A structural equation model of the determinants of repeat purchase behaviour of online grocery shoppers in the UK

by

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Abstract

The thesis aims at developing a structural equation model of the determinants of repeat online grocery shopping behaviour. In particular, it examines online grocery shopping behaviour, sample and characteristics of shoppers, identifies key constructs that are the determinants of online grocery repurchase behaviour, and formulates a structural equation model in terms of the key determinants.

Previous key literatures related to online grocery shopping are first reviewed and a conceptual framework comprising the various hypotheses is proposed, and then empirically examined. Quantitative research method based on an online survey is employed and a total of 333 respondents form the sample for this research. Confirmatory factor analysis is used to assess the fit of the measurement model and to refine the constructs. Structural model is also employed to investigate any causal relationships among the constructs based on the proposed model and the hypotheses paths.

With respect to the results of demographic profiles, online grocery shoppers are identified as women, age group of 18-34 years old, full-time workers, having a moderate income and higher educational level, and living with another adult without children. In addition, the results indicate that six constructs, perceived usefulness, perceived ease of use, shopping enjoyment in a store, social influence, post-purchase attributive satisfaction and attitudes towards online grocery shopping, are involved in the consumer's repeat online grocery shopping behaviour. Moreover, the proposed theoretical framework has all consistent and valid scales for each of the constructs, and the measurement model for each construct shows good measures of fit explaining data reasonably well. Associated with the structural model, it is found that the construct of post-purchase attributive satisfaction has the strongest direct effect on consumers' attitudes towards online grocery shopping, and the strongest both direct and indirect effects on consumers' repeat online grocery purchasing intentions. Indirect route is developed through consumer's attitude although this route is much weaker than that from direct relationship.

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Chapter 1 Introduction

1.1 Introduction

The aim of the chapter is to present an introduction to the thesis. This study develops empirical research to explore the key issues associated with UK consumers' repeat online grocery shopping behaviours. Particularly, it examines the critical factors affecting attitudes and behavioural intentions in the choice of an electronic channel for grocery shopping on the basis of actual experience of consumers. Subsequently, the interrelationships between determinant constructs and their impacts on consumers' behavioural intentions towards likelihood of future purchase are identified.

Section 1.2 discusses the characteristics of grocery shopping. Definition of online grocery shopping and its distinct features are described in Section 1.3. In its sub-sections, the backgrounds of online grocery market are explained on the basis of the results of previous literatures: market growth, leading online food retailers, consumer demand for online grocery shopping, consumer motivations that lead to actual shopping behaviour, the characteristics of main shoppers and online grocery shopping difficulties are described. Following this, the research aims and objectives are explained in Section 1.4. Then, in Section 1.5, research methodology is discussed linked to the previous section and the structure of thesis is outlined in Section 1.6. Finally, Section 1.7 provides a brief chapter summary.

1.2 Grocery Shopping

Grocery shopping is regarded as routine buying behaviour, not only because decisions are frequently made at regular intervals, but also the behaviour of a consumer is largely habitual, automatic and unthinking. Raijas and Tuunainen (2001) have stated that low information and low risk are involved in the grocery shopping decision due to the low cost. In addition, Hoyer (1984) has added that if earlier experiences are based on information search and decision-making, routine purchasing behaviour would be economically rational as time and effort are saved. For example, if the consumer has satisfied with buying a product or using a shop, risk would most likely be diminished

(Assael 1983). That is, the shopper learns the value and consequences caused by the choice from previous experience (Bettman and Sujan 1987). Furthermore, Grunert and Ramus (2005) implied that grocery shopping entails considerable effort both mental and physical because many food purchases are made jointly, even while the single product purchase may be simple and habitual.

Grocery shopping is also perceived as a stressful and time-intensive chore (Aylott and Mitchell 1998; Geuens et al. 2003) compared to other tasks that consumers enjoy. A survey conducted by the online grocer, Peapod.com, also found that grocery shopping was the chore that consumers dislike most next to going to the dentist (Corral 1999), and a study by the University of Michigan similarly identified that it was ranked next to last just ahead of cleaning among 22 favourite household tasks (Richards 1996). Therefore, Datamonitor (2008) concludes that grocery shopping makes consumers eager to seek efficiencies in its conduct. Aylott and Mitchell (1998) have identified in their research that the two major stressors of grocery shopping were crowding and queuing in a physical store while other factors included regular shopping involvement, impulse purchasing pressure, product assortment and handling sometimes heavy and bulky bags, while time pressure was seen as a main cause of shopping stress in the past.

Verhoef and Langerak (2001) emphasised the differences between grocery shopping and shopping in other retail formats, such as department stores, in accordance with the level of consumers' involvement, enjoyment, and frequency of shopping. In addition, consumers' preferences for buying grocery products through sensory examination are another notable difference. When consumers purchase a grocery product, they greatly depend on sensory examinations such as touching, smelling, and feeling to determine the freshness or appropriateness of the product.

1.3 Online Grocery Shopping

The feature of online grocery shopping is that consumers purchase grocery products through retailers' web sites by simply clicking the mouse button for the required items (Kurnia and Chien 2003) and the subsequent delivery of those ordered groceries at home (Burke 1997; Peterson et al. 1997) . The increasing levels of internet penetration

and consumer time poverty (ONS 2001; 2002a; 2002b), together with the feeling that in-store grocery shopping regarded as a stressful chore, might have brought consumer's eagerness to seek convenience and added value to the services that would save time. Time-saving is a very important aspect for time starved and can be achieved by home delivery, which significantly reduces the amount of time spent on grocery shopping. This service is likely to be a more attractive option to those who dislike grocery shopping (Smaros and Holmstrom 2000). However, Yrjola et al. (2000) and Boyer and Hult (2006) have indicated an aspect of using e-grocery shopping that has been neglected is that even though customers expect convenience from its service, it takes some time to learn and become familiar with new buying routines before the time-saving element is entirely fulfilled. In supplier terms, grocery store operators who are seeking more direct contact with the consumers (Morganosky and Cude 2000) will obtain significant benefits as online grocery shopping builds more a personal and simplified infrastructure for dealing with consumers (Kurnia and Johnston 1999; Slonae 2000). Smaros and Holmstrom (2000) also added that online grocery suppliers can access customers' information and use the information in order to service their customers better. Thus, online grocery shopping services might have the potential to make both consumers and grocery store operators satisfied.

Since online purchases of certain grocery products, especially fresh produce like meat, fish, fruit and vegetables, which are rich in sensory attributes (Morganosky and Cude 2000; Geuens et al. 2003) are significantly different from buying those items in a physical store, shopping online for groceries is considered as a discontinuous innovation (Hansen 2005a; Robinson et al. 2007). That is, there is a significant change in behaviour: selecting grocery items from a list on a web page instead of choosing items on display on a supermarket shelf. Therefore, with regard to the marketing strategies, Anderson and Ortinau (1988) has indicated that discontinuous innovation should be developed to overcome consumers' reluctance to adopt the innovation and to generate new consumption patterns for consumers. Also, Lim et al. (2009) have suggested that effective presentation of sensory attributes on the internet appears to be a key factor that can reduce consumers' perceived risk and affect consumers' perceived compatibility.

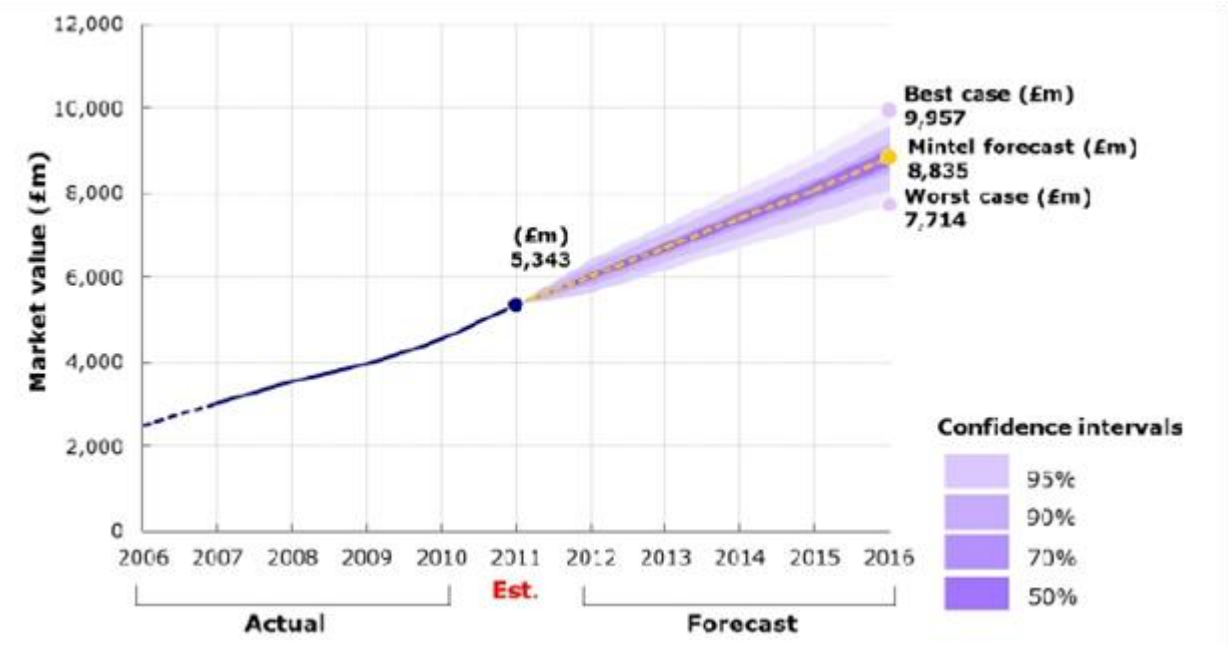
1.3.1 Online grocery market conditions

Mintel (2011) defined the online grocery market as the online sales of food and drink for in-home consumption, including store-based grocers' sales online, food and drink specialist retailers' online sales, online-based grocers' sales and online-based food box delivery schemes.

The online grocery sector has showed strong growth although it still remains a small share of the whole sector accounting for an estimated 4.1% of sales in 2011. Figure 1.1 depicts the actual value of online grocery sales in the UK from 2006 to 2010 and forecasts sales for the period 2012 -2016.

From Figure 1.1 it is evident that the UK online grocery market was estimated at £5.3 billion (including sales tax and delivery charges) in 2011, having more than doubled in sales by 63% over the period 2006-2011. Mintel (2011) forecasts that online grocery market will show considerable growth over the next five years, expecting a market size of £8.8 billion by 2016. Also, IGD (2010) set the value of online grocery sales to double to £11.2 billion by 2016 fuelled by consumers' increasing willingness to shop online.

Figure 1.1 Forecast of value sales in the UK online grocery sector 2006-16



Source: Mintel estimates (2011)

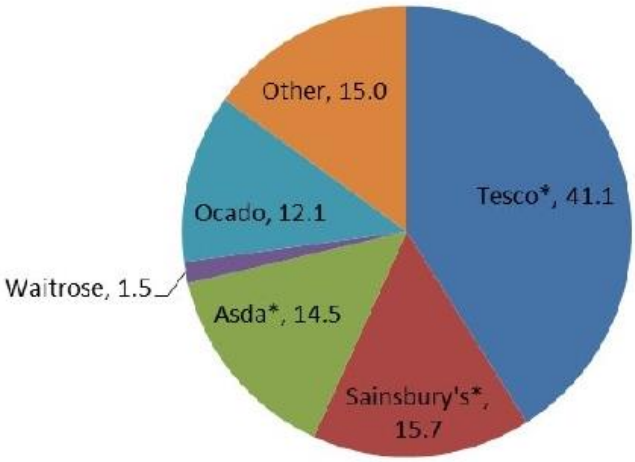
This online grocery market growth is considered on the basis of five key factors. First, the rapid growth in broadband connections was boosted by the increasing availability and falling cost of broadband. The fast operation of broadband compared with dial-up connections, bringing increased online usage and more reliable access to the internet, has increased levels of online grocery shopping, which is relatively complex and previously time consuming areas. Second, growing familiarity with the technology and increasing confidence in shopping online are also important factors driving frequency of purchasing online. Third, the leading retailers like Tesco, Sainsbury's, Asda and Iceland are continuing the development of the e-grocery business by integrating new concepts with the conventional grocery business and have a greater focus on an improving and expanding online service, particularly, online food delivery operations and the shopping experience (Tanskanen et al. 2002; IGD 2007). For example, there have been continual improvements in site usability, home delivery, solutions to managing product substitutions and shorter delivery slots. Fourth, time-pressured consumers have become more aware of the benefits of convenience and time-saving of online purchasing. Finally, online grocery market growth has been driven partly by inflation in terms of broader market environment. Consumers' shopping habits have changed, for example in

2011 there is evidence that they have become more cautious with their spending with high inflation and they have particularly attempted to decrease food spending. According to the report by Sainsbury's, consumers' average basket sizes became smaller and shopping trips were made more frequently in order to reduce waste. Mintel (2011) forecast that this situation could continue to offer opportunities for online grocery shopping as a channel which finances can be easier to manage online than in store offering price comparison and ease of checking the spending on the food basket as well as being well suited for more closely planned food shopping.

1.3.2 Leading online food retailers

The four largest grocers, Tesco, Sainsbury's, Asda, and Ocado, dominate the UK food sector accounting for almost 79% of sales (Mintel 2011). Food has broadly held its share in total consumer spend over 2004-09, at around 6%. It is expected to gain a marginal increase in the share of total spending in 2009. The store based grocers currently dominate online retail, partly by virtue of their high brand recognition and trust, and their activity in the channel will have a major impact on its growth. Figure 1.2 summaries estimated shares of online grocery retailing of UK leading food retailers between 2010 and 2011. According to Figure 1.2, Tesco, the market leader, is estimated to take 41.1% of total online grocery sales although it is losing market share. The surprise entrant in the online food market is Ocado with its 12.1% market share seeing that the online-only grocer enjoys some of the strongest rates of growth (Mintel 2011).

Figure 1.2 Leading retailers' estimated shares of online food retailing (%) in 2010 and 2011



Note:

*Estimated grocery sales only, excludes non-food sales outside the grocery shopping portal

Source: Company accounts and financial reports/Mintel (2011)

1.3.2.1 Tesco

Tesco is the UK's largest grocery market and its sales reached £40.8 billion (excl. sales tax) in 2010, representing an increase of 5.7% on 2009 (Mintel 2011). Tesco operates through a number of different sized store formats and Tesco.com launched in 2000 has expanded rapidly to become the largest in sales for grocery in the UK. Tesco's online operations, based on the local store pick-up and delivery, and the advantage of its early introduction of online grocery shopping in 2000 have led to strong benefits in the arena including its market leadership in wider food retail. Tesco is best known as the value-oriented retailer and it has operated under the "Every little helps" tagline, continuing to attract shoppers broadly and equally from across the socio-economic and age groups (Mintel 2009b). Although Tesco has formed a powerful presence in the UK online grocery market with 98% of geographical coverage (Evans and Wurster 2000; Mintel 2011), it is facing increased competition online as the competitors expand their coverage and improve their offering. However, according to the research of Mintel

(2011), not only are Tesco shoppers the most loyal when it comes to online grocery shopping (86% who shop at Tesco and also shop online use Tesco.com), but Tesco has also managed to attract a significant proportion of shoppers from its competitors (Owen 2011). This is thought to be derived by Tesco customers' long term purchases in associated with a clubcard loyalty scheme that allows highest potential from the loyal consumers.

Tesco provides a variety of rich contents which are a simple but helpful on its web store (Hackney et al. 2006). For instance, at first, free-form notes to the picker enable users to write detailed notes such as preferred ripeness of fruit and portion sizes or preferred colour of toothbrush, for each product in their shopping basket. Second, the cheaper alternative feature launched in September 2008 on Tesco's site suggests cheaper own-label or branded alternatives to products chosen by the user where available. Third, the company introduced an online weight management system that included customised meal plans, food diaries, tracker systems and eating out guides with Weight Watchers in January 2011. Tesco also introduced an online tool, using which customers can upload their Special K Personal Plan and have the items for this weight management plan added to their weekly shopping list.

With respect to the digital marketing strategies, Tesco has maintained an interest in social networking; a Facebook application called My Shopping Assistant enables users to plan their shopping through Facebook, and a number of Twitter feeds and a Facebook page are aimed at increasing consumer contact (Mintel 2011). Furthermore, an iPhone application and an Android version of the application which includes voice search enable customers not only to scan barcodes wherever they are but also to have the products added to their online shopping basket. Also, Tesco provides a text alert that allows consumers to be notified their delivery with a 1 hour window if they have booked a 2 hour delivery slot.

Tesco began trialling a click-and-collect system for food in August 2010, which allows consumers to order their groceries online and pick up their shopping as soon as two hours later from the store car park subject to a flat fee of £2 for the service.

1.3.2.2 Sainsbury's

Sainsbury's is in the second-position in the food retail sector with consolidated sales of £500 million (Mintel 2009b). Sainsbury's home delivery was originally launched from a warehouse base leading to high start-up costs and availability issues. In 2004 and 2005, online grocery operation was reorganised as integrating into stores, and the website also launched again: groceries ordered by online are hand-picked by colleagues in nearby Sainsbury's stores, reducing the distances drivers travel to customers' homes and therefore food miles. Since then, the operation has posted strong sales growth corresponding with geographical coverage extended to around 93% of UK households, word-of-mouth recommendation and improvements in the online service such as product availability and supply chains.

Sainsbury has revealed that its online grocery orders are exceeding 165,000 a week, resulting in an annual turnover of over £750m positioning the retailer in second place in the UK market (SainsburyPress 2012). Sainsbury's, the fastest growing retailer in the online grocery sector, has been driven by industry leading customer service such as quality of products, availability of delivery slots, customer service from the delivery person, speed of placing an order and contact centre staff.

Sainsbury's focuses its brand positioning more on competitive pricing and increased promotional activity with the tagline 'Great foods at fair prices' in the recession (Mintel 2011). Also, Sainsbury's has leveraged its positioning as a source of food ideas online, with some innovative features around recipes and interactive content that enables shoppers to add all the ingredients to their shopping basket with one click on a direct link to the online store. For a greater interaction with customers, Sainsbury's not only launched a Facebook site in spring 2009 featuring various recipes, videos, user comments and the availability of exclusive deals but also operates 'online community' discussion board for topics related to Sainsbury's and food on the dedicated Sainsbury's page. Similar to Waitrose, Sainsbury's site now features typical life icons on selected fresh fruit and vegetables, showing the average shelf-life of the produce.

1.3.2.3 Asda

Owned by the US retail giant, Walmart, Asda is the third largest food retailer in the UK by consolidated sales, which stood at £23.9 billion (excl. sales tax) in 2010. Asda launched its e-commerce facility in 1998 delivering goods from a warehouse before switching to a store-based fulfilment model. The retailer was relatively slow to expand the operation, offered by only 53 stores by autumn 2004, reaching some 40% of the UK population. However, the rollout has accelerated with Asda reaching 97% population coverage by end 2009, fuelling strong sales growth with rapid geographical expansion (Mintel 2011).

The slow start has left Asda still behind its competitors in terms of online turnover. A new online shopping platform launched in summer 2009 is designed to improve the shopping experience, while Asda continues to offer a 200% refund on any products deemed unsatisfactory. Asda maintains a strong price-led focus, appealing to the lower end of the mass market. Promotional activity in recent times has targeted market leader Tesco, promoting Asda's pricing as the lowest in the sector.

As a recent activity, Asda's website now boasts a price-comparison option, which compares the prices of any basket of goods at Asda against Tesco, Morrisons, Sainsbury's and Waitrose. Asda promises to be 10% cheaper than its rivals or consumers receive a voucher covering the difference, which can be redeemed against their next purchases. Its price guarantees as part of its push to position itself as the price leader amongst the major grocers. The first online Price Guarantee tool was launched in May 2010, which customers could use to compare prices of similar grocery products sold at Tesco, Waitrose and Sainsbury's. If the basket of eight or more branded and own-label products was cheaper at Asda's rivals, the company undertook to refund the difference through an e-voucher.

Asda continues to expand its online grocery operation and to enjoy some solid rates of growth from the online channel. Furthermore, Mintel (2011) anticipates that the pressure of high fuel prices on disposable incomes could encourage more people to trial shopping online, particularly if the company can communicate the cost benefit of paying for a delivery rather than visiting the store.

1.3.2.4 Ocado

Ocado, the single channel online grocery retailer, is the latest entrant to the UK online food shopping arena and launched its operation selling Waitrose products online in 2002. Ocado is the only operator to have delivered from a central warehouse and seven depots from the start, while its competitors pick and dispatch their orders from the existing store network. Ocado's cost and operational base is thus very different from its competitors, at the moment enabling it to add scale at low incremental cost.

Ocado's services reached 65% of the UK population by spring 2009. Ocado remains the fourth-largest operator in online grocery retailing although it is a very small business compared to the other operators selling groceries online. The company served an average of 108,350 orders per week in the half-year to May 2011, up by 22.6% compared with the previous year. The average order size for the same period was £114.09, down by 1.5% compared with the previous year. The rapid geographical expansion has fuelled strong sales growth, despite the business having to build its name and visibility in the process, unlike its long-established competitors. Ocado generated £551.1 million in gross sales (£515.7 million excl. sales tax) in the financial year 2010 and had about 262,000 active customers as of November 2010 (Mintel 2011).

Ocado launched various initiatives that cater its product offer more comprehensively for its customers' needs and sharpen its price image with its own-label 'Everyday value range' and various price cuts to match Tesco prices on all identical branded goods. In addition, Ocado has introduced various innovative services and online features ahead of its competitors. For example, "Life Guarantee" provides minimum use-by dates for the products in the online store and text message reminders of upcoming deliveries. "Instant Shop" compiles a list of suggested items based on earlier shopping patterns, said to take into account likely frequency of purchase. "Ocado on Demand" aims to encourage customer loyalty reducing a fee for grocery deliveries over a period like at £40 for three months, £60 for six months and £105 for a year (Mintel 2009b; Mintel 2011). Its site also features recipe suggestions and customer reviews of the product, linked to each product where available.

1.3.2.5 Waitrose

Waitrose is the food retailing business of the John Lewis Partnership, operating 243 supermarkets which generate sales of £4.7 billion (excl. sales tax), an increase of 8.9% on the previous year in 2010 and 2011 (Mintel 2011). It targets the same affluent, upper mass-market customers as the John Lewis department stores, and has a similarly loyal following. That is, Waitrose targets the upper-mid-market with a high-quality food offer. Consumer research by Mintel (2009b) shows its customer base geared towards the AB socio-economic group, and the 20-34 age group. Ocado was originally seen as Waitrose's e-commerce arm, however as Waitrose has developed its own online business, the two have adopted increasingly competitive positions.

Waitrose still remains in the minor league. As the recent innovative activities, Waitrose launched an interactive new portal in early 2009 called "My Waitrose". The site offers registered customers special offers, invitations to tasting events and a chance to give their views of products, as well as engaging them in new product development. Also, Waitrose.com features information on food and health, such as a nutritionist Q&A column and a 14-day menu plan for helping weight management. While the plan includes ready-compiled daily shopping lists, these do not link directly to the online store, an area potentially worth developing to enable customers to use the online store to purchase an entire meal plan. Waitrose launched the Essential Waitrose own-brand range with greater emphasis on value, and began price matching Tesco on a selection of leading branded products. Investment in advertising and the ongoing development of premium ranges have also contributed to growing like-for-like sales through the downturn (Mintel 2011).

The new waitrose.com website re-launched in March 2011 includes improvements to the ordering process and increased delivery slots for peak times such as Fridays and weekends (Mintel 2011). This allows shoppers to give specific instructions for certain items, such as with regards to the thickness of slices of ham or the ripeness of bananas. Moreover, the company operates the iPhone application and mobile website to offer recipes, a store finder tool, cooking guides and videos. However, marketing is still focused on the continuation of its free delivery offer for all orders over £50 as well as a new customised service offer. Like Tesco, the site also offers a click-and-collect service,

with consumers able to order online and collect from their preferred Waitrose store free of charge.

1.3.3 Consumer demand for online grocery shopping

According to Mintel (2007) in 2007, only 4 % of consumers undertook most of their grocery shopping online, corresponding to an online grocery sales of £3.6 billion. The number of consumers shopping online for food increased to 35% in 2009. Of these shoppers, two thirds do shop occasionally and one in nine shop online regularly or exclusively. Online grocery shoppers are typically those with larger families with children and the full-time employees who emphasise convenience as a key driver.

The report from Mintel (2009b) indicated that nearly half the population (45%) think there is no point of shopping for food online. A report by Defra (2006) asked a question assuming that consumers had access to the internet and the retailer would deliver groceries free of charge to their home. A high proportion of 52 % said that they would not countenance this while only 22 % indicated that it was likely. Another key issue of the reluctance of using an online channel for grocery shopping is that around seven in ten consumers see popping into grocery shops as easy. This has been driven by the major grocers' vast investments into expanding their store networks with different formats. Therefore, they negate the incentive to switching to the more expensive online service (Mintel 2011). Like these results, consumer demand for online grocery shopping is still low and the growth in numbers is slower than expected. Furthermore, the market has struggled to gain consumer loyalty and trust (Datamonitor 2008). Mintel (2009a) forecasts that future growth of the market looks to depend more on the retailers' activity and success in making new consumers aware of the tangible benefits of doing their grocery shopping online.

However, despite these concerns, IGD (2010) found that 44% of consumers intend to shop online for groceries in the next five to ten years compared to 17% that do so now. Purchasers generally rate the experience of buying groceries online highly favorable (FMI 2000) and 80% say that orders are correct, fresh, undamaged and shipped in a timely manner. Therefore, there is no doubt that online shopping for food is a niche

market, since both consumers' appetites for purchasing groceries online and their actual spending on it are clearly increasing (Ellis-Chadwick et al. 2007). A previous study by Morganosky and Cude (2000) supports this tendency of an increase in consumer's demand for online grocery shopping and has found that consumers put the strength on convenience as the main leading factor of e-food shopping. Keh and Shieh (2001) have also stated that consumers are more concerned with convenience and perceive added value from the benefit of being able to avoid carrying bulky and heavy shopping bags and getting these items delivered to their home (Grunert and Ramus 2005).

1.3.4 Consumer motivation

Shopping online seems to be all about saving time, reducing stress and saving money. When asked, 82% of main shoppers agreed that shopping online saved time, 41% strongly agreed. In larger households, this increased to between 52% and 55%. Only 6% of those questioned felt that shopping online did not save time. 72% of main shoppers agreed that shopping online was less stressful than shopping in store, with 37% strongly agreeing. Those between 25-34 years old and those with families agreed more heavily with this sentiment. Two thirds of shoppers think that online shopping helps them to maintain control of spending within their budget avoiding impulse purchases. 64% of shoppers also agreed that online shopping helped them to save money on fuel by reducing the drive to the supermarket. This is likely to become more prevalent as fuel prices reach highs and more and more consumers see rising costs of fuel as a major concern (Mintel 2011).

Several studies have also found that shopping behaviour is determined by motivational factors. For instance, Morganosky and Cude (2000) noted that convenience was a particularly relevant motive when there were situational constraints such as illness or the presence of small children in the household. Gillett (1976) also found that in-home shopping was often motivated by specific needs or personal circumstances, such as avoiding an extra trip to pick up a needed item or disability. Therefore, situational variables may be important in triggering the adoption of e-grocery shopping. However, Corbett (2001) suggests that time-saving did not affect consumer's motivational decision to shop online, possibly because of the time taken to receive the goods.

Furthermore, consumers who have decided to adopt online grocery shopping may revert to in-store shopping if they have repeated bad experiences, including not being able to find their favourite products and freshness of the products on delivery (Fox and Kempiak 2006). Therefore, improvements in services, such as supermarket delivery options and website functionality, will attract grocery shoppers to shop online.

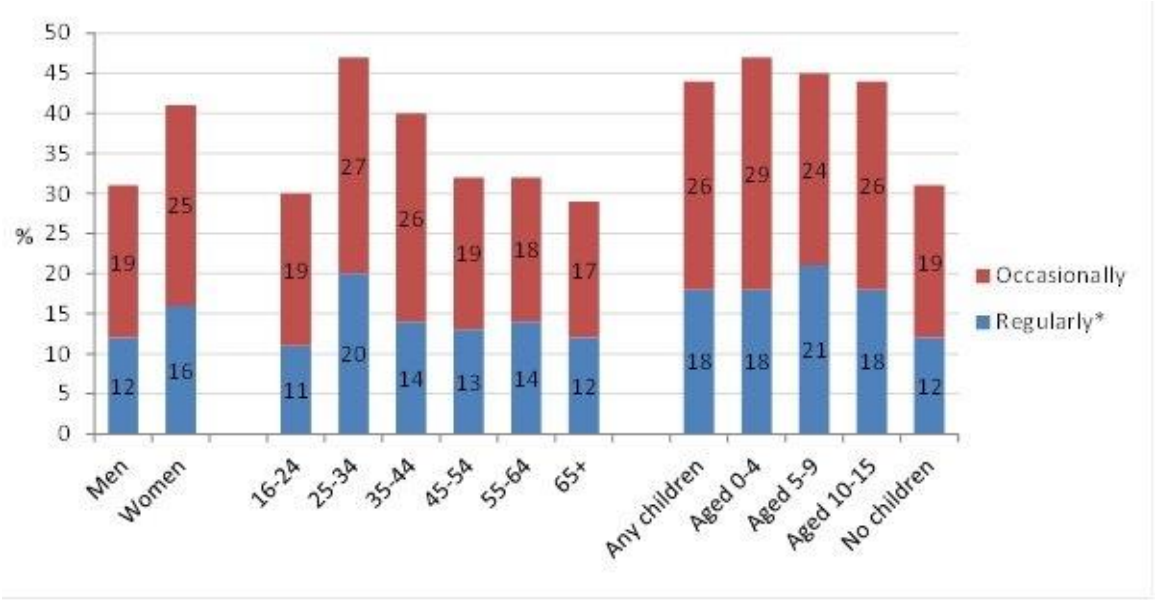
1.3.5 The characteristics of regular shoppers for groceries online

Many previous researchers have investigated the demographic characteristics of regular online grocery consumers to understand the various consumer groups associated with online grocery shopping and predict the relevance to their online grocery behaviour (Verhoef and Langerak 2001; Pechtl 2003; Hansen et al. 2004; Hansen 2005b). The study by Hiser et al. (1999) revealed that attributes such as income, number of people living in the same household, the presence of children and gender were not significant determinants to the usage of online grocery shopping services whereas age and education were found to have a positive impact on consumer propensity to use such services. Additionally, a survey carried out by Priluck (2001) revealed that education was the main demographic variable affecting the tendency to buy groceries online, while other demographic variables were found to be less significantly related to consumers' willingness to use this service.

Sieber (2000) concludes that online shoppers are generally younger than the average internet user and their educational level is higher. Morganosky and Cude (2000; 2002) agree that online grocery customers are younger and have higher education level and income. In addition, their study reveals that more female online grocery shoppers are observed while online shoppers in general are typically more male. In accordance with Cude and Morganosky (2000) and Mintel (2007; 2009b), typical e-grocery shoppers are a dual-income suburban family with more than one child in the age group 0-4 years. Also, they are characterised as having higher income and disliking in-store grocery shopping (Keh and Shieh 2001). The time starved, stressed consumers and individuals with disabilities related to age and health can be included (Heikkila et al. 1999): the disabled and the elderly were the second most often mentioned target market. This is supported by Morganosky and Cude (2000) who have found that 14.8 % of e-grocery

shoppers cite physical constraints as the primary reason that they use the internet to buy groceries. However, internet grocery shopping has failed to find favour with consumers older than 65 years. This is presumably due to problems with the acceptance and use of technology, along with a preference for the well-established habits of a lifetime (Mintel 2009b) and smaller basket sizes which make the delivery cost poor value. Table 1.1 summaries the demographic characteristics of online grocery shoppers by gender, age and presence of children in the household by Mintel (2011) in July, 2011.

Table 1.1 Shopping online for groceries, by gender, age and presence of own children in the household



Note

* Includes those who do all or most of their grocery shopping online, and those shopping online for groceries regularly.

Base: 2,000 internet users aged 16+

Source: GMI/Mintel (July, 2011)

1.3.6 Online grocery shopping difficulties

Ring and Tigert (2001) and Geuens et al (2003) have stated that grocery shopping through the internet has faced difficulties in attracting consumers in consequence of unsuitability of groceries as an object of trade for electronic commerce (Raijas and Tuunainen 2001). Here are assumed main difficulties that support this statement.

Firstly, groceries are tangible items which are hardly attainable via a network. That is, groceries, such as fruits and vegetables, usually belong in the high-touch category so that consumers generally prefer to physically examine the quality and freshness of the products prior to the purchase (Canedy 1999; Baker 2000; Vijayasarathy 2002; Hays et al. 2004; Fox and Kempiak 2006). According to Mintel (2011), nearly three in four (71%) people emphasise the importance of seeing or touching and want to judge the use-by-dates of fresh foods before buying (Mintel 2009b), which are currently impossible to provide online channel. Consequently, grocery shoppers are still worried about uncertainty of product quality delivered (Raijas 2002) including the selection and handling of perishables like vegetables, eggs and meat product (Ramus and Nielsen 2005) in accepting an online channel for their grocery shopping. That is, interacting with the products seems to be a key part of the grocery shopping experience.

Secondly, groceries are perishable goods that are time-sensitive in terms of their delivery needs. Therefore, e-grocery commerce is more local in character than many other physical products such as books, clothes and digital products. Also, suitable delivery systems and temperature controlled delivery vehicles are necessary to guarantee a superior product freshness and quality. Hence, the expensive delivery systems involved may require a minimum level of customers per region in order for such systems to be economically feasible (Grunert and Ramus 2005).

Thirdly, additional delivery cost that grocery retailers charge (Huang and Oppewal 2006; Mintel 2009b) is often a concerned issue as the potential disadvantage in grocery e-commerce (Kornum and Bjerre 2005). Mintel (2009b) also supports this weakness that three in five consumers consider the delivery charges are deemed not worth paying. Kamarainen et al. (2001) have stated that the prices are unlikely to be competitive on the web due to the high operational costs involved in e-grocery and the delivery cost

charged. Thus, online grocery shopping would not be easily embraced by budget-conscious consumers and some low spending groups. Mintel (2009b) expects that cheaper delivery would make the service more appealing to more households. For example, Waitrose abolished delivery charges in spring 2009, while Ocado allows customers to avoid delivery charges "depending on the day and time of the slot".

Fourthly, delivery time is regarded as one of the major elements in delivering ordered groceries more than other products (Burton 2000). In brief, consumers expect speedy delivery because they do not always plan their meals ahead of time and daily schedules are hard to predict. With respect to the delivery time, around half of consumers consider waiting at home for a delivery inconvenient (Mintel 2011). The latest market research, eDigitalResearch (2007) has found that the availability of delivery slots is more important to online grocery shoppers than price. Online retailers were losing a significant amount of customers because they couldn't provide satisfactory delivery slots. Therefore, as an improvement for a customer service, online grocery retailers are offering shorter delivery windows and confirmation of delivery on the day (Mintel 2011).

Fifthly, more than half of consumers are concerned about not getting what they ordered. That is, getting the complete order is another majority issue addressed by a number of online grocery shoppers. As an example, some retailers like Waitrose and Tesco are offering greater control over substitutions, out of stock and fresh food selection allowing consumers to leave detailed product requirements like the ripeness of fruit on their order (Mintel 2011). Furthermore, there is an increased risk of having to accept or return products when those simply did not match the expectations of the consumers or when in a bad condition (Ramus and Nielsen 2005).

Finally, frequently mentioned major problems with internet shopping, for example, transaction concerns, lack of credit card security and insufficient information such as product's label are also applied to online grocery shopping.

1.4 Research Aims and Objectives

Online grocery shopping, which has a different format of purchasing procedure compared to in-store shopping, provides distinctive features to its users such as convenience and time-saving. As the penetration of computer users and online shopping users has increased, online grocery market also shows strong growth and is forecasted continuous growth over the next five years. Moreover, as leading online grocery retailers expand their coverage and improve their offering against competitors, they appeal to potential and existing customers to use their online services. Based on such circumstances of online grocery market, grocery shoppers become interested in using online channel for their grocery shopping and indicate their intentions to do so in the future. However, the online grocery market still remains a small share of the whole online sector and the numbers using online grocery shopping is a minority at present. In addition, unlike other online shopping, online grocery shopping handles groceries like fresh fruit, vegetables and even frozen products which need a special care so grocery consumers might be more concerned about selecting an online channel for their grocery shopping. Consequently, since online grocery sector is a niche market and the consumer demand is growing with future potential, it is no doubt that online grocery market is a valuable and interesting sector to investigate.

In association with these backgrounds of online grocery shopping, the aim of the research is to develop a structural equation model of the determinants of repeat online grocery shopping behaviour. The research objectives are to

- examine online grocery shopping behaviour, sample and characteristics of shoppers
- identify key constructs that are the determinants of repeat online grocery shopping behaviour
- formulate a structural equation model to explain repeat online grocery shopping behaviour in terms of the key determinants:

    develop scales for each of the constructs

    evaluate scales for reliability and validity

    estimate structural equation model

    evaluate model for goodness of fit

identify the nature of the interrelationships between constructs

identify the impact of determinant constructs on repeat online grocery shopping behaviour in terms of direct, indirect and total effects

The first question primarily reveals an individual's online grocery shopping routine aiming to understand consumer's online grocery purchase behaviour. Consumer profiles are also examined to identify the characteristics of online grocery shoppers. The second research objective is aimed at the key factors affecting user's repeat online grocery buying intention which is worth to investigate because frequent consumer's repeat purchase intention is connected to the long term actual behaviour like loyalty and positive recommendations to others. The third question stresses the relationships between the constructs and consumer's online grocery repurchasing intention in the future using a structural equation model.

1.5 Research Methodology

The examination of the factors perceived to be most influential in the online grocery shoppers' purchasing choices were identified using both secondary and primary research methods. The main primary research instrument to establish the underlying dimensions of grocery consumers' priorities to online grocery shopping was a structured quantitative research in the form of an online survey. The development of the questionnaire was informed by secondary research and an observational study related to the online purchasing behaviour of grocery shoppers. Then, online based questionnaire was distributed to individual respondents through a market research firm and advertising on the websites, like online consumer forums, a classified community website and social media.

For the empirical results, the data analysis technique structural equation modelling (SEM) was employed. Hair et al. (1998) have indicated that SEM is particularly useful when one desires to simultaneously examine a series of dependence relationships and to identify possible structural relationships between constructs. Therefore, in this study, SEM is used to investigate any causal relationships among the constructs for the development of consumer's repeat online grocery shopping behaviour based on the

proposed model and the hypotheses paths: twelve hypotheses between various constructs on the conceptual model were established and examined.

1.6 Structure of Thesis

This thesis comprises seven chapters. The present chapter, Chapter 1, introduces the background of the research, identifies the aims and objectives of the research and outlines the proposed research methodology. Chapter 2 provides a review of the literatures regarding service context, online grocery shopping, determinant factors influencing consumers' repeat online grocery purchase behaviours, and the concepts of the marketing, such as direct marketing, digital marketing and social media marketing. Chapter 3 describes the proposed conceptual framework for consumers' repeat online grocery shopping behaviours and the research hypotheses linked to the each construct. Chapter 4 outlines the research methodology employed in this study including details of the research design process. Chapter 5 presents the empirical results and analysis related to testing the hypotheses in the proposed model. Chapter 6 discusses the results of the data based on the research questions. The final chapter, Chapter 7, summarises research approach, key results and results of hypotheses. Additionally, contributions and limitations of the study, and suggestions for future research are highlighted.

1.7 Summary

In this introductory chapter, the thesis begins with providing background and current market conditions of internet grocery shopping in the UK. It establishes the research aims and objectives, presents methodology for conducting the research and outlines the structure of the thesis. On the basis of these foundations, the following chapter details the description of the research.

Chapter 2 Literature Review

2.1 Introduction

This chapter aims to review existing studies relevant to the context of this research. The review is first concerned with the service context in general in Section 2.2. In Section 2.3, a concept of e-commerce and different types of specific models applied in the literatures regarding to online grocery shopping are summarised. Also, detailed descriptions of consumers' attitudes towards online grocery shopping and various factors influencing their online grocery shopping choices from previous research are included in this section. Section 2.4 explains the distinctive features of online shopping compared to general service environments. Section 2.5 discusses about the effects of usability and readability of websites on consumers' online shopping experiences. These sections are followed by overviews of degree of support (Section 2.6), direct marketing (Section 2.7) and digital marketing (Section 2.8). Then, social media marketing and m-commerce are explained in Section 2.9 and Section 2.10 respectively. It concludes with a summary of the chapter in Section 2.11.

2.2 Service Context in General

Service researchers have attempted to focus on service quality, perceived value, satisfaction and loyalty intentions to understand the dynamics of service (Bolton et al. 2000; Cronin et al. 2000; Rust and Oliver 2000; Szymanski and Henard 2001; Sirdeshmukh et al. 2002). Oh (1999) stated that service quality, perceived value, and customer satisfaction have important relationships in customers' decision processes. In addition, they both directly and indirectly influence loyalty and positive word of mouth communication intentions (Oh 1999; Harris and Goode 2004). A considerable body of research has approached service quality as the primary determinant of customer satisfaction (Parasuraman et al. 1988; Brown et al. 1993; Zeithaml et al. 1996). However, Oh (1999) and McDougall and Levesque (2000) highlighted the importance of perceived value as well as service quality to customer satisfaction. They revealed that

perceived value should be recognised as a determinant of customer satisfaction and loyalty because not only does it play a vital role in explaining customers' decision behaviours but also it is linked to market share, relationship marketing and future (re)purchase intentions (Patterson and Spreng 1997). Overall, service quality and perceived value are significantly related to customer satisfaction and future intentions. Customer satisfaction is positively related to repurchase intentions, likelihood of recommending a product or service, and customer loyalty. Increasing customer loyalty also leads to increasing profitability (Storbacka et al. 1994; Reichheld 1996; Heskett et al. 1997; Sivadas and Baker-Prewitt 2000). Further, Berry (1995) adds that customer loyalty positively influences profitability by both helping to reduce marketing costs as well as to increase sales per customer.

Loyal customers are often described as those that buy more, are willing to spend more, are easier to reach, and act as enthusiastic advocates for the firms (Harris and Goode, 2004). Loyal online customers also show the same characteristics regarding willingness to pay more and positive word of mouth intentions. That is, loyal customers are considered highly profitable (Srinivasan et al, 2002). Therefore, developing customer loyalty is important and essentially needed to make long-term financial profit of firms (Jones and Sasser 1995). However, different from prior studies, Reinartz and Kumar (2002) have reconsidered the correlation between loyalty and profitability using four companies' customer databases. Firstly, these authors discovered that loyal and presumably experienced customers were actually more expensive to serve. These customers know their value to the company and often exploit it to get premium service or price discounts. In other words, loyal customers expect special treatment for their loyalty. Even if customers have a willingness to pay higher prices, it might be abandoned by using the loyalty cards which provide them with special benefits like discounts and offers. Secondly, they found that the link between loyalty and profits is weaker than expected. Although a group of customers was profitable in the past, it does not mean it will continue to be so in the future. Sometimes, short-term customers can be highly profitable. Thirdly, the idea that loyal customers are active word-of-mouth marketers is overestimated. According to their empirical findings, a higher proportion of loyal customers are willingly become the active word-of-mouth marketers compared to others, but it is not that strong prior researchers expect.

Harris and Goode (2004) indicated that developing customer loyalty online is both more difficult and more important than in offline retailing: online shopping is involved not only in security and privacy concerns so it is difficult to generate consumer trust which is an important determinant to establish online loyalty, but also a repeat purchase activity, particularly in the food retailing sector.

Table 2.1 summarises studies concerned with service quality, perceived value, satisfaction and loyalty in a service sector as well as those that further elaborate the satisfaction-loyalty relationship for products and services. The studies that have focused on the online market choose the method of web-based survey because it is more consistent with the context of online shopping. Moreover, an online approach would be more appropriate to identify and reach online shoppers who are in a relevant setting (Szymanski and Hise 2000). As regards the analytical methods, principal component analysis or exploratory factor analysis is used to simplify data or identify the underlying constructs on consumer's e-satisfaction. Regression analysis is used for analysing several variables when the focus is on the relationships between the construct and measures. Structural equation modelling (SEM) is also employed to test and estimate casual relationships, but more specifically this technique allows both confirmatory and exploratory modelling that is suited to both theory testing and theory development (Hair et al. 1998). SEM deals with more complex inter-relationships between variables, specifically independent variables which indicate latent and observed variables, and dependent variables. Unlike regression analysis, SEM uses multiple dependent variables and deals with both direct and indirect relationships leading to a total effect.

Table 2.1 Existing studies: service quality- value- satisfaction- loyalty in a service context

Sources	Aim	Methods and Techniques
Anderson and Srinivasan (2003)	The impact of e-satisfaction on e-loyalty	Online survey Exploratory factor analysis Regression analysis
Buttner and Goritz (2008)	Measuring the perceived trustworthiness of online shops	Web-based simulated study Principal components analysis SEM Hierarchical regression analysis
Hallowell, (1996)	The relationship of profitability to intermediate, customer-related outcomes	Survey OLS regression
Harris and Goode (2004)	Four-dimension scale of loyalty	Online survey Preliminary correlation analysis Path analysis SEM
Hellier et al. (2003)	A general service sector model of repurchase intention	A postal questionnaire SEM
Johnson et al. (2008)	Online search behaviour and loyalty	Review of the extant literatures
Lam et al (2004)	Analysing a conceptual framework that considers customer perceived value, customer satisfaction and switching costs in a B2B context	A mail survey SEM
Mai and Ness (2006)	The relationship between satisfactions with mail-order speciality food attributes, overall satisfaction and likelihood of future purchase	A mail survey Univariate analysis Correlation analysis Exploratory factor analysis SEM
Patterson and Spreng (1997)	Modelling the relationship between value, satisfaction and repeat purchase intentions in business-to-business, service context	Mail survey SEM
Rafiq and Fulford (2005)	Effectiveness of UK supermarkets in transferring store loyalty to online loyalty	Online survey Exploratory investigation
Shankar et al (2003)	Customer satisfaction and loyalty in online and offline environments	Survey Simultaneous equation model
Sivadas and Baker-Prewitt (2000)	Two complementary models of the interrelationship between service quality, customer satisfaction, and store loyalty within a department store context	Telephone interview SEM
Szymanski and Hise (2000)	The initial evidence for the determinants of e-satisfaction	Focus groups Online survey Exploratory factor analysis Regression analysis

2.3 Online Grocery Shopping

2.3.1 Electronic commerce

Electronic commerce (e-commerce) is one of the major business operations advancements developed computer technologies and utilising information (Kurnia 2007). Chaffey and Smith (2008) have viewed e-commerce as an operation primarily selling online or enabling to transact online. This includes e-tailing, online banking and shopping which involve transactions where buyers actually buy and shoppers actually shop. However, some suggest that e-commerce includes all online transactions such as a responding to an enquiry or an online catalogue search (Kurnia 2007). In brief, e-commerce is about conducting business transaction electronically which can range from servicing customers online, collaborating with business partners to exchange business information and transaction execution over an electronic network (Kraemer et al. 2005).

The most prominent and potential benefits of e-commerce are its ability to boost productivity and reduce transaction costs. It can also help organisations disseminate information, reduce paperwork and decrease human errors (Turban 2005; Kurnia 2006). Additionally, the networking capabilities of the internet allow firms to improve flexibility and responsiveness in the face of competition, encourage new and more efficient intermediaries, expand market access, reduce time to market by linking orders to production and improve internal coordination (Qureshi 2005).

As the shopping habits of consumers have become more advanced by adopting new technology, e-commerce is now the preferred method of shopping for many products (Anon 2011). Therefore, it is very important for the competitiveness of a company to have an own web portal where it is possible to offer products and services to remote customers (Bruzzone et al. 2004). Furthermore, from the environmental and energy point of view, shopping for online goods and groceries has the potential to reduce energy consumption (OECD 1999; Romm 1999) as well as a reduction in environmental emissions (Orremo and Mallin 1999).

2.3.2 Consumer's perception and attitude towards online grocery shopping

Numerous studies have attempted to explain consumers' perceptions and the acceptance of online grocery shopping (Pavitt 1997; Eastlick and Lotz 1999; Mintel 1999; Christensen and Tedlow 2000; Morganosky and Cude 2000). The attitudes of existing online grocery shoppers (Morganosky and Cude 2000; Raijas 2002) and consumers' behavioural intentions to perform an online grocery purchase on the basis of their adoption have also been considered by Verhoef and Langerak (2001). Research in social psychology has shown that behaviour can be predicted by an individual's attitude and perception (Hui and Wan 2009). In other words, a consumer's perception of online grocery shopping needs to be understood to encourage a consumer's actual usage of online grocery shopping. Consumer's attitude towards online grocery shopping also needs to be explored to identify the behavioural intention. Furthermore, more recent studies have begun to employ several models and theories as one underlying framework for understanding behaviours of online grocery shoppers, such as the technology acceptance model (TAM) and the theory of planned behaviour (TPB). TAM serves as a valuable framework to the core psychological aspects associated with technology use, so this model is widely employed to predict an individual's intention when using a particular information system (IS) in technology adoption studies (Hui and Wan 2009). For example, Kurnia and Chien (2003) explored consumer perception of online grocery shopping in order to identify various factors affecting the acceptance using TAM. The research revealed that perceived usefulness and perceived ease of use of online grocery shopping have positive impacts on the attitude towards using online grocery shopping. Likewise, this attitude, in turn, influences behavioural intentions and actual usage. Ramus and Nielsen (2005) tested TPB (Ajzen 1985), which is one of the most widely used social psychology theories in analysing the relationships between attitude and behaviour, to investigate consumers' perceptions about internet grocery shopping: why people use or abstain from using the internet for shopping groceries. Hansen (2004) has also mentioned that TPB is a well suited theory to investigate and predict consumer online grocery purchase intentions.

A summary of existing studies concerned with consumers' perceptions, attitudes and behaviour towards online grocery shopping is presented in Table 2.2. Like the pattern found in the previous table, online survey is the preferred method in online market focused studies. As the data collection methods, qualitative research, namely focus groups and in-depth interviews are frequently employed because the use of focus groups is highly recommended amongst others for understanding perceptions, preferences, and behaviour (Morgan 1998; Malhotra 1999). For example, Ramus and Nielson (2005) established seven focus groups in order to uncover beliefs, underlying attitude, subjective norm and perceived behavioural control for online grocery shopping. Seven focus groups were established in Denmark and England with regard to the level of development in internet commerce: the former is the country which is not yet very advanced in an online grocery sector (Rasmussen 2000) and the latter is the leader in Europe (White and Daniel 2004). This diversification of respondents was chosen to capture a broad range of the consumer beliefs that predict intentions to buy groceries online or not. As regards the analysis of the data, discriminant analysis is used to determine the class of an observation on the basis of a set of variables known as predictors or input variables and structural equation modelling (SEM) is employed to reveal relations.

Table 2.2 Existing studies: consumers' perceptions, attitudes and behaviour towards online grocery shopping

Sources	Aim	Methods and Techniques
Alba et al. (1997)	The implications of electronic shopping for consumers, retailers and manufacturers	
Degeratu et al. (2000)	Consumer choice behaviour in online and traditional supermarkets: the impact of brand name, price and other attributes	A randomised experiment Two-stage choice modelling (Binary probit model and multinomial logit model)
Eastlick and Lotz (1999)	Identifying personal characteristics, shopping patterns, and attitudes of potential innovators and non-adopters of an interactive electronic shopping innovation	Mail survey Principal components factor analysis Regression analysis MANOVA
Hansen (2005a)	Whether consumers who have adopted online grocery buying perceive this innovation differently	Online survey Exploratory factor analysis SEM Multiple discriminant analysis
Hansen (2006)	What factors determine repeat buying behaviour of already experienced online grocery consumers (Integrated TAM)	Online survey SEM
Hansen et al. (2004)	Test the ability of tow consumer theories (TRA and TPB) in predicting consumer online grocery buying intention	Online survey Exploratory factor analysis SEM
Hui and Wan (2009)	Consumer intention to use of online grocery shopping services (TAM)	Questionnaire Contingency analysis Factor analysis Discriminant analysis
Kurnia and Chien (2003)	Grocery consumers' perception of online grocery shopping (TAM)	Online survey MRA Pearson correlation Point-Biserial correlation
Ramus and Nielsen (2005)	Consumers' intentions either to use or not to use the internet for shopping groceries (TPB)	Qualitative research (focus groups and in-depth interviews) Exploratory methodology
Riley et al. (2007)	The role of situational variables in the adoption process of online grocery shopping	Qualitative research (focus groups) and then postal survey Cluster analysis
Shih (2004)	Consumer acceptance of electronic-shopping (TRA and TAM)	Survey MRA

2.3.3 Consumer's determinant factors when choosing grocery shopping channel

Existing consumer researches have investigated the factors affecting consumer decisions of online channel to shop for groceries. Primarily, the reasons for buying online are hatred of grocery shopping or grocery stores, an inability to avoid impulse buying, and the fact that the respondents do not like queuing (Morganosky and Cude, 2000). As the other reasons, wider selection of retailers, unlimited opening hours, ease of comparing product and price offerings are enumerated. Nevertheless, the most important reasons to purchase groceries online are convenience-related, such as the ability to shop from home, have products delivered and shop at any time, and time saving (Morganosky and Cude 2000; Corbett 2001; Verhoef and Langerak 2001; Raijas 2002; Tanskanen et al. 2002; Ramus and Nielsen 2005). That is, it can be said that the combination of easy internet ordering and home delivery has enough appeal to the consumers who demand convenience (Grunert and Ramus 2005). Moreover, this fulfilment will make the internet a profitable and complementary market channel (Lim et al. 2009).

Wilson-Jeanselmen and Reynolds (2006) investigated shoppers who have never used the internet to buy groceries, in order to understand the strategies required to acquire shoppers. They focused their study on consumers' perceptions and expectations of online grocery buying rather than actual experience. According to their findings, the two main determinant attributes for offline shoppers to shop online are ordering time and quality. This could be due to a fear of spending too much time placing an order whilst not being familiar with the websites and a fear of not getting a quality as good as that which might be personally selected by them. Therefore, quick and easy purchase process especially for a first time buyer and ensuring that best quality items are provided would improve the customer acquisition rate.

A further issue within consumer choice behaviour is that limited empirical research has been conducted into the effects of situational factors on consumer's channel choice (Raijas and Tuunainen 2001; Verhoef and Langerak 2001; Huang and Oppewal 2006). Hand et al. (2009) found that situational factors and lifestyle changes were emerged as the key triggers for the adoption of e-grocery shopping (Anckar et al. 2002; Riley et al.

2007). Another approach was made by Morganosky and Cude (2000) to look specifically at the reasons for consumers to shop online in the grocery area. They noted that convenience was a particularly relevant motive when there were situational constraints, such as ill health or the presence of small children in the household. This suggests that situational factors driven by erratic circumstances rather than by a cognitive decision may be important in shaping and reinforcing online shopping motivations.

Although situational factors appeared to be important triggers for starting online grocery shopping, these are easily reversed when the situation changes and the initial trigger disappears. Also, if consumers have negative experiences with the quality of service, such as unsatisfactory deliveries and incorrect orders, the frequency of online shopping for groceries would be diminished or discontinued (Hand et al. 2009). Other worries which can be raised by consumers pertaining to the service issue include bad picking and packing of goods, and perishables being too near to sell-by-dates or not being kept properly chilled in delivery vans.

The existing studies which have focused on the various factors affecting consumer's shopping channel choice behaviour for groceries are grouped in Table 2.3.

Table 2.3 Existing studies: various factors affecting consumer's online grocery shopping choice

Sources	Aim	Methods and Techniques	Influencing Factors
Alba et al. (1997)	The implications of electronic shopping for consumers, retailers and manufacturers		
Anckar et al. (2002)	Identifying different ways to create customer value in online grocery shopping	Case study	Necessity (the elderly and disabled customers)
Grunert and Ramus (2005)	Review the factors that impact on consumers' possibility to buy food via the internet (Combination of TPB and the lifestyle construct)	Literature review	Type of product bought Convenience
Huang and Oppewal (2006)	Consumers' grocery shopping channel choice affected by situational factors	Survey MRA Principal components analysis	Time saving
Hui and Wan (2009)	Consumer intention to use of online grocery shopping services (TAM)	Questionnaire Contingency analysis Factor analysis Discriminant analysis	Convenience Time saving
Morganosky and Cude (2000)	Consumer response to and demand for online grocery shopping services	Survey Exploratory study	Convenience Time saving
Raijas (2002)	The consumer benefits of the electronic grocery store service and problems when they shop groceries online	Integrated method	Time saving Shopping convenience
Raijas and Tuunainen (2001)	The critical factors influencing the shopping channel choice for groceries	Survey Integrated method	Time saving Trust
Ramus and Nielsen (2005)	Consumers' intentions to either use or not use the internet for shopping groceries	Qualitative research Exploratory methodology	Convenience Product range Price
Riley et al. (2007)	The role of situational variables in the adoption process of online grocery shopping	Postal survey Cluster analysis ANOVA	No reason Health Kids
Verhoef and Langerak (2001)	Possible determinants of consumers' adoption of electronic grocery shopping	Questionnaire SEM Multi-group analysis	Perceived convenience

The data collecting methods and analytical techniques utilised in each study are different according to their aims. For instance, Raijas and Tuunainen (2001) employ the integrated research method to reveal consumers' online purchasing behaviour. They gathered data through the questionnaires concerning customer experiences with online grocery shopping in the check-outs and shortly interviewed to observing customers. Additionally, some qualitative data consisting of the in-depth interviews of the online grocery retailer was collected for better understanding. Regarding analytical methods used in studies, Huang and Oppewal (2006) applied multiple regression to test a hypothesis if the choice of purchasing groceries between online and in-store depends on the four situational factors (purpose of the trip, time available for shopping, delivery charge and travel time to a physical store) and the relationships were presented in the conceptual model. A principal components analysis was conducted on the item ratings to establish the convergent and divergent validity of the mediating constructs. Also, cluster analysis is used to categorise the whole sample of consumers in accordance with their features and ANOVA is applied to compare groups of consumers.

2.4 The Factors Distinguishing Online Shopping from General Service Environments

2.4.1 Availability of wider range of information

In the electronic environment, consumers' shopping experiences are influenced heavily by the information presented on a retailer's web site since sensory attributes, such as direct visual inspection and handling of products are limited on the internet. Unlike other category of goods, e-grocers' web sites especially need to deliver quality of full information about their products, such as nutritional quality, origin of produce, product specific information, brand assortment, and meal solutions for special needs (Lim et al. 2009) because this detailed information can aid consumer's judgement on intangible or invisible qualities as proxies that mitigate the absence of sensory examination (Grunert and Ramus, 2005). Although physical intangibility may increase consumers' perceived risks in online purchasing (Laroche et al. 2005), it is true that internet channels potentially provide better information compared to traditional retailing channels and

effectively presented product information are expected to lead consumers to make better decisions.

Comparing products and prices can be much easier on the internet without physical movements between shops or between shelves in a shop although it depends on the logical capabilities of the system. Moreover, greater transparency is provided by the use of comparison web sites. With comparison results, consumers can further get the reviews, which are one of the popular measures consumers use as outside sources of information in their purchase decisions (Kuksov and Xie 2008), from those who have already experienced. Therefore, internet providers combining convenience with an emphasis on information intensive products may have the best case for consumers.

2.4.2 More interactive and personalised environment

Traditional food retailing has a large amount of information being generated during transactions by the scanner technology, but personal information has been mostly limited even though some retailers have tried to use more this information combining the sale transaction data with personal data based on the use of loyalty cards (Grunert and Ramus, 2005). On the contrary, online transactions automatically enable to create person-related data so online grocery sellers are able to provide a number of tailored services to individual customers, like automatic reordering, retention of information about customers' preferred brands and customised information on special offers (Dorgan 1997; Corbett 2001). Such services would provide extra benefits, such as enhanced efficiency when placing an order, to consumers (Wilson-Jeanselmen and Reynolds 2006). In addition, creating customised service can boost customers' perceived relative advantages in the self-service environment. For example, e-grocers allow customers to cancel their order online and permit customers to check the status of their orders online.

Some studies identify that personalisation and customisation of product or information creates web site stickiness which is a crucial feature facilitating repeat transactions (Zott et al. 2000). Stickiness can be gained through virtual communities like online

communities and social networks (Wang et al. 2002; Wang and Fesenmaier 2004; Chaffey and Smith 2008). Communications between customers and retailers can be established on either retailers' own web sites or an independent community and via e-mail like an online newsletter. Communities such as discussion board and chat rooms allow customers to stay close each other and a chance to give their concerns and views of products. As an example of interaction with customers, Sainsbury's launched a Facebook site in spring 2009, featuring various recipes, videos and user comments (Mintel 2009b). The online newsletter includes a list of suggested items based on earlier shopping patterns, relevant special offers, information and money-off coupons.

2.4.3 Security and privacy issues

The purchase itself involves checking products out at the supermarket till or finalising the shopping basket with an internet seller. It is the same in both physical activities involved but differs in terms of payment: the latter shows consumers' involvement with payment security when buying via the internet (Gritzalis and Gritzalis 2001; Kolsaker and Payne 2002; Liebermann and Stashevsky 2002). Many researchers tried to examine the importance of security and privacy to online shopping users. According to the Mintel report in 2009, two in five UK internet users are 'often', 'largely' affected by security concerns when purchasing on the web. Another study by Wang et al. (1998) supports these findings showing that online consumers are worried about protecting their private information from spam, usage tracking and data collection, and the sharing of information with third parties.

Security issues include the transfer of personal and financial information, such as addresses, telephone numbers and credit card numbers, to electronic commerce outlets (Branscum 2000; Belanger et al. 2002) so that these are thought to be the major reason why consumers emphasise security when deciding whether or not to buy online (Keh and Shieh 2001; Grunert and Ramus 2005). Similarly, Green et al. (1998) found that the biggest obstacle preventing consumers from using websites above the issues of cost and ease of use was privacy. Another privacy concern is related to the use of online consumer demographic and taste-related data. Online stores gather this information and

can use it to target customers, whereas from the customer's point of view, many are not willing to trade convenience for privacy (Keh and Shieh 2001). Unlike previous studies, Sonia (2004) has asserted that consumers today have fewer security concerns and are willing to complete financial transactions over the internet, as evidenced by the growth in other spheres like online banking. According to KPMG's Consumer & Convergence report (KPMG 2011), consumers are increasingly willing to allow their online usage patterns and personal profile information to be tracked by advertisers, if it results in lower cost or free content. In a case of grocery sector, the findings by Morganosky and Cude (2000) also confirm that convenience surpasses perceived risk once consumers have experienced online grocery shopping. Nonetheless, Chaffey and Smith (2008) conclude that customers still value their privacy and expect their privacy to be protected. Besides, consumers want transparency in handling data security and they want third parties to certify this security (KPMG 2011). Therefore, grocery retailers need to take this concern seriously.

2.4.4 Delivery

One of the big advantages of online shopping is that the shopper does not need to undertake the delivery themselves. It is true that home delivery significantly reduces the amount of time spent on grocery shopping, which is a very important aspect for the time starved. Furthermore, this service is likely to make shopping more bearable for those who dislike grocery shopping (Smaros and Holmstrom 2000) and namely consumers with mobility problems and physical disabilities (Cude and Morganosky 2000; Hays et al. 2004; Somerville et al. 2006). Although online shopping allows for convenience, possible barriers for the successful transition from traditional to online grocery shopping may include the wait between times of order to delivery. Meanwhile, Tesco seems to overcome this barrier as enabling customers to view delivery slots and choose a convenient time for delivery ahead to a shopping. That is, previewing of delivery slots allows them not only to choose a time before beginning a shop, but also to get products accurately at a time of their choosing (IDM 2003).

According to Kamarainen et al. (2001), consumer prices in e-grocery shopping are often estimated as higher than in traditional supermarkets. It is assumed that these high prices result from the e-grocery home delivery operation which must deal with different preservation temperature requirements, tight order-to-delivery lead times and delivery time windows (Punakivi and Saranen 2001). Therefore, the expensive refrigerated delivery systems to enhance the quality of products may require a minimum level of customers per region in order for such systems to be economically feasible (Grunert and Ramus, 2005). However, Punakivi and Saranen (2001) found that an e-grocery delivery service can actually be as much as 43 per cent cheaper compared to the current costs of a household customer visiting the store using their own car and spare time.

2.5 Usability and Readability of Websites

2.5.1 User friendly web site

Customer experience is one of the well-known critical factors for the success of e-commerce (Fang and Salvendy 2003). A web-site itself has an effect on customers' online shopping experiences. For example, the technical constraints involved in online shopping include waiting times while downloading, incompatibilities of software and hardware, and complex procedures (Elliot and Fowell 2000; Grunert and Ramus 2005). These technical limits not only make customers feel annoyed but also cause the dissatisfying online experiences (Keh and Shieh 2001). Conversely, a user friendly web site generates pleasurable attributes like satisfactory and enjoyable experiences by providing quality content, ease of navigation, regularly updated information, security, useful links, and desirable interfaces. The findings from previous studies (Fram and Grady 1995; Eighmey and McCord 1998; Ernst and Young 1999) support this statement that when the retailing sites offer fast presentations, uncluttered screens and simple search paths, consumers perceive online shopping more favourably. That is, such web sites enhance attitudes toward online shopping, online purchase intentions and the level of satisfactions with customers' shopping experiences (Liu and Arnett 2000; Szymanski and Hise 2000; Yoo and Donthu 2001). In particular, a user-friendly web interface of an e-grocer's web site will be a more important factor for customers in evaluating their

online shopping experiences compared to other categories of online shopping due to the high frequency and repeated routine of grocery shopping (Lim et al. 2009).

A well-designed application, furthermore, leads customers to complete shopping actions efficiently (Manes 1997; Chaffey and Smith 2008; Dhamija and Dusseault 2008). That is, as well as economising on shopping time (Pastrick 1997), it could reduce the possibility that the final users misunderstand security notifications (Cranor 2003; Johnston et al. 2003; Yurcik et al. 2003). To sum up, effective design of web sites is essential in order to generate positive customer experiences in the computer-mediated environment (Yoo and Donthu 2001; Wolfinbargar and Gilly 2003; Lim et al. 2009).

2.5.2 Ease of use

Usability is a concept applied to the design of a range of products which describe how easy they are to use. The British Standard Institution (1999) defines usability as the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. Chaffey and Smith (2008) have suggested that usability and accessibility are two key approaches for an effective web site design and ease of use is number two of the key factors that make customers return to web sites. In terms of web site, easy-to-use means good navigation. Therefore, to achieve ease of use, firstly, it needs to be structured for customers to easily be able to navigate. Here, the structure and navigation of web site should be ensured two things: first, all sections of the web site are easily accessible and enable to flow smoothly for site visitors, and second, visitors enjoy the satisfying experience of finding what they want. That is, high-quality web site design can enhance online customers' shopping experiences by increasing navigability and ease of use. Secondly, suitable page layout is necessary to make easy for customers to find information on the page. To get the best results, it is important that the layout keeps simple, consistent and clearly signposted. Thirdly, the right types and amounts of interactivity are needed.

There are some studies which have recognised the relationship between the quality of the web site and consumers' purchase intentions. For example, Belanger et al. (2002) express that a pleasurable online experience and convenience features by good interface web design influence consumer willingness to make online purchases. Also, perceptions of consumers' shopping experiences on the internet can be enhanced by ease to use of a retailer's web site (Yoo and Donthu 2001). Therefore, they hypothesised that convenience and ease of use features will be more important to consumers rather than online security and privacy issues which are generally concerned as the most important. Then, they found that having a satisfying and pleasurable experience drives purchase intentions regardless of privacy and security concerns. That is, consumers who intend to purchase decided to do on the web means that they have already controlled any discomfort or distrust feelings caused by privacy and security concerns although they might express a desire for security and privacy before making a final decision to purchase. Consequently, the findings provide further support for the importance of web site attributes (reputation and convenience) above and beyond privacy and security concerns.

2.5.3 Interactivity of web site

Interactivity refers to the ability of websites to generate outputs based on customer queries and searches (Shankar et al. 2003). A well designed interactive website could provide greater involvement and control over customers' web experiences and, in turn, generate higher satisfaction. Good customer engagement reinforces customers' pleasure and convenience of shopping experiences which is an important component of customer satisfaction (Marmorstein et al. 1992). That is, appropriate interactions add satisfaction, value and flow to the web site. They also help customers not only learn about features, benefits and choose products but also enjoy better post-purchase service. Thus, Chaffey and Smith (2008) insist that this feature is worth considering.

In the electronic marketplace, a physical interaction between a customer and a company is restricted. Nonetheless, online customers can receive various forms of interactive support from an e-retailer through a call centre or an electronic form to submit an

inquiry (Lim and Dubinsky 2004). Lim et al. (2009) demonstrate that quality of interface design facilitates customers' online orderings reducing complexity. The better web sites offer customers more navigation features to be interacted with company's web site. These features can include recipe-related links for grocery products: linking ingredients of a recipe directly to a customer's shopping cart.

2.6 Degree of Support

Each customer's geographic, demographic and psychographic segment and the proportion of customers who use various digital channels are needed to be identified (Chaffey and Smith 2008). For instance, Ramus and Nielsen (2005) have profiled internet shoppers, mainly with regard to the demographic and psychographic criteria. Hiser et al. (1999) also found the relationship between demographic characteristics and the usage of online grocery service. Morganosky and Cude (2000) used chi-square analysis in order to identify variables significantly related to the descriptors of the survey participant's online grocery shopping and demographic characteristics of them. As a further issue within this context, recognising and meeting the needs of different customer groups, for example, special services for the aged and disabled can be important.

2.7 Direct Marketing

2.7.1 Definition of direct marketing

Many researches focused on direct marketing have presented a more unified opinion about the definition using the DMA (1991) version.

"Direct marketing is an interactive system of marketing which uses one or more advertising media to affect a measurable response and/or transaction at any location."

According to Hoekstra and Schijns (1996), several problems with this definition can be arisen. First, defining direct marketing as an interactive system of marketing does not distinguish direct marketing from general advertising because advertising and sales

promotions are also interactive. Second, ‘measurability’ is not a specific characteristic of direct marketing. Consumer reactions to advertising or sales promotions can be measured in terms of recognition or purchase behaviour, respectively. That is, measurability can be a distinguishable feature of direct marketing only when measuring response at the individual level by use of direct response (Hoekstra and Raaijmaakers 1991; Bauer and Miglautsch 1992). Finally, the indication of 'at any location' does not distinguish direct marketing from direct selling and telemarketing (Bauer and Miglautsch 1992).

Meanwhile, there are some studies emphasising the role of customer databases within direct marketing. For example, Tapp (2008) has defined direct marketing as a method of marketing based on individual customer records held on a database. Hoke (1982) also states that a database of a customer file must exist for direct marketing because these customer records are used for marketing analysis, planning, implementation of programmes, and control of all activities that are often described in terms of directed marketing, relationship marketing and interactive marketing (Tapp 2008).

Scovotti and Spiller (2006) have proposed the following conceptual definition of direct marketing:

“Direct marketing is a database-driven process of directly communicating with targeted customers or prospects using any medium to obtain a measurable response or transaction via one or multiple channels.”

This definition incorporates the key elements found throughout their research: database, interactivity, direct communication, target customers, any medium, response generation, and multiple channels. This definition encompasses not only what direct marketing is but also what makes it unique.

2.7.2 Features of direct marketing

There are some distinctive differences from the mass marketing or other marketing disciplines. In comparing with general marketing, firstly, an advantage of a direct

marketing framework is that of the use of a database focused on customers rather than products. Therefore, direct marketing is better to understand customers as individuals in more detail than to build product brands (Peppers and Rogers 1993). For example, if direct marketers measure marketing effort, they will analyse behaviour using their database in order to predict the best responding people and the best offers to make.

Secondly, direct marketing has the aim of attracting a direct response. Direct marketing focuses on using a database to communicate and sometimes distribute directly to customers through addressable and one-to-one media. For example, general marketers tend to use mass media to build brands and use sales promotions in the retail environment. In contrast, direct marketers use personal media such as direct mail and telemarketing when developing a relationship with existing customers although they also sometimes use some mass media when addressing new prospects, in order to get a response.

Tapp (2008) expresses that direct communication and direct distribution are the most distinctive features of direct marketing. In practice, direct marketing is often considered as being an instrument for communication (Hoekstra and Schijns, 1996). At this point, the discipline of direct marketing needs to be cleared that direct marketing began in mail order which is primarily a method of distribution rather than communication. Therefore, direct marketing can be characterised that its systems perform an additional role as coordinator of communications based on databases, but the main aim is that of getting response.

Thirdly, the investment in direct marketing is often more expensive than general marketing as dealing with a closer relationship with the customer. This relationship is normally accomplished by following few steps. First, individual customer information is collected and then subsequent precision and control in customer contact are completed. As a relationship develops, the number of interactions may rise: a customer may increase the frequency of purchase and may also buy a larger number of products. The relationship can be very stable in terms of frequency and intensity of contacts, but too many contacts such as mailings may irritate the customer and deteriorate the quality

and intensity of the relationship. Hence, the number of interactions should be controlled according to the customer's willingness to accept messages (Tapp 2008).

Briefly, the key to modern direct marketing is the capture of individual customer details at the first sale, so that the marketer can begin a relationship with that customer, subsequently treating them differently over time in order to generate repeat business (Tapp 2008). However, direct marketing in its fullest sense will be happened only when the customer’s name, address and details are taken and the subsequent marketing to them changes a result.

2.8 Digital Marketing

2.8.1 Digital marketing and multi-channel communications

Digital marketing involves applying digital technologies as the access platforms and communication tools to build and develop relationships with customers. The access platforms or hardware include PCs, PDAs, mobile phones and interactive digital TV, and these deliver content and enable interaction through different online communication tools, such as organisation web sites, portals, search engines, blogs, e-mail, instant messaging and text messaging (Chaffey and Smith 2008).

While digital marketing is effective using one channel, it is much more successful when it is combined with other communication channels, such as phone, direct mail or face-to-face (Chaffey and Smith, 2008). For example, if a company is trying to promote a new product release, they could send an email message or text individually. This could yield positive results. However, if this is integrated with multiple channels, the marketing results could be exponentially improved.

2.8.2 Features of digital marketing

There is increasing recognition of the potential of interactive media by many service companies because not only are the numbers of online and internet service users soaring, but also the majority of customers tend to be young, well-educated, and richer than average which are perceived as good marketing targets (Kierzkowski et al. 1996).

Digital marketing enhances the unique and powerful characteristics of interactive media: consumers can be identified and targeted separately. In other words, tailored services and content for each individual customer are generated and delivered real time (Wind and Mahajan 2000). Digital marketing also allows for personalised two-way dialogue in which information is shared between customer and firm: each individual customer does not receive pushed information but pulls information, and even helps create the information they need. For example, Amazon.com allows customers the chance to search for titles quickly and to post their own reviews on the site (Tapp 2008). This two-way communication can include complaints, guarantees, terms of refund and returned goods.

Several broad types of attractive digital marketing opportunities are identified by Parsons et al. (1998) and Chaffey and Smith (2008). First, interactive media provide better service at lower cost by delivering information about a product or services. UPS, FedEx and Sun Computers, for example, use an internet based service to allow customers to track the whereabouts of their packages. Second, interactive media build relationships with online consumers and can be used to identify attractive self-selected users or prospects. Additionally, it can develop customer loyalty by providing value-added services like reward schemes and customise their offerings. Third, marketers can use interactive media as a new channel: either eliminate traditional intermediaries and go direct or establish an entirely new role as a value-added intermediary. For instance, airlines are increasingly bypassing travel agents to sell tickets so saving significant commission costs (Kierzkowski et al. 1996). In general, digital marketing is applicable to much more consumer products or services in any categories building relationships one consumer at a time (Parsons et al. 1998). For example, some categories of products or services, such as travel, software and selected groceries, are natural fit with

interactive media because not only they are information intensive but also transactions can be made online.

2.8.3 Forms of digital marketing

Digital marketing utilises multiple channels of delivery accompanied with the use of both push and pull digital marketing techniques (Wetzel 2008). Pull digital marketing technologies involve the visitors and potential customers coming to seek information about products and/or services and directly pulling the specific content via web search. These are typically located in web based medium or web page and specifically linked through URL to display the content. There are no restrictions on content, no opt-in requirements and low technology requirements for the company. However, there is a weakness in the content that of no personalisation to keep the visitors coming back: if customers have found related information on other websites, they would directly move to a referring website to find the information. Therefore, marketing is required.

Meanwhile, push digital marketing technologies involve both the marketer and recipients using techniques like E-mail, SMS or an RSS feed. The marketer pushes information about the latest product and service to the subscribers in order for the message to be received or viewed digitally. These messages can be personalised and targeted. Consequently, push digital marketing shows high conversation rate and detailed tracking of customer choices. However, it requires Can Spam Act 2003 compliance most customers must opt-in, can be blocked, simply opt-out, and requires delivery technology (Wetzel 2008). Although digital marketing is divided into two types of forms, both of these are used to deliver messages and information about products and services to customers, along with any others who submit inquiries. That is, digital marketing can be implied as the combination of push and pull communications (Reitzin 2007; Chaffey and Smith 2008).

2.8.4 Digital marketing strategy

Parsons et al. (1998), Werthner and Klein (1999) and Gretzel et al. (2000) suggest that marketers must build a new model for marketing in the new media environments. They selected five interrelated factors which are essential for successful digital marketing strategies: attract, engage, retain, learn and relate. Firstly, unlike direct and traditional mass marketing, digital marketing requires consumers to voluntarily visit an interactive application, such as a web site. Therefore, marketers need to actively attract users in the first place. Secondly, marketers should engage user's interest and participation to achieve an interaction or a transaction providing content that is valuable to them. Thirdly, once consumers are drawn to the web site in the first place and then have engaged with suitably interactive and valued content, it is important that marketers keep consumers return to their web site over time because maintaining on-going contact is essential to develop relationships with consumers. Retaining users emphasise the content of web site for marketers to be freshly renewed on an on-going basis. Thus, marketers need to recognise the requirement for digital marketing which is continued resource commitments over time. Fourthly, interactive media offers the opportunities for marketers to learn about consumers' demographics, attitudes, and behaviours from different sources. Demographic and attitudinal information can be collected from the form of e-mail communications or registration processes or questionnaires. Behavioural information may be gathered from transaction records. The critical focus here is that marketers need to define what type of information may be most valuable and worth to them. Finally, relating is one of the most important value creation opportunities of digital marketing. Interactive media not only provides opportunities for the markets to relate to a consumer but also delivers value through personalised communication and real time interactions.

Overall, digital marketing should be the business that supports the activities aimed at gaining new customers and maintaining relationships with existing customers within a multi-channel buying process and customer lifecycle. Retention is achieved through improving the customer knowledge of their profiles, behaviour, value and loyalty drivers, then delivering integrated, targeted communications and online services that match their individual needs. To achieve these objectives, online channels must be used

to support the whole buying process from pre-sale to post-sale and further development of customer relationships, particularly covering customer acquisition, conversion and retention separately (Reitzin 2007; Chaffey and Smith 2008).

2.9 Social Media Marketing

The impact of social networks on media consumption has shown the most dramatic trend since the growth of the web itself. That is, growth rates of the worldwide usage and growth of the popularity of social network sites have generated the huge volumes of web traffic (Kim et al. 2010). This change in media consumption has major implications for how advertisers reach and target these consumers who are now spending less time within mainstream media sites or channels (Chaffey and Smith 2008).

Social networking websites, such as MySpace, Facebook and twitter, involve participation and sharing of information between different applications. In other words, the primary objectives of social web sites are to enable the formation of online communities through the free services of such sites, interactions among members of such communities in order to stay connected online with their offline friends and new online acquaintances, and the sharing of user-created contents, such as photos, videos and blogs (Stroud 2008; Kim et al. 2010). Therefore, it can be said that to socialise and share experiences is the real factors behind the success of social networks. In addition, social networking is the place where people express their opinions, discuss and hear the viewpoints of others although customers' value reviews, such as electronics products, a fashion brand or a business service, are comprised a large proportion. Chaffey and Smith (2008) reinforce the importance of these discussions for marketers to monitor both positive and negative comments about their products and shape their actions accordingly. The remarkable features of social networks are that they are driven by their members through the on-going levels of activity that determine the site's continuing success. The website owner establishes the style of the network, provides the functionality, creates content and sets the rules. Also, social networks are the individual's profile-centric sites. That is, the personal details' database of the members is possessed at their core (Stroud 2008).

With the tremendous increase in social networks, social web sites have become a powerful additional means that businesses can use to market their products and services, and manage customer relationships (Zezima 2007; Higgins 2009; Rosen 2009). Therefore, companies throughout the world are making the increasable use of social media, especially for marketing purposes (Thomas 2011). Like individual users, businesses maintain profiles on most social web sites free of charge although they may need an appropriate level of investment to look contents professionally in their social networks (Kim et al. 2010). In addition, many businesses now advertise their products within social networks either through buying advertisement space or more interestingly creating brand space and channels that enable consumers to interact with or promote a brand (Microsoft 2007). Hence, customers can be engaged more closely through the targeted advertising and marketing campaigns developed (Thomas 2011). Communications between users and access to information are sometimes restricted to only members, but companies are starting to create more open and accessible platforms, allowing personal data to be shared with other networks and making it easier to interface with other web service providers. For example, e-bay is talking with both Facebook and MySpace about making it easier for their members to access the auction site (Stroud 2008). Moreover, social media strategies are becoming more integrated using Facebook and Twitter in conjunction with other social media channels, notably YouTube and corporate blogs. Particularly, Twitter is most often used to provide company news and updates, customer service and to offer deals to customers (Celentano 2012). For instance, the Whole foods company has also dedicated Twitter accounts to help customers with questions about recipes, wine and cheese. In short, as having the social web site, consumers can get better and faster information for the shopping and brand experience, such as the sharing of ideas, coupons, reviews and recommendations whilst retailers can listen to the consumer and respond to the consumer demand (Celentano 2012).

2.10 M-commerce

Mobile commerce (m-commerce) is a type of e-commerce conducted through mobile devices such as mobile phones, personal digital assistants and other mobile devices with a wireless connection including smartphones (iPhones, Google Android), tablets (iPad, Amazon Kindle), netbooks and notebooks. The use of mobile marketing and m-commerce is becoming increasingly common due to reliance on mobile devices that perform important tasks; people use these devises from browsing the internet and shopping wherever there is network access to keep up with friends on social networks (KPMG 2011; BusinessLink n.d).

M-commerce allows customers to complete online transactions via mobile devices and mobile marketing which is a practice allows marketers to extend their online reach so that they can interact with not only existing customers but also potential customers using a mobile device or network. As the main mobile marketing tools, mobile web, mobile applications or 'apps', mobile advertising and SMS or MMS messages are used (BusinessLink n.d). In addition, with mobile marketing, rich multimedia messages combing text, picture, audio and video clips and streaming video can be triggered to connect with potential customers. Therefore, this new mobile technology will play a huge role in shopping in the future. Already major retailers have launched mobile apps for grocery shopping. For example, Tesco and Ocado have embraced m-commerce to improve the customer experience of online grocery shopping through enhanced convenience such as barcode scanning, deal finders, shopping lists and loyalty scheme tie ins (Mintel 2011; Nielsen 2011). Other new areas, such as offering recipe ideas to consumers, providing assistance with nutrition tracking and weekly meal planners are also being introduced, as they look to engage and provide self-service options for consumers online using the mobile application.

To successfully exploit m-commerce, a unique mobile internet presence offering a quick and easy shopping experience for consumers, such as personalised shopping with products and discounts based on individual customer preference and previous online activity, will be needed. Also, content should be easy to read and simple to digest on

mobile devices because not only the speeds of internet connections are vastly different but also loading times can cause of losing customers' interests.

2.11 Summary

This chapter starts with a review of existing studies relevant to the context of service in general and online grocery shopping in the UK. The aim of this study is to develop a structural equation model of the determinants of repeat online grocery shopping behaviour. Therefore, it is necessary to investigate key constructs that affect repeat purchasing behaviour of online grocery shoppers. In order to identify various key factors, understanding their opinions of online grocery shopping is preferentially needed. With regard to this matter, this chapter discusses a review of existing studies related to consumers' opinions and influencing key factors. It also summarises different types of specific models employed in the previous literatures regarding online service context because this background helps to provide inspiration for proposing a conceptual framework. In addition, the factors that distinguish online shopping from general service environments are presented regarding availability of wider range of information, more interactive and personalised environment, security and privacy issues and delivery. Detailed descriptions of direct marketing and digital marketing on the basis of its definition and features are provided and specifically, social media marketing and m-commerce are explained in the end of the chapter.

Overall, this chapter provides a theoretical background of the major concepts that will be centred on the conceptual framework and hypotheses of the study in the following chapter.

Chapter 3 Model and Hypotheses

3.1 Introduction

This chapter presents the proposed model and the hypotheses developed for the study based on the literature review. Section 3.2 provides the theoretical background that underlies the hypothesised model of this study. A discussion of the development of the conceptual model for understanding consumer's repeat online grocery purchase behaviour is followed in Section 3.3. Then, the relationships of each hypothesis in the theoretical framework are explained in detail in Section 3.4. Finally, Section 3.5 provides a chapter summary.

3.2 Theoretical Approach

3.2.1 Theory of reasoned action and theory of planned behaviour

The theory of reasoned action (TRA) regards a consumer's attitude and subjective norm (SN) as determined by the consumer's behavioural intention (Chang, 1998; Fishbein and Ajzen, 1975). To put it simply, the theory predicts intention to perform behaviour by consumer's attitude towards that behaviour rather than by consumer's attitude towards a product or service. Also, a consumer's intention to perform certain behaviour may be influenced by the normative social beliefs held by the consumer (Hansen 2006). A consumer may be reluctant to buy groceries online if the consumer perceives the purchase process as too complex or if the consumer is lack of the information necessary to perform the considered behaviour. Such considerations are incorporated into the theory of planned behaviour (TPB) (Ajzen, 1985; 1991), which is an extension of the TRA (Fishbein and Ajzen, 1975). In comparison with TRA, TPB adds perceived behavioural control as a determinant of behavioural intention. Perceived behavioural control can be conceptualised as the consumer's subjective belief about how difficult it will be for that consumer to generate the behaviour in question (Posthuma and Dworkin, 2000). With respect to the concept of TRA and TPB, Hansen et al. (2004) tested the ability of those two consumer theories in predicting consumer online grocery buying

intention and they found that the TPB explained a higher proportion (more than 60%) of the variation in online grocery buying intention than TRA.

3.2.2 The technology acceptance model (TAM)

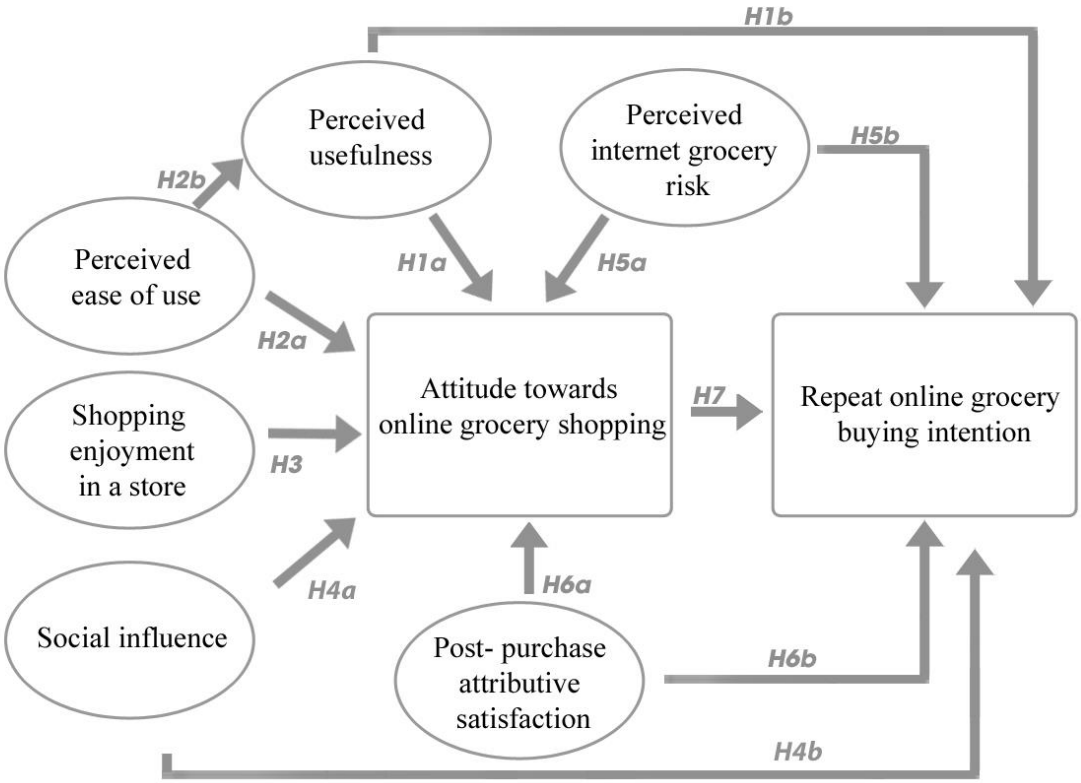
The technology acceptance model (TAM) developed by Davis (1989) based on the theory of reasoned action (TRA) (Ajzen and Fishbein 1975) is widely adopted to explain individuals' intentions and actual usage behaviours of a particular technology due to its strength in theoretical basis and empirical support (Sage and Zmud 1994). TAM proposes perceived usefulness and perceived ease of use as two important determinants for explaining attitude towards a technological innovation using intention. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" while perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989: p.320). Both perceived usefulness and perceived ease of use reflect the utilitarian or extrinsic aspects of IT usage because they are instrumental in achieving valued outcomes. To model the role of intrinsic motivation in the TAM, Davis et al. (1992) suggested a third belief called perceived enjoyment. Perceived enjoyment is defined as "the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated" (Davis et al. 1992: p.1113). That is, enjoyment reflects the hedonic or intrinsic aspects of IT usage.

3.3 Conceptual Model Framework

The primary system for customers to purchase products and services online is the web site, a form of information technology (IT) (Chiu et al. 2009). Accordingly, online shopping behaviour can be partially explained by the TAM. However, the use of web site rigorously differs from online purchasing, especially refer to repurchase intention (Tsai and Huang 2007). Therefore, the TAM needs to be modified and expanded by incorporating additional variables in order to adapt it to the online grocery shopping context and improve its explanatory power (Hu et al. 1999; Moon and Kim 2001; Liu and Wei 2003; Keen et al. 2004; Shih 2004). For example, in accordance with the recent

evidences based on a modification of the TAM approach, Liu and Wei (2003) found that perceived usefulness and perceived ease of use explained more than 50% of the consumers' intentions to adopt online shopping of books and banking services. Also, both perceived usefulness and perceived ease of use of the internet for shopping purposes have positive effects on consumers' attitudes towards online grocery shopping (Kurnia and Chien 2003; Hansen 2006). Consequently, to understand better the customers' repurchase behaviours, this study proposed a theoretical model that modifies and expands the TAM by incorporating four additional constructs, namely shopping enjoyment in a store, social influence, perceived internet grocery risk and the dimensions of post-purchase attributive satisfaction. Twelve hypothetical relationships between various constructs in Figure 3.1 were established and discussed as follows. Four hypotheses (H1a, H1b, H2a and H2b) are originated from the TAM.

Figure 3.1 A model for consumer's repeat online grocery purchase behaviour



3.4 Model Hypotheses

3.4.1 Perceived usefulness (pu)

Davis (1989) defines perceived usefulness as, "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989: p.320). The reason why online grocery shopping becomes convenience and time-saving (Kurnia and Chien, 2003) is that perceived usefulness of e-shopping is relevant to the perceived benefits, such as minimising cost, minimising time to receive product, maximising convenience, and minimising time spent during a transaction (Shih, 2004: p.357). That is, consumers seem to prefer evaluating the effectiveness of e-shopping based on its benefits and costs. Therefore, in this study, the revised perceived usefulness is measured in terms of two main important items, time and cost saving, and convenience rather than assessing the abstracted items of the original perceived usefulness. Specifically, time and cost saving include the measures of more cost effective shopping (Hansen, 2005a), ease of finding products and comparing prices (Huang and Oppewal, 2006; Ramus and Nielsen, 2005; Shih, 2004), and receiving web exclusive offers and new products details (Ramus and Nielsen, 2005). Meanwhile, convenience comprises the measures of convenient for personal circumstances in cases of elderly and disable people (Kurnia and Chien, 2003), less stressful shopping experience (Ramus and Nielsen, 2005), reduced physical effort (Hansen, 2006), and convenient facilities, such as automated shopping list of regular purchases or favourites (Kurnia and Chien, 2003).

Mathieson (1991) indicated that the original perceived usefulness (pu) from the TAM is positively correlated with user attitudes toward an information systems (IS) and its use. Since a website can be viewed as an IS and provides information to its users, if a website effectively assists consumers in completing transactions, they can easily accomplish online shopping (Shih 2004). Hence, perceived usefulness of e-shopping can be conceptualised as the degree to which online shopping will provide the consumer with some relative enhancements through the website in comparison with offline shopping (Al-Gahtani 2001; Chiu et al. 2009). Furthermore, according to Bhattacherjee (2001), an individual more tends to undertake continued usage when such usage is perceived to be useful. In other words, customers who have performed the shopping task in an efficient way will be more likely to manifest stronger repurchase intention

(Babin and Babin 2001). Prior research by Cyr et al. (2006) also shows that perceived usefulness has a significant effect on repeat grocery buying intention.

Hence, two hypotheses are formulated from the existing literature that concern the effect of perceived usefulness on attitudes (Mathieson 1991; Shih 2004)) and repeat online purchase intentions (Babin and Babin 2001; Cyr et al. 2006) as follows:

H1a. Perceived usefulness will positively affect attitude towards online grocery shopping.

H1b. Perceived usefulness will positively affect repeat online grocery buying intention.

3.4.2 Perceived ease of use (peuse)

E-shopping involves consumers and firms interacting via the internet so interactive processes of browsing, messaging and uploading/downloading data through the websites are necessary to be considered (Shih, 2004). Perceived ease of use (peuse) have an effect on entire IS/IT usage, but there are severe discrepancies between the ease of browsing the web and ease of e-trading (Chiu et al. 2009). Hence, in this study, perceive ease of use was conceptually divided into two parts: perceived ease of use of the web (peusew) and perceived ease of use of trading on-line (peuset). Firstly, consumers' experiences of using grocery shopping websites were focused and assessed adapting two items from Kurnia and Chien (2003) and Chiu et al. (2009): clear and understandable website layout and ease of becoming skilful. Secondly, three items, ease of following the procedures when ordering, easy payment via the internet and easy delivery arrangement, were adapted from Shih (2004) to measure ease of use of e-grocery shopping procedures.

In earlier, Davis (1989) found that perceived ease of use is positively correlated with system usage on the understanding that perceived usefulness is under control. Afterwards, Venkatesh and Davis (2000), Raijas (2002), Kurnia and Chien (2003), Odekerken-Schroder and Wetzels (2003) and Shih (2004), however, introduced the positive relationship between perceived ease of use and consumers' usage intentions.

Therefore, the hypothesis is formulated based on the previous literatures concerning the influence of perceived ease of use on attitude (Venkatesh and Davis 2000; Raijas 2002; Kurnia and Chien 2003; Odekerken-Schroder and Wetzels 2003; Shih 2004) as follows:

H2a. Perceived ease of use will positively affect attitude towards online grocery shopping.

Referring to the further issue of perceived ease of use, Davis et al. (1989) argued that improvements in ease of use may lead to increased performance and improved ease of use would have a direct effect on perceived usefulness and behavioural intention (Venkatesh and Davis 2000) That is, the improved model of TAM (Davis 1993) suggests that perceived usefulness is influenced by perceived ease of use because easy-to-use technology is more useful than hard-to-use technology, but not vice versa because useful technology may not be easy to use (Venkatesh and Davis 2000; Kurnia and Chien 2003). This relationship between perceived ease of use and perceived usefulness has been confirmed in a number of other studies (Davis et al. 1989; Davis 1993; Taylor and Todd 1995; Chau 1996) including in the context of online shopping (Devaraj et al. 2002; Gefen et al. 2003; Kurnia and Chien 2003; Pavlou 2003; Shih 2004). To exemplify, Chiu and Chang (2009) support that, all other things being equal, the TAM implies that an online shopping web site that is perceived to be easier to use is more likely to induce a perception of usefulness.

Thus, the hypothesis is established based on the existing studies that concern the relationship between perceived ease of use and perceived usefulness (Davis et al. 1989; Devaraj et al. 2002; Gefen et al. 2003; Kurnia and Chien 2003; Pavlou 2003; Shih 2004; Chiu et al. 2009) as follows:

H2b. Perceived ease of use will positively affect perceived usefulness.

3.4.3 Shopping enjoyment in a store (senjoy)

Drawing upon the TAM model, Childers et al. (2001) empirically demonstrate that research investigating consumer motivations for online shopping behaviour may benefit

from taking into account the hedonic aspects, such as shopping enjoyment, of the shopping experience along with the constructs of perceived usefulness and perceived ease of use that are more utilitarian. There are also some studies (Lee 2005; Ahn et al. 2007) which have modelled perceived usefulness and enjoyment as utilitarian and hedonic values respectively, and have linked them to customer attitude and behavioural intention towards online shopping.

According to Tauber (1972), consumers who consider in-store grocery shopping to be enjoyable derive personal and social values from visiting retail stores. For that reason, they have a tendency to regard the loss of shopping enjoyment as the chief limitation of electronic grocery shopping (Verhoef and Langerak 2001). Therefore, those consumers may be less likely to buy groceries online even if the internet may provide additional enjoyment, and may find online grocery shopping incompatible with their shopping behaviour and experience because of reduced opportunities to obtain some hedonic shopping attributes like sensory shopping (Jones 1999; Childers et al. 2001; Verhoef and Langerak 2001; Vijayasarathy 2002; Hansen 2006).

Hence, the hypothesis is conceptualised according to the studies that concern the negative effect of grocery shopping enjoyment in a store on attitude (Jones 1999; Childers et al. 2001; Vijayasarathy 2002; Hansen 2006) as follows:

H3. Grocery shopping enjoyment in a store will negatively affect attitude towards online grocery shopping.

In this study, grocery shopping enjoyment in a store is evaluated with six items, in terms of hedonic shopping obtaining fun and pleasure from Hansen (2006), physical examination of products and socialising means with others from Verhoef and Langerak (2001), spontaneous decisions in the shop from Ramus and Nielsen (2005), in order to identify whether it would affect a respondent's decision to use online grocery shopping.

3.4.4 Social influence (si)

According to the theory of planned behaviour (Ajzen 1985; 1991), a person's behavioural intention (BI) is affected by subjective norm (SN) concerning the behaviour. The effect of subjective norm on behavioural intention was also proposed by Davis et al. (1989) in accordance with the extended TAM. Subjective norms, which reflect the perceived opinions of referent others that are a person or group whose beliefs may be important to the individual, are then affected by normative beliefs and motivations to comply (Ajzen 1985). A normative belief is the individual's perception of a referent other's opinion about the individual's performance of the behaviour. Motivation to comply is the extent to which the person wants to comply with the wishes of the referent other (Mathieson 1991). Therefore, recommendations and experiences of referent others are most often mentioned as the triggering factor to perform the behaviour (Hansen et al. 2004). Also, according to the report of Ramus and Nielsen (2005), online shoppers had recommended or even had tried to persuade family, friends or colleagues to experience internet shopping. Meanwhile, negative opinions held by online shoppers are more often motivated by personal experience and experiences of referent individuals. Consequently, this relationship can be conceptualised in the context of online grocery shopping; if referent others believe that online grocery shopping is useful, a person might agree and accept their belief and in turn establish an intention to use it. In this study, the effect of the subjective norm was assessed in a construct named social influence (si) and two hypotheses are derived from the existing literature that consider the effect of social influence on attitudes (Mathieson 1991; Kurnia and Chien 2003; Hansen et al. 2004) and repeat online purchase intentions (Ajzen 1985; Davis 1989; Ajzen 1991) as follows.

H4a. Social influence will positively affect attitude towards online grocery shopping.

H4b. Social influence will positively affect repeat online grocery buying intention.

Based on these hypotheses, social influence is measured using four items. These measures can be summarised in terms of two main features developed by Kurnia and Chien (2003) and Ramus and Nielsen (2005) respectively: the influences with respect to

the uses of referent others and the evaluations of the friends/family on using online grocery shopping.

3.4.5 Perceived internet grocery risk (prisk)

Previous researches (Van den Poel and Leunis 1999; Miyazaki and Fernandez 2001) indicate that consumers are more likely to consider risks when accepting online channel than offline (Hsiao, 2003; Olivero and Lunt, 2004). The higher perceived online risk is often deemed to be caused by the unexpected and potentially undesirable outcomes or the negative consequences as a result of their online buying behavioural decisions (Lim, 2003). In other words, a high perceived risk might result in not only consumers' reduced opportunities to physically examine the products prior to the purchase on the internet but also their concerns regarding the security of online shopping, such as payment and personal information risk (Jarvenpaa and Todd 1997; Hansen 2006), costs and legality of transactions, and the lack of reliable information (Sheehan and Hoy, 2000). Related to the grocery sector, Hays et al. (2004) and Fox and Kempiak (2006) explain that groceries, especially like fruits and vegetables, are perceived as one of the most avoidable items for internet buying due to their sensory attributes. Furthermore, many consumers may still be reluctant to shop online because of inconvenience of returning or exchanging unsatisfying products. Consequently, perceived risk, which has been considered an important barrier to electronic commerce technologies adoption (Bauer 1960; Webster Jr. 1969; Ostlund 1974; Kurnia and Johnston 1999; Hansen 2006), is believed to have a negative influence on attitude towards online grocery shopping (Forsythe and Shi 2003; Kurnia and Chien 2003; Lim 2003) and online grocery buying intention (McKnight et al. 2002; Forsythe and Shi 2003; Hansen 2006) if the consumer anticipates some kinds of loss or harm. Since this study investigates the internet as a grocery shopping channel, it is more focused on the internet related risks of performing online grocery buying.

Therefore, two hypotheses are formulated based on the previous literatures that concern the negative influence of perceived internet grocery risk on attitudes (Forsythe and Shi 2003; Kurnia and Chien 2003; Lim 2003; Hansen 2006) and repeat online grocery buying intention (Hansen 2006) as follows:

H5a. Perceived internet grocery risk will negatively affect attitude towards online grocery shopping.

H5b. Perceived internet grocery risk will negatively affect repeat online grocery buying intention.

This study is focused on the risks related to the grocery e-commerce and inter-related risks of buying groceries online. Therefore, the former is measured in terms of two main security aspects adapted from McKnight et al. (2002): credit card details and personal privacy protection. Also, it includes other two items, the risk of delivery timing from Kurnia and Chien (2003) and Huang and Oppewal (2006), and returning opportunities from Ramus and Nielsen (2005) and Hansen (2006). Meanwhile, the latter is measured by three items in terms of risks of receiving replacement items, and low quality items and receiving damaged products on delivery adapted from Kurnia and Chien (2003) and Hansen (2006), and lack of personal inspection of products from Ramus and Nielsen (2005).

3.4.6 Post-purchase attributive satisfaction (sat)

This study focuses on attributive satisfaction which refers to a consumer's satisfaction regarding the individual attributes of the transaction experience rather than overall satisfaction which refers to the consumer's perception of the transaction as a whole (Bagozzi 1992). Because attributive satisfaction deemed an accumulation of separate satisfactions is seen not only as a cognitive construct but also as an antecedent to both overall satisfaction and attitude in principle (Hansen 2006). Furthermore, online grocery channel is regarded as being more related to the factors in the proposed framework, such as possibility of saving time, obtaining usefulness and perceived risk, rather than a specific online retailer or specific online purchases. Attributive satisfaction in accordance with online grocery buying is, therefore, thought to be more appropriate to discover the influences on consumers' attitudes and further repeat purchase intentions rather than overall satisfaction. In this study, customer satisfaction is replaced with post-purchase attributive satisfaction (sat). Post-purchase attributive satisfaction is measured in terms of five main aspects, satisfaction of the quality and freshness of delivered

products (Hansen et al., 2004; Ramus and Nielsen, 2005; Hansen, 2006; Huang and Oppewal, 2006), availability of the quality (Hansen et al., 2004; Hansen, 2006) and range of items (Ramus and Nielsen, 2005), delivery timing (Ramus and Nielsen, 2005; Huang and Oppewal, 2006), online customer support and services (Lu, 2007), and post-purchase service such as receiving special offers and discount deals (Ramus and Nielsen, 2005).

Hansen (2006) found that post-purchase attributive satisfaction showed a positive effect on attitude towards online grocery buying while the effect of post-purchase attributive satisfaction on repeat online buying intention was not significant. However, Friese et al. (2003) suggest that consumers' post-purchase attributive satisfaction of an online grocery buying may heavily influence consumers' attitudes as well as consumers' intentions to buy online again. Also, Dhruv et al. (2003) predict that if the performance of a product and service fails to meet consumers' expectations, this may lead to a negative change in attitude and reduction in repeat purchase.

Therefore, two hypotheses are conceptualised from the existing researches that address the effect of satisfaction on attitude (Dhruv et al. 2003; Friese et al. 2003; Hansen 2006) and repeat online purchase intention (Dhruv et al. 2003; Friese et al. 2003) as follows:

H6a. Post-purchase attributive satisfaction will positively affect attitude towards online grocery shopping.

H6b. Post-purchase attributive satisfaction will positively affect repeat online grocery buying intention.

3.4.7 Attitude towards online grocery shopping (att)

Hansen (2006) implies that attitude towards online grocery shopping can be considered as more directly action-oriented than post-purchase overall satisfaction so this construct can be directly related to consumers' overall evaluations of future grocery buying. On the basis of the theory of reasoned action (Fishbein and Ajzen 1975), intention to perform a behaviour will be positively affected by consumer's attitude towards that

behaviour. This relation has been also confirmed by several studies concerning consumer online shopping behaviour (Chang 1998; Kurnia and Chien 2003; Sestoft and Hansen 2003; Hansen et al. 2004; Shih 2004).

Thus, the hypothesis is established according to the previous literatures that concern the effect of attitude on online grocery buying intentions (Kurnia and Chien 2003; Hansen et al. 2004; Hansen 2006) as follows:

H7. Attitude towards online grocery shopping will positively affect repeat online grocery buying intention.

In addition, attitude is measured in terms of individual preferences and interests via feelings and evaluations referring to the electronic shopping outcomes, such as convenience of shopping for personal purchasing needs (Hansen, 2006), enjoyable experience (Kurnia and Chien, 2003; Shih, 2004), suitability of ways of grocery shopping routine (Hansen et al., 2004) and involvement of shopping process (Childers et al., 2001; Hansen et al., 2004).

3.4.8 Repeat online grocery buying intention (behint)

The behavioural intention captures the perceived likelihood that consumers adopt internet grocery shopping (Verhoef and Langerak 2001). In this context, the measurement of behavioural intention involves both a measure of expectation and of intention to use online grocery purchase in the future. In particular, the intentions of choosing a specific provider repeatedly, encouraging people in social circle to shop on the same site and choosing the site even if others of similar quality offer better deals are assessed because these three aspects could be the crucial points influencing consumers' repeat purchasing intentions in accordance with satisfaction from the particular e-providers. First one item is drawn from the work by Hansen (2006) and Lu (2007), and following other two items are adapted from Lu (2007). Furthermore, the percentage of future grocery spending on the web is measured for identifying the future buying intention and expectation.

In developing the measurement scales, the relevant previous literatures and studies were reviewed. Most of the measurements for the constructs in the conceptual model were readily available in the literature, but all statements were not derived: some deemed inappropriate were modified and some items were added to suit more appropriately the theme of online grocery shopping. Hair et al.(2010) explain that the items should be sufficient in number to fully capture the construct domain. Devellis (2003) also stresses the importance of adequate number of items for each factor because some items overlapping and seemingly irrelevant can be deleted in the final scale. According to a rule of thumb by Hair et al. (2010), a construct should be reflected by a minimum of three items, preferably four. In a case of this study, not only little academic literatures have addressed grocery shopping in an online context but also the number of established items from a particular literature lacked. Therefore, items were adopted from the number of relevant sources for better reliability and validity of the construct. The literature resources in terms of each construct are provided in Table 3.1.

Table 3.1 Literature sources for development of item scales

Model construct	Literature source
Perceived usefulness	Davis (1989), Hansen (2006), Kurnia and Chien (2003), Shih (2004), Ramus and Nielsen (2005), Hansen (2005a), Huang and Oppewal (2006)
Perceived ease of use	Kurnia and Chien (2003), Shih (2004), Chiu and Chang (2009)
Shopping enjoyment in a store	Hansen (2006), Verhoef and Langerak (2001), Ramus and Nielsen (2005)
Social influence	Kurnia and Chien (2003), Ramus and Nielsen (2005)
Perceived internet grocery risk	Hansen (2006), Kurnia and Chien (2003), McKnight et al. (2002), Ramus and Nielsen (2005), Huang and Oppewal (2006)
Post-purchase attributive satisfaction	Hansen et al. (2004), Hansen (2006), Ramus and Nielsen (2005), Huang and Oppewal (2006), Lu (2007)
Attitude towards online grocery shopping	Hansen et al. (2004), Hansen (2006), Kurnia and Chien (2003), Shih (2004), Childers et al. (2001)
Repeat online grocery buying intention	Hansen (2006), Lu (2007)

3.5 Summary

This chapter aims at developing a conceptual framework and formulating a set of research hypotheses on the basis of the literature review. The theoretical model that modifies and expands the TAM is adopted to better explain the determinants of repeat purchase behaviour of online grocery shoppers and relevant twelve hypotheses are proposed based on the eight constructs of perceived usefulness, perceived ease of use, shopping enjoyment in a store, social influence, perceived internet grocery risk, post-purchase attributive satisfaction, attitude towards online grocery shopping and repeat online grocery purchase intention. Then, the relationships of each hypothesis in the theoretical framework are discussed in detail; H1a, H2a, H3, H4a, H5a and H6a hypothesise that respectively the constructs of perceived usefulness, perceived ease of use, shopping enjoyment in a store, social influence, perceived internet grocery risk and post-purchase attributive satisfaction will affect attitude towards online grocery shopping. H1b expects the positive relationship between perceived usefulness and repeat online grocery buying intention. H2b proposes that perceived ease of use will affect perceived usefulness. H4b, H5b, H6b and H7 hypothesise that respectively social influence, perceived internet grocery risk, post-purchase attributive satisfaction and attitude towards online grocery shopping will positively affect repeat online grocery buying intention. The following chapter provides methodology employed for this research.

Chapter 4 Methodology

4.1 Introduction

This chapter discusses the research methodology used in this study. It contains details of the research design process. Section 4.2 describes the philosophical basis of research providing knowledge of main philosophical positions that underlie the designs of management research. In Section 4.3, the development of the questionnaire and the rationale of the selected measures are elaborated. A survey method, and the strengths and weaknesses of the chosen method are explained in Section 4.4. In Section 4.5, data collecting procedure from creating web-based questionnaire to gathering the completed responses is described. Linked to the previous section, Section 4.6 explains the survey sampling method. The definition and explanation about reliability and validity analysis are detailed in Section 4.7 and 4.8 respectively. The theoretical aspects of the analytical strategy and key statistical concepts in relation to the quantitative techniques used for the data analysis are presented in Section 4.9 and 4.10 respectively. Finally, a brief chapter summary is presented in Section 4.11.

4.2 Research Philosophy

Research philosophies refer to theories that related to the ways of perceiving the world and undertaking research (Trochim, 2000). That is, as philosophical issues are central to the notion of research design, awareness of philosophical assumptions can both increase the quality of management research and contribute to the creativity of the researcher (Proctor 2005; Easterby-Smith et al. 2012). Easterby-Smith et al. (2012), therefore, suggest that understanding knowledge of research philosophy is very useful and significant to shape the research from design to conclusions. This research philosophy comprises ontology, epistemology, methodology, and methods and techniques (Easterby-Smith et al., 2012). Crotty (1998) describes that the researcher's methodological, epistemological and ontological premises can be termed a paradigm or

interpretive framework that encompasses a set of beliefs that guide the research action and consider matters of ontology and epistemology.

4.2.1 Ontology (Internal realism)

Ontology is the science or study of being and existence in the world (Blaikie 1993; Easterby-Smith et al. 2012). Proctor (2005) also defines ontology as basic questions about the nature of reality concerning with assumptions about entities: what entities exist or can be said to exist, and how such entities can be grouped and subdivided according to similarities and differences (Jacquette 2002).

There are four main positions on this issue: realism, internal realism, relativism and nominalism. Firstly, according to Niiniluoto (2002), ontological realism claims that at least a part of reality is ontologically independent of human minds. This view is compatible with physicalism, emergent materialism, and dualism, and even objective idealism, but incompatible with subjective idealism. Secondly, internal realism assumes that there is a single reality and it describes indirect evidence of what is really going on in fundamental physical processes (Putnam 1987). Internal realism also accepts that scientific laws once discovered are absolute and independent of further observations. Thirdly, the stage of relativism goes further in suggesting that scientific laws are created by people, and based on the observed patterns and phenomena (Latour and Woolgar 1979). Thus, the relativist position assumes that different observers may have different viewpoints. Finally, the position of nominalism goes further by suggesting that the labels and names attached to experiences and events are crucial. That is, the reality exists only through experience of it. The ontological position of subjectivism is nominalism (Hatch and Cunliffe 2006). This research adopts internal realism as its ontology because reality exists externally and it shares the principle that the world and things in it exist independently of consciousness of them.

4.2.2 Epistemology (Positivism)

Epistemology is about the nature of knowledge, its possibility, scope and general basis (Hamlyn 1995). Proctor (2005) and Easterby-Smith et al. (2012) explain that epistemology deals with the most appropriate and different ways of enquiring into the nature of the physical and social worlds. In addition, epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible, and what are the sources and limits of knowledge (Maynard 1994; Eriksson and Kovalainen 2008). That is, in its simple term, epistemology refers to the philosophy of knowledge (Trochim 2000).

According to Crotty (1998), epistemology is divided into three main positions: objectivism, constructivism and subjectivism. Easterby-Smith et al. (2012) describe that epistemology has formed the ground of two contrasting views of positivism and social constructionism in social science research. However, it is difficult to distinguish between the natural science model and positivism as it is not always clear whether they are inveighing against the application of a general natural scientific approach or of positivism in particular (Bryman and Bell 2011).

Proctor (2005) views positivism as a more dominant approach in natural science and as being concerned with causal explanation such as patterns and regularities in events. Aiken (1956) also indicates that positivism provides the best way of investigating human and social behaviour, and its properties should be measured through objective methods rather than being inferred subjectively through sensation, reflection or intuition (Easterby-Smith et al. 2012). For example, the positivist position is characterised by the testing of hypotheses developed from existing theory through measurement of observable social realities. In addition, epistemologically, it is assumed that if positivism is based on observations of ontological external reality, knowledge is only of significance (Comte 1853). Thus, the epistemology of this study is based on the theory of objectivism, and positivism as the epistemological position. Because this thesis not only analyses phenomena in terms of variables but also starts with testing theory through the use of hypothesis and then refines theory with data.

4.2.3 Methodology

Methodology is about a strategy, plan of action, a process or design that supports the choice of particular methods used to inquire into a specific situation (Crotty 1998; Proctor 2005). Epistemological positions influence the methodological stance for a research study. According to Crotty (1998), the methodology inherits all the assumptions established in the epistemology, ontology and theoretical perspective. In other words, methodology is a research strategy that translates ontological and epistemological principles into guidelines that show how research is to be conducted (Sarantakos 2005) and principles, procedures, and practices that govern research (Marczyk et al. 2005).

Proctor (2005) explains that research methodologies will differ according to both their ontological and epistemological assumptions: positivist and phenomenological approach. Easterby-Smith et al. (2012) support this statement exemplifying that scientists and social scientists generally draw from different ontological and epistemological assumptions when developing their methodologies for conducting research. Positivism is an important approach in the social sciences and particularly in business research. Within a positivist methodology, the ontological assumptions view the social world as an external environment. The epistemological assumptions in this approach are that the researcher is independent of what is being researched, and observes and quantitatively measures social structures (Healy and Perry 2000). A positivist approach is therefore deductive in nature; for example, taking a theory from literature and researching it to confirm or refute the proposition (Proctor 2005). Briefly, positivist research is able to focus on the generalisation and abstraction to a wider context and underpins quantitative methodology to evaluate the result using statistically valid techniques (Cohen et al. 2000). The realist/objectivist ontology and empiricist epistemology contained in the positivist paradigm require a research methodology that is critical and objective, where the emphasis is on measuring variables and testing hypotheses that are linked to general explanations (Sarantakos, 2005; Marczyk et al. 2005).

4.2.4 Methods and techniques

A method is a systematic procedure for collecting and analysing data to resolve the research issues (Dessler 2003). Methods and techniques are the most obvious and visible features of a project and depend on decisions and assumptions about methodology, epistemology and ontology.

Recognising the strengths and weaknesses of each position would help the researcher to judge which methods and aspects are most appropriate to a given situation (Easterby-Smith et al. 2012). In general, the research strategy employed is dependent on the nature and type of research undertaken, and a range of criteria for specific data collection methods is chosen between a quantitative and a qualitative approach towards a research problem. In other words, methodologies to social research are based on different philosophical assumptions (Neuman 2003; Ulin et al. 2004) characterised a signal distinctive ontological (view of reality), epistemological (view of knowing and the relationship between knower and the to-be-known) and methodological (view of mode of inquiry) positions about the purpose of science and the nature of research (Bryman 1984; Tashakkori and Teddlie 1998). However, it is important to note that the distinction between quantitative and qualitative research occurs at the level of methods, not at the level of epistemology or theoretical perspective (Quiros et al. 2007).

Quantitative research, which emphasises quantification in the data collection and analysis, is based on the ideals of positivism (Cavana et al. 2001; Bryman and Bell 2011). The main strengths of quantitative methods are that they can provide wide coverage of the range of situations in a fast and economical way. Also, it not only has a clear theoretical focus but also is easy to compare the collected data. However, these methods tend to be rather inflexible and artificial; they are very weak at understanding processes or the significance that people attach to social phenomena. In addition, much of the data gathered may not be relevant to real decisions even though it can still be used to support the covert goals of decision-makers (Easterby-Smith et al. 2012). On the contrary, qualitative methodology emphasises usages of words in collecting and analysing the data (Mutch 2005; Bryman and Bell 2011), and the paradigm that forms the basis is interpretivism (Kuzel and Like 1991; Altheide and Johnson 1994; Secker et

al. 1995) and constructivism (Guba and Lincoln 1994). Thus, they have strengths in their ability to observe changes that occur in the research processes over time, to understand people's meanings, and to adjust to new issues and ideas as they emerge. They also provide a way of gathering data in a natural way. However, a great deal of time and resources are devoted to collect data, and the collected data is thought to be very difficult to analyse and interpret, although this depends on the intimate and tacit knowledge of the researchers. Easterby-Smith et al. (2012) describe that qualitative studies are often regarded as very untidy because it is harder to control their pace, progress and end points.

In a case of this study, a highly structured research process is used and relied on quantitative data using online survey in order to discover and understand the online grocery repurchase behaviour of experienced repeat customers. The study also emphasises the explanation of underlying mechanisms to identify determinants of consumer's repeat grocery buying intentions and casual effects between constructs. Therefore, this study employs deductive approach with positivism as the philosophical stance and theory testing.

4.3 Questionnaire Design

The first page of the questionnaire explained the purpose of this study, degree of time requirement, guaranteed confidentiality in accordance with the Data Protection Act 1998 and thanked participants for participating. The main questionnaire consisted of three thematic sections: online grocery purchase behaviour; consumers' opinions of online grocery shopping; and consumers' demographic characteristics. All sections follow the accepted protocol for questionnaire design because it is initially quicker and easier approach to ask people as closed-ended questions rather than ask them to give their opinions. It also allows the participants an opportunity to feel familiar and comfortable with the questionnaire before moving on to more complex themes. This structured questionnaire is located in Appendix A.

4.3.1 Likert item scale

The Likert item scale is a format allowing respondents to state the relative strength of their opinions on a number of issues. Parasuraman (1991) and Malhotra (1996) suggested that from 5 to 9 is the appropriate number of categories, but Hinkin (1995) argued that 5 to 7 response categories are adequate for most items. A recent empirical study by Dawes (2008) supports this guideline explaining that a 5- or 7- point scale may produce slightly higher mean scores relative to the highest possible attainable score compared to those produced from a 10-point scale, and this difference is statistically significant. Meanwhile, there are contradictions about selecting between 5- and 7- point scales. Often 5 response scales are favourably used although many psychometricians advocate using 7 or 9 levels.

The Likert scale presented in this study is the form of 7 response levels even though some measurement items were measured on 5- point Likert scales in the previous literatures (Shih 2004; Hansen 2006). There are two reasons using 7- point Likert scales for this research. Firstly, 7- point response gives more spread possibility to evaluate respondents' level of their perceptions than 5-point scales (Tharenou et al. 2007). In other words, respondents can finely discriminate each response category in a larger number of scale points (Parasuraman 1991; Malhotra 1996). Furthermore, larger number of scale points leads to larger variances, resulting in increased reliability (Nunnally 1978; DeVellis 1991). Secondly, according to Malhotra (1996), more categories like 7 or more are required when the data is analysed with sophisticated statistical techniques. Also, the number of scale categories influences the size of correlation coefficient, which is the common measure of the relationship between variables when the data is analysed with SEM. That is, a reduction in the number of scale categories may cause a decrease in the correlation coefficient. As a result, all questions in the survey were measured by 7-point Likert scales except the measure of future percentage of grocery spending, regardless of their original scale categories from previous authors.

4.3.2 Online grocery purchase behaviour

The theme of purchase behaviour was concerned with two aspects: purchase activity and associated financial features. With respect to the purchase activity, specific questions employ not only nominal single response measures of preferred online grocery shopping site, frequency of grocery shopping via the internet and principal decision maker in purchase, but also a nominal multiple response measure of purchase occasion such as Christmas and a birthday. Financial aspects were concerned with the use of a food budget when shopping through the internet. The questions were drawn from previous work by Mai and Ness (2006) and Lu (2007).

4.3.3 Consumers' opinions of online grocery shopping

All the theoretical constructs used in the conceptual model were designed as multiple item scales to measure consumer's online grocery repurchase behaviour. The survey respondents were requested to indicate the level of their agreement with each statement in a measure using a seven- point Likert scales anchored by 1 (Not at all) and 7 (Completely) except one question about the percentage of future grocery spending. Then, the measures related to each construct were assessed using respondents' experiences. The each theme of constructs was broadly concerned with experienced adopters' opinions of online grocery shopping, in terms of usefulness, ease of use, shopping enjoyment in a store, social influence, internet grocery risks, post-purchase attributive satisfaction, attitude as well as repeat online grocery buying intention.

4.3.4 Demographic variables

This section introduces the theme relevant to the socio-demographic characteristics of respondents most frequently investigated in the context of adopting internet shopping (Grunert and Ramus 2005). Studies, which concentrate on demographic information to identify the various consumer groups associated with online grocery shopping, report that gender, age, education, income, social status and the presence of children in the household affect the tendency to use a grocery shopping service (Hiser et al. 1999; Morganosky and Cude 2000; Sieber 2000; Priluck 2001; Verhoef and Langerak 2001;

Raijas 2002; Hansen 2005a). Furthermore, these questions are preferable when the demographic variables are indicated because the results could be differently yielded and the demographic information not only allow the classification of respondents into the sociological categories but also provide a basis for understanding and targeting different customer groups (Lewis et al. 2003; Hui and Wan 2009). Therefore, consumer profile section contains nominal measures of the gender, age, employment status, the number of adults, education level, and annual household income. Also, the presence of children in specific age categories in the same household are measured with multiple choices. The age and education qualification categories are based on the Office for National Statistics data.

4.4 Survey Method

With the application of probability sampling in the 1930s, surveys became a standard tool for empirical research in social sciences, marketing and official statistics (Vehovar and Lozar Manfreda 2008). Surveys are useful when a researcher wants to collect information from a sample of individuals by asking a set of questions (Babbie 1973; Blaxter et al. 2001). Hair et al. (2003) generally divide survey methods into three generic types: person-administered survey, telephone-administered survey and self-administered survey. First, the person-administered survey deals with significant face-to-face interaction between the interviewer and the respondent. Second, the telephone-administered survey uses a telephone to conduct the question and answer exchanges. During telephone interviews, computers are now used for management functions, data recording, and telephone number selection. Third, the self-administered survey is the way of that the respondent reads the questions and records his or her answers. Mail survey is normally included in this category. According to Bethlehem and Biffignandi (2012), these methods are now increasingly replaced by web survey, which is defined that the questionnaire designed on a web site is accessed by respondents (Bethlehem 2009), due to its advantages of major speed, cost, and flexibility although significant sampling limitations also exist.

There is no optimal survey method in all situations. Therefore, selecting a survey method best suited to the specific marketing research is important. The appropriate criteria for selecting a survey method are related to several factors: information requirements, relevance, accuracy, budgetary constraints, such as timeliness and cost, and respondent characteristics (Malhotra and Birks 2003; Proctor 2005). Making a balance is also significant for researchers to maximise the quantity and quality of data collected while minimising the cost and time of the survey (Hair et al. 2003).

In this study, the web survey method was chosen over other survey methods because both online method and this research have in common with an online approach. Also, internet grocery shoppers are still relatively few in number and can be quite difficult to access through the traditional research methods. Thus, the online approach can be more effective not only for identifying and reaching online shoppers but also for investigating those customers who have already bought groceries online. Besides, in accordance with CustomerSat.com (1999), if the respondents are familiar with websites, they are more likely to respond and complete the online survey accurately. In this point, Ranchhod and Zhou (2001) specify that people who prefer to answer online surveys are usually those who have a better understanding of the technology and use the internet extensively as a communication medium, being concerned about the sampling limitation. However, this situation would not cause any serious sampling bias if the target population are required to be familiar with the web and do their grocery shopping online.

4.4.1 Advantages of a web-based questionnaire

Web-based questionnaires provide particular advantages compared with alternative methods such as a mail survey, random digit dialling, or mall intercept, for several reasons (Szymanski and Hise 2000).

Access

As many people are nowadays connected to the internet, an online survey is a simple means to get access to a large group of potential respondents (Bethlehem 2009; Chiu et

al. 2009). Moreover, it provides convenient anytime and anywhere access so that it easy for people to participate.

Target population

Online survey is consistent with the context of the respondent's target population based on online shoppers using an online approach. Therefore, consumers are in a relevant setting when completing the survey (Szymanski and Hise 2000).

Effective approach

Online approach can be more effective for identifying and reaching online shoppers. Online shoppers can be identified using a preliminary survey sent through e-mail.

Interest

It has been reported that people view online surveys as more important, interesting, and enjoyable than traditional surveys (Edmonson 1997).

Fast and efficient responses

Web page surveys are extremely fast and efficient to access. A questionnaire posted on a popular web site can gather several thousand responses within a few hours. People also can be invited to click through to the web survey by e-mail addresses.

Cost

Questionnaires can be distributed at very low costs. No interviewers are needed and there are no mailing and printing costs involved (Bethlehem 2009). In addition, there is practically no cost involved once the set-up has been completed. Large samples do not cost more than smaller ones (except for any cost to acquire the sample). Therefore, it offers an economical method for gathering empirical data (Cooper and Schindler 2002).

Attractive media use

Online surveys offer new, attractive possibilities, such as the use of multimedia (sound, picture, animation and movies) (Bethlehem 2009).

Flexible features

Web page questionnaires can use complex question skipping logic, randomisations and other features not possible with paper questionnaires or most email surveys. These features can assure better data.

Honesty

A significant number of people may give more honest answers to questions about sensitive topics, such as drug use or disability, when giving their answers to a computer, instead of to a person or on a paper.

Useful software

Some web survey software, such as The Survey System, can combine the survey answers with pre-existing information about individuals taking a survey.

4.4.2 Disadvantages of a web-based questionnaire

Simultaneously, the limitations of an online survey should be kept in mind when interpreting findings because these may have an impact on the quality of the survey outcomes.

Length limit

Online surveys cannot be long. According to the findings by Fram and Grady (1995), consumers are unwilling to respond to lengthy surveys administered online so if online surveys become long, for example, more than 40 items, participation rates would drop dramatically.

Representative specification

The issue of respondents being representative of the population or similar groups must be addressed.

Biased population

Current use of the internet is far from universal. Internet surveys do not reflect the population as a whole when elements of the target population do not have a corresponding entry in the frame population (Bethlehem 2009). This is true even if a sample of internet users is selected to match the general population in terms of age, gender and other demographics.

None response rate

None response can occur in online surveys because it is based on a self-administered questionnaire: people can easily quit in the middle of a questionnaire. Furthermore, technical problems of respondents have an impact on none response rates of online survey (Couper 2000; Dillman and Bowker 2001; Fricker and Schonlau 2002; Heerwegh and Loosveldt 2002). For instance, slow modem speeds, unreliable connections, high connection costs, low-end browsers and unclear navigation instructions may frustrate respondents.

Selection error

Selection errors can occur in an online survey when the sample is based on self-selection because the survey researcher is not in control of the selection process. Consequently, selection probabilities are unknown and therefore biased estimation is possible (Bethlehem 2009).

Multiple times responding possibility

Depending on the software used, there is often no control over people responding multiple times to bias the results.

4.5 Development of Web-based Questionnaire

The final version of questionnaire based on a paper format was created onto 'SurveyMonkey' which is an online survey tool. The questionnaire was edited using a specially designed form creator it provides. The completed web-based questionnaire could be viewed through the web link shows below.

http://www.surveymonkey.com/s/onlinegrocery_survey

Before the questionnaire was distributed to the target samples, proofreading of online versions of questionnaire was conducted several times in order to detect any problematic issues associated with design, ambiguity and interpretation. The time taken to complete a questionnaire and readability of the questionnaire were also observed. As the results of that, it took about 10 minutes to complete the questions and no difficulties were found.

The programme was designed to be able to download the completed responses into a variety of formats: an Excel spreadsheet or CSV (Comma Separated Vales) file, Adobe PDF and an HTML or XML summary. Additionally, there was an option to download the data by choosing type of values either actual values or numerical values. With numerical values, it is unnecessary to code the questions and responses, which can save a great deal of time. In this study, the Excel format was used not only to open and store the data, but also to integrate it into a SPSS data file.

4.6 Sampling Method

Most research has a specific population to which the findings should apply. That may be a broad population or a narrow one in the study. Usually, the population is too large to attempt to survey all of its members. Therefore, use of sampling which aims to reduce the number of respondents brings the three main advantages: the cost is lower, data collection is faster, and since the data set is smaller it is possible to ensure homogeneity and to improve the accuracy and quality of the data (Ader et al. 2008). However, the sample should be able to represent the population to obtain the generalised results reflecting the characteristics of the whole group (Tharenou et al. 2007) and also be of sufficient size to have adequate power to detect quantitative relationships in the social sciences (Mone et al. 1996).

Sampling methods can be classified as two broad types of sampling approaches: probability and non-probability sampling (Parasuraman 1991; Churchill 1995; Malhotra

1996). In probability samples, every element of the population has a known non-zero likelihood of being sampled. That is, there is no bias in the choice; each member and each household in the sampling frame has the same probability of selection. Thus, the generalisability of a study is much stronger when a probability sampling approach is adopted (Tharenou et al. 2007). Another advantage of probability sampling is that sampling error, which indicates the degree to which a sample might differ from the population, can be calculated. When inferring to the population, results are reported plus or minus the sampling error. The main types of probability sampling include simple random sampling, systematic sampling and stratified sampling. Blaxter et al. (2001) have claimed that the most widely understood probability sampling approach is probably random sampling where every individual or object in the population of interest has an equal chance of being chosen for study.

Meanwhile, in nonprobability samples, specific elements from the population have been selected in a non-random manner. Non-randomness results mean population elements are selected on the basis of assumptions regarding the population of interest, which forms the criteria for selection because they are easy or inexpensive to reach. Therefore, nonprobability sampling approaches are usually used when a sampling frame for the population is lacked in question, or where a probabilistic approach is not judged to be necessary. Unlike probability sampling techniques, sampling error remains unknown in nonprobability sampling. In other words, these conditions provide limited information about the relationship between sample and population, making it difficult to extrapolate from the sample to the population. Nonprobability sampling methods include convenience sampling, judgment sampling, quota sampling and snowball sampling. According to Blaxter et al. (2001), market researchers commonly use a quota sampling approach with targets for the numbers they have to interview with different socio-demographic characteristics.

4.6.1 Sampling frame

The sampling frame is defined as a list or set of directions for identifying the target population by Malhotra (1999). Bradly (1999) has divided the internet sampling frame

into internal and external. In terms of the internal, respondents are selected on the internet itself either as website visitors or among e-mail address listings. In cases of the external, respondents are chosen elsewhere such as from panels or from paper directories. These respondents are then invited to the internet for a data collection.

4.6.2 Survey sampling approach

Since the number of online grocery shoppers is relatively small compared to the general population of internet shoppers, it is difficult to detect the target samples. The data presented in this study were collected via an online (web-based) survey using self-administered questionnaire. The target population consists of UK consumers who have had an experience of online grocery shopping and adults, over 18 years of age. The questionnaire, firstly, was distributed to the individual respondents by the use of e-mail lists administered by a market research firm named 'DataCorp'. Total 600,000 e-mails were delivered as initial mail of 300,000 with a reminder mail of 300,000 over two-week period beginning on Monday 18th April 2011. As a result, only 13 responses were collected. Then, the questionnaire was reorganised to make a look much shorter and simpler so that more people are to participate to the survey. The number of pages was reduced from 12 to 6 pages rearranging questions from one question per page to at least three questions per page. In addition, some similar measures were combined and few measures thought to be unnecessary were removed to reduce the time taken to complete the questionnaire. It finally took 3-5 minutes to complete. Another e-mail delivery was attempted with newly amended version of questionnaire for another two weeks. Unfortunately, there were very little 8 replies. The e-mail campaign with total 21 responses was judged to be failed to generate a sufficient sample.

A new approach which can generate an acceptable sample size and a representative sample of online grocery shoppers was needed. Advertising on the web was adopted to reach a substantial sample using the same questionnaire. However, this time an incentive in the form of supermarket giftcards by a prize draw were offered in order to encourage more people to join in the survey. Each prize was allocated to the randomly selected eight respondents. The detail of prizes shows below:

First prize (1 person) - £100 supermarket giftcard
Second prize (2 people) – £50 supermarket giftcard
Third prize (5 people) – £10 supermarket giftcard

At first, advertising was posted on the 6 different consumer forums which are related to the issues of UK business and consumer information. Secondly, advertising was also accomplished through 'Gumtree' that is an extensive network of online classifieds and community websites. Thirdly, advertising linked to Social Media such as 'Facebook' was tried because advertising with Facebook Adverts is allowed to reach the exact target population effectively using keywords included location, age and interests. Specifically, this advert has targeted 65,280 users who are categorised into age 18 and older living in the UK, and who are interested in advertising, food shopping, internet shopping, online grocery shoppers, research, supermarket or survey. There was an option to choose a pay method between CPC (cost per click) and CPM (cost per 1000 impressions). In case of this research, it would be more important to give awareness about the survey to as many people as possible rather than simply get click through to an advert if daily budget was set the same. Therefore, CPM was considered more effective to promote this survey. The advert on the Facebook website was showed on the right hand side of the main page of each user who is matched for the criteria of this survey, as depicted in Figure 4.1.

Figure 4.1 Online grocery survey adverting on Facebook

Collecting responses were operated for approximately three weeks from 3rd to 22nd July 2011. The draw result was announced on the first page of the questionnaire on the web and, at the same time, confirmation emails were sent to all winners on 23rd July 2011. This approach has generated a sample of 351, which are an acceptable number of responses. Subsequently, the survey yielded total 372 valid responses.

4.7 Reliability Analysis

DeVellis (2003) has defined that scale reliability is the proportion of variance attributed to the true score of the latent variable. When assessing scale reliability, it is assumed that the scale is valid with respect to the latent variable and is only concerned with how strongly the scale's items are related to each other. Strong relationships among variables can then be attributed to causal relationships among them (unlikely) or to a shared cause (the latent variable).

Reliability refers to the extent to which a measure is free of random measurement errors (Smithson 2005). A perfectly reliable measure has no random measurement error. However, most measures used in research are imperfect and this is unreasonable in practice. Therefore, Tharenou et al. (2007) suggest that reliability must be tested each time as an instrument to evaluate the contribution of measures to the explanation of the variables: how appropriate the question and the subsequent scales are.

Although there have been many proposals for assessing reliability (Nunnally 1978; Hattie 1985), Cronbach's alpha coefficient (Cronbach 1951) is typically preferred in social science research to estimate the reliability of a measurement scale (Peter 1979; Cortina 1993) because it is independent on the assumptions required of other indices of reliability (Bollen 1989). The alpha coefficient measures how closely a set of items are related as a group. The correlation between scale items is equal to the sum of the coefficients, that is, alpha coefficients are calculated using the average correlation among the items. Hence, if the number of items increases, Cronbach's alpha coefficient will also increase (Tharenou et al. 2007). Besides, as the average inter-item correlation among items increases, Cronbach's alpha generally increases holding the number of

items constant. Consequently, since reliability of the measure is an ability to yield consistent results, the more measures are reliable, the more consistent the individual items are in their measurements (Nunnally 1988). Although a measure has little random measurement error, the items would be expected to be consistent with each other.

An alpha coefficient ranges from 0 to 1.00. Measures that have an alpha value of greater than 0.70 can be considered reliable (Nunnally 1978; Churchill 1979; Pallant 2001), while a value of 0.60 is acceptable for exploratory research (Robinson et al. 1991). However, DeVellis (2003) clarifies that it is not unusual for researchers to use scales with lower reliability coefficients.

4.8 Validity Analysis

Hair et al. (2010) assured that if a scale conforms to its conceptual definition, is unidimensional, and meets the necessary levels of reliability, scale validity should be finally assessed. Validity is whether a measure accurately represents what it is supposed to. In other words, it is concerned with how well the concept of interest is defined by the scale or set of measures. Ensuring validity starts with a thorough understanding of what is to be measured and then making the measurement as correct and accurate as possible. Furthermore, validity highlights the need to eliminate or minimise the effects of irrelevant factors that can confound a study and reduce the accuracy of its conclusions. That is, its primary purpose is to increase the accuracy and usefulness of findings by eliminating or controlling as many detracting variables as possible, which allows for greater confidence in the study's findings (Marczyk et al. 2005). Consequently, validity is an important and useful criteria in all forms of research methodology that refers to the conceptual and scientific soundness and quality of a research study (Graziano and Raulin 2004; Marczyk et al. 2005).

There are several types of validity: construct validity, content validity, criterion validity, face validity and nomological validity.

4.8.1 Construct validity

Essentially, construct validity refers to whether a set of measured items actually reflects the theoretical latent construct (Hair et al. 2010). Construct validity evidence involves the empirical and theoretical support for the interpretation of the construct. Such lines of evidence include statistical analyses of the internal structure of the test including the relationships between responses to different test items. They also include relationships between the test and measures of other constructs. That is, evidence of construct validity provides confidence that item measures taken from a sample represent the actual true score that exists in the population. Thus, construct validity is regarded as a slightly more complex issue relating to the internal structure of an instrument and the concept it is measuring (Muijs 2004), and an accuracy of measurement (Hair et al. 2010).

Construct validity is comprised of two subtypes: convergent and discriminant validity. Convergent validity refers to the degree to which two measures of the same concept are correlated (Hair et al. 2010). For example, if a measure captures what it really is supposed to measure, scores on that measure should be more related to scores on other similar constructs (Tharenou et al. 2007). Here, high correlations indicate that the scale is measuring its intended concept. Whereas, discriminant validity describes the degree to which a construct is truly distinct from other constructs. Generally, a measure should correlate more highly with other measures of the same construct than with measures of other constructs (Shih 2004). Fornell et al. (1982) suggest that the squared correlations between two different measures in any two constructs should be statistically lower than the variance shared by the measures of a construct. Therefore, high discriminant validity provides evidence that a construct is unique and captures some phenomena other measures do not (Hair et al. 2010).

4.8.2 Content validity

Content validity refers to whether the items designed for the measure adequately cover the latent concept that to be measured. Anastasi and Urbina (1997) have added that content validity is a non-statistical type of validity that involves the systematic examination of the test content to determine whether it covers all of the content

associated with the construct to be measured in the course. Thus, content validity is focused on the extent to which the content of a measure is representative of the behaviour domain that is trying to assess (Tharenou et al. 2007).

Clearly there is an important role for theory in determining content validity. The better the subject and the concepts are theoretically defined, the better an instrument that is content-valid will be designed. The main judgement of whether an instrument is content valid is therefore its accordance to a theory of how the concept works and what it is. A thorough review of the relevant literature on the concept wanting to be measured will help to achieve content validity (Muijs 2004) to determine whether the items in the measure have adequately sampled the domain (Tharenou et al. 2007).

4.8.3 Criterion validity

Like content validity, criterion validity is closely related to theory (Muijs 2004). For example, when developing a measure, it is usually expected to be related to other measures or to predict certain outcomes. That is, criterion validity evidence involves the correlation between the test and a criterion variable taken as representative of the construct. Simply, criterion validity is signified that the measure predicts a relevant criterion. Tharenou et al (2007) also imply that it attempts to answer the question. Criterion validity is practical and pragmatic. However, the choice of the criterion variable is critical. Smithson (2005) notes that the criterion measure should be known to be reliable and valid already.

Criterion validity is consisted of predictive and concurrent validity, depending on how it is measured. Predictive validity is the extent to which a measure predicts subsequent performance or behaviour. Thus, it is determined by the strength of the correlation between a measure and subsequent performance (Tharenou et al. 2007). On the other hand, concurrent validity makes a less stringent assumption than predictive validity (Muijs 2004). In concurrent validity, the measure is correlated with other measures of the same construct that are measured at the same time.

In order for validity coefficients to have criterion validity, the coefficient should be as high as possible. One rule of thumb is that a relationship may be considered weak if the validity coefficient is 0.10, medium if 0.30, and strong if 0.50 (Cohen 1988). Accordingly, what is needed to establish criterion validity are two things: a good knowledge of theory relating to the concept so that what variables expecting to be predicted by and related to it can be decided, and a measure of the relationship between the measure and those factors (Muijs 2004).

4.8.4 Face validity and nomological validity

Hair et al. (2010) state that constructs also should have face validity and nomological validity. The processes for testing these properties are the same whether using confirmatory factor analysis or exploratory factor analysis. Nomological validity is the degree to which a construct behaves as it should within a system of related constructs called a nomological set. In other words, it refers to the degree to which the construct as measured by a set of indicators predicts other constructs that are deemed to be theoretically and empirically predicted in the past work (Droge 1997). Nomological validity is tested by examining whether the correlations among the constructs in a measurement theory make sense. For example, the tendency to purchase premium brands should show a high correlation with a person's need for status and materialism and a negative correlation with price sensitivity. Consequently, the matrix of construct correlations can be useful in this assessment (Hair et al. 2010).

Face validity is an estimate of whether a test appears to measure a certain criterion. However, there is no guarantee that the test is empirically demonstrated in that domain (Tharenou et al. 2007). Face validity must be established prior to any theoretical testing when using confirmatory factor analysis because without an understanding of every item's content or meaning, it is impossible to express and correctly specify a measurement theory. Thus, face validity is considered as very closely relative to content validity since it is determined by a review of the items, not through the use of statistical analyses. Hair et al. (2010) affirm that face validity is the most important validity test in a very real way. Tharenou et al. (2007) agree with this statement suggesting that all

measures must have face validity nevertheless it is subjective. When using previously used scales, face validity should also be checked because there is a possibility that when two borrowed scales are used together in a single measurement model even if they have been applied successfully with adequate reliability and validity in other research, face validity issues become apparent that were not seen when the scales were used individually (Hair et al. 2010).

4.9 Analytical Strategy

The questionnaire was designed to collect the quantitative data so that multivariate statistical techniques including structural equation modelling (SEM) can be employed to analyse research questions.

Quantitative methods generate information which is statistically easy to analyse and fairly reliable. These methods are associated with the scientific and experimental approach so it is often described that quantitative questions are more exact than qualitative, even though are criticised for not providing an in-depth description.

An initial item analysis is undertaken to determine whether the items are ambiguous or are skewed because respondents tend to respond very similarly to the items. That is, a basic item analysis involves obtaining data from a developmental sample to remove ambiguous items, and calculating basic statistics, such as means, standard deviations and frequencies, to remove skewed items.

IBM SPSS Statistics (2010) was used to facilitate the preliminary analysis, exploratory factor analysis and SEM.

4.9.1 Descriptive statistics

Descriptive statistics are used to describe the basic features of the data and summarise the data in a meaningful way allowing simpler interpretation (Mason and Bramble 1989). For example, in a research study with large data, descriptive statistics are useful

to summarise the scale variables and measures of the data using a combination of tabulated description (i.e. tables), graphical description (i.e. graphs and charts) and statistical commentary (i.e. a discussion of the results).

Descriptive statistics can encompass measures of central tendency (e.g. means or medians), measures of dispersion (e.g. standard deviations or semi-interquartile ranges), and frequencies (Cooper and Schindler 1998). It is important to provide both measures of central tendency and measures of dispersion because these two types of statistics yield different information. Firstly, the measures of central tendency describe the central position of a frequency distribution for a group of data, that is, the average value of the sample. In a research study, there are probably lots of measures or a large number of people on any measures, but descriptive statistics reduce large amounts of data into a simpler summary. Secondly, the measures of dispersion elaborate a group of data further by describing how spreads out the scores are. The dispersion is usually measured by the range of the standard deviation and variance implying the difference between the highest and the lowest value.

Descriptive analyses reflect a picture of observed behaviour. In other words, descriptive analysis has an important role to understand what happened for a particular sample at a particular time and to summarise the data. Cole et al. (2003) have stated that e-shopping behaviour has been often analysed at the aggregate level in descriptive studies. For example, what percentage of internet users in the sample purchased online, or had an intention to e-shopping. Also, there are some descriptive studies explaining consumers' behaviours (Hoffman et al., 1999; Lim, 2003; Raijas, 2002) to identify the factors influencing their choices of e-shopping. However, descriptive studies have a disadvantage that is unable to explain consumer's behaviour at the individual level.

4.9.2 Frequencies for sample characteristics

Frequency represents the count of each category for a certain variable. Hence, it is generally used for looking at the detailed information about the values of variables and describing the results (Theron 1992; Adams et al. 2007). This count is often expressed

as percentages and cumulative percentages in a table. Frequency tables form a part of descriptive statistics classified (Theron 1992) and describe the numbers to help understanding and interpretation of the important features of the data obtained (Ferguson 1981). Healy (1990) has also stated that frequency distributions could be regarded as tables summarising the distribution of a variable by presenting the number of cases contained in each category. A frequency distribution plots the values of the dependent variable against their frequency of occurrence (Howell 1999). Therefore, it can be used to describe a set of values on a single variable (Beukman 2005). In short, the frequency distribution is simply the distribution and pattern of descriptive statistics is used to present quantitative descriptions in a manageable form. Normally, the frequency and valid percentage columns are the most useful columns as the valid percentage particularly excludes missing values.

4.9.3 Mean scores for scales

Probably the most often used descriptive statistic is the mean which is the same thing as the average score of the numbers. The mean can be used in all sorts of mathematical manipulations and statistical analyses, such as the t-test. In particular, the mean is informative measure of the central tendency of the variable if it is reported along with its confidence intervals (McHugh and Hudson-Barr 2003). The mean incorporates the exact score from every subject into its estimate of central tendency. However, when some subjects' scores are extreme, the mean is distorted; extreme scores artificially make the mean score high or low dragging it away from the middle such that the mean is not a good representation of the central tendency of the variable.

4.10 Statistical Analysis

4.10.1 Structural equation modelling (SEM)

Structural equation modelling (SEM) is a multivariate technique that combines multiple regression analysis and factor analysis to estimate simultaneously a series of interrelated dependence relationships (Hair et al. 1998). It was developed from econometric modelling of multiple equation systems and its substantive use has been growing in

psychology and social sciences. As an example, SEM is commonly used in applications of attitude theory (Shim and Eastlick 1998; Perugini and Conner 2000; Hansen et al. 2004). Its popularity is embedded in the employment of confirmatory methods which provide a comprehensive means for assessing and modifying theoretical models for researchers. That is, SEM offers great potential for furthering theory development.

4.10.2 The features of SEM

The notable feature of SEM is the facility to model relationships between both latent and observed variables. Latent variables are those that are non-observable, but are operationalised through the process of scale development in terms of measures that are observable. There is a link between latent variables and factors in factor analysis. SEM is, thus, seen as a combination of factor analysis and regression or path analysis.
There are several literatures emphasising the notable features of SEM compared to other multivariate techniques. Firstly, Hair et al. (2010) have elaborated that the most obvious difference between SEM and other multivariate techniques is the use of separate relationships for each of a set of dependent variables. In simple terms, SEM estimates a series of separate, but interdependent, multiple regression equations simultaneously by specifying the structural model used by the statistical program. Essentially, the structural model captures the regression effects of independent variables on dependent variables, and the regression effects of dependent variables on each other, but differing effects. In other words, the independent variables can directly affect the dependent variable or indirectly do so through influencing mediator variables that then impinge on the dependent variables (Tharenou et al. 2007). Secondly, unlike other statistical techniques, the strength of SEM is that the model tests the fit to the data at the same time as measurement error (unreliability) is taken into account by factor models for each latent variable being estimated. That is, structural equation modelling estimates the size of the paths in the model and the general fit of the model to the data, while correcting for measurement error (Tharenou et al. 2007).

A SEM analysis usually consists of two components: the measurement (factor) model and the structural model. The measurement model specifies the relationship between a

latent variable, its (observed) measures and their measurement errors. The measurement model is obtained by conducting confirmatory factor analysis which is used to obtain a good factor structure that fits well. All the scales used to define the constructs need to be examined through the estimation of the measurement model (Anderson and Gerbing 1988). The factor structure (the observed variables mapping on to the latent factors) is then used to estimate the full latent variable structural path model (Kelloway 1996). In the structural model, the correlational and dependence relationships between latent variables and observed variables comprise the main elements of the model (Hair et al. 2010).

4.10.3 Advantages and disadvantages of SEM

There are a number of advantages for using SEM for data analysis rather than traditional 'measured variable only' technique, such as regression or multivariate analysis of variance. Firstly, when relationships among factors are examined, the relationships are free of measurement error because the error has been estimated and removed leaving only common variance. For this reason, reliability of measurement can be explicitly accounted for within the analysis by estimating and removing the measurement error. In other words, SEM allows the results of relationships between constructs not only unbiased by measurement error but also equivalent to relationships between variables of perfect reliability (Werner and Schermelleh-Engel 2009). Secondly, complex patterns of relationships can be examined. When the phenomena of interest are complex and multi-dimensional, SEM is the only analysis that allows complete and simultaneous tests of all the relationships while other methods of analysis frequently require several separate analyses. Thirdly, when the constructs are operationalised, many different variables are often considered for an optimal operationalisation. In a case of other methods of analysis, the conclusions would often be less clear or several separate analyses would be required. In contrast, SEM only allows using several indicator variables per construct simultaneously, which leads to more valid conclusions on the construct level (Werner and Schermelleh-Engel 2009). Since the main focus of this research is to explore the whole process for the development of consumer repeat purchase behaviour towards

internet grocery shopping, SEM can allow a broad range of factors to be addressed simultaneously.

However, Tabachnick and Fidell (2001) address its limitation: SEM should be developed with some underlying theory. That is, SEM cannot be used without prior knowledge of, or hypotheses about potential relationships among variables. Although theory can be important in all multivariate procedures, it is particularly important for SEM because it is considered a confirmatory analysis testing a pre-specified relationship. Also, the process of interpreting the results is more complex compared to other methods of data analysis, as assumptions on the data are high. This is perhaps the largest difference between SEM and other techniques. This problem will be overcome in this study, as a research model was developed based on an extensive literature review.

4.10.4 The technique for running SEM

Exploratory factor analysis (EFA) is normally used in exploratory research to reveal the underlying factors for identifying the relationships between the latent factors and the observed variables. The purpose of exploratory factor analysis is to extract the minimum number of factors that is able to explain the covariance among the observed variables: how many factors are needed to best represent the data. The distinctive feature of exploratory factor analysis is that the factors are derived from statistical results, not from theory, so they can only be named after the factor analysis is performed (Hair et al. 2010). This approach is especially designed for the situation where links between the observed and latent variables are unknown or uncertain (Sureshchandar et al. 2002a). However, exploratory factor analysis suffers from certain limitations. For example, although researchers can have a fairly good idea about the presence of a particular factor, they need to decide which variable should be retained or deleted (Byrne 2001; Tharenou et al. 2007). Also, an item often loads on no clear factors or more than one factor so that not only the distinctiveness of the factors but also the unidimensionality of the item can be affected.

However, confirmatory factor analysis (CFA) is able to overcome the aforementioned limitations and address the situation by testing the interrelationships between the observed and the latent variables statistically (Hair et al. 2010). Confirmatory factor analysis is often used when the researcher has some knowledge of the underlying latent variable structure. That is, if the researcher has the complete control over the specification of indicators for each construct, SEM would play a confirmatory role testing the measurement theory. Before running SEM, the hypothesised model involved in the relations between the observed measurement and the underlying factors is built on logic and theoretical findings. To sum up, confirmatory factor analysis solely plays a role in testing how well measured variables represent a smaller number of constructs within the framework of SEM, compared to exploratory factor analysis (Hair et al. 2010). Therefore, confirmatory factor analysis is a special type of factor analysis and is the first part of a complete test of a structural equation model. Unlike exploratory factor analysis, the SEM program must be able to indicate which variables belong with which factors before conducting an analysis. Furthermore, confirmatory factor analysis not only must provide acceptable fit, but also must show evidence of construct validity. If a model fits well and displays construct validity, the measurement theory can be supported with a better understanding of the quality of their measures (Hair et al. 2010).

As the interest of this study mainly focuses on the interrelationships between constructs to identify determinants of repeat purchase behaviour of online grocery shoppers, adopting confirmatory factor analysis technique will be appropriate for this research.

4.10.5 Estimation method/analysis strategy

Model fit assesses the degree to which the model that best represents the sample data actually reflects underlying theory (Hooper et al. 2008). Several procedures are undertaken to test the measurement properties of the model using latent variable and structural equation modelling. As an example, maximum likelihood estimation (MLE) is the most widely used approach due to the MLE's potential sensitivity to non-normal data (Hair et al., 1998; Kline, 1998; Byrne, 2001). There are also several model fit criteria commonly used: chi-square (χ^2), goodness of fit index (GFI), adjusted goodness

of fit index (AGFI), root mean square error of approximation (RMSEA), normed-fit index (NFI), comparative fit index (CFI) and Tucker Lewis index (TLI). These criteria are based on differences between the observed (original, S) and model-implied (reproduced, E) correlation or covariance matrix (Schumacker and Lomax, 1996). In this study, RMSEA, NFI, CFI and TLI were adapted to evaluate the model fit.

4.10.5.1 Root mean square error of approximation (RMSEA)

One of the most widely used measures based on chi-square values is the root mean square error of approximation (RMSEA). The RMSEA measures attempt to correct for the tendency of the χ^2 goodness-of-fit test statistic to reject models with a large sample or a large number of observed variables (Hair et al. 2010). Thus, it better represents how well a model fits a population, not just a sample used for estimation (Hu and Bentler 1999). Browne and Cudeck (1993) also comment that RMSEA takes into account the error of approximation in the population. This discrepancy between observed and predicted values, as measured by the RMSEA, is expressed per degree of freedom, thus making the index sensitive to the number of estimated parameters in the model. Subsequently, it explicitly tries to correct for both model complexity and sample size by including each in its computation.

Hair et al. (2010) suggest that lower RMSEA values indicate better fit. However, the question of what is a good value of RMSEA is debatable. Although Browne and Cudeck (1993) point that values less than 0.05 indicate good fit and values as high as 0.08 represent reasonable errors of approximation in the population, Golob (2003) claims a good model has a RMSEA value of less than 0.05. However, Hair et al. (2010) have confirmed that the value of RMSEA is between 0.03 and 0.08. In addition, an empirical examination of several measures found that the RMSEA was best suited for use in a confirmatory or competing models strategy as samples become larger, such as more than 500 respondents (Rigdon 1996).

4.10.5.2 Normed-fit index (NFI)

The NFI is one of the original incremental fit indices. This statistic assesses the model by comparing the χ^2 value of the fitted model to the χ^2 value of the null model (Hooper et al. 2008). Values for this statistic range between 0 and 1.00, and a model with perfect fit would produce an NFI of 1. Although Bentler and Bonnet (1980) have recommended that values greater than 0.90 indicate a good fit, more recent suggestions state that cut-off criteria should be greater than 0.95 (Hu and Bentler 1999). A major drawback to this index is that it is sensitive to sample size, underestimating fit for samples less than 200 (Mulaik et al. 1989; Bentler 1990). Thus, this measure is not recommended to be solely relied on and rather one of the next two is used (Kline 2005; Kenny 2010).

4.10.5.3 Comparative fit index (CFI)

The comparative fit index (CFI) is a revised version of the NFI which takes into account sample size (Byrne 1998) so that it performs well even when sample size is small (Bentler and Bonnet 1980; Hu and Bentler 1999; Tabachnick and Fidell 2007). Like the NFI, this statistic is derived from the comparison of a hypothesised model with the independence model. The values of CFI range between 0 and 1.00, with values closer to 1 indicating a good fit. Although a value of greater than 0.90 was initially considered representative of a well-fitting model (Bentler 1992), a revised cut-off value close to 0.95 has presently been advised by Hu and Bentler (1999) as indicative of a good fit. Fan et al.(1999) affirm that this index is one of the most widely used fit indices due to being one of the measures least affected by sample size.

4.10.5.4 Tucker Lewis index (TLI)

The TLI predates the CFI and it is conceptually similar in that it can be also used to compare alternative models or a proposed model against a null model (Tucker and Lewis 1973; Schumacker and Lomax 2004). Due to non-normed nature of the TLI, its values can fall below 0 or go above 1.00, thus a problem with the TLI is that it can be difficult to interpret (Byrne 1998). Typical models with values close to 1 indicate a good fit and models with a higher value suggest a better fit (Hair et al. 2010).

Recommendations as low as 0.80 as a cut-off have been proffered, but Bentler and Hu (1999) have suggested greater than 0.95 as the threshold. In practice, the TLI and CFI generally provide very similar values (Hair et al. 2010).

4.11 Summary

In this chapter, the research methodology of the study is discussed. It starts with describing the basis of the research philosophy centred on the research design. This chapter then explains the procedures for conducting the research, which include the development of the questionnaire, the survey method adopted for data collection, data analysis procedures in terms of reliability, validity, confirmatory factor analysis and full SEM model followed by the estimation of the model using several model fit criteria.

The following chapter will present the empirical results of preliminary analysis, reliability analysis, validity analysis and the confirmatory factor analysis. Finally, structural results from the testing hypothesised model will be discussed.

Chapter 5 Results

5.1 Introduction

The aim of this chapter is to present and discuss the empirical results. First, the results from the preliminary analysis are presented in Section 5.2. In Section 5.3, the results of reliability analysis for the various constructs employed are summarised and discriminant validity analysis using exploratory factor analysis are conducted in Section 5.4. Section 5.5 explains the findings obtained through the retests of reliability and validity analysis using retained measures. The results from the retests of the revised constructs using reliability and validity analysis are described in Section 5.6. Following this, the SEM model is discussed in two-stages in Section 5.7: the full measurement model and the structural model. The measurement model specified by the measurement theory is validated with confirmatory factor analysis and the structural model to test the hypotheses is then detailed. A modified model developed to achieve the improved model fit is evaluated and discussed in the end of this section. Finally, in Section 5.8, a summary of the chapter is presented.

5.2 Preliminary Analysis

Preliminary analysis, such as a frequency analysis and a descriptive analysis, was firstly processed. The frequency analysis of online grocery shopping behaviour and respondents' characteristics was conducted in Sub-section 5.2.1 and mean scores of the measures associated with the constructs that comprise the structural equation model have been generated. The descriptive analysis referring to descriptive statistics such as mean, sum, measures of dispersion and measures of distribution was followed in Sub-section 5.2.2. Descriptive of mean scores and standard deviation for all eight constructs representing the respondent opinions of online grocery shopping were also generated.

5.2.1 Profile of the respondents

5.2.1.1 Online grocery purchase behaviour of respondents

In this study, 372 data were collected in total, but only 333 responses were left for analysis. That is, 39 respondents who answered that never shopped online for groceries were justified as unqualified sample because this research is based on the responses of the sample that have had an experience of online grocery shopping. Referring to the results, Tesco is the most preferred site of 42% respondents to do their online grocery shopping followed by Asda with 27.3% respondents. Online grocery shoppers say that they rarely (37.5%) purchase groceries online and 20.1% of shoppers do their grocery shopping once a month. By contrast, there are the customers who were used to shop for groceries online but have stopped doing it (3.9%). The decision to choose online as the shopping channel is mainly made by respondents themselves (42.6%) and jointly with others (34.2%). The remainder (23.1%) make their decision based on circumstances. The majority of 68.6% respondents purchase groceries through the internet for a routine top-up (36.5%) and for other reasons (32.1%). However, 17.4% respondents tend to shop groceries online for the special occasions, such as birthday or anniversary. With respect to budget, higher proportion of respondents (53.5%) have in mind a fixed sum of money for their online grocery expenditure while the rest of 46.5% do not plan a budget when shopping for groceries online. The online purchasing behaviours of respondents are summarised in Table 5.1.

Table 5.1 Online grocery purchase behaviour of respondents

Characteristics		Statistics
Preferred website to shop for groceries	Asda	91 (27.3%)
	Ocado	13 (3.9%)
	M&S	7 (2.1%)
	Sainsbury's	33 (9.9%)
	Tesco	140 (42.0%)
	Other	49 (14.7%)
Purchase frequencies	Every day	3 (0.9%)
	Once a week or less often	42 (12.6%)
	Once a fortnight	32 (9.6%)
	Once a month	67 (20.1%)
	Once every 2-5 months	51 (15.3%)
	Rarely	125 (37.5%)
	Used to but don't any more	13 (3.9%)
Decision making	You	142 (42.6%)
	Jointly with others	114 (34.2%)
	Depends on circumstances	77 (23.1%)
Purchase purposes	Routine basis	149 (36.5%)
	Christmas	44 (10.8%)
	Easter	13 (3.2%)
	Special occasions (e.g. birthday, anniversary)	71 (17.4%)
	Others	131 (32.1%)
Budget	Yes	178 (53.5%)
	No	155 (46.5%)

5.2.1.2 Demographic characteristics of the respondents

Frequency tables provide a description and summary of the dispersion of the respondents across the demographic variables. From these frequency tables, the general characteristics of the sample are revealed and the values are indicated against the frequency of occurrence in each table.

Total 333 data were qualified as sample, but only 304 responses were valid for the frequency analysis of respondent's profile: 29 respondents did not answer the questions for demographic information in consumer profile section of the survey. Therefore, the composition of 304 samples was balanced in terms of gender with 38.2% males and 61.8% females indicating that women are more likely to shop online for groceries. This may partly reflect women being typically the more likely main shoppers in the

household (Mintel 2011). 55.2% of the respondents which is the majority are in the age group 25- 34 years (28.6%) and 18- 24 years (26.6%); 24.7% are in the 35- 44 years group; 14.8% are between 45 and 54 years old; 4.3% are 55- 64 years old and 1% are 65 years old and over. The results indicate that the major online grocery shoppers are the age between 18 and 34 years. That is, the younger consumers are driving the market while oldest consumers are the least likely to buy groceries online. This finding is similar with the Mintel report (2011) which highlights that the 25- 44 age group is the most likely to shop online; the 18- 34 years old age group is the core shoppers for online grocers as using the channel regularly. The majority of 58.9% respondents consisted of the employed either as full-time (46.1%) or as part-time (12.8%), and the full-time students (19.1%). The employed as full-time are the group most likely to shop for groceries online. 56.6% of online grocery shoppers have an annual household income over £25,000 while 21.1% below £15,000. 56.6% is comprised of 31.6% of respondents who have an annual household income, £25,000-£39,999, and 25% of those who are in the annual household income group from £40,000 to £50,000 or more. 66.8% of respondents have a university degree level or higher, while 14.8% and 13.2% have a higher educational qualification and A-level respectively. That is, the popularity of online grocery shopping peaks among the consumers who have a middle household income of £25,000-£39,999 and higher educational level. With respect to the number of adults and the presence of children in the household, 45.4% of online grocery shoppers live with another adult and 60.2% respondents have no children. It is supported by the results of Mintel (2011) and Nielsen (2011) which have found that the popularity of online grocery shopping peaks among young families. To sum up, the results reveal that internet grocery buyers tend to be women, 18- 34 year olds, full-time employment, young families with no children, better educated and have moderate income level amongst the groups. The demographics information of the respondents is summarised in Table 5.2.

Table 5.2 Demographic characteristics of respondents

Characteristics		Statistics (%)
Gender	Male	116 (38.2%)
	Female	188 (61.8%)
Age	18-24 years	81 (26.6%)
	25-34 years	87 (28.6%)
	35-44 years	75 (24.7%)
	45-54 years	45 (14.8%)
	55-64 years	13 (4.3%)
	65 plus years	3 (1.0%)
Employment status	Full-time employment	140 (46.1%)
	Part-time employment	39 (12.8%)
	Full-time student	58 (19.1%)
	Part-time student	3 (1.0%)
	Unemployed	11 (3.6%)
	Full-time homemaker	26 (8.6%)
	Retired	5 (1.6%)
	Other	22 (7.2%)
Number of adults in the household	1	39 (12.8%)
	2	138 (45.4%)
	3	58 (19.1%)
	4	52 (17.1%)
	5 or more	17 (5.6%)
The age of children	Under 5 years of age	49 (15.2%)
	5-11 years of age	44 (13.7%)
	12-17 years of age	35 (10.9%)
	No children	194 (60.2%)
Education	No formal qualification	5 (1.6%)
	GCSE (D-G grade)	4 (1.3%)
	GCE / GCSE (A-C grade)	7 (2.3%)
	A Level	40 (13.2%)
	Higher educational qualification	45 (14.8%)
	Degree level or higher	203 (66.8%)
Annual household income	<£15,000	64 (21.1%)
	£15,000-£19,999	37 (12.2%)
	£20,000-£24,999	31 (10.2%)
	£25,000-£29,999	47 (15.5%)
	£30,000-£39,999	49 (16.1%)
	£40,000-£49,999	37 (12.2%)
	£50,000 or more	39 (12.8%)

5.2.2 The results of descriptive analysis

Descriptive analysis provides the basic qualities of the data. Descriptive analysis includes descriptive statistic such as the range, minimum, maximum and frequency. IBM SPSS Statistics (2010) allows completing a number of statistical procedures including: measures of central tendency, measures of variability around the mean, measures of deviation from normality, and information concerning the spread of the distribution. The descriptive statistics are designed to give information about the basic features of the data in a study (Mann 1995): they simply summarise statistics for the scale variables and measures of the data in a sensible way (Dodge et al. 2006). Descriptive statistics also help manage the data and present it in a summary table and simple graphics.

Descriptive statistics for all the variables typically include number of respondents (N) who participated in the survey, the mean and standard deviation. Table 5.3 has depicted the mean in a descending order for the variables of each construct. With respect to the construct of perceived ease of use, easy payment is the most important variable that influences consumers' opinions about the grocery shopping websites regularly used. It has the highest mean of 5.80. In terms of the construct of perceived usefulness, less physical effort (5.83) is the most important benefit that consumers think in associated with online grocery shopping. Unavailability of physical examination with the highest mean of 5.27 is the most concerned risk that affects consumer's choice of internet channel for grocery shopping. In addition, personal recommendation (3.93) is the most influential factor when consumers make a decision to shop for groceries online with respect to the construct of social influence. More convenient (4.96) is the most important variable that reflects consumers' attitudes towards online grocery shopping. Product examination with the highest mean of 5.34 indicates the most strongly agreed variable that affects consumer's shopping enjoyment in a store. The online grocery shoppers agree that range of items available is the most important factor that influences their post purchase attributive satisfaction. It has the highest mean of 5.27. Finally, with regard to the consumers' future intentions to shop for groceries online, the respondents are most likely to do their grocery shopping online continuously (5.02) in the future.

Table 5.3 Descriptive statistics

Construct and measures	N	Mean	Std. Deviation
Perceived ease of use			
Easy payment	317	5.80	1.112
Easy delivery arrangement	317	5.64	1.228
Easy procedure follow-up	317	5.36	1.270
Effective usage	317	5.26	1.309
Clear layout	317	5.25	1.329
Perceived usefulness			
Less physical effort	317	5.83	1.336
More convenient	317	5.42	1.457
Less stressful	317	5.35	1.394
Easier price compare	317	5.31	1.502
Automated shopping list	317	5.16	1.558
Receiving products and offer details	317	4.97	1.558
Easier products find	317	4.95	1.637
More cost effective	317	4.81	1.655
Perceived internet grocery risk			
Unavailability of physical examination	314	5.27	1.685
Delivered items condition or quality	314	5.11	1.766
Replacement items	314	4.84	1.704
Difficulty of returning items	314	4.83	1.698
Delayed item delivery	314	4.52	1.795
Personal and credit card details	314	4.43	1.909
Social influence			
Personal recommendation	314	3.93	1.978
Friends and relatives	314	3.77	2.016
People in social circle	314	3.46	2.043
People you respect	314	3.00	1.820
Attitude towards online grocery shopping			
More convenient	313	4.96	1.503
Suited shopping routine	313	4.71	1.499
Mechanical process	313	4.47	1.725
Enjoyable experience	313	4.44	1.560
Shopping involvement	313	4.29	1.624
Shopping enjoyment			
Product examination	310	5.34	1.504
Shopping enjoyment in supermarkets	310	4.65	1.778
Chore to be finished ASAP	310	4.52	1.679
Spontaneous decisions	310	4.43	1.649
Meeting others in supermarkets	310	3.31	1.755
Leisure activity	310	3.28	1.765
Post-purchase attributive satisfaction			
Range of items	310	5.27	1.298
Delivery times	310	5.17	1.376
Quality of items	310	5.07	1.309
Delivered items condition and quality	310	5.02	1.392
Receiving information_ new products and special offers	310	4.83	1.429
Customer support and services	310	4.80	1.424
Repeat online grocery buying intention			
Continuous shopping	310	5.02	1.529
Encouraging people	310	4.25	1.719
Returning to the site	310	4.15	1.745

5.3 Reliability Analysis

The reliability of the scales is considered in connection with the measurement models. Reliability was assessed using Cronbach's alpha coefficient (α), which is the most commonly used measure of reliability, for each construct in order to identify the consistency of the entire scale. Perfect reliability is indicated by a coefficient of 1. In practice, a construct is considered reliable when it has an alpha value of greater than 0.70 (Nunnally 1978; Churchill 1979; Pallant 2001). The Cronbach's alpha coefficient (α) for each construct was all above the threshold level of 0.70 except the construct of shopping enjoyment in a store with 0.633, as detailed in Table 5.4.

Table 5.4 Constructs and their Cronbach's alpha coefficients

Construct	Cronbach's Alpha (α)
Perceived ease of use	0.863
Perceived usefulness	0.842
Perceived internet grocery risk	0.826
Social influence	0.862
Shopping enjoyment in a store	0.633
Attitude towards online grocery shopping	0.743
Post-purchase attributive satisfaction	0.870
Repeat online grocery buying intention	0.778

As another measure of reliability, the "corrected item-total correlation" and "Cronbach's alpha if item deleted" for all questionnaire items of each construct were also examined. The values of "corrected item-total correlation" show the correlations between each item and total score from the construct (Field 2005). In a reliable scale, all items should correlate with the total and these values should be 0.30 or higher. In Table 5.5, the value of measure, chore to be finished as soon as possible in "corrected item-total correlation" is at -0.131. This value is not only negative but also lower than a cut-off point of 0.30 which means that this item has low correlations with the scale overall.

"Cronbach's alpha if item deleted" indicates the impact on the scale reliability of deleting a particular measure from the scale. That is, if the deletion of an item increases Cronbach's alpha, it would mean that the deletion of this scale item improves scale reliability. Deleting the measure of chore to be finished as soon as possible from the set

of scale items increases the overall scale reliability from 0.633 to 0.754 as shown in Table 5.5. Consequently, this scale item has been removed so that the scale reliability is improved from a questionable level to an acceptable level (George and Mallery 2003).

In association with reliability, there was consideration of whether to include the item future percentage within the construct of repeat online grocery buying intention or to employ it as dependent variable as originally planned. When including the measure of future percentage in repeat online grocery buying intention, the Cronbach's alpha coefficient (α) is at 0.774 which is above the threshold level of 0.70 indicating an acceptable level of reliability. However, deleting this item increases the overall scale reliability from 0.774 to 0.778. Thus, it is decided that future percentage is better to be remained as a final dependent variable.

Table 5.5 Item-total statistics for the construct of shopping enjoyment in a store

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Shopping enjoyment in supermarkets	20.88	23.512	.560	.506
Product examination	20.19	27.898	.388	.583
Meeting others in supermarkets	22.22	23.623	.564	.505
Spontaneous decisions	21.10	25.997	.453	.556
Chore to be finished ASAP	**21.01**	**36.149**	**-.131**	**.754**
Leisure activity	22.25	25.288	.446	.556

The revised Cronbach's alpha coefficients (α) for each construct are summarised in Table 5.6, which reveals that the reliability measures for all constructs are above the minimum threshold level of 0.70. Therefore it is concluded that all constructs are internally consistent and have acceptable reliability values.

Table 5.6 Constructs and their revised Cronbach's alpha coefficients

Construct	Cronbach's Alpha (α)
Perceived ease of use	0.863
Perceived usefulness	0.842
Perceived internet grocery risk	0.826
Social influence	0.862
Shopping enjoyment in a store	0.754
Attitude towards online grocery shopping	0.743
Post-purchase attributive satisfaction	0.870
Repeat online grocery buying intention	0.778

As well as calculating Cronbach's alpha values, reliability analysis is tested using measures of composite reliability (CR) and average variance extracted (VE) to measure internal consistency grounded in confirmatory factor analysis (Fornell and Larcker 1981). This issue is specifically discussed in Section 5.7.

5.4 Discriminant Validity

With the necessary levels of reliability established, scale validity should be assessed to have confidence in subsequent research findings (Farrell 2009; Hair et al. 2010). Discriminant validity, one of the three most widely accepted forms of validity, is used to assess the extent to which constructs are distinct and uncorrelated (Campbell and Fiske 1959; Peter 1981). Generally, a measure should relate more strongly with other measures of the same construct than with measures of other constructs (Shih 2004). In this study, the discriminant validity of the constructs in the framework was investigated using exploratory factor analysis of measures for each construct separately and of all measures. A factor loading estimate representing the correlation between an original variable and its factor was applied to evaluate statistical significance. According to the guidelines suggested by Hair et al. (2010) for identifying significant factor loadings on the basis of sample size, factor loading of 0.35 is required for significance in a sample size between 250 and 349. In a case of this study, a sample size is 333 so factor loading of 0.35 was considered to meet the minimal level of criteria. Furthermore, if the items loaded significantly on more than one factor are identified, these would be considered either removed or transferred to maximise discriminant validity of items.

5.4.1 The results of discriminant validity for constructs

Item factor loadings obtained from exploratory factor analysis of measures for each construct were all greater than 0.35 which means that all relevant factor loadings are significant. Also, examination of discriminant validity tests associated with all measures has been tested using exploratory factor analysis and revealed that constructs are generally distinct although there are some minor problems. Discriminant validity results are summarised in Appendix B.

Firstly, the measure concerning convenience has appeared in both constructs of perceived usefulness (pu) and attitude towards online grocery shopping (att) (Table 5.7). This issue was assessed based on literatures, examination of reliability and factor results. The construct of pu has an alpha value of 0.842 whereas att has an alpha value of 0.743, which means that both values are greater than the threshold level of 0.70. In a reliable scale, the values of "corrected item-total correlation" of the item, more convenient, in pu and att are 0.536 and 0.604 respectively which indicate that both values are higher than the recommended level of 0.30. Even "Cronbach's alpha if item deleted" was considered, the deletion of more convenient in both constructs decreases its Cronbach's alpha. However, deleting this measure in att greatly decreases its reliability compared to deleting it in pu although these are marginal. With regard to the factor results, the coefficient of more convenient in pu is loaded on the same factor as att. Accordingly, it is believed that the measure of more convenient is more relevant to the construct of attitude rather than perceived usefulness so that it was finally allocated to the construct of attitude towards online grocery shopping.

Table 5.7 The examination of reliability of perceived usefulness and attitude

Construct (Reliability)	Measures	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived usefulness (Cronbach's Alpha = .842)	More cost effective	.602	.819
	Less stressful	.595	.821
	Less physical effort	.478	.834
	More convenient	**.536**	**.827**
	Easier products find	.678	.809
	Easier price compare	.632	.815
	Receiving products and offer details	.526	.829
	Automated shopping list	.544	.827
Attitude (Cronbach's Alpha = .743)	Suited shopping routine	.656	.644
	More convenient	**.604**	**.664**
	Enjoyable experience	.612	.659
	Shopping involvement	.673	.632
	Mechanical process	.103	.846

Secondly, the measure of mechanical process in the construct of attitude towards online grocery shopping always loaded on a single factor. Therefore, this issue was checked through its reliability as described in Table 5.8. The item mechanical process in att of "inter item-total correlation" is less than 0.30 and deletion from scale would increase alpha coefficient from 0.743 to 0.846 in reliability analysis. Subsequently, the item of mechanical process was decided to delete.

Table 5.8 Reliability and item-total statistics of the construct of attitude

Cronbach's Alpha = .743				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Suited shopping routine	18.17	19.934	.656	.644
More convenient	17.91	20.488	.604	.664
Enjoyable experience	18.43	19.996	.612	.659
Shopping involvement	18.58	18.847	.673	.632
Mechanical process	**18.41**	**26.178**	**.103**	**.846**

5.5 Retests of Reliability and Validity Analysis with Retained Measures

Since the two items, more convenient and mechanical process, were deleted from the constructs of perceived usefulness and attitude towards online grocery shopping respectively, reliability analysis and discriminant validity using exploratory factor analysis were retested with retained measures. From the results, all constructs and measures were suited to the model. Discriminant validity results are summarised in Appendix C and revealed that all constructs are distinct except the construct of perceived usefulness.

The measures for the construct of perceived usefulness (pu) loaded on more than one factor. Therefore, two issues were raised with regard to this matter; whether it should be represented by a single dimension or three dimensions, and whether the constructs of perceived usefulness and attitude towards online grocery shopping (att) are distinct and if so, how they are distinguished. At first, factor analysis results for pu were evaluated to confirm its number of factors. When only pu construct was assessed with its own measures, one factor was loaded whereas more than one factor was loaded when pu was tested with all measures. Consequently, since the construct pu itself is represented by a single dimension, it is believed that some measures of pu that are also loaded on other constructs need to be transferred to others for maximised validity. Second, pu has cross-loading items that relate more strongly with measures of the construct att, so literatures were examined to identify whether two constructs are distinct. Based on the definition, perceived usefulness and attitude are distinguished as follows. Davis (1989: p.320) defines pu as the degree to which a person believes that using a particular system would enhance his or her job performance. Attitude is defined as a person's overall, enduring evaluation of a concept or object, such as a person, a brand or a service (Arnould et al., 2002). In the context of consumer behaviour, it is defined as the positive or negative feelings of an individual toward a particular behaviour influenced by these beliefs (Fishbein and Ajzen, 1975b; Ajzen and Fishbein, 1980; Miller, 2005). Specifically, the measures of more cost effective and less stressful were loaded on the same factor as the construct att. Therefore, these two items were re-evaluated on the basis of the definition of pu and att, and the meanings are assumed much relevant to the personal evaluation and feelings rather than a factor enhancing its performance. To conclude, two measures are considered to eliminate or transfer from pu to att. That is, perceived usefulness was

finally modified to omit three items of more cost effective, less stressful and more convenient, and the construct of attitude towards online grocery shopping was augmented with the measures of more cost effective and less stressful.

5.6 Retests of Reliability and Validity Analysis with the Modified Constructs of Perceived usefulness and Attitude towards online grocery shopping

To summarise, the measures of more cost effective, less stressful and more convenient were omitted from the construct perceived usefulness and the deleted items of more cost effective and less stressful were transferred to the construct attitude towards online grocery shopping. Also, the item mechanical process was eliminated from the construct of attitude. Since the two constructs of perceived usefulness and attitude were modified, reliability analysis and discriminant validity using exploratory factor analysis should be retested with retained measures. Furthermore, in general preliminary analysis should be rechecked to confirm that other measures are appropriate.

5.6.1 Reliability analysis for the constructs of perceived usefulness and attitude

Revised two constructs of perceived usefulness and attitude towards online grocery shopping were retested using reliability analysis. All other constructs and measures were suited to the model although there is a minor problem; perceived usefulness involves marginal increase in alpha if item is deleted with the measure of less physical effort. Table 5.9 shows the results of reliability and item-total statistics for modified constructs, perceived usefulness and attitude towards online grocery shopping.

Table 5.9 Reliability and item-total statistics of the revised constructs of perceived usefulness and attitude towards online grocery shopping

Construct and measures	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived usefulness (Cronbach's Alpha = .776)				
Less physical effort	**20.39**	**23.833**	**.376**	**.786**
Easier products find	21.27	18.969	.622	.708
Easier price compare	20.91	19.584	.653	.699
Receiving products and offer details	21.26	20.216	.562	.730
Automated shopping list	21.06	20.535	.535	.739
Attitude (Cronbach's Alpha = .852)				
Suited shopping routine	23.87	33.604	.760	.804
More convenient	23.61	34.791	.678	.819
Enjoyable experience	24.13	34.785	.644	.826
Shopping involvement	24.28	34.267	.639	.826
More cost effective	23.76	35.202	.565	.842
Less stressful	23.22	37.837	.545	.843

5.6.2 Discriminant validity analysis

The two revised constructs of perceived usefulness and attitude towards online grocery shopping were also retested for validity analysis. As a result, all other constructs and measures are distinct, but the item of less physical effort in the construct of perceived usefulness was loaded on a single factor (Appendix D). Therefore, this issue was checked through the factor results and its reliability as described in Table 5.10 and Table 5.9 respectively.

Table 5.10 Factor results for the construct of perceived usefulness

Construct and measure	Factor loadings	h^2
Perceived usefulness		
Less physical effort	**.545**	**.297**
Easier products find	.796	.633
Easier price compare	.815	.664
Receiving products and offer details	.742	.550
Automated shopping list	.712	.507
Eigenvalue	2.651	
Variance %	53.021	
Cumulative var %	53.021	
KMO = .784, Barlett = χ^2 (10) = 418.895, Sig = .000		

Note
Extraction Method: Principal Component Analysis

The measure of less physical effort in pu has low communality although its coefficient is significant as the factor loading is greater than 0.35 in factor analysis. In addition, from the reliability results, "inter item-total correlation" is 0.376 which means that its value is just above the recommended level of 0.30 and the deletion of this item increases alpha coefficient from 0.776 to 0.786 as shown in Table 5.9. Subsequently, the item of less physical effort was decided to delete to maximise discriminant validity. The revised construct of perceived usefulness was also retested for validity analysis. From Table 5.11, it can be seen that there is strong evidence of discriminant validity for the retained indicators in a modified model.

Table 5.11 Discriminant validity results of revised model 2

KMO = .886, Barlett = χ^2 (741) =6726.444, Sig = .000

Construct and measure	Factor number							h^2
	1	2	3	4	5	6	7	
Perceived ease of use								
Clear layout	.266	**.730**	.197	.105	.040	.154	-.018	.679
Effective usage	.156	**.804**	.153	.024	.000	.119	-.013	.709
Easy procedure follow-up	.265	**.696**	.170	.114	.020	.259	-.014	.664
Easy payment	.088	**.770**	-.029	-.051	-.022	.098	.095	.622
Easy delivery arrangement	.156	**.734**	-.020	-.114	-.063	.079	-.078	.593
Perceived usefulness								
Easier products find	.195	.209	.394	.155	.089	**.583**	-.020	.609
Easier price compare	.034	.203	.232	.100	.144	**.707**	.076	.633
Receiving products and offer details	.151	.078	.044	.035	.147	**.787**	-.013	.673
Automated shopping list	.214	.265	.147	.078	-.039	**.581**	-.022	.483
Perceived risk								
Personal and credit card details	.087	-.146	.258	**.479**	.219	.174	.244	.462
Delayed item delivery	.013	-.096	.094	**.775**	.156	.130	.102	.670
Replacement items	-.044	.069	.124	**.721**	-.076	-.218	.080	.602
Delivered items condition or quality	.001	.068	.021	**.810**	.066	.141	.085	.692
Unavailability of physical examination	-.124	.050	-.190	**.743**	.118	.051	.211	.667
Difficulty of returning items	-.231	-.050	-.170	**.636**	.109	.110	.187	.548
Social influence								
People in social circle	.088	-.153	.150	.194	**.746**	.172	.250	.739
People you respect	.104	-.054	.153	.154	**.789**	-.002	.173	.713
Friends and relatives	.054	.048	.158	.096	**.862**	.055	.138	.804
Personal recommendation	.089	.050	-.030	.018	**.791**	.141	-.043	.659
Attitude								
Suited shopping routine	.410	.146	**.699**	-.017	.139	.160	-.099	.733
More convenient	.260	.199	**.686**	.037	.115	.121	-.129	.624
Enjoyable experience	.289	.081	**.515**	.114	.288	.254	.011	.516
Shopping involvement	.387	-.019	**.449**	.081	.273	.362	-.109	.575
More cost effective	.113	.152	**.560**	.018	.144	.481	.080	.608
Less stressful	.193	.466	**.477**	.018	-.015	.252	-.143	.566
Shopping enjoyment in a store								
Shopping enjoyment in supermarkets	.039	.131	-.169	.224	.115	.038	**.755**	.682
Product examination	.031	.199	-.393	.326	-.026	.124	**.474**	.542
Meeting others in supermarkets	.135	-.187	.070	.157	.150	.025	**.732**	.642
Spontaneous decisions	.049	.058	-.343	.149	.012	-.165	**.553**	.479
Leisure activity	-.047	-.080	.200	.143	.180	.019	**.719**	.619
Satisfaction								
Quality of items	**.670**	.221	.325	-.085	-.032	.018	.127	.628
Range of items	**.548**	.370	.276	-.082	-.054	.101	.117	.547
Delivery times	**.745**	.297	.051	-.061	.021	.039	-.050	.655
Delivered items condition and quality	**.812**	.164	.115	-.078	.120	.125	-.013	.736
Customer support and services	**.810**	.114	-.012	.005	.105	.237	-.037	.738
Receiving information _new products and special offers	**.534**	.257	.000	.014	.073	.532	-.004	.639
Repeat buying intention								
Continuous shopping	**.528**	.315	.475	-.122	.011	.100	.092	.637
Encouraging people	**.527**	.033	.369	-.101	.304	.175	.145	.569
Returning to the site	**.597**	.014	.332	-.003	.123	.099	.122	.507
Eigenvalue	4.777	3.922	3.534	3.409	3.135	3.093	2.597	
Variance	12.248	10.056	9.061	8.740	8.037	7.930	6.659	
Cumulative variance	12.248	22.304	31.365	40.105	48.143	56.072	62.731	

Furthermore, discriminant validity of the applied constructs was examined using the approach proposed by Fornell and Larcker (1981). Table 5.12 shows the correlations between all constructs. Here, the diagonals represent the average variance extracted (AVE) of each underlying construct and the other entries represent the squares of inter-construct correlations (SIC). All diagonal estimates are larger than the corresponding squared correlations between constructs, except two correlations between attitude and repeat buying intention, and between satisfaction and repeat buying intention. For attitude towards online grocery shopping, its variance (0.497) is less than its squared correlation with repeat online grocery buying intention (0.635). However, from the hypothesised path of H7, the correlation between attitude towards online grocery shopping and future grocery buying intention can be inferred relatively high. Similarly, for post-purchase attributive satisfaction with respect to its correlation with repeat online grocery buying intention, the corresponding squared correlations between these two constructs (0.684) exceed the average variance extracted of satisfaction (0.532), but it can also be inferred that these two constructs are highly related as the path from post-purchase attributive satisfaction to repeat online grocery buying intention is hypothesised (H6b). Thus, the results indicate that the measured variables have more in common with the construct they are associated with than they do with the other constructs. That is, all the pairs of latent constructs show a strong evidence for discriminant validity.

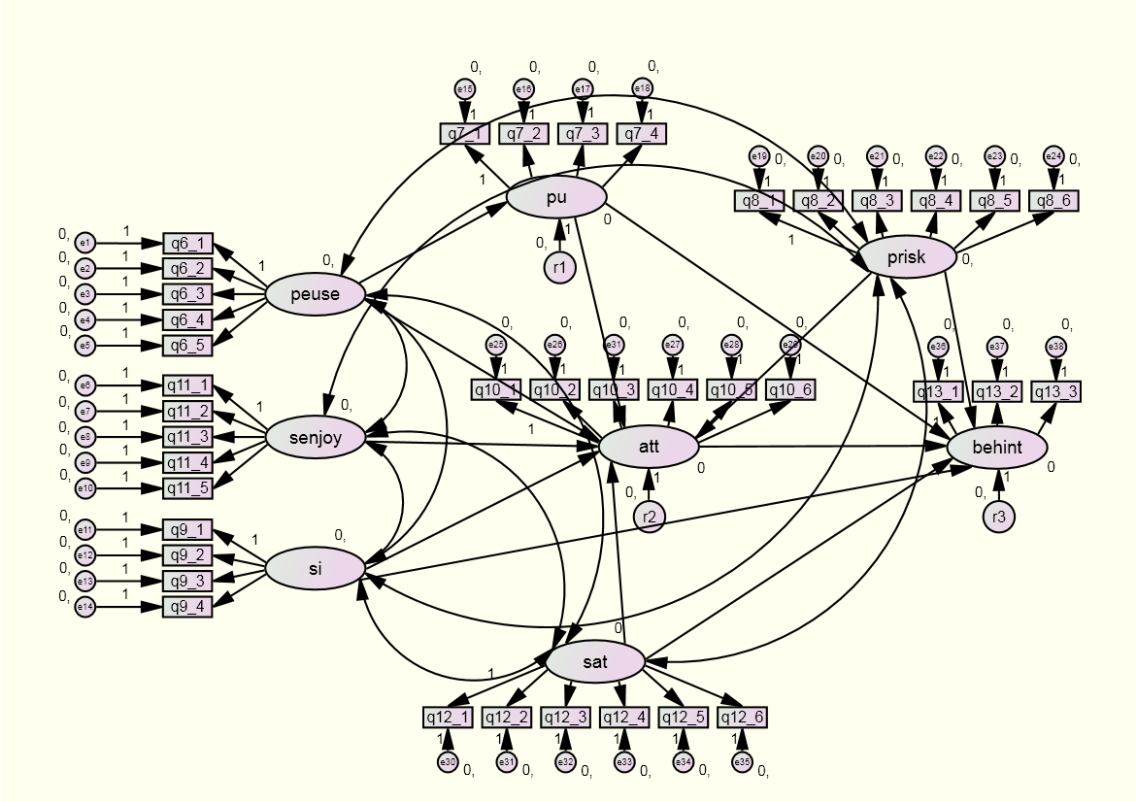
Table 5.12 Discriminant validity of constructs

Construct	1	2	3	4	5	6	7	8
1. pu	0.487							
2. peuse	0.304	0.561						
3. senjoy	0.004	0.004	0.394					
4. si	0.119	0.002	0.122	0.624				
5. prisk	0.069	0.005	0.288	0.120	0.459			
6. att	0.473	0.251	0.012	0.145	0.002	0.497		
7. sat	0.280	0.335	0.004	0.045	0.012	0.448	0.532	
8. behint	0.285	0.255	0.005	0.125	0.004	**0.635**	**0.684**	0.545

5.7 SEM Model Results

Once a theory is proposed, the SEM model is developed (Hair et al. 2010). The complete structural equation modelling (SEM) process comprises both the measurement model which relates variables to the constructs and the structural model which relates constructs to each other (Raj 2011). Figure 5.1 depicts the full structural equation model for consumer's repeat online grocery purchase behaviour.

Figure 5.1 Structural equation model for the repurchase behaviour of online grocery shoppers



5.7.1 The results of confirmatory factor analysis

The measurement model is developed by employing the method of confirmatory factor analysis on the applied multi-item scales (Hansen 2006). Single construct measurement testing was conducted. All eight constructs were individually examined for the adequate measurement model through the estimation of the measurement model. For each construct, variable names and their descriptors are presented to define measures in Appendix E.

Firstly, goodness of fit for each measure was tested to identify how well the model explains the data reasonably. In this study, NFI (Normed-Fit Index), TLI (Tucker Lewis Index), CFI (Comparative Fit Index) and RMSEA (Root Mean Square Error of Approximation) were applied to decide whether the model is acceptable. Measures of model fit indices used in the study and its level of acceptance are displayed in Table 5.13.

Table 5.13 Measures of model fit and level of acceptance

Measures	Definition	Acceptance Level
P value	Probability value	High value
RMSEA	Root mean square error of approximation	Ideal = 0, Acceptable < 0.08
NFI	Normed fit index	Ideal = 0, Acceptable = 0.90
TLI	Tucker-Lewis index	Ideal = 0, Acceptable = 0.90
CFI	Comparative fit index	Ideal = 0, Acceptable = 0.90

Source: Adopted from Hair et al. (2010); Hu and Bentler (1995)

Secondly, the estimated model results were examined to identify offending estimates. This refers to the signs and statistical significance of all estimated parameters, such as regression weights, the standardised regression weights and probability (P). For example, standard weights are checked to understand the relative importance of the measures. Hair et al. (1998) suggested that standardised loading estimates should be 0.5 or higher, and ideally 0.7 or higher. Information from probability (P) indicates statistical significance of the coefficient based upon the hypotheses. If p-value is 0.05 or less, H0 is rejected, that is, the coefficients are significant.

Thirdly, the measurement model is considered in connection with the reliability and validity of the scales used. Reliability can be evaluated using composite reliability (CR) and variance extracted (VE) in order to indicate adequate convergence or internal consistency and to suggest adequate convergent validity respectively. Hair et al. (2010) explained that high construct reliability indicates that internal consistency exists meaning that the measures all consistently represent the same latent construct. The reliabilities and variance were computed using indicator standardised loadings and measurement errors (Hair et al. 1998; Shim et al. 2001). Threshold values of acceptability for the measures are CR = 0.7 and VE = 0.5. Reliability between 0.6 and 0.7 may be acceptable providing that other indicators of a model's construct validity are good (Hair et al. 2010).

5.7.1.1 Perceived usefulness

The values of NFI (0.962) and CFI (0.966) are well above the acceptable level of 0.9 for a satisfactory goodness of fit (Bentler 1992) although the estimate of TLI (0.831) and RMSEA (0.136) do not meet the requirement level of 0.90 and 0.08 respectively as shown in Table 5.14. Thus, throughout the model estimates, the model provides a good fit because the values of two (NFI and CFI) among four fittings are reasonable and adequate for an acceptance model.

For the construct of perceived usefulness, CR has a value of 0.788 while VE has a value of 0.487. Although VE is below 0.5, it is referred to the acceptable approximate value. Therefore, the reliability and variance extracted for each variable indicate that the measures (q7_1- q7_4) are reliable and valid.

Table 5.14 Model results for perceived usefulness

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q7_1 <--- pu	1.000	.761	na	na	.579
q7_2 <--- pu	.983	.815	.085	***	.664
q7_3 <--- pu	.783	.626	.079	***	.392
q7_4 <--- pu	.701	.560	.078	***	.313
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	.962	.831	.966	.136	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	.330	
Composite reliability = 0.788					
Variance extracted = 0.487					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.1.2 Perceived ease of use

As described in Table 5.15, the signs of the coefficients are positive and higher than 0.5 which is the minimum level of standardised estimates. Also, all standardised coefficients are statistically significant at the .001 level. The values for NFI and CFI, an incremental fit index, are 0.900 and 0.905 respectively which are close to the guidelines of 0.90 for an acceptance model. The values for TLI (0.714) and an absolute fit index, RMSEA (0.212) do not meet the requirement level of 0.90 and 0.08 respectively. However, the CFA results suggest that this measurement model provides a good fit because two of fittings (NFI and CFI) among four are reasonable and marginally adequate for an acceptance model.

For the construct of perceived ease of use, CR has a value of 0.862 while VE has a value of 0.561. Both measures exceed the respective threshold values of 0.7 and 0.5 respectively indicating that the measurements are reliable and valid. In summary, the

model fits relatively well, and all the items (q6_1- q6_5) are reliable and adequate evidence of convergent validity is provided.

Table 5.15 Model results for perceived ease of use

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q6_1 <--- peuse	1.000	.819	na	na	.671
q6_2 <--- peuse	1.024	.851	.061	***	.725
q6_3 <--- peuse	.973	.834	.059	***	.696
q6_4 <--- peuse	.610	.597	.056	***	.357
q6_5 <--- peuse	.675	.598	.062	***	.357
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	.900	.714	.905	.212	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	. .396	
Composite reliability = 0.862					
Variance extracted = 0.561					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.1.3 Shopping enjoyment in a store

In Table 5.16, the measurement model for the construct of shopping enjoyment in a store is estimated and resulted by goodness of fit indices: NFI (0.845); TLI (0.556); CFI (0.852) and RMSEA (0.185). This model shows a good fit as the values for NFI and CFI are approximate to 0.90 which is the minimum level of recommended threshold suggested by Hair et al. (2010) while the estimate of TLI (0.556) and RMSEA (0.185) are very apart from the requirement level indicating a poor level of fit. However, throughout the model estimates, because two indices (NFI and CFI) among four yield reasonable values for a good fit, it is possible to regard this model as an acceptable fit.

When considering both the p-value and standardised coefficient, all estimates are statistically significant at the .001 level. In cases of CR and VE, the former is 0.759 and the latter is 0.394. Although VE is below 0.5, it is referred to the acceptable approximate value. Hence, all the items (q11_1– q11_5) are reliable and adequate evidence of convergent validity is provided.

Table 5.16 Model results for shopping enjoyment in a store

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q11_1 <--- senjoy	1.000	.844	na	na	.712
q11_2 <--- senjoy	.559	.557	.065	***	.311
q11_3 <--- senjoy	.673	.575	.076	***	.331
q11_4 <--- senjoy	.589	.536	.070	***	.287
q11_5 <--- senjoy	.677	.575	.076	***	.331
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	.845	.556	.852	.185	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	.277	
Composite reliability = 0.759					
Variance extracted = 0.394					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.1.4 Social influence

The model fit indices for the construct of social influence are NFI (0.987); TLI (0.953); CFI (0.991) and RMSEA (0.093) as shown in Table 5.17. All values of NFI, TLI and CFI are close to 1.00 which satisfies the perfect fit, except RMSEA (0.093). However, the value of RMSEA is below 0.10 for an acceptance model (Browne and Cudeck, 1993; Hair et al., 2010). Consequently, the model is acceptable explaining the data ideally

well. In reviewing both the p-value and standardised coefficient, all estimates are statistically significant.

CR has a value of 0.868 while VE has a value of 0.624. Both measures exceed the acceptable threshold level of 0.7 and 0.5 respectively. In summary, the measurement model for testing the construct of social influence represents the best fit and the measures all consistently represent the same latent construct.

Table 5.17 Model results for social influence

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q9_1 <--- si	1.000	.812	na	na	.659
q9_2 <--- si	.887	.809	.057	***	.654
q9_3 <--- si	1.069	.880	.064	***	.775
q9_4 <--- si	.763	.640	.065	***	.409
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	.987	. .953	.991	.093	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	.429	
Composite reliability = 0.868					
Variance extracted = 0.624					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.1.5 Perceived internet grocery risk

The point estimate of RMSEA is 0.158 which exceeds the recommended threshold of 0.08. The other fit indices, NFI (0.880), TLI (0.742) and CFI (0.889), provide support to the model a good fit because the values of NFI and CFI are approximate to 0.90 which

is the minimum level of threshold (Bollen and Long 1993). Overall, acceptable support is provided for the applied measurements (Table 5.18).

The value of CR is 0.833 while VE is 0.459. Hence, it can be said that the model fits relatively well, and all the items (q8_1- q8_6) are reliable and valid. Additionally, all standardised coefficients are statistically significant at the .001 level.

Table 5.18 Model results for perceived internet grocery risk

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q8_1 <--- prisk	1.000	.494	na	na	.244
q8_2 <--- Prisk	1.423	.749	.152	***	.560
q8_3 <--- prisk	1.065	.590	.131	***	.348
q8_4 <--- prisk	1.472	.786	.156	***	.618
q8_5 <--- prisk	1.365	.764	.149	***	.584
q8_6 <--- prisk	1.139	.633	.136	***	.401
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	.880	.742	.889	.158	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	.312	
Composite reliability = 0.833					
Variance extracted = 0.459					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.1.6 Attitude towards online grocery shopping

In Table 5.19, indices of the model fit show that the model performs well. The values of NFI and CFI are 0.902 and 0.911 respectively indicating a good overall model fit to the data while other indices, TLI (0.792) and RMSEA (0.152) do not meet the requirement level of 0.90 and 0.08 respectively. However, throughout the model estimates, because

two indices (NFI and CFI) among four yield reasonable values for a good fit, it is possible to regard as a good fitting model.

Both CR (0.853) and VE (0.497) satisfy the acceptable thresholds of 0.7 and 0.5 respectively. Although VE is below 0.5, it is approximate to 0.5 which is the minimum level of recommended threshold. Therefore, it is referred to the acceptable approximate value. In reviewing both reliability and validity, the model explains the data relatively well and all the items (q10_1- q10_6) are reliable and adequate evidence of convergent validity is provided. All standardised factor loadings are statistically significant at the .001 level.

Table 5.19 Model results for attitude towards online grocery shopping

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q10_1 <--- att	1.000	.866	na	na	.750
q10_2 <--- att	.909	.785	.058	***	.617
q10_3 <--- att	.820	.683	.063	***	.466
q10_4 <--- att	.846	.676	.066	***	.458
q10_5 <--- att	.628	.585	.058	***	.342
q10_6 <--- att	.757	.593	.069	***	.352
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	.902	.792	.911	.152	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	.334	
Composite reliability = 0.853					
Variance extracted = 0.497					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.1.7 Post-purchase attributive satisfaction

The values of the NFI (0.895) and CFI (0.902) provide support to the model a good fit because the value of CFI is well above the acceptable level of 0.9 and NFI value is approximate to 0.90 which is the minimum level of threshold. However, the estimate of TLI (0.772) and RMSEA (0.169) do not meet the requirement level of 0.90 and 0.08 respectively as shown in Table 5.20. However, the CFA results suggest that this measurement model provides a good fit because the values of two (NFI and CFI) among four fittings are reasonable and marginally adequate for an acceptance model.

For the construct of post-purchase attributive satisfaction, CR has a value of 0.871 while VE has a value of 0.532. Both measures exceed the respective threshold values indicating that the measurements are reliable and valid. In reviewing both standardised weights and the p-value, all estimates are highly significant. Subsequently, all the items (q12_1- q12_6) measure the construct very well and adequate evidence of convergent validity is provided.

Table 5.20 Model results for post-purchase attributive satisfaction

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q12_1 <--- sat	1.000	.716	na	na	.512
q12_2 <--- sat	.904	.652	.084	***	.425
q12_3 <--- sat	1.093	.744	.090	***	.554
q12_4 <--- sat	1.256	.845	.092	***	.714
q12_5 <--- sat	1.203	.791	.093	***	.626
q12_6 <--- sat	.921	.603	.093	***	.364
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	.895	.772	.902	.169	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	.354	
Composite reliability = 0.871					
Variance extracted = 0.532					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.1.8 Repeat online grocery buying intention

The measurement model fits well to the data. NFI and CFI have a perfect fit values with 1.000 although the estimates of TLI and RMSEA are not available. In addition, both measures of CR (0.781) and VE (0.545) indicate reliability and validity of the measurements exceeding the recommended threshold of 0.7 and 0.5 respectively. Hence, not only the model fits perfectly but also all the items explain the data very well. All standardised coefficients are also statistically significant at the .001 level.

Table 5.21 Model results for repeat online grocery buying intention

Construct and measure	Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
	Unstdsd	Stdsd			
q13_1 <--- behint	1.000	.723	na	na	.523
q13_2 <--- behint	1.247	.802	.126	***	.643
q13_3 <--- behint	1.079	.684	.110	***	.468
Measures of fit	NFI	TLI	CFI	RMSEA	
Model					
Default	1.000	na	1.000	na	
Saturated	1.000	na	1.000	na	
Independent	.000	.000	.000	.356	
Composite reliability = 0.781					
Variance extracted = 0.545					

Notes

a Estimated regression coefficients: Unstndsd = Unstandardised, Stndsd = Standardised.

b Standard error of estimated unstandardised coefficient.

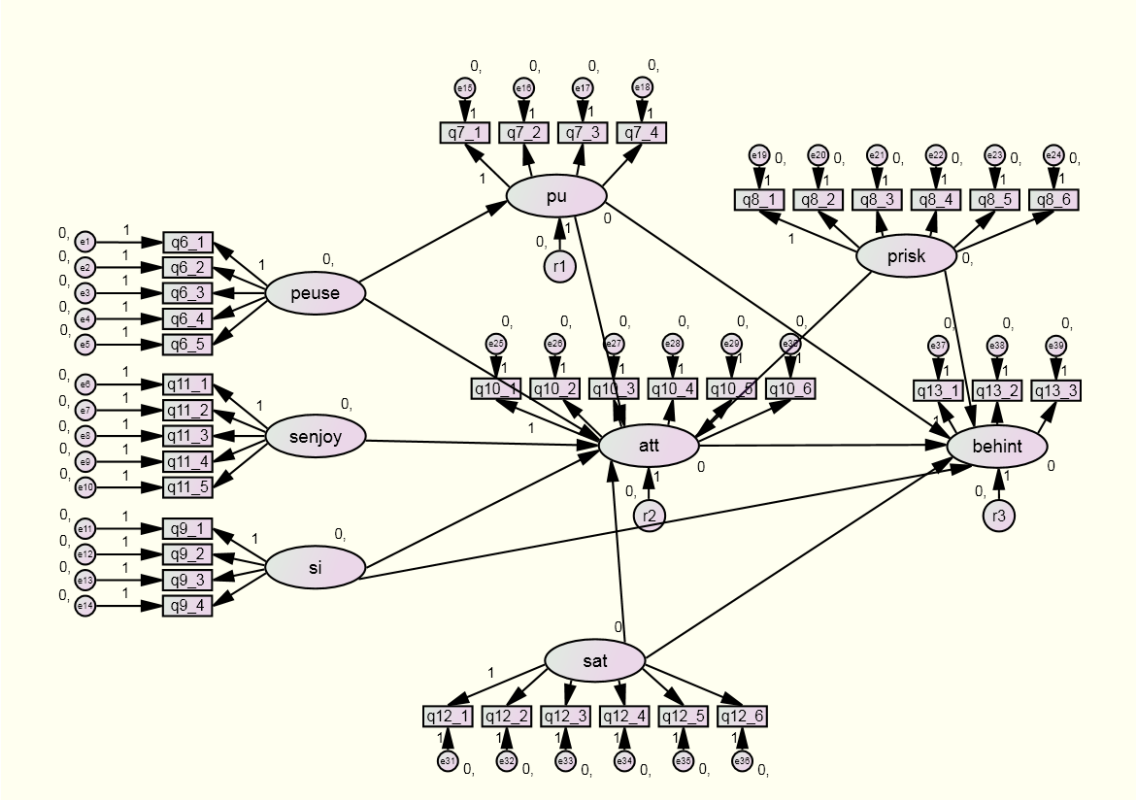
c Probability of a t value equal to or greater than actual t value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the .001 level of significance.

d SMCC = squared multiple correlation coefficient

5.7.2 Developing structural model

Unlike measurement models, structural models focus on the relationships between constructs rather than the relationship between latent constructs and measured variables (Iacobucci, 2009). The structural model represents the theory with a set of structural equations showing how constructs are related to another and is usually depicted with a path diagram. In a path diagram its specification is used to evaluate the theoretical model; how well it reproduces the observed covariance matrix and on the significance and direction of the hypothesised paths. In this study, Amos 19 (2010) was used for this theory testing procedure. Figure 5.2 depicts the full structural model for consumer's repeat online grocery purchase behaviour.

Figure 5.2 Structural model for the repurchase behaviours of online grocery shoppers



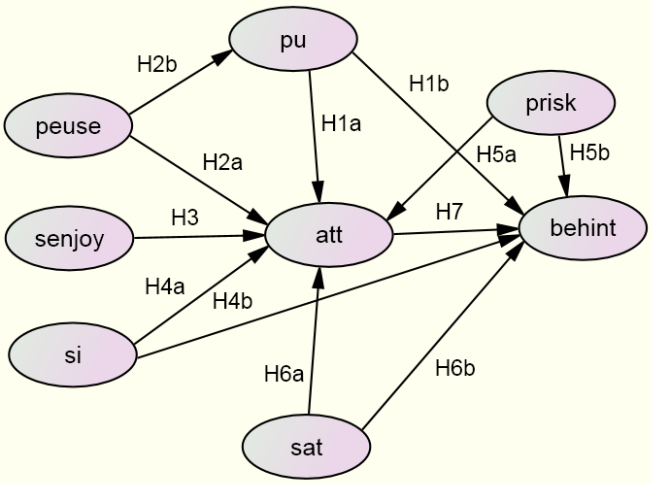
5.7.2.1 Structural evaluation of the hypothesised model

The various hypotheses were tested using the structural model to identify how the constructs are related to each other. Table 5.22 summarises the standardised coefficients from the estimated structural model along with p-value. Also, a simplified structural model that the measured variables and the error variance terms are omitted from the diagram for simplicity, are depicted in Figure 5.3.

Table 5.22 Structural model estimation results

Hypotheses	Hypothesised paths	Standardised coefficient	P-value	Test results
H1a	Perceived usefulness → Attitude towards online grocery shopping	.366	***	Accept
H1b	Perceived usefulness → Repeat online grocery buying intention	-.012	.836	Reject
H2a	Perceived ease of use → Attitude towards online grocery shopping	.106	.105	Reject
H2b	Perceived ease of use →Perceived usefulness	.645	***	Accept
H3	Shopping enjoyment in a store→Attitude towards online grocery shopping	-.206	***	Accept
H4a	Social influence → Attitude towards online grocery shopping	.194	***	Accept
H4b	Social influence → Repeat online grocery buying intention	.086	.017	Reject
H5a	Perceived internet grocery risk → Attitude towards online grocery shopping	.034	.577	Reject
H5b	Perceived internet grocery risk → Repeat online grocery buying intention	-.083	.154	Reject
H6a	Post-purchase attributive satisfaction → Attitude towards online grocery shopping	.540	***	Accept
H6b	Post-purchase attributive satisfaction → Repeat online grocery buying intention	.643	***	Accept
H7	Attitude towards online grocery shopping →Repeat online grocery buying intention	.405	***	Accept

Figure 5.3 Simplified hypothesised model and paths



H1a is confirmed with the construct of perceived usefulness positively related to the construct of attitude towards online grocery shopping (Standardised coefficient of 0.366 at $p<0.001$). The construct of perceived usefulness did not affect the construct of repeat online grocery buying intention (standardised coefficient of -0.012, p-value = 0.836) and thus H1b is not confirmed. H2a is not supported, as the construct of perceived ease of use did not have a significant relationship with the construct of attitude towards online grocery shopping (standardised coefficient of 0.106, p-value = 0.105). H2b is accepted as the construct of perceived ease of use positively affected the construct of perceived usefulness (Standardised coefficient of 0.645 at $p<0.001$). H3 receives support as the construct of shopping enjoyment in a store is negatively related to the construct of attitude towards online grocery shopping (Standardised coefficient of -0.206 at $p<0.001$). H4a is also supported, as the construct of social influence had a significant positive effect on the construct of attitude towards online grocery shopping (Standardised coefficient of 0.194 at $p<0.001$). However, H4b is rejected, as the construct of social influence did not significantly affect the construct of repeat online grocery buying intention (Standardised coefficient of 0.086 at p-value = 0.017). From

H5a, it was expected that the construct of perceived internet grocery risk would negatively affect the construct of attitude towards online grocery shopping. This prediction was not supported in the study (standardised coefficient of 0.034, p-value = 0.577). H5b is rejected, as the construct of perceived internet grocery risk insignificantly and negatively influenced the construct of repeat online grocery buying intention (standardised coefficient of -0.083, p-value = 0.154). The construct of post-purchase attributive satisfaction would be positively related to the construct of attitude towards online grocery buying (H6a). This proposition is confirmed (Standardised coefficient of 0.540 at $p<0.001$). H6b is also accepted as the construct of post-purchase attributive satisfaction positively affected the construct of repeat online grocery buying intention (Standardised coefficient of 0.643 at $p<0.001$). H7 predicted that the construct of attitude towards online grocery shopping would have a significant positive effect on the construct of repeat online grocery buying intention. This prediction was confirmed in the study (Standardised coefficient of 0.405 at $p<0.001$).

Briefly, minor problems with the paths between the constructs exist; seven of the twelve proposed hypotheses specified in the original model are statistically significant at the .001 level. That is, hypotheses H1a, H2b, H3, H4a, H6a, H6b and H7 are accepted while H1b, H2a, H4b, H5a and H5b are rejected. The results of five rejected hypotheses are summarised in Table 5.23.

Table 5.23 Rejected hypotheses paths

Hypothesised path	Coefficient sign	Significance
pu → behint (H1b)	Negative (-)	Not significant
peuse → att (H2a)	Positive (+)	Not significant
si → behint (H4b)	Positive (+)	Not significant
prisk → att (H5a)	Positive (+)	Not significant
prisk → behint (H5b)	Negative (-)	Not significant

5.7.3 Re-specified hypothesised model

5.7.3.1 Tests for alternate models

Five hypotheses in association with the constructs of perceived usefulness, perceived ease of use, social influence and perceived internet grocery risk were rejected. Both the constructs of perceived usefulness and perceived internet grocery risk have insignificant relationships with the constructs of attitude towards online grocery shopping and repeat online grocery buying intention, except the relationship between the constructs perceived usefulness and attitude. Also, the construct of social influence has insignificant relationship with the construct repeat online grocery buying intention. Therefore, six alternate models related to the constructs of perceived usefulness, social influence and perceived internet grocery risk were tried to review whether problematic hypotheses possibly can be enhanced providing sufficient support for the overall model as proposed. That is, alternate model that deletes six rejected hypothesis paths one at a time has been established to examine whether the rests of rejected hypotheses can be improved as being significant rather than just deleting the insignificant paths.

First, since the path from the construct of perceived usefulness (pu) to the construct of repeat online grocery buying intention (behint) (H1b) was rejected, another path H1a (pu → att) associated with the construct perceived usefulness was used to test alternative models. That is, H1a (pu → att) was assessed to identify whether its hypothesised correlation would remain supported and improve the other rejected paths into significant if H1b (pu → behint) is deleted (Figure 5.4). The positive coefficient sign for H1a (pu → att) is still ok and the estimate is highly significant (Table 5.24). To summarise, the construct of perceived usefulness significantly affects the construct attitude towards online grocery shopping. However, other rejected hypotheses are still insignificant although their p-values are slightly improved compared to original values except H2a (peuse → att).

Figure 5.4 Alternate model 1 with path of H1b deleted (pu→behint)

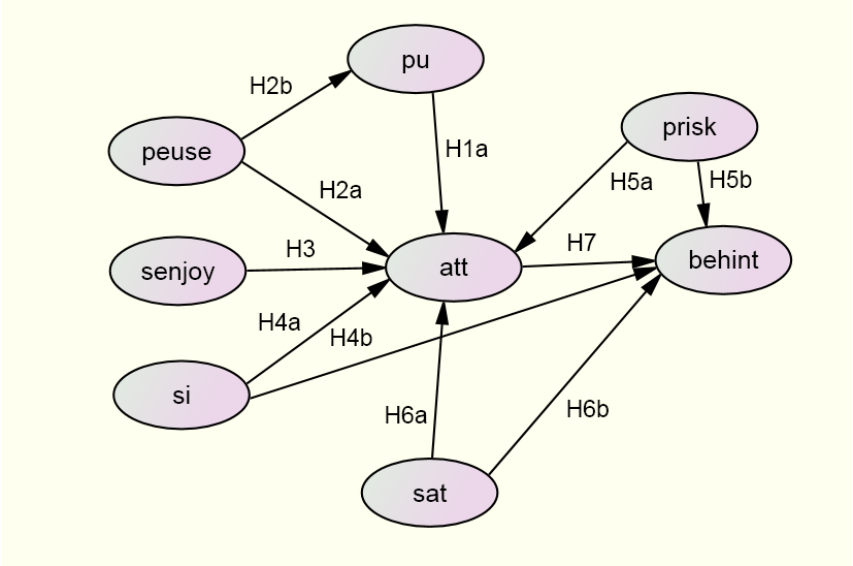


Table 5.24 Parameter estimates of alternate model 1 with path of H1b deleted (pu→behint)

			Estimate	S.E.	C.R.	P
pu	<---	peuse	.645	.078	8.242	***
att	<---	peuse	.105	.065	1.611	.107
att	**<---**	**pu**	**.366**	**.062**	**5.927**	*******
att	<---	senjoy	-.206	.041	-4.970	***
att	<---	si	.194	.035	5.524	***
att	<---	sat	.541	.067	8.035	***
att	<---	prisk	.034	.060	.564	.572
behint	<---	prisk	-.086	.058	-1.476	.140
behint	<---	att	.397	.063	6.299	***
behint	<---	sat	.643	.078	8.241	***
behint	<---	si	.087	.034	2.528	.011

Second, in reverse with first alternative model attempted, H1b (pu → behint) was examined with H1a (pu → att) omitted as displayed in Figure 5.5. The result in Table 5.25 shows that positive direction of the path from the constructs pu to behint is not significantly related (p-value= .906). Overall, the construct of perceived usefulness does not have significant effect on the construct of repeat online grocery buying intention and other rejected hypotheses still have insignificant paths although their p-values are further improved except H1b (pu →behint). Especially, the rejected hypothesis H2a (peuse → att) became significant.

Figure 5.5 Alternate model 2 with path of H1a deleted (pu→att)

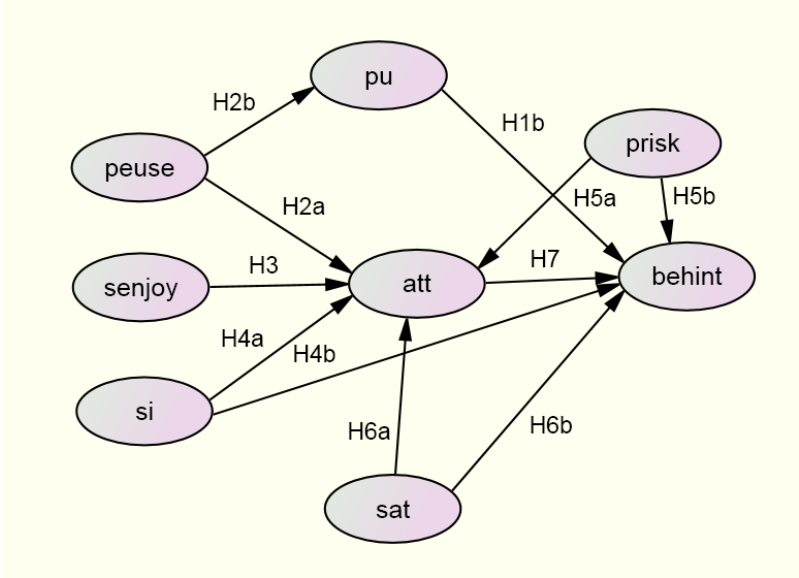


Table 5.25 Parameter estimates of alternate model 2 with path of H1a deleted (pu→att)

			Estimate	S.E.	C.R.	P
pu	<---	peuse	.644	.078	8.279	***
att	<---	peuse	.309	.056	5.498	***
att	<---	senjoy	-.251	.045	-5.574	***
att	<---	si	.244	.038	6.453	***
att	<---	sat	.649	.074	8.807	***
att	<---	prisk	.126	.065	1.923	.054
behint	<---	prisk	-.085	.058	-1.455	.146
behint	<---	att	.385	.066	5.866	***
behint	<---	sat	.648	.083	7.853	***
behint	<---	si	.088	.036	2.438	.015
behint	**<---**	**pu**	**.005**	**.044**	**.118**	**.906**

Third, since the path from the construct of social influence (si) to the construct of repeat online grocery buying intention (behint) (H4b) was rejected, another path H4a (si → att) associated with the construct social influence was used to test alternative models. That is, H4a (si → att) was assessed to identify whether its hypothesised correlation would remain supported and improve the other rejected paths into significant if H4b (si → behint) is deleted (Figure 5.6). The positive coefficient sign for H4a (si → att) is still ok and the estimate is highly significant (Table 5.26). To summarise, the construct of social influence significantly affects the construct attitude towards online grocery shopping, but other rejected hypotheses still have insignificant paths.

Figure 5.6 Alternate model 3 with path of H4b deleted (si → behint)

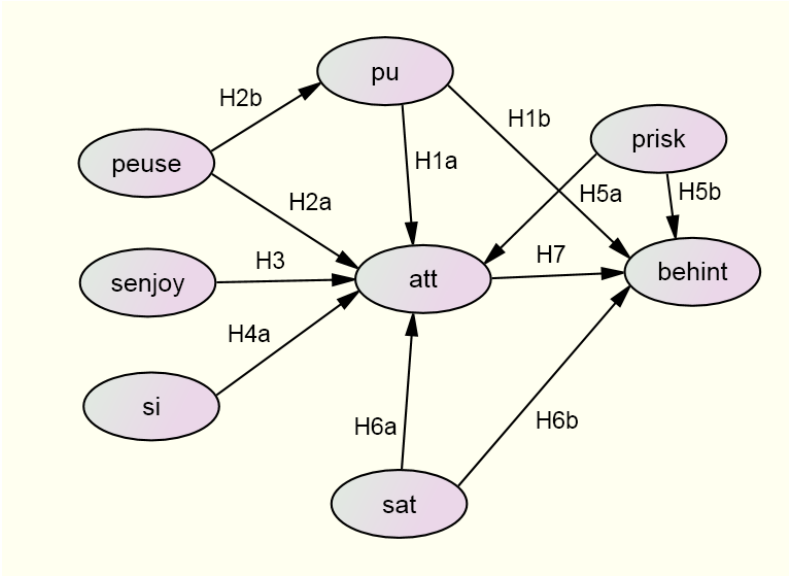


Table 5.26 Parameter estimates of alternate model 3 with path of H4b deleted (si→behint)

			Estimate	S.E.	C.R.	P
pu	<---	peuse	.645	.078	8.243	***
att	<---	peuse	.109	.065	1.682	.093
att	<---	senjoy	-.201	.041	-4.883	***
att	**<---**	**si**	**.200**	**.035**	**5.713**	*******
att	<---	sat	.531	.067	7.925	***
att	<---	pu	.366	.061	5.960	***
att	<---	prisk	.027	.060	.453	.651
behint	<---	att	.481	.076	6.322	***
behint	<---	sat	.637	.081	7.865	***
behint	<---	pu	-.027	.055	-.497	.619
behint	<---	prisk	-.044	.059	-.743	.458

Fourth, in reverse with third alternative model attempted, H4b (si → behint) was examined with H4a (si → att) omitted as displayed in Figure 5.7. The result in Table 5.27 shows that positive direction of the path from the constructs si to behint is not significantly related (p-value= .003). Overall, the construct of social influence does not have significant effect on the construct of repeat online grocery buying intention and other rejected hypotheses still have insignificant paths although their p-values are further improved except H2a (peuse → att).

Figure 5.7 Alternate model 4 with path of H4a deleted (si → att)

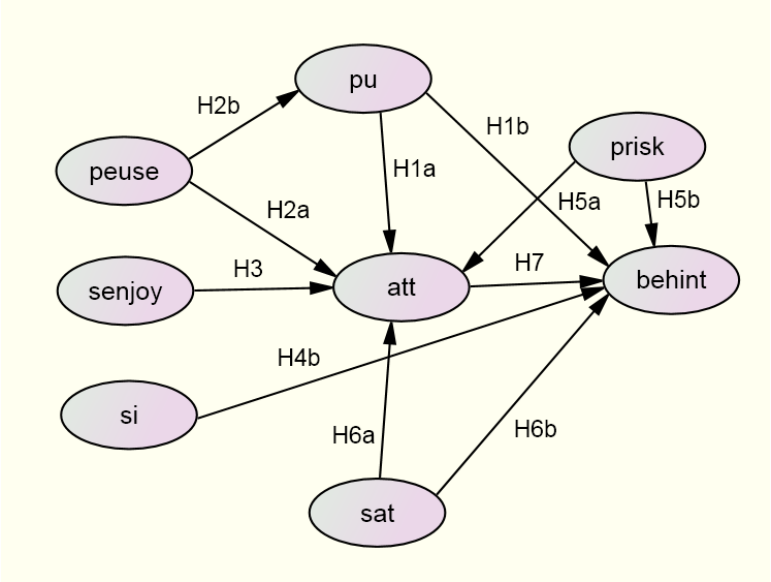


Table 5.27 Parameter estimates of alternate model 4 with path of H4a deleted (si→att)

			Estimate	S.E.	C.R.	P
pu	<---	peuse	.646	.078	8.246	***
att	<---	peuse	.043	.068	.630	.529
att	<---	senjoy	-.165	.042	-3.899	***
att	<---	sat	.602	.071	8.422	***
att	<---	pu	.437	.066	6.647	***
att	<---	prisk	.098	.064	1.538	.124
behint	<---	att	.407	.079	5.138	***
behint	<---	sat	.639	.085	7.484	***
behint	<---	pu	-.014	.058	-.248	.804
behint	<---	prisk	-.085	.058	-1.466	.143
behint	**<---**	**si**	**.096**	**.032**	**2.974**	**.003**

Fifth, with respect to the construct of perceived internet grocery risk, H5a (prisk → att) was measured to examine whether its relationship between these constructs could be improved if H5b (prisk → behint) is deleted (Figure 5.8). The positive coefficient sign and p-value (.644) of H5a (prisk → att) did not still support its original hypothesis as the construct perceived internet grocery risk does not negatively relate to the construct of attitude (Table 5.28).

Figure 5.8 Alternate model 5 with path of H5b deleted (prisk → behint)

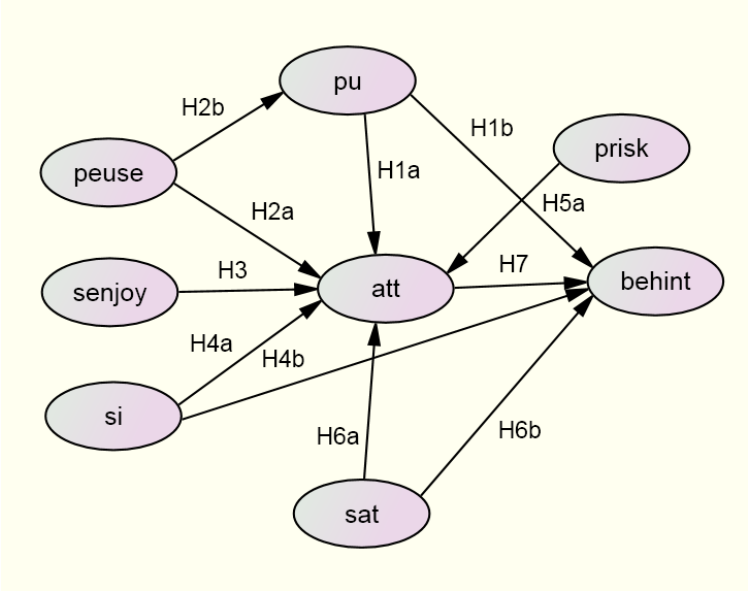


Table 5.28 Parameter estimates of alternate model 5 with path of H5b deleted (prisk→behint)

			Estimate	S.E.	C.R.	P
pu	<---	peuse	.645	.078	8.240	***
att	<---	peuse	.106	.065	1.634	.102
att	<---	senjoy	-.205	.041	-4.949	***
att	<---	si	.195	.035	5.536	***
att	<---	sat	.538	.067	7.994	***
att	**<---**	**prisk**	**.028**	**.060**	**.462**	**.644**
att	<---	pu	.367	.062	5.953	***
behint	<---	att	.418	.082	5.113	***
behint	<---	sat	.655	.084	7.823	***
behint	<---	si	.072	.036	2.003	.045
behint	<---	pu	-.033	.056	-.587	.558

Finally, in reverse with the fifth alternative model, the path from the construct of perceived internet grocery risk to the construct of attitude towards online grocery shopping (H5a) is deleted (Figure 5.9) while H5b (prisk → behint) and other hypotheses were examined to see whether this alternative model can improve the relationships between constructs, in particular rejected hypotheses obtained from the results of original structural model. The negative coefficient sign of H5b (prisk → behint) is ok but p-value (.160) is not significant (Table 5.29). Thus, the construct of perceived internet grocery risk did not affect the construct of repeat online grocery buying intention and other rejected hypotheses are still remained as not significant.

Figure 5.9 Alternate model 6 with path of H5a deleted (prisk → att)

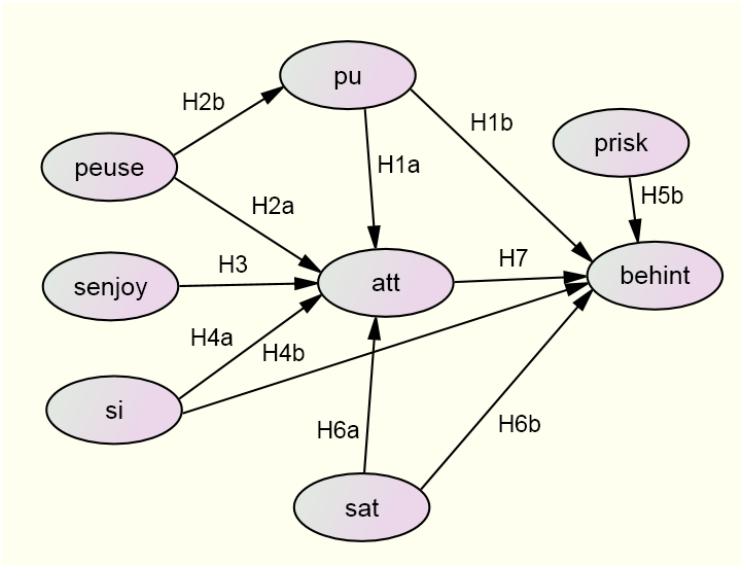


Table 5.29 Parameter estimates of alternate model 6 with path of H5a deleted (prisk → att)

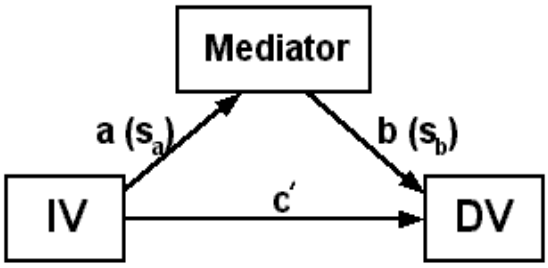
			Estimate	S.E.	C.R.	P
pu	<---	peuse	.646	.078	8.246	***
att	<---	peuse	.106	.065	1.631	.103
att	<---	senjoy	-.197	.041	-4.772	***
att	<---	si	.197	.035	5.597	***
att	<---	sat	.531	.067	7.905	***
att	<---	pu	.373	.062	6.021	***
behint	<---	att	.407	.082	4.966	***
behint	<---	sat	.643	.083	7.723	***
behint	<---	si	.086	.036	2.373	.018
behint	<---	pu	-.013	.057	-.224	.823
behint	**<---**	**prisk**	**-.081**	**.058**	**-1.404**	**.160**

In summary, alternate models with deleted paths were evaluated on the basis of the rejected hypotheses to identify if those can be improved into being significant and accepted. As a result, six alternative models failed to support original hypotheses except one path H1a (pu → att). That is, rejected hypotheses in original model still have insignificant relationships between constructs.

5.7.3.2 Tests for mediating effects of the constructs of perceived usefulness and attitude towards online grocery shopping

A mediating effect is created when a third variable intervenes between two other related constructs; the mediator theoretically facilitates a sequence of relationship between two other constructs involved (Hair et al., 2010). Therefore, testing mediation is to identify whether an independent variable (initial variable) influences a dependent variable (outcome) (Preacher and Leonardelli, 2006; Kenny, 2011). Denis (2010) and Hair et al (2010) have highlighted the importance of the underlying condition that mediation requires statistically significant correlations among all three constructs before the actual test of mediation is conducted. That is, if any of the above paths are not statistically significant, then the test of mediation cannot be processed. Figure 5.10 illustrates a path diagram of mediation.

Figure 5.10 Path diagram of mediating effect



a, *b*, and *c'* are path coefficients.

a = raw (unstandardized) regression coefficient for the association between IV and mediator.
s_a = standard error of *a*.
b = raw coefficient for the association between the mediator and the DV (when the IV is also a predictor of the DV).
s_b = standard error of *b*.

Source: Adopted from preacher and Leonardelli (2006)

Mediation can be examined in several ways. Brown (1997) has mentioned that the most important type of effect for assessing mediation in structural equation models is the specific indirect effect representing the portion of the total indirect effect that works through a single intervening variable (Fox 1980). In this study, the Sobel test was conducted using the program provided by Preacher and Leonardelli (2006) on the webpage, http://quantpsy.org/sobel/sobel.htm. It calculates that the critical ratio as a test of whether the indirect effect of the independent variable (IV) on the dependent variable (DV) via the mediator variable is statistically and significantly different from zero. That is, whether a mediator variable significantly carries the influence of an independent variable to a dependent variable. Denis (2010) states that this is the same idea as the test providing support for partial mediation said to occur if c' is not equal to 0. Here, full mediation is said to occur if c' is equal to 0.

Mediating effects of the constructs perceived usefulness and attitude towards online grocery shopping were systematically tested. Firstly, an indirect effect of the construct of perceived ease of use on the construct of attitude towards online grocery shopping through the mediating effect of the construct perceived usefulness is significant (t-value = 4.80, p-value = 0.00). The null hypothesis of no mediation is rejected and it is deemed to have some evidence for full mediation. That is, the relationship between the constructs of perceived ease of use and attitude towards online grocery shopping is mediated by the construct perceived usefulness.

Secondly, the construct of perceived usefulness mediating the relationship between the constructs of perceived ease of use and repeat online grocery buying intention is not significant (t-value = -0.21, p-value = 0.83). Therefore, it is concluded that the construct of perceived ease of use cannot explain the construct of repeat online grocery buying intention through the construct of perceived usefulness.

Thirdly, an indirect effect of the construct perceived internet gocery risk on the construct repeat online grocery buying intention through the mediating effect of the construct attitude is not significant (t-value = 0.56, p-value = 0.57): the null hypothesis of no mediation is accepted. That is, the relationship between the constructs perceived internet grocery risk and repeat online grocery buying intention are not mediated by the construct of attitude towards online grocery shopping.

Finally, the construct attitude towards online grocery shopping mediating the relationship between the constructs of social influence and repeat online grocery buying intention is significant (t-value = 3.71, p-value = 0.00). Therefore, it is concluded that the construct of social influence can explain the construct of repeat online grocery buying intention through the construct of attitude towards online grocery shopping.

In brief, experiments to test mediating effects of the constructs perceived usefulness and attitude towards online grocery shopping were found that the construct perceived ease of use has an indirect effect on the construct of attitude towards online grocery shopping through the construct perceived usefulness. In addition, the construct of social influence indirectly influence the construct repeat online grocery buying intention through attitude. However, the construct of perceived usefulness do not have a mediating effect on between the constructs of perceived ease of use and repeat online grocery buying intention. The construct of attitude towards online grocery shopping is also failed to support a mediating role for the constructs of perceived internet grocery risk and repeat buying intention.

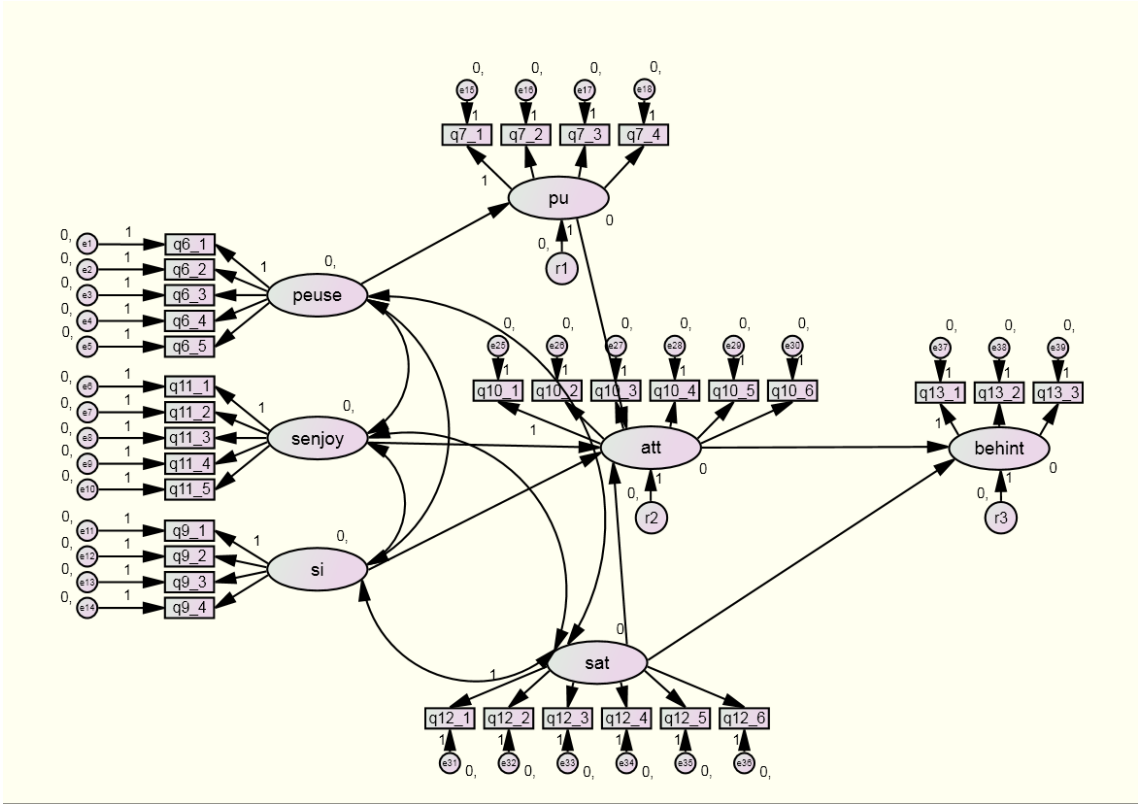
5.7.3.3 Structural results of the re-specified hypothesised model

To improve the model fit to the data, two experiments were conducted: alternate models with deleted paths and mediation. However, evaluating alternative models on the basis of five rejected hypotheses failed to support original hypotheses. That is, rejected hypotheses in the original model still have insignificant relationships between constructs: pu → behint (H1b), peuse → att (H2a), si → behint (H4b), prisk → att (H5a) and prisk → behint (H5b). Experiments to test mediating effects of perceived usefulness and attitude towards online grocery shopping also failed except two (peuse → pu → att and si → att → behint sequences). Insignificant hypothesised paths are subsequently considered better to be deleted from the model. Furthermore, a remaining problem appears to be the issue of the construct perceived internet grocery risk which has no correlation with other constructs in a model. This action is supported by the findings from Kurnia and Chien (2003) that perceived risk has no influence on the attitude. Therefore, it is justified that this construct needs to be omitted for a better model fit.

5.7.4 Developing modified model

Not only the construct of perceived internet grocery risk, but also five insignificant paths (pu → behint (H1b), peuse → att (H2a), si → behint (H4b), prisk → att (H5a), and prisk →behint (H5b)) within original model were eliminated. Then, it was retested to check original paths be prepared to modify measurement models. Figure 5.11 depicts the modified structural equation model.

Figure 5.11 Modified structural equation model



5.7.4.1 The structural evaluation of modified model

In examining both the p-value and standardised loading estimates, the sign of the coefficients are positive and higher than 0.5. Also, all the individual parameter estimates are statistically significant at the .001 level (Table 5.30). The value of CR is 0.971 while VE is 0.513, and both measures satisfy the acceptable threshold level of 0.7 and 0.5 respectively.

The modified structural equation model is estimated using NFI, TLI, CFI and RMSEA to assess whether the relationships are consistent with theoretical expectations. The value of RMSEA is at 0.075 which is well within the recommended range of 0.05 and 0.08. The values for NFI (0.766), TLI (0.805) and CFI (0.832) are reasonably adequate for an acceptable model although these are slightly below the requirement level of 0.90 suggested by Hair et al. (2010). To sum up, the model is acceptable explaining the data ideally well because most of indices yield reasonable values for a good fit and the reliability and variance extracted for each variable indicate that all items are reliable and valid.

5.7.4.2 The structural results of the hypothesised model

The test results for modified structural equation model and hypotheses paths are described in Table 5.30 and Table 5.31 respectively. All hypothesised paths within the modified model were highly significant at the .001 level. In other words, hypotheses are all supported.

Table 5.30 The results for revised structural equation model

Construct and measure			Coefficient[a]		Std error[b]	Prob[c]	SMCC[d]
			Unstdsd	Stdsd			
pu	<---	peuse	.672	.570	.078	***	pu = .325
att	<---	pu	.391	.416	.054	***	
att	<---	senjoy	-.212	-.254	.046	***	att = .649
att	<---	si	.201	.277	.039	***	
att	<---	sat	.581	.460	.075	***	behint =
behint	<---	att	.421	.428	.067	***	. 784
behint	<---	sat	.681	.547	.090	***	
q6_1	<---	peuse	1.000	.830			.688
q6_2	<---	peuse	.983	.827	.058	***	.685
q6_3	<---	peuse	.978	.849	.056	***	.721
q6_4	<---	peuse	.594	.589	.055	***	.347
q6_5	<---	peuse	.656	.589	.060	***	.346
q7_1	<---	pu	1.000	.793			.629
q7_2	<---	pu	.885	.764	.070	***	.584
q7_3	<---	pu	.742	.618	.072	***	.382
q7_4	<---	pu	.707	.589	.072	***	.346
q9_1	<---	si	1.000	.824			.679
q9_2	<---	si	.881	.815	.055	***	.663
q9_3	<---	si	1.038	.867	.061	***	.752
q9_4	<---	si	.745	.634	.064	***	.402
q10_1	<---	att	1.000	.837			.701
q10_2	<---	att	.904	.751	.062	***	.564
q10_3	<---	att	.846	.674	.066	***	.455
q10_4	<---	att	.893	.684	.069	***	.468
q10_5	<---	att	.660	.587	.061	***	.345
q10_6	<---	att	.816	.612	.072	***	.374
q11_1	<---	senjoy	1.000	.823			.678
q11_2	<---	senjoy	.572	.557	.065	***	.310
q11_3	<---	senjoy	.714	.596	.076	***	.355
q11_4	<---	senjoy	.608	.539	.071	***	.291
q11_5	<---	senjoy	.705	.584	.077	***	.342
q12_1	<---	sat	1.000	.738			.544
q12_2	<---	sat	.925	.688	.078	***	.473
q12_3	<---	sat	1.060	.744	.083	***	.553
q12_4	<---	sat	1.182	.820	.084	***	.672
q12_5	<---	sat	1.129	.765	.086	***	.586
q12_6	<---	sat	.921	.623	.087	***	.388
q13_1	<---	behint	1.000	.794			.631
q13_2	<---	behint	1.030	.726	.081	***	.528
q13_3	<---	behint	.953	.661	.083	***	.437
Measures of fit			NFI	TLI	CFI	RMSEA	
Model							
Default			.766	.805	.832	.075	
Saturated			1.000	na	1.000	na	
Independent			.000	.000	.000	.169	
Composite reliability = 0.971							
Variance extracted = 0.513							

Note
Constructs are defined as follows:
peuse = perceived ease of use; pu = perceived usefulness; si = social influence; att = attitude towards online grocery shopping; senjoy = shopping enjoyment in a store; sat = post-purchase attributive satisfaction; behint = repeat online grocery buying intention

Table 5.31 The results of revised structural model estimation

Hypotheses	Hypothesised paths	Standardised coefficient	P-value	Test results
H1a	Perceived usefulness → Attitude towards online grocery shopping	.391	***	Accept
H2b	Perceived ease of use →Perceived usefulness	.672	***	Accept
H3	Shopping enjoyment in a store →Attitude towards online grocery shopping	-.212	***	Accept
H4a	Social influence → Attitude towards online grocery shopping	.201	***	Accept
H6a	Post-purchase attributive satisfaction → Attitude towards online grocery shopping	.581	***	Accept
H6b	Post-purchase attributive satisfaction → Repeat online grocery buying intention	.681	***	Accept
H7	Attitude towards online grocery shopping →Repeat online grocery buying intention	.421	***	Accept

5.7.4.3 Total effects

The general model permits the evaluation of total effects on the determination of the constructs of perceived usefulness, attitude towards online grocery shopping and repeat online grocery buying intention, arising from the combination of direct and indirect effects of measures and constructs. The standardised direct, indirect and total effects are summarised in Table 5.32. Test of statistical significance of indirect effects was based on Sobel (1982) test and t values, and probability values were computed from Preacher and Leonardelli (2006) (Table 5.33).

Table 5.32 Direct, indirect and total effects by constructs

Construct	Perceived usefulness			Attitude			Repeat buying intention		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
peuse	.570	na	.570	na	.237	.237	na	.101	.101
senjoy				-.254		-.254		-.109	-.109
si				.277		.277		.119	.119
pu				.416		.416		.178	.178
att							.428		.428
sat				.460		.460	.547	.197	.744

Note
Constructs are defined as follows:
peuse = perceived ease of use; senjoy = shopping enjoyment in a store; si = social influence; pu = perceived usefulness; att = attitude towards online grocery shopping; sat = post-purchase attributive satisfaction

With respect to the relative importance of constructs or measures on the construct of attitude towards online grocery shopping, the construct of post-purchase attributive satisfaction has the strongest total effect, followed by the constructs of perceived usefulness, social influence, perceived ease of use and shopping enjoyment in a store. In the case of the construct of perceived usefulness, only the construct perceived ease of use has direct influence. The relative importance of constructs or measures on the construct of repeat online grocery buying intention, it shows a similar pattern with the construct of attitude towards online grocery shopping: the construct of post-purchase attributive satisfaction has the greatest total effect, followed by the constructs of attitude towards online grocery shopping, perceived usefulness, social influence, perceived ease of use and shopping enjoyment in a store.

Table 5.33 The results of Sobel test with t-values and p-values

	t-value	p-value	Significance
peuse→pu→att	5.54	0.00	Yes
senjoy→att→behint	-3.72	0.00	Yes
si→att→behint	3.98	0.00	Yes
pu→att→behint	4.75	0.00	Yes
sat→att→behint	4.88	0.00	Yes

Note
Constructs are defined as follows:
peuse = perceived ease of use; pu = perceived usefulness; si = social influence; att = attitude towards online grocery shopping; senjoy = shopping enjoyment in a store; sat = satisfaction; behint = repeat online grocery buying intention

5.8 Summary

This chapter presents the empirical results of the data. Firstly, the preliminary analysis provides the profile characteristics and statistical descriptive analysis of the sample, online grocery shoppers. Secondly, the results of the reliability and validity of measures for the sample are detailed. Thirdly, the full SEM process, as the main data analysis, is discussed by the full measurement model prior to the analysis of its structural model. The results from the confirmatory factor analysis for the measurement model are presented and the results of the structural model from the hypotheses tests are then detailed. A revised structural equation model developed to achieve the improved results is evaluated, and the impact of determinants on repeat online grocery purchase behaviour in terms of direct, indirect and total effects is discussed in the end.

Following this chapter, a comprehensive discussion into the results is presented in the next chapter.

Chapter 6 Discussion

6.1 Introduction

The aim of the chapter is to present a summary discussion of the study in the context of the literature. This chapter discusses the empirical findings on the basis of the research questions developed for the study. Section 6.2 includes the summarised key results regarding each research question. Finally, a summary of the chapter is provided in Section 6.3.

6.2 Research Questions Addressed

6.2.1 Online grocery shopping behaviour

The first research objective of this study is to examine online grocery shopping behaviour through consumer's online grocery shopping routine. Furthermore, linked to its behaviour, demographic characteristics of the sample and descriptive statistics that provide the basic features of the data are tested.

To identify respondents' online grocery shopping behaviours and socio-demographic profiles of them, frequency analysis was performed. With respect to the shopping behaviour, grocery shoppers who have participated in the survey for this research do mostly prefer the website of Tesco to visit and do their grocery shopping, and they mostly decide to shop for groceries online by themselves. In terms of purchase frequencies, the majority numbers rarely do grocery shopping online while the second majority numbers do once a month. As for purchase purpose, the majority of respondents answered that they choose an online channel for their routine basis grocery top-up and for other reasons. Finally, over half of respondents plan their online grocery expenditure according to their budget. In other words, they seem more cautious of spending money for their grocery shopping via the internet.

In terms of sample characteristics, a high proportion of internet grocery buyers who participated in the survey were women, and aged between 18 and 34 years. In addition,

they tend to be in full-time employment, have a moderate level of income and a higher educational level. In this research, the household where two adults live without children composes the majority. Briefly, online grocery shopping is mostly used by young samples having no children, especially by women. Also, online grocery shoppers have distinct characteristics of a full-time employment with either moderate or high income, and have a higher education qualification.

When considering the descriptive statistics, all the variables of each construct were calculated by IBM SPSS Statistics (2010), and the mean scores and standard deviation of the measures were enumerated in a descending order of importance that affects constructs. With respect to the construct of perceived ease of use, easy payment is the most important variable that influences consumers' perceptions about ease of use for online grocery shopping. Less physical effort is the mostly perceived measure linked to usefulness when consumers choose an online channel for buying groceries. Associated with the perceived internet grocery risk, grocery shoppers are mostly concerned that they are physically unable to examine the products when considering an online service. It was also found that personal recommendation linked to social influence mostly affects the decision to use online grocery shopping. As the most important feature of online grocery shopping, more convenience was perceived whereas product examination was revealed as the primary reason that grocery shoppers enjoy their in-store shopping rather than doing it online. With respect to the construct of post-purchase attributive satisfaction, the result indicates that grocery consumers would feel the most satisfaction with online grocery service if the range of items is available. Finally, shopping continuously through the internet is identified as the most important measure that affects consumers' future grocery buying intention.

6.2.2 Key determinants of repeat online grocery shopping behaviour

The second research objective of this study is related to the critical constructs affecting repeat online grocery shopping behaviour based on the actual experiences of consumers. In this study, there are six constructs involved in the consumer's repeat online grocery shopping behaviour after deleting the construct of perceived internet grocery risk through the estimation of the full structural model: perceived usefulness, perceived ease

of use, shopping enjoyment in a store, social influence, post-purchase attributive satisfaction and attitudes towards online grocery shopping. Above all, five constructs, perceived usefulness, perceived ease of use, shopping enjoyment in a store, social influence and post-purchase attributive satisfaction, directly affect consumers' attitudes towards online grocery shopping first except the construct of perceived ease of use. Then, six constructs, including the construct of attitude towards online grocery shopping this time, influence users' online grocery repurchase intentions either directly or indirectly.

6.2.2.1 Perceived usefulness

Perceived useful features of online grocery shopping have a direct effect on consumer's positive attitude to use online service for their grocery shopping, and furthermore, such positive attitude affects the repeat online grocery purchase intention. That is, perceived usefulness influences repurchase intention in the future through the positive attitude towards online grocery shopping. This results contradict the researches by Cyr et al. (2006) and Chiu et al. (2009) stating that perceived usefulness and repeat online grocery buying intention have direct and positive relationship.

6.2.2.2 Perceived ease of use

Like the construct of perceived usefulness, perceived ease of use is not the direct determinant that affects consumer's repeat online grocery buying intention. However, perceived ease of use has two indirect positive effects on repurchase behaviour. In other words, ease of use of online grocery shopping positively affects consumers' attitude towards online grocery shopping through the construct of perceived usefulness. Also, such positive attitudes lead consumers to repeatedly purchase groceries through the internet. The relationship between the constructs of perceived ease of use and perceived usefulness support the past literatures (Kurnia and Chien 2003; Shih 2004) finding that the construct of perceived ease of use indirectly influence the construct of attitude towards online grocery shopping through the construct of perceived usefulness.

6.2.2.3 Shopping enjoyment in a store

The construct of shopping enjoyment in a store only shows a negative effect on consumer's repeat purchase behaviour. This negative behaviour is developed by the consumer's negative attitude towards online grocery shopping. Grocery shoppers who enjoy shopping for groceries in a supermarket are less likely to do their grocery shopping on the internet regardless of the purposes of the shopping. Such negative attitude to online grocery shopping affects their future behavioural intention not to purchase groceries online. The results are consistent with previous research (Verhoef and Langerak 2001; Ramus and Nielsen 2005) that have found a negative relationship between shopping enjoyment in a store and attitude to online grocery shopping.

6.2.2.4 Social influence

Like the construct of shopping enjoyment in a store, the construct of social influence determines consumers' attitude as well as repeat purchase intention in the future. However, these relationships between constructs are positive. Therefore, it is said that social influence is one of key determinants that affects repeat online grocery buying intention through the positive attitude to use online grocery shopping.

6.2.2.5 Post-purchase attributive satisfaction

Post-purchase attributive satisfaction is the only construct that has both direct and indirect impacts on repeat online grocery shopping intention. That is, these relationships act as a specific feature that distinguishes satisfaction from other constructs, especially the construct of attitude which shows only direct relationship with online grocery repurchase intention. In other words, post-purchase attributive satisfaction is one of the key factors that determine an online as a grocery shopping channel and such consumer's satisfied prior experience leads to the positive repeat buying behaviour in the future. The results support the existing studies which find that post-purchase attributive satisfaction has a positive effect on attitude towards online grocery buying (Hansen 2006) and which emphasise the influence of satisfaction on attitude as well as repeat purchase intention in the future (Dhruv et al. 2003; Friese et al. 2003).

6.2.2.6 Attitudes towards online grocery shopping

As mentioned in Section 6.2.2.5, the construct of attitude towards online grocery shopping directly affects repeat online grocery buying intention. That is, a positive attitude to use online grocery shopping encourages consumers to continue buying groceries online. This finding is consistent with the research of Hansen (2006).

6.2.3 The development of a structural equation model

The third research question is to formulate a structural equation model to explain repeat online grocery shopping behaviour in terms of the key determinants. The scales for each of the constructs used in the conceptual model were firstly developed based on the existing literatures associated with online grocery shopping. Then, whether these scales are reliable and valid was evaluated in order to assess their suitability to the latent variables and the distinctiveness of each construct. Through the reliability test, the reliability of the construct that has an item less correlated with the scale overall was improved as that item has been deleted. That is, all constructs in the proposed model became to have acceptable reliability values and ready for the validity test. By exploratory factor analysis employed to confirm the discriminant validity of the constructs, some minor problems were raised although those problems are solved through attempting a retest. Subsequently, all distinctive constructs for the proposed model are established.

The estimation of the structural equation model as the final stage of the analysis was conducted. Within this analysis, the measurement models for each construct have been evaluated in terms of measures of fit and convergent validity, and the results confirm that proposed model explains the data reasonably well. Following from this, the results regarding the full structural model and the initially proposed twelve hypotheses to identify the nature of the interrelationships between constructs are summarised as follows. Five hypotheses associated with the constructs of perceived usefulness, perceived ease of use, social influence and perceived internet grocery risk, were rejected. That is, perceived usefulness do not influence repurchase intention; perceived ease of use do not affect attitude; social influence do not influence repurchase intention; perceived internet grocery risk do not have an impact on both attitude and repeat online

grocery buying intention. To improve such insignificant paths, alternate models were proposed before just deleting five rejected hypotheses paths. However, it was concluded that insignificant hypothesised paths were better to be deleted from the model. Accordingly, insignificant paths (peuse → att (H2a), pu → behint (H1b), si → behint (H4b), prisk → att (H5a), and prisk →behint (H5b)) and the construct of perceived internet grocery risk, which shows no relationship with other constructs in a proposed model, were eliminated. The model was modified and retested. As the results, the revised model is acceptable explaining the data ideally well and all hypothesis paths regarding the determinants of consumer's online grocery repurchase intention are all supported showing significant at the .001 level.

From the newly specified structural model, the impact of determinant constructs on repeat online grocery shopping behaviour was identified in terms of direct, indirect and total effects. This research has established that consumers' attitudes towards online grocery shopping are most strongly influenced by the constructs of post-purchase attributive satisfaction, perceived usefulness, social influence, perceived ease of use and shopping enjoyment in a store in descending order of importance. It reveals that the construct of post-purchase attributive satisfaction is much stronger than the other four determinants of attitude to online grocery shopping. It is contrary to the previous researches (Ramus and Nielsen, 2005; Morganosky and Cude; 2000, Raijas; 2002, Verhoef and Langerak; 2001and Ranskanen et al., 2002; Corbett, 2001) which have shown that the perceived usefulness of online grocery shopping, such as shopping from home, having products delivered, shopping at any time and saving time, is the most significant influence when consumers decide to shop for groceries via the internet. However, the relationship between the constructs of perceived ease of use and perceived usefulness support the past literatures by Kurnia and Chien (2003) and Shih (2004) which find that the construct of perceived ease of use indirectly influence the construct of attitude towards online grocery shopping through the construct of perceived usefulness. Consequently, this finding indicates that post-purchase attributive satisfaction is a key factor enabling online grocery retailers to build the relationship with their customers. In other words, if consumers have satisfied with purchasing grocery products from the internet, their prior experiences would significantly lead to the positive attitudes towards online grocery shopping. It may be important that online grocery retailers should more focus on providing satisfactory products and services for

their potential and existing customers. Moreover, the effectiveness of online grocery shopping needs to be magnified as the second important influence on attitude towards online grocery shopping.

This research has also found that the consumers' repeat online grocery purchasing intentions are most strongly affected by the constructs of post-purchase attributive satisfaction, attitude towards online grocery shopping, perceived usefulness, social influence, perceived ease of use and shopping enjoyment in a store in descending order of importance. It reveals that post-purchase attributive satisfaction is a better indicator of consumers' future behavioural intentions compared to the other influences. Furthermore, there is another route that consumers' repeat purchasing intentions can be indirectly developed by satisfaction through the consumer's attitude although this route is much weaker than that from direct relationship. Briefly, post-purchase attributive satisfaction has significant positive effects on the consumers' repeat buying intentions both directly and indirectly via attitude. Hence, this result suggests associated with the descriptive statistics that the online grocery retailers need to consider the importance of the range of products available and the quality of items available to get consumers' high satisfactions from the products. In addition, providing enhanced services, such as delivery times, and controlled and guaranteed condition and quality of items that are delivered should be weighted to gain consumers' high satisfactions. Similarly, consumers' perceptions of the effectiveness of online grocery shopping and influence of others indirectly lead to the consumer's repurchase intention of e-grocery shopping via their positive attitudes. On the other hand, shopping enjoyment in a store has a significant effect but decreases consumer's repeat buying intention, reducing their willingness to shop for groceries online.

Overall, when making an acceptance decision involved in e-grocery shopping, consumers are mostly influenced by their post-purchase attributive satisfaction. In other words, consumers' satisfied prior accumulated experiences of purchasing groceries from online grocery retailers significantly determine consumer's willingness to use the online grocery service and to repeatedly purchase groceries via the internet. Hence, high satisfaction not only directly increases consumers' positive attitudes to online grocery shopping but also both directly and indirectly increases their repurchase likelihood in the future: customer satisfaction may become a means of earning customer loyalty.

6.3 Summary

This chapter provides the further discussions about the results regarding to the research questions addressed in the study. The basic features of the data such as consumer online grocery shopping behaviour based on their shopping routine, sample characteristics and descriptive statistics were described. The key determinants that affect consumer's repeat online grocery purchasing behaviour were also explained in terms of each construct. To explain repeat online grocery buying behaviour in terms of direct, indirect and total effects, a structural equation model was developed and estimated. Overall, the findings highlight the importance of post-purchase attributive satisfaction as the central driver of consumers' repeat behavioural intentions. That is, satisfaction influences the consumer's willingness to use the internet continuously for their grocery shopping in the future.

Following the discussion of the results of this study, the next chapter outlines the conclusions of the study.

Chapter 7 Conclusion

7.1 Introduction

This chapter presents some concluding comments. First, the brief summary of research methodology is overviewed in Section 7.2. Section 7.3 discusses model estimation and the results of proposed hypotheses. The summary of key results is illustrated in Section 7.4. Section 7.5 details the contribution of this study followed by the value of results and summary of implications (Section 7.6), and limitations of study (Section 7.7). Specific directions for future research are stated in Section 7.8. It concludes with a summary of the chapter in Section 7.9.

7.2 Summary of Research Methodology

The aim of the study is to identify the key factors that influence future grocery repurchasing behaviour through the internet using a structural equation model. First, consumer's online grocery shopping behaviour, demographic characteristics of the sample and descriptive statistics are explained through the preliminary analysis. Key constructs that are the determinants of repeat online grocery shopping behaviour are also identified. To explain repeat online grocery purchase behaviour linked to the key determinants, a structural equation model is adopted and developed. Before proceeding to the main analysis of structural equation model, scales for each of the constructs are firstly developed. Then, scales are evaluated for reliability and validity: scale reliability is assessed via Cronbach's alpha coefficient to confirm that how well the measures explain the variables being all consistent with each other. Validity analysis is estimated using exploratory factor analysis in order to clarify the distinctiveness of constructs.

As the first part of a complete test of a structural equation model, confirmatory factor analysis for the single construct measurement testing is performed. All eight constructs are individually examined to estimate how well measured variables represent constructs within the framework of SEM for the adequate measurement model. Then, evaluations of the model using the goodness of model fit such as NFI, TLI, CFI and RMSEA, and

construct reliability and validity, provide important evidence implying that the measurement theory is well explained by quality of the measures. The hypothesised paths involved in the relations between the constructs are tested to confirm the theoretical interrelationships between constructs followed by the estimation of the model in terms of measures of fit, significance and sign of coefficients. As the final stage of the analysis, direct, indirect and total effects on the determination of the construct repeat online grocery buying intention are evaluated on the basis of Sobel test in order to identify the impact of other key factors.

The grocery consumers' opinions of online grocery shopping and the factors perceived to be most influential when they decide to shop for groceries online were revealed through the quantitative research method, a questionnaire. The development of the questionnaire was informed by the validated questionnaires used in earlier studies related to online grocery shopping. The questionnaire on the basis of the experienced online grocery shoppers aged over 18 years old in the U.K was undertaken by using a structured questionnaire (Appendix A). It consisted of three sections that were concerned with and included, in order of online grocery purchase behaviour, opinions of online grocery shopping and demographic details of respondents. The web survey method was selected considering the distinct characteristic of the research which is an online approach. The website called 'SurveyMonkey' providing an online survey tool was used to create the web version of questionnaire and to collect the completed responses automatically into a variety of formats. As the sampling approach, the e-mail lists administered by a market research firm named 'DataCorp' and advertising on the websites, such as 6 different consumer forums related to the issues of UK business and consumer information, 'Gumtree' which is an extensive network of online classifieds and community websites, and 'Facebook' which is one of the popular social medias were employed. Data collection was operated over a period of seven weeks.

7.3 Discussion of Model Estimation and Hypotheses Results

The focus of the study was the development of a structural equation model of the determinants of repeat online grocery purchase behaviour. An original conceptual model was based on the insights obtained by the study of Hansen (2006) and this model

extended the Technology Acceptance Model (TAM) adding four constructs of shopping enjoyment in a store, social influence, perceived online grocery risk and post-purchase attributive satisfaction. The findings of the study have demonstrated the applicability of the modified TAM in assessing the consumer's repeat online grocery shopping behaviour in the UK.

To estimate the structural equation model, the measurement model and the structural model were evaluated respectively. Firstly, the measurement model was developed to identify the relationship between variables and constructs for the adequate measurement model. All eight constructs were individually evaluated in term of measures of fit and convergent validity. From the results of the estimation of each construct, all constructs within a proposed model have a positive sign of the coefficients and all standardised coefficients are statistically significant at the .001 level related to the p-value. Also, these measurement models for each construct yielded reasonable values for a good fit and all the items were identified as reliable and valid. Secondly, when considering the structural evaluation of model, the estimation regarding the hypothesised paths between constructs identifies that five hypotheses among twelve of those which are initially proposed are statistically insignificant. Therefore, rejected hypotheses in original model are evaluated through reviewing the alternate models and it is concluded that these paths are better to be deleted from the model based on the results. Furthermore, through the test of mediating effects, the construct of perceived internet grocery risk which shows no relationship with rest of constructs in a model is deleted for a better model fit. Then, after retesting the model that the construct of perceived internet grocery risk and insignificant paths are omitted, the modified structural equation model is developed. The examination of modified model indicates that remained seven hypotheses provide an empirical support establishing inter-relationships between constructs for the development of consumer's repeat online grocery shopping behaviour. That is, the signs of the coefficients are positive and higher than 0.5, and all the individual parameter estimates are also statistically significant at the .001 level. With respect to the measures of fit, the revised full structural model is acceptable explaining the data ideally well because two indices among four yielded reasonable values for a good fit, and the reliability and variance extracted for each variable indicated that all items are reliable and valid. In the following sections each hypothesis is discussed in turn according to the

original model (Figure 7.1). Revised structural model with the finally specified paths is depicted in Figure 7.2.

Figure 7.1 Original structural model for consumer's repeat online grocery purchasing behaviour

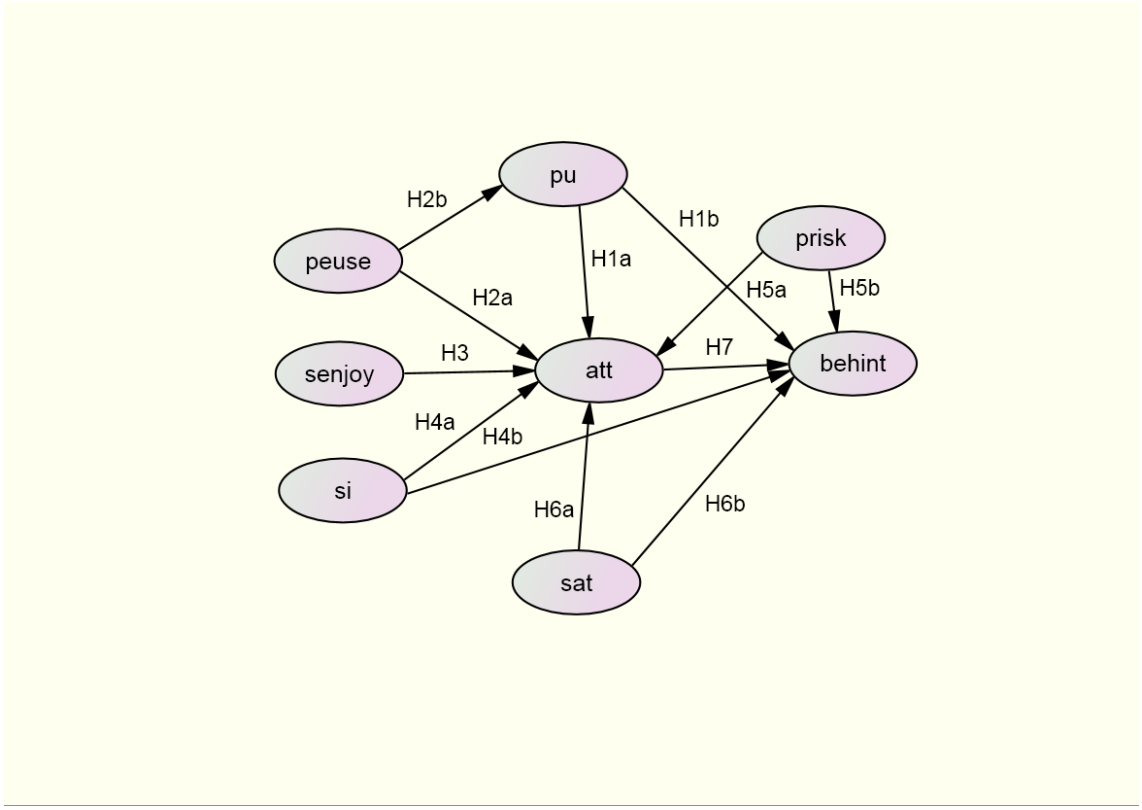
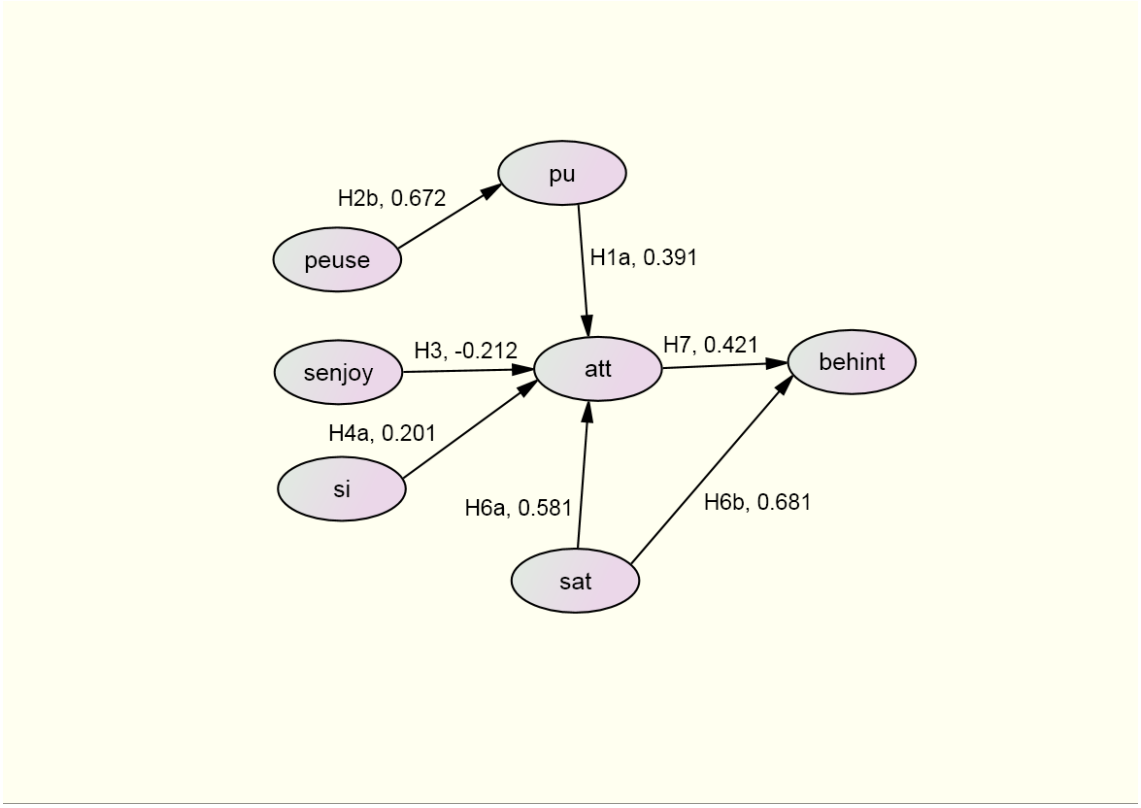


Figure 7.2 Revised structural model for consumers' repeat online grocery purchasing behaviour



7.3.1 Results of proposed hypotheses

H1a posited that there is a positive relation between perceived usefulness and consumer's attitude towards online grocery shopping. The relationship between these two constructs is found to be statistically significant (standardised regression coefficient is 0.391 at $p<0.001$). That is, perceived usefulness of online grocery shopping determines consumer attitude.

H1b posited that perceived usefulness has a direct and positive effect on repeat online grocery buying intention. However, contrary to the expectation and the research literature (Chiu et al. 2009), this hypothesis was rejected due to the insignificant relationship between the constructs of perceived usefulness and repurchase intention, and deleted from the original model.

H2a posited that perceived ease of use has a direct and positive influence on attitude towards online grocery shopping. This hypothesis was also rejected in the original model due to the insignificant relationship between two constructs, perceived ease of use and attitude. However, the construct of perceived ease of use had an indirect positive effect on the construct of attitude through the construct of perceived usefulness. Hansen (2006) addressed that consumers may hesitate from an online grocery purchase if they are faced with high online complexity. In other words, ease of ordering groceries might positively influence consumer's intention to select an online channel for their grocery shopping (Raijas 2002; Odekerken-Schroder and Wetzels 2003). Therefore, providing more convenient online services on the basis of easy payment and easy delivery arrangement may be very important to encourage both potential and existing consumers to buy their groceries online.

H2b posited that perceived ease of use has a positive effect on perceived usefulness. A strong and significant standardised regression weight is recorded between these two variables (0.672 at $p<0.001$). This finding supports the contention of Kurnia and Chien (2003) who suggest that perceive usefulness of online grocery shopping is influenced directly by its perceived ease of use. This is implied that a consumer who found online grocery shopping easy to use would also find it useful.

H3 posited that shopping enjoyment in a store has negative effect on attitude towards online grocery shopping. The construct of shopping enjoyment in a store is found to be statistically significant with a negative effect on the construct of attitude towards online grocery shopping (standardised regression coefficient is -0.212 at $p<0.001$). In other words, it is assumed that online grocery shoppers are more sensitive to obtaining enjoyable online shopping experiences. Therefore, retail managers should look further into the potential importance of shopping enjoyment on consumer online behaviour and to what extent online grocery retailers should provide consumers with a hedonic shopping value (Hansen 2006).

H4a posited that there is a positive relationship between social influence and attitude towards online grocery shopping. The results of this study show that the construct of social influence contributes positively to the construct of attitude towards online grocery shopping despite very little effect; the standardised regression coefficient between the

constructs of social influence and attitude is 0.201 at $p<0.001$. The result indicates that customers deciding to shop for groceries online are influenced by others, such as people in their social circles, friends and relatives and personal recommendations. Especially, personal recommendation is found to be the most impact factor in accepting the online channel for a grocery purchase. That is, it seems that online grocery consumers keep an open mind towards possible guidance from friends and relatives having experience of grocery shopping online (Hansen et al. 2004). However, this finding is contrary to the results of Kurnia and chien (2003) who demonstrate that social influence had no influence on the attitude motivating consumers to use online grocery shopping.

H4b posited that social influence has a direct and positive effect on repeat online grocery buying intention. The previous researches (Sapp and Harrod 1989; Thompson et al. 1994) relative to the food choice applications, found that social influence was poor predictor of behavioural intention due to a low level of involvement with the act as much food choice can be characterised as habitual behaviour (Thompson et al. 1994). In a case of internet grocery shopping, this shows difference from the situation of previous studies as using a new shopping channel, the internet. Therefore, Hansen et al.(2004) assumed that consumers may depend on normative guidance or influence from others when a new shopping channel is involved. However, contrary to the expectation and the research literature (Hansen et al. 2004), this hypothesis was rejected due to the insignificant relationship between the constructs of social influence and repurchase intention, and deleted from the original model.

H5a posited that perceived internet grocery risk has a negative effect on attitude towards online grocery shopping. However, there is no significant path found between the constructs of perceived internet grocery risk and attitude towards online grocery shopping in this study. This result is consistent with the study of Kurnia and Chien (2003) proposing that perceived risk, which has been found to be one of the major obstacles to the adoption of electronic commerce technologies (Ostlund 1974; Kurnia and Johnston 1999), was discovered to have no influence on the attitude. In contrast, this result is different from the study by Hansen (2006) which finds that perceived internet grocery risk negatively affects attitude towards online grocery buying.

H5b posited that there is a negative relation between perceived internet grocery risk and repeat online grocery buying intention. There is also no significant causal path found linking these two constructs. On the contrary, according to Hansen (2006), perceived risk had an indirect negative effect on repeat online grocery buying intention through the attitude towards online buying.

As mentioned above with respect to hypotheses 5a and 5b, the findings contradict a priori expectations and the previous literatures (Ostlund 1974; Kurnia and Johnston 1999; Kurnia and Chien 2003; Hansen 2006). This finding might indicate that consumers have a high level of experience of using internet and are becoming more and more familiar with the internet as a shopping channel. Online grocery shopping is still a relatively new experience for grocery consumers in the UK. However, since this research is conducted among experienced internet grocery consumers, the results of this study might indicate that experienced online grocery shoppers fully understand the risks involved during the purchase procedure, and that their level of uncertainty is lower compared to less the experienced or non-shoppers. That is, consumers do not seem to attach a higher risk to grocery shopping through the internet as compare to other sorts of online shopping.

H6a posited that post-purchase attributive satisfaction is positively related to attitude towards online grocery shopping. The results of this research indicate that the construct of satisfaction has a strongly positive effect on the construct of attitude (the standardised regression weight is 0.581 at $p<0.001$). Consistent with the previous studies by Dhruv et al. (2003) and Friese et al. (2003), consumers may use the results of several grocery transactions as a predictor for the outcome of the next transaction. Also, the study by Cho (2011) shows evidence that perceived memory based on prior purchasing experience affects next time purchasing behaviour. In other words, the next buying intentions may be determined by the accumulation of separate satisfactions associated with online grocery buying. Hence, it implies that consumers having high levels of satisfaction with the experience of online grocery shopping are more likely to buy groceries using the online channel as well as to purchase again online.

H6b posited that post-purchase attributive satisfaction is positively related to repeat online grocery buying intention. Similar to hypothesis 6a, there is a significant causal

path linking the constructs of satisfaction and repeat buying intention. That is, the construct of post-purchase attributive satisfaction is observed to be a significant and strong determinant of the construct of repurchase intention in this study (their standardised regression weight is 0.681 at $p<0.001$). It is assumed that a customer who is satisfied with an internet grocery retailer will be more likely to believe that the retailer can perform their role effectively and reliably. This satisfied customer may have positive attitudes not only to the retailer but also to its products and services, and repeatedly patronise the provider. This result confirms the findings of past literatures (Mittal and Lassar 1998; Geyskens et al. 1999; Oliver 1999; Lu 2007) which propose that customer satisfaction is the central factor for the long-term relationship between suppliers and buyers forming of customer loyalty because the level of satisfaction is likely to have an important effect on the decision whether to stay or leave (Levitt 1981; Jackson 1985; Crosby et al. 1990).

H7 posited that attitude towards online grocery shopping is positively related to repeat grocery buying intention. There is a significant correlation recorded between the constructs of attitude and repeat buying intention (its standardised regression coefficient is 0.421 at $p<0.001$). This study corroborates the view that people who have a positive attitude towards using online grocery shopping will have a positive behavioural intention to use of online grocery shopping (Kurnia and Chien 2003).

7.4 Summary of Key Results

Since the potential and importance of the internet is increasing throughout the world, many retailers now have an online operation (Chu et al. 2010). In this regard, the grocery market is also experiencing rapid and significant growth on the internet. However, consumer demand for online grocery shopping is still relatively low and the market has struggled to gain consumer loyalty and trust (Datamonitor 2008). Therefore, this study was aimed at developing a structural equation model of the determinants of repeat online grocery shopping behaviour because behaviour plays an important role in predicting not only individual's attitude but also the best loyal customers. This study firstly examines the information about background of consumers, such as online grocery purchasing behaviour, demographical characteristics and descriptive statistics. Secondly,

various key factors that affect repeat online grocery shopping behaviour are identified. Thirdly, the determinants of consumers' repeat online grocery purchasing intentions were investigated using a structural equation model.

Associated with consumer's online grocery purchasing behaviour, this study has found that Tesco is the most preferred online grocery retailer compared to other competitors: grocery shoppers mostly like to visit its website for their online grocery shopping. Also, a high proportion of respondents rarely use online grocery shopping whereas the second major group use it once a month. The major purposes of usage of this service are for routine grocery shopping and for other reasons. In other words, online grocery shoppers do not often buy groceries on the web, but they use this service for top- up grocery shopping based on their purchasing routine and other purposes except special occasions when it is needed. It can be assumed that most online grocery shoppers may use this service to top up regular grocery products that are normally big and heavy items or bumper packs such as toilet rolls, wines, beers and canned products. A greater proportion of respondents are more likely to make a decision by themselves to shop for groceries through the retailer website and they tend to have budget in their mind for the grocery shopping expenditure. That is, online grocery shoppers seem more cautious of spending money to shop for groceries online.

In accordance with the results of demographic profiles, higher number of respondents who have experienced online grocery service answered they are women and are in the age group of 18-34 years old. Most online grocery shoppers are full-time workers and have a moderate income and higher educational level. In the household, they live with another adult but do not have children.

The respondents are solely responsible for online grocery shopping in their household and higher proportions of those who participated with the survey are women. From these results, it could be inferred that the decision to use online grocery shopping and the process of shopping itself is performed by women as in the case of in-store grocery purchasing.

Seven constructs involved in the conceptual framework were assessed to identify the key factors that influence repeat online grocery shopping behaviour. Five constructs of

perceived usefulness, perceived ease of use, shopping enjoyment in a store, social influence and post-purchase attributive satisfaction indirectly determine the consumer's repeat online grocery buying intention through the construct of attitude towards online grocery shopping. Here, three constructs, perceived ease of use, shopping enjoyment in a store and post-purchase attributive satisfaction, show distinctive features each compared to others. For example, unlikely other constructs, perceived ease of use do not have a directly effect on attitude towards online grocery shopping but instead it has an indirect effect on attitude through perceived usefulness. Shopping enjoyment in a store only has a negative effect on repeat online grocery buying intention. Also, only the construct of post-purchase attributive satisfaction has both direct and indirect relationships with repeat behavioural intention. Finally, this study found that perceived internet grocery risk has no correlations with attitude towards online grocery shopping and repeat online grocery buying behaviour.

Furthermore, key determinants affecting repeat online grocery shopping behaviour were explained by a structural equation model. Overall, the conceptual model proposed in this study has all consistent and valid scales for each of the constructs. From the estimation of measurement model, the measurement model for each construct shows good measures of fit explaining data reasonably well. Then, associated with the structural model, the nature of the interrelationships between constructs was identified on the basis of the hypothesis assessment. Moreover, the effect of determinant constructs on repeat online grocery shopping behaviour were identified in terms of direct, indirect and total effects. From the results, this research has found that the consumers' repeat online grocery purchasing intentions are most strongly affected by the constructs of post-purchase attributive satisfaction both directly and indirectly. Indirect route is developed through consumer's attitude although this route is much weaker than that from direct relationship. This result related to the descriptive statistics suggests that the online grocery retailers need to consider the importance of the range and quality of items available to get consumers' high satisfactions from the products. In addition, providing enhanced services, such as delivery times, and controlled condition and guaranteed quality of items that are delivered should be weighted to gain consumers' high satisfactions. Similarly, consumers' perceptions of the ease and effectiveness of online grocery shopping and social influence indirectly lead to the consumer's repurchase intention of e-grocery shopping via their positive attitudes. On the other

hand, shopping enjoyment in a store has a significant effect but decreases consumer's repeat buying intention reducing their willingness to shop for groceries online.

7.5 The Contribution of the Study

In the U.K, the grocery market has begun to grow rapidly and strongly on the internet over recent years. However, not only has a very limited number of academic studies focused on the online grocery sector, but also very few studies have addressed the concepts of consumer's attitude and repurchase intention to online grocery shopping. Therefore, this study has the potential to contribute to the existing literatures on the adoption of electronic commerce in a food sector in general. The information based on the consumers who already have purchased groceries via the internet is also very helpful to understand the experienced consumers' attitudes towards online grocery shopping and the underlying influential factors affecting their acceptance which are one of the important predictors of behaviour in social psychology (Hui and Wan 2009).

This study contributes to the development of the theoretical model with regard to the significant variables influencing consumers' attitudes towards online grocery shopping and their repurchase intentions. First, while a number of researches (Babin and Babin 2001; Bhattacherjee 2001; Cyr et al. 2006) have previously highlighted the importance of perceived usefulness to the consumers' attitudes and repurchase intentions, this work has found that perceived usefulness of online grocery shopping positively affects consumers to use online service and it is believed that this relationship repeatedly works for the long-term. However, perceived usefulness does not directly determine consumers' repeat buying behaviour.

Second, it contributes a different view of perceived ease of use that is one of the prime determinants of choosing an online channel to shop for groceries. That is, in most existing studies perceived ease of use has been seen as direct antecedents of perceived usefulness and attitude. However, the present study reveals that perceived ease of use positively and directly affects perceived usefulness as other research has established. However, the study also reveals that there are two indirect positive relationships between perceived ease of use and attitude through perceived usefulness, and between

perceived ease of use and repeat buying intention via attitude. That is, this result extends the role of perceived ease of use within the TAM model influencing repurchase intention for a long time period.

Third, the finding of this research supports a number of earlier studies (Verhoef and Langerak 2001; Ramus and Nielsen 2005) which have argued that hedonic and social shoppers who enjoy the conventional trip to the supermarket tend to be less likely to do their grocery shopping through the internet. Furthermore, the study extends previous research by finding the relationship between the constructs of shopping enjoyment in a store and consumers' future purchase intentions: shopping enjoyment in a store negatively and indirectly influence repeat buying intention.

Fourth, the results corroborate existing research that provides evidence of the positive relationship between social influence and attitude. Moreover, in identifying an additional indirect effect of social influence on repeat buying intention through attitude, this research not only supports existing researches but also further contributes an extended research finding to such researches relative to internet grocery shopping.

However, fifth, differentiated results are found in relation to perceived internet grocery risk. In study, perceived internet grocery risk does not have a correlation to the attitude and repeat buying intention. That is, unlike previous literatures (Jarvenpaa and Todd 1997; Hansen 2006), the results capture a distinct point of view that online shoppers are not concerned with the risk, which is the most limitation of the e-businesses, when considering a grocery shopping and intending to repurchase through the internet.

Sixth, the results are consistent with a number of existing studies (Dhruv et al. 2003; Friese et al. 2003) that have emphasised the important direct influence of consumer's satisfaction on decision processes, and both direct and indirect influence on loyalty and positive word of mouth communication intentions (Oh 1999; Harris and Goode 2004). In this study, satisfaction was revealed as the most significant aspect determining consumers' attitudes to online grocery shopping and their repurchase likelihood in the future. Hence, this can contribute insights into such researches approaching its objectives to the customer's satisfaction and the relationship between customer's

satisfaction and their decision making, and informing the importance of building customer satisfaction which is regarded as a goal and a key element.

Finally, the study finds that, consistent with the study by Hansen (2006), attitude towards online grocery buying is the second important predictor of repeat online grocery buying intention. Therefore, this study contributes insights into the positive relationship between attitude and future purchase intention in regard to online grocery shopping.

In brief, this research helps to better yield research questions for the consumer based researches, such as focusing on online purchase behaviour, consumers' attitudes and their demographic characteristics, in particular, important factors influencing a choice of online grocery shopping. Additionally, this study can provide useful background for the research performing a web-based questionnaire as quantitative method in online grocery sector.

7.6 Research Implications

In terms of practice, the results of this study also have implications which are more considerable in the marketing sector than was previously believed (Peck and Wiggins 2006). First, the findings of this study can be used by U.K food retailers to formulate a more effective strategy in encouraging consumers to use online grocery shopping. For example, the most influential factor for the consumer's decision to choose online grocery shopping was revealed as the construct of post-purchase attributive satisfaction followed by the construct of perceived usefulness. Thus, if the food retailers want to get more online customers, the marketing scheme would better be concentrated on not only the features of post-purchase attributive satisfaction in terms of the products and services provided, but also the usefulness of online grocery shopping. With regard to customer satisfaction, this study has also revealed that consumer's post-purchase attributive satisfaction positively influences repurchase future intention, such as continuous shopping intention, encouraging people to use the service and returning to the site. If consumers have negative experiences with the quality of delivery service, such as missed order items, cancelled drop-off, unpleasant behaviour of driver, they

might never consider buying groceries online again. Hand et al. (2009) support this statement that unsatisfied consumers tend to easily diminish or discontinue their frequency of shopping. Therefore, post-purchase attributive satisfaction both directly and indirectly related to the future buying intention is important to increase customer loyalty which, in turn, leads increased profitability to retailers reducing marketing costs as well as increasing sales per customer (Berry 1995). To summarise, in practice, this study provides significant implications to e-grocery business sector by suggesting the importance of customers' satisfactions with their attitudes and repurchasing intentions, which become a means of earning customer loyalty and attracting new customers (Cho 2011). In other words, the successful management should be based on the online customer satisfaction to gain their long-term loyalty for the stable and profitable growth.

The benefits of online grocery shopping which are referred to the usefulness, such as easy of price comparison, easy of tracking spending on the food basket and planned food shopping, are the attractive triggers which can bring more customers to shop for groceries online. That is, to boost the effectiveness of using online grocery shopping, online food retailers should establish an online system which can be stable and easy to use, easy to update the consumer's details, easy to change the delivery details and easy to keep updating basket-system on the basis. In addition, this study suggests that increasing their perceptions of the usefulness would indirectly improve their repurchase intentions via created positive attitudes. Thus, online retailers should design their web sites to improve the customers' task quality as enhancing performance, effectiveness and productivity in searching and purchasing goods and also as supporting fun experience.

Further, as using the information of detailed shoppers' profiles, retailers precisely can understand the characteristics of their main shoppers and the tailored marketing strategies can be developed to achieve maximum marketing results. That is, the market implications will be several and obviously different according to the profile characteristics of consumers. For example, if the internet grocery retailers want to target the key market segment, more quality guaranteed products should be selected and delivered properly through the temperature controlled delivery van. Degeratu et al. (2000) and Andrews and Currim (2004) have found that online consumers are less price sensitive when shopping groceries online than offline. In addition, Bakos (1997)

theorises that price sensitivity would be lower online than offline when quality related attributes are important to consumers. That is, the quality controlled products and services will be able to give high satisfaction to the frequent users because major internet grocery buyers tend to have a moderate or higher income that might be less price conscious. However, value for money is also a very significant factor that cannot be ignored when choosing the online retailers because low prices could be a key to the online shoppers. Therefore, providing the best quality of product and service as well as promoting online exclusive offers will be a prominent priority for retailer among other competitors. In terms of age, it is anticipated that the young age group to which the main online grocery shoppers are belonged and the generation of teenagers who have grown up with high penetration of online usage will have more possibility to willingly use online grocery buying in the future. Such a tendency reflects implications for the long term future of shopping online. Hence, identifying the age group of main and potential customers has valuable meaning to build effective targeting strategies which are expected to produce a higher behavioural response from target audiences.

Consequently, the findings of this study provide a number of potentially important and valuable resources for retailers when they devise marketing schemes to target online consumers in the grocery sector because the results reflect the all opinions and the purchasing behaviour of meaningful experienced customers regarding to online grocery shopping. If retailers precisely understand the attitudes of their main target and the profiles which represent the characteristics of main consumers, they can not only select the most suitable marketing strategy for their shoppers focusing their efforts on the particular areas of most important but also improve their service quality including the quality control from the selection of grocery items to the delivery of groceries to the customers to satisfy their online consumers.

7.7 Limitations of the Study

The research has some limitations that offer opportunities for future research. First, the study established the profile characteristics of the main consumers using online grocery shopping. With this result, it has become much easier to understand the selected target market. However, the target is restricted to only the experienced online grocery

shoppers in the U.K. Inexperienced customers and individuals who originally used online grocery service but have stopped might have had different perceptions and attitudes to online grocery shopping. In addition, opinions of inexperienced customers might be significantly used to attract new customers. Comparing how the perceptions and attitudes toward online grocery buying are different between the experienced and the inexperienced can derive very valuable and generalised results. In addition, there was no profile about the region distribution of customers. Based on the result, more specifically, different marketing strategies can be customised in accordance with the characteristics of region and experienced repeat customers who live in that area.

Second, the number of valid responses 333 is lower than expected which may indicate that potential respondents lacked time to complete the survey and that the target population consist of a minority. A larger sample size will be more representative of the national population of grocery shoppers and contribute to the generalisation of the research.

Third, this research is limited on only behavioural intentions of fulfilling a repeat online grocery buying. However, the measurement of future actual online shopping patterns might lead to different results. Shim et al. (2001) explain that inconsistencies between intention and actual behaviour of customers may be occurred by the developments and changes in internet characteristics, consumer characteristics and situational factors.

Fourth, this study provides a brief side of online purchasing behaviour rather than a longitudinal study. The internet as a grocery shopping channel is still evolving and changing so that the internet consumer research needs to be continuously repeated and modified.

7.8 Suggestions for Future Research

The findings of this study suggest the need for further inquiry into a number of areas. First, the group of older and physically challenged consumers should be investigated as a potential target for online grocery services. In this regard, the previous researches by Heikkila et al.(1999) and Morganosky and Cude (2000) have found that e-grocery

shoppers regard physical constraints as the primary reason that they use the internet to buy groceries although internet grocery shopping has failed to find favour with the over 65. The student group also should be considered as one of the important target segments because students are not only very familiar with online environment but also mostly experienced users of a computer spending much time with it for their studies, and personal and social purposes. Therefore, students can be treated as a prospective target for current marketing activity and as a potentially lucrative segment for longer term marketing relationships. For instance, most big supermarkets offer a free delivery service when spending over £50 for a grocery shopping online. Most of students live in an accommodation of university and a house or flat sharing with other students during a school term time, also few of them own a car compared to other segments. Hence, they may get advantages from using online grocery shopping as placing a grocery shopping order combined with others: they do not need to carry bulky and heavy shopping bags and a group purchase of grocery shopping will be easily reached a minimum price of free delivery option.

Second, as mentioned above, this study focused on the data which only show the presence of purchasing groceries online. However, to retailers identifying why consumers are unlikely to purchase groceries online is also valuable for marketing strategies. Consequently, it is suggested that not only the perception and attitude associated with consumer's grocery buying online but also the reasons that shoppers do not use this online service, need to be analysed for future research.

Third, relative to the theory of customer retention, further research is required to investigate the effect of customer satisfaction and repurchase intention upon repurchase behaviour because increases in retention rates can have a significant positive effect on market share and company's net profit (Fornell and Wernerfelt 1988; Rust and Zahorik 1993; McGahan and Ghemawat 1994).

Finally, this study has not formally examined trust in the theoretical model. Future research may attempt to more rigorously examine the relationships of trust with customer satisfaction and loyalty. Chiu et al. (2009) have said that building good buyer-seller relationships might increase repurchase intentions through increased trust. Therefore, in order to enhance the trust of customers, online retailers should place

special emphasis on three aspects of fulfilment in an order process: the timeliness of the order, the accuracy of the order and the condition of the order (Collier and Bienstock 2006). Online retailers also must provide the best environment which customers can freely give feedback and report problems, then they should be able to manage promptly such customers' opinions from responding to fully resolving the problems (Chiu et al. 2009).

7.9 Summary

This chapter highlights an overview of the key findings generated through the research. The thesis explores the relationship between the various determinants and consumer's repeat purchase behaviour in an online grocery sector. To identify the interrelationships of these two, a theoretical model is developed and empirically tested using a structural equation model. Model estimation and the results of proposed hypotheses are discussed. Consequently, when considering the measurement model, all constructs within a proposed model are not only positively and significantly significant but also have reasonable values for a good fit. All the items are also reliable and valid. When considering the structural model through the hypothesis testing, five rejected hypotheses in an original model are deleted after testing alternate models with deleted paths and mediation to improve the model fit to the data. Then, the modified model is developed and retested. As the results, it is concluded that the revised model to explain the determinants of repurchase behaviour of online grocery shoppers represents the data ideally well, and all items are reliable and valid. In addition, all hypothesised paths between remained constructs are all supported, and the impact of determinant constructs on repeat online grocery purchase behaviour associated with direct, indirect and total effects are revealed. Finally, not only the contributions of the study but also research implications are outlined, and limitations of the research and suggestions for further research are explained.

Appendix A

Online Grocery Shopping Survey

Thank you for taking part in our survey.

We would like you to answer some questions about online grocery shopping. It should take about 3-5 minutes.

Please read the questions and instructions carefully. All answers will remain anonymous and confidential in accordance with the Data Protection Act 1998. All the questions require just tick-box answers and we want to emphasise that there are no right or wrong answers. All we are interested in is your opinions.

Thank you very much.

YoungMin Choi, Researcher / Dr Mitchell Ness, Project Leader

Your Online Purchase Behaviour

In this section, we would now like to ask you some questions about your online grocery shopping routine.

1. What is your preferred online grocery shopping site?
   Please tick one

Asda	☐ (1)
Ocado	☐ (2)
M&S	☐ (3)
Sainsbury's	☐ (4)
Tesco	☐ (5)
Other	☐ (6)

2. How often do you usually purchase groceries online?
   Please tick one

Every day	☐ (1)
Once a week or less often	☐ (2)
Once a fortnight	☐ (3)
Once a month	☐ (4)
Once every 2-5 months	☐ (5)
Rarely	☐ (6)
Never	☐ (7)
Used to but don't any more	☐ (8)

3. Are decisions about grocery shopping online usually made by you alone or jointly with others?
   Please tick one

You	☐ (1)
Jointly with others	☐ (2)
Depends on circumstances	☐ (3)

4. Do you buy groceries online only at particular times of the year?
Please tick more than one if necessary

Routine basis	☐ (1)
Christmas	☐ (2)
Easter	☐ (3)
Special occasions (e.g. birthday, anniversary)	☐ (4)
Others	☐ (5)

5. When you usually shop for groceries online, do you have in mind a fixed sum of money (i.e. a budget) that you plan to spend?
Please tick one

Yes ☐ (1)

No ☐ (2)

Your Opinions of Online Grocery Shopping

Here, we would like you to answer some questions about your opinions of online grocery shopping.

6. To what extent do you think that the grocery shopping website that you use regularly:

	Not at all						Completely
	1	2	3	4	5	6	7
Has a layout that is clear and understandable							
Is easy to learn how to use it effectively							
Is easy to follow procedures to get products and information that you want							
Is easy to make payment							
Is easy to arrange delivery							

7. To what extent do you associate online grocery shopping with the benefits of:

	Not at all						Completely
	1	2	3	4	5	6	7
More cost effective shopping							
A less stressful shopping experience							
Requiring less physical effort							
Being more convenient for your personal circumstances							
Being easier to find products							
Being easier to compare prices							
Receiving details of new products and special offers							
Using an automated shopping list of your regular purchases or favourites							

8. Please indicate the extent to which you are concerned about:

	Not at all						Completely
	1	2	3	4	5	6	7
Providing your personal and credit card details							
Items are not delivered on time							
Receiving replacement items that you did not order							
The condition or quality of items that are delivered							
That you can’t examine products before purchase							
That it is difficult to return items							

9. To what extent is your decision to shop for groceries online influenced by:

	Not at all						Completely
	1	2	3	4	5	6	7
People in your social circle							
People you respect							
Friends and relatives							
Personal recommendation							

10. To what extent do you think that online grocery shopping:

	Not at all						Completely
	1	2	3	4	5	6	7
Is ideally suited to your shopping routine							
Is more convenient for your personal circumstances							
Is an enjoyable experience							
Makes you feel involved in the shopping process							
Is a mechanical process and lacks spontaneity							

11. Please indicate the extent to which you agree with the following statements about shopping for groceries in a store.

	Not at all						Completely
	1	2	3	4	5	6	7
I enjoy going out to shop for groceries in supermarkets							
I like to be able to examine grocery products before I buy							
I enjoy meeting other people in the supermarket							
I like to make spontaneous decisions in the shop about products that I buy							
I consider grocery shopping as something to be done as quickly as possible							
I view grocery shopping as a leisure activity							

12. Following your experience of online grocery shopping, to what extent are you satisfied with:

	Not at all						Completely
	1	2	3	4	5	6	7
The quality of items available							
The range of products available							
Delivery times							
The condition and quality of items that are delivered							
Online customer support and services							
Receiving information about new products and special offers							

13. With regard to your future intentions about your regular online grocery site, how likely is it that in future you will:

	Not at all						Completely
	1	2	3	4	5	6	7
Continue to shop on the site							
Encourage people in your social circle to shop on this site							
Choose this site even if others of similar quality offer cheaper products							

14. Approximately, what share of total grocery spending do you plan to do online in the future?

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	More than 50%
	1	2	3	4	5	6	7
Future percentage							

About yourself

In this section, we would like to ask you questions about yourself.

15. Please indicate your gender.
Please tick one

Female ☐ (1)
Male ☐ (2)

16. Please indicate your age group.
Please tick one

18-24 years ☐ (1)
25-34 years ☐ (2)
35-44 years ☐ (3)
45-54 years ☐ (4)
55-64 years ☐ (5)
65 plus years ☐ (6)

17. What is your current employment status?
Please tick one

Full-time employment	☐ (1)
Part-time employment	☐ (2)
Full-time student	☐ (3)
Part-time student	☐ (4)
Unemployed	☐ (5)
Full-time homemaker	☐ (6)
Retired	☐ (7)
Other	☐ (8)

18. How many adults including yourself live in your household?
Please tick one

1	☐ (1)
2	☐ (2)
3	☐ (3)
4	☐ (4)
5 or more	☐ (5)

19. Please indicate if you have children in any of these age groups in your household?
Please tick more than one if applicable

Under 5 years of age	☐ (1)
5-11 years of age	☐ (2)
12-17 years of age	☐ (3)
No children	☐ (4)

20. What is your highest level of education?
Please tick one

No formal qualification	☐ (1)
GCSE (D-G grade)	☐ (2)
GCE / GCSE (A-C grade)	☐ (3)
A Level	☐ (4)
Higher educational qualification	☐ (5)
Degree level or higher	☐ (6)

21. Which band best describes your total annual household income?
Please tick one

<£15,000	☐ (1)
£15,000-£19,999	☐ (2)
£20,000-£24,999	☐ (3)
£25,000-£29,999	☐ (4)
£30,000-£39,999	☐ (5)
£40,000-£49,999	☐ (6)
£50,000 or more	☐ (7)

Thank you very much for your time. Your help is very much appreciated!

Appendix B

Test for Discriminant Validity using exploratory factor analysis of all measures

KMO = .885, Barlett = χ^2 (861) =7192.216, Sig = .000

Construct and measure	Factor number									h^2
	1	2	3	4	5	6	7	8	9	
Perceived ease of use										
Clear layout	.270	**.782**	.096	.165	.096	.015	.013	.194	-.020	.769
Effective usage	.168	**.835**	.019	.129	.112	-.017	.007	.110	-.043	.770
Easy procedure follow-up	.259	**.755**	.102	.272	.079	-.010	.016	.188	.028	.764
Easy payment	.102	**.682**	-.050	.089	.266	-.002	.057	-.282	-.025	.640
Easy delivery arrangement	.162	**.673**	-.120	.070	.213	-.056	-.103	-.183	.035	.591
Perceived usefulness										
More cost effective	.162	.097	.051	**.498**	**.414**	.170	.086	.273	-.180	.601
Less stressful	.179	.375	-.003	.254	**.569**	-.002	-.112	.184	.037	.609
Less physical effort	.094	.193	-.023	.266	**.575**	.006	-.089	-.126	.213	.518
More convenient	.210	.159	.103	.183	**.739**	.084	-.138	-.005	-.065	.691
Easier products find	.208	.195	.168	**.591**	.292	.095	-.004	.231	-.107	.617
Easier price compare	.049	.163	.115	**.710**	.248	.158	.069	.041	-.086	.647
Receiving products and offer details	.134	.095	.023	**.788**	.012	.133	-.006	.059	.104	.681
Automated shopping list	.205	.202	.065	**.567**	.255	-.034	-.024	-.002	.160	.500
Perceived internet grocery risk										
Personal and credit card details	.134	-.115	**.516**	.204	.007	.227	.225	.192	-.123	.494
Delayed item delivery	.005	-.079	**.774**	.140	.029	.152	.088	.080	.097	.672
Replacement items	-.063	.069	**.700**	-.208	.116	-.078	.091	.072	.063	.579
Delivered items condition or quality	.016	.085	**.827**	.135	-.010	.070	.056	-.013	-.057	.721
Unavailability of physical examination	-.129	.029	**.748**	.030	-.031	.127	.165	-.235	.086	.685
Difficulty of returning items	-.266	-.043	**.617**	.080	-.061	.102	.183	-.118	.157	.546
Social influence										
People in social circle	.108	-.167	.213	.177	.064	**.759**	.229	.070	.030	.754
People you respect	.127	-.036	.173	.015	.005	**.795**	.162	.119	-.049	.722
Friends and relatives	.073	.037	.110	.065	.101	**.875**	.123	.056	-.075	.823
Personal recommendation	.046	.052	-.010	.131	.035	**.779**	-.036	.012	.195	.669
Attitude										
Suited shopping routine	.408	.111	-.026	.166	**.502**	.142	-.032	**.506**	-.016	.737
More convenient	.254	.109	.038	.102	**.661**	.133	-.082	.395	-.014	.706
Enjoyable experience	.259	.124	.089	.261	.258	.264	.091	**.512**	.067	.570
Shopping involvement	.348	.060	.050	.368	.121	.231	-.025	**.580**	.220	.716
Mechanical process	.089	-.033	.182	.078	.033	.084	.121	.087	**.793**	.708
Shopping enjoyment in a store										
Shopping enjoyment in supermarkets	.033	.140	.219	.035	-.105	.113	**.744**	-.189	.121	.698
Product examination	.031	.125	.335	.104	-.026	.001	**.399**	-.551	.042	.605
Meeting others in supermarkets	.158	-.177	.187	.034	-.021	.163	**.720**	-.009	-.074	.643
Spontaneous decisions	-.001	.035	.114	-.189	-.095	.002	**.543**	-.302	.361	.575
Leisure activity	-.032	-.019	.160	.037	-.043	.171	**.749**	.215	-.010	.667

Continued

Construct and measure	Factor number									h^2
	1	2	3	4	5	6	7	8	9	
Satisfaction										
Quality of items	**.686**	.146	-.079	.028	.358	-.010	.121	.069	-.019	.647
Range of items	**.564**	.269	-.076	.091	.407	-.028	.105	-.013	.011	.582
Delivery times	**.733**	.300	-.072	.035	.069	.008	-.052	.049	.151	.666
Delivered items condition and quality	**.806**	.136	-.079	.130	.152	.121	-.031	.029	.123	.746
Customer support and services	**.799**	.123	.006	.241	.007	.099	-.058	-.017	.070	.730
Receiving information _new products and special offers	**.514**	.255	.007	.532	.079	.067	-.015	-.052	.044	.628
Repeat grocery buying intention										
Continuous shopping	**.555**	.230	-.102	.101	.490	.041	.098	.150	-.151	.677
Encouraging people	**.543**	.028	-.081	.183	.216	.309	.157	.260	-.029	.571
Returning to the site	**.638**	.065	.032	.128	.045	.125	.130	.284	-.240	.601
Eigenvalue	4.909	3.645	3.485	3.252	3.173	3.164	2.495	2.196	1.215	
Variance	11.689	8.678	8.298	7.744	7.555	7.533	5.940	5.229	2.893	
Cumulative variance	11.689	20.367	28.664	36.408	43.964	51.497	57.437	62.666	65.559	

Appendix C

Test for discriminant validity with retained measures

KMO = .886, Barlett = χ^2 (780) = 6851.072, Sig = .000

Construct and measure	Factor number								h^2
	1	2	3	4	5	6	7	8	
Perceived ease of use									
Clear layout	.271	**.779**	.204	.095	.162	.017	-.012	-.089	.765
Effective usage	.162	**.841**	.156	.015	.126	-.019	-.008	-.035	.776
Easy procedure follow-up	.266	**.746**	.178	.104	.270	-.004	-.008	-.084	.750
Easy payment	.098	**.709**	-.040	-.050	.094	-.009	.094	.315	.633
Easy delivery arrangement	.167	**.692**	-.027	-.116	.077	-.056	-.077	.235	.591
Perceived usefulness									
More cost effective	.105	.134	**.555**	.016	.484	.143	.084	.089	.607
Less stressful	.186	.377	**.469**	.016	.256	.004	-.142	.411	.651
Less physical effort	.132	.192	.189	.015	.283	.024	-.086	**.636**	.583
Easier products find	.191	.209	.393	.152	**.586**	.082	-.015	.022	.609
Easier price compare	.033	.183	.224	.101	**.708**	.144	.078	.098	.633
Receiving products and offer details	.152	.074	.041	.036	**.787**	.143	-.010	.008	.672
Automated shopping list	.220	.203	.137	.082	**.572**	-.026	-.021	.234	.498
Perceived risk									
Personal and credit card details	.077	-.105	.267	**.476**	.180	.205	.245	-.156	.474
Delayed item delivery	.006	-.094	.102	**.775**	.134	.155	.098	.009	.671
Replacement items	-.050	.033	.128	**.721**	-.217	-.065	.074	.175	.628
Delivered items condition or quality	.008	.097	.026	**.809**	.135	.056	.081	-.107	.705
Unavailability of physical examination	-.116	.050	-.190	**.748**	.044	.120	.202	.007	.669
Difficulty of returning items	-.222	-.049	-.174	**.642**	.100	.111	.179	-.017	.549
Social influence									
People in social circle	.085	-.158	.153	.198	.172	**.749**	.247	-.019	.746
People you respect	.100	-.038	.160	.155	.002	**.785**	.172	-.076	.713
Friends and relatives	.052	.043	.161	.098	.059	**.864**	.135	.016	.808
Personal recommendation	.089	.029	-.028	.021	.145	**.798**	-.047	.075	.675
Attitude									
Suited shopping routine	.401	.112	**.701**	-.021	.162	.143	-.093	.132	.739
More convenient	.255	.151	**.683**	.034	.120	.124	-.127	.194	.638
Enjoyable experience	.280	.096	**.522**	.110	.261	.278	.014	-.043	.520
Shopping involvement	.378	.025	**.461**	.074	.371	.254	-.103	-.168	.603
Shopping enjoyment									
Shopping enjoyment in supermarkets	.041	.126	-.173	.230	.034	.119	**.752**	.031	.682
Product examination	.041	.148	-.401	.336	.114	-.009	**.467**	.202	.569
Meeting others in supermarkets	.128	-.167	.073	.161	.025	.147	**.733**	-.095	.644
Spontaneous decisions	.053	.002	-.348	.158	-.174	.032	**.548**	.204	.522
Leisure activity	-.059	-.018	.204	.143	.028	.163	**.721**	-.214	.659

Continued

Construct and measure	Factor number								h^2
	1	2	3	4	5	6	7	8	
Satisfaction									
Quality of items	**.665**	.151	.328	-.085	.016	-.015	.130	.268	.669
Range of items	**.552**	.296	.272	-.081	.092	-.036	.119	.282	.577
Delivery times	**.750**	.294	.064	-.065	.040	.017	-.046	.013	.661
Delivered items condition and quality	**.809**	.134	.128	-.080	.129	.124	-.009	.104	.738
Customer support and services	**.810**	.113	.004	.003	.240	.100	-.032	-.017	.738
Receiving information _new products and special offers	**.534**	.247	.007	.013	.536	.069	-.001	.056	.642
Repeat buying intention									
Continuous shopping	**.525**	.271	.475	-.124	.100	.019	.096	.187	.645
Encouraging people	**.519**	.053	.380	-.104	.182	.295	.150	-.083	.576
Returning to the site	**.590**	.072	.349	-.010	.106	.102	.130	-.228	.566
Eigenvalue	4.750	3.716	3.628	3.432	3.203	3.105	2.581	1.379	
Variance	11.874	9.291	9.069	8.581	8.006	7.762	6.453	3.448	
Cumulative variance	11.874	21.165	30.235	38.815	46.822	54.583	61.036	64.484	

Appendix D

Discriminant validity results of modified model

KMO = .886, Barlett = χ^2 (780) = 6851.072, Sig = .000

Construct and measure	Factor number								h^2
	1	2	3	4	5	6	7	8	
Perceived ease of use									
Clear layout	.271	**.779**	.204	.095	.162	.017	-.012	-.089	.765
Effective usage	.162	**.841**	.156	.015	.126	-.019	-.008	-.035	.776
Easy procedure follow-up	.266	**.746**	.178	.104	.270	-.004	-.008	-.084	.750
Easy payment	.098	**.709**	-.040	-.050	.094	-.009	.094	.315	.633
Easy delivery arrangement	.167	**.692**	-.027	-.116	.077	-.056	-.077	.235	.591
Perceived usefulness									
Less physical effort	.132	.192	.189	.015	.283	.024	-.086	**.636**	.583
Easier products find	.191	.209	.393	.152	**.586**	.082	-.015	.022	.609
Easier price compare	.033	.183	.224	.101	**.708**	.144	.078	.098	.633
Receiving products and offer details	.152	.074	.041	.036	**.787**	.143	-.010	.008	.672
Automated shopping list	.220	.203	.137	.082	**.572**	-.026	-.021	.234	.498
Perceived risk									
Personal and credit card details	.077	-.105	.267	**.476**	.180	.205	.245	-.156	.474
Delayed item delivery	.006	-.094	.102	**.775**	.134	.155	.098	.009	.671
Replacement items	-.050	.033	.128	**.721**	-.217	-.065	.074	.175	.628
Delivered items condition or quality	.008	.097	.026	**.809**	.135	.056	.081	-.107	.705
Unavailability of physical examination	-.116	.050	-.190	**.748**	.044	.120	.202	.007	.669
Difficulty of returning items	-.222	-.049	-.174	**.642**	.100	.111	.179	-.017	.549
Social influence									
People in social circle	.085	-.158	.153	.198	.172	**.749**	.247	-.019	.746
People you respect	.100	-.038	.160	.155	.002	**.785**	.172	-.076	.713
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Personal recommendation	.089	.029	-.028	.021	.145	**.798**	-.047	.075	.675
Attitude									
Suited shopping routine	.401	.112	**.701**	-.021	.162	.143	-.093	.132	.739
More convenient	.255	.151	**.683**	.034	.120	.124	-.127	.194	.638
Enjoyable experience	.280	.096	**.522**	.110	.261	.278	.014	-.043	.520
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More cost effective	.105	.134	**.555**	.016	.484	.143	.084	.089	.607
Less stressful	.186	.377	**.469**	.016	.256	.004	-.142	.411	.651
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Product examination	.041	.148	-.401	.336	.114	-.009	**.467**	.202	.569
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Spontaneous decisions	.053	.002	-.348	.158	-.174	.032	**.548**	.204	.522
Leisure activity	-.059	-.018	.204	.143	.028	.163	**.721**	-.214	.659

Continued

Construct and measure	Factor number								h^2
	1	2	3	4	5	6	7	8	
Satisfaction									
Quality of items	**.665**	.151	.328	-.085	.016	-.015	.130	.268	.669
Range of items	**.552**	.296	.272	-.081	.092	-.036	.119	.282	.577
Delivery times	**.750**	.294	.064	-.065	.040	.017	-.046	.013	.661
Delivered items condition and quality	**.809**	.134	.128	-.080	.129	.124	-.009	.104	.738
Customer support and services	**.810**	.113	.004	.003	.240	.100	-.032	-.017	.738
Receiving information _new products and special offers	**.534**	.247	.007	.013	.536	.069	-.001	.056	.642
Repeat buying intention									
Continuous shopping	**.525**	.271	.475	-.124	.100	.019	.096	.187	.645
Encouraging people	**.519**	.053	.380	-.104	.182	.295	.150	-.083	.576
Returning to the site	**.590**	.072	.349	-.010	.106	.102	.130	-.228	.566
Eigenvalue	4.750	3.716	3.628	3.432	3.203	3.105	2.581	1.379	
Variance	11.874	9.291	9.069	8.581	8.006	7.762	6.453	3.448	
Cumulative variance	11.874	21.165	30.235	38.815	46.822	54.583	61.036	64.484	

Appendix E

Variable names and descriptors

Variable name	Descriptor
Perceived ease of use	
q6_1	Clear layout
q6_2	Effective usage
q6_3	Easy procedure follow-up
q6_4	Easy payment
q6_5	Easy delivery arrangement
Perceived usefulness	
q7_1	Easier products find
q7_2	Easier price compare
q7_3	Receiving products and offer details
q7_4	Automated shopping list
Perceived internet grocery risk	
q8_1	Personal and credit card details
q8_2	Delayed item delivery
q8_3	Replacement items
q8_4	Delivered items condition or quality
q8_5	Unavailability of physical examination
q8_6	Difficulty of returning items
Social influence	
q9_1	People in social circle
q9_2	People you respect
q9_3	Friends and relatives
q9_4	Personal recommendation
Attitude towards online grocery shopping	
q10_1	Suited shopping routine
q10_2	More convenient
q10_3	Enjoyable experience
q10_4	Shopping involvement
q10_5	More cost effective
q10_6	Less stressful
Shopping enjoyment in a store	
q11_1	Shopping enjoyment in supermarkets
q11_2	Product examination
q11_3	Meeting others in supermarkets
q11_4	Spontaneous decisions
q11_5	Leisure activity
Post-purchase attributive satisfaction	
q12_1	Quality of items
q12_2	Range of items
q12_3	Delivery times
q12_4	Delivered items condition and quality
q12_5	Customer support and services
q12_6	Receiving information _new products and special offers
Repeat online grocery buying intention	
q13_1	Continuous shopping
q13_2	Encouraging people
q13_3	Returning to the site

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