's epistemological position (Henn, Foard, & Weinstein, 2009).

In the research literature there is frequent mention of ontology, which is the study of being (Crotty, 2009). Ontology is a set of assumptions about the world, and epistemology is a way of knowing about that world which reflects these assumptions (Henn et al., 2009). The way in which the ontological perspective feeds into the epistemological perspective is further reflected in our methodological approach (Henn et al., 2009). Crotty (2009) defines ontology as the study of being and it is concerned with 'what is', with the nature of existence. He also argues that it is not necessary to distinguish ontology and epistemology because ontological issues and epistemological issues tend to emerge together.

Therefore, this research follows Crotty (2009), there are four key elements that researchers needs to consider in deciding their research methodology. These include (1) the methods that a researcher proposes to use in the study, (2) the research methodology that governs the chosen methods, (3) the

underlying theoretical perspective behind the methodology and, (4) the research epistemology that informs the theoretical perspective. Crotty (2009) suggests that each of these key elements informs the others as shown in Figure 3.1.

Figure 3. 1 Key elements of the research methodology



Source: Crotty (2009)

The following sections briefly present a discussion of each of the major elements formed into the research including the epistemology, theoretical perspective, methodology and methods underpinning the present study.

3.1.1 The epistemology of this research – objectivism

Epistemology is a crucial philosophical concept for social scientists, which considers questions to do with the theory of knowledge (Henn et al., 2009), and deals with 'the nature of knowledge, its possibility, scope and general basis' (Hamlyn, 2005, p. 242). Maynard (1994, p. 10) explains the relevance of epistemology to what we are here: 'Epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate'. More specifically, Krauss (2005) explains that epistemology is asking the questions what is the relationship between the researcher and what is known, how does the researcher know what he knows, and what research counts as knowledge. It is the philosophy of knowledge, or how we come to know and the confidence we have in knowledge. It is also the theory of knowledge embedded in the theoretical perspective and thereby in the methodology (Crotty, 2009). Hence the epistemological stance which will be adopted in this study needs to be identified, explained and justified. In social research, epistemology can be described as the nature of knowledge, providing a philosophical foundation to the methodology embedded within a research project (Crotty, 2009).

In subjectivism, meaning does not come out of an interplay between subject and object but is imposed on the object by the subject, that is to say, meaning comes from anything but an interaction between the subject and the object to which it is ascribed (Crotty, 2009). On the other hand, objectivist

epistemology holds that meaning, and therefore meaningful reality, exists as such apart from the operation of any consciousness, exists as a meaningful reality external to those social actors concerned with their existence (Crotty, 2009). In the objectivist view of ‘what it means to know’, understandings and values are considered to be objectified in the people we are studying and, if we go about it in the right way, we can discover the objective truth (Crotty, 2009).

In terms of this research, as this study is about discovering natural laws with prediction (Crotty, 2009), this indicates that objectivism is a pertinent epistemology with positivism providing the theoretical perspective (Crotty, 2009)

3.1.2 Research theoretical perspectives – positivism

Research theoretical perspective is a way of looking at the world and making sense of it (Crotty, 2009). It involves knowledge, therefore, and embodies a certain understanding of what is entailed in knowing, that is, how we know what we know. More specifically, it is the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria (Crotty, 2009). There are two major philosophical stances: positivism and interpretivism (Collis & Hussey, 2014; Henn et al., 2009).

According to Hudson and Ozamme (1988), positivists take a generalizing approach to research; that is, they seek out general, abstract laws that

ideally can be applied to an infinitely large number of phenomena, people, settings, and times. In addition, positivists believe that human action can be explained as the result of a real cause that temporally precedes the behaviour (Hunt, 1991), and their position regarding the relationship of the researcher to the subject is assumed to be a pronounced separation in which the researcher does not influence and is independent from the subject.

When researchers choose the processes through which they gain knowledge, there is another predominant approach to gaining knowledge in the social sciences - interpretive approaches. Conversely, interpretivists take a more historical, particularistic approach to research; that is, they study a specific phenomenon in a particular place and time. In addition, the interpretivists view the world as being so complex and changing that it is impossible to distinguish a cause from an effect, and they believe that in the social sciences the scientist is a member of the social reality; no privileged (Giddens, 1993). The logic of an interpretive research design is not to explain why something happens, but to explore or build up an understanding of something of which we have little or no knowledge (Henn et al., 2009).

Positivism has two main characteristics: first, social phenomena can be explained by observing cause and effect, which is something has been borrowed directly from the natural sciences; second, this approach aims to test an existing theory by establishing a hypothesis, and then collecting data to assess how appropriate the initial theory (as expressed in the hypothesis) actually is. For the purpose of this research and based on the objectives

extended in the first chapter, the aim of the current research is to try to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of consumer green purchase behaviour. Therefore, the epistemological stance of positivism is more appropriate for this research.

3.1.3 Research methodology – quantitative

The research methodology is defined by Frankfort-Nachmias and Nachmias (1996) as a system of explicit rules and procedures upon which research is based and against which claims for knowledge are evaluated. For this research, before analysing the results of the data gathered through the research instrument described in Chapter5, it is essential to describe the research methodology upon which this research was built. Methodology concerns the research strategy as a whole, including, as Seale (2012, p. 3) notes, 'the political, theoretical and philosophical implications of making choices of method when doing research'. Just as Crotty (2009) and Trafford and Leshem (2008) mention methodology is the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes, which includes not only the data-gathering techniques, but also the research design, setting, subjects, analysis, reporting, and so on (Hudson & Ozamme, 1988).

Based on Crotty (2009), justification of the choice and particular use of methodology and methods is something that reaches into the assumptions about reality that we bring to our work. To ask about these assumptions is to

ask about the theoretical perspective. From the discussion of the last section, a positivist approach is adopted in this research, this approach favours quantitative measuring instruments, including experiments, questionnaire surveys and content analysis. It means that the research will be highly structured, typically large-scale and statistically based (Henn et al., 2009).

Cameron and Price (2009) explain that if a researcher is trying to test a hypothesis or to identify the relationship that exists between two or more variables, the nature of the research will direct him/her towards quantitative/statistical methods. Alternatively, where a researcher is seeking to explain rather than test, he/she may need a depth of description and discussion that cannot be gleaned from quantitative data. If so, he/she will have to consider methods that generate qualitative data. According to Creswell (2014), in quantitative research, the problem is best addressed by understanding that factors or variables influence an outcome, that is, understanding the factors that explain or relate to an outcome helps the researcher best understand and explain the research question. In addition, in quantitative introductions, researchers sometimes advance a theory to test, and they will incorporate substantial reviews of the literature to identify research questions that need to be answered (Creswell, 2014). Meanwhile, using a quantitative approach which incorporate numeric analyses of data to arrive at conclusions that are high in reliability and so can be generalised (Trafford & Leshem, 2008).

For this research, it involves the development and use of scales and measurements of green purchase behaviour in the green food context. An accurate study of consumer behaviour requires a large number of participants be involved in order to seek generalizability to the wider context. In view of this, the selection of a quantitative strategy is further judged as most appropriate for this research. Moreover, the existing research points to the adoption of this type of methodology in the pursuit of understanding and measuring Chinese consumer purchasing of green products, and provides inference about this increasingly important marketplace (e.g. Chan & Lau, 2000; J. Chen & Lobo, 2012; Teng & Wang, 2015). Thus, this study chooses a quantitative research strategy through survey questionnaire to explore green consumption in mainland China.

3.1.4 Research method – self-administrated survey questionnaire

Quantitative research is associated with a number of different approaches to data collection. The most common way to collect primary data is through surveys, interview and observation (O'Leary, 2014). Each approach has its strengths and weaknesses and each is particularly suitable for a particular context. The approach adopted and the methods of data collection selected will depend on the nature of the inquiry and type of information required (Henn et al., 2009). More specifically, in all three approaches, data collection is directed with some precision towards the research question, hypothesis, aims and objectives, and this has real appeal (O'Leary, 2014). For example, demands for generalizable results may mean that researchers have to

access databases to get contact details or spend more on the production and distribution of hard-copy questionnaires (Cameron & Price, 2009).

In sociology in particular, the social survey is one of the main methods of data collection (Bryman, 2000; De Vaus, 2013; Fowler, 2009). The survey's capacity for generating quantifiable data on large numbers of people who are known to be representative of a wider population in order to test theories or hypotheses has been viewed by many practitioners as a means of capturing many of the ingredients of a science (Bryman, 2000). M. J. Baker and Foy (2012) further suggest that the survey is the best known source of primary data collection, not only in marketing but the social sciences in general. Surveys are concerned with fact finding, by asking questions, of persons' representative of the population of interest, to determine attitudes and opinions, and to help understand and predict behaviour (M. J. Baker & Foy, 2012). The main advantages of a survey are that they are comprehensive, customised, versatile, flexible, and efficient (M. J. Baker & Foy, 2012). Although a survey can bring response error, accidental or deliberate, all of these weak points may be reduced significantly through careful design and execution of the test instrument (M. J. Baker & Foy, 2012; Webb, 2002). More details are discussed in the next section.

Moreover, time is also a resource that researcher must consider (Cameron & Price, 2009). Questionnaires may be less draining on researchers' own time but can be accused of limiting the richness of data gathered. Interviews allow for that richness but make significant demands on researchers in terms of

organising, running and transcribing. The research methods chosen must reflect a balance between answering the research question in the best way possible and choosing a means of doing so that is feasible. Therefore, this research will use a quantitative research strategy through a self-administrated survey questionnaire to investigate green purchase behaviour in mainland China.

3.2 Research design

According to Wilson (2010), the choice of research study largely depends on the purpose of the research. The purpose of this research is to identify what factors are important in determining consumer purchase behaviour towards green food in China. Thus, based on the discussion above about different types of research, this study will be quantitative research through a self-administrative survey questionnaire to provide understanding of why Chinese consumers buy green food.

This section, therefore, presents the data collection method and sampling plan. First, this study implemented a large scale questionnaire survey for the data collection. This method was selected as it fits with the positivist nature of this study's enquiry (Churchill & Iacobucci, 2010), and due to the research aims' intention to understand the wider relationship between consumers' green purchase behaviour, intentions to buy, and their knowledge, green purchase attitude, subjective norms, moral obligation, perceived behaviour control, ecological affects and positive affects. Second, this study was

conducted in two mainland Chinese cities: Beijing and Xi'an, through web-based and paper-and-pencil questionnaires by two different Chinese market research agencies in February and March 2015. The following part provides more details about the methods chosen in this study.

As discussed in Section 3.1, the epistemological stance of positivism is adopted in this research. Thus, in line with the suggestions of Henn et al. (2009), the implications are that the research design should be highly structured; methods should be reliable; and the research design aims to generate large-scale, statistically based studies. The data collection method and sampling plan is explained below.

3.2.1 Data collection method

A quantitative approach is capable of generating quantifiable data on a large number of people who are representative of a wider population. Furthermore, the results generated by the quantitative method can be analysed in a rigorous and statistical manner. This ensures the validity and reliability of the research. Thus, a self-administrated questionnaire survey is chosen as the main data collection method for the survey conducted for this research. The criteria of different questionnaire communication methods are considered in Table 3.1 below.

Table 3. 1 Comparison of questionnaire communication methods

Criteria	Mail	Internet	Interview	Telephone
Cost	Low	Very low	High	Moderate
Speed of data collection	Slow	Fast	Immediate	Immediate
Ability to reach geographically dispersed segments	High	Very high	Very low	Medium
Hard-to-recall data obtainable	Good	Good	Poor	Moderate
Respondent anonymity	Possible	Possible	Not possible	Not possible
Rapport with respondents	None	None	High	Moderate
Interviewer bias	None	None	High	Medium
Need for interviewer supervision	No	No	Yes	Yes
Response rate	Low	Moderate	Very high	Moderate

Source: Frazer and Lawley (2000, p. 3)

Sample surveys are a method of gathering information by means of personal interviews or questionnaires. They are sometimes referred to as ‘mass interviews’ because they are a way of collecting similar information from a large number of people at the same time. Sample surveys are based on standardised approaches, using standardised instruments, such as questionnaires. These research instruments employ fixed question-and-answer formats so that there is a consistency of data collection approach, regardless of who is actually asking the questions.

In terms of design, internet questionnaires are most similar to mail questionnaires (but delivered electronically), so very similar principles to the design of mail and internet questionnaires can be applied (Frazer & Lawley, 2000; Sue & Ritter, 2012). That is, questions written for online surveys share features with those created for self-administered paper-and-pencil questionnaires. In both formats, respondents complete the survey in their

environment, at their own pace, and without the help or (hindrance) of the researcher. Thus, this study adopts online survey and mail survey methods together to collect data; these methods are chosen over such other quantitative methods as mall intercept or interview method for several reasons:

First, an online and mail survey provides convenient anytime/anywhere access making it easy for people to participate, while the shorter time involved in administering an online survey means potential mistakes in interpretation can be reduced. Email and mail follow-ups can then also be used to enhance the response rate, thus helping speed up the response process (Scornavacca, Luiz Becker, & Barnes, 2004).

The second reason is that respondents may be more interested in face than in providing accurate feedback, so they may tell the researcher what they believe he or she wishes to hear as a means of enhancing the interviewer's face (Roy, Walters, & Luk, 2001), which may be reduced by online and mail survey, because respondents will give their answers without any worries about being judged. Scornavacca et al. (2004) and Cameron and Price (2009), however, argue that a critical problem concerning the quality of the online survey is the sampling frame. That is, general population sampling frames used in traditional surveys tend to make use of household addresses rather than individual names. A sampling frame of Internet users would most likely require personal email addresses, which are not generally available. In order to minimise any kind of bias that might influence the outcomes of the

study, a database of a consumer panel from a market research agency (sojump.com will be used). The database included more than 10,000 general consumers and the participants will be selected randomly rather than using a convenience sample.

Third, online surveys can be significantly cheaper and faster than hard-copy questionnaires. Through using the multimethod, the researcher can collect more data within a reasonable time period and cost. Moreover, they both allow researchers to send pre-survey notice of the questionnaire.

The main disadvantage is that researchers are limited to surveying within online populations (O'Leary, 2014), who have access to email or the internet and then to those who have the technological capabilities to complete the form (Cameron & Price, 2009). This highlights an issue in that, regardless of the sampling strategy we adopt, it is questionable whether the Internet can provide a reliable and representative sample of the general population anyway. According to Statistical Report on Internet Development in China, which was issued in January 2013, by the end of 2012, the internet penetration rate among urban residents had reached about 60%. The internet has become a key sector that affects the development of Chinese society and economy and changes people's lifestyle. Although Ranchhod and Zhou (2001) point out that people who prefer to answer on-line surveys are usually those who have a better understanding of the technology and use the Internet extensively as a communication medium, It is thought this situation would not cause any serious sampling bias as the target population

are required to be familiar with the web. Moreover, in order to minimise any kind of bias that might influence the outcomes of the study, this study also adopts mail survey methods to catch other populations who have no access to the internet or technological capabilities to complete online forms. Meanwhile, the database of a consumer panel from two market research firms in Beijing and Xi'an were used. The database included more than 5,000 general consumers and the participants were selected randomly rather than using a convenience sample, discussed in more detail in the next section. In order to prevent any site visitor who happens across the link or clicks on the survey icon from participating, the web-questionnaire was set up with a password.

For this research, the data collection is conducted in Xi'an and Beijing, two cities in China. The marketing survey company's data-base provides good access to spread the survey.

3.2.2 Sampling plan

3.2.2.1 Sampling population and sampling frame

Data for this study was gathered using a self-administrated questionnaire that was distributed to individual respondents in two different cities in China through different data collection methods. In Beijing, the survey was distributed by a web-based survey; in Xi'an, the mail questionnaire was used to distribute to individual respondents. For this study the target population

consists of general consumers who are over 18 years of age, who live in urban mainland China. The reason is that with the world's largest population and a vast and varied geographical area, the characteristics of China and its population are diverse. Centuries of adaptation have created a wide range of lifestyles and behaviours, particularly in densely-populated urban areas. As a result, it is not practical to treat the population of China as a single consumer market. Connecting to the rapid urbanization advanced by China, approximately 43% of the total population live in urban areas, and this figure continues to grow. Moreover, in order to gain as much diversity as possible, this research was conducted in two mainland Chinese cities: Beijing and Xi'an. The rationale behind the selection of both cities is related to their economic development: Beijing is one of the gateway cities, and Xi'an is a secondary city. China's recent rapid economic development has not been uniform across the country (the east is far more developed than the west) (Sun & Collins, 2004). In spite of some differences in economic development level and low – high income region, consumer behaviour of these two cities is essentially similar because of their location (both belong to Northern regions), dietary habits and lifestyles.

3.2.2.2 Sampling size

Once the relevant population had been identified, it was felt important to consider the number of respondents within similar studies targeting general consumers in China. The sample size determination for this research is based on a structural equation modelling (SEM) technique, which is

employed for the statistical analysis at a later stage (more details in Section 4.6). Sample size, as in any other statistical method, provides a basis for the estimation of sampling error. The critical question in the SEM technique involves how large a sample is needed since it is generally understood among statisticians that SEM requires a large sample size. Kline (2011) offers rough guidelines towards the optimal SEM sample size saying that with less than 100 cases; almost any type of SEM analysis may be untenable unless only a very simple model is evaluated. Between 100 and 200 subjects – a "medium" sample size – is a better minimum, but again this not an absolute because things like model complexity must also be considered. Sample sizes that exceed 200 cases could be considered "large". Hair, Black, Babin, and Anderson (2010) point out that the minimum ratio between sample size and the respondents is at least five respondents for each estimated parameter, with a ratio of 10 respondents per parameter considered most appropriate. Hu et al. (1992) find that when the normality assumption is reasonable, both the ML and the Scaled ML (estimation of parameters in SEM) perform well with sample sizes over 500. Considering the model complexity of this study and the rough guidelines from previous research, and estimation of 350 responses per city, a total of 700 responses was felt necessary to meet the requirements for SEM analysis. In the end, a total of 800 responses from Beijing and Xi'an were received within two months of which 720 were usable.

3.2.2.3 Sampling method

Sampling methods can be classified as probability and non-probability sampling (Henn et al., 2009; Wilson, 2010). Probability samples are selected in such way that every element of the population is under a known, non-zero likelihood of being chosen for each population member (Wilson, 2010). That is, there is no bias in the choice. Each element, each individual in the sampling frame has in an equal chance of being chosen. On the other hand, non-probability samples are selected on the basis of specific non-random techniques, which means the 'probability of selection for each member of the population of interest is unknown' (Wilson, 2010, p. 179). Compared with probability samples, this method is convenient, easy and less costly, but less stringent to select population elements.

Research on green consumption is often criticised for using non-probability samples particularly of a convenience nature, as the results generated from these studies are not representative (e.g. Suki, 2015; Teng & Wang, 2015; Yazdanpanah & Forouzani, 2015). Therefore, Teng and Wang (2015) recommend using probability samples in green consumption studies, as results obtained from a probability sample are more representative and generalizable to the population of interest. Hence, for the purpose of the present study, the researcher decided to use a probability sampling method to select general Chinese respondents, as it will allow the researcher to obtain more generalizable insights via a representative sample.

There are several sampling techniques available for a researcher to select a sample under the probability and non-probability sampling methods. The key probability sampling techniques include simple random, systematic random, stratified random, and cluster sampling (Wilson, 2010). On the other hand, the key non-probability sampling techniques include quota, convenience, snowball, and purposive (judgement) sampling. An overview of these sampling techniques is presented in Table 3.2 below.

Table 3. 2 Sampling techniques

Probability Sampling Techniques	
Simple random sampling	Simple random sampling involves a process in which all members of the population are assigned a number, and then random numbers are chosen (and people selected) until the sample list has been created (Henn et al., 2009, p. 154).
Systematic sampling	With systematic sampling, the population is divided by the required sample size, which creates the sampling interval. Select the first unit randomly, and remaining units according to the interval (Henn et al., 2009, p. 154).
Stratified sampling	Stratified random sampling involves a researcher pre-allocating the appropriate proportions of the sample to individual categories and then sampling randomly within those categories (Cameron & Price, 2009, p. 231)
Cluster (multistage) sampling	Cluster sampling involves first selecting larger groupings, called clusters, and then selecting the sampling units from the clusters randomly (Frankfort-Nachmias & Nachmias, 1996, p. 192).
Non-Probability Sampling Techniques	
Quota sampling	The quota sampling method aims to achieve statistically representative samples, but where there is no list of potential respondents (or sampling frame) or where resources do not permit the use of a random probability method (Henn et al., 2009, p. 157).
Convenience sampling	Convenience sampling involves the researcher selecting whichever cases are conveniently available (Henn et al., 2009, p. 157).
Snowball sampling	With snowball sampling, the researcher will typically build up a network of respondents through an initial group of informants, who introduce the researcher to other members of the same population (Henn et al., 2009, p. 158).
Purposive (judgement) sampling	With purposive samples, researchers select sampling units subjectively in an attempt to obtain a sample that appears to be representative of the population (Frankfort-Nachmias & Nachmias, 1996, p. 184).

As identified above, the sample for the primary study will be selected using probability sampling methods. Therefore, of the key probability sampling techniques in this study, a random sampling technique is appropriate to

select respondents from the database. That is, each general consumer in the database from the panel had an equal probability of being selected. It is thought that a random sample would be more representative of the general consumer population and thus provides a better ability to generalise to the population than non-probability sampling.

In nonprobability sampling, there is no way of specifying the probability of each unit's inclusion in the sample, and there is no assurance that every unit has some chance of being included. If a set of units has no chance of being included in the sample, this implies that the definition of the population must be restricted; that is, if the traits of this set of units remain unknown, then the precise nature of the population cannot be known (Frankfort-Nachmias & Nachmias, 1996).

This study adopts both of these sampling methods. Xi'an sample is probability sampling which is selected randomly from the database of Tian Long Ma Market Research and Advertising Consultancy Agency. Beijing sample is nonprobability, which gains from a database of a consumer panel, and from an online market research agency (sojump.com). Thus, it is not possible to reach a sample frame as required for probability sampling.

Admittedly, there is the possibility that the sampling method adopted here could cause bias. However, this is not considered to have adverse results, as first, non-probability samples can still be used effectively in similar studies (e.g., Botetzagias, Dima, & Malesios, 2015; Dowd & Burke, 2013; Klaus G.

Grunert, Hieke, & Wills, 2014; Paul, Modi, & Patel, 2016; Yadav & Pathak, 2016 etc.). Second, the assessment of common method bias shows there is no such issue in this study (details show in section 4.5 Chapter 4).

3.3 Questionnaire design

The questionnaire for the primary study was developed following the process of questionnaire development outlined by Wilson (2010). This involved a six step procedure namely (1) identification of key constructs and question topics, (2) determination of questions (items) and response formats, (3) selecting appropriate wording, (4) determining the sequence of the questions, (5) deciding on questionnaire layout, appearance, (6) conducting a pilot test, and implementation of the survey.

The subsequent sections detail each of the aforementioned steps through identification of key question topics, question sequence, response format, design layout and appearance, key constructs and measures (Section 3.4), survey implementation (Section 3.5)

3.3.1 Identification of key question topics

First, the key question topics for the primary study were developed around the key constructs of the conceptual framework, which are (1) subjective knowledge, (2) attitudes, (3) subjective norms, (4) perceived behavioural control, (5) moral obligation, (6) ecological affects, (7) positive affects, (8)

green purchase intentions, and (9) green purchase behaviour. The respondents were also asked to provide their socio-demographic information as part of the questionnaire. Most of the measurements for the constructs in the conceptual model are readily available in the literature, although some are adapted to suit a green food consumption context. More details are given in Section 3.4.

3.3.2 Question sequence

The data was collected using a structured questionnaire with questions in a prearranged order. The survey contains the measures, accompanied by a cover letter. The cover letter explained the purpose of the study, assured participants of the confidentiality of the data, and thanked them for participating. The primary survey questionnaire consisted of three parts. Part I of the questionnaire focused on real green food products buying behaviour, the respondents were asked to rate the eight different green food products they bought. Moreover, the respondents were also asked to indicate how much money they spent for these green foods on a 9-point Likert scale. This part aims to explore consumers' physical action towards green food, also helps to screen out unsuitable respondents, since this study is interested in consumers who consumed green food. Part II focused on consumer evaluation of green food products when buying. The respondents were asked to indicate their level of agreement on a 7-point Likert scale about the perceptions of green food products, in terms of their knowledge about the products, attitudes, norms, emotions and purchase intentions. The part III

was designed to gather socio-demographic information about the respondents through nominal scales, such as gender, age, educational level, monthly household income after tax, and monthly household expense of food products; and then concluded the survey by thanking respondents for their time in the last.

3.3.3 Response format – Likert scales

Third, all items relevant to key constructs were measured using 7-point Likert scales except for the amount of money they spent which was measured with a nine point Likert scale. The Likert scale is the most used scale in marketing research (Wilson, 2010). It is normally a balanced scale with equal number of positive and negative points and therefore, it avoids the problem of development pairs of dichotomous adjectives, and the "chances of respondents simply agreeing with all statement" (Wilson, 2010, p. 161).

The choice of 7-point Likert scales in this research was guided by several reasons. One is because respondents can finely discriminate each response category in a larger number of scale points (Malhotra, Birks, & Wills, 2012). The common problem of using Likert scale questions especially those with a low number of scale points is that respondents are very likely to choose the middle point like "don't know" or "not applicable" without thinking their answer through. According to Nunnally (1967) and DeVellis (1991), a larger number of scale points leads to larger variances, resulting in increased reliability. The other reason is because more categories are required (e.g. seven or more

categories) when data is analysed with sophisticated statistical techniques (Malhotra et al., 2012). Since structural equation modelling (SEM) (see Section 3.6.4) is the data analysis method for this study, the number of scale categories may influence the size of correlation coefficient, which is the common measure of the relationship between variables. The correlation coefficient decreases with a reduction in the number of scale categories. Thus, all the Likert-scale questions in the survey are 7-point scales, except for the amount of money they spent which was measured with a 9-point Likert scale, regardless of their original scale category from previous authors.

3.3.4 Design layout and appearance

Fourth, the design and layout of the questionnaire is important particularly for self-administered and postal questionnaires (Wilson, 2010). Hence, special attention was given to these aspects when designing the primary questionnaire. The questionnaire comprised of five pages. All questions were presented with clear instructions along with each part. The instructions were differentiated clearly from the main questions to allow respondents to identify them clearly. Bold face type was used to emphasise key words. The printed version of the questionnaire was produced with high quality printing, with a good quality paper.

The last two steps, construct measures and survey implementation are discussed in the following two Sections, 3.4 and 3.5 respectively. The next section details the construct measures used in the present primary study to

test the hypothesised relationships based conceptual framework identified in Chapter Two.

Most of the measures in this study were established scales (see Table 3.3). In order to keep the online survey at a reasonable length and to satisfy the sufficient conditions for latent construct measurement (Kline, 2011), this study employed only three items and not more than five items from each of the established scales to measure the key constructs, except one item for the construct of actual behaviour. A pre-test was conducted to identify the items with the highest factor loadings (see more detail in Section 3.5.1).

The first question in the survey asked respondents to select any green food products they had bought before in the category from a list of eight items. These products had been identified by respondents in pre-test (N=20) listing all the green food products they knew in the real market. The rest of the questions were based on the answer to the first question and measured the respondent's attitude, purchase intention and their purchase behaviour regarding the specific food products, as well as the respondent's psychological traits and demographic characteristics. The whole questionnaire is presented in Appendix A.

3.4 Construct measures

The conceptual model of this study consists of nine constructs (see the model in Figure 2.6). These are subjective knowledge, attitude toward green

purchase behaviour, subjective norms, perceived behaviour control, consumer moral obligation, ecological affects, positive affects, green purchase intention, and green purchase behaviour. All of the measurement items for the constructs in the conceptual model are well established in the literature, and presented in Table 3.3 below.

There are three criteria to modify the items in the original constructs: first, all of the items have been modified under 'green food' context by using 7- point Likert scales; second, all of the double-barrelled questions, which is two different questions posed in one question (Schmidt & Hollensen, 2006), have been divided into two single and simple questions. For example, one item one meaning (i.e. modification for consumer moral obligation item 2 and 3); no causality (i.e. modification for green purchase intention item 1, 2, 3). Third, to avoid the problem of a respondent's inability to remember (Schmidt & Hollensen, 2006), time periods of asking about their real purchase behaviour, should be kept relatively short, say, within one month in this study.

Table 3. 3 Measurement scales development

Constructs	Modification
Subjective Knowledge (Aertsens et al., 2011; Flynn & Goldsmith, 1999) 1. In comparison with an average person I know a lot about organic vegetables. 2. I know a lot about how to judge the quality of organic vegetables. 3. People who know me consider me as an expert in the field of organic vegetables.	1. In comparison with an average person I know a lot about green food. 2. I know a lot about how to judge the quality of green food. 3. People who know me consider me as an expert in the field of green food.

Constructs	Modification
Attitude toward green purchase behaviour (Ajzen, 2006; Dowd & Burke, 2013) For me buying this kind of food is… 1=bad, 7=good; 1=harmful, 7=beneficial; 1=unhelpful, 7=helpful; 1=unpleasant, 7=pleasant 1=unenjoyable, 7=enjoyable	No modification
Subjective Norms (Ajzen & Sheikh, 2013) 1. Most people who are important to me think that I should drink alcohol (avoid alcohol…) 2. Most people whose opinions I value would approve of my drinking alcohol 3. Most of my friends and class mates drink alcohol (avoid…)	1. Most people who are important to me think that I should buy green food. 2. Most people whose opinions I value would approve of my green purchase behaviour. 3. Most of my friends and colleagues buy green food.
Perceived Behaviour Control (Ajzen & Sheikh, 2013) 1. For me to drink alcohol (avoid…) is (*easy-difficult*). 2. Whether or not I drink alcohol (avoid…) is completely up to me. 3. I am confident that, if I wanted to, I could drink alcohol (avoid…).	1. For me to buy green food is 1= extremely *difficult, 7*= extremely *easy* 2. Whether or not I buy green food is completely up to me 3. I am confident that, if I wanted to, I could buy green food.
Consumer Moral Obligation (Peluso, 2015) 1. I feel obligated to safeguard my personal health and welfare 2. I feel obligated to safeguard the health and welfare of other people who are important to me [such as close friends and relatives] 3. I feel obligated to safeguard the health and welfare of other people with whom I live and work 4. I feel obligated to safeguard the natural environment.	1. I feel obligated to safeguard my personal health and welfare. 2. I feel obligated to safeguard my relatives' health and welfare. 3. I feel obligated to safeguard my friends' health and welfare. 4. I feel obligated to safeguard the health and welfare of other people with whom I live and work 5. I feel obligated to safeguard the natural environment.

Constructs	Modification
Emotions: ***Ecological Affects:*** Fear (Verhoef, 2005) when thinking about the health consequences of eating ordinary food: worried, scared, afraid	Fear: When thinking about the food issues I feel: 1. Worried 2. Scared 3. Afraid
Anger (Grégoire, Laufer, & Tripp, 2010) I felt: outraged, resentful, indignation, angry	Anger: When thinking of environmental issues I feel 1. Resentful, 2. Angry 3. Indignation, 4. Outraged
Positive Affects (Elliot & Devine, 1994; Spangenberg, Sprott, Grohmann, & Smith, 2003) 1. good 2. happy 3. optimistic 4. friendly	Positive Affects: Buying green food makes me feel: 1. good 2. happy 3. optimistic 4. friendly
Green Purchase Intention (Chan, 2001; L. Y. Li, 1997) 1. Over the next one month, I will consider buying products because they are less polluting. 2. Over the next one month, I will consider switching to other brands for ecological reasons. 3. Over the next one month, I plan to switch to a green version of a product.	1. Over the next one month, I will consider buying green food products 2. Over the next one month, I will consider switching to other green food brands 3. Over the next one month, I plan to switch to a green version of a product.
Green Purchase Behaviour (Chan, 2001; Homer & Kahle, 1988) The actual amount of money spent (RMB) on CSR products within the previous month	In the past one month, how much you spent for green food products.

3.5 Survey implementation pre-test and pilot study

3.5.1 Pre-testing

Prior to the pilot study, a pre-test survey was conducted. Visser, Krosnick, and Lavrakas (2000) suggest that questionnaire pre-testing is very important particularly when data is to be gathered via mainly self-completed questionnaires. To use a pre-testing questionnaire before conducting the final study brings potential additional benefits by reducing measurement error and minimizing the potential for nonresponse, as well as providing an easier questionnaire for completion by the respondent in the subsequent substantive study (De Vaus, 2013).

The aim of the pre-test survey was to identify potential problems with redundant questions, missing questions, misunderstood questions and ambiguous questions, and to check the translation between Chinese and English. The pre-test study was carried out from the 14th to 16th of December, 2014. Four Chinese PhD students living in UK, ten full time employees who all have Bachelor or Doctor Degrees, and six retired people living in China were selected for the pre-pilot survey. Participants were asked to fill out the questionnaire, and give feedback. The average time to complete the questionnaire was 12 minutes.

There were some suggestions for improving questions by participants. Most of the participants suggested that it would be better to change Question 1

(did you ever buy any one of green foods below: yes or no) to a multiple choice question. It can make much easier for respondents to recall the time when they consumed. Regarding questions related to social-demographic profile, for the last question about income, one of them suggested that some people may be a housewife/househusband, they don't earn money but they do buy food for the family. Thus, the question was change to ask about the 'annual household income after tax'.

3.5.2 Pilot study

Following the pre-test, a pilot study aiming to achieve 100 responses was launched. It is crucial to begin the fieldwork by conducting a pilot study to help the researcher to identify and eliminate possible problems before the main study (Peterson, 2000). A small-scale pilot study is to test the reliability of the questionnaire, and normally it consists of administering the proposed questionnaire under actual research conditions. Responses obtained from a pilot study can be analysed according to the research design, and tentative conclusions might be made. Thus, a pilot study can provide information on many aspects of the research, such as the likely answers and an assessment of research cost, in addition to questionnaire-related information (Peterson, 2000). Thus, in the research, the main purpose of the pilot study was to identify whether the questionnaire was reliable and valid before launching the main survey.

3.5.2.1 Objectives of the pilot study

A pilot study should be well planned, organised and implemented, in the same way as the main study, because it can contribute to improving the reliability of multiple measures of a hidden construct (Peterson, 2000). Pilot testing finds potential weakness, inadequacies, ambiguities and problems prior to the start of the main research study, allowing correction before the actual data assembly takes place (Sarantakos, 2013). Hence, the objectives of the pilot study were to determine problems with the questionnaire and revise and modify the questionnaire; to identify dimensions of influencing factors on consumers' intention to purchase green food; to validate dimensions as the same as previous studies; to verify that dimensions are the same as the research model of the present study; and to demonstrate construct validity such as convergent validity and discriminant validity.

3.5.2.2 Data collection

The pilot study's sample was chosen as Chinese who buy food in order to match the main sample of this research. However, its size is smaller than a whole sample. This procedure aimed to remove potential problems in the questionnaire. After the pilot study, some questions may be added, deleted or modified. The final version of the questionnaire was evaluated in terms of instructions, ease of use, reading level, clarity, item wording and response formats, and was judged to possess face and context validity (Hair et al., 2010).

Participants were recruited through a snowball sampling procedure by the researcher and they were informed in writing that completing the questionnaire was anonymous and voluntary and that there were no rewards for completing the questionnaire. Recently, the number of Internet users has grown explosively; thus, an online survey was employed because of the fast and convenient sampling methods for both participants and researchers. Even though participants were asked about their awareness and previous experiences of green consumption, this survey includes all respondents as potential green consumers regardless of their previous knowledge of green consumption. A total of 122 responses were collected, and 106 were useful for this pilot study.

3.5.2.3 Result of the pilot study

The population was set as Chinese consumers who shop for food regularly (e.g. at least once every month), which would be the same as the main survey in order to provide face validity to the study. This pilot study generated a high response rate, as indicated above, with a level of participation in absolute terms being more than adequate for a pilot study (De Vaus, 2013). The characteristics of respondents were demonstrated by the examination of the socio-demographics: gender, age, education level, monthly household income after tax and monthly household expenses for food. Table 3.4 shows a summary of the respondents' profile of the pilot study.

Table 3. 4 Respondents' profile

Variable	Frequency	Percentage	Variable	Frequency	Percentage
Gender			**Monthly family after tax income (RMB)**		
Male	40	37.7%	2,000 and below	11	10.4%
Female	66	62.3%	Above 2,000- 4,000	21	19.8%
Age			Above 4,000-7,000	29	27.4%
18-21	13	12.3%	Above 7,000-11,000	18	17.0%
22-26	7	6.6%	Above 11,000-16,000	7	6.6%
27-35	48	45.3%	Above 16,000-22,000	10	9.4%
36-45	27	25.5%	Above 22,000	10	9.4%
46-50	8	7.5%	**Monthly expense for food (RMB)**		
51 and above	3	2.8%	200 and below	3	2.8%
Education			Above 200-400	3	2.8%
High school and below	7	6.6%	Above 400-700	14	13.2%
Junior school	28	26.4%	Above 700-1,100	19	17.9%
College or university diploma	52	49.1%	Above 1,100-1,600	23	21.7%
Master	17	16.0%	Above 1,600-2,200	26	24.5%
PhD and above	2	1.9%	Above 2,200	18	17.0%

Exploratory Factor Analysis (EFA) was applied to identify the number of dimension for the measures. As a result of exploratory factor analysis (EFA), reliability, and item-based statistics, the number of dimensions for proposed constructs was identified (see Table 3.5 below). At the initial stage, Bartletts's test of sphericity (a statistical test for the presence of correlations among the variables) and the KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy were measured to assess the factorability of the data. The KMO value was 0.819 which exceeded the acceptable minimum value 0.6 (Hair et al., 2010; Pallant, 2007). The Barlett's test of sphericity was

found to be significant (p<.000). Thus, significant inter correlation exists among all factors.

And then, the EFA (Principal components, oblimin rotation) on all of the items, except actual behaviour, yielded an eight-factor solution (eigenvalues > 1.0), accounting for 82.9% of the variance (see Table 3.5 below): consumers' attitudes towards green food purchase behaviour (ATT), subjective norms (SN), perceived behaviour control (PBC), moral obligation (MO), positive affects (PA), ecological affects (EA: anger and fear), subjective knowledge (SK), and green purchase intention (GPI).

Table 3. 5 Factor loading – cross loading

Pattern Matrix[a]

	Component							
	1	2	3	4	5	6	7	8
MO1	.864							
MO2	.862							
MO5	.841							
MO3	.791							
MO4	.777							
Anger4		-.972						
Anger3		-.933						
Anger1		-.892						
Anger2		-.859						
Fear2		-.842						
Fear1		-.833						
Fear3		-.830						
ATT4			-.889					
ATT5			-.860					
ATT1			-.830					
ATT3			-.814					
ATT2			-.801					
PA4				.985				
PA3				.976				
PA2				.953				
PA1				.939				
GPI3					-.937			
GPI2					-.922			
GPI1					-.907			
PBC2						.869		
PBC3						.757		
PBC1						.671		
SN1							-.844	
SN3							-.842	
SN2							-.712	
Sk3								-.818
Sk1								-.771
Sk2								-.751

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.639	28.350	28.350	9.639	28.350	28.350	5.827
2	6.244	18.365	46.714	6.244	18.365	46.714	7.212
3	3.365	9.898	56.612	3.365	9.898	56.612	5.270
4	2.699	7.939	64.552	2.699	7.939	64.552	5.442
5	2.048	6.022	70.574	2.048	6.022	70.574	4.725
6	1.916	5.636	76.210	1.916	5.636	76.210	2.502
7	1.263	3.716	79.926	1.263	3.716	79.926	4.010
8	1.024	3.012	82.939	1.024	3.012	82.939	3.738
9	.759	2.233	85.171				
10	.682	2.007	87.179				
11	.609	1.790	88.969				
12	.499	1.467	90.436				
13	.401	1.179	91.614				
14	.374	1.101	92.715				
15	.318	.934	93.649				
16	.307	.903	94.552				
17	.275	.808	95.360				
18	.215	.632	95.992				
19	.211	.619	96.611				
20	.181	.532	97.143				
21	.139	.409	97.552				
22	.134	.394	97.947				
23	.107	.315	98.261				
24	.091	.268	98.833				
25	.081	.238	99.071				
26	.075	.220	99.292				
27	.066	.195	99.487				
28	.055	.162	99.649				
29	.040	.118	99.767				
30	.031	.091	99.858				
31	.022	.064	99.921				
32	.019	.056	99.977				
33	.008	.023	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Finally, to assess the reliability of the internal consistency of the eight factors, Cronbach's Alpha (α) was employed. Alpha provides the degree of inter-item consistency which indicates that the items that make up the dimension are measuring the same underlying construct (Brace, 2008). The pilot study data provided Cronbach's alpha values for each of the scale items all greater than 0.7, varying from 0.984 to 0.724, demonstrating that the questionnaire used in this study meets appropriate levels of reliability (Bryman & Bell, 2015; Churchill & Iacobucci, 2010; Hair et al., 2010). Thus, the validity of the questionnaire was approved, and the final survey questionnaire is presented in Appendix A.

3.6 Method of data analysis

Data from this study were analysed using a combination of SPSS statistics 22 and SPSS Amos 22 software packages. The following sections discuss the use of statistical techniques. First, descriptive statistics is explained, and this is followed by the statistical analysis, which are exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modelling (SEM).

3.6.1 Descriptive statistics

As a preliminary stage, the normality, non-response bias and common method bias will be examined to ensure the accuracy of the SEM analysis.

This study adopts the recommendation of Hair et al. (2010) and Field (2013) to assess the normality by checking the univariate skewness and kurtosis values through SPSS. And then, the nonparametric Mann-Whitney U test is conducted to assess the non-response bias (Armstrong & Overton, 1977; Graca, Barry, & Doney, 2015). Following Mittal and Dhar (2015), this study adopts a Harman's single factor analysis, one of the most widely used techniques, to check the possibility of common method bias.

3.6.2 Exploratory factor analysis (EFA)

Factor analysis is an interdependence technique, which is treated as a foundation of structural equation modelling along with the multiple regression analysis in statistical analysis (Hair et al., 2010). The purpose of exploratory factor analysis is to define the underlying structure among the variables in the analysis (Hair et al., 2010; Mazzocchi, 2008), that is to identify the number of factors and interpret what they present.

There are three steps to conduct EFA. First, the Kaiser-Meyer-Olkin (KMO; Kaiser, 1974) measure and Bartlett (1951; BTS) test of sphericity will be conducted to ensure the appropriateness for running a factor analysis. And then, factor extraction and principal components analysis (PCA) with Promax rotation (Matsunagea, 2010) will be employed to confirm the dimensionality of constructs and to establish the discriminant validity between sets of constructs. Finally, the coefficient alpha (Cronbach, 1951) will be examined to assess the reliability of the scales.

3.6.3 Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) is a way of testing how well measured variables represent a smaller number of constructs (Hair et al., 2010). Through CFA, a mode estimating the effects of the experiential factors on the different variables and further on green purchase intention and actual behaviour will be built. The CFA model is useful in considering the issue of how to measure a theoretical variable in a study (Bagozzi & Yi, 2012), and also a tool that enables researchers to either confirm or reject a preconceived theory (Hair et al., 2010). CFA tests measurement theory based on the covariance between all measured items. Through evaluating the model fit, the CFA model provides the foundation for all further theory testing (Hair et al., 2010).

3.6.4 Structural equation modelling (SEM)

Structural equation modelling (SEM) is a collection of statistical techniques for measuring relationships among multiple variables (Shah & Goldstein, 2006) through examining the structure of interrelationships expressed in a series of equations, similar to a series of multiple regression equations (Hair et al., 2010). Yet, the most obvious difference between SEM and multivariate techniques is that SEM estimates a series of separate, but interdependent, multiple regression equations simultaneously. Thus, SEM provides a comprehensive means for assessing and modifying theoretical models,

which further offers good potential for theory development (Anderson & Gerbing, 1988).

Substantive use of structural equation modelling has been growing in psychology and the social sciences (Anderson & Gerbing, 1988; Baumgartner & Homburg, 1996), and is also an important tool for consumer psychology research (Iacobucci, 2010). There are four features that make SEM preferred over many other commonly used statistical procedures in data analysis for this study. First, by using SEM techniques, it is possible to simultaneously elaborate theoretical constructions, such as ‘attitudes’, or ‘moral obligation’ and to estimate relationships between those constructs and other latent and observed variables. So as to make it possible to investigate in a straightforward comprehensive theoretical frameworks in which the effects of constructs are propagated across multiple layers of variables via direct, indirect, or bi-directional paths of influence (Baumgartner & Homburg, 1996). The more a model incorporates complex sets of direct and indirect effects, the more realistic (representative) it can be, which mean researchers can get closer to the environment they investigate through analysing complex relations between latent and manifest variables (Corral-Verdugo, 2002). Second, SEM can often provide a more accurate estimate of the effects of hypothesized variables controlling for the effects of other potential variables (Bollen, 1989; Fabrigar, Porter, & Norris, 2010), because SEM allows researchers to take into account random measurement error (which can lead not only to attenuated estimates of effects, but also sometimes inflated estimates (Fabrigar et al., 2010). Thus, it helps researchers to be

more precise in their specification of hypotheses and operationalization of constructs (Bagozzi & Yi, 2012). Third, formal indices of model fit of SEM have been developed to evaluate how well a model represents the data (Fabrigar et al., 2010), which makes it easy for researchers to appraise an entire model. Finally, SEM allows factor construction, verification of measures' properties, elaboration and testing of models, and the assessment of models' adequacy, all simultaneously. This saves time and effort duplication and provides quick and precise answers to research questions (Corral-Verdugo, 2002). However, Tabachnick and Fidell (2013) discussed the way that SEM cannot function without prior knowledge of potential relationships among variables, that is, SEM must be used to test a theory. This limitation of SEM was overcome in this research, as the research model was developed based on an extensive literature review.

Moreover, the aim of this study is to develop a structural model of consumers' purchase intention and actual behaviour and explain the interrelationships between constructs (variables). Furthermore, this study also aims to evaluate reliability and validity to estimate measurement models for each of the constructs in the model and evaluate them in terms of measures of fit and interpretation. So the SEM approach was chosen as the main statistical technique used in this study. Meanwhile, all of the assessment of SEM is through Amos 22 software.

As Bagozzi and Yi (2012) suggest, SEM comprises three basic elements: model specification, estimation, and fit evaluation. For this study, through

CFA (see previous section), a model will be built to estimate the effects of the experiential factors on the different variables and further on green purchase behaviour through the intentions of the respondents. And then, for the model fit evaluation, some common model fit criteria will be used, which are Chi-square (χ^2), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), comparative fit index (CFI), incremental fit index (IFI),Tucker Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). If the model exhibits an adequate fit with regard to all of those indices, researchers can confidently claim that it represents the latent factor structure underlying the data well (Matsunaga, 2010).

A significant Chi-square (χ^2) value relative to the degree of freedom indicates that the observed and estimated matrices differ. For SEM, a good fit is obtained when the χ^2 statistic is nonsignificant. However, χ^2 is sensitive to sample size, which make it difficult to achieve satisfactory model fit as the sample size increases. Thus, researchers should examine at least two different types of fit indices and thereby evaluate the fit of the model (Matsunaga, 2010). Generally there are several types of fit indices such that all indices included in a cluster reflect some unique aspect of the model, while different clusters help examine the model from different angles (Kline, 2011; Matsunaga, 2010).

GFI and AGFI can be classified as absolute indexes of fit because they basically compare the hypothesised model with no model at all (Hu & Bentler, 1999). Both indexes values are close to 0.90, indicative of good fit.

The second type of fit index is incremental fit index, which represents the degree to which the tested model accounts for the variance in the data vis-a-vis a baseline model (Matsunaga, 2010). CFI, IFI and TLI will be used in this study. The conventional cutoff seen in the literature is about 0.90 (D. W. Russell, 2002), but 0.95 or higher has been advised by Hu and Bentler (1999).

RMSEA is another type of fit index. It evaluates the model in terms of how closely it fits to the data. Hu and Bentler (1999) recommend that RMSEA should be 0.06 or lower, though Marsh, Hau, and Wen (2004) and Thompson (2004) suggest 0.08 should be acceptable in most circumstances.

The last type of model fit index, used in this study, is residual-based index. The most widely utilized is the SRMR, which indicates the average value of the standardized residuals between observed and predicted covariances. Both Hu and Bentler (1999) and Kline (2011) suggest that SRMR should be less than 0.10.

3.7 Ethical considerations

Given that business and management research is inextricably involved with the study of human behaviour all such research raises ethical issues that need to be taken into account in its design and undertaking (M. J. Baker & Foy, 2012).

This research was designed and implemented in line with the research and consultancy policy of Northumbria University through the granting of ethical approval by the Newcastle Business School Ethics Committee in March of 2013 (Appendix B and C). A freely given and fully informed consent form and an information sheet comprised of information on research aim and objectives and indicating the type of information required from the participants were provided to the respondents prior to the implementation of the primary survey. If they agreed to take part in the survey, the respondents were asked to sign the informed consent prior to filling in the survey questionnaire. All respondents were informed of the nature and aims of the research, their right to withdraw at any point and that they could skip any questions that they did not want to answer. Therefore, responses to the self-completion questionnaire were voluntary. The respondents' right to anonymity and confidentiality was implemented by assigning a code number to the respondents rather than using their real identity.

All information gathered was kept securely and appropriate security measures were taken to prevent unauthorised access. The digital data

related to the survey was stored on a password-protected hard-drive kept in a secure location. All other materials were kept in a locked filing cabinet. As part of the data analysis process, hard copies of the anonymised transcripts (raw data) were permitted to be given as required to the doctoral supervision team. It is also the case that the ethical procedures were adhered to during all stages of data gathering, including the presentation of findings.

3.8 Chapter summary

This chapter describes the research philosophy as positivist, and the research design with regard to the use of a self-administrated questionnaire based on online and mail survey as the data collection method in two different cities. This chapter also discusses several different methodological choices and their rationales related to the data collection method, sampling plan, survey design, construct item generation. It then explains the procedures for conducting the research, which include the literature review, pre-testing, pilot study, and data analysis plan. Finally, this chapter concludes by presenting the ethical consideration of the study. Following the research methodology, the empirical results, particularly the SEM analyses, are shown in the following chapter.

Chapter Four: Data Analysis and Findings

4.0 Chapter overview

The purpose of this chapter is to conduct the statistical analysis of the findings taken from the survey. This chapter describes the process involved in preparing the raw data for Structural Equation Modelling (SEM) by Amos (version 22) for assessing the model-to-data fit. It starts with a brief discussion of the whole data, and the data normality is explored before revealing the descriptive demographic analysis of the data. Based on the preliminary evaluation, a summary of key findings and justification from the steps above is undertaken to ensure that the data in this study is appropriate for in-depth analysis using SEM. Moreover, a 4-step process of examining the raw data set of the SEM model is elaborated. Specifically, the development of measurement and the structural model is interpreted in details. The resutls of hypotheses tests are provided before the chapter summary.

4.1 Cleaning of the data

A survey was chosen as the principal distribution method for this research. The data presented in this study was collected in two different ways in two different cities in China, but both using the same self-administered questionnaire. The paper-and-pencil questionnaire was used in Xi'an, and an online survey was used in Beijing. The received data consist of 400 from

Beijing and 400 from Xi'an; 34 from Xi'an were uncompleted. In order to ensure that all the data was able to generate good quality results, the following two criteria were applied for the selection of the data and 720 usable questionnaires (362 for Beijing; 358 for Xi'an) were left for the final data analysis.

4.1.1 Deletion of the data

First, the completion time of the survey was adopted for checking and deletion of unqualified responses. Figure 4.1 is a frequency histogram, which gives an overview of the time taken by Beijing's respondents to complete the questionnaire. It can be seen that the distribution of the histogram is not normal as its mean (10.99) and median (9.20) are different. For the normal distribution, there is 68.2% probability that the data points lie within one standard deviation (SD) either side of the mean, and about 99.7% probability that the data points lie within 3 standard deviations (SDs) either side of the mean.

Figure 4. 1 An overview of the completion time for the questionnaire - Beijing

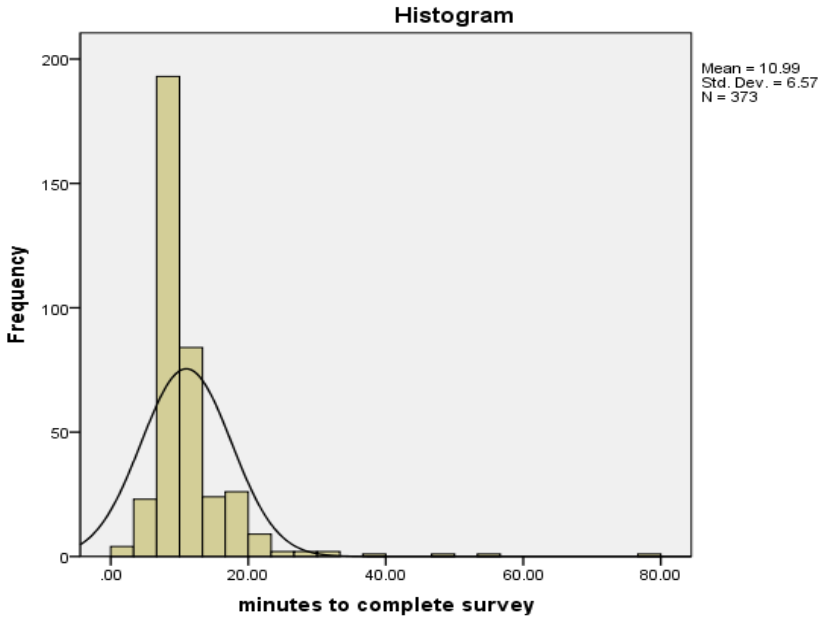


Figure 4.1 shows that the distribution of the completion time is a little positively skewed, that suggests the completion time is much more clustered around the low end of the scale between (-1SD) below the mean and (+3SD) above the mean. Thus, the possible data that can be included for further analysis ranges from approximately 4.5 minutes [mean (11) – 1 SD (6.5) =4.5] to 30.5 minutes [mean (11) + 3 SD (6.5) =30.5]. From the histogram, there are some completion times that are longer than 30.5 minutes. It is thought that it is better to include that data in the analysis in the first place until further evidence is found that they do not qualify.

Before launching this survey questionnaire, its length and completion time were tested among some Chinese consumers who completed the survey by computer and pencil-and-paper individually. The average time to complete the questionnaire was about 15 minutes. Thus, if the completion time of the questionnaire is less than 4.5 minutes, it was considered that little thought

was given to the questions. Finally, 17 responses with completion times less than 4.5 minutes in the Beijing database were deleted.

Second, although some responses had reasonable completion time, some of the answers in the questionnaire did not make sense. For example, the same answers are listed throughout the questionnaire; some respondents said they had bought green products more than once in the last month, but the amount they spent was zero; or some respondents said they had never bought green products in the last month, but stated amounts spent. It can be seen that those questionnaires were not carefully answered. Therefore, a further 21 responses from Beijing and 8 from Xi'an were deleted.

After the initial screening and the deletion of 80 unqualified responses, the remaining 720 data (362 from Beijing, 358 from Xi'an) was further subjected to the normality testing and the outliers checking, which is explained in the next section.

4.1.2 Data preparation: tests of normality

This section explains the preparation of the data for SEM. In this research, SEM is used as the principal statistical technique and requires certain data criteria to be met, especially regarding the distributional characteristics. Data-related problems can cause model-fitting programs to fail to yield a solution. Therefore, carefully screened data (the consideration and resolution of

problematic data before the primary analysis) is essential to ensure the accuracy of a SEM analysis.

Normality is the most fundamental assumption in multivariate analysis. There are two types of normality: univariate and multivariate normality. Univariate normality refers to a single variable. Multivariate normality, which combines two or more variables, means that the individual variables are normal in a univariate sense and that combinations are also normally distributed. Therefore, if a variable is multivariate normal, it is also univariate normal. However, two or more univariate normal variables are not necessarily multivariate normal. Thus, a situation in which all variables exhibit univariate normality will help to gain, although not guarantee, multivariate normality (Hair et al., 2010). Multivariate normality is very difficult to assess. This research, thus, focuses on assessing and achieving univariate normality for all the variables as sufficient, and emphasizes multivariate normality only when it is especially critical.

Normality of variables is usually assessed by either visual check of the histogram or statistical tests (Hair et al., 2010). A visual check is the simplest diagnostic test for normality. It compares the observed data values with a distribution approximating normal distribution. However this method is very subjective. An objective test is needed to decide whether or not distribution is normal. Hair et al. (2010) mentioned that the skewness and kurtosis tests are a more reliable approach to examine the deviation from normality, but they deal with only one aspect of non-normality each. Skewness is used to

describe the symmetry of the distribution, which means the mean of a skewed variable is not in the centre of the distribution. Kurtosis refers to the peakedness of a distribution – a distribution is either too peaky (with short, thick tails) or too flat (with long, thin tails). The value of skewness and kurtosis in a normal distribution should be zero.

In general, the value of skewness and kurtosis is converted into a z-score, which is simply a score from a distribution that has a mean of 0 and a standard deviation of 1, which can be converted from Zskewness = Skewness/Std.Error of Skewness or Zkurtosis=Kurtosis/Std.Error of Kurtosis (Hair et al., 2010). Commonly used critical values are ±3.29 (at 0.001 significant level), ±2.58 (at 0.01 significant level) and ±1.96 (at 0.05 significant level). If the calculated z values exceed the fixed critical value, the distribution is a non-normal distribution.

Field (2013) argues that large samples raise small standard errors. Therefore, he suggests that for a large sample (200 or more) it is more important to observe the shape of the distribution visually and to look at the value of the skewness and kurtosis rather than calculate their significance. This is in line with Hair et al. (2010), who argue that it is less useful for large samples to test the significance, and both the graphical plots and any statistical tests should always be used to assess the actual degree of departure from normality. Therefore, this study follows the recommendation of Hair et al. (2010) and Field (2013) to assess the normality by looking at the skewness and kurtosis values in combination with the distribution of the histograms

provided by SPSS. Table 4.1 below exhibits the assessment of the normality for the variables which are used in the analysis.

Table 4.1 shows that the multivariate kurtosis value is 497.721, which is bigger than the upper threshold value of ±3.29, and therefore indicates significant non-normality. For the individual variables (the univariate normality), the results indicate that the majority of C.R. values are more than ±3.29, which is significant at 0.001 level. The sample size of this study is 720, which is quite large. Thus, this sample can be very sensitive due to the small standard errors. Under this situation, it is not surprising that the results are poor and this kind of significance test is less useful.

Table 4. 1 Assessment of normality (sample size = 720)

Constructs	Variable	Min	Max	Skew	C.R. of Skew	Kurtosis	C.R. of Kurtosis
Subjective Knowledge	Sk1	1.000	7.000	-.598	-6.548	-.388	-2.124
	Sk2	1.000	7.000	-.252	-2.762	-.919	-5.036
	Sk3	1.000	7.000	-.258	-2.828	-.849	-4.651
Subjective Norm	SN1	1.000	7.000	-1.020	-11.171	.754	4.129
	SN2	1.000	7.000	-.933	-10.216	.585	3.206
	SN3	1.000	7.000	-.611	-6.693	-.376	-2.058
Perceived Behaviour Control	PBC1	1.000	7.000	-.289	-3.166	-.869	-4.757
	PBC2	1.000	7.000	-.446	-4.891	-.960	-5.256
	PBC3	1.000	7.000	-.584	-6.399	-.791	-4.331
Positive Affects	PA1	1.000	7.000	-1.564	-17.134	2.488	13.627
	PA2	1.000	7.000	-1.277	-13.993	1.594	8.732
	PA3	1.000	7.000	-1.265	-13.860	1.506	8.247
	PA4	1.000	7.000	-1.158	-12.687	1.185	6.489
Moral Obligation	MO1	1.000	7.000	-2.268	-24.841	6.474	35.460
	MO2	1.000	7.000	-2.180	-23.884	6.020	32.971
	MO3	1.000	7.000	-1.527	-16.732	2.727	14.937
	MO4	1.000	7.000	-1.205	-13.200	1.482	8.115
	MO5	1.000	7.000	-1.696	-18.579	4.006	21.940
Fear	Fear1	1.000	7.000	-1.857	-20.347	3.251	17.807
	Fear2	1.000	7.000	-.950	-10.404	.136	.745
	Fear3	1.000	7.000	-1.054	-11.550	.297	1.624
Attitude	ATT1	1.000	7.000	-1.896	-20.771	3.236	17.724
	ATT2	1.000	7.000	-2.098	-22.981	4.083	22.363
	ATT3	1.000	7.000	-1.557	-17.056	1.923	10.530
	ATT4	1.000	7.000	-1.303	-14.275	1.052	5.760
	ATT5	1.000	7.000	-1.384	-15.166	1.268	6.945
Anger	Anger1	1.000	7.000	-1.871	-20.491	2.840	15.558
	Anger2	1.000	7.000	-1.621	-17.761	2.067	11.322
	Anger3	1.000	7.000	-1.272	-13.937	.917	5.024
	Anger4	1.000	7.000	-1.178	-12.908	.654	3.580
Green Purchase Intention	GPI1	1.000	7.000	-1.151	-12.608	1.657	9.073
	GPI2	1.000	7.000	-.957	-10.482	1.054	5.773
	GPI3	1.000	7.000	-1.025	-11.224	1.182	6.474
Green Purchase Behaviour	Monthly spent	.000	8.000	-.325	-3.556	-.525	-2.878
Multivariate						497.721	134.964

Note: C.R. is the critical ratio, which represents skewness/kurtosis divided by the standard error of skewness/kurtosis. It operates as a z-score in testing that the estimate is statistically different from zero.

Therefore, it was decided to visually check the histograms through the SPSS software to assess the actual degree of departure of the data from normality

(Appendix D). After checking the shape of the distribution of each item of the 10 constructs (attitude, subjective norm, perceived behaviour control, positive affects, fear, anger, moral obligation, subjective knowledge, green purchase intention, and green purchase behaviour), the items of 4 constructs are a little negatively skewed, which include attitude, ecological affects, moral obligation, and green purchase intention. The other constructs appear quite normal. However, as mentioned in the last chapter, as a large sample size (720) is used in this study, it is thought that the minority of non-normal data is unlikely to have a large impact on the analysis. Also based on Byrne (2013), there are some analytical methods that are available for solving non-normal distribution in SEM analysis. In the next section, details regarding the solution for dealing with non-normality are discussed.

Non-normal data is a common issue for researchers who utilise SEM techniques. However, due to rapid development in dealing with non-normal data in SEM, several corrective procedures are now available that appears to mitigate the impact of non-normality. Enders (2001) applied the Monte Carlo simulation to examine full information of maximum-likelihood estimation (FIML) in structural equation models with non-normal indicator variables. The findings of this examination show that the presence of non-normal data does not make the problem worse, as FIML bias is relatively unaffected by non-normal data. Since FIML bias is relatively unaffected by the distribution shape and thus appears to be the method of choice, it is thought that the non-normal data identified in this study will not cause too much concern for this research.

4.2 Profile of the respondents

Table 4.2 presents a summary of the respondents' profile.

Table 4. 2 Respondents' profile

Variable	Pooled sample (n=720)		Beijing (n=362)		Xi'an (n=358)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender						
Male	302	41.9%	160	44.2%	142	39.7%
Female	418	58.1%	202	55.8%	216	60.3%
Age						
18-21	8	1.1%	3	0.8%	5	1.4%
22-26	102	14.2%	59	16.3%	43	12.0%
27-35	303	42.1%	191	52.8%	112	31.3%
36-45	152	21.1%	87	24.0%	65	18.2%
46-50	46	6.4%	13	3.6%	33	9.2%
51 and above	109	15.1%	9	2.5%	100	27.9%
Education						
High school and below	71	9.9%	4	1.1%	67	18.7%
Junior school	154	21.4%	47	13.0%	107	29.9%
College or university diploma	378	52.5%	233	64.4%	145	40.5%
Master	104	14.4%	70	19.3%	34	9.5%
PhD and above	13	1.8%	8	2.2%	5	1.4%
Monthly household income after tax income (RMB)						
2,000 and below	21	2.9%	3	0.8%	18	5%
Above 2,000- 4,000	121	16.8%	20	5.5%	101	28.2%
Above 4,000-7,000	159	22.1%	46	12.7%	113	31.6%
Above 7,000-11,000	143	19.9%	74	20.4%	69	19.3%
Above 11,000-16,000	125	17.4%	90	24.9%	35	9.8%
Above 16,000-22,000	83	11.5%	68	18.8%	15	4.2%
Above 22,000	68	9.4%	61	16.9%	7	2.0%

Variable	Pooled sample (n=720)		Beijing (n=362)		Xi'an (n=358)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Monthly household expense for food (RMB)						
200 and below	17	2.4%	4	1.1%	13	3.6%
Above 200-400	42	5.8%	9	2.5%	33	9.2%
Above 400-700	91	12.6%	37	10.2%	54	15.1%
Above 700-1,100	143	19.9%	60	16.6%	83	23.2%
Above 1,100-1,600	174	24.2%	89	24.6%	85	23.7%
Above 1,600-2,200	123	17.1%	69	19.1%	54	15.1%
Above 2,200	130	18.1%	94	26.0%	36	10.1%

1 RMB = 0.101996 GPB (As of 25th June 2015)

As shown in Table 4.2, the majority of the survey respondents belonged to the 27-35 age categories. Of 720 respondents, 41.9% were male and 58.1% were female respondents. 68.7% respondents hold university and higher degree qualifications. Compared with the Beijing sampling, in Xi'an, there are more respondents belonging to older age groups, lower education level, MHI and MHE.

4.3 Assessment of differences among variables in two cities – Beijing and Xi'an

To compare differences among variables in two different cities – Beijing and Xi'an, an independent T-test with a confidence level of 95% was executed, and there were some differences among variables between Beijing and Xi'an samples in this study, which are attitude, subjective norms, positive affects, perceived behaviour control, subjective knowledge, green purchase intention,

and green purchase behaviour, but there were no differences among other variables such as moral obligation, anger, and fear. Table 4.3 below shows the result of the T-test.

Table 4. 3 The results of T-test for two cities sampling

Variables	City	N	Mean	Std.D	F	T	Sig.
Attitude	Xi'an	358	5.8916	1.41710	39.552	-2.165	0.031
	Beijing	362	6.0950	1.07967			
Subjective norms	Xi'an	358	5.0335	1.30674	7.801	-3.960	0.000
	Beijing	362	5.4070	1.22233			
Positive affects	Xi'an	358	5.3331	1.42834	20.671	-4.036	0.000
	Beijing	362	5.7300	1.19922			
Perceived behaviour control	Xi'an	358	4.6955	1.23396	0.054	-5.899	0.000
	Beijing	362	5.2505	1.28940			
Moral obligation	Xi'an	358	6.1302	0.99879	6.671	0.380	0.704
	Beijing	362	6.1033	0.89147			
Anger	Xi'an	358	5.5328	1.50250	0.003	-0.977	0.329
	Beijing	362	5.6436	1.54079			
Fear	Xi'an	358	5.5196	1.41798	0.195	0.735	0.463
	Beijing	362	5.4383	1.54586			
Subjective knowledge	Xi'an	358	4.0251	1.47486	3.908	-8.932	0.000
	Beijing	362	4.9733	1.37097			
Green purchase intention	Xi'an	358	5.3175	1.12108	13.813	-5.566	0.000
	Beijing	362	5.7523	0.96875			
Green purchase behaviour	Xi'an	358	4.2486	2.01734	0.062	-5.151	0.000
	Beijing	362	5.0387	2.09700			

As shown in Table 4.3, Beijing sampling showed the more positive attitude towards green food, more subjective norms and positive affects, lower

perceived behaviour control, higher subjective knowledge, higher green purchase intention, and more monthly payment for the green food.

4.4 Assessment of non-response bias

Of 720 useful questionnaires, 358 responses were gathered in Xi'an in three weeks (February 23, 2015 – March 15, 2015); in Beijing, 362 responses were gathered within one week (March 9, 2015 – March 15, 2015). Since it took 3 weeks to gather 358 usable questionnaires in Xi'an, the nonparametric Mann-Whitney U test is conducted to assess the non-response bias. The researcher compared the means of all the factors including demographic characteristics of early respondents (n=192) and late respondents (n=166) (Armstrong & Overton, 1977; Graca et al., 2015). The results indicated no significant difference between the two groups in this study (see Appendix E for more details). Thus, non-response bias was not likely to be a problem in the study.

4.5 Assessment of common method bias (CMB)

In behavioural research, common method bias is a common issue when the same respondents evaluate the predictor and criterion variables (Mittal & Dhar, 2015). Following Podsakoff, MacKenzie, Lee, and Podsakoff (2003) and Mittal and Dhar (2015), this study conducts a Harman's single factor analysis, one of the most widely used techniques, to the check the possibility of common method bias. If CMB is an issue in the model, a single factor will

account for the majority (% of variance >50%) of the variance in an un-rotated factor analysis. The results showed in the pooled, Xi'an and Beijing samplings, the greatest covariance explained by one factor is 34.283%, 36.083% and 32.548% individually, which are all less than 50% (see Appendix F). Hence, common method bias was not an issue in this study.

4.6 Exploratory factor analysis (EFA)

For this study, EFA will be conducted appropriately because the scales had not been previously tested in a green food purchasing context. Following Matsunagea (2010) and Thompson (2004), before EFA and CFA are conducted, an initial set of items are first screened by principal component analysis (PCA) using SPSS version 22. PCA provides an effective tool to reduce a pool of items into a smaller number of components with as little a loss of information as possible (Matsunagea, 2010).

First, stepwise analysis was undertaken using the Kaiser-Meyer-Olkin (KMO) statistic to determine whether the sample size was adequate for factor analysis. An acceptable value for KMO is 0.5 and it is better as it approaches 1. The second statistic calculated was Bartlett's test of sphericity, which if significant, indicates that the correlation matrix is not equal to its identity matrix and that there is some relationship between variables (Thompson, 2004). In this study, the KMO is 0.907, and the Bartlett's test of sphericity is significant. Thus, the further factor analysis can be conducted.

The next step is factor extraction, which was done by calculating the eigenvalues of the correlation matrix. Factor retention depends on the magnitudes of associated eigenvalues of variables (some may be large and others small). The default setting for SPSS is to use Kaiser's criterion (eigenvalue>1) to retain factors. Minimum eigenvalues of 1.0 were used to determine the number of factors for each scale. For this study, all the variables can be divided into 8 factors, which together account for 80.136% of the total variance (more details in Appendix G).

To ensure maximum dispersion of loadings within factors, the PCA with Promax rotation was used. Proxmax is one of the rotation methods that provide solutions with correlated components/factors (Matsunagea, 2010). Items loading above 0.50 on one factor and with a minimum difference of 0.20 on all other factors were retained (George & Mallery, 2007). In this study, all of the items loading is from 0.649 to 0.909 (Appendix G). From Table 4.4 below, the overall factor loadings are fine except PBC2 and SK2, which show a cross loading distribution in component group 4 and group 8. According to Matsunagea (2010), an item should be retained if its primary-secondary discrepancy is sufficiently large, usually 0.3-0.4. The primary-secondary difference of PBC2 is 0.516 (0.818-0.302), and the difference of SK2 is 0.462 (0.768-0.306). Thus, PBC2 and SK2 are retained for the next data analysis. It should also be noted that Anger and Fear are distributed in one component group. Based on the previous discussion in literature, they are all negative emotions. Further CFA will be conducted to examine whether they should be in one factor group.

Table 4. 4 Factor loading – cross loading

Pattern Matrix[a]

	Component							
	1	2	3	4	5	6	7	8
Anger2	.908							
Anger3	.907							
Anger4	.900							
Anger1	.856							
Fear1	.819							
Fear2	.818							
Fear3	.815							
ATT3		.920						
ATT2		.911						
ATT1		.837						
ATT4		.823						
ATT5		.813						
MO3			.898					
MO5			.870					
MO4			.863					
MO2			.836					
MO1			.835					
PBC3				.852				
PBC2				.818				.302
PBC1				.703				
PA3					.942			
PA2					.938			
PA4					.936			
PA1					.877			
GPI2						.850		
GPI3						.816		
GPI1						.802		
SN1							.892	
SN2							.841	
SN3							.789	
Sk3								.800
Sk2				.306				.768
Sk1								.642

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

In summary, in this study, EFA yielded 8 constructs, attitude, moral obligation (MO), perceived behaviour control (PBC), positive affects (PA), green purchase intention (GPI), subjective knowledge (SK), and ecological affects (negative emotion, includes fear and anger). All of the factor loadings of each item were above 0.50, demonstrating soundness of the factor structure (Hair et al., 2010).

Finally, all scales used in the primary study were subjected to reliability analysis, which was measured through coefficient alpha by SPSS 22 (Cronbach, 1951). The internal consistency of items demonstrated a high level of reliability above 0.7 (Cronbach, 1951), which ranged from 0.862 to 0.956. Thus, all scales used in this study are regarded as highly reliable. The results of the Cronbach's Alpha internal reliability analysis are presented in Table 4.5.

Table 4. 5 Cronbach's alpha internal reliability analysis

Construct	Cronbach's Alpha	N of Items
Attitude	.919	5
Subjective norms	.862	3
Positive affects	.956	4
Perceived behavioural control	.866	3
Moral obligation	.916	5
Anger	.956	4
Fear	.915	3
Ecological affects (anger+fear)	.943	7
Subjective knowledge	.910	3
Green purchase intention	.903	3

However, the EFA, which refers to principal component factor analysis, does not require a priori hypotheses about factor-indicator correspondence or even the number of factors (Kline, 2011). For instance, all indicators are allowed to load on every factor; that is, EFA tests unrestricted factor models. Thus, after the EFA, confirmatory factor analysis (CFA) and structural equation modelling (SEM) will be developed, which play a confirmatory role because the researcher constructs an explicit model of the factor structure underlying the given data and statistically tests its fit (Matsunagea, 2010; D. W. Russell, 2002). The next section provides more details about conducting CFA and SEM.

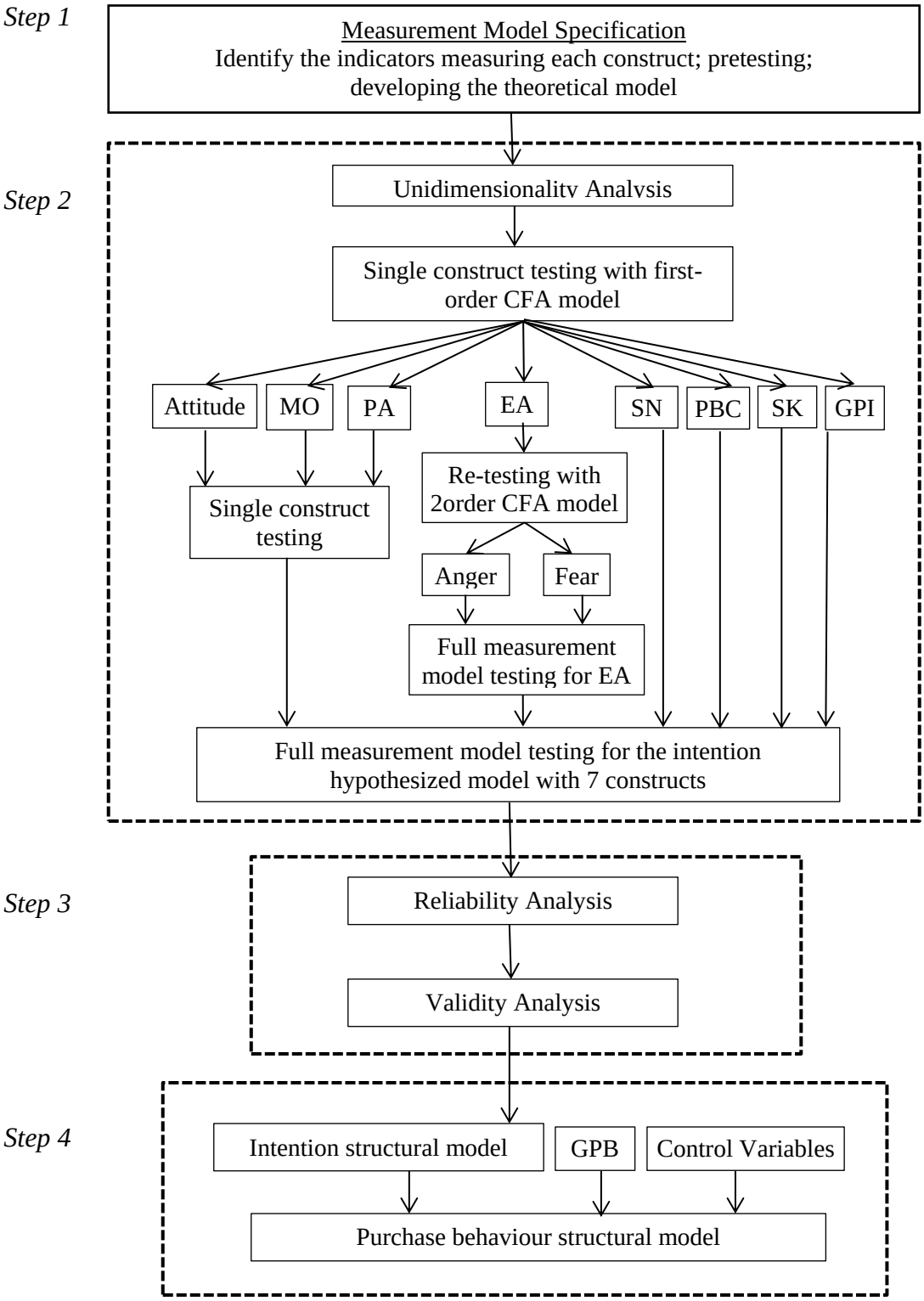
4.7 Steps for conducting structural equation modelling (SEM)

Kline (2011) recommended that structural equation modelling (SEM) includes two approaches, which are measurement model test and structural model test. The measurement model specifies the causal relations and the underlying latent variables or theoretical constructs which are presumed to determine response to the observed measures (Hair et al., 2010). In order to estimate the parameters and assess the fit of a hypothesized measurement model to the observed correlations, the measurement model in SEM can be evaluated through confirmatory factor analysis (CFA) (Hair et al., 2010).

Following with the process for SEM from Hair et al. (2010) and Kline (2011), this study adopts four steps to conduct the structural equation modelling, as detailed in Figure 4.2 below.

First, a brief description about the original theoretically based conceptual model is provided before testing the hypothesized relationships in the conceptual model. Meanwhile, individual constructs will be defined and pretested. Second, the assessment of the measurement scales and the test of the hypothesized relationships represented in the conceptual model are conducted with use of Amos 22. The measurement model is assessed with the CFA. As shown in Figure 4.2 below, conducting measurement model is used to check the unidimensionality of each construct, and then with all the possible pairs of the constructs in the hypothesized model. Third, the measurement model is further assessed with construct reliability and validity examination after the unidimensionality testing in order to obtain the consistency and generalization of the results. Finally, following the measurement purification for each construct and their indicators, the hypothesized relationships from the conceptual model are tested with the structural model.

Figure 4. 2 Stages for conducting structural equation modelling (SEM)



Note: MO: Moral Obligation; PA: Positive Affects: SN: Subjective Norms; SK: Subjective Knowledge; EA: Ecological Affects; GPI: Green Purchase Intention; GPB: Green Purchase Behaviour

4.8 Step one: developing a theoretical model

Based on the theoretical background discussed in the literature review chapter, this study infers that there exist positive or negative relationships between each construct involved in the theoretical model, which is expressed as a path diagram - the direction of the arrows indicates theoretical cause relationships. Subjective knowledge is posited to be the antecedents of three goal-frames, and green purchase behaviour is considered as the critical relational outcome dimension. The key determinants of green purchase behaviour are three goal-frames – “attitude”, “subjective norms”, “perceived behaviour control”, “moral obligation”, “ecological affects”, “positive affects”, and “green purchase intention” have been developed based on existing literature. Subjective knowledge has an impact on green purchase behaviour, which is mediated by the interactions of the dimensions of the three goal-frames. The postulated causal relations among all variables in this hypothesized model are grounded in the theory and empirical research. The measurement scale set with pretesting results is presented below in Table 4.6.

Table 4. 6 Constructs scale items, reliability measures, descriptive statistics and factor loadings

Variables	Cronbach's Alpha	Mean	SD	Factor loading
Subjective knowledge (Aertsens et al., 2011)	0.910			
SK1. In comparison with an average person I know a lot about green food.		4.73	1.525	0.828
SK2. I know a lot about how to judge the quality of green food.		4.39	1.684	0.907
SK3. People who know me consider me as an expert in the field of green food.		4.39	1.673	0.906
Attitude towards green purchases (Dowd & Burke, 2013)	0.919			
For me buying this kind of food is				
ATT1. Bad-good;		6.17	1.358	0.785
ATT2. Harmful-beneficial;		6.21	1.361	0.789
ATT3. Unhelpful-helpful;		5.93	1.494	0.861
ATT4. Unpleasant-pleasant		5.80	1.538	0.868
ATT5. Unenjoyable-enjoyable		5.87	1.498	0.862
Subject norm (Ajzen & Sheikh, 2013)	0.862			
SN1. Most people who are important to me think that I should buy green food.		5.35	1.403	0.861
SN2. Most people whose opinions I value would approve of my green food purchasing behaviour		5.31	1.373	0.856
SN3. Most of my friends and colleagues buy green food		5.01	1.549	0.765
Perceived behaviour control: (Ajzen & Sheikn, 2013)	0.866			
PBC1. For me to buy green food is (*very difficult* - very *easy)*		4.57	1.526	0.719
PBC2. Whether or not I buy green food is completely up to me.		4.56	1.686	0.887
PBC3. If I wanted to, I could buy green food.		4.77	1.737	0.876
Affect: *1. Positive affect:* (Spangenberg et al., 2003)	0.956			
Buying green food makes me feel				
PA1. Good		5.62	1.393	0.881
PA2. Happy		5.52	1.410	0.930
PA3. Optimistic		5.51	1.426	0.943
PA4. Friendly		5.48	1.437	0.926

Variables	Cronbach's Alpha	Mean	SD	Factor loading
Affect: *2. Ecological affect (EA)*	0.943			
a. Fear: (Verhoef, 2005) when thinking about the food issues I feel	0.915			
Fear1. Worried		5.87	1.442	0.954
Fear2. Scared		5.26	1.663	0.784
Fear3. Afraid		5.31	1.697	0.782
b. Anger: (Grégoire et al., 2010) When thinking of environmental issues I feel	0.956			
Anger1. Resentful		5.83	1.568	0.847
Anger2. Angry		5.64	1.607	0.919
Anger3. Indignation		5.49	1.623	0.961
Anger4. Outraged		5.39	1.678	0.945
Consumers' moral obligation: (Harland et al., 1999; Peluso, 2015)	0.916			
MO1. I feel obligated to safeguard my personal health and welfare		6.25	1.070	0.893
MO2. I feel obligated to safeguard my relatives' health and welfare.		6.29	1.040	0.890
MO3. I feel obligated to safeguard my friends' health and welfare.		5.98	1.169	0.791
MO4.I feel obligated to safeguard the health and welfare of other people with whom I live and work		5.88	1.174	0.719
MO5. I feel obligated to safeguard the natural environment.		6.18	1.004	0.829
Green purchase intention: (Chan, 2001 cf. Li, 1997)	0.903			
GPI1. Over the next one month, I will consider buying products		5.55	1.141	0.899
GPI2. Over the next one month, I will consider switching to other brands		5.51	1.148	0.863
GPI3. Over the next one month, I plan to switch to a green version of a product		5.55	1.214	0.848
Green purchase behaviour: (9-likert scale) (Chan, 2001 cf. Li, 1997)	-			
GPB: In the past one month, how much you spent on green food products.		4.65	2.094	-

Items that do not behave statistically as expected may need to be refined or deleted to avoid these issues when the final model is analysed. Thus, constructs' reliability and validity will be pre-tested.

The type of reliability coefficient reported most often in the literature is the coefficient alpha also called Cronbach's alpha, which is the most widely used measure of internal consistency reliability (Hair et al., 2010), the degree to which responses are consistent across the items within a measure (Kline, 2011) . The generally agreed upon lower limit for Cronbach's alpha is 0.70. In this study, all of the constructs' Cronbach's alpha values are above 0.85 (see Table 4.6), which means their internal consistency is high, then the content of the items are very good or excellent possible unit of analysis for the measure (Kline, 2011).

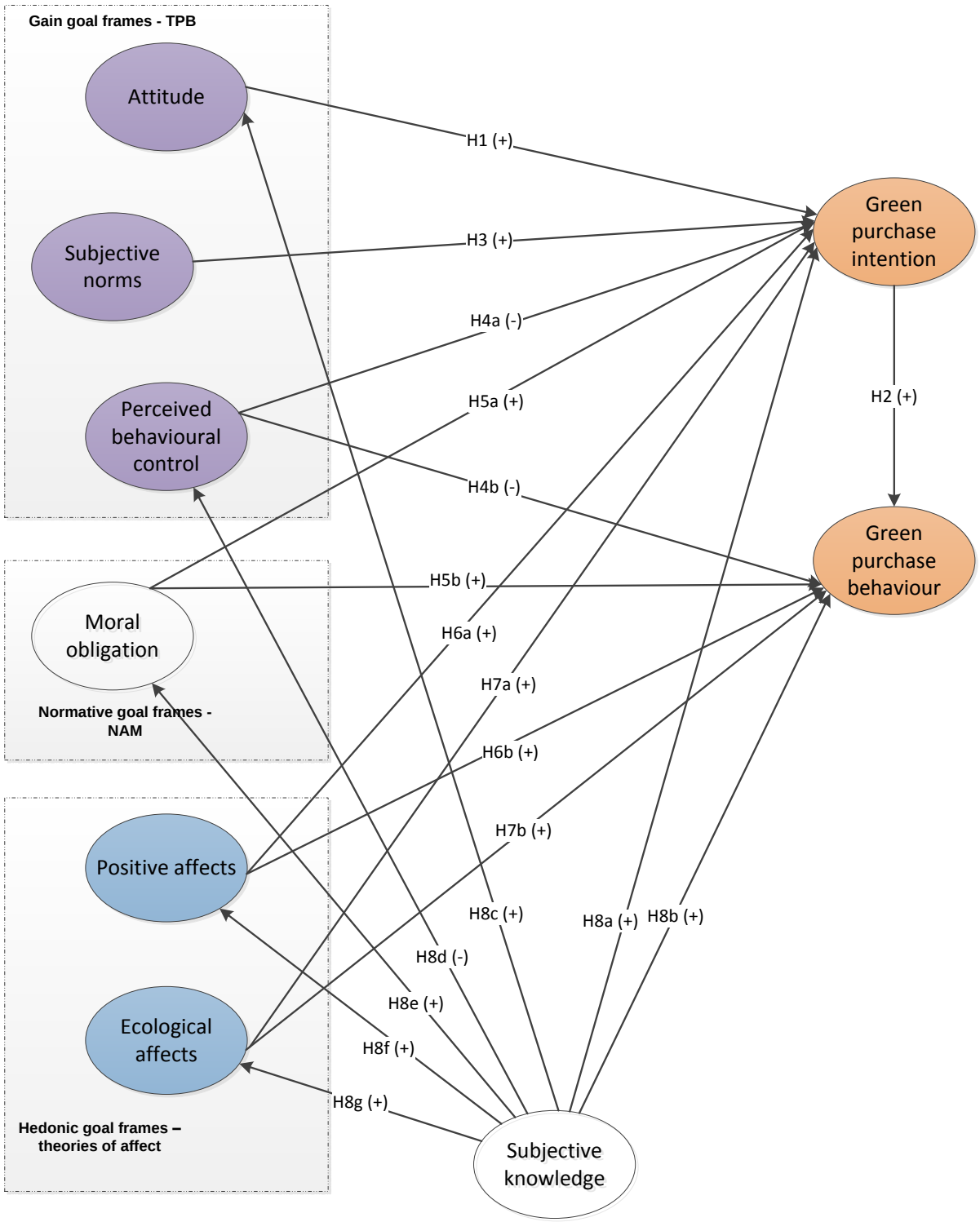
The factor loading in the Table 4.5 are calculated by Amos 22 to make sure all loadings are significant as required for convergent validity. Hair et al. (2010) suggests the loadings should be at least 0.5 and preferably 0.7 or higher. For this study, as Table 4.6 shows, all of the loadings of variables used are higher than 0.7.

It should be noted that the green purchase behaviour (GPB) construct, which is a single-item construct. In general, constructs with fewer than three indicators should be avoided in the SEM analysis. However, if there is little argument over the meaning of a term and that term is distinct and very easily understood, a single item can be sufficient (Hair et al., 2010). In marketing,

some behavioural outcomes such as purchase/no purchase can be captured with a single item. For this study, ‘amount spent’ is a specific behaviour outcome, which is a very simple and easily understood concept that does not require multiple items. Since one of the objectives of this study is to investigate consumers’ green purchase behaviour, GPB’s summates scale values are available and need to be included in the analysis. The primary problem with this single-item measure is that it is underidentified and its loading and error term cannot be estimated in the SEM analysis. So GPB will join in the path analysis in step four (see Section 4.11.3) directly.

In reviewing this model, which is shown in Figure 4.3 below, it can be seen that three goal-frames are represented as a multi-dimensional construct with attitude, subjective norms (SN), perceived behaviour control (PBC), moral obligation (MO), ecological affects (EA), and positive affects (PA) operating as conceptually distinct factors. This part of the model is based on the work of Lindenberg and Steg (2007), in conceptualizing different motives or frames in a personal buying context. The model argues that the three goal-frames hold the central position in developing consumers’ green purchase behaviour because they are considered to be the most enduring and intensive facets of buying. Meanwhile, subjective knowledge is essential to stimulate these goal-frames in building purchase behaviour. With the hypothesized model completely specified, the next stage is to test the data for meeting the assumptions underlying the structural equation modelling.

Figure 4. 3 Proposed conceptual model



4.9 Step two: developing the measurement model

Although using well-established scales, all the scales used to operationalise the constructs must be examined through assessment of the measurement model (Hair et al., 2010). According to Byrne (2013) the task involved in developing the measurement model of SEM is twofold: (1) to determine the number of indicators to use in measuring each construct, and (2) to identity which items to use in formulating each construct. Thus, details regarding the number of indicators and the formulation of each construct for this hypothesized model are elaborated in the following section.

This section starts with testing the unidimensionality of each construct, followed by the reliability and validity analysis. Unidimensionality is carried out by individually testing each latent variable in the proposed model (attitude, perceived behavioural control, positive affects, moral obligation, ecological affects), and then the testing is conducted by linking all the possible pairs of the constructs within the model (linking all 8 constructs in the model together).

In should be noted here that the unidimensionality test with each latent variable should be done with first order structure factor analysis if possible, otherwise using second structure factor analysis or keeping on moving to the next stage with the original indicators. For a construct (e.g. ecological affects) that has a second order factor structure, each of its sub-dimensions is examined first, followed by linking all the sub-dimensions together (please refer to Figure 4.2 for details).

4.9.1 Unidimensionality analysis for the measurement model

The procedure for estimating unidimensionality is recommended by Garver and Mentzer (1999). They suggest that it should first be done independently with each latent variable. Items are omitted as required at each step to obtain adequate measurement model fit. Indices of fit are normally used to suggest unidimensionality. Once each construct in the measurement model is deemed unidimensional by itself, then unidimensionality should be conducted for all possible pairs.

The most commonly reported index of fit for examining unidimensionality is chi-square χ^2, that is a measure of exact fit (Bagozzi & Yi, 2012; Hair et al., 2010). However, chi-square rejects the model fitting as the number of cases increases (Bagozzi & Yi, 2012). The other fit statistics such as goodness of fit index (GFI) and adjusted goodness of fit index (AGFI) are frequently reported in the articles about SEM for unidimensionality testing (Hair et al., 2010). In order to check the unidimensionality of each construct, all 8 constructs in the model are subject to individual testing, and then the full measurement model is estimated with CFA, which is carried out by an overall unidimensionality test for all the constructs.

The current study follows Matsunagea (2010) suggestion that a CFA model should be evaluated in the light of its exact fit, that is, χ^2values, RMSEA, one of the incremental fit indices (CFI, TLI, or RNI), and SRMR (see also Kline, 2011). If the model exhibits an adequate fit with regard to all of those indices,

that is, the computed χ^2value is not statistically significant, RMSEA is smaller than 0.06, CFI/TLI/RNI is greater than 0.95, and SRMR is smaller than 0.10, then, researchers can confidently claim that it represents the latent factor structure underlying the data well. Perhaps some criteria may be loosed without causing overly drastic consequences; for example, RMSEA smaller than 0.08 should be considered acceptable under most circumstances and so is CFI/TLI/RNI greater than 0.90 (Hair et al., 2010). In a related vein, it seems noteworthy that the number of items being analysed in a given CFA is negatively associated with the model's goodness of fit. In other words, generally speaking, the more the items, the worse the model fit (Kenny & McCoach, 2003). This finding points to the importance of the item-generating and item-screening procedures, because it illuminates that not only does selecting quality items help the model to fit well, but also failing to sieve unnecessary items out eventually results in harming the model and therefore impedes the analysis.

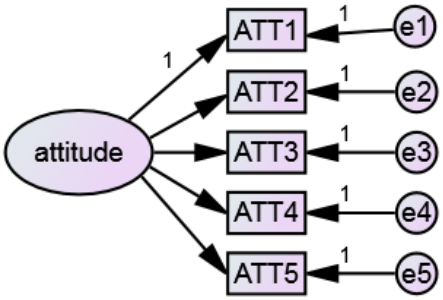
4.9.2 Single constructs measurement model testing

4.9.2.1 Unidimensionality analysis for consumers' attitude

The measurement model for consumers' attitude (Figure 4.4) yields χ2 value of 11.512 (χ^2/df = 3.837), which exceeds 3 as recommended by Bagozzi and Yi (2012). All of the estimated parameters GFI (0.994), AGFI (0.968), CFI (0.997), IFI (0.997), TLI (0.990), and SRMR (0.0092) are all marginally

adequate, despite the value for RMSEA (0.063) being a little above the recommended level of 0.06.

Figure 4. 4 Single-construct measurement testing for Attitude



In reviewing both the unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.7 below), all the parameter estimates are statistically significant and substantively meaningful. Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fit. Although the fit of the current model does not exceed the recommended guidelines of RMSEA, taking each of the aforementioned factors into account, no further consideration is given to the inclusion or deletion of additional parameters.

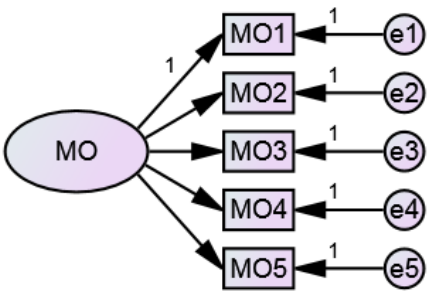
Table 4. 7 Selected Amos test output for Attitude: maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Pool							
ATT1	<---	attitude	1.000				.770
ATT2	<---	attitude	1.010	.036	28.164	***	.776
ATT3	<---	attitude	1.303	.053	24.630	***	.912
ATT4	<---	attitude	1.201	.053	22.480	***	.816
ATT5	<---	attitude	1.138	.052	21.891	***	.794

4.9.2.2 Unidimensionality analysis for moral obligation

The measurement model for consumers' moral obligation (Figure 4.5) yields $\chi 2$ value of 527.862 (χ^2/df = 3105.572), which exceeds 3 as recommended by Bagozzi and Yi (2012). Other estimated parameters GFI (0.774), AGFI (0.323), CFI (0.825), IFI (0.826), TLI (0.649), SRMR (0.0813) and RMSEA (0.831) all suggest poor fit as their values are below the recommended thresholds. It seems that the current model can be improved. In an effort to address the problems, the next stage should examine those inconsistent estimates and the areas of poor fit in the model.

Figure 4. 5 Single-construct measurement testing for Moral Obligation (1)



In reviewing both unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.8) below, most of the parameter estimates are statistically significant and substantively meaningful, all of the standardized estimates are above 0.7.

Table 4. 8 Selected Amos test output for Moral Obligation (1): maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Pool							
MO1	<---	MO	1.000				.895
MO2	<---	MO	.970	.027	36.139	***	.892
MO3	<---	MO	.963	.039	24.593	***	.788
MO4	<---	MO	.878	.043	20.646	***	.716
MO5	<---	MO	.868	.031	28.110	***	.828

A review of the modification indices (Table 4.9) reveals some evidence of poor fit in the model. In reviewing the parameters in the Covariance section (see Table 4.9 below), the largest MI is between err3 and err 4, which are 337.600. Looking back at the Moral Obligation Model (1) (Figure 4.5), these two items correspond to another two similar items (MO3 and MO4) about the feelings of obligation to other people. Thus, it can be decided that if the model is re-estimated with one of the covariance errors (let's say err4) specified as free, the overall $\chi 2$ value can drop. The re-specified model is labelled as Moral Obligation Model (2) (Figure 4.6). Results from this analysis are discussed in the next section.

Table 4. 9 Amos test output for Moral Obligation model (1): modification indices and parameter change statistics

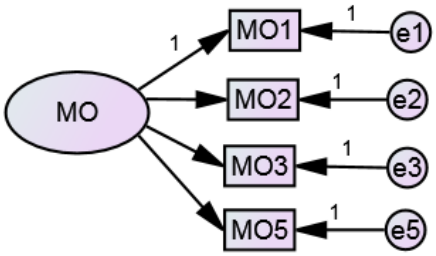
Covariances			M.I.	Par Change
e4	<-->	e5	23.454	.094
e3	<-->	e5	5.797	.042
e3	<-->	e4	337.600	.445
e2	<-->	e4	63.879	-.139
e2	<-->	e3	54.037	-.113
e1	<-->	e5	7.911	-.035
e1	<-->	e4	78.625	-.157
e1	<-->	e3	26.188	-.081
e1	<-->	e2	112.767	.115
Variances			**M.I.**	**Par Change**
Regression Weights			**M.I.**	**Par Change**
MO5	<---	MO4	10.727	.064
MO4	<---	MO5	6.321	.080
MO4	<---	MO3	113.873	.290
MO4	<---	MO2	9.647	-.095
MO4	<---	MO1	11.434	-.101
MO3	<---	MO4	153.748	.302
MO3	<---	MO2	8.324	-.079
MO2	<---	MO4	29.707	-.096
MO2	<---	MO3	18.985	-.077
MO2	<---	MO1	18.440	.083
MO1	<---	MO4	36.618	-.109
MO1	<---	MO3	9.223	-.055
MO1	<---	MO2	19.178	.089

Re-specified measurement model for Moral Obligation model (2)

The re-specified full measurement model 2 for moral obligation (Figure 4.6) yields an overall $\chi 2$ value of 3.343 (χ^2/df = 3.343), which exceeds 3 as recommended by Bagozzi and Yi (2012). All of the estimated parameters

GFI (0.998), AGFI (0.977), CFI (0.999), IFI (0.999), TLI (0.993), SRMR (0.0047), and RMSEA (0.057) are all marginally adequate.

Figure 4. 6 Single-construct measurement testing for Moral Obligation (2)



In reviewing both the unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.10 below), all the parameter estimates are statistically significant and substantively meaningful. Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fit, thereby indicating that the measurement model (2) for testing Moral Obligation (Figure 4.6) represents the best fit and provides good evidence of unidimensionality for the scales of Moral Obligation to the data so far in the analysis.

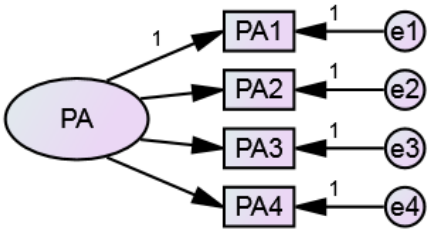
Table 4. 10 Selected Amos test output for Moral Obligation (2): maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Pool							
MO1	<---	MO	1.000				.930
MO2	<---	MO	.967	.025	38.217	***	.925
MO3	<---	MO	.827	.035	23.396	***	.704
MO5	<---	MO	.787	.028	27.708	***	.779

4.9.2.3 Unidimensionality analysis for consumers' positive affects

The measurement model for consumers' positive affects (Figure 4.7) yields $\chi 2$ value of 12.555 (χ^2/df = 6.278), which exceeds 3 as recommended by (Bagozzi & Yi, 2012). All of the estimated parameters GFI (0.999), AGFI (0.992), CFI (1.000), IFI (1.000), TLI (1.000), RMSEA (0.014), and SRMR (0.0017) are all marginally adequate, and provide strong confidence in the plausibility of the measurement model.

Figure 4. 7 Single-construct measurement testing for Positive Affects



In reviewing both the unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.11 below), all the parameter estimates are statistically significant and substantively meaningful. Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fit, thereby indicating that the measurement model for testing Positive Affects (Figure 4.7) represents the best fit and provides good evidence of unidimensionality for the scales of Positive Affects to the data so far in the analysis.

Table 4. 11 Selected Amos test output for Positive Affects: maximum likelihood estimates

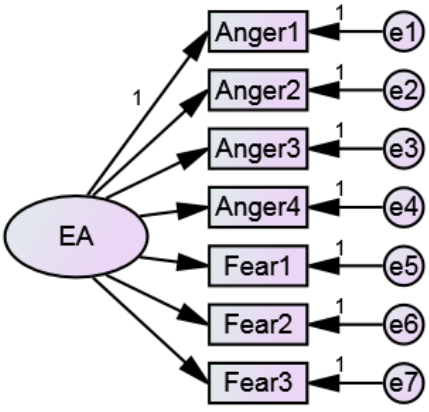
Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
PA1	<---	PA	1.000				.859
PA2	<---	PA	1.078	.026	40.873	***	.915
PA3	<---	PA	1.136	.030	37.712	***	.953
PA4	<---	PA	1.120	.031	36.128	***	.932

4.9.2.4 Unidimensionality analysis for ecological affects

- Testing ecological affects with the first order factor structure

The measurement model for EA (ecological affects) (Figure 4.8) consists of 7 items and yields a poor level of model fit. All the estimated parameters, $\chi 2$ value is 1441.785 (χ^2/df = 102.985), GFI (0.661), AGFI (0.323), CFI (0.761), IFI (0.761), TLI (0.641), RMSEA (0.377), and SRMR (0.1087) suggest poor fit as their values are below the recommended thresholds.

Figure 4. 8 First order CFA testing for Ecological Affects (1)



It seems that the current model can be improved. In an effort to address the problems, the next stage should examine those inconsistent estimates and the areas of poor fit in the model.

In reviewing both unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.12) below, all of the parameter estimates are statistically significant and substantively meaningful.

Table 4. 12 Selected Amos test output for Ecological Affects (1): maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Anger1	<---	EA	1.000				.843
Anger2	<---	EA	1.115	.033	34.243	***	.916
Anger3	<---	EA	1.175	.033	35.993	***	.956
Anger4	<---	EA	1.197	.034	34.936	***	.943
Fear1	<---	EA	.786	.034	22.815	***	.720
Fear2	<---	EA	.864	.041	21.128	***	.686
Fear3	<---	EA	.881	.042	21.064	***	.685

A review of the modification indices (Table 4.13) reveals strong evidence of poor fit in the model. More than half of the items of ecological affects are either highly correlated with one another or error correlations are found between item pairs.

Table 4. 13 Amos test output for Ecological Affects (1) model: modification indices and parameter change statistics

Covariances			**M.I.**	**Par Change**
e6	<-->	e7	490.114	1.269
e5	<-->	e7	162.974	.607
e5	<-->	e6	157.536	.584
e4	<-->	e6	7.538	-.081
e4	<-->	e5	77.423	-.216
e3	<-->	e7	19.175	-.120
e3	<-->	e6	21.275	-.123
e3	<-->	e5	53.380	-.162
e3	<-->	e4	110.008	.137
e2	<-->	e7	37.264	-.201
e2	<-->	e6	11.787	-.111
e2	<-->	e5	11.989	.093
e2	<-->	e4	15.198	-.065
e2	<-->	e3	5.202	-.034
e1	<-->	e7	25.119	-.206
e1	<-->	e6	23.155	-.193
e1	<-->	e5	45.912	.226
e1	<-->	e4	39.259	-.132
e1	<-->	e3	20.358	-.085
e1	<-->	e2	201.699	.327
Variances			**M.I.**	**Par Change**
Regression Weights			**M.I.**	**Par Change**
Fear3	<---	Fear2	251.835	.446
Fear3	<---	Fear1	75.752	.282
Fear3	<---	Anger2	4.969	-.065
Fear3	<---	Anger1	6.714	-.077
Fear2	<---	Fear3	252.441	.429
Fear2	<---	Fear1	73.225	.272
Fear2	<---	Anger1	6.189	-.073
Fear1	<---	Fear3	83.959	.205
Fear1	<---	Fear2	80.963	.206
Fear1	<---	Anger4	6.386	-.057
Fear1	<---	Anger1	12.279	.085
Anger4	<---	Fear1	36.425	-.102
Anger4	<---	Anger3	7.258	.040
Anger4	<---	Anger1	10.798	-.051
Anger3	<---	Fear3	10.030	-.041
Anger3	<---	Fear2	11.103	-.044

Regression Weights			M.I.	Par Change
Anger3	<---	Fear1	25.285	-.077
Anger3	<---	Anger4	10.723	.043
Anger3	<---	Anger1	5.688	-.033
Anger2	<---	Fear3	19.297	-.068
Anger2	<---	Fear2	6.089	-.039
Anger2	<---	Fear1	5.610	.043
Anger2	<---	Anger1	54.757	.125
Anger1	<---	Fear3	12.960	-.070
Anger1	<---	Fear2	11.918	-.068
Anger1	<---	Fear1	21.386	.105
Anger1	<---	Anger2	27.220	.107

Since the correlation matrix is typically of interest in presenting results between variables, it is usual to request this when checking the overall model. From the correlation matrix (Table 4.14) below some patterns can be seen between the variables. Correlation coefficients between half of the variables are very close or exceed 0.70. According to Garver and Mentzer (1999), if the correlation coefficients are close or bigger than 0.70, then the researcher should consider using second-order CFA to test the Model rather than using first order factor model. In theory, fit statistics related to a model parameterised either as a first-order structure or as a second-order structure are equivalent (Byrne, 2013). However, some differences emerge when generating research findings. Details regarding the differences between first-order and second-order structure are elaborated in the next section.

Table 4. 14 Amos text to output for Ecological Affects (1) model: correlation matrix among latent factors

	EA	Fear3	Fear2	Fear1	Anger4	Anger3	Anger2	Anger1
EA	1.000							
Fear3	.685	1.000						
Fear2	.686	.470	1.000					
Fear1	.720	.494	.494	1.000				
Anger4	.943	.646	.647	.679	1.000			
Anger3	.956	.656	.656	.689	.902	1.000		
Anger2	.916	.628	.629	.660	.864	.876	1.000	
Anger1	.843	.578	.578	.607	.795	.806	.772	1.000

- Testing ecological affects with the second order factor structure

Two perspectives on the factor analysis structure can be gained with the introduction of the first-order factor and the second-order factor models. Anger and Fear are difference constructs from difference studies, however, the primary factor analysis shows that they are in one construct. Thus, in the first-order factor model, the researcher specifies just one level of factors (the first order). A first order factor is a unidimensional factor determined directly from its indicators (Garver & Mentzer, 1999).

However, when the construct in a CFA model has several dimensions, it is necessary to see the structural relationships between the dimensions. The items for ecological affects in this study are drawn from studies by Verhoef (2005) and Grégoire et al. (2010) called fear and anger individually, which aim to measure an individual's degree of emotional attachment to ecological issues (Benton, 1994; Y. K. Lee et al., 2012; Satterfield, 2001).

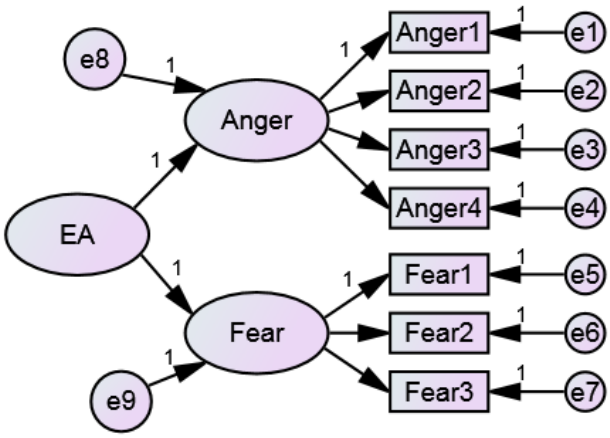
Garver and Mentzer (1999) offer two guidelines for determining the level of factors to be specified in the measurement model. From a theoretical perspective, researchers should consider whether a first or second order factor model would be better at answering research questions. From a statistical consideration, researchers should examine the correlation coefficient between first order factors. If the correlations is greater than 0.70, then second order factor models should be used. Otherwise, Garver and Mentzer (1999) recommend using the first factor model.

Table 4.14 above shows the correlation coefficients between first order factors for ecological affects (EA). Almost all of the correlation coefficients between items from EA are close or bigger than 0.70. Moreover, as customers normally evaluate ecological affects at an overall lever, it is thought that using second order factor model would be more relevant than using the first order factors in generalising the research findings about the consumers' perceptions of the negative emotions of food and environmental issues. In the following sections, the full measurement model for ecological affects will be tested.

At this stage, all the possible pairs of the dimensions in the ecological affects model are linked together and examined with the second-order CFA (confirmatory factor analysis) structure. The full measurement model for EA (Figure 4.9) is estimated and resulted in a poor level of model fit, but obviously better than the first-order model (Figure 4.8). The measurement model for EA (2) (Figure 4.9) yields a poor $\chi 2$ value of 536.980 (χ^2/df =

41.306), GFI (0.812), AGFI (0.595), IFI (0.913), TLI (0.858), and RMSEA (0.237); however, CFI (0.912) and SRMR (0.0698) are adequate.

Figure 4. 9 Second order CFA testing for Ecological Affects (2)



In reviewing both unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.15 below), all of the parameter estimates are statistically significant and substantively meaningful.

Table 4. 15 Selected Amos test output for Ecological Affects (2): Maximum likelihood estimates

Regression Weights			**Unstandardized Estimate**	**S.E.**	**C.R.**	**P**	**Standardized Estimate**
Anger	<---	EA	1.000				.780
Fear	<---	EA	1.000				.905
Anger1	<---	Anger	1.000				.831
Anger2	<---	Anger	1.121	.034	32.760	***	.909
Anger3	<---	Anger	1.204	.034	35.782	***	.967
Anger4	<---	Anger	1.225	.035	34.807	***	.952
Fear1	<---	Fear	1.000				.779
Fear2	<---	Fear	1.394	.048	29.053	***	.942
Fear3	<---	Fear	1.426	.049	29.133	***	.945

A review of the modification indices (Table 4.16) reveals some evidence of poor fit in the model. In reviewing the parameters in the Covariance section, the largest MI is between err1 and err 2 (227.354). Looking back at the Ecological Affects Model (2) (Figure 4.9), these two items correspond to two similar items (Anger1 and Anger2) about feelings concerning environmental issues. Thus, it can be seen that if the model is re-estimated with one of the covariance errors (let's say err1) specified as free, the overall $\chi 2$ value can drop. The re-specified model is labelled as Ecological Affects Model (3) (Figure 4.10). Results from this analysis are discussed in the next section.

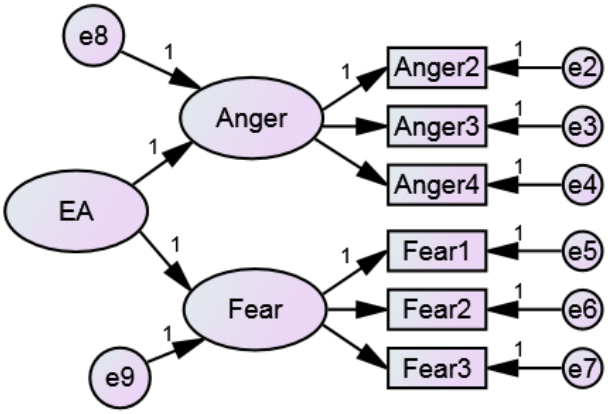
Table 4. 16 Amos test output for Ecological Affects (2) model: modification indices and parameter change statistics

Covariances			**M.I.**	**Par Change**
e7	<-->	e8	5.950	-.064
e6	<-->	e8	4.682	-.056
e5	<-->	e9	37.103	-.181
e5	<-->	e8	73.097	.292
e4	<-->	e7	27.145	.087
e4	<-->	e5	43.451	-.142
e3	<-->	e5	4.754	-.042
e3	<-->	e4	24.959	.055
e2	<-->	e7	38.490	-.123
e2	<-->	e5	77.260	.223
e2	<-->	e4	18.113	-.068
e2	<-->	e3	11.627	-.048
e1	<-->	e7	15.943	-.098
e1	<-->	e6	9.712	-.075
e1	<-->	e5	139.956	.374
e1	<-->	e4	35.595	-.121
e1	<-->	e3	22.433	-.086
e1	<-->	e2	227.354	.365
Variances			**M.I.**	**Par Change**
Regression Weights			**M.I.**	**Par Change**
Fear3	<---	Anger2	15.240	-.066
Fear3	<---	Anger1	12.426	-.061
Fear2	<---	Anger1	8.394	-.050
Fear1	<---	Anger	33.971	.159
Fear1	<---	Anger4	14.097	.079
Fear1	<---	Anger3	26.319	.111
Fear1	<---	Anger2	74.044	.188
Fear1	<---	Anger1	123.616	.249
Anger4	<---	Fear3	4.777	.029
Anger4	<---	Fear1	10.473	-.051
Anger4	<---	Anger1	10.557	-.047
Anger3	<---	Anger1	6.825	-.034
Anger2	<---	Fear1	27.130	.098
Anger2	<---	Anger1	66.267	.140
Anger1	<---	Fear1	43.108	.153
Anger1	<---	Anger2	34.209	.123

Re-specified measurement model for Ecological Affects model (3)

The re-specified full measurement model 3 (Figure4.10) yields an overall $\chi 2$ value of 192.879 (χ^2/df = 24.110). It can be seen that there is an improvement comparing to Model (2) (please see Figure 4.10). The GFI (0.924), CFI (0.962), IFI (0.924), TLI (0.929) are all higher than the recommended level, and SRMR (0.0551) is lower than 0.10. However, AGFI (0.801), and RMSEA (0.179) are still not adequate.

Figure 4.10 Second order CFA testing for Ecological Affects (3)



In reviewing both the unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.17 below), all the parameter estimates are statistically significant and substantively meaningful. However, a review of the modification indices (Table 4.18) reveals some evidence of poor fit in the model. In reviewing the parameters in the Covariance section of these three samplings, the largest MI is between err2 and err 5, which are 94.561. Looking back at the Ecological Affects Model (3) (Figure 4.10), these

two items correspond to another two items (Anger2 and Fear1) concerning negative feelings. Thus, it can be seen that if let the model is re-estimated with one of the covariance errors (let's say err5) specified as free, the overall $\chi 2$ value can drop. The re-specified model is labelled as Ecological Affects Model (4) (Figure 4.11). Results from this analysis are discussed in the next section.

Table 4. 17 Selected Amos test output for Ecological Affects (3): Maximum likelihood estimates

Regression Weights			**Unstandardized Estimate**	**S.E.**	**C.R.**	**P**	**Standardized Estimate**
Anger	<---	EA	1.000				.743
Fear	<---	EA	1.000				.949
Anger2	<---	Anger	1.000				.891
Anger3	<---	Anger	1.102	.024	46.088	***	.973
Anger4	<---	Anger	1.119	.025	43.924	***	.956
Fear1	<---	Fear	1.000				.778
Fear2	<---	Fear	1.397	.048	28.962	***	.942
Fear3	<---	Fear	1.431	.049	29.050	***	.945

Table 4. 18 Amos test output for Ecological Affects (3) model: modification indices and parameter change statistics

Covariances			**M.I.**	**Par Change**
e7	<-->	e8	4.343	-.060
e5	<-->	e9	28.857	-.160
e5	<-->	e8	56.937	.284
e4	<-->	e7	19.225	.071
e4	<-->	e5	19.120	-.091
e2	<-->	e7	35.233	-.125
e2	<-->	e5	94.561	.264
Variances			**M.I.**	**Par Change**
Regression Weights			**M.I.**	**Par Change**
Fear3	<---	Anger2	14.482	-.064
Fear1	<---	Anger	26.582	.129
Fear1	<---	Anger4	14.352	.079
Fear1	<---	Anger3	26.596	.112
Fear1	<---	Anger2	75.350	.190
Anger4	<---	Fear1	4.203	-.031
Anger2	<---	Fear1	40.488	.127

Re-specified measurement model for Ecological Affects model (4)

The re-specified full measurement model 4 (Figure 4.11) yields an overall $\chi 2$ value of 23.897 (χ^2/df = 5.974), GFI (0.987). Most of the estimated parameters AGFI (0.950), CFI (0.995), IFI (0.996), TLI (0.988), SRMR (0.0074), appear to be adequate, except RMSEA (0.083) which is a bit above the recommended level of 0.06. An improvement can be seen compared to Model (3) (see Figure 4.10). All standardized and unstandardized parameter estimates are statistically significant (see Table 4.19).

Figure 4. 11 Second order CFA testing for Ecological Affects (4)

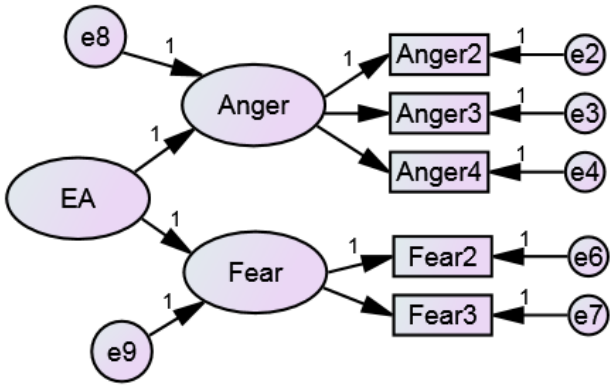


Table 4. 19 Selected Amos test output for Ecological Affects (4): maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Anger	<---	EA	1.000				.869
Fear	<---	EA	1.000				.792
Anger2	<---	Anger	1.000				.891
Anger3	<---	Anger	1.103	.024	45.984	***	.973
Anger4	<---	Anger	1.120	.026	43.843	***	.956
Fear2	<---	Fear	1.000				.945
Fear3	<---	Fear	1.024	.027	37.547	***	.947

Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fitting. Thereby, indicating that the measurement model (4) for testing Ecological Affects (Figure 4.11) represents the best fit and provides a good evidence of unidimensionality for the scales of EA to the data so far in the analysis.

4.9.3 Results of the single construct measurement model

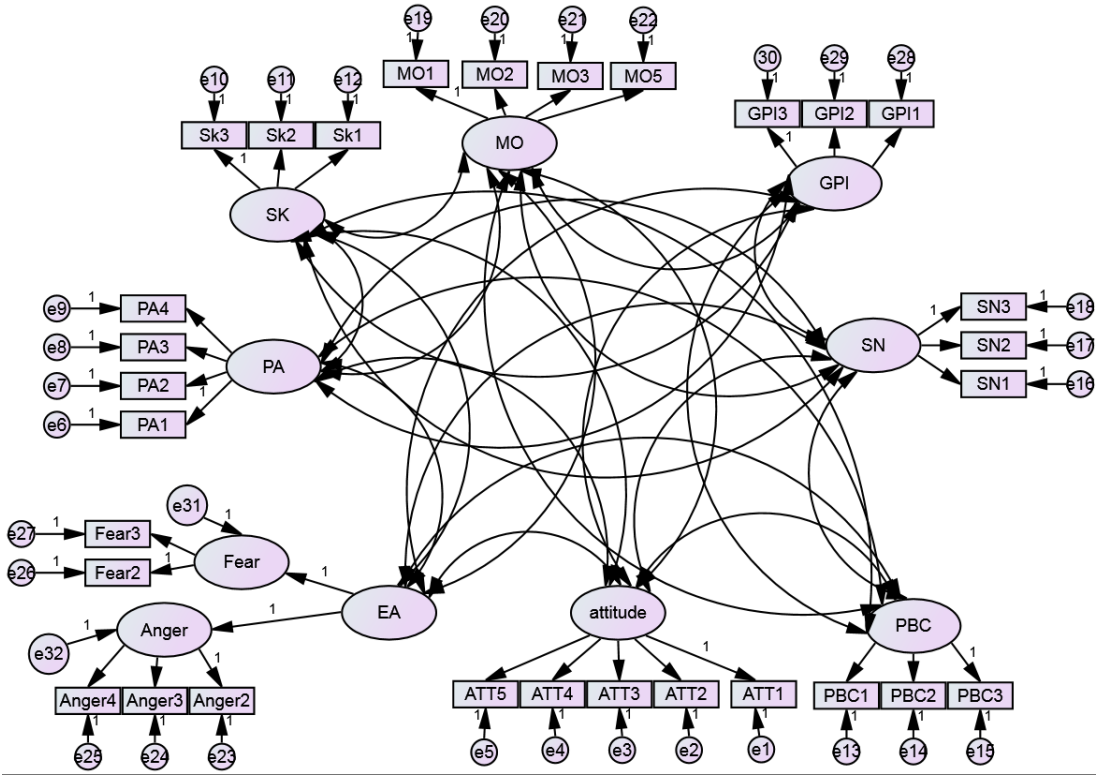
Table 4.20 below summaries the indices of fit for all the constructs, which can be tested with the single construct measurement model. According to Matsunagea (2010), if RMSEA is smaller than 0.06, CFI/TLI/IFI is greater than 0.95, and SRMR is smaller than 0.10, then researchers can confidently claim that it represents the latent factor structure underlying the data well. In all of those four constructs, most of the indices have shown strong evidence of unidimensionality except for EA's RMSEA, which is slightly higher than the recommended level of 0.06.

Table 4. 20 Results of the single construct measurement model for Attitude, Moral Obligation, Positive Affects and Ecological Affects

	$\chi 2$	df	χ^2/df	GFI	AGFI	CFI	IFI	TLI	RMSEA	SRMR
Attitude	11.512	3	3.837	0.994	0.968	0.997	0.997	0.990	0.063	0.0092
MO	3.343	1	3.343	0.998	0.977	0.999	0.999	0.993	0.057	0.0047
PA	12.555	2	6.278	0.999	0.992	1.000	1.000	1.000	0.014	0.0018
EA	23.897	4	5.974	0.987	0.950	0.995	0.996	0.988	0.083	0.0074

4.9.4 Full measurement model testing

Figure 4. 12 Full measurement model



The full measurement model (Figure 4.12) yields χ^2/df values of 2.446 which are all well within the recommended level of 3. Most of the estimated parameters, GFI (0.919) and CFI (0.973), IFI (0.974), TLI (0.968), RMSEA (0.045) and SRMR (0.0344) are all found to be well within the recommended level, except AGFI (0.896) is slightly lower than 0.90. In an effort to see whether the current model can be further improved, the next stage is to examine the maximum likelihood parameter estimates and modification indices (MIs).

In reviewing both the unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.21) below, all the parameter estimates are statistically significant. A review of the modification indices reveals there are no outstanding values suggestive of poor model fit.

Table 4. 21 Selected Amos test output for the full measurement model: maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Anger	<---	EA	1.000				.873
Fear	<---	EA	1.000				.790
Anger2	<---	Anger	1.000				.890
Anger3	<---	Anger	1.106	.024	46.334	***	.973
Anger4	<---	Anger	1.122	.025	44.105	***	.956
Fear2	<---	Fear	1.000				.946
Fear3	<---	Fear	1.021	.027	38.256	***	.947
ATT3	<---	attitude	1.062	.048	21.928	***	.821
ATT4	<---	attitude	1.140	.053	21.419	***	.856
ATT5	<---	attitude	1.137	.050	22.697	***	.876
ATT1	<---	attitude	1.000				.851
ATT2	<---	attitude	.868	.038	22.895	***	.737
MO1	<---	MO	1.000				.925
MO2	<---	MO	.976	.026	38.240	***	.928
MO3	<---	MO	1.012	.069	14.671	***	.858
MO5	<---	MO	.795	.028	27.934	***	.783
PA1	<---	PA	1.000				.927
PA2	<---	PA	1.002	.031	31.914	***	.917
PA3	<---	PA	1.049	.034	31.113	***	.950
PA4	<---	PA	1.038	.035	29.780	***	.933
SN3	<---	SN	1.000				.804
SN2	<---	SN	.978	.043	22.899	***	.887
SN1	<---	SN	.943	.046	20.544	***	.837
PBC3	<---	PBC	1.000				.865
PBC2	<---	PBC	1.007	.035	28.939	***	.898
PBC1	<---	PBC	.734	.033	21.992	***	.723
GPI3	<---	GPI	1.000				.847
GPI2	<---	GPI	.964	.034	28.738	***	.863
GPI1	<---	GPI	1.000	.033	30.006	***	.900
Sk3	<---	SK	1.000				.904
Sk2	<---	SK	1.010	.028	35.965	***	.907
Sk1	<---	SK	.834	.028	29.880	***	.828

Since the correlation matrix is typically of interest in presenting results between latent variables, it is usually of interest to request this statistic when determining the final model. According to Hair et al. (2010), correlation between two items exceeding 0.80, can be indicative of multicollinearity and corrective action should be taken. Multicollinearity exists when there is strong evidence of overlap between two or more items. This condition arises from the situation where two variables are so highly correlated that they both, essentially, represent the same underlying construct. From the correlation matrix (Table 4.22) below it can be seen there is no correlation coefficient value exceeding 0.80. Thus, in all the constructs in the measurement model, there is no evidence of overlap between two or more items. It can be accepted that Figure 4.12 represents the best fit for the scales to the data so far in the analysis.

Table 4.22 Amos test output for the full measurement model: correlation matrix among latent factors

	SK	**GPI**	**PBC**	**SN**	**PA**	**MO**	**Attitude**	**EA**
SK	1.000							
GPI	.538	1.000						
PBC	.663	.441	1.000					
SN	.509	.613	.468	1.000				
PA	.492	.582	.446	.599	1.000			
MO	.206	.435	.190	.397	.427	1.000		
Attitude	.362	.561	.290	.568	.550	.420	1.000	
EA	.096	.219	.010	.153	.247	.243	.185	1.000

4.10 Step three: tests of reliability and validity for the full measurement model

As recommended by Gerbing and Hamilton (1996), the scale items were first examined using exploratory factor analysis (EFA) to identify poorly fitting items, followed by confirmatory factor analysis (CFA) for further measure purification. By using scales from previous studies to design the questionnaire items, and employing five pre-tests for the questionnaire revisions before posting it online, content validity is ensured.

Two measurements are used to confirm the reliability of the constructs, and also two methods to confirm the validity of the constructs. More details are discussed below.

Reliability is an assessment of the degree of consistency between multiple measurements of variables (Hair et al., 2010). Coefficient alpha, also called Cronbach's alpha (α) (Cronbach, 1951), is most often reported in reliability tests. This statistic measures internal consistency reliability, "the degree to which responses are consistent across the items within a measure" (Kline, 2011, p. 69). In this study, values of α spread between 0.862 and 0.956 (see Section 4.8 Table 4.6), which are higher than the commonly used threshold value of 0.7. Since Cronbach's alpha (α) assumes its items are perfectly correlated with their underlying construct (i.e. measured without error) (Bollen, 1989), that is, it underestimates reliability (Hair et al., 2010), the construct reliability (CR), computing reliability of items that are measured

with error (Gerbing and Anderson, 1988), is tested. The values of CR in this study are calculated through Excel based on Amos output, shown in Table 4.22 below. Most are higher than 0.87 except EA's CR is 0.818, which is also greater than the acceptable threshold of 0.70. Thus, both Cronbach's alpha (α) and CR results demonstrate that all the constructs and the indicators in the measurement model (Figure 4.12) are internally consistent and have excellent reliability values in their original form.

Although reliability is important, high reliability does not guarantee that a construct is measured accurately (Hair et al., 2010; Kline, 2011). That is, reliability is a necessary but not sufficient condition for validity. Construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure (Hair et al., 2010). Thus, it deals with the accuracy of measurement. Evidence of construct validity provides confidence that item measurements taken from a sample represent the actual true score that exists in the population.

Validity is multifaceted, which means different validity terms are used to illustrate various aspects of construct validity. Face, convergent and discriminant validity are the most widely accepted forms of validity (Hair et al., 2010). Face validity, also known as content validity, concerns the degree to which a measurement seems to measure what it is supposed to (McDaniel & Gates, 2004). It must be established prior to any theoretical testing when using CFA whether the selection of scale items extends past just empirical issues to also include theoretical and practical considerations (Hair et al.,

2010; Robert, 1996). In this study, all the constructs adopted are justified from the review of previous literature with a similar context, each construct has respectively been adequately discussed in Chapter 2 and presented in Chapter 3 (Section 3.4 construct measures). Also, pre-testing and a pilot study were conducted (see Chapter 3) to test construct validity before launching the main study. Thus, it is believed that the constructs of this study have strong face validity.

According to Bagozzi and Yi (2012), construct validity is developed to consider both the degree of agreement of indicators hypothesized to measure a construct and the distinction between those indicators and indicators of a different construct, namely convergent validity and discriminant validity. In the next section, this study tests construct validity for the whole measurement model through these two aspects.

The items that are indicators of a specific construct should converge or share a high proportion of variance in common, called convergent validity (Hair et al., 2010). If a set of variables presumed to measure the same construct, their intercorrelations should be at least moderate in magnitude (Kline, 2011). There are several ways to estimate the relative amount of convergent validity among item measures. Based on Hair et al. (2010), this study adopt factor loadings and average variance extracted (AVE). Fornell and Larcker (1981) suggest that convergent validity exists when item factor loadings are greater than 0.7. The results from the Amos output in Table 4.21 exhibit significant standardized loadings above 0.7 ($p<0.0001$) for individual items, which

indicate that they converge on a common point, the latent construct. Another measure of convergent validity is the AVE, which is calculated as the mean variance extracted for the items loading on a construct and is a summary indicator of convergence. The AVE measure should be computed for each latent construct in a measurement model, and 0.5 or higher values means the indicators are truly representative of the latent construct (Hair et al., 2010). Hair et al. (2010) recommend that the AVE values should be in excess of 0.5, meanwhile CR $>$ AVE, hence convergent validity can be upheld. From Table 4.22 below, the results show that the AVE values of the constructs in this study are from 0.688 to 0.868, respectively, which are all less than their CR values, confirming their convergent validity.

Discriminant validity is the extent to which a construct is truly distinct from other constructs (Hair et al., 2010). High discriminant validity provides evidence that a construct is unique and captures some phenomena other measures do not. In this study, to test discriminant validity, the measurement of AVE, maximum shared variance (MSV) and average shared variance (ASV) are adopted. Hair et al. (2010) and Fornell and Larcker (1981) propose, in assessing discriminant validity, that the AVE value should be greater than the MSV and ASV. The results of the assessment of the MSV and ASV, presented in Table 4.23 below, indicate that for all eight constructs, AVE values exceed those of their MSV and ASV. Therefore, the discriminant validity of each construct can be confirmed. Moreover, the presence of cross-loadings indicates a discriminant validity problem (Hair et al., 2010). From Table 4.23, all correlations between two constructs are lower than 0.80,

which indicates that there is no cross-loading problem in this study. Thus, in this study, the measurement is acceptable in convergent validity and discriminative validity. According to the above tests of reliability and validity, there is adequate reliability and validity in this study.

Table 4. 23 Construct reliability and validity for full model

	CR	AVE	MSV	ASV	PBC	MO	SK	GPI	SN	PA	attitude	EA
PBC	0.870	0.692	0.440	0.167	0.832							
MO	0.929	0.767	0.163	0.106	0.186	0.876						
SK	0.912	0.775	0.440	0.201	0.663	0.189	0.880					
GPI	0.903	0.757	0.377	0.247	0.440	0.394	0.538	0.870				
SN	0.881	0.711	0.377	0.244	0.467	0.382	0.509	0.614	0.843			
PA	0.963	0.868	0.359	0.237	0.445	0.393	0.490	0.581	0.599	0.932		
attitude	0.917	0.688	0.328	0.198	0.293	0.404	0.366	0.573	0.572	0.558	0.830	
EA	0.818	0.693	0.061	0.033	0.010	0.224	0.096	0.220	0.153	0.247	0.199	0.833

4.11 Step four: developing the structural equation model

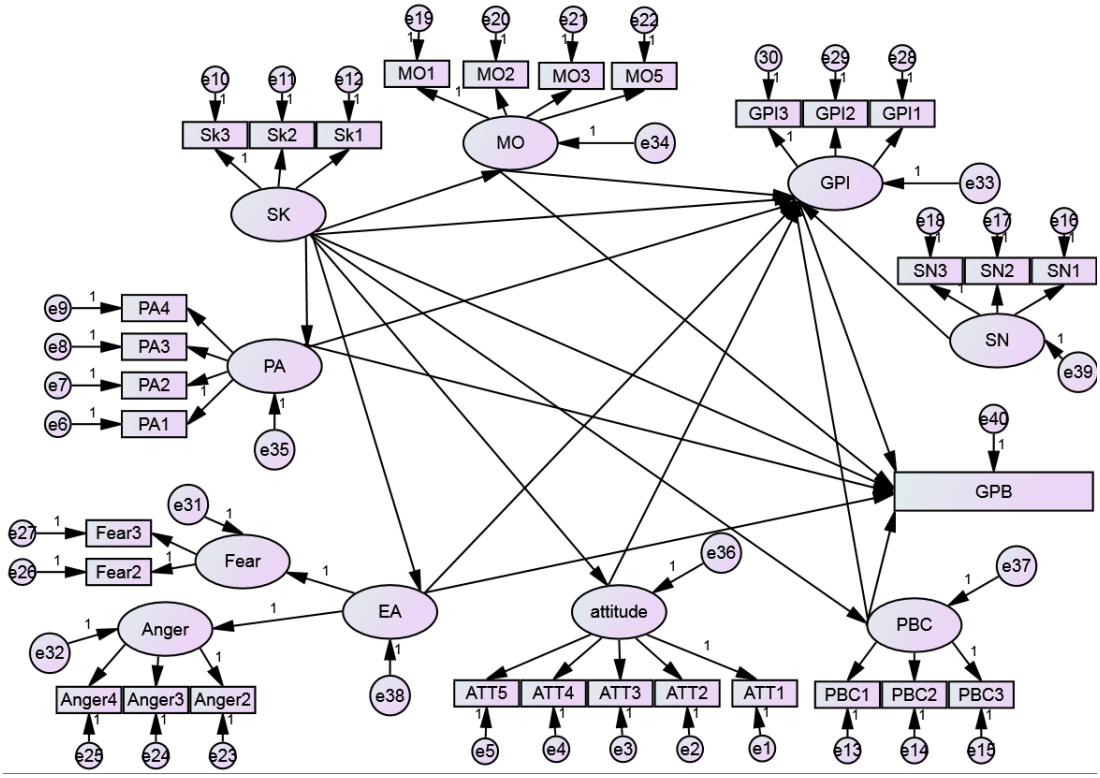
Having assessed the overall model and aspects of the measurement model, the path relationships within the relationships model are analysed by structural equation modelling (SEM) to examine the estimated coefficients themselves for both practical and theoretical implications.

4.11.1 Structural evaluation of the hypothesized model for purchase intention

Based on the purification of all the scales in the measurement model, the structural equation model with green purchase behaviour (single-item construct) in Figure 4.13 is estimated and result in a poor level of fit: χ^2 (2124.360), df (417), p = 0.000, χ^2/df (5.094), GFI (0.821), AGFI (0.690), CFI

(0.914), IFI (0.914), TLI (0.904), RMSEA (0.075), SRMR (0.1786). Although the values of CFI, IFI and TLI are higher than the recommended level 0.90, other estimated parameters indicate that the model is poor.

Figure 4. 13 Structural equation model (1)



In reviewing both of the unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.24), all the parameter estimates are statistically significant and meaningful.

Table 4. 24 Selected Amos test output for SEM (1): maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Anger2	<---	Anger	1.000				.890
Anger3	<---	Anger	1.106	.024	46.005	***	.973
Anger4	<---	Anger	1.123	.026	43.841	***	.956
Fear2	<---	Fear	1.000				.946
Fear3	<---	Fear	1.021	.027	38.055	***	.947
ATT3	<---	attitude	1.219	.048	25.454	***	.863
ATT4	<---	attitude	1.265	.052	24.234	***	.869
ATT5	<---	attitude	1.225	.051	24.124	***	.864
ATT1	<---	attitude	1.000				.778
ATT2	<---	attitude	1.014	.044	23.192	***	.787
MO1	<---	MO	1.000				.924
MO2	<---	MO	.967	.024	40.360	***	.919
MO3	<---	MO	.862	.035	24.601	***	.729
MO5	<---	MO	.811	.028	28.933	***	.799
PA1	<---	PA	1.000				.878
PA2	<---	PA	1.071	.028	38.671	***	.928
PA3	<---	PA	1.102	.028	39.734	***	.945
PA4	<---	PA	1.090	.029	38.001	***	.928
SN3	<---	SN	1.000				.749
SN2	<---	SN	1.000	.046	21.877	***	.846
SN1	<---	SN	1.068	.048	22.169	***	.884
PBC3	<---	PBC	1.000				.866
PBC2	<---	PBC	1.005	.035	28.790	***	.897
PBC1	<---	PBC	.733	.033	21.961	***	.723
GPI3	<---	GPI	1.000				.823
GPI2	<---	GPI	.960	.033	28.962	***	.837
GPI1	<---	GPI	.989	.033	30.138	***	.874
Sk3	<---	SK	1.000				.894
Sk2	<---	SK	1.010	.029	35.255	***	.898
Sk1	<---	SK	.857	.029	29.946	***	.841

A review of the modification indices, (see Table 4.25 below), reveals strong evidence of poor fit in the model.

Table 4. 25 Amos test output for SEM (1): modification indices and parameter change statistics

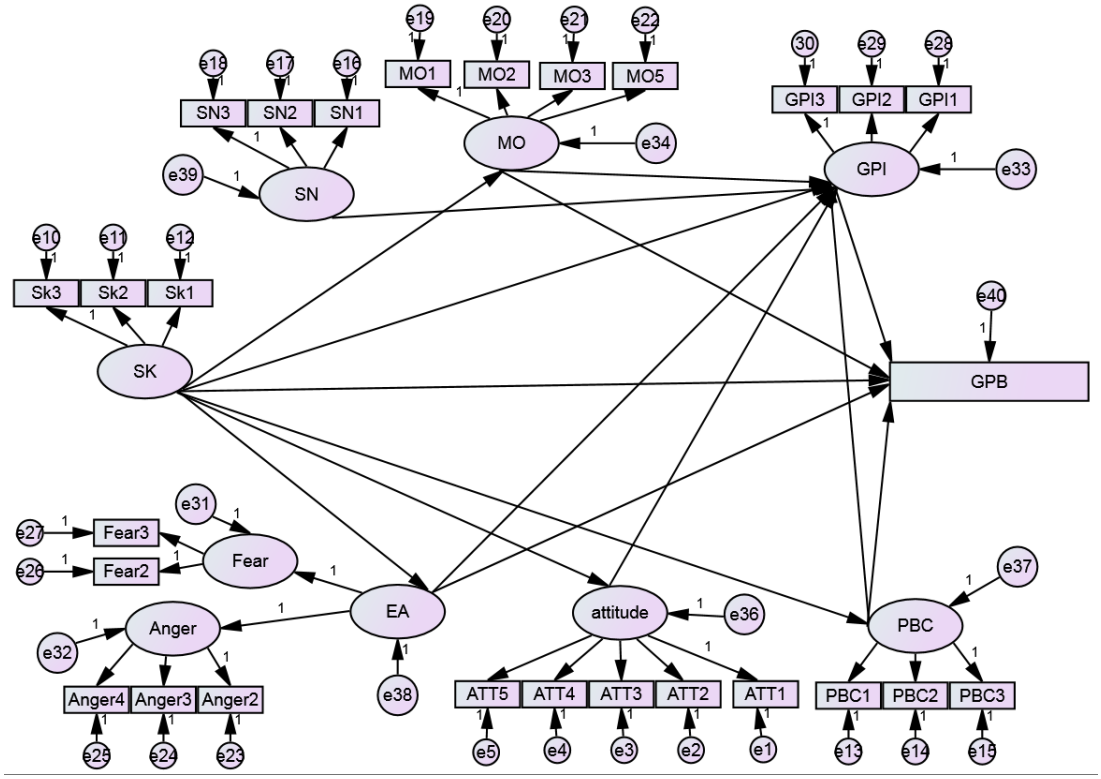
Covariances			**M.I.**	**Par Change**
e39	<-->	SK	178.493	.958
e35	<-->	e39	98.698	.493
e34	<-->	e39	45.482	.311
e34	<-->	e35	75.785	.350
e36	<-->	e39	94.495	.454
e36	<-->	e35	136.342	.475
e36	<-->	e34	82.868	.345
Variances			**M.I.**	**Par Change**
Regression Weights			**M.I.**	**Par Change**
SN	<---	SK	178.493	.429
SN	<---	PBC	131.165	.370
SN	<---	PA	231.689	.586
SN	<---	MO	89.139	.456
SN	<---	attitude	203.500	.647
PA	<---	SN	98.698	.366
PA	<---	MO	71.713	.356
PA	<---	attitude	108.995	.413
MO	<---	SN	45.482	.231
MO	<---	PA	51.449	.224
MO	<---	attitude	66.219	.299
attitude	<---	SN	94.495	.337
attitude	<---	PA	92.594	.304
attitude	<---	MO	78.410	.351

The problematic items are attitude and PA. The largest MI is between them in these three samplings. These two constructs are highly correlated with each other. Thus, it is considered that such misspecification can be solved by the deletion of positive affects.

4.11.2 Re-specified structural model

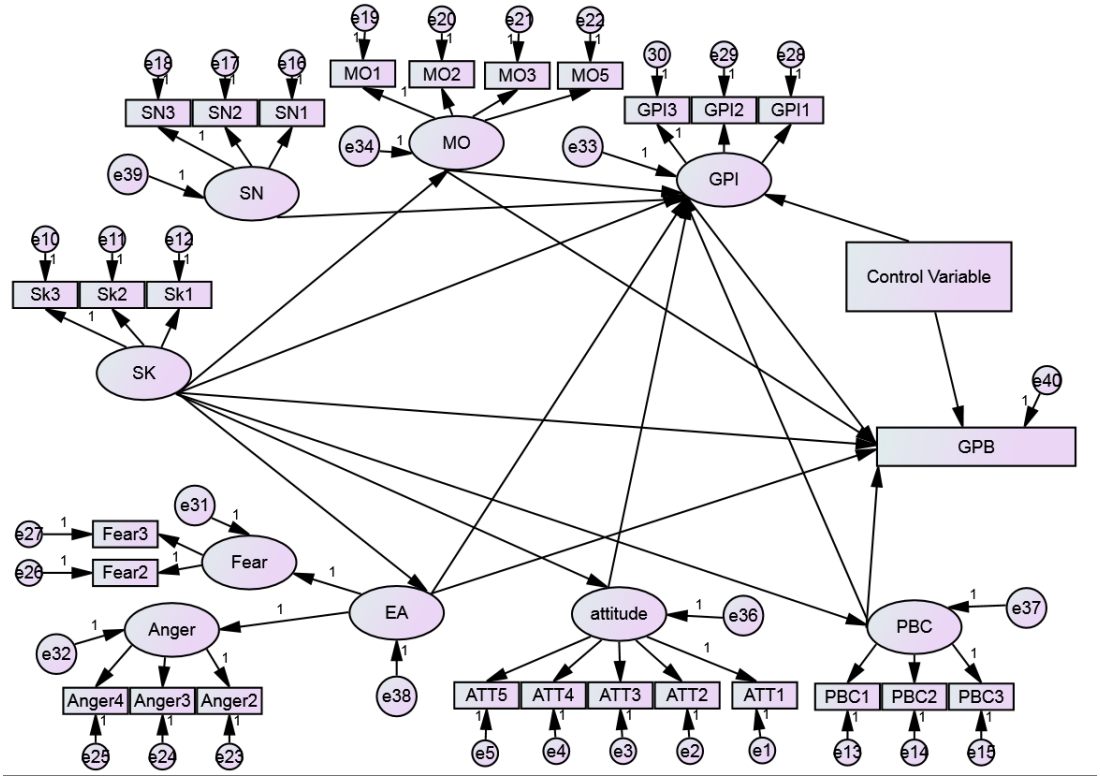
The re-specified structural model in Figure 4.14 yields an overall χ^2 value of 800.731 with 294 degrees of freedom (χ^2/df = 2.724). The GFI (0.918) and AGFI (0.894) provide more confidence in the plausibility of the structural model. The RMSEA (0.049) provides a measure of the expected goodness of fit for the model if it is approximated for the population, and is found to be well within the recommended range of less than 0.06. CFI (0.968), IFI (0.968) and TLI (0.962) are all found to be well above the recommended good threshold of 0.95, and SRMR (0.0606) is less than 0.10, providing further support for the acceptance of the model. As such, there is a high degree of confidence provided in the parsimony of the model. From the statistical perspective, it is noted that the addition of each new parameter results in a statistically significant difference in fit from Model (1). The deletion of PA results in a final model that fits the data well. It appears that the revised Model (2) (Figure 4.14) has the greatest potential for replication in other samples of relationship quality, compared with Model (1) (Figure 4.13). A review of the modification indices reveals there are no outstanding values suggestive of poor model fit.

Figure 4. 14 Re-specified structural equation model (2)



4.11.3 Structural evaluation of the hypothesized model for purchase behaviour (the whole model with control variables)

Figure 4. 15 Full structural equation model (3)



The structural equation model with control variables (gender, age, education level, monthly household income after tax, and monthly household expense for food) in Figure 4.15 is estimated and resulted in a good level of fit: χ^2 (999.466), df (424), p = 0.000, χ^2/df (2.357), GFI (0.916), AGFI (0.895), CFI (0.965), IFI (0.966), TLI (0.960), RMSEA (0.043), SRMR (0.0604). All of the estimated parameters are within the recommended threshold, which shows this model's fitness is very good. In reviewing both the unstandardized, as well as standardized maximum likelihood parameter estimates (Table 4.26) below, all the parameter estimates are statistically significant. A review of the

modification indices reveals there are no outstanding values suggestive of poor model fit.

Table 4. 26 Selected Amos test output for SEM (3): maximum likelihood estimates

Regression Weights			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
Anger	<---	EA	1.000				.875
Fear	<---	EA	1.000				.789
Anger2	<---	Anger	1.000				.890
Anger3	<---	Anger	1.107	.024	45.969	***	.973
Anger4	<---	Anger	1.123	.026	43.808	***	.956
Fear2	<---	Fear	1.000				.946
Fear3	<---	Fear	1.021	.027	38.148	***	.947
ATT3	<---	attitude	1.047	.049	21.204	***	.813
ATT4	<---	attitude	1.143	.054	21.310	***	.863
ATT5	<---	attitude	1.131	.050	22.628	***	.877
ATT1	<---	attitude	1.000				.856
ATT2	<---	attitude	.852	.038	22.147	***	.726
MO1	<---	MO	1.000				.923
MO2	<---	MO	.980	.026	37.896	***	.930
MO3	<---	MO	1.024	.043	23.888	***	.866
MO5	<---	MO	.795	.028	27.958	***	.782
SN3	<---	SN	1.000				.828
SN2	<---	SN	.959	.042	22.986	***	.896
SN1	<---	SN	.899	.045	19.825	***	.822
PBC3	<---	PBC	1.000				.865
PBC2	<---	PBC	1.007	.035	28.690	***	.897
PBC1	<---	PBC	.736	.033	21.974	***	.724
GPI3	<---	GPI	1.000				.847
GPI2	<---	GPI	.964	.033	28.955	***	.864
GPI1	<---	GPI	.992	.033	30.136	***	.895
Sk3	<---	SK	1.000				.714
Sk2	<---	SK	1.005	.037	27.467	***	.713
Sk1	<---	SK	.981	.043	22.819	***	.769

4.11.4 Structural results of the hypothesized model with control variables

The structural results of Model (3) (Figure 4.15) are summarised in Table 4.27 below.

Table 4. 27 The results of the structural equation model

Hypotheses	Path Coefficients	Standardized Estimate (β)	Proposed Effect	Sig. Level (P)	Decision
H1	Attitude → GPI	.248	Positive	***	Accepted
H2	GPI → GPB	.237	Positive	***	Accepted
H3	SN → GPI	.146	Positive	**	Accepted
H4a	PBC → GPI	-.072	Negative	.315	Rejected
H4b	PBC → GPB	-.027	Negative	.724	Rejected
H5a	MO → GPI	.083	Positive	**	Accepted
H5b	MO → GPB	-.159	Positive	***	Rejected
H6a	PA → GPI	-	-	-	-
H6b	PA → GPB	-	-	-	-
H7a	EA → GPI	.074	Positive	**	Accepted
H7b	EA → GPB	-.137	Positive	***	Rejected
H8a	SK → GPI	.483	Positive	***	Accepted
H8b	SK → GPB	.451	Positive	***	Accepted
H8c	SK → Attitude	.119	Positive	**	Accepted
H8d	SK → PBC	.741	Negative	***	Rejected
H8e	SK → MO	.346	Positive	***	Accepted
H8f	SK → PA	-	-	-	-
H8g	SK → EA	.145	Positive	**	Accepted

Control Variables

Gender → GPI	-.031
Age Group → GPI	.082**
Education → GPI	.061**
MHI → GPI	-.019
MHE → GPI	-.035
Gender → GPB	.035
Age Group → GPB	.074**
Education → GPB	.109***
MHI → GPB	-.007
MHE → GPB	.103**

Note: ***significant at $p < 0.001$; **significant at $p < 0.05$

The structural results of green purchase behaviour Model (3) (Figure 4.15) are summarized in Table 4.27. First, of the 18 causal paths specified in the original proposed relationship green purchase behaviour model (Figure 4.13), 10 are found to be statistically significant for the formation of consumer purchase behaviour towards green food. These paths reflected the impact of relative factors on green food purchase intention and real buying behaviour.

Following the recommendations of Henseler, Ringle, and Sinkovics (2009) and Fornell and Larcker (1981), the coefficient of determination (R^2) is examined which aims to assess the predictive power of the model for the dependent constructs. The criterion recommended for this test varies. Hair et al. (2010) state that the R^2 value of 0.75, 0.50 or 0.25 can be described as substantial, moderate or weak, respectively; Chin (1998) suggests the relevant points as 0.67 (substantial), 0.33 (moderate), 0.19 (weak); and Cohen (2013) suggests those points to be 0.29 (substantial), 0.13 (moderate), and 0.02 (weak). The data results show that the values of R^2 for the two dependent constructs in this study, green purchase intention and green purchase behaviour, are 0.565 and 0.348, respectively, which means that it is estimated that the predictors of GPI and GPB explain 56.5% and 34.8% of their variance respectively. They are all above the moderate level of 0.33 based on criterion suggested by Chin (1998). Thus, the model is considered as having satisfactory predictive power.

4.12 Hypotheses test results

In Table 4.27 the results of the structure equation model used in this study, which provides the path coefficients and related p-values for each of the hypotheses in the theorized model are presented. Ten of all the hypotheses are confirmed. Consumer attitudes towards green purchase behaviour have a positive impact on consumer green purchase intention, supporting H1. Support was also found for H2, which suggests the positive relationships between green purchase intention and green purchase behaviour. H3, which assumes a positive relationship between consumer subjective norms and green purchase intention, was supported. Perceived behaviour control is neither related to green purchase intention nor green purchase behaviour, thus H4a and H4b were rejected. Consumer moral obligation has a positive relationship with green purchase intention although it's weak, supporting H5a, but its relationship with green purchase behaviour is non-significant, and thus H5b was rejected. Similar, to ecological affects, support was found for H7a, which suggests a positive relationship between ecological affects and green purchase intention, but its relationship was rather weak. H7b was rejected because its relationship with green purchase behaviour is weak and non-significant. Consistent with H8a and H8b, consumers' subjective knowledge has a strong impact on green purchase intention and purchase behaviour; support was also found for H8c, H8e and H8g, which suggest the relationships between subjective knowledge with attitude, moral obligation and ecological affects. However, the relationship between subjective knowledge and perceived behaviour control was non-significant, thus H8d

was rejected. Finally, the anticipated positive affect (PA) was deleted from the SEM model due to the high correlation between PA and attitude. Thus, the hypotheses of PA were not tested in this study; H6a, H6b and H8f are all not accepted.

Among the control variables, although age and education level have significant effect on purchase intention and purchase behaviour, their effects are rather marginal.

4.13 The mediation role of subjective knowledge

In this section, the mediation role of subjective knowledge is examined, that is, whether demographic characteristics (gender, age, education level, monthly household income after tax (MHI), and monthly household expense for food (MHE) have effects on green purchase intention (GPI) and green purchase behaviour (GPB) mediated through consumers' subjective knowledge. This study follows the two-step process (Hair, Black, Babin, & Anderson, 2010). Step one is to establish significant relationships between demographic characteristics, intention and actual purchase behaviour. Step two is to estimate the mediated model with subjective knowledge as a mediator. Partial mediation means that both the direct and indirect effects from the X to Y are significant. Full means that the direct effect drops out of significance when the mediator is added and that the indirect effect is significant. Indirect means that the direct effect never was significant, but that indirect effect is. (Hair et al., 2010). As recommended by Preacher and

Hayes (2004, 2008), the bootstrapping method is adopted to test the direct and indirect effects of demographic characteristics on green purchase intention and actual green purchase behaviour. Shrout and Bolger (2002) pointed that developments in statistical theory provide alternative methods for testing direct and indirect effects in mediation models, and the bootstrapping is one particular useful approach.

Table 4. 28 The results of mediation role of subjective knowledge

Relationships	Direct without mediator - β(P)	Direct with mediator - β(P)	Indirect P-value	Results
Gender → SK→ GPI	-.031 (NS)	-.015 (NS)	.398	no mediation
Age group → SK → GPI	.103 (.011)	.048 (NS)	.008	full mediation
Edu → SK→ GPI	-.081 (NS)	-.029 (NS)	.019	indirect effect
MHI → SK→ GPI	.194 (***)	.023 (NS)	.001	full mediation
MHE → SK→ GPI	.125 (.008)	.131 (.002)	.800	no mediation
Gender → SK→ GPB	.014 (NS)	.025 (NS)	.375	no mediation
Age group → SK → GPB	.115 (.002)	.077 (.026)	.007	partial mediation
Edu → SK→ GPB	-.013 (NS)	.023 (NS)	.018	indirect effect
MHI → SK→ GPB	.256 (***)	.136 (.002)	.001	partial mediation
MHE → SK→ GPB	.194 (***)	.197 (***)	.807	no mediation

Note: ***significant at $p < 0.001$; NS: no-significant

The results as shown in Table 4.28 indicate that subjective knowledge mediated the relationships between several demographic characteristics and GPI and GPB. First, the direct effects of age and MHI on GPI both drops out of significance when the mediator – subjective knowledge is added, and that the indirect effects of age and MHI are significant, which means subjective knowledge fully mediates the relationships between age, MHI and GPI. Second, due to the direct effects of education level on GPI and GPB never are significant, however, that the indirect effects are, education level is found to have an indirect effect on GPI and GPB through the mediation of

subjective knowledge. Third, both the direct and indirect effects of the age and MHI to GPB are significant, thus, subjective knowledge partially mediates the relationships between age, MHI and GPB. Finally, subjective knowledge is found no mediation effects on the relationships between gender, MHE and GPI, GPB because their indirect effects are all not significant.

4.14 Chapter summary

In this chapter, the measurement and structural results of green purchase intention and purchase behaviour are evaluated and presented. The modified integrated model (Figure 4.15) offers a good fit to the data and it explains a good portion (R^2=56.5% for GPI and R^2=34.8% for GPB) of the variance associated with subjective knowledge, attitude, subjective norms, moral obligation and ecological affects.

Based on the overall model fit, measurement and structural evaluation of the hypothesized model, it is found that the proposed hypothesized model achieved good fit statistically. The results highlight especially the role of consumers' subjective knowledge which has a strong effect on green purchase intention and purchase behaviour. Although green purchase intention can also be influenced by other variables, such as attitude, subjective norms, moral obligation and ecological affects, the effects from these factors are much weaker than that from subjective knowledge. In addition, these factors are also directly affected by subjective knowledge.

Unexpectedly, perceived behaviour control does not impact on green purchase intention and purchase behaviour in the present research.

In the next chapter, the results of this study are discussed by comparing them with the findings from existing research.

Chapter Five: Discussion

5.0 Chapter overview

This chapter discusses the empirical results from the model estimated in Chapter 4, which is based on the theoretical model and hypotheses developed for the study as well as previous studies in the literature. The key findings of this research are then summarised.

5.1 Discussion of model estimation and hypotheses tests results

The results of the structural equation modelling analysis indicate that a total of ten hypotheses of the initially hypothesised model (see Figure 5.1 below) provide an empirical support for the development of consumer purchase behaviour in green food. The proposed model was able to predict 56.5% of the variation of behavioural intention and 34.8% of variance of actual behaviour, which are much higher than many studies based on TPB typically explaining only 39% of variance in behavioural intention and 27% of actual behaviour (Armitage & Conner, 2001). The results confirm that subjective knowledge, attitude, subjective norms, moral obligation and ecological affects play important roles in predicting green purchasing behaviour and actual purchase behaviour in the context of green food. In light of the structural model (Figure 5.2), the following section discusses the main findings, based on two aspects: the role of subjective knowledge, and the role of other influential factors.

Figure 5. 1 Original conceptual model – consumer purchase behaviour for green food in China

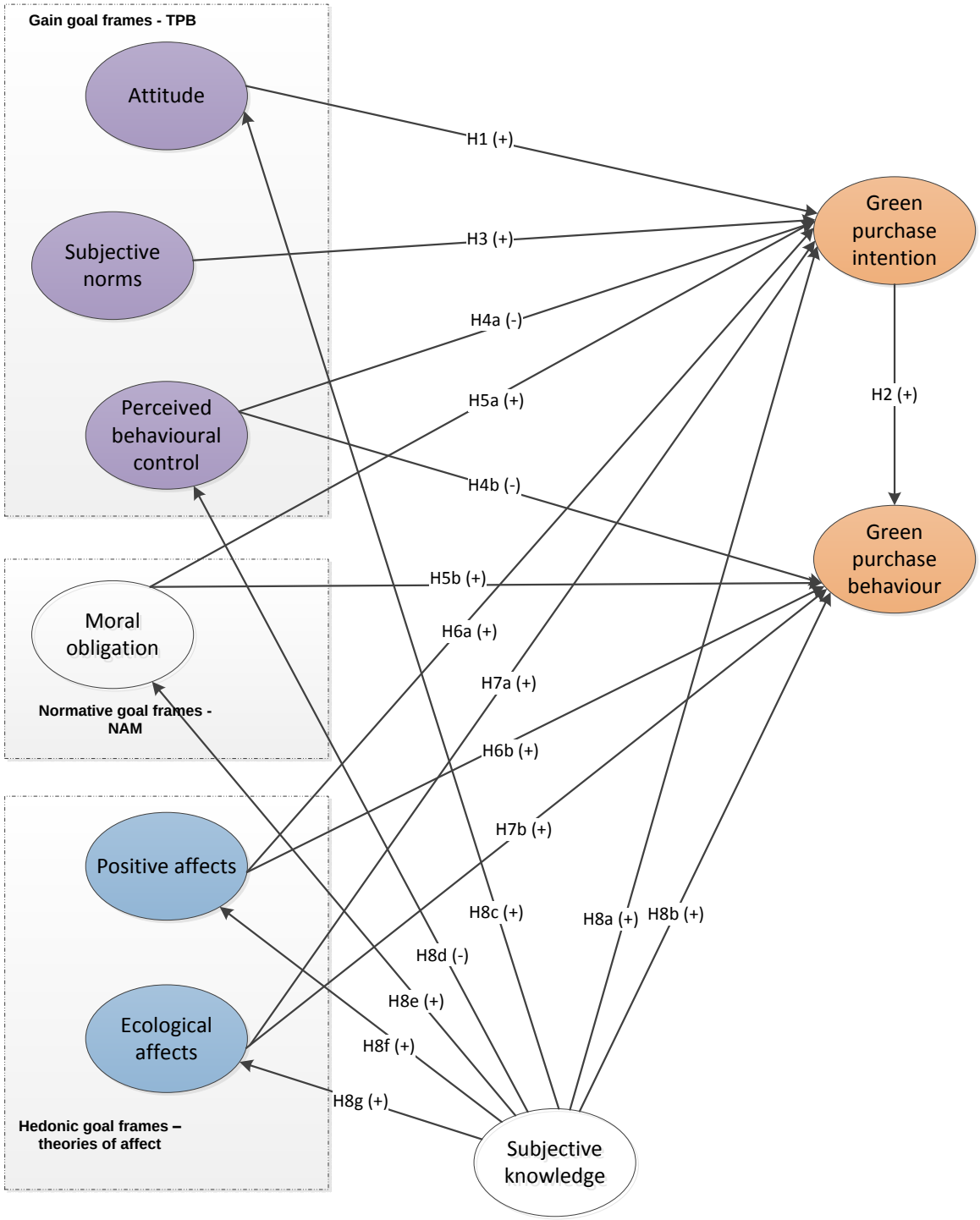
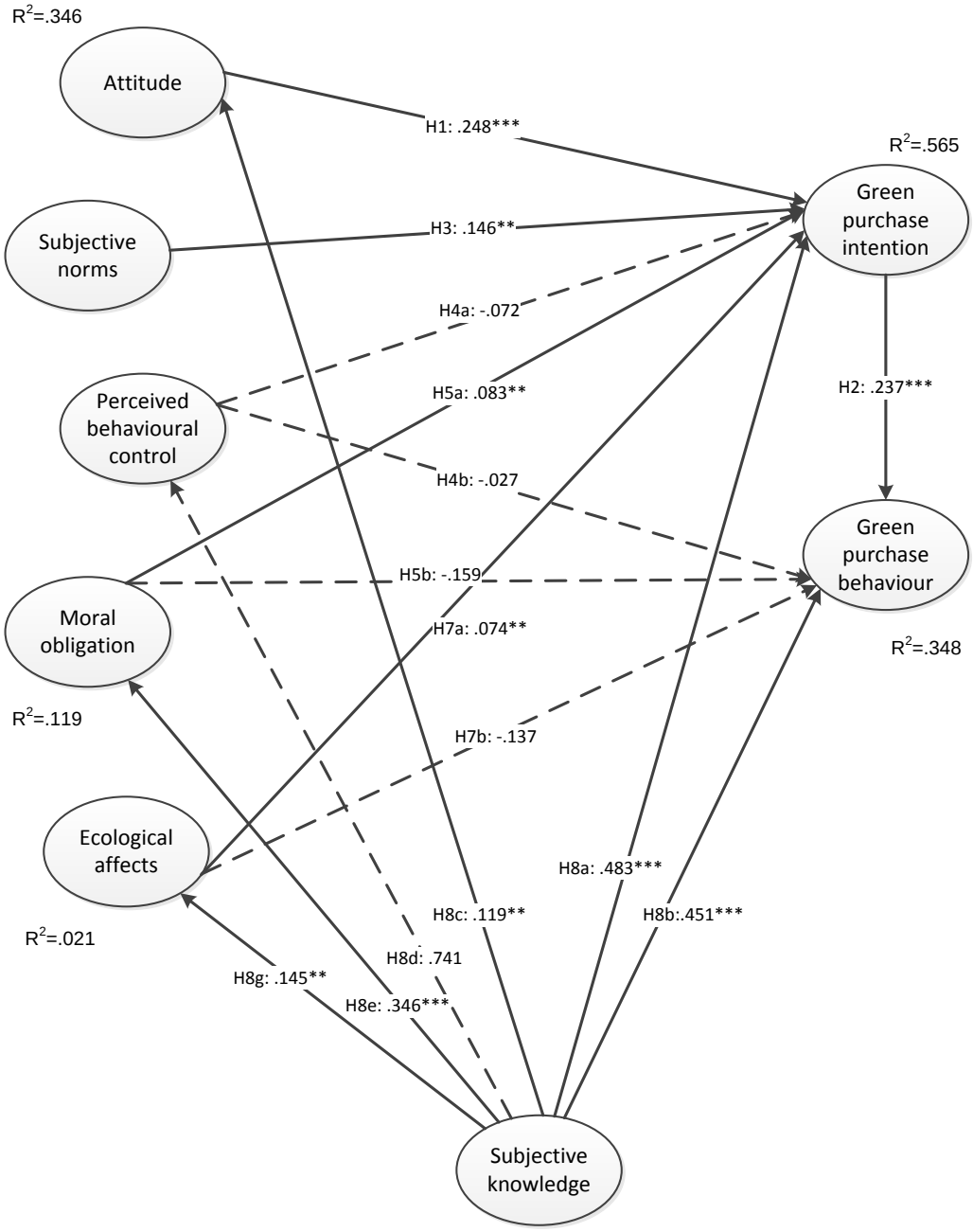


Figure 5. 2 Re-specified structural model for consumer purchase behaviour



Significant Path (***significant at $p < 0.001$; **significant at $p < 0.05$)
Non-significant Path

Model fit: $\chi 2$ =999.466; $\chi 2/df$ =2.357; GFI=0.916; AGFI=0.895; CFI=0.965; IFI=0.966; TLI=0.960; RMSEA=0.043; SRMR=0.0604

5.1.1 The role of subjective knowledge

In this study, consumers' subjective knowledge (SK) of green food was found to have a strong influence on their purchase intention (GPI) and actual purchase behaviour (GPB). The structural modelling shows strongly and positively significant causal paths between SK and GPI ($\beta=0.483$ at $p<0.001$), SK and GPB ($\beta=0.451$at $p<0.001$). That is, consumers, who have more subjective knowledge of green food, are more likely to buy such products, and pay more to buy green food in reality. This analytical finding is consistent with Pieniak, Aertsens, and Verbeke (2010), who find that consumers' subjective knowledge about vegetables is an important factor in explaining the choice of organic vegetable consumption. Pieniak et al. (2010)'s research measures the share of organic vegetable consumption of vegetable consumed. In this study, SK is also proved have a strong and positive impact on consumers' actual payment for green food. Thus, only when the consumers had an appropriate level of information on food, was their behaviour effective (Fraj-Andrés & Martínez-Salinas, 2007; Schahn & Holzer, 1990; Synodinos, 1990).

Using structural equation modelling, this study's findings suggest that subjective knowledge about green food both directly increases the consumers' actual payment for green food, and indirectly through purchase intention towards green food. Therefore, this study also indicates that purchase intention towards green food serves as a mediator between subjective knowledge and actual behaviour in this case.

Additionally, there is a significant path linking ‘green purchase intention’ and ‘green purchase behaviour’ (β=0.237 at p<0.001). This is indicative of the fact that a consumer, who thinks to buy green food products, will spend more to buy in reality. In reviewing past literature, empirical studies also have proved significant positive relationships between ecological intention and behaviour (Chan, 2001; Qinghua Zhu et al., 2013). In working with the structural equation model, R^2 (the coefficient of Squared Multiple Correlation is 0.348) of GPB represents the proportion of variance that is explained by its predictor of the variable – namely green purchase intention. It can be seen that 34.8% of the variance associated with GPB is accounted for by GPI. It also hints that some other variance (the other 65.2%) may also influence GPB as GPI does. Thus, there is a quite obvious gap between purchase intention and physical purchase behaviour, which is consistent with previous literature.

Furthermore, this study also found positively significant paths between SK and attitude (β=0.119 at p=0.033), SK and moral obligation (β=0.346 at p<0.001), SK and ecological affects (β=0.145 at p=0.002). Yet no supposed path was found between subjective knowledge and perceived behavioural control (β=0.741 at p<0.001), which is caused by the complete opposite impact of these two constructs. This is in line with the researchers Aertsens et al. (2011) and Pieniak et al. (2010), who find attitude is significantly positively influenced by subjective knowledge.

Carrington, Neville, and Whitwell (2010), in their discussion of consumer moral decisions, observed that people are more aware of the value of ethical consumption than previous generations, but a change in actual purchasing is still not very apparent. When are altruistic norms activated in consumer decisions? The formation as well as the activation of a moral norm is probably based on the interplay of cognitive, emotional, and social factors (Bierhoff, 2002). In the field of Chinese green purchase behaviour, the awareness of and knowledge about environmental problems are probably the most important cognitive preconditions for developing moral norms. Lindenberg and Steg (2007) suggest that insufficient knowledge of environmental problems may lead people to act against their moral norms. Meinhold and Malkus (2005) found that when levels of environmental knowledge are high, the relationships between environmental attitudes and behaviour are stronger, which suggests that environmental knowledge encourages people to behave in accordance with normative goals (Lindenberg & Steg, 2007).

Consumers' subjective knowledge also exercises an influence on their ecological affects, which is defined as a person's emotional level towards environmental issues (Satterfield, 2001). Although individuals with little knowledge about the environment may still exhibit strong emotional attachment to environmental issues (L. Y. Li, 1997), the findings of this study are consistent with Junaedi (2007), showing consumers' subjective knowledge about green food increases their emotional engagement with food and environmental issues. Hence, green-product consumers who have an

understanding of green food will be sensitive to food and environmental issues.

5.1.2 The role of other influential factors

Moreover, except the subjective knowledge, the findings of this study show that consumers' purchase intention towards green food is influenced by four other factors: (1) consumers' attitudes towards purchase behaviour of green products; (2) consumers' subjective norms about buying green food; (3) consumers' moral obligation towards the health and welfare of themselves, their relatives and friends, and the natural environment; (4) consumers' ecological affects for environmental and food issues. It appears those consumers' positive attitudes towards purchase behaviour, subjective norms, moral obligation, and ecological affects, all will lead to consumers purchase intention towards green food.

The relationship between attitudes and green purchase intention is found to be statistically significant. Consumer attitudes towards green food purchase positively affect green purchase intention (standardised regression coefficient is 0.248 at $p<0.001$). This is indicative of the fact that consumers, who believe green food purchase behaviour is good, beneficial, helpful, pleasant and enjoyable, will be more likely to buy such products in the future. This result is consistent with the study by Dowd and Burke (2013) that there is a significant positive relationship between consumers' attitudes and their intentions to purchase sustainably sourced food. According to the theory of

planned behaviour (Ajzen, 1991; Ajzen & Fishbein, 1980), positive evaluations are related to holding supportive intentions in relation to attitude objects. Thus, it is believed that consumers' attitudes would have a direct and positive effect on their purchase intention towards greed food.

The relationship between subjective norms and green purchase intention is found to be statistically significant. Consumer subjective norms positively affect green purchase intention (standardised regression coefficient is 0.146 at p=0.011). Although empirical evidence does not always support the relationships between subjective norms and purchase intention, the result of this research is in line with a study by Dean et al. (2012), conducted across eight EU countries and which found that subjective norms are a good predictor of purchase intention towards organic food.

The relationships between moral obligation and GPI and GPB are tested in this study. There is a positively significant causal path between moral obligation and GPI (their standardised regression weight is 0.083 at p=0.017). Yet no significant causal path was found between moral obligation and GPB (their standardised regression weight is -0.159 at p<0.001), which is caused by the complete opposite impact of these two constructs. These results indicate that consumers, who feel more obligations to safeguard themselves and their close friends and relatives will be more likely to buy green food in the future, but have not actually spent more for such products recently. In reviewing past literature, the results of this study are in line with some empirical studies that personal norms or moral obligation are found to

improve the explanation of intention (Raats et al., 1995). Positive moral obligation significantly increases the purchase intention for fair trade products (Hustvedt & Bernard, 2010) and sustainably sourced food (Dowd & Burke, 2013). Parker et al. (1996) indicated that moral considerations are an important additional normative influence on intention and often more influential than subjective; Sheeran and Orbell (1999) found it is possible that intentions that are more aligned with one's moral norm are closer to the core self than intentions which are more aligned with one's attitudes. Yet, in this study, moral obligation is not found to have more influence than subjective norms and attitudes on intention.

Through testing the relationships between ecological affects (negative emotion) and GPI and GPB, this study found a positively significant causal path between ecological affects and GPI (their standardised regression weight is 0.074 at $p=0.030$). Yet no significant causal path was found between ecological affects and GPB (their standardised regression weight is -0.137 at $p<0.001$), which is caused by the complete opposite impact of these two constructs. Some consistent empirical evidence has been found to support a positive relationship between ecological affect and purchase intention (L. Y. Li, 1997; Verhoef, 2005; Xu & Wu, 2010). This result can be explained by the fact that consumers feel anger and fear about food and environmental issues, which will result in more intention to buy green food, but not spending more to buy in reality.

There are no significant paths found linking perceived behaviour control and GPI (their standardised regression weight is -0.72 at p=0.315), PBC and GPB (their standardised regression weight is -0.027 at p=0.724) in this study. Contrary to expectations, this result is quite different from that of other green consumption literature. However, Dean et al. (2008) and Yazdanpanah and Forouzani (2015) find that PBC is not a good predictor for organic processed products. These results may be due to the fact that despite green food being readily available in supermarkets or some stores, it may not be very prominent. Thus, consumers may perceive buying such food products as being outside their control. Since PBC has no significant impact on purchase intention and actual behaviour in this study, the theory of reasoned action (TRA) is a more appropriate model rather than the TPB (Yazdanpanah & Forouzani, 2015).

Three hypotheses related to anticipate positive affect were unable to be tested in the SEM analysis due to the deletion of this construct from the model. This problem was caused by the high correlation between anticipated positive affect and consumers' attitudes (the correlation coefficient between these two items is 0.558). This condition is called multicollinearity, which arises from the situation where two variables are so highly correlated that they both, essentially, represent the same underlying construct. Since this situation can lead to offending parameter estimates in SEM analysis, anticipated positive affect was eventually deleted from the model. In reviewing past literature, attitude and anticipated positive affect are two distinct conceptualisations (Arvola et al., 2008; S. Baker et al., 2004; Perugini

& Bagozzi, 2001). Eagly & Chaiken (1993) point out that evaluative responses of the affective type consist of feelings, mood, emotions and sympathetic nervous system activity that people experience in relation to attitude objects, which is treated as an intervening state that accounts for the covariation between classes of stimuli and the evaluative responses elicited by the stimuli (Dowd & Burke, 2013). While the affects is treated as one type of responding by which people may express their evaluations (Dowd & Burke, 2013), and is about the likely affective consequences of performing a behaviour (Ajzen & Sheikh, 2013). Since several past empirical researchers (Pelletier et al., 1998; Smith et al., 1994) in the environmental context have already identified that anticipated positive affect has a strong and direct effect on purchase intention, there is no reason to suspect that such a relationship does not hold in green food consumption. Thus, it is still believed that anticipated positive affect would have a direct and positive effect on purchase intention towards green food because of the aforementioned reasons.

5.2 Summary of the key findings

As presented in the profile of the survey participants in Table 4.2, of 720 respondents, 41.9% were male and 58.1% were female respondents. A majority of the survey participants belonged to the 27-35 age categories (42.1%), and displayed a high level of educational attainment, 68.7% of respondents hold university and higher degree qualifications. Regarding indicating monthly household income after tax, 58.2% of 720 respondents

exceed RMB7,000. Over 79% of respondents indicated that their monthly household expenses for food were above RMB700. Compared with the Beijing sampling, in Xi'an there are more respondents belonging to older age groups, lower education level, and lower monthly household income after tax and monthly household expenses for food.

Consequently, the structural equation model (SEM) was tested using the statistical software Amos 22, and the results are presented in Chapter 4 Table 4.26. Based on the results, the certain outcomes of the SEM are:

- The strongest predictors of consumers' purchase behaviour were: subjective knowledge (H8b: $\beta = 0.451$at $p<0.001$); and purchase intention (H2: $\beta = 0.237$ at $p<0.001$). Contrary to our predictions, perceived behaviour control, moral obligation, and ecological affects did not exhibit significant predictive power in their relationship with consumer purchase behaviour. Thus, the results support hypotheses H2 and H8b, while H4b, H5b and H7b are rejected.

- Findings also show that influencing factors on consumers' purchase intention were: subjective knowledge (H8a: $\beta = 0.483$ at $p<0.001$); attitude (H1: $\beta = 0.248$ at $p<0.001$); subjective norms (H3: $\beta = 0.146$ at $p<0.001$); moral obligation (H5a: $\beta = 0.083$ at $p = 0.017$); and ecological affects (H7a: $\beta = 0.074$ at $p = 0.030$). Thus, H8a, H1, H3, H5a and H7a are accepted. However, the relationship between

perceived behavioural control and purchase intention was revealed to be weak and non-significant, thus H4a is rejected.

- Moreover, the influence of subjective knowledge on attitude (H8c: $\beta = 0.119$ at $p = 0.033$); moral obligation (H8e: $\beta=0.346$ at $p<0.001$); and ecological affects (H8g: $\beta=0.145$ at $p=0.002$) is found to be positive and significant. Thus, H8c, H8e, and H8g are all accepted.

- Finally, the anticipated positive affect (PA) was deleted from the SEM model; PA was not tested in this study; H6a, H6b and H8f are all not tested.

Chapter Six: Conclusions

6.0 Chapter overview

This chapter mainly discusses the research contributions based on the findings discussed in Chapter 5. This chapter begins with a summary of this study. Following this, conclusions are drawn in relation to research objectives. And then it highlights this study's theoretical and managerial contributions to the investigation of green consumption specifically in the Chinese context. Finally, the research limitations and recommendations for future research are presented.

6.1 Summary of the thesis

Over the past few decades, changes occurred in food-related lifestyles which have stimulated increasing attention on the experiential and symbolic meanings of food consumption (Guido et al., 2010). More specifically, Tobler et al. (2011) pointed out that food consumption has been recognised as an environmentally significant behaviour, because food production, transport, and consumption contribute to environmental problems, such as greenhouse gas emissions, farmland erosion, and excess wastage. For example, the consumption of organic food products – made through biological methods devoid of synthetic fertilisers, toxic pesticides, and genetic engineering – can satisfy consumers' ethical needs to care for their relatives' health as well as for their own, to protect the environment, and to preserve the wellbeing of

animals (McEachern & McClean, 2002). Most consumers perceive this kind of product as also having specific benefits – in terms of taste, nutrition, and sensory characteristics – which distinguish them from conventional food (Arvola et al., 2008).

This study defined goal-framing theory (Lindenberg, 2001, 2001b, 2006) as a conceptual framework that is focused on understanding the key drivers of a pro-environmental behaviour. This theoretical framework links with several social-psychological theories, which are theory of planned behaviour (Ajzen, 1988, 1991), norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981), theories on affects, and consumers' knowledge. This study draws upon the work of Lindenberg and Steg (2007) in the adaption of the goal-framing theory model to investigate Chinese consumers' purchase intention and actual purchase behaviour of green food products.

The main investigative survey was then conducted in two mainland Chinese cities: Beijing and Xi'an. Total data of 800 participants was collected from February to March of 2015, using web-based and paper-and-pencil self-administered questionnaires by two Chinese market research agencies.

Confirmatory factor analysis (CFA) was used to assess the measurement models of this study's conceptual framework for green purchase intention. The analysis of the measurement model found that eight constructs proposed were undimensional, reliable and exhibited convergent and discriminant validity. Structural equation modelling (SEM) analysis was then

used to test all of the proposed hypotheses. Goodness-of-fit statistical tests indicated that data fitted the structural model within statistically acceptable bounds. Before the CFA and SEM analysis by using Amos 22, the exploratory factor analysis (EFA) was applied to identify the number of factors and interpret what they present by using SPSS 22.

Based on the findings shown in Chapter Four section 4.11, consumers' attitudes towards green purchase, subjective norms, moral obligation, and ecological affects have significant positive influence on their purchase intention for green foods; and only purchase intention and consumers' subjective knowledge have significant positive impact on their actual purchase behaviour for green food.

6.2 Objectives of the study

Growing environmental awareness, in combination with concerns about food safety, has driven modern consumers to increase their demand for green products, which are perceived as less damaging to the environment and considered to be safer than conventional food. Chinese consumers have also become interested in green food because their attention on food safety and environmental issues are very high. However, although Chinese consumers are interested in green food and know the advantages, the value of the organic market is still very low, and green consumption has not increased to the same degree as consumers' interest in green food. In addition, there are only a few studies related to green food in China.

Hence, the main objective of this study was to identify Chinese consumers' purchasing intention and actual purchasing behaviour for green food, and then to investigate the determinants of the relationship between consumers' purchase intention and actual purchase behaviour. Table 6.1 below outlines the research objectives and hypotheses which have been tested in Chapter 4 in order to achieve the research objectives. The following section reviews and discusses the findings of the study with regard to these objectives.

Table 6. 1 Research objectives and hypotheses

Research Objectives	Hypotheses (results)
1. To identify the relative influence of factors affecting consumers' intentions to purchase green food.	H1: Consumer attitudes towards green food purchases are positively related to green food purchase intention. (*accepted*) H3: Consumer subjective norms are positively related to green food purchase intention. (*accepted*) H4a: Perceived behaviour control has a negative impact on green purchase intention. (*rejected*) H5a: Consumer moral obligation is positively related to green purchase intention. (*accepted*) H6a: Consumer anticipated positive affect is positively related to green purchase intention. (*not tested*) H7a: Consumers' ecological affects have positive impact on their green purchase intention. (*accepted*) H8a: Consumers' subjective knowledge positively relates to their green purchase intention. (*accepted*)

Research Objectives	Hypotheses (results)
2. To determine factors affecting consumers' actual purchase behaviour for green food.	H2: Green purchase intention is positively related to green purchase behaviour. (*accepted*) H4b: Perceived behaviour control has a negative impact on green purchase behaviour. (*rejected*) H5b: Consumer moral obligation is positively related to green purchase behaviour. (*rejected*) H6b: Consumer anticipated positive affect is positively related to green purchase behaviour. (*not tested*) H7b: Consumers' ecological affects have positive impact on their green purchase behaviour. (*rejected*) H8b: Consumers' subjective knowledge positively relates to their green purchase behaviour. (*accepted*)
3. To propose and operationalise a conceptual model integrating relative variables.	H8c: Consumers' subjective knowledge positively relates to their attitudes towards green food purchase behaviour. (*accepted*) H8d: Consumers' subjective knowledge negatively relates to their perceived behaviour control. (*accepted*) H8e: Consumers' subjective knowledge positively influences moral obligation. (*accepted*) H8f: Consumers' subjective knowledge positively influences anticipated positive affect. (*not tested*) H8g: Consumers' subjective knowledge negatively influences ecological affect. (*accepted*)

Research Objective 1: To identify the relative influence of factors affecting consumers' intentions to purchase green food.

The results of hypotheses H1, H3, H5a, H7a, and H8a indicate that consumers' purchase intention towards green food is influenced by five factors: (1) consumers' attitudes towards purchase behaviour of green products; (2) consumers' subjective norms about buying green food; (3) consumers' moral obligation towards the health and welfare of themselves, their relatives and friends, and the natural environment; (4) consumers' ecological affects for environmental and food issues; (5) consumers' subjective knowledge of green products. It appears those consumers' more positive attitudes towards purchase behaviour, subjective norms, moral obligation, ecological affects and subjective knowledge, will all lead to consumers' purchase intention towards green food.

The relationship between attitudes and green purchase intention is found to be statistically significant. Consumer attitudes towards green food purchase positively affect green purchase intention. This is indicative of the fact that consumers who believe green food purchase behaviour is good, beneficial, helpful, pleasant and enjoyable, will be more likely to buy such products in the future. This result is consistent with the study by Dowd and Burke (2013) that there is a significant positive relationship between consumers' attitudes and their intentions to purchase sustainably sourced food. According to the theory of planned behaviour (Ajzen, 1991; Ajzen & Fishbein, 1980), positive evaluations are related to holding supportive intentions in relation to attitude

objects. Thus, it is believed that consumers' attitudes would have a direct and positive effect on their purchase intention towards green food.

The relationship between subjective norms and green purchase intention is also found to be statistically significant. Consumer subjective norms positively affect green purchase intention. Although empirical evidence does not always support the relationships between subjective norms and purchase intention, the result of this research is in line with a study by Dean et al. (2012), conducted across eight EU countries which found that subjective norms are a good predictor of purchase intention towards organic food.

The relationships between moral obligation and GPI and GPB are tested in this study. There is a positively significant causal path between moral obligation and GPI. Yet no significant causal path was found between moral obligation and GPB (H5b), which is caused by the complete opposite impact of these two constructs. These results indicate that consumers who feel more obligations to safeguard themselves and their close friends and relatives will be more likely to buy green food in the future, but have not actually spent more for such products recently. In reviewing past literature, the results of this study are in line with some empirical studies that personal norms or moral obligation are found to improve the explanation of intention (Raats et al., 1995). Positive moral obligation significantly increases the purchase intention for fair trade products (Hustvedt & Bernard, 2010) and sustainably sourced food (Dowd & Burke, 2013). Parker et al. (1996) indicated that moral considerations are an important additional normative

influence on intention and often more influential than subjective norms; Sheeran and Orbell (1999) found it is possible that intentions that are more aligned with one's moral norm are closer to the core self than intentions which are more aligned with one's attitudes. Yet, in this study, moral obligation is not found to have more influence than subjective norms and attitudes on intention.

Through testing the relationships between ecological affects (negative emotion) and GPI and GPB, this study found a positively significant causal path between ecological affects and GPI. Yet no significant causal path was found between ecological affects and GPB (H7b), which is caused by the complete opposite impact of these two constructs. Some consistent empirical evidence has been found to support a positive relationship between ecological affect and purchase intention (L. Y. Li, 1997; Verhoef, 2005; Xu & Wu, 2010). This result can be explained by the fact that consumers feel anger and fear about food and environmental issues, which will result in more intention to buy green food, but not spending more to buy in reality.

In this study, consumers' subjective knowledge (SK) of green food was found to have a strong influence on their purchase intention (GPI) and actual purchase behaviour (GPB), which will be discussed in more detail in Objective 2 below.

Research Objective 2: To determine factors affecting consumers' actual purchase behaviour for green food.

In this study, the structural modelling shows strongly and positively significant causal paths between SK and GPI (H8a), SK and GPB (H8b). That is, consumers who have more subjective knowledge of green food, are more likely to buy such products, and pay more to buy green food in reality. This analytical finding is consistent with Pieniak et al. (2010), who find that consumers' subjective knowledge about vegetables is an important factor in explaining the choice of organic vegetable consumption. Pieniak et al. (2010)'s research measures the share of organic vegetables consumption in overall vegetable consumption. In this study, SK is also proven have a strong and positive impact on consumers' actual payment for green food. Thus, only when consumers had an appropriate level of information on food, was their behaviour effective (Fraj-Andrés & Martínez-Salinas, 2007; Schahn & Holzer, 1990; Synodinos, 1990).

Using structural equation modelling, this study's findings suggest that subjective knowledge about green food both directly increases the consumers' actual payment for green food, and indirectly effects actual buying behaviour through purchase intention towards green food. Therefore, this study also indicates that purchase intention towards green food serves as a mediator between subjective knowledge and actual behaviour in this case.

Additionally, there is a significant path linking ‘green purchase intention’ and ‘green purchase behaviour’ (H2). This is indicative of the fact that a consumer, who thinks about buying green food products, will spend more to buy in reality. In reviewing past literature, empirical studies also have proved significant positive relationships between ecological intention and behaviour (Chan, 2001; Qinghua Zhu et al., 2013). In working with the structural equation model, R^2 (the coefficient of Squared Multiple Correlation is 0.348) of GPB represents the proportion of variance that is explained by its predictor of the variable – namely green purchase intention. It can be seen that 34.8% of the variance associated with GPB is accounted for by GPI. It also hints that some other variance (the other 65.2%) may also influence GPB as GPI does. Thus, there is a quite obvious gap between purchase intention and physical purchase behaviour, which is consistent with previous literature.

Research Objective 3: To propose and operationalise a conceptual model integrating relative variables.

The results of the structural equation modelling analysis indicate that a total of 10 hypotheses of the initially hypothesised model (see Figure 5.2) provide empirical support for the development of consumer purchase behaviour in green food. The proposed model was able to predict 56.5% of the variation of behavioural intention and 34.8% of variance of actual behaviour, which are much higher than many studies based on TPB typically explaining only 39% of variance in behavioural intention and 27% of actual behaviour (Armitage & Conner, 2001). As discussed in Objective 1 and 2, the results confirm that

subjective knowledge, attitude, subjective norms, moral obligation and ecological affects play important roles in predicting green purchasing behaviour and actual purchase behaviour in the context of green food.

Furthermore, this study also found positively significant paths between SK and attitude (H8c), SK and moral obligation (H8e), SK and ecological affects (H8g). Yet no supposed path was found between subjective knowledge and perceived behavioural control (H8d), which is caused by the complete opposite impact of these two constructs. This is in line with the researchers Aertsens et al. (2011) and Pieniak et al. (2010), who find attitude is significantly positively influenced by subjective knowledge.

Carrington et al. (2010), in their discussion of consumer moral decisions, observed that people are more aware of the value of ethical/green consumption than previous generations, but a change in actual purchasing is still not very apparent. When are altruistic norms activated in consumer decisions? The formation as well as the activation of a moral norm is probably based on the interplay of cognitive, emotional, and social factors (Bierhoff, 2002). In the field of Chinese green purchase behaviour, the awareness of and knowledge about environmental problems are probably the most important cognitive preconditions for developing moral norms. Lindenberg and Steg (2007) suggest that insufficient knowledge of environmental problems may lead people to act against their moral norms. Meinhold and Malkus (2005) found that when levels of environmental knowledge are high, the relationships between environmental attitudes and

behaviour are stronger, which suggests that environmental knowledge encourages people to behave in accordance with normative goals (Lindenberg & Steg, 2007).

Consumers' subjective knowledge also exercises an influence on their ecological affects, which is defined as a person's emotional level towards environmental issues (Satterfield, 2001). Although individuals with little knowledge about the environment may still exhibit strong emotional attachment to environmental issues (L. Y. Li, 1997), the findings of this study are consistent with Junaedi (2007), showing consumers' subjective knowledge about green food increases their emotional engagement with food and environmental issues. Hence, green-product consumers who have an understanding of green food will be sensitive to food and environmental issues.

However, there are no significant paths found linking perceived behaviour control (PBC) and GPI, PBC and GPB in this study. Contrary to expectations, this result is quite different from that of other green consumption literature. However, Dean et al. (2008) and Yazdanpanah and Forouzani (2015) find that PBC is not a good predictor for organic processed products. These results may be due to the fact that despite green food being readily available in supermarkets or some stores, it may not be very prominent. Thus, consumers may perceive buying such food products as being outside their control. Since PBC has no significant impact on purchase intention and actual behaviour in this study, the theory of reasoned action (TRA) is a more

appropriate model rather than the TPB (Yazdanpanah & Forouzani, 2015) in the context of Chinese consumers' consumption behaviour of green food.

Three hypotheses related to anticipated positive affect were unable to be tested in the SEM analysis due to the deletion of this construct from the model. This problem was caused by the correlation between anticipated positive affect and consumers' attitudes (the correlation coefficient between these two items is 0.558). This condition is called multicollinearity, which arises from the situation where two variables are so highly correlated that they both, essentially, represent the same underlying construct. Since this situation can lead to offending parameter estimates in SEM analysis, anticipated positive affect was eventually deleted from the model. In reviewing past literature, attitude and anticipated positive affect are two distinct conceptualisations (Arvola et al., 2008; S. Baker et al., 2004; Perugini & Bagozzi, 2001). Eagly and Chaiken (1993) point out that evaluative responses of the affective type consist of feelings, mood, emotions and sympathetic nervous system activity that people experience in relation to attitude objects. This is treated as an intervening state that accounts for the covariation between classes of stimuli and the evaluative responses elicited by the stimuli (Dowd & Burke, 2013) while the affect is treated as one type of responding by which people may express their evaluations (Dowd & Burke, 2013), and is about the likely affective consequences of performing a behaviour (Ajzen & Sheikh, 2013). Since several past empirical researchers (Pelletier et al., 1998; Smith et al., 1994) in the environmental context have already identified that anticipated positive affect has a strong and direct

effect on purchase intention, there is no reason to suspect that such a relationship does not hold in green food consumption. Thus, it is still believed that anticipated positive affect would have a direct and positive effect on purchase intention towards green food because for the aforementioned reasons.

6.3 Theoretical contributions

This study represents one of the first attempts to examine consumer behaviour towards green food using the goal-framing theory model in mainland China. As previously mentioned, the goal-framing theory has been used to explain some pro-environment behavioural intention, and this study provided justification for using this model in explaining food consumption behaviour of Chinese consumers. This study also confirmed that all goal frames, gain goal frames, normative goal frames and hedonic goal frames of the goal-framing model were significant in predicting the behavioural intention of Chinese consumers' green food choice. Therefore, the empirical results and findings from this study are helpful in making a contribution to further expand research in relation to consumers' food consumption behaviour, as well as, using the goal-framing model offers very useful information for marketing people who wish to gain insights into the intentions of the consumers in the context of mainland China.

Distinct from prior green consumption researchers who focused on the influence of attitudes and motives on consumers' purchase intention (e.g.

Teng & Wang, 2015; Yazdanpanah & Forouzani, 2015), and on their willingness to buy (e.g. Yu et al., 2014), this study investigated not only consumer's purchase intention, but also actual purchase behaviour, that is, how much they paid for green food in one month. Moreover, this study introduces consumers' subjective knowledge in the conceptual framework, which extends goal-framing theory (Lindenberg, 2001, 2001b, 2006) and theory of planned behaviour (Ajzen, 1991; Ajzen & Fishbein, 1980) applying to green food consumerism in the context of China.

The tested model is adapted from Lindenberg and Steg (2007) concept and includes a number of factors that have not been tested before in a single model, which advances intention-behaviour theory. Thus, the five significant theoretical implications of this research can be drawn.

First, research on subjective knowledge in green consumption has mostly focused on its influence on consumers' purchase intention (Chryssochoidis, 2000; Gracia & de Magistris, 2008; House et al., 2004; Lin & Filieri, 2015). Previous studies have not adequately adopted consumer knowledge to predict behavioural intention for food consumption, and have not understood how it works to influence other factors and intention to purchase. Furthermore, Aertsens et al. (2011) suggest that it is essential for future researchers to investigate further insight into the relationships between the different factors modelled, and to explore how knowledge may influence the formation of these factors in food consumption.

This research's findings emphasize consumers' subjective knowledge in green consumption, which was found to be the most important relative influence affecting consumers' purchase intention and actual purchase behaviour directly, which is in line with and also evolves findings from previous research but in different contexts (Chryssochoidis, 2000; Gracia & de Magistris, 2008; House et al., 2004; Lin & Filieri, 2015). Additionally, although intention is a proximal determinant of behaviour according to TPB (Ajzen, 1991; Ajzen & Fishbein, 1980), consumers' subjective knowledge shows more impacts than intentions on their real purchase behaviour in this study. That is, consumers would not consider buying green food if they lack knowledge about it. This result can be explained by the fact that consumers, who have more subjective knowledge, incorporate a higher level of self-confidence in their knowledge, which can help to translate their attitude and motivations more strongly into their purchase intention and real behaviour. Therefore, more subjective knowledge would raise consumers' confidence with respect to green claims, so as to decrease the obstacles to buying green products. Thus, this research shows that subjective knowledge is an important predictor of green consumption decisions not only for purchase intention but also for actual buying.

In addition, subjective knowledge was also found to have a positive impact on consumers' attitude, subjective norms, moral obligation, and ecological affects, which are all direct predictors of intentions. That is, the more subjective knowledge of green food consumers have, the more positive their attitude, moral obligation and ecological affects. The findings may point to

the fact that consumers' subjective knowledge levels can help them increase understanding of green food, enhance their obligation feelings towards the people and environment around them, and raise negative emotions about food and environmental issues. Moreover, they are more likely to transform their attitudes, norms and emotions into positive intention, which can further influence green food buying behaviour.

Therefore, by adopting subjective knowledge as a new variable of the TPB model and distinguishing between the concepts both conceptually and empirically, has provided important insights into its distinct roles in the green food purchase behaviour. This study provides the comprehensive understanding of subjective knowledge related factor that consumers consider as they engage in green food consumption.

Secondly, this study's findings also show that consumers' positive attitudes with their subjective norms strongly predict purchase intention, which is consistent with previous findings in green/food consumption research (Dean et al., 2012; Teng & Wang, 2015). In this study, the association between general attitude and behaviour was found to be of moderate strength, which confirms some more basic attitudinal research (Armitage & Conner, 2001; Pieniak et al., 2010), suggesting that attitude is a stronger predictor, rather than moral attitude/obligation. This result may be due to the fact that attitudes associated with buying green food have more to do with doing something good or bad, rather than the moral feelings of right or wrong for doing so.

Thirdly, consumers' purchase intentions towards green food are influenced by people who are important in their lives (that is, subjective norms). If consumers believe that those people who are important to them consider buying green food to be good, they will be more likely to think of purchasing such products. It may be due to the fact that some kind of interpersonal processes are involved in green consumption, which is based on one's need for approval (Xie et al., 2013). Thus, this study shows that subjective norms is an important predictor of consumers' purchase intention towards green food (Dean et al., 2012).

Fourthly, these results indicate that consumers who feel more obligations to safeguard themselves and their close friends and relatives will be more likely to buy green food in the future, but did not actually spend more for such products recently. In reviewing past literature, the results of this study are in line with some empirical studies that personal norms or moral obligation is found to improve the explanation of intention (Raats et al., 1995). Positive moral obligation significantly increases the purchase intention for fair trade products (Hustvedt & Bernard, 2010), sustainably sourced food (Dowd & Burke, 2013). This study also proved that there is a significant positive relationship between consumers' moral obligation and their green purchase intention. In the past studies, Parker et al. (1996) indicated that moral considerations are an important additional normative influence on intention and often more influential than subjective; Sheeran and Orbell (1999) found it is possible that intentions that are more aligned with one's moral norm are

closer to the core self than intentions which are aligned with one's attitudes. Yet, in this study, moral obligation was found have a small effect on purchase intention, it does not have more influence than attitudes and subjective norms on intentions which is inconsistent with Parker et al. (1996) and Sheeran and Orbell (1999) findings.

Fifthly, it was found that the level of negative emotions towards environmental and food issues is a significant predictor of purchase intention towards green food, although the influence is small. This means that the more consumers feel anger and fear over the food safety and polluted environmental conditions, the more likely they are to buy green food. However, this kind of negative emotion will not drive consumers to spend money on green food in reality. Thus, this study shows that ecological affects is a predictor of purchase intention of green food.

6.4 Managerial contributions

In terms of practice, the results of this study also have some implications for marketers and policy makers. In the first instance, this research indicated that consumers' subjective knowledge is the critical and important predictor of their purchase behaviour towards green food. What they think they know not only has a strong influence on consumers' purchase intentions with regard to green products, but also influences a consumer's actual payment for such products. Greater subjective knowledge about green food products may not only persuade new individuals to try the green food, but most likely it

will also increase the frequency and level of consumption among existing consumers. In this study, consumers' subjective knowledge was only at a moderate to rather low level, indicating that consumers did not perceive themselves as very knowledgeable about green food. In addition, Chinese consumers have low knowledge about what green food is, and they mostly lack knowledge about the production standard or quality controls for good products (see R. Liu et al., 2013 for the reviews). Meanwhile, this relatively low subjective knowledge also shows that many respondents lack confidence about green food, which is based on expertise and experience (Alba & Hutchinson, 2000). With their lower level of actual payment for green food (about $50 per month on average), consumers do not feel confident about evaluating their knowledge about such products, so as to either think of them as more expensive with no good reason, or simply distrust them.

Thus, the promotion strategy should focus on promoting green food in general, so that consumers are provided with detailed information and experiences that stimulate at least their belief of being knowledgeable about this product category. Retailers and producers are recommended to inform consumers about the beneficial aspects of green food, through building objective knowledge, but even more through consumers with subjective feelings of being informed about green food. For instance, increasing consumers' subjective knowledge through offering green products at lower prices temporarily, which may attract consumers to buy and gain experience of such products. In addition, through providing an easily visible place for green food in a shop, consumers' familiarity with such products may be

raised, so as to improve the sales. In reality, strong environmental action will probably have a limited impact on the market without a policy to support the development of green consumption. Thus, the policy makers should motivate people's efforts in supporting clear and reliable green products, capable of providing credible and verifiable environmental information to consumers.

Moreover, consumers should also be provided with additional information about green farming, so that they have knowledge and confidence about green production methods and food certification systems. It may encourage the non-green consumer to buy green products through providing information about green farming and distinctiveness of green food to consumers. Although it might not allow the encouraging of consumers who are satisfied with the green food and have no need for additional information, it might allow producers and retailers to convince some of those consumers who simply distrust and are unaware of the benefits green products. By addressing the issue that green product is grown surely without artificial pesticides and is thus less likely to have residues, producers and retailers would emphasise its safe and health aspects, which is the most important issue for consumers. Direct personal contact between consumers and producers or retailers, which is achieved when foods are purchased, makes it possible for consumers to obtain detailed information about green products, production methods or specific producers. If this information can be delivered directly to consumers, then their confidence in green products can be increased, and this would give green products a unique and distinctive position in the food industry.

Further, psychologically, this study also found that consumers' positive attitudes and subjective norms are the strong, but not the only drivers of consumer intentions toward green purchases. Consumers' moral obligation and ecological affects are also found to have significant positive influence on their purchase intention. These findings suggest that understanding of consumers' intentions in green products can be greatly enriched by their norms and concerns/moods. This study reports quite a high level of consumers' ecological affects and moral obligation. Undoubtedly, if this strong emotional attachment to ecological issues and consumers' moral feelings to safeguard themselves, their families and friends, and the natural environment can be properly translated into corresponding behaviour, the potential of the Chinese green market would be greatly enhanced. The huge challenge, in practice, for both Chinese government and business leaders is incorporating their green vision into consumers' concerns, and their obligation norms. Thus, companies should exploit popular concerns about food issues to position their products and obtain new differentiation advantages in new markets. Hence, the idea of green food products can become a new way of product positioning in China. For example, companies can help to create and maintain demand for green products by educating consumers about product quality issues and safeguards. For the national government, stricter food systems, and the better enforcement of corporate transparency and accountability would help to increase consumers' knowledge of green food. Meanwhile, non-governmental organisations should heighten their monitoring and, for example, highlight the efforts of produce retailers to limit pesticide contamination of fresh produce. They

could also publish a rank of companies based on the quality of their green policies.

In addition, in terms of the development of consumers' purchase intentions and actual purchase behaviour, the results of the present study also show that there is no significant path between perceived behavioural control and consumers' purchase intention and actual buying. This is possibly because green food has received insufficient attention, that is, consumers do not treat green food as traditional and conventional food which could be consumed daily. Also, they lack experience of such products. Thus, whether it's easy or difficult to purchase has no influence on their purchasing behaviour. The implication of this finding is that retailers should improve availability and ease of access to green food so as to attract consumers to buy and gain more experience of such products. Meanwhile, the price strategies might improve the market share of green food, because the high price is obviously a major obstacle to buying green food in China, so as to impede Chinese consumers gaining further experience of green products. Thus, the retailers and producers should adopt some price strategies to attract consumers' attention on green products.

Moreover, this study shows that the green consumer profile is no longer well defined since environmental consciousness nowadays is permeating all social strata and is not a peculiar characteristic of a precise cluster of consumers. It is no longer effective to develop some marketing plans which highlight who are considered to be an ideal target for green food for socio-

demographic reasons. Thus, green marketing plans should cope with the expectations of a wide range of consumers, and focus on the need to ensure that the products consumers buy are definitely better than conventional products for environmental and safe performance.

In summary, green food retailers and producers should respond the Chinese consumers' safe and health concerns about food products, and claim about price with the assurance of its quality. The Chinese government and policy makers should provide correct and detailed information to consumers. Through increasing consumers' understanding of green farming, their knowledge of such products and the food certification system, as well as increasing the availability and range of green products at various prices, the Chinese green market share may grow effectively.

6.5 Research limitations and suggestions for future research

Since all of the influential factors captures 56.5% of the variance in green purchase intention, and 34.8% of the variance in actual green purchase behaviour, it appears that there are other antecedents of green consumption that are not captured in this model. It seems probable that other factors may also exert an influence on green consumption, such as trust, which is found to the most important determinants of the discrepancies between intention and real purchase behaviour for green products. Moreover, there would be useful to explore the possibility of alternative items for understanding the relationships between perceived behavioural control and green consumption.

Although the results of this study indicated no relationship between perceived behavioural control and purchasing intention and behaviour, some obstacles, such as availability, price and convenience buying, etc., behind perceived behavioural control are believed having effects on the green consumption. Further research could investigate what other factors may be drivers of consumer buying behaviour towards green food, and should consider using several identifiable perceived behavioural controls to explain purchasing behaviour for food choice.

Another limitation in this research is that a self-reported single-item measure for actual green purchase behaviour is presented in this study. Although the measure can be considered valid as long as it adequately captures actual behaviour of consumers without being influenced by attitudes – recent conclusions regarding the predictive validity are positive (Bergkvist & Rossiter, 2007), as well as it having been used and recommended by previous studies (Pieniak et al., 2010) – the true behaviour of green consumption may only be partially captured on a self-report questionnaire. In order to strengthen confidence in the results, database information such as real marketplace behaviour data could be used for measuring consumers' actual purchase behaviour. In order to strengthen confidence in the results presented here, it is recommended that future research uses a multiple-items measure for behaviour or real marketplace behaviour data.

Additionally, in the present study, the data were gathered through convenience sampling in Beijing, which limited to consumers who are

customers of particular marketing research agency and have access to a computer. Therefore, those respondents perhaps did not truly represent the populations of consumers in China and did not match the perceptions and understanding of green food of Chinese consumers. Hence, a more comprehensive sampling design is required to obtain a higher reliability and validity to the data and findings for the future studies.

Furthermore, this study focussed on green food consumption in two cities in mainland China. Since behavioural patterns of consumers are different in different countries (Perrini, Castaldo, Misani, & Tencati, 2010), future research could conduct studies in other emerging and developed countries to find out to what extent these results are generalizable.

Finally, although the data collected for this study are based on a large number of general consumers, this study verified the hypotheses with a questionnaire survey, only providing cross-sectional data. It could not observe the dynamic change of consumers' attitudes, personal norms, subjective knowledge, ecological affects, and their green consumption in the different stages of green regulations in the world through longitudinal data. Therefore, future studies of a longitudinal nature or in countries with different green regulations would be useful.

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Appendices

Appendix A – Questionnaire: main study

Green food is defined by a number of attributes and perceived benefits regarding how a food is produced or processed, its impact on the environment, adherence to quality and safety standards, and even where food is sold and how it is priced.

Part 1

Q1. **How many times within the previous month you bought it/them?**

	0	1-2	3-4	5-6	7-8	9-10	11 or more
Green vegetables	☐	☐	☐	☐	☐	☐	☐
Green fruits	☐	☐	☐	☐	☐	☐	☐
Green rice and flours	☐	☐	☐	☐	☐	☐	☐
Organic meat (beef, pork, lamb, poultry, fish, etc.)	☐	☐	☐	☐	☐	☐	☐
Green eggs	☐	☐	☐	☐	☐	☐	☐
Organic milk and dairy products	☐	☐	☐	☐	☐	☐	☐
Green snacks	☐	☐	☐	☐	☐	☐	☐
Other (Please specify)	☐	☐	☐	☐	☐	☐	☐

Q2. Within the previous month, how's your buying green food frequency?

Never buy 1---- 2---- 3---- 4----- 5---- 6 ---- 7 always buy

Q3. And, how much actual money you spent (RMB) on green food within the previous month?

☐ 0
☐ 50 and less
☐ 51- 100
☐ 101 - 200
☐ 201 - 300
☐ 301 - 600
☐ 601 - 900
☐ 901 - 1,500
☐ Above 1,500

Q4. For you, to purchase green food is

		1	2	3	4	5	6	7	
A.	bad	☐	☐	☐	☐	☐	☐	☐	good
B.	harmful	☐	☐	☐	☐	☐	☐	☐	beneficial
C.	unhelpful	☐	☐	☐	☐	☐	☐	☐	helpful
D.	unpleasant	☐	☐	☐	☐	☐	☐	☐	pleasant
E.	unenjoyable	☐	☐	☐	☐	☐	☐	☐	enjoyable

Q5. How the following people would think that you should buy green food.

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Most people who are important to me think that I should buy green food.	☐	☐	☐	☐	☐	☐	☐
Most people whose opinions I value would approve of my green food purchasing behaviour.	☐	☐	☐	☐	☐	☐	☐
Most of my friends and colleagues buy green food.	☐	☐	☐	☐	☐	☐	☐

Q6. Buying green food makes you feel

		Strongly Disagree						Strongly Agree
		1	2	3	4	5	6	7
A.	good	☐	☐	☐	☐	☐	☐	☐
B.	happy	☐	☐	☐	☐	☐	☐	☐
C.	optimistic	☐	☐	☐	☐	☐	☐	☐
D.	friendly	☐	☐	☐	☐	☐	☐	☐

Q7. How is it for you to buy green food?

Extremely Difficult						Extremely Easy
1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Q8. To what extend do you agree with the following statements?

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
1. Whether or not I buy green food is completely up to me.	☐	☐	☐	☐	☐	☐	☐
2. If I want to, I could buy green food.	☐	☐	☐	☐	☐	☐	☐

Q9. To what extend do you agree with the following statements?

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
1. I feel obligated to safeguard my personal health and welfare.	☐	☐	☐	☐	☐	☐	☐
2. I feel obligated to safeguard my relatives' health and welfare.	☐	☐	☐	☐	☐	☐	☐
3. I feel obligated to safeguard my friends' health and welfare.	☐	☐	☐	☐	☐	☐	☐
4. I feel obligated to safeguard the health and welfare of other people with whom I live and work	☐	☐	☐	☐	☐	☐	☐
5. I feel obligated to safeguard the natural environment.	☐	☐	☐	☐	☐	☐	☐

Q10. How do you feel the current environment situation?

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
A. Resentful	☐	☐	☐	☐	☐	☐	☐
B. Angry	☐	☐	☐	☐	☐	☐	☐
C. Indignation	☐	☐	☐	☐	☐	☐	☐
D. Outraged	☐	☐	☐	☐	☐	☐	☐

Q11. How do you feel the current food safety situation?

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
A. Worried	☐	☐	☐	☐	☐	☐	☐
B. Scared	☐	☐	☐	☐	☐	☐	☐
C. Afraid	☐	☐	☐	☐	☐	☐	☐

Q12. To what extend do you agree with following statements about you:

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
1. In comparison with an average person I know a lot about green food.	☐	☐	☐	☐	☐	☐	☐
2. I know a lot about how to judge the quality of green food.	☐	☐	☐	☐	☐	☐	☐
3. People who know me consider me as an expert in the field of green food.	☐	☐	☐	☐	☐	☐	☐

Q13. To what extend do you agree with following statements:

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
1. Over the next one month, I will consider buying green food products.	☐	☐	☐	☐	☐	☐	☐
2. Over the next one month, I will consider switching to green brands.	☐	☐	☐	☐	☐	☐	☐
3. Over the next one month, I plan to switch to a green version of a food product.	☐	☐	☐	☐	☐	☐	☐

Part 2

Q14. Your gender: ☐ Male ☐ Female

Q15. Your current age group:

☐ 18-21 ☐ 22-26 ☐27-35 ☐ 36-45 ☐ 46-50 ☐51 and elder

Q16. Your education:

☐ High school and below
☐ Junior College
☐ College or university diploma
☐ Master
☐ PhD and above
☐ Other (Please specify)_____

Q17. Your **monthly household income after tax** (RMB) currently:

☐ 2,000 and less
☐ Above 2,000-4,000
☐ Above 4,000-7,000
☐ Above 7,000-11,000
☐ Above 11,000-16,000
☐ Above 16,000-22,000
☐ 22,000 and above

Q18. Your **monthly household expenses for food** (RMB) currently:

☐ 200 and less
☐ Above 200-400
☐ Above 400-700
☐ Above 700-1,100
☐ Above 1,100-1,600
☐ Above 1,600-2,200
☐ 2,200 and above

If you have any additional comments you wish to make about your answers or the contents of this questionnaire, please provide these below:

End of Questionnaire, Thank you very much for your time to complete this questionnaire!

All information that you provide will be used in the strictest confidence and anonymity!

Appendix B – Student research ethical issues form

Newcastle Business School

Student Research Ethical Issues Form

Student Name:	Hui JIN
Portfolio Area:	Marketing
Title of Research Project:	The Gap Between Attitudes and Behaviour in Ethical Consumerism: Empirical Evidence from China
Start Date of Research project:	8th October, 2012

	Comments
Brief description of the proposed research methods including, in particular, whether human subjects will be involved and how.	The purpose of this research is to develop and test a conceptual model of ethical consumerism in China, in order to gain deeper knowledge of Chinese consumers' attitude and behaviours towards business ethics and corporate social responsibility. There will be a pilot study and follow up survey could also be conducted. The pilot survey will involve the distribution of a self-completion questionnaire, which will be posted online by the researcher, to ordinary consumers across different industries in China. Potential sample size is approximately 500. In follow up survey, the sponsor company, Tian Long Ma Market Research and Advertising Consultancy Agency, who funds this project, will assist by providing access to its data base. This agency has clients across the country, covering both first tier cities, i.e. Beijing, Shanghai, Guangzhou, Shenzhen, and second tier cities, e.g. Xi'an, Tianjin, Xiamen, Nanjing etc.. I will manage and lead the data collection process but will be assisted by the agency helping with spreading the amended self-administered survey questionnaire to its customers. Thus, this study will not survey

	consumers at multiple outlets. Potential sample size is approximately 1,000. *Human subjects involvement* In this research, human subjects will be involved as participants of survey questionnaire. Potential participants will be asked to complete a survey questionnaire. Before completing the questionnaire, respondents will read an appropriate statement of individual informed consent. They are indicating acceptance by completing the questionnaire. Participants will be informed of data protection and confidentiality issues in line with the Northumbria University Ethics policy. Permission from Tian Long Ma Market Research and Advertising Consultancy Agency will be obtained prior to undertaking data collection.
Ethical issues that may arise (if none, state “None” and give reasons)	This research will involve gathering information from human subjective; There are several ethical issues that need to be considered. The major ethical issue that may arise include: the need to gain an informed consent; the need to assure respondents of anonymity and confidentiality; ethical issues related to the data protection and storage when receiving, processing and finally disseminating the data, and data destruction after the research has been completed.
How will the ethical issues be addressed? (if none state n/a)	For the purpose of this research, data will be collected as per the guidelines supplied in the fifth edition (2011-12) hand book of Northumbria University’s the “Research Ethics and Governance Handbook”. All respondents will be selected using a screening questionnaire. Through the screening questionnaire any respondents below 18 years old will not be selected for the survey. Participants’ anonymity and confidentiality should be protected. Informed concent will be obtained by completing the survey. Participants will be guaranteed anonymity and have the right to withdraw from the research. Anonymity will be assured by non-filling the names of the participants. Confidentiality will be maintained in terms of storing data securely on computer and ensuring hard

	copies of transcripts and field notes are stored in a locked cupboard. As part of the data analysis process, hard copies of the anonymised transcripts may be given to the doctoral supervision team and a small number of other research participants to review to ensure that the researcher's analysis has resonance. Hard copies will be returned to the researcher and will not remain in the possession of the research participants. Data will be used for research purposes only, and will be used and reproduced in a variety of research publications. After the research has been completed, data will be destroyed.
Has informed consent of research participants been considered? If appropriate, has an informed consent form been completed?	Informed consent has been considered. Though no need for participant to sign the informed consent form, completion of questionnaires will be interpreted as informed consent as the introduction of the survey will be clear that participation is entirely voluntary. All participants will have the opportunity to opt-out of the further analysis of their reflective statements.
Has organisational consent been considered? If appropriate, has an organisational consent form been completed?	Organisation consent has been considered and will be implemented with all participating organisations. Formal data collection will not take place until project approval is granted.

Please tick to confirm acceptance that it is your responsibility to store and destroy the data appropriately. ☐X

Student Signature (indicating that the research will be conducted in conformity with the above and agreeing that any significant change in the research project will be notified and a further "Ethical Issues Form" submitted).

Date: …… **Student Signature**: ……

Supervisor:

I confirm that I have read this form and I believe the proposed research will not breach University policies.

Please Note:

The appropriate completion of this form is a critical component of the University Policy on Ethical Issues in Research and Consultancy. If further advice is required, please contact the School Ethics Sub Committee through the Academic Support Office in the first instance.

Appendix C – Organisational consent and participant consent forms

RESEARCH **ORGANISATION** INFORMED CONSENT FORM

Newcastle Business School

University of Northumbria

Completion of this form is required whenever research is being undertaken by NBS staff or students within any organisation. This applies to research that is carried out on the premises, or is about an organisation, or members of that organisation or its customers, as specifically targeted as subjects of research.

The researcher must supply an explanation to inform the organisation of the purpose of the study, who is carrying out the study, and who will eventually have access to the results. In particular issues of anonymity and avenues of dissemination and publications of the findings should be brought to the organisations' attention.

Researcher's Name: Hui JIN

Student ID No. (if applicable): W12030972

Researcher's Statement:

Research Purpose

The purpose of this research is to develop and test a conceptual model of ethical consumerism in China, in order to gain deeper knowledge of Chinese consumers' attitude and behaviours towards business ethics and corporate social responsibility.

Parties Involved

- Tian Long Ma Market Research and Advertising Consultancy Agency.

- Individual Chinese ordinary customers who are willing to participate. The researcher will use a screening questionnaire to select respondents, and below 18 years old will not be selected. Individual participation is entirely voluntary, anonymous and each may withdraw at any time.

- The research will be conducted by Hui Jin, a doctoral student at Newcastle Business School, Northumbria University. Her PhD research is on Chinese consumer's attitudes and behaviour towards ethical products. The finding of this research will hopefully contribute both the theory and practice of marketing in ethical consumerism in China.

Research Methods

The expected involvement of the research participants is a self-completion questionnaire. Completion of questionnaires will be interpreted as informed consent. All quantitative data collected from the survey, will be analysed by using correlation, regression and structural equation modeling by SPSS and AMOS.

Location of Research

The survey questionnaire collection will take place on business premises in Xi'an, China

Timescale

The data collection timescale is from April 2013 – May 2014.

Time Commitment

The survey questionnaire will take approximately 15 minutes to complete.

Anonymity

All information in this study will be anonymised.

Confidentiality

All data will be stored securely either electronically on computer or in hard copy version in a locked cupboard. As part of the data analysis process, hard copies of the anonymised transcripts may be given to the doctoral supervision team and a small number of other research participants to review to ensure that the researcher's analysis has resonance. Hard copies will be returned to the researcher and will not remain in the possession of the research participants. After the research has been completed, data will be destroyed.

Research Dissemination

Data obtained through this research will be reproduced and published in a variety of forms and for a variety of audiences related to the broad nature of the research detailed above (i.e. conferences, peer reviewed journals, articles etc.).

Queries

Please direct any queries regarding this research to Hui Jin on 0044-1912273049 or hui.jin@northumbria.ac.uk

Any organisation manager or representative who is empowered to give consent may do so here:

Name: _____

Position/Title: _____

Organisation Name: _____

Location: _____

Anonymity must be offered to the organisation if it does not wish to be identified in the research report. Confidentiality is more complex and cannot extend to the markers of student work or the reviewers of staff work, but can apply to the published outcomes. If confidentiality is required, what form applies?

[ ] No confidentiality required

[ ] Masking of organisation name in research report

[ ] No publication of the research results without specific organisational consent

[ ] Other by agreement as specified by addendum

Signature: _____ Date: _____

This form can be signed via email if the accompanying email is attached with the signer's personal email address included. The form cannot be completed by phone, rather should be handled via post.

Newcastle Business School

Informed Consent Form for research participants

Title of Study	The Gap Between Attitudes and Behaviour in Ethical Consumerism: Empirical Evidence from China
Person(s) conducting the research	Hui JIN
Programme of study	Marketing
Address of the researcher for correspondence	Newcastle Business School City Campus East Newcastle upon Tyne NE1 8ST
Telephone	(0191)2273049

E-mail	hui.jin@northumbria.ac.uk
Description of the broad nature of the research	The purpose of the research is to develop and test a conceptual model of ethical consumerism in China, so as to gain deeper knowledge of Chinese consumers' attitude and behaviours towards business ethics and corporate social responsibility (CSR).
Description of the involvement expected of participants including the broad nature of questions to be answered or events to be observed or activities to be undertaken, and the expected time commitment	The expected involvement of the research participants is a self-completion questionnaire. The sponsor company, Tian Long Ma Market Research and Advertising Consultancy Agency, is willing to allow access to its data base. The agency will help with spreading the questionnaire to its customers and collecting data. And the self-completion questionnaire will be posted online by the researcher as a supplemental data source. Anonymity will be assured by non-filling the names of the participants. Confidentiality will be maintained in terms of storing data securely on computer and ensuring hard copies of transcripts and field notes are stored in a locked cupboard. All data will be stored securely either electronically on computer or in hard copy version in a locked cupboard. As part of the data analysis process, hard copied of the anonymised transcripts may be given to the doctoral supervision team and a small number of other research participants to review to ensure that the researcher's analysis has resonance. Hard copies will be returned to the researcher

	and will not remain in the possession of the research participants. Data will be used and reproduced in a variety of research publications.

Information obtained in this study, including this consent form, will be kept strictly confidential (i.e. will not be passed to others) and anonymous (i.e. individuals and organisations will not be identified *unless this is expressly excluded in the details given above*).

Data obtained through this research may be reproduced and published in a variety of forms and for a variety of audiences related to the broad nature of the research detailed above. It will not be used for purposes other than those outlined above without your permission.

Participation is entirely voluntary and participants may withdraw at any time.

By signing this consent form, you are indicating that you fully understand the above information and agree to participate in this study on the basis of the above information.

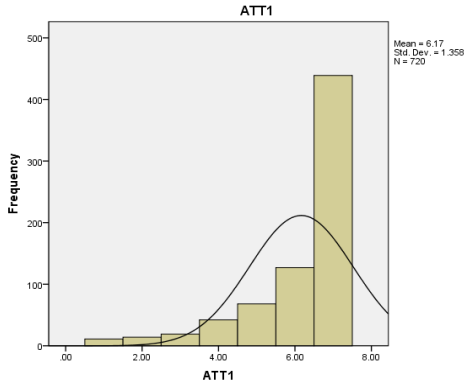
Participant's signature Date

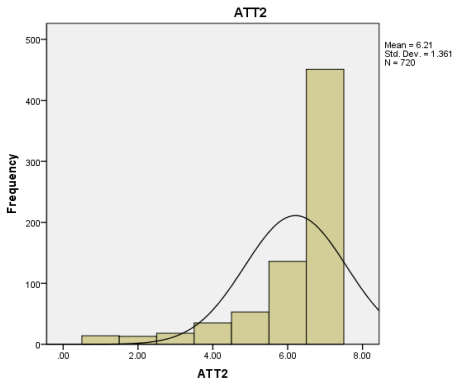
Student's signature ***Date***

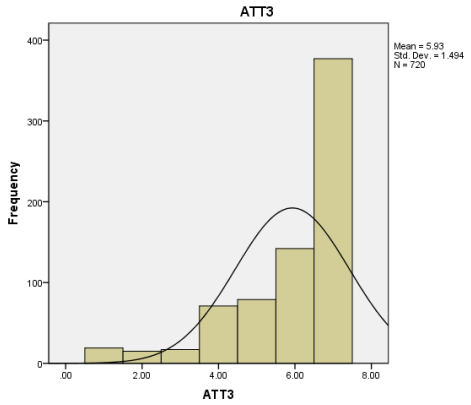
Please keep one copy of this form for your own records

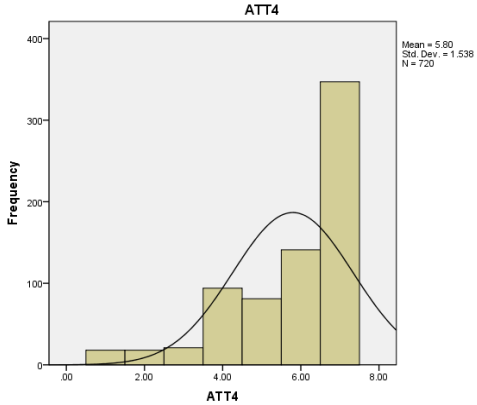
Appendix D – Univariate normality testing of each constructs

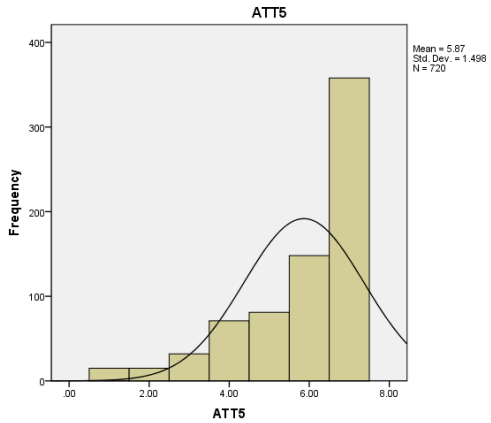
Attitude



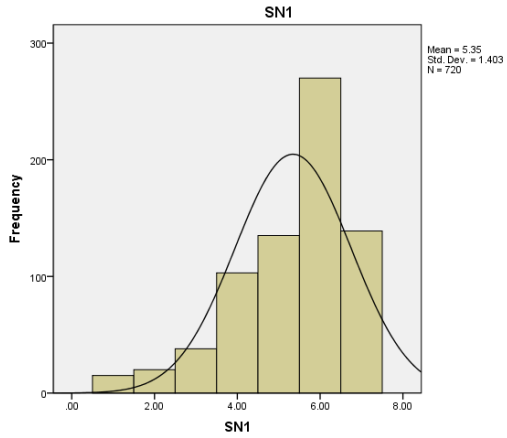


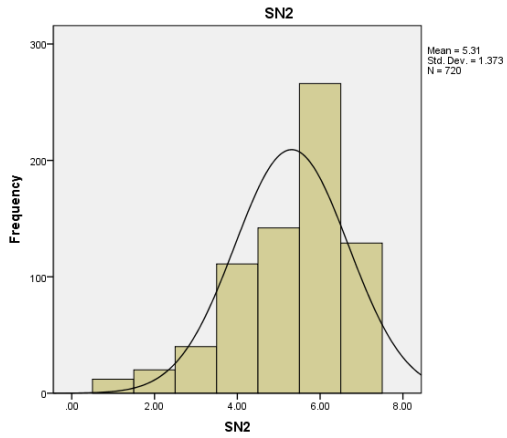


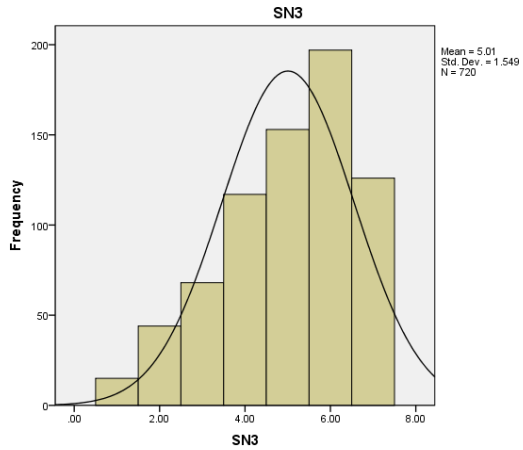




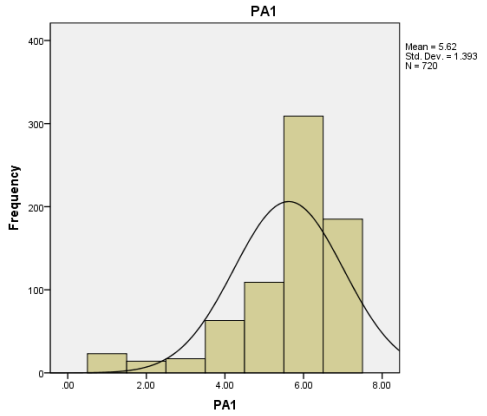
Subjective Norm

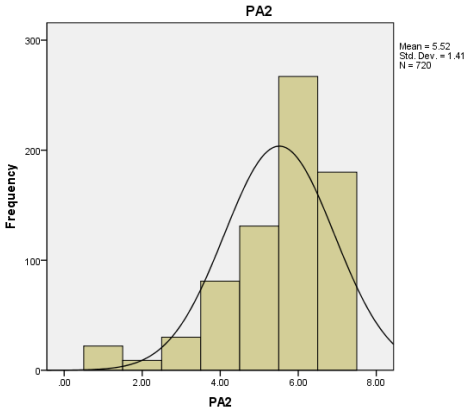


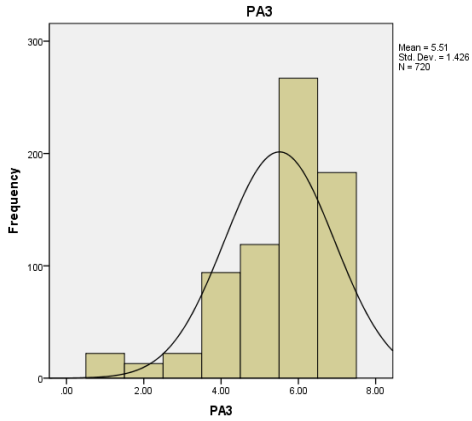


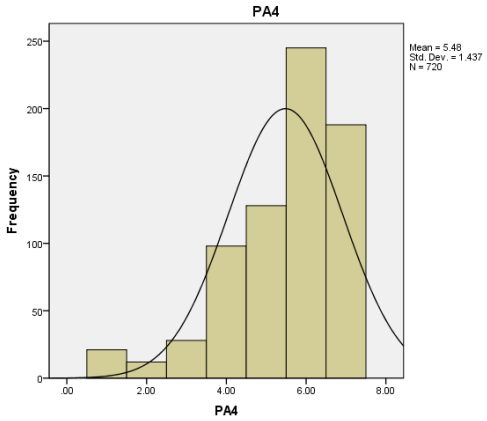


Positive Affects

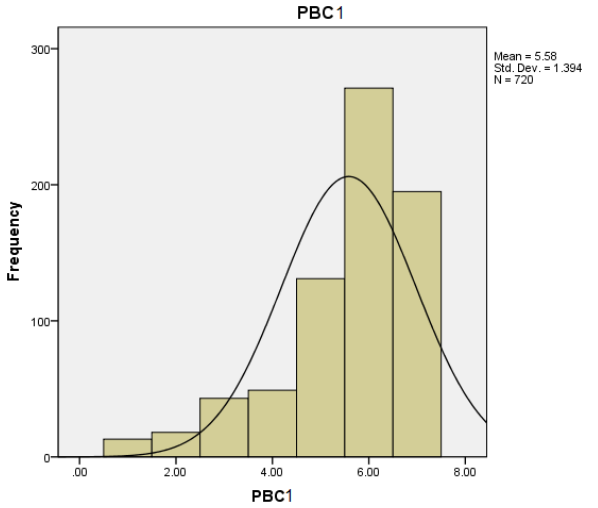


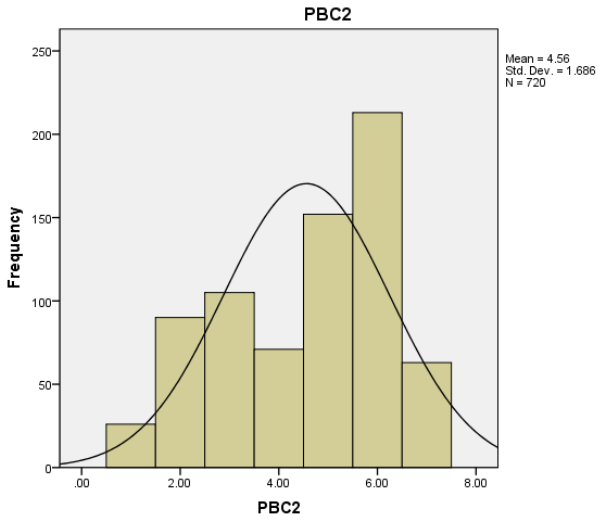


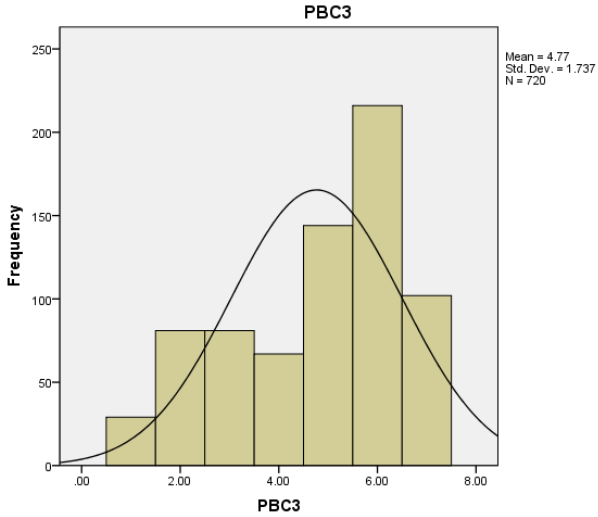




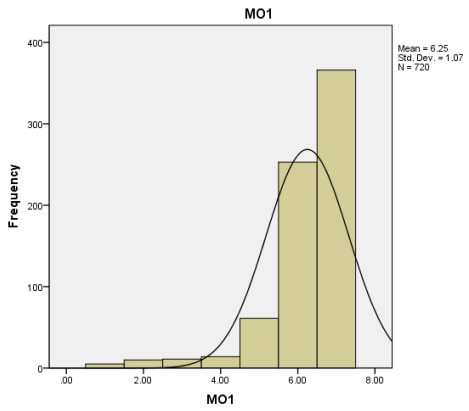
Perceived Behaviour Control

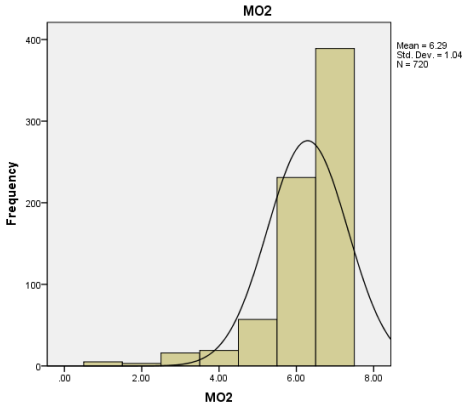


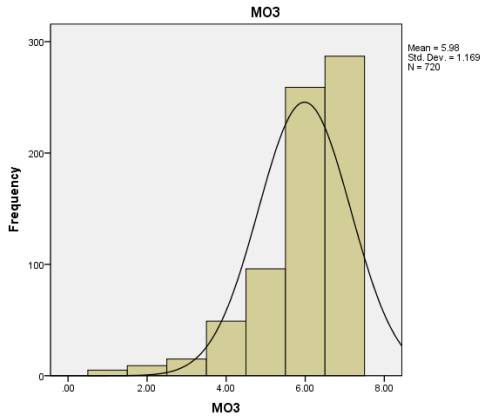


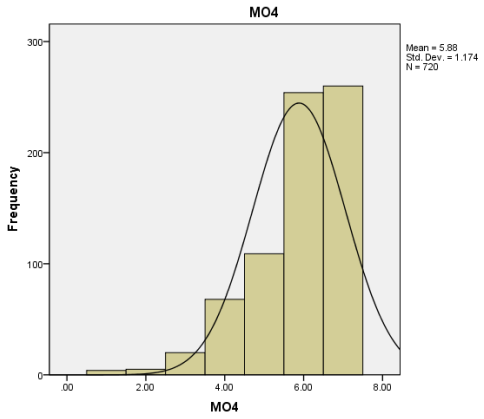


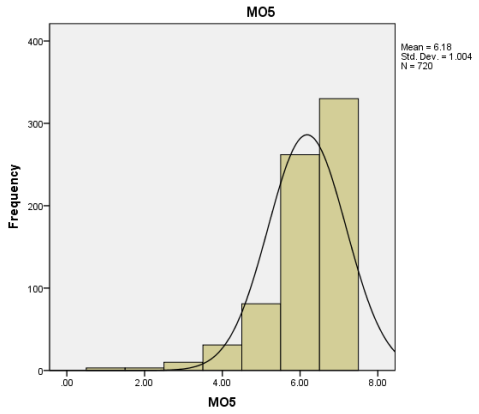
Moral Obligation



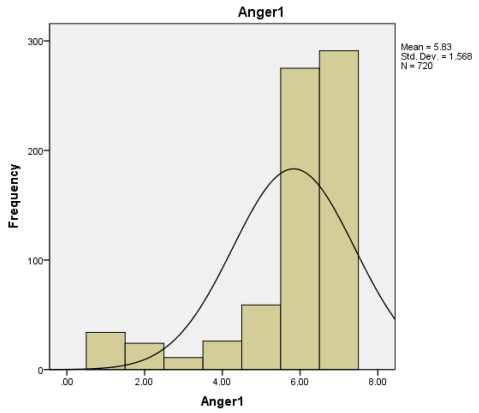


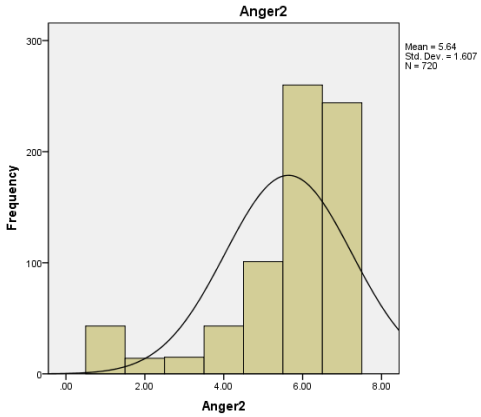






Anger


Anger1
Mean = 5.83
Std. Dev. = 1.568
N = 720
Frequency
Anger1


Anger2
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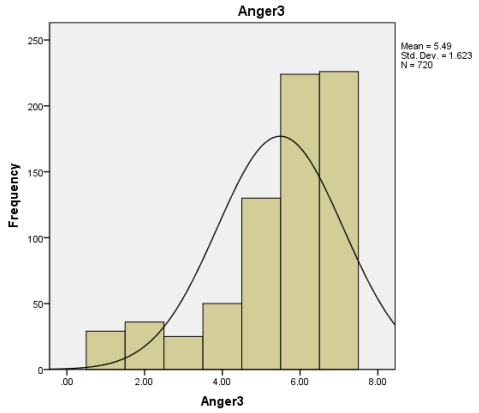
Std. Dev. = 1.607
N = 720
Frequency
Anger2


Anger3
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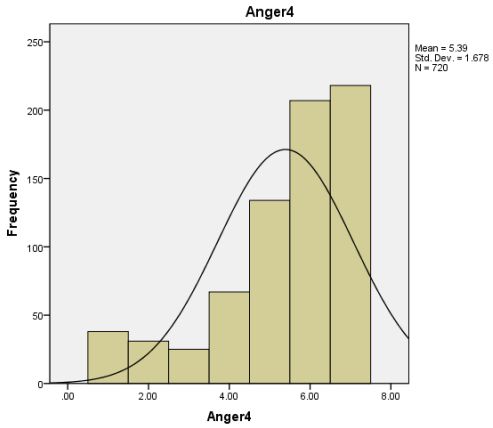
Std. Dev. = 1.623
N = 720
Frequency
Anger3


Anger4
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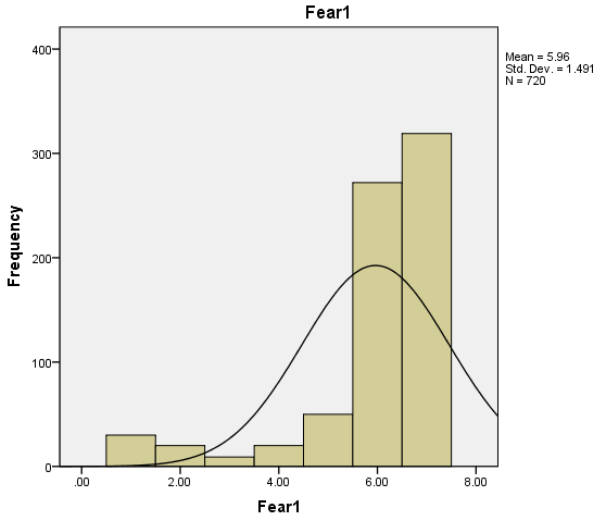
Std. Dev. = 1.678
N = 720
Frequency
Anger4

Fear


Fear1
Mean = 5.96
Std. Dev. = 1.491
N = 720
Frequency
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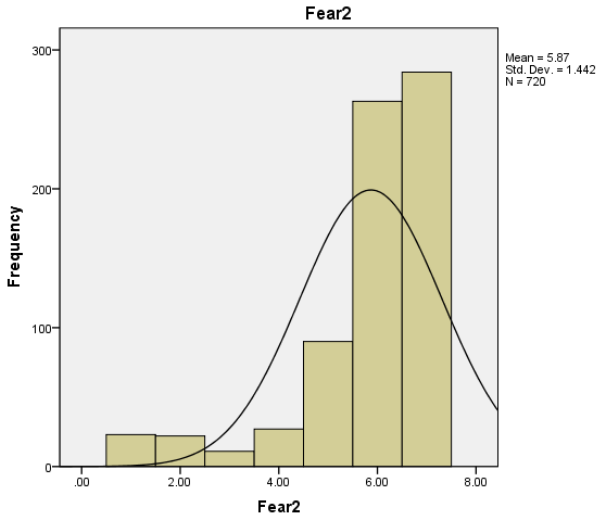
300
200
100
0
.00
2.00
4.00
6.00
8.00
Fear1


Fear2
Mean = 5.87
Std. Dev. = 1.442
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Frequency
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200
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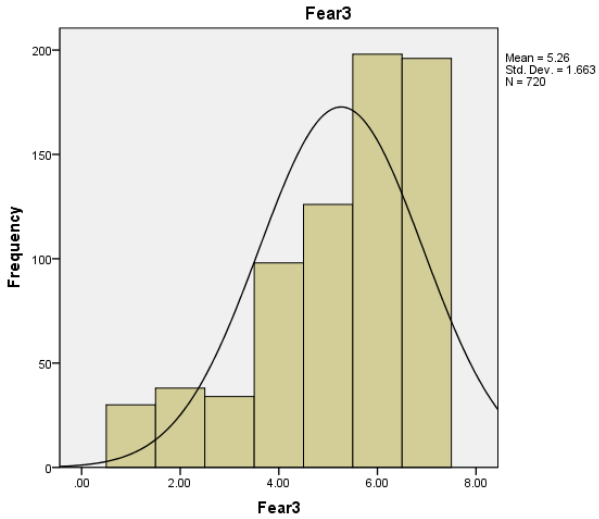
.00
2.00
4.00
6.00
8.00
Fear2


Fear3
Mean = 5.26
Std. Dev. = 1.663
N = 720
Frequency
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150
100
50
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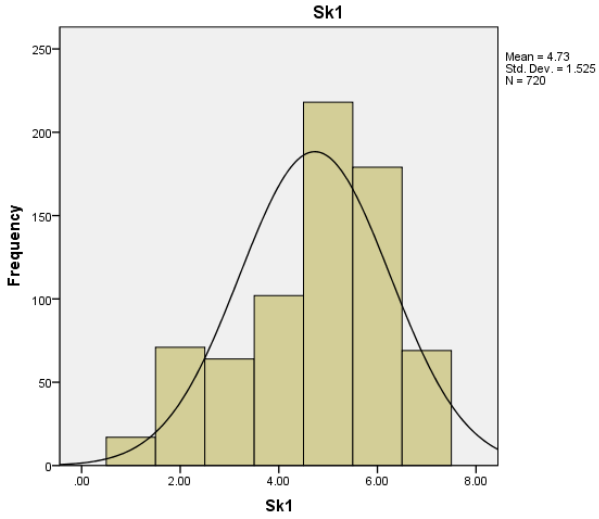
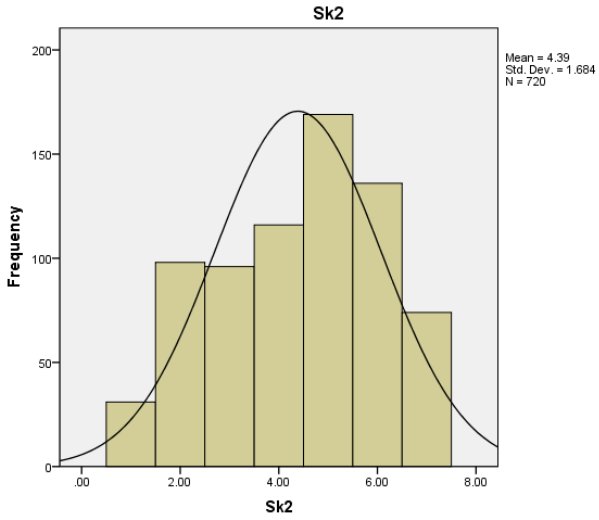
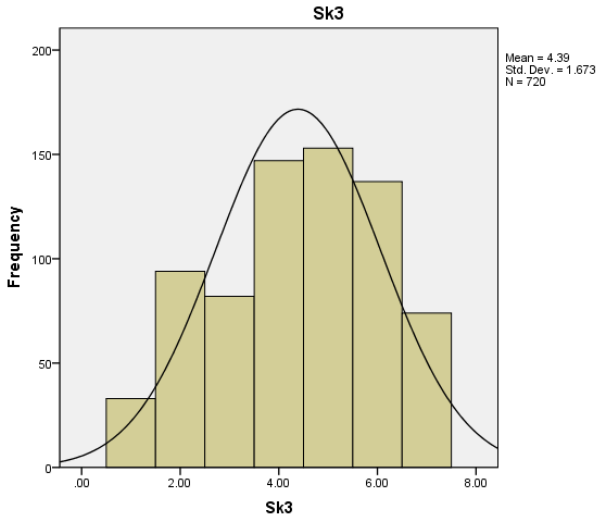
.00
2.00
4.00
6.00
8.00
Fear3

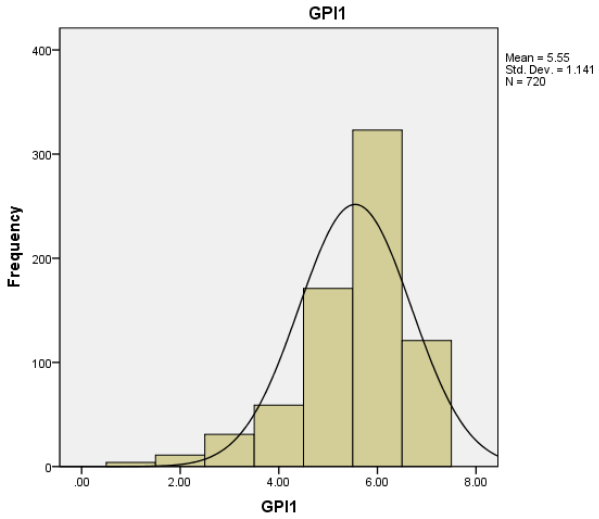
Subjective Knowledge

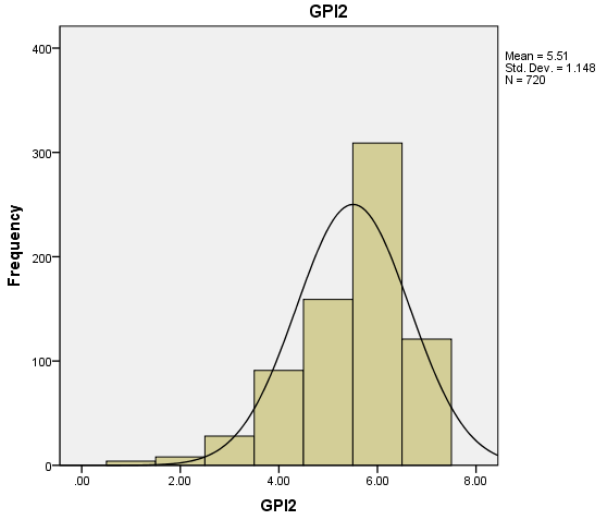


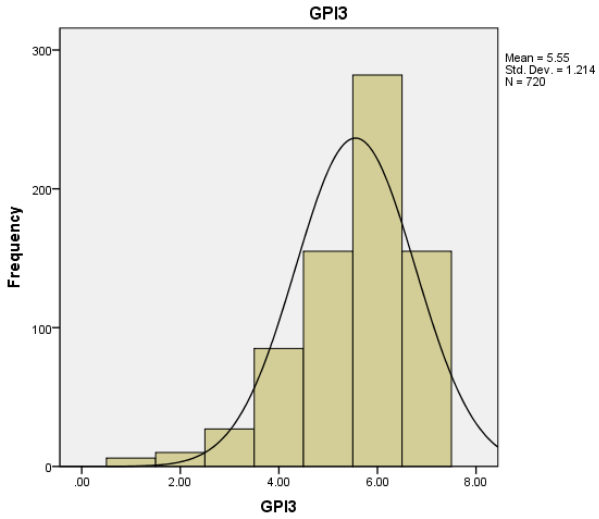




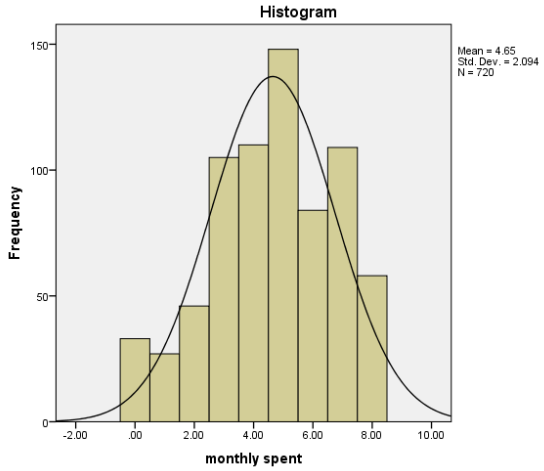
Green Purchase Intention







Green purchase behaviour



Appendix E – Non-response bias analysis

The results of comparing the means between early/late respondents

	response time	N	Mean Rank	Sum of Ranks
ATT1	Early	192	176.11	33813.50
	Late	166	183.42	30447.50
	Total	358		
ATT2	Early	192	175.63	33720.00
	Late	166	183.98	30541.00
	Total	358		
ATT3	Early	192	178.46	34263.50
	Late	166	180.71	29997.50
	Total	358		
ATT4	Early	192	184.18	35362.00
	Late	166	174.09	28899.00
	Total	358		
ATT5	Early	192	182.70	35079.00
	Late	166	175.80	29182.00
	Total	358		
SN1	Early	192	181.29	34807.00
	Late	166	177.43	29454.00
	Total	358		
SN2	Early	192	174.13	33433.50
	Late	166	185.71	30827.50
	Total	358		
SN3	Early	192	182.49	35038.00
	Late	166	176.04	29223.00
	Total	358		
PA1	Early	192	177.72	34122.50
	Late	166	181.56	30138.50
	Total	358		
PA2	Early	192	178.45	34262.00
	Late	166	180.72	29999.00
	Total	358		
PA3	Early	192	176.28	33845.00
	Late	166	183.23	30416.00
	Total	358		

	response time	N	Mean Rank	Sum of Ranks
PA4	Early	192	177.14	34011.50
	Late	166	182.23	30249.50
	Total	358		
PBC1	Early	192	177.32	34045.50
	Late	166	182.02	30215.50
	Total	358		
PBC2	Early	192	183.47	35227.00
	Late	166	174.90	29034.00
	Total	358		
PBC3	Early	192	181.82	34909.00
	Late	166	176.82	29352.00
	Total	358		
MO1	Early	192	163.42	31376.50
	Late	166	198.10	32884.50
	Total	358		
MO2	Early	192	164.32	31549.00
	Late	166	197.06	32712.00
	Total	358		
MO3	1.00	192	168.40	32333.00
	2.00	166	192.34	31928.00
	Total	358		
MO4	Early	192	168.75	32399.50
	Late	166	191.94	31861.50
	Total	358		
MO5	Early	192	164.04	31495.50
	Late	166	197.38	32765.50
	Total	358		
Anger1	Early	192	180.36	34628.50
	Late	166	178.51	29632.50
	Total	358		
Anger2	Early	192	178.64	34299.00
	Late	166	180.49	29962.00
	Total	358		
Anger3	Early	192	183.96	35320.50
	Late	166	174.34	28940.50
	Total	358		
Anger4	Early	192	185.44	35604.00
	Late	166	172.63	28657.00
	Total	358		

	response time	N	Mean Rank	Sum of Ranks
Fear1	Early	192	172.12	33046.50
	Late	166	188.04	31214.50
	Total	358		
Fear2	Early	192	178.92	34353.50
	Late	166	180.17	29907.50
	Total	358		
Fear3	Early	192	177.75	34128.00
	Late	166	181.52	30133.00
	Total	358		
Sk1	Early	192	175.86	33765.00
	Late	166	183.71	30496.00
	Total	358		
Sk2	Early	192	183.23	35181.00
	Late	166	175.18	29080.00
	Total	358		
Sk3	Early	192	181.38	34824.50
	Late	166	177.33	29436.50
	Total	358		
GPI1	Early	192	173.72	33354.50
	Late	166	186.18	30906.50
	Total	358		
GPI2	Early	192	177.35	34051.50
	Late	166	181.98	30209.50
	Total	358		
GPI3	Early	192	175.15	33628.50
	Late	166	184.53	30632.50
	Total	358		
Gender	Early	192	169.39	32523.00
	Late	166	191.19	31738.00
	Total	358		
Age_group	Early	192	181.53	34854.00
	Late	166	177.15	29407.00
	Total	358		
Edu	Early	192	183.97	35321.50
	Late	166	174.33	28939.50
	Total	358		
MHI	Early	192	175.20	33638.00
	Late	166	184.48	30623.00
	Total	358		

	response time	N	Mean Rank	Sum of Ranks
MHE	Early	192	181.78	34902.00
	Late	166	176.86	29359.00
	Total	358		

The results of nonparametric Mann-Whitney U test

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
ATT1	15285.500	33813.500	-.771	.440
ATT2	15192.000	33720.000	-.885	.376
ATT3	15735.500	34263.500	-.227	.820
ATT4	15038.000	28899.000	-.984	.325
ATT5	15321.000	29182.000	-.679	.497
SN1	15593.000	29454.000	-.363	.716
SN2	14905.500	33433.500	-1.091	.275
SN3	15362.000	29223.000	-.601	.548
PA1	15594.500	34122.500	-.364	.716
PA2	15734.000	34262.000	-.214	.831
PA3	15317.000	33845.000	-.655	.513
PA4	15483.500	34011.500	-.478	.633
PBC1	15517.500	34045.500	-.438	.661
PBC2	15173.000	29034.000	-.795	.427
PBC3	15491.000	29352.000	-.464	.643
PBC4	14692.500	33220.500	-1.331	.183
MO1	12848.500	31376.500	-3.469	.001
MO2	13021.000	31549.000	-3.325	.001
MO3	13805.000	32333.000	-2.327	.020
MO4	13871.500	32399.500	-2.236	.025
MO5	12967.500	31495.500	-3.323	.001
Anger1	15771.500	29632.500	-.179	.858
Anger2	15771.000	34299.000	-.177	.860
Anger3	15079.500	28940.500	-.905	.365
Anger4	14796.000	28657.000	-1.200	.230
Fear1	14518.500	33046.500	-1.542	.123
Fear2	15825.500	34353.500	-.116	.908
Fear3	15600.000	34128.000	-.354	.723

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Sk1	15237.000	33765.000	-.729	.466
Sk2	15219.000	29080.000	-.746	.456
Sk3	15575.500	29436.500	-.376	.707
GPI1	14826.500	33354.500	-1.193	.233
GPI2	15523.500	34051.500	-.442	.658
GPI3	15100.500	33628.500	-.896	.370
Gender	13995.000	32523.000	-2.346	.019
Age_group	15546.000	29407.000	-.412	.680
Edu	15078.500	28939.500	-.926	.354
MHI	15110.000	33638.000	-.873	.383
MHE	15498.000	29359.000	-.456	.648

a. Grouping Variable: response time

Appendix F – Common method bias

The results of Harman's single factor analysis

720 sample size

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.313	34.283	34.283	11.313	34.283	34.283
2	4.967	15.052	49.335			
3	2.839	8.602	57.937			
4	2.168	6.570	64.508			
5	1.474	4.468	68.975			
6	1.225	3.713	72.688			
7	1.140	3.453	76.141			
8	1.102	3.340	79.481			
9	.875	2.651	82.131			
10	.697	2.111	84.242			
11	.542	1.641	85.884			
12	.463	1.404	87.288			
13	.388	1.175	88.464			
14	.351	1.065	89.528			
15	.317	.961	90.489			
16	.304	.922	91.411			
17	.269	.816	92.227			
18	.262	.793	93.020			
19	.243	.736	93.756			
20	.236	.714	94.470			
21	.214	.649	95.119			
22	.200	.606	95.726			
23	.187	.566	96.291			
24	.173	.523	96.814			
25	.161	.488	97.302			
26	.156	.474	97.776			
27	.142	.432	98.208			
28	.132	.400	98.608			
29	.118	.356	98.964			
30	.107	.323	99.287			
31	.096	.291	99.578			
32	.079	.241	99.819			
33	.060	.181	100.000			

Extraction Method: Principal Component Analysis.

Xi’an (358 sample size)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.907	36.083	36.083	11.907	36.083	36.083
2	4.342	13.158	49.241			
3	2.897	8.778	58.019			
4	2.228	6.750	64.769			
5	1.543	4.675	69.444			
6	1.332	4.037	73.481			
7	1.153	3.493	76.974			
8	1.106	3.351	80.325			
9	.952	2.884	83.209			
10	.709	2.149	85.358			
11	.523	1.586	86.943			
12	.446	1.352	88.296			
13	.411	1.246	89.542			
14	.406	1.231	90.773			
15	.327	.990	91.763			
16	.279	.845	92.608			
17	.250	.757	93.365			
18	.242	.733	94.098			
19	.227	.688	94.786			
20	.218	.662	95.448			
21	.205	.622	96.070			
22	.199	.602	96.672			
23	.168	.510	97.182			
24	.151	.459	97.641			
25	.124	.375	98.016			
26	.117	.355	98.371			
27	.109	.331	98.702			
28	.098	.296	98.998			
29	.086	.259	99.257			
30	.083	.251	99.508			
31	.068	.206	99.714			
32	.053	.159	99.874			
33	.042	.126	100.000			

Extraction Method: Principal Component Analysis.

Beijing (362 sample size)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.741	32.548	32.548	10.741	32.548	32.548
2	5.426	16.441	48.989			
3	2.846	8.624	57.613			
4	2.145	6.500	64.114			
5	1.585	4.802	68.916			
6	1.294	3.920	72.836			
7	1.110	3.364	76.200			
8	1.097	3.323	79.523			
9	.712	2.156	81.679			
10	.647	1.961	83.640			
11	.519	1.571	85.212			
12	.502	1.521	86.733			
13	.386	1.171	87.904			
14	.367	1.113	89.016			
15	.353	1.071	90.087			
16	.314	.952	91.040			
17	.293	.888	91.927			
18	.273	.827	92.754			
19	.262	.793	93.547			
20	.250	.757	94.304			
21	.237	.718	95.022			
22	.202	.613	95.634			
23	.186	.564	96.198			
24	.177	.536	96.734			
25	.169	.511	97.245			
26	.157	.475	97.720			
27	.144	.438	98.157			
28	.128	.389	98.546			
29	.121	.366	98.912			
30	.112	.338	99.251			
31	.100	.303	99.554			
32	.083	.253	99.806			
33	.064	.194	100.000			

Extraction Method: Principal Component Analysis.

Appendix G – Factor loading analysis

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	11.307	34.262	34.262	11.307	34.262	34.262	5.706
2	5.054	15.317	49.579	5.054	15.317	49.579	7.308
3	2.957	8.962	58.541	2.957	8.962	58.541	6.041
4	2.182	6.612	65.153	2.182	6.612	65.153	5.100
5	1.487	4.505	69.658	1.487	4.505	69.658	7.901
6	1.280	3.878	73.536	1.280	3.878	73.536	6.700
7	1.108	3.358	76.894	1.108	3.358	76.894	6.319
8	1.070	3.242	80.136	1.070	3.242	80.136	3.058
9	.895	2.711	82.847				
10	.687	2.080	84.928				
11	.469	1.420	86.348				
12	.436	1.321	87.669				
13	.370	1.120	88.789				
14	.328	.993	89.782				
15	.308	.932	90.714				
16	.287	.869	91.584				
17	.268	.811	92.395				
18	.253	.766	93.160				
19	.240	.728	93.889				
20	.219	.663	94.551				
21	.200	.607	95.158				
22	.195	.590	95.748				
23	.186	.562	96.311				
24	.174	.526	96.837				
25	.161	.488	97.324				
26	.156	.473	97.798				
27	.142	.432	98.229				
28	.127	.384	98.614				
29	.117	.355	98.969				
30	.106	.323	99.292				
31	.095	.289	99.581				
32	.079	.238	99.819				
33	.060	.181	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Communalities

	Initial	Extraction
ATT1	1.000	.760
ATT2	1.000	.771
ATT3	1.000	.810
ATT4	1.000	.790
ATT5	1.000	.775
SN1	1.000	.817
SN2	1.000	.791
SN3	1.000	.744
PA1	1.000	.851
PA2	1.000	.901
PA3	1.000	.909
PA4	1.000	.890
PBC1	1.000	.649
PBC2	1.000	.792
PBC3	1.000	.769
MO1	1.000	.819
MO2	1.000	.817
MO3	1.000	.801
MO4	1.000	.759
MO5	1.000	.767
Anger1	1.000	.837
Anger2	1.000	.865
Anger3	1.000	.855
Anger4	1.000	.832
Fear1	1.000	.735
Fear2	1.000	.811
Fear3	1.000	.807
Sk1	1.000	.713
Sk2	1.000	.789
Sk3	1.000	.806
GPI1	1.000	.820
GPI2	1.000	.803
GPI3	1.000	.789

Extraction Method: Principal Component Analysis.

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