Analysing and Conceptualising Mobile Grocery Shopping Behaviour in the UK

Submitted by

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Abstract

Mobile commerce is becoming an important component of modern business especially in the retail sector thanks to the fast diffusion of smartphones. This new shopping technique enables consumers to shop wherever and whenever they choose. It also helps retailers to grow their business in omni-channel – many major UK retailers including the "Big Four Grocers" (Tesco, Asda, Sainsbury's and Morrisons) have adjusted their digital and category strategies in response to mobile customers.

Despite the growing body of literature on mobile commerce, little research has been conducted to provide a comprehensive list of factors that affect the mobile grocery shoppers' decision-making and their loyalty. In addition, some of the studies had issues relating to inappropriate sampling techniques, which led to unrepresentative findings.

This thesis will explore the factors that drive consumers' intention to use smartphones for grocery shopping, and to identify the key elements that drive consumer loyalty to the mobile grocery provider. Building on an extensive literature review, the key determinants of mobile commerce adoption were analysed with a consideration of issues around online grocery shopping, diffusion of innovation, and customer satisfaction.

The key research methods and approaches were compared along with an analysis of the research methods used by the existing literatures, and concluded that a mixed-method approach was the most appropriate way to meet the aim and objectives of this study.

Following the research design, the author undertook 32 interviews with shoppers from various backgrounds, 12 of which had previous experience of using a smartphone for grocery shopping. Content analysis was carried out to produce 13 themes relating to the mobile grocery shopping acceptance. Based on the result from the thematic analysis and existing literature, a questionnaire was designed and launched. Three hundred valid responses were collected, including 150 purchasers and 150 non-purchasers. Statistical techniques such as factor analysis and multiple-regression analysis were used to analyse the survey data. Results from the quantitative study suggested there were 7 factors

affecting shoppers' decision to use smartphones for grocery shopping, while purchaser and non-purchaser models showed a different pattern. In parallel, the study also identified factors affecting mobile grocery shopping satisfaction and customer loyalty. Drawing together these findings, the thesis helps grocers to understand their mobile channel customer in a wider angle. It also provides managerial applications to improve both customer experience and digital strategy.

Keywords: mobile grocery shopping, consumer behaviour, mixed methods, retail management, mobile commerce

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Glossary of key terms

Mobile commerce: an extension and subset of electronic commerce, where product purchases are completed on a mobile device over a wireless network.

Mobile shopping: smartphone users utilising the devices for the purpose of shopping.

Mobile grocery shopping: buying groceries using a smartphone.

Smartphone: a mobile phone that performs many of the same functions as a computer, typically having a touchscreen interface, internet access, and an operating system capable of running downloaded apps.

App: software designed to run on smartphones and other mobile devices.

Purchasers: customers who have experienced mobile grocery shopping.

Non-purchasers: customers who haven't experienced mobile grocery shopping.

Chapter 1 Introduction

1.1 Background

In today's vast and interconnected digital landscape, it is hard to define a "typical" consumer. After the Second World War, grocery shopping in Britain gradually expanded from local store and cash transactions, to supermarket and self-service (Alexander et al., 2005), then to computer and credit card (Bevan and Murphy, 2001, Hand et al., 2009), and now to smartphone and mobile wallet (Criteo, 2017). There are therefore multiple channels available to buy groceries both on and offline. However, not all shoppers use every channel equally, especially when new technologies are involved (Huang et al., 2016, Maity and Dass, 2014).

Indeed, the smartphone and mobile internet are changing the way we shop and communicate. In 2015 Ofcom announced that smartphones had overtaken laptops as the most popular device for getting online (Ofcom, 2015). Mobile commerce has been enjoying fast growth thanks to the increasing penetration of smartphones in recent years –online sales have a double digit year-on-year growth, now accounting for 14.6% of retail spending according to the ONS (Office for National Statistics, 2017). This fast growth is primarily driven by the sharp rise in retail sales made by smartphone users, which is up by +47% year-on-year, accounting for 54% of online sales (Business Insider UK, 2017). Mobile sales are fast becoming the primary online sales channel for UK retailers. Mintel (2013) claimed that any retailer lagging behind developing mobile applications or mobile optimised website may lose market share (Mintel Group Ltd, 2013). At this critical moment, companies are heading to "mobile first" digital strategies.

The rise of mobile commerce is opening up new opportunities and challenges to grocers because the new shopping channel is re-defining consumer behaviour. While retail innovations have made the path to purchase more complex and fragmented, it is important that retailers have a more in depth understanding of their customers and engage with them more effectively. Therefore, it is crucial to explore the shoppers' motivation and behaviour in purchasing using a particular channel, especially how they choose channels and what they think

and how they behave during the shopping journey. Grocery is a major component of the retail sector in the UK, but grocers respond to mobile channel opportunities differently, and not every grocer has achieved notable success like Ocado and Tesco (see Tesco plc, 2014, Ocado Ltd, 2016). A number of retailers remain cautious with their digital and category strategy on mobile channel. This largely comes down to a simple question that often confuses industry and researchers: what factors contribute to the acceptance of grocery shopping by mobile phones (mobile grocery shopping)?

Mobile grocery shopping is a grocery shopping session that takes place on a mobile device, typically on a smartphone – a shopper can buy groceries on their smartphone without the need to go into a physical store or turn on a computer. Because of the differences lie between smartphones and tablets (see section 2.2.1), and a continual decline of tablet traffic in the UK (*Marketing Charts, 2017*), customer behaviour on a tablet (such as iPads) is not the focus of this study.

Mobile grocery shopping comes under the umbrella of mobile commerce, it is also an extension of online grocery shopping. The complexity of its nature makes it difficult to conceptualise mobile shoppers by using models from mobile commerce or online grocery shopping literature. This study is intended to provide an in-depth investigation and conceptualisation of mobile grocery shopping in the UK.

1.2 Mobile commerce

Mobile commerce is an extension and subset of electronic commerce (Coursaris and Hassanein, 2002), where product purchases are completed on a mobile device over a wireless network (Shao Yeh and Li, 2009). Mobile commerce differs from electronic commerce (e-commerce) in terms of communication, internet access devices, and technologies applied for each to support its own environment (Chun and Wei, 2004), it enables transactions to be completed in an entirely innovative manner compared with existing shopping channels (Yang, 2010).

To a consumer, a mobile phone is a personal possession. It stays in their pocket virtually all the time and is rarely shared with others in the same way that

they may share their computer in a household or work situation (Chae and Kim, 2003). Therefore, a mobile phone becomes the most advantageous channel for retailers to engage with individual customers (Rowley, 2004, Yang, 2010).

Mobile commerce has been attracting academic research in different ways, for example mobile banking (Lin, 2011, Akturan and Tezcan, 2012), mobile payment (Srivastava et al., 2010), mobile shopping (Ko et al., 2009, Lu and Su, 2009, Yang, 2010, Aldás-Manzano et al., 2009) and mobile marketing adoption (Mort and Drennan, 2005). A small number of academics have discussed mobile app design (Chen et al., 2011, Li and Yeh, 2010), and mobile trust (Park and Yang, 2006). However, to the best knowledge of the author, none have yet taken an in-depth approach to systematically study the behavioural intentions and customer loyalty of mobile shoppers. In addition, few studies have emphasised the differences between users and non-users.

1.3 Digital and mobile marketing

Digital marketing is the practice of using a range of tools to raise retailers' profile and transparency on the internet (Pitta and Taken Smith, 2012); it increases brand recognition and enhances brand awareness, so that retailers are able to target new customers (Hutter et al., 2013) and improve customer loyalty online (Dumeresque, 2013). Companies spending time and resources to develop a singular selling tool would be pointless if the target consumers were unable to see it online, therefore a website is not enough (Mathieson, 2010). Nowadays, a common digital strategy employed by most organisations is to construct a portfolio that captures responsive website, app, social media, and email communications, so that their customers can be reached through these digital platforms, and consequently make purchases on the website or app. Thanks to the development of smartphones, retailers are able to use the mobile channel to conduct both pull and push based marketing techniques (Persaud and Azhar, 2012), whereby information about product and promotion are pushed into consumers' pockets through SMS, e-newsletter, app notification, etc.; consumers could reach the retail content via direct navigation on the website or app, or be redirected to the site through social media and e-coupon (*Marketing Land*, 2014, *eMarketer*, 2016a). On the other hand, the smartphone

itself is an important retail channel (Zhang et al., 2010), retailers are able to use their mobile optimised site or app, together with digital communications, to attract patronage; it is those mobile strategies that this study focuses on.

1.4 From online to mobile grocery shopping

Internet based shopping provides advantages to both grocers and consumers. For grocers, it means a larger range of products can be listed without any physical space limitations, with a lower level of operating costs compared to traditional brick-and-mortar stores. It also enables grocers to access individual customer profiles and tailor promotion and recommendations. For the consumers, online stores bring ease of access, convenience and wider choices for grocery shopping.

According to IGD, the UK online grocery market is currently worth £10.5 billion and is forecasted to be worth about £17.6 billion by 2021 (IGD, 2016), the main online grocers are the traditional "Big 4" (Tesco, Sainsbury's, ASDA and Morrisons) together with premium retailers Waitrose and Ocado (Pearl, 2017); on the other hand, new provider Amazon Fresh entered the market in 2016, while discounters such as Lidl and Aldi entered the channel through a soft launch of non-food groceries online (*City A.M., 2015, The Daily Telegraph, 2015)*.

With the fast penetration of the smartphone, most of the leading online grocers have started developing mobile shopping channels. However, the process is not straight-forward, because adopting mobile grocery shopping means a change of shopping behaviour; the web-based shopping environment is significantly different from buying in a physical store because grocery products, especially fresh products like food and drink, are rich in sensory attributes (Morganosky and Cude, 2000), meaning shoppers need to make various decisions in a context of moving away from supermarket shelf to digital content. For those experienced online grocery shoppers, the mobile channel means a shift from computer to smartphone, abandoning fixtures like a keyboard, mouse and the large display unit. During the process of developing mobile shopping channels, some grocers encountered failure which led to the need for re-launching the app (Essential Retail Ltd, 2014). As a retailer, developing a new digital

shopping channel is daunting but potentially rewarding – the new channels provide an engine for the growth of sales (Huang et al., 2016); however, if the content and shopping experiences are not optimised for the mobile device, it is easy for customers to abandon their shopping basket and switch to another retailer (*The Guardian, 2015*). Therefore, the challenge for grocery retailers is to understand their mobile channel customers, and transfer the generic online marketing module to a multi-channel context with a special focus on mobile users.

1.5 Research aims and objectives

Given the background of mobile shopping, the aim of the research is to investigate the factors affecting the purchase behaviour of mobile grocery shoppers in the UK. It includes exploring the factors that drive consumers' intentions to use smartphones for grocery shopping, along with those that drive consumer loyalty to a particular mobile grocery provider. The aim will be achieved by the following research objectives:

Objective 1: to identify and investigate the factors that influence the intention of consumers to use mobile applications for grocery shopping.

This objective will complement previous studies regarding the acceptance of mobile commerce. It provides relevant knowledge of factors affecting the acceptance of mobile grocery shopping.

Objective 2: to compare the factors influencing the purchasers and non-purchasers decisions to use mobile grocery shopping.

Due to the lack of research on the distinctions between users and non-users, the primary focus of this research objective is to compare and contrast the differences between purchasers and non-purchasers in terms of their cognitive and demographic characteristics.

Objective 3: to explore the factors influencing consumers' repeat purchases and loyalty in mobile shopping.

The first two research objectives help to understand the issues around customer acquisition. This research objective provides knowledge of customer

retention, which is complementary to research objectives one and two. Together, the research objectives provide a comprehensive insight into factors affecting grocery shopping decisions.

Objective 4: to develop a conceptual framework of factors influencing use of mobile devices for online grocery shopping.

This objective will use elements from various theoretical ideas to develop a better understanding of the most important aspects of mobile shopping behaviour, which would ultimately lead to development of a conceptual framework to explain consumer decision making in the use of mobiles for grocery shopping.

1.6 Structure of the thesis

The thesis consists of seven chapters. Chapter one provides a brief introduction to the rationale of the study and an overview of the research objectives. Chapter two is the literature review, which provides the theoretical foundations of the research by discussing the literature related to mobile commerce adoption, online grocery shopping and loyalty. It explains some of the classic models used in consumer behaviour literature focusing on those relating to mobile commerce adoption. The development of smartphone and mobile retailing is also discussed in this chapter in order to present an overview of the commercial background as well as the research necessity connected to it.

A review of the possible research methodologies is presented in the third chapter. A presentation of a mixed methods approach, in which both qualitative and quantitative approaches are utilised, is outlined. The chapter justifies the mixed methods as the most suitable approach for this study. In addition, it provides a review of techniques of content and statistics analysis employed in this research. Research ethics are also discussed.

The three following chapters, (chapters four, five and six) provide the main results of this study: chapter four presents the results of in-depth interviews with 12 purchasers (consumers who had previous experience of using smartphones for grocery shopping) and 20 non-purchasers (shoppers without relevant mobile

grocery shopping experience). A content analysis is also carried out, providing a summary of themes relating to usage behaviour.

Chapter five discusses the survey results from 150 purchasers and 150 non-purchasers. The survey questions were designed on the foundation of existing literature and insights from the interview data. Statistical analysis is undertaken which led to the identification of the factors affecting the intention to use mobile grocery shopping.

In chapter six, customer loyalty in a mobile grocery shopping context is presented. This starts with a content analysis of the purchasers' interview data relating to their experience and satisfaction with aspects of mobile grocery shopping; the second half of the chapter focuses on the quantitative data analysis of the survey results, regarding the factors affecting the purchasers' shopping satisfaction and loyalty.

The final chapter, the conclusion of the thesis, summarises the main findings and gives recommendations to grocery marketers. It also outlines the managerial implications of this study. The limitations of this research and recommended future research avenues are also discussed.

Chapter 2 Literature Review

2.1 Introduction

The purpose of this chapter is to review and analyse existing studies relevant to the context of this research. A review of existing literature that focuses on mobile commerce adoption and diffusion issues, namely those involving mobile shopping, is undertaken in this chapter. This information will guide the selection of factors affecting mobile grocery shopping adoption and will be used to formulate and design the conceptual framework that will lead this research. In order to conduct a rigorous review of existing literature, the chapter has been separated into categories.

The structure is as follows: the chapter begins with a review of the development of the smartphone, mobile shopping platforms, and the mobile retailing market in the UK (section 2.2). Having obtained the views and perspectives of existing research, section 2.3 reviews a set of classic frameworks that predict the adoption of information systems especially the mobile commerce system. With the theoretical models being analysed, section 2.4 provides a comprehensive review of the key variables influencing the mobile commerce adoption. Section 2.5 discusses the disparity between intention and actual behaviour in adopting new technology. Section 2.6 provides the feature of innovation diffusion, and the reason why the innovation may be abandoned by some adopters. Section 2.7 discusses cultural differences and their impact on online grocery shopping behaviour. Section 2.8 focuses on the factors that influence a consumers' decision to continue supporting a particular mobile grocer, in order to shed light in exploring the determinants of customer loyalty in grocery shopping. This is followed by section 2.9 which highlights the issues associated with online based grocery shopping. Section 2.10 discusses the feasibility to de-compose variables from current framework as a means to elaborate the elements for a conceptual framework of mobile shopping behaviour. The data collection methods used for the literature review are explained in section 2.11. The final section (section 2.12) summarises the outcome of this chapter.

2.2 Smartphone and mobile shopping

Smartphones have enjoyed a rapid and extensive diffusion since iPhone and Android phones were launched. In order to put consumer demand for mobile grocery shopping into context, this section reviews the features of a smartphone, and mobile internet usage in the UK, as well as the platforms for mobile grocery shopping (mobile sites and apps).

2.2.1 What is a smartphone?

Ofcom (2014b) defined a smartphone as "a phone on which you can easily access emails, download files and applications, as well as view websites and generally surf the internet. Popular brands of smartphone include BlackBerry, iPhone and Android phones such as the Samsung Galaxy S4" (Ofcom, 2014b :78). A smartphone is a major extension of the "feature phone" (traditional voice/text message phones); it combines a feature phone with a personal computer operating system which runs third party apps.

The smartphone usually has a touchscreen; the screen size is between 3.5 inches to 6.9 inches. In the UK, the 4 inches and 4.7 inches phones account for more than half of the market share. While the smaller screens are phasing out (such as Blackberry), the smartphones with a large screen (5-6.9 inches) are becoming popular, which represent 22% of market share (The DeviceAtlas, 2016).

Although some literature, especially grey literature, tend to classify mobile shopping by incorporating shopping activities on both smartphone and tablet (a tablet is a mobile computer with a touch screen of more than 7 inches and without a dialling function). This thesis focuses only on grocery shopping undertook by smartphone users. Arguably tablet and smartphone use the same operation systems (Android or IOS), yet the size of the device and the availability of mobile broadband are quite different between the two. Therefore consumers' shopping behaviour on these two types of devices is different – the tablets are usually kept at home or workplace where a fixed wifi network is available (similar to a laptop). In comparison, the smartphone has greater level of mobility and accessibility to internet. Heinemann and Schwarzl (2010)

pointed out that smartphones are becoming an everyday essential device, and are more suitable for making on-the-spot purchases than tablets.

2.2.2 Smartphone history and development

IBM's Simon Personal Communicator is commonly considered as the first smartphone which was released in 1993. "Simon" was the name of the first mobile phone that could send and receive emails and faxes, it had a touch screen, and ran apps like calendar, calculator, world clock and note pad. Ericsson's R380 was the first phone marketed as a "smartphone" and was launched in the early 2000s. R380 has the Personal Digital Assistant (PDA) function, and some basic web browsing features. Before the launch of the iPhone and Android phone, smartphone manufacturers focused on the market for business users, these smartphones normally ran a Symbian Operating System, and had limited adoption in the mass market.

The development of the smartphone experienced a slow start, but then a rapid acceleration after the launch of the iPhone in 2007 and the launch of HTC Dream (also known as Google Phone G1) in 2008; these smartphones run Apple's iOS and Google's Android system respectively. In the UK, the proportion of population use a smartphone increased from 30% in 2010 to 72% in 2016 (Ofcom, 2017). UK smartphone users reached for their device an average of 9 times a day; in addition, they spend a longer hours on their device than users from the United States (Nielsen, 2014). *eMarketer* tracked the share of time spent with major media (computer, mobile, TV, radio, and print) by UK adults, and found that the amount of time UK adults spent on a smartphone grew from an average of 36 minutes in 2011, to an average of 1 hour 46 minutes in 2016 (*eMarketer*, 2016b).

The fast development of the smartphone is associated with a longer amount of time spent by the users. This has resulted in more engagement between the user and the phone. Deloitte (2014) pointed out that more than a third of UK smartphone owners make an online purchase on their smartphone. In relation to this, mobile commerce is becoming an emerging topic driven by the fast development of the smartphone. Mobile commerce, accordingly to Tiwari et al. (2006) consists of a range of mobile services, including mobile shopping, mobile

banking, mobile entertainment, mobile information services, mobile marketing, telematics service (mainly intelligent transport system), and mobile ticketing.

2.2.3 Recent mobile internet evolution in the UK

Britain launched the 3G network in 2003, relatively earlier than the rest of the world. 3G stands for the third generation of mobile telecommunications technology; it is based on a set of standards used for mobile devices and mobile telecommunications and uses services and networks that comply with the International Mobile Telecommunications-2000 (International Telecommunication Union, 2012). Early 3G network service provided at least 200 Kbit/s of data transfer speed. The demand and development of the network had only seen notable development until the iPhone and Android phones were introduced. This is because prior to the launch of the iPhone and Android phone the cost of a 3G subscription was perceived to be expensive (Ofcom, 2010), and there were limited types of phones fitted with 3G network.

In 2015, there were 3.5 billion people using mobile broadband subscriptions worldwide. The number of mobile broadband users has seen a substantial increase in recent years. Global mobile broadband subscription rates were less than 5% in 2007, within 8 years of development the rate has surged to 47% in 2015. In the meantime, the year 2015 marks the first time that the mobile broadband user population outpaced the internet user population (International Telecommunication Union, 2015).

In Britain, the mobile internet usage is particularly heavy, because of the high rate of smartphone adoption and wide mobile broadband coverage. The UK government forecasted a fast growing demand for mobile data and expected mobile data traffic to grow 11-fold from 2013 to 2018, reaching 445 Petabytes per month by 2018 (UK Government, 2015).

4G network has a faster speed than 3G, the latest generation of mobile telecommunications technology started to roll out in the UK in 2013 by most of the mobile operators including EE, O2 and Vodafone. 4G downstream speed is four times faster than 3G in the UK at about 15 Mbit/s-20 Mbit/s. It appears mobile services that require internet are creating a great demand among the 4G subscribers – 24% of 4G subscribers in the UK claim browsing shopping sites is

the most frequently used mobile service. Despite the fast development in mobile broadband, Wi-Fi remains the preferred network connection for the majority of UK smartphone users because of the speed and cost (Deloitte, 2014).

In order to enable residents of rural areas to also enjoy mobile broadband, the UK government and mobile operators have invested over £5 billion to improve mobile coverage. At the end of 2017, 96% of premises received 4G mobile broadband indoors. Many rural communities have accessed quality mobile internet for the first time (UK Government, 2017).

2.2.4 Mobile retail spending

Wang et al. (2015) tracked changes in retail order sizes and rates as customers become mobile shoppers; they found customers' order rates go up after adopting mobile for shopping. Huang et al. (2016) added that the mobile channel stimulates incremental sales, despite a small fraction of the online sales is cannibalised by the mobile channel. Meanwhile, many retailers reported more than half of their website traffic came from mobile devices, for example John Lewis (see John Lewis Partnership Plc, 2015). According to the Centre for Retail Research (2015), among all the online retailing channels (PC, Tablet, and Smartphone), smartphone stands for 16.5% of the share in the UK, and is the biggest proportion amongst other major European and North American countries (see table 2.1 for details).

Table 2.1 Online retail spending by device 2014-2015

	2014			2015		
	PC	Tablet	Smartphone	PC	Tablet	Smartphone
UK	81.3%	8.0%	10.7%	71.4%	12.1%	16.5%
Germany	83.2%	7.2%	9.6%	72.3%	11.5%	16.2%
Sweden	83.2%	7.4%	9.4%	73.8%	11.7%	14.5%
U.S.	81.3%	8.4%	10.3%	73.2%	12.4%	14.4%
France	88.2%	5.5%	6.0%	80.8%	8.1%	11.1%
Netherlands	88.8%	4.8%	6.4%	81.7%	8.7%	9.6%
Canada	88.7%	4.9%	6.4%	83.8%	7.5%	8.7%
Spain	90.6%	3.8%	5.6%	84.4%	7.5%	8.1%
Poland	92.0%	3.4%	4.6%	86.1%	6.1%	7.8%
Italy	92.9%	3.0%	4.1%	89.9%	5.0%	5.1%

Source: Centre for Retail Research (2015)

Barclays Bank Plc (2015) forecasted that retail sales made via mobile devices in 2019 will reach £32 billion. It also shows that food and grocery shopping is the biggest category of mobile expenditure, which accounts for £2.6 billion of sales in 2014 and is expected to rise to £8.8 billion in 2019. See table 2.2

Table 2.2 Mobile retail sales by sector in the UK (£billion)

	Food and grocery	Clothing and footwear	Electricals	Entertainment and books	Health and beauty	Homewares	Furniture and flooring	DIY and gardening
2014	2.6	2.3	1.6	0.8	0.3	0.3	0.3	0.2
2019 (forecast)	8.8	7.8	5.4	2	1.2	1.2	1	0.5
% growth between 2014-19	238%	239%	238%	150%	300%	300%	233%	150%

Source: Barclays Bank Plc (2015)

Kentico (2013) reported retailers who invest their mobile app or mobile friendly website will have a considerably higher usage and popularity by consumers. Indeed, according to a range of reviews of major UK grocers' Annual Reports from 2012 to 2015, those who invested in mobile commerce performed particularly well in this channel. For example, as early as Q4 2012, ASDA reported that 16% of its online grocery orders were completed via mobile devices (Mintel Group Ltd, 2015). In the same year, M&S launched its first mobile shopping app and re-launched the mobile optimised site, which drove the mobile channel sales to grow by 200% year-on-year; mobile channels that year accounted for 18% of M&S total online sales (Marks and Spencer Plc, 2013). Ocado Ltd (2015) reported over 48% of its orders delivered in 2014 were checked out over a mobile device, with their mobile app accounting for 37% of all checkouts. Sainsbury's mobile optimised website was launched in 2014, resulting in a 12% increase in online grocery sales during the year (Sainsbury's Plc, 2014).

Despite there is a potential to grow business in the mobile channel, Internet Retailing (2016) found that only 23% of the top 500 retailers in the UK have developed a transactional app, moreover, half of these apps had bugs that directly influence performance. On the other hand, most of the top 500 UK

retailers have developed a mobile friendly website, but the average page loading time is 10 seconds, which is very slow, and is associated with a high probability of bounce (visitor leave the site without interaction) (Google Analytics, 2017). These evidences suggest a huge opportunity for retailers to grow mobile commerce in the UK, but there is a lack of attention and investment to optimise the shopping experience for mobile users.

2.2.5 Mobile websites

Mobile websites are websites created to suit users navigating on mobile devices. Using a traditional desktop website on a mobile device, especially on a smartphone would be a frustrating and time-consuming experience, because users have to constantly change the viewing position, or zoom in and zoom out to adjust the content for reading. However, there are a number of businesses that still believe the traditional desktop site will suffice. To encourage businesses to adapt the increasing amount of mobile internet users, and the demand of a better mobile internet experience, Google announced that websites that are not mobile-friendly would lose their position in their search results from the mobile as of 21 April 2015. In other words, websites that are designed for desktop only, would not be searchable on smartphones. When it comes to the term "mobile-friendly website design", there are two main streams of choice: one is a responsive-design, which is a website that adapts to both desktop and smartphone screen size. A responsive-design sometimes requires an overhaul of codes from existing desktop-only websites. Another option is a dedicated mobile website – a separate mobile site operating in parallel with the desktop site. The debate of whether it is best to invest in a responsive website or to develop a dedicated mobile site has never ended (Luniewski, 2015), this is because none of the above solutions would cover the trade-off between the effort of site maintenance and the richness of information on the site. Both solutions have their own advantages and disadvantages. Before making the decision to engage with mobile shoppers, it is important to understand the customers and their web browsing activities first. For example if customers prefer to use multiple devices (desktop PC and mobile phone) to visit the website, a responsive website would create a seamless experience.

Walmart.com recognised the pattern, and created a responsive site which resulted a huge success in mobile customer engagement (IGD, 2015).

2.2.6 Mobile shopping apps

Mobile shopping apps are computer programmes designed for shopping that run on mobile devices. Unlike mobile shopping sites where consumers can access through the internet browser directly, mobile shopping apps need to be downloaded from the App Store before they can be used for shopping. Mobile apps stay in the smartphone unless the user chooses to delete the app. Flurry (2014) found that on average people spend 86% on apps and 14% mobile website when they use a smartphone. However, when it comes to mobile shopping, Google Analytics (2012) claimed that more consumers prefer a mobile site than an app for activities such as searching price, product review and purchasing. Nielsen (2014) research showed the British smartphone users spend about 5% of time for shopping on an app, whilst the proportion in the United States is only 2% (see table 2.3).

Table 2.3 Share of time spent using smartphone apps by category in selected economies

	U.S.	U.K.	Japan
Communications	12%	9%	16%
Shopping/Commerce	2%	5%	6%
News/Info	2%	5%	5%
Productivity/Function	11%	7%	6%
Entertainment	6%	15%	9%
Games	9%	18%	16%
Social	28%	29%	24%
Others	29%	12%	17%

Source: Nielsen (2014)

2.3 Mobile commerce adoption theories

Although the literature relating to mobile shopping acceptance has started to accumulate since the smartphone was introduced in the mass market, the topic

is still in its early stages (Kourouthanassis and Giaglis, 2012). On the other hand, the factors influencing mobile shopping acceptance have been constantly refined in literature over the past decade (Kourouthanassis et al., 2012, Luqman et al., 2013), because mobile broadband and smartphone technologies are evolving quickly, and smartphone ownership is growing rapidly, which results in an on-going behavioural change in general (Kourouthanassis et al., 2012, Okazaki, 2005, Google Analytics, 2014). The objective of this section is to provide the theoretical background that is related to the topic of consumers adopting smartphone use for mobile shopping.

Some popular behavioural theories relating to this research context are reviewed, including the Technology Acceptance Model (see for example Chen et al., 2017, Yang, 2005, Wu and Wang, 2005), the Diffusion of Innovation (see for example Zhang et al., 2012, Hung et al., 2003, Mallat et al., 2009, Natarajan et al., 2017), the Theory of Reasoned Action and the Theory of Planned Behaviour (see for example Hansen et al., 2004), the Unified Theory of Acceptance and Use of Technology (see for example Jaradat and Al Rababaa, 2013, Park et al., 2007, Marriott and Williams, 2016).

Throughout the review of these theoretical frameworks, key variables from these models are analysed in order to provide themes relating to the context of mobile grocery shopping adoption, which is discussed in the next section.

2.3.1 Theory of reasoned action (TRA)

Ajzen and Fishbein (1980) introduced the Theory of Reasoned Action, which is a model designed to predict behavioural intention through the consumers' attitude and subjective norm – as outlined in figure 2.1, intention then determines the actual behaviour. The model sets an underlying precondition that behavioural intentions are rational and voluntary, and individual decision makers are constantly measuring the performance and behavioural criterion in terms of action, target, context, time frame and/or specificity (Ajzen and Fishbein 1975).

Figure 2.1 Theory of Reasoned Action
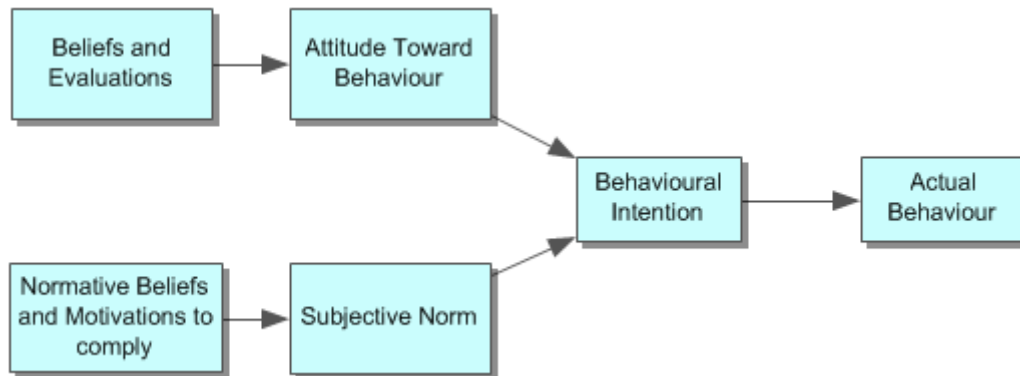
Source: Fishbein and Ajzen (1975), Ajzen et al. (1980)

As originally developed and typically used, the TRA focuses on the determinants and performance of a single behaviour (Sheppard et al., 1988). Sheppard et al. (1988) argued the presence of choices may significantly change the process of formatting the intention; therefore, by ignoring the possibility of choosing among alternative behaviours represents a serious omission in the model. In this research context, mobile shoppers have the option to use a computer as an alternative way to buy, or to visit a local supermarket to buy groceries. Consumers may behave differently depending on the nature of the shopping channel they use. Therefore adopting the TRA exclusively for this study may result in issues of generalisation and reliability of the model. On the other hand, Davis et al. (1989) argued that the TRA is "very general" (Davis et al., 1989 :983), it explains behaviour in wide variety of domains, but not tailored for the prediction of using the information system.

2.3.2 Theory of planned behaviour (TPB)

Based on the foundation of the Theory of Reasoned Action, Ajzen (1991) improved the predictive power by including "perceived behavioural control" as an additional variable, and formed a new model, the Theory of Planned Behaviour. Ajzen (1991) suggested that intentions to perform behaviours of different kinds can be predicted with high accuracy from attitudes toward the behaviour, subjective norms, and perceived behavioural control; and these

intentions, together with perceptions of behavioural control, account for considerable variance in actual behaviour. Hansen et al. (2004) compared the TPB and TRA in a setting of predicting online grocery shopping intention; they confirmed that the TPB would explain higher proportion of variation than the TRA.

As outlined in figure 2.2, according to the TPB, behaviour is determined by intention; intention is influenced by attitude, subjective norm and perceived behaviour control. Perceived behavioural control can, together with intention, be used to predict behaviour (shown on figure 2.2 in dashed line).

Figure 2.2 Theory of Planned Behaviour
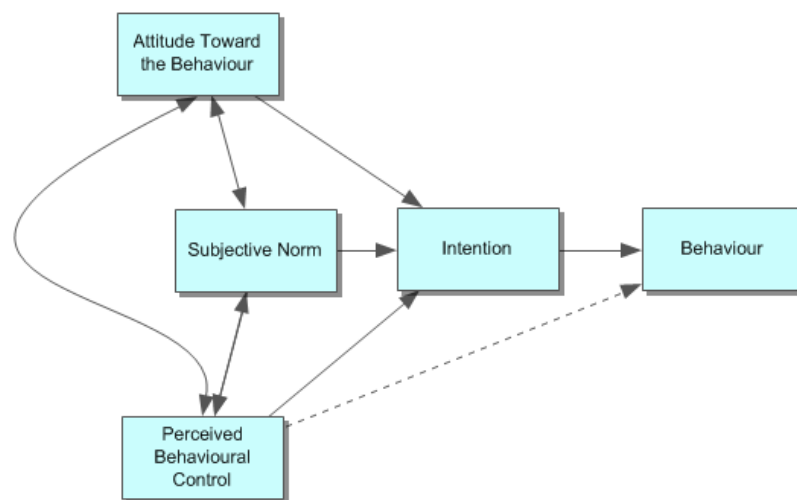
Source: Ajzen (1991)

Perceived behavioural control can be conceptualised as the consumers' subjective belief about the difficulties of generating the behaviour in question (Posthuma and Dworkin, 2000). According to Ajzen (1991), individuals hold a lot of beliefs towards behaviour, only the salient beliefs are considered to be the prevailing determinants of a person's intentions and actions. For the Theory of Planned Behaviour, the salient beliefs, including behavioural beliefs, normative beliefs and control beliefs, are the antecedent to attitude, subjective norm and perceived behavioural control respectively. There is plenty of evidence for the significant relationships between these salient beliefs and factors that determine

the intention, however the exact form of these relations is still uncertain (Ajzen, 1991).

2.3.3 Technology Acceptance Model (TAM)

Davis (1989) introduced the Technology Acceptance Model (TAM) by using the TRA as a theoretical basis. The TAM examines the mediating role of perceived usefulness and perceived ease of use in relation to individuals' attitude, and their intention to use information systems. The model is widely used to predict the intention to use a particular technology due to its strength in theoretical basis and empirical support (Saga and Zmud, 1993). The model (see figure 2.3) suggests while perceived usefulness is influenced by perceived ease of use, both perceived usefulness and perceived ease of use would affect the individuals' attitude toward using an information system. In addition, users' attitude and usefulness perception could determine their intention to use. The model also confirms a positive relationship between intention and actual usage.

Figure 2.3 Technology Acceptance Model
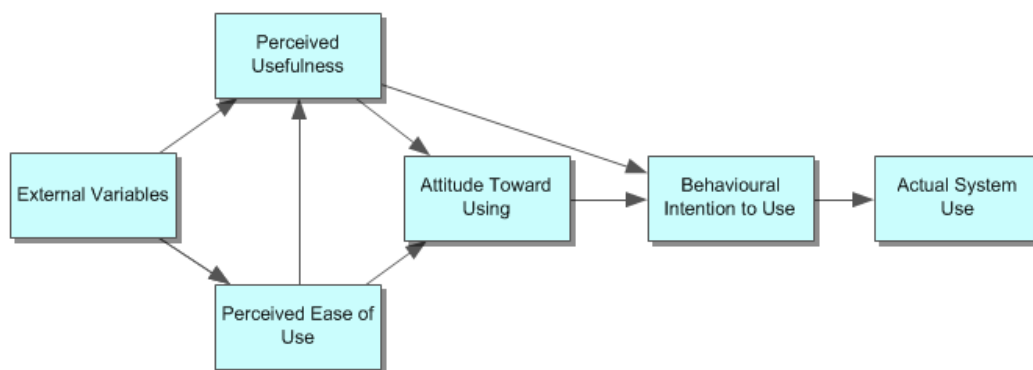
Source: Davis (1989)

Due to the popularity of Internet and other emerging information communications technology, TAM has also been used extensively to study these other aspects of IT, such as the World Wide Web, intranet, electronic commerce, and online shopping; it is the most broadly applied theoretical model to explain the acceptance of information system (Lee et al., 2003). Coursaris et al. (2002) claimed that mobile commerce (M-commerce) can be viewed as a

subset of E-commerce. As TAM has been extended to examine electronic commerce usage, it is appropriate to use the model to examine mobile commerce technology. In fact, TAM is one of the most used models in predicting mobile commerce adoption (Zhang et al., 2012), and has been widely validated in different countries. Empirical studies have found that TAM consistently accounts for about 40% of variance in information system usage intentions (Venkatesh and Davis, 2000a).

A consumer who engages in mobile grocery shopping has dual identities: a supermarket shopper as well as an information system adopter. TAM can be considered as a core model for predicting adoption of mobile shopping, although there are several reasons explaining why TAM is not the best model to predict mobile shopping adoption.

Firstly, TAM was originally designed to only predict computer acceptance: "(TAM) is specifically meant to explain computer usage behaviour… TAM is considerably less general than TRA, designed to apply only to computer usage behaviour." (Davis et al., 1989 :983).

Secondly, TAM was specifically designed in a workplace-setting. According to Davis's work, the first study was conducted to rate the usefulness and ease of use of two computer systems at work place: PROFS electronic mail system and XEDIT file editor. The second study was conducted to evaluate the acceptance of two IBM PC-based graphic systems: Chart-Master and Pendraw (Davis, 1989). The model is designated to predict the work related acceptance of information system, therefore the context is more mandatory. In comparison, the use of information system for shopping tasks is more voluntary.

Thirdly, adopting a new channel or technology for shopping comes in different stages. Early adopters, early majority, late majority and laggards may have different values and therefore behave differently. The behavioural intention may be varied depending on their experience, materiality of the mobile technology and the stage of innovation diffusion.

Fourthly, using TAM alone without considering that demographic difference may result in missing important factors that predict mobile shopping acceptance. For example, different cultures hold different risk perceptions on presenting a credit

card online (Ko et al., 2004, Hwang et al., 2006), while using a credit card is an essential step of mobile grocery shopping.

As a result of this, many researchers (Zhang et al., 2012, Wu et al., 2005, Tsu Wei et al., 2009) suggested additional variables should be added as an extension of TAM, in order to provide better explanations and predictions of usage intention.

2.3.4 TAM2

Venkatesh et al. (2000a) developed the Technology Acceptance Model (TAM) into its second version (TAM2) through the inclusion of an additional variable: subjective norms. According to their study, TAM2 accounts for 37% - 52% of the variance in information system usage intention, and the correlation between intention and usage behaviour is between 0.44 – 0.57. Venkatesh et al. (2000a) claimed that perceived usefulness is a strong determinant of intention to use, followed by the ease of use perception; their study also showed when usage is mandatory, subjective norms have a direct effect on the usage intentions; when usage is voluntary, subjective norms have no direct effect on intention over and above what is explained by perceived usefulness and perceived ease of use. Mobile shopping is conducted by the individual consumer voluntarily; therefore empirical evidence is needed to test the role of subjective norms for this present study.

2.3.5 Comparing Technology Acceptance Model and Theory of Planned Behaviour

TAM and TPB were both widely used to predict the adoption of information systems. TAM was explicitly designed for information system usage, while TPB is widely used in social science, and have also been adopted in studies relating to information system usage adoption (Chau & Hu, 2001; Harrison et al., 1997; Mathieson, 1991; Taylor & Todd, 1995b).

Both TAM and TPB are considered to have similar predictive power, there is no agreed consistency in literature results showing which model has superior power in explaining information system adoption (Mathieson, 1991, Taylor and Todd, 1995). Davis et al. (1989) reported that TAM predicts the acceptance of a

word processing software better than TRA. Mathieson (1991) agreed that TAM predicts intentions better than TPB; whilst Taylor et al. (1995) argued TPB predicts intention slightly better than TAM. According to Mathieson (1991), both TAM and TPB predicted intention to use an Information System quite well, with TAM had a slight empirical advantage, which is easier to apply; however the questionnaire items collecting users' opinion is considered to be too general (Mathieson, 1991).

On the other hand, the two models treat behavioural control differently. TPB specifies internal behavioural control factors (for example skill and will power), and external control factors (for example time, opportunity, and the cooperation of others). Whilst within TAM, the only variable that relates to behavioural control is the perception of ease of use, which was examined by two items: "Learning to operate CHART-MASTER would be easy for me.", and "My interaction with CHART-MASTER would be clear and understandable" (Davis, 1989 :340). Mathieson (1991) argued that ease of use refers to the match between the respondent's capabilities and the skills required by the system. In other words, ease of use corresponds to the internal factor of skill. However, external control issues are not considered in TAM in any obvious way.

2.3.6 Innovation Diffusion Theory (IDT)

Rogers (2010) suggested that innovation diffusion is a special type of communication which relates to the range of messages that are perceived to deal with new ideas and represent a certain degree of uncertainty to an individual. There are four main factors influencing the spread of new ideas, these are: innovation itself, communication channels, time, and the social system (Rogers, 2010).

Concerning the rate of adoption at a micro (adopter) level, there are five characteristics of innovation that influence an individual's decision to adopt, these are: relative advantage (the expected advantages of an innovation compared with prior innovation), compatibility (the extent the innovation fits to the adopter's value and past experience), complexity (the level of difficulty that the innovation adopter perceives), trial-ability (the extent to which the innovation

could be tested and tried) and observability (the extent to which the innovation result could be observed) (Rogers, 2010).

Innovations that are perceived by individuals as having greater relative advantage, compatibility, trial-ability, observability, and less complexity will be adopted more rapidly than other innovations (Rogers, 2010). Specifically, trial-ability and observability focus on evaluating the results of adopting the innovation, which denote a belief that the individual decision makers are rational, and they constantly evaluate the relevant behaviour beliefs. On the other hand, empirical results showed that relative advantage, perceived complexity and perceived compatibility positively influence consumers' adoption of online grocery shopping (Hansen, 2005). In fact, two IDT variables, perceived relative advantage and perceived complexity, are quite similar to perceived usefulness and perceived ease of use from TAM.

Although the IDT is a popular model for explaining and predicting the rate of innovation adoption, it is criticised for not taking into account short-life-cycle innovations (such as fads or fashions, which may not be adopted fully across the population before they die out); it is also criticised for being presuming all innovations are beneficial and will eventually to be diffused to the whole population (Bhattacherjee, 2012).

2.3.7 The Unified Theory of Acceptance and Use of Technology (UTAUT)
Venkatesh et al. (2003) made an empirical comparison of eight IS adoption models in four different organisations, and suggested a unified model: "Unified Theory of Acceptance and Use of Technology" (UTAUT). Venkatesh et al. (2003) claimed the model explains as much as 70% of variance of information system usage intention. UTAUT contains four core determinants, namely: usage behaviour: Performance expectancy, Effort expectancy, Social influence, and Facilitating conditions; while user experience, voluntariness, age, and gender would moderate their decisions over use. The key variable in this model is Performance expectancy, which consists of items from Perceived usefulness (Technology acceptance model), Relative advantage (Innovation diffusion theory), and Outcome expectations (Social cognitive theory). Items within Effort expectancy is similar to Perceived ease of use from TAM and IDT. Items within

Social influence is transformed from Subjective norm from TRA (and TAM2). The last variable, Facilitating conditions, incorporates concepts from Perceived behavioural control (TPB) and compatibility (IDT).

The model was used to examine Chinese consumers' intention to use mobile commerce by Park et al. (2007), the results showed that these 4 core variables significantly influence the adoption of mobile commerce; while gender, education level were proved to have moderating effect, internet experience on the other hand, was found to have no significant impact. Similarly, Slade et al. (2015) applied the UTAUT to predict mobile payment adoption in the UK, and in this context "effort expectancy" was found to have no influence on usage intention, whilst other variables were confirmed to be significant. However the research exhibits sampling problems that participants did not have relevant knowledge or experience of mobile payment. This may raise issues of representativeness of the findings.

Although the UTAUT combines and absorbs key variables and items from other theories for behavioural prediction, and it accounts for a good deal of variance for Information System usage intention, it may lack of predicting power in a mobile grocery shopping context because the shopping risks, and consumer anxiety aspects involved. Therefore additional variables shall be considered for this research rather than relying on this stand-alone model.

2.4 Review of the key variables affecting mobile shopping adoption

The previous section discussed the mainstream theories relating to this study. Using these theoretical foundations, this section extracts the key variables from the previous studies of intention to adopt mobile commerce, a total of 26 key variables are captured from a review of 34 journal articles published from 2003 to 2017, the search engine used was Google Scholar.

After further refinement, consolidation, and evaluation, 14 distinct variables are concluded for further discussions, these are: Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Attitude, Financial Constraint, Infrastructural Constraint, Perceived Skill, Social Influence, Trust/Perceived Risk, Innovativeness, Compatibility, Affinity, Anxiety, and Demographics (age, gender, education, etc.).

Table 2.4 provides a meta-analysis of these variables, including their presence and related source of literature. According to the meta-analysis table, it appears that Perceived usefulness, Perceived ease of use, and Compatibility (and their derivatives) were the most used variables to predict mobile commerce usage intention; while Financial control, Affinity, and Anxiety, received fewer coverage / proved to be insignificant for predicting behavioural intention. It is important to notice that despite the author used as many databases, library, and resource as possible, no journal article is found to research the consumers' intention of mobile grocery shopping.

The following sections (section 2.4.1- 2.4.15) discuss these 14 variables individually, in order to provide insights and context to guide thematic data analysis for the next stage of this research.

Table 2.4 Meta-analysis: factors affecting mobile commerce (part 1)

Yr published	Article	Author	Journal	Perceived Usefulness	Perceived Ease Of Use	Perceived Enjoyment	Attitude	Financial Resource Control	Perceived Skill	Infrastructure Control	Social influence	Perceived Risk	Innovativeness	Compatibility	Affinity	Anxiety	Demographics
2003	M-Commerce in Canada: An Interaction Framework for Wireless Privacy	Coursaris et al, 2003	Canadian Journal of Administrative Sciences 20(1), 54-73	√						√		√					
2004	What drives mobile commerce? An empirical evaluation of the revised technology acceptance model	Wu & Wang, 2004	Information & Management 42 (2005) 719–729	√	√							√		√			
2005	Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons	Nysveen et al, 2005	Journal of the Academy of Marketing Science. Volume 33, No. 3, pages 330-346.			√	√	√			√						
2005	Exploring factors affecting the adoption of mobile commerce in Singapore	Yang, 2005	Telematics and Informatics 22 (2005) 257–277	√	√		√		√				√	√			√
2005	Marketing m-services: Establishing a usage benefit typology related to mobile user characteristics	Mort & Drennan, 2005	Henry Stewart Publications 1741–2447 (2005) Vol. 12, 4, 327–341 Database Marketing & Customer Strategy Management						√		√	√					√
2005	Moderating Effects of Task Type on Wireless Technology Acceptance	Fang et al, 2005	Journal of Management Information Systems /Winter 2005-6, Vol. 22, No. 3, pp. 123-157	√	√							√					
2006	Predicting consumer intention to use mobile service	Wang et al, 2006	Info Systems J(2006) 16, 157–179	√	√			√	√			√					
2006	The moderating role of consumer trust and experiences:Value driven usage of mobile technology	Park & Yang, 2006	International Journal of Mobile Marketing, December 2006 VOL. 1 NO. 2	√		√	√					√					
2007	Exploring consumer adoption of mobile payments – A qualitative study	Mallat, 2007	Journal of Strategic Information Systems 16 (2007) 413–432		√					√		√		√			
2007	Value-based adoption of mobile internet: An empirical investigation	Kim et al, 2007	Decision Support Systems 43 (2007) 111 –126	√	√	√											
2007	Key Drivers of Mobile Commerce Adoption. An Exploratory Study of Spanish Mobile Users	Bigné et al, 2007	Journal of Theoretical and Applied Electronic Commerce Research ISSN 0718–1876 Electronic Version VOL 2 / ISSUE 2 / AUGUST 2007 / 48 - 60				√								√		√
2008	The Influence of Gender on New Technology Adoption and Use–Mobile Commerce	Li et al, 2008	Journal of Internet Commerce, Vol. 7(2) 2008	√	√							√					√
2008	An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models	Lo´pez-Nicola´s et al, 2008	Information & Management 45 (2008) 359–364	√			√				√						
2008	What drives Malaysian m-commerce adoption? An empirical analysis	Wei et all, 2008	Industrial Management & Data Systems Vol. 109 No. 3, 2009 pp. 370-388	√	√				√			√					
2009	Modeling Consumer Adoption of Mobile Shopping for Fashion Products in Korea	Ko et al, 2009	Psychology & Marketing, Vol. 26(7): 669–687 (July 2009)	√	√	√	√				√						
2009	Factors affecting purchase intention on mobile shopping web sites	Lu & Su, 2009	Internet Research Vol. 19 No. 4, 2009 pp. 442-458	√		√			√					√		√	
2009	Exploring individual personality factors as drivers of M-shopping acceptance	Alda´s-Manzano et al, 2009	Industrial Management & Data Systems Vol. 109 No. 6, 2009 pp. 739-757	√	√		√						√	√	√		

Table 2.4 Meta-analysis: factors affecting mobile commerce (part 2)

Yr published	Article	Author	Journal	Perceived Usefulness	Perceived Ease Of Use	Perceived Enjoyment	Attitude	Financial Resource Control	Perceived Skill	Infrastructure Control	Social influence	Perceived Risk	Innovativeness	Compatibility	Affinity	Anxiety	Demographics
2010	Determinants of US consumer mobile shopping services adoption: implications for designing mobile shopping services	Yang, 2010	Journal of Consumer Marketing 27/3 (2010) 262–270	√	√	√	√				√			√			
2010	An empirical examination of factors influencing the intention to use mobile payment	Kim et al, 2010	Computers in Human Behavior, 2010	√	√								√	√			
2011	An empirical examination of the determinants of mobile purchase	Zhou, 2011	Pers Ubiquit Comput (2013) 17:187–195	√		√						√		√	√		
2011	Exploring the Impact of Usefulness and Enjoyment on Mobile Service Acceptance: A Comparative Study	Niklas & Strohmeier, 2011	Proceedings of the 44th Hawaii International Conference on System Sciences - 2011	√	√	√						√			√		
2012	Consumer technology traits in determining mobile shopping adoption: An application of the extended theory of planned behavior	Yang, 2012	Journal of Retailing and Consumer Services	√		√	√		√	√	√		√				
2013	Mobile Shoppers: Types, Drivers, and Impediments	San-Martín et al, 2013	Journal of Organizational Computing and Electronic Commerce, 23: 350–371, 2013					√	√	√							
2013	The Moderating Role Of Consumer Technology Anxiety In Mobile Shopping Adoption: Differential Effects Of Facilitating Conditions And Social Influences	Yang & Forney, 2013	Journal of Electronic Commerce Research, VOL 14, NO 4, 2013	√		√					√					√	
2013	Factors Determining Mobile Shopping. A Theoretical Model of Mobile Commerce Acceptance	Ferri et all, 2013	International Journal of Information Processing and Management(IJIPM) Volume 4, Number 7, November 2013	√	√	√					√	√					√
2014	Exploring the acceptance of technology for mobile shopping: an empirical investigation among Smartphone users	Groß, 2014	The International Review of Retail, Distribution and Consumer Research, DOI: 10.1080/09593969.2014.988280	√	√	√	√					√					
2015	Explain the intention to use smartphones for mobile shopping	Agrebi & Jallais, 2015	Journal of Retailing and Consumer Services 22(2015)16–23	√	√	√											
2015	Modeling Consumers' Adoption Intentions of Remote Mobile Payments in the United Kingdom: Extending UTAUT with Innovativeness, Risk, and Trust	Slade et all, 2015	Psychology & Marketing, Vol. 32(8): 860–873	√	√						√	√	√				
2016	The effect of mobile retailing on consumers' purchasing experiences: A dynamic perspective	Pantano et all, 2016	Computers in Human Behavior 61 (2016) 548e555	√	√							√	√	√	√		
2016	The Predictors and Consequences of Consumers' Attitude Towards Mobile Shopping Application	Musa et all, 2016	Procedia Economics and Finance 37 (2016) 447 – 452				√			√		√					
2017	Acceptance of Smartphone-Based Mobile Shopping: Mobile Benefits, Customer Characteristics, Perceived Risks, and the Impact of Application Context	Hubert et all, 2017	Psychology & Marketing, Vol. 34(2): 175–194 (February 2017)	√	√	√			√						√		
2017	Impact of flow on mobile shopping intention	Chen et all, 2017	Journal of Retailing and Consumer Services (2017), http://dx.doi.org/10.1016/j.jretconser.2017.04.004	√	√	√	√										
2017	Mobile phones and the practice of shopping: A study of how young adults use smartphones to shop	Fuentes et all, 2017	Journal of Retailing and Consumer Services 38 (2017) 137–146	√		√			√							√	
2017	Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory	Gupta et all, 2017	Journal of Retailing and Consumer Services 36 (2017) 1–7	√			√		√				√			√	

Source: Author

2.4.1 Perceived usefulness

Perceived usefulness is the degree to which an individual believes using an information system would increase his or her job performance at work (Davis, 1989). It is the most influential variable that determines a user to adopt a new information system (Davis, 1993). Some research projects concerning mobile commerce adoption found that perceived usefulness is positively correlated with the consumers attitude towards mobile commerce (see for example, Yang, 2005, Yang, 2012, López-Nicolás et al., 2008, Aldás-Manzano et al., 2009, Groß, 2014); a number of studies found perceived usefulness directly determines the behavioural intention (for example, Wu et al., 2005, López-Nicolás et al., 2008, Aldás-Manzano et al., 2009, Yang, 2012, Zhou, 2013b, Groß, 2014, Agrebi and Jallais, 2015, Chen et al., 2017).

While the variable was developed from an organisational study, Shih (2004) pointed out that perceived usefulness can be used in an online shopping context; it can be evolved to assess consumers' perception of the effectiveness of cost, time and convenience. Because a smartphone has a unique nature of mobility, users may have a greater degree of usefulness perception when considering shopping on a smartphone; on the other hand, perceived usefulness of online shopping is reflected through the relative enhancement of the shopping experience (Shih, 2004, Chiu et al., 2009).

Guided by the existing literature, in this study the author revised the original items from the TAM, and conceptualised it as the effectiveness of the shopping experience (Ahn et al., 2005, Wu et al., 2005), time saving (Aldás-Manzano et al., 2009), convenience (Chong et al., 2012), and cost saving (Aldás-Manzano et al., 2009) of mobile grocery shopping.

2.4.2 Perceived ease of use

Perceived ease of use was defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989 :320). A low level of ease of use perception for mobile grocery shopping may be resulted from users to perceive a high level of effort being made on browsing, searching, navigating, and paying groceries on their mobile phone. Ozok and Wei (2010)

pointed out a low perception on ease of use is the key impediment that prevents consumers switching from computer to mobile.

Some studies indicated that the ease of use perception may influence some important cognitive aspects that drive mobile commerce usage intention, such as perceived usefulness (Wu et al., 2005, Yang, 2005), attitude (Ko et al., 2009, Aldás-Manzano et al., 2009), trust (Gefen et al., 2003), and perceived enjoyment (Groß, 2014, Agrebi et al., 2015). On the other hand, Perceived ease of use was found to have significant direct impact on mobile shopping intention (see for example Wang et al., 2006). López-Nicolás et al. (2008) examined the impact of ease of use perception on mobile commerce adoption, the study separated adopters and non-adopters in its sample, the empirical results showed a strong correlation between ease of use perception and intention, regardless of whether the respondents are adopters or non-adopters. A few other mobile commerce studies evolved or reversely coded the original items of ease of use from TAM; under the new labels such as "perceived complexity" (Mallat, 2007), "perceived technicality" (Kim et al., 2007), consistent results were found that these variables have a significant effect on mobile commerce usage intention.

Okazaki (2005) suggested that in order to design and implement an easy-to-use application, the characteristics of the system should be understandable. Chou et al. (2004) added that it means an easy-to-use interface for mobile devices. Amberg et al. (2004) concluded the ease of use should measure navigation, display, and log-in procedure of mobile commerce.

Ease of use, in this research therefore is conceptualised as: the belief of using mobile grocery shopping is intuitive and free from making physical and mental effort. A mobile grocery shopping journey involves physical activities such as viewing and touching the screen, therefore a clear and understandable user interface would help consumers to search and navigate in the shopping app. From a supplier's perspective, it would involve providing a clear layout and categorisation of products (Kurnia and Chien, 2003, Chiu et al., 2009), a user interface that is easy to learn (Davis, 1989), an effort free environment to enable consumers to find the product they want (Aldás-Manzano et al., 2009), a simple and easy checkout/payment procedure (Shih, 2004), and an easy process to undertake the delivery service (Shih, 2004).

2.4.3 Perceived enjoyment

Davis et al. (1992) suggested that the two core variables, perceived usefulness and perceived ease of use from TAM, reflect utilitarian or extrinsic aspects of information system usage because they are instrumental in achieving valued outcomes. While an intrinsic motivation, such as perceived enjoyment, shall be incorporated with these variables to lift the predictive power.

Davis et al. (1992) defined perceived enjoyment 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 :1113). Enjoyment, fun, and entertainment, in a form of users' hedonic value of using an information system, would trigger the usage intention (Davis et al., 1992, Kim et al., 2009b).

Early studies of online shopping revealed the direct effect of enjoyment on behavioural intention (for example Koufaris, 2002, Childers et al., 2002). This agrees with the pattern of technology-based self-service adoption (Dabholkar and Bagozzi, 2002). Kim et al. (2009b) claimed that consumers that perceive fun and enjoyment with mobile phones may exhibit a positive attitude toward mobile commerce. Indeed, a positive relationship between perceived enjoyment of using a smartphone, and the intention to use mobile shopping, was found in many studies (for example, Nysveen et al., 2005, Zhou, 2013b, Lu et al., 2009, Lee et al., 2002).

Agrebi et al. (2015) added that perceived enjoyment impacts on the mobile shopping intentions only among the consumers who have experienced using a mobile for purchasing; while for non-users the correlation between enjoyment perception and usage intention is low.

A few other studies concerned with the relationship between perceived enjoyment and other variables that affect usage intention found a positive relationship between perceived enjoyment and perceived usefulness (or "flow", see Zhou 2013) , and attitude (for example, Nysveen et al., 2005, Park et al., 2006, Yang, 2012, Yang, 2010, Ko et al., 2009, Groß, 2014).

Hoffman and Novak (1996) suggested that reasons for underlying consumers' experiential behaviour are related to receiving entertainment. In this research

context, the enjoyment of using advanced functions on a smartphone, where graphical animation and individual customer-tailored experiences may entertain the users, and consequently encourage them to use shopping apps. From this perspective, the underlying aspects of perceived enjoyment would be: a fun and entertaining feeling of buying groceries on mobile (Groß, 2014) and an enjoyable or pleasant feeling of using the mobile website or app (Lu et al., 2009).

2.4.4 Attitude

The effects of the user's attitude towards using an information systems were suggested in many models for behavioural prediction, such as TAM, TPR and TRA. Fishbein et al. (1975) defined attitude as an individual's positive or negative feelings about performing the target behaviour. TRA implies that people want to perform behaviour that is in accordance with their attitudes, in other words, a persons' attitude is postulated to have a direct influence on their intention to use a system.

Rogers (2010) stated an innovation adopter may drop out at any stage during the process of adopting a new technology – first of all they gain knowledge about the innovation, then they form their own attitude toward the innovation. The relationship between attitude and intention was further tested in studies relating to mobile commerce adoption, where a positive correlation between attitude and usage intention has been found (for example Nysveen et al., 2005, Bigné et al., 2007, López-Nicolás et al., 2008, Aldás-Manzano et al., 2009, Yang, 2012, Yang, 2010, Groß, 2014). Not only attitude can influence intention, López-Nicolás et al. (2008) found that attitude towards mobile innovations also has a positive impact on the usefulness perception. Hansen (2006) pointed out that attitudes towards online grocery shopping should be regarded as more of a directly action-oriented evaluation for future online grocery buying, rather than a post-purchase overall satisfaction.

However this variable (attitude) received a number of criticisms. A typical example being in the latest version of the technology acceptance model (UTAUT) – Venkatesh, Morris et al. (2003) argued the relationship between attitude and intention is spurious in a technology acceptance context. Indeed, it

is noticeable that in most of the mobile commerce or mobile shopping acceptance literature, "attitude" as a variable was tested in samples that respondents' previous experience of mobile commerce were not explicitly identified, see for example Yang (2012) and Groß (2014). It is also noticeable that "attitude" as a variable was often examined in a Confirmatory Factor Analysis technique (CFA), see for example Nysveen et al. (2005), Groß (2014), Yang (2010). Because the latent structure is predefined (Byrne, 2016), the use of CFA in an early stage of a research subject would potentially mask the inter-correlation among items from attitude and items from other variables. In addition, Cho (2004) argued that a user's attitude shall not be examined as a stand–alone variable because it may have effect on multiple constructs depend on the context. Wu et al. (2005) also suggested that attitude only affects the perceived risk in mobile commerce adoption. In this research context, it is likely that the role of a smartphone in our daily life can be overly amplified through increasing propaganda of smartphone's powerfulness by the media. As a result of this, the public may have a positive attitude towards the new way of shopping, but the actual intention is in fact determined by other variables. Because of above reasons, user attitude is not analysed in this thesis.

2.4.5 Behavioural control

Perceived behavioural control is a key variable from TPB, it refers to the individual's perception of his/her capability to perform a behaviour of interest (Ajzen, 1985). This variable has been empirically examined in some mobile commerce acceptance studies, where a strong effect on usage intention was found (Nysveen et al., 2005, Zhou, 2013b, Yang, 2012). San-Martín et al. (2013) added that behavioural control affects the ease of use perception, and it only affects the usage intention when the potential mobile shoppers are highly motivated.

In general, perceived behavioural control in technology acceptance context refers to users' perception of resources to use information technology, the facilitating conditions, and their knowledge or ability to use the system (Thompson et al., 1994, Taylor et al., 1995). Taking into account of this, three main dimensions pertain mobile commerce behavioural control shall be considered in this study, these are: limited financial resource (Tsu Wei et al.,

2009), limited infrastructure in place (Yang, 2012), and limited smartphone usage skill to complete the shopping task (Lu et al., 2009). These constraints refer to very different aspects of using mobile for shopping, therefore in this research, behavioural control needs to be treated as three individual variables for further validation.

2.4.6 Financial constraint

Mathieson et al. (2001) found monetary resource is an important consideration for users to adopt an information system. Early studies of behavioural control on mobile commerce acceptance concerned mainly about resource related limitations (see for example Wang et al., 2006). Luarn and Lin (2005) also found that perceived financial cost negatively influence mobile banking usage intentions. This was largely resulted from the expensive mobile internet data charged in the early days of mobile commerce diffusion (Ofcom, 2014a). Coursaris et al. (2003), Mallat (2007), Yang (2012), Wu et al. (2005), and Wang et al. (2006) confirmed that monetary costs have a negative effect on mobile commerce usage intention. In parallel, the cost of using mobile commerce is negatively correlated to the usefulness perception (Wang et al., 2006), and user's attitude (Kim et al., 2007) of using mobile commerce.

Despite Ofcom (2014a) confirmed the average monthly mobile data charge had been halved – from £39.65 in 2003 to £12.87 in 2012 – thanks to the roll out of new telecommunication technologies such as 3G and 4G network, there is no empirical evidence to indicate the effect of financial constraints on mobile shopping intention has been eased. On the other hand, apart from the mobile data cost, in most cases shoppers need to pay a delivery fee when they shop online or on mobile, which instrumentally drive the overall financial cost of shopping.

Therefore, financial resource constraints may remain to have a negative effect on the usage intention. In particular, individual's financial constraint in regards to the affordability (Nysveen et al., 2005, Wang et al., 2006) to conduct mobile grocery shopping shall be examined in this thesis.

2.4.7 Infrastructural constraint

The availability of technical infrastructures that support the use of mobile grocery shopping may be another constraint to consider by the adopters. A positive perception of technological control would facilitate a consumer's confidence of the outcome (Bateson and Hui, 1987), on the other hand, a lack of control would prevent consumer wanting to adopt new technology (Hoffman et al., 1999). Mobile commerce has been distinguished from E-commerce in terms of delivering value by offering more convenience and access to the internet at any time or place (Clarke, 2001), therefore the primary concern of infrastructural and technological control in this research context is relating to the network availability for mobile shopping. Without mobile internet, a smartphone may not be able to browse to the shop (unless the app supports offline shopping), and a slow browsing speed and an inconsistent internet availability may affect the shopping experience. Zhou (2013b) found that a poor connectivity would results in a low trust on mobile commerce. Yang (2012) confirmed that technological infrastructure to support mobile shopping transactions positively affect the usage intention.

On the subject of network connectivity, some studies from East Asia argued that instant connectivity has no impact on mobile shopping usage intention (Lu et al., 2009), and that there is no correlation between connectivity and perceived value of using mobile for shopping (Ko et al., 2009). The research context of Ko et al. (2009)'s work was related to Korean consumers buying fashion products via mobiles; despite the fact that there may be some cultural influences, the empirical results need further validation in other research contexts of mobile commerce. Lu et al. (2009) argued that although connectivity does not affect the intention to use, it actually has a positive impact on perceived enjoyment and perceived usefulness. Notably, network connectivity was labelled under Ease of Accesses by Lu et al. (2009a), so instead of explicitly examining the browsing issues such as content loading speed, navigation effort, or internet availability, the survey only generally measured the ease of access and related mental effort – similar to items in the Perceived Ease of Use from the TAM, therefore their result was similar to Davis (1989)'s work that Perceived Ease of Use showed no direct impact on Behavioural Intention. Venkatesh et al. (2003) mentioned technical infrastructure may be a precondition to adopt the new technology. Arguably, when a mobile internet connection is lost, users can

leave the shopping page or app open in the background and re-open it when the internet becomes available. The inconsistency of mobile internet may have been an accepted situation by smartphone users, they may use to the signal loss and navigation issues therefore have more tolerance. Nevertheless, further empirical evidence is needed to validate this variable.

The second constraint relating to technological infrastructure of using mobile grocery shopping refers the size of the smartphone screen. Compared to online shopping, mobile has a natural disadvantage that a smaller screen may result in perceived difficulties of reading, navigating or searching for products on the shopping app. An experiment conducted by Chae and Kim (2004) showed that on a mobile phone, users have to scroll frequently, the information displayed on a mobile phone screen changes dramatically with each scrolling action. As a result of this, users may have to bear a greater level of cognitive load, and they may get lost more easily when conducting complex tasks. However Kim and Sundar (2016) argued because there are fewer content to display, smaller screen size is more likely to bring the users to a comprehensive and analytical oriented information processing environment, thus it leads to a greater cognitive trust when making a purchase.

The larger screen smartphones are gaining the market share rapidly (Flurry, 2015). Over the past few years, the most popular phones have grew their average size from 4 inches to 5.1 inches (The DeviceAtlas, 2016). Kim and Sundar (2014) compared large (5.3 inches) screen and small (3.7 inches) screens, and found that the large screens have a more positive influence on perceived ease of use. However there is a lack of empirical evidence to show the relationship between screen size and mobile shopping intention.

Using views adapted from and Yang (2012), Coursaris et al. (2003), the infrastructural constraints in this research focus on measuring technological resources needed for mobile grocery shopping, including: the condition of the mobile phone, availability of internet, battery, and the screen size.

2.4.8 Perceived skill

Bandura (1977) pointed out that although some individuals believe the outcome is beneficial, they may still not to perform the activity because they doubt their

own ability. Several researches have confirmed users' capability belief has a positive effect on their intrinsic motivation to adopt an information system (see for example Compeau and Higgins, 1995b).

Consumers who perceive themselves as having sufficient knowledge in conducting online shopping, and using the smartphones, would be more confident to explore advanced features on a smartphone, such as downloading an app, using an internet browser, or even making a purchase. In this study, Perceived Skill refers to a shopper's self-assessment of his/her capability to use a smartphone for grocery shopping.

Yang (2012) stressed that individuals' differences in technological skills may affect mobile shopping adoption. On the other hand, perceived skill was found to have a positive effect on those variables that have a direct influence on mobile shopping intention (San-Martín et al., 2013, Gupta and Arora, 2017). Yang (2005) also pointed out that consumer knowledge of technological innovations positively influences the ease of use perception of mobile commerce. Whilst Lu et al. (2009) suggested that mobile skilfulness exhibited a significant negative influence on anxiety, and had a significant positive effect both on enjoyment and usefulness in mobile shopping. On the other hand, the term Self-efficacy is sometimes labelled in mobile commerce adoption research to describe the perceived skill. Self-efficacy is defined as the belief that one has the ability to perform a specific behaviour (Compeau et al., 1995b). Wang et al. (2006) found a positive correlation between self-efficacy and perceived ease of use, as well as the behavioural intentions of using mobile transactional services. Mort et al. (2005) agreed that mobile self-efficacy is associated with a person's intentions to use mobile commerce.

Based on existing literature, Perceived Skill in this research is measured by consumers' perceived skilfulness in downloading and browsing in a shopping app; their ability to complete the shopping in a short time; and their ability to make a payment on a smartphone (Lu et al., 2009).

2.4.9 Social Influence

Social Influence (sometimes labelled as Subjective Norm, Normative Pressure, Peer Pressure, or Interpersonal Influence) are norms developed through

external and interpersonal influence. Ajzen (1991) conceptualised it as "the perceived social pressure to perform or not to perform the behaviour" in question (Ajzen, 1991 :188).

During social communication, many people are susceptible to interpersonal influence. Hansen et al. (2004) pointed out that recommendations and experiences mentioned by others are often a factor triggering the behaviour of online grocery shopping. Early studies in social pressure to individuals (for example, McGuire, 1968) concluded that susceptibility to interpersonal influence happens to individuals in varying degrees depending on the social situation; consumers are more likely to make a purchase after observing others, or being influenced by another person's purchase or recommendation.

Social influence is examined in many mobile commerce acceptance studies, for example Nysveen et al. (2005) found that under the social pressure, consumers would choose to use mobile technologies despite their attitude toward the technology is neutral or negative. Several other studies (see for example Mort et al., 2005, and Yang, 2012, Yang, 2010) confirmed the effect of social influence on intention to adopt mobile commerce is significant and positive. Nysveen et al. (2005) added that among the older adopters, the effects are stronger. López-Nicolás et al. (2008) conducted wider research on social influences in advanced mobile service adoption, where strong and positive correlations are discovered between social influence and perceived usefulness, and between social influence and perceived ease of use. Taylor et al. (1995) highlighted the need of decomposing this variable into its salient normative beliefs because of the potential divergence from influencers. For example a consumer may believe her colleague thinks she should use mobile for grocery shopping, in the meantime her friend thinks she should not. In this case, "monolithic normative structure may show no influence on SN or intention because the effects of the referent groups may cancel each other out" (Taylor et al., 1995 :152).

Following these studies, in this research context the social influences can be conceptualised as: if the influencers believe buying groceries on a smartphone is a good practice, consumers would agree and accept the belief, and establish an intention to buy groceries on their mobile. The effect of social influence is assessed by the expectation from the individual consumer's idol or influencer

(Yang, 2012), and social circle (Nysveen et al., 2005, López-Nicolás et al., 2008, Yang, 2012).

2.4.10 Trust/Perceived Risk

Trust plays a critical role in determining purchasing intentions on the internet because of uncertainties from both the retailer and the technology. A lack of trust may become an obstacle for mobile commerce usage, because consumers may not feel comfortable providing personal information to the supplier if they perceive a risk. The importance of trust has been emphasised extensively in e-commerce research (see for example, McKnight et al., 2002, Gefen et al., 2003). Coursaris et al. (2002) pointed out that mobile commerce is a natural extension of e-commerce; they share fundamental business principles but operate in different channels. Indeed, a number of mobile commerce adoption studies have confirmed the significant impact of trust or perceived risk on adoption (for example, Wu et al., 2005, Wang et al., 2006, Park et al., 2006, López-Nicolás et al., 2008, Mallat, 2007, Zhou, 2013b, Groß, 2014).

Trust represents multiple dimensions of perceived risk in mobile grocery shopping, including concerns of possible monetary loss/financial fraud (for example shopping account or password being stolen, bank card information being leaked, and the subsequence of losing money), privacy (for example leaking of shopping records, location records, phone number, and other personal information), poor product or services being received (for example the food and drinks purchased are not fresh or bad customer service), and finally, time wasted (for example the shopping basket or delivery/payment form being cleared by the system due to account inactivity).

To put this into the current research context, the thesis summarises two tiers of perceived security relating to mobile shopping:

The first tier of security concern relates to the idea of mobile shopping, which includes privacy and financial risk concerns. A smartphone keeps the owner's shopping record and personal information. This enables the retailer to give recommendations on repeat purchases, as well as location based services (for example the store locator). However, it could potentially raise smartphone

users' concerns about both the leakage of their personal information, and the inappropriate use of their shopping history by the retailer.

The second tier of security concern relates to the customers' concerns of buying products on a smartphone: when engaging with a shopping app, consumers will not physically see the product purchased until the delivery is made; on the other hand, product images, descriptions and reviews are not always comprehensively presented due to the overloaded content on the mobile site or app, and the limited size of a mobile phone screen. Owing to these uncertainties and constraints, mobile shoppers therefore may perceive a certain degree of risk towards the retailer. Compared to the first tier of security concern (concerns towards the securities and privacies), the second tier is more specific, it is to do with the retailer's creditability and the consumers' trust towards the retailer. Therefore, these are relatively controllable on the retailer's side. Kim et al. (2003) showed that consumers' perceptions about the reputation of the retailer, information quality presented, and system reliability, are strong implications for consumers' trust. Siau and Shen (2003) suggested that at the early stage of mobile technology diffusion, trust of the technology plays a more important role than the trust of the retailer. Table 2.5 denotes the literature coverage of mobile commerce trust-related issues: in the early publications (pre-3G) of mobile commerce adoption literature, research on mobile commerce trust focused on the consumers' risk perception about the mobile technology itself; as the mobile technology evolves, research on trust in recent years have become more specific, and moved towards the issues around the retailers' side. For example brand (Hillman et al., 2012), policy (Hung et al., 2012), website and service (San-Martín et al., 2013, Zhou, 2013b, Slade et al., 2015), and the customer-vendor relationship (San-Martín et al., 2013, Groß, 2014, Musa et al., 2016).

Table 2.5 Previous research concerning perceived risks in mobile commerce

		Mobile Technology	Brand	Policy / Guarantee Promise	Transactional Websites and Services	Customer–Vendor Relationships
Moderating Effects Of Task Type On Wireless Technology Acceptance	Fang et al. 2005	X				
The Moderating Role Of Consumer Trust And Experiences:Value Driven Usage Of Mobile Technology	Park et al. 2006	X				
Predicting Consumer Intention To Use Mobile Service	Wang et al. 2006	X				
New Technology Adoption And Use–Mobile Commerce	Li et. 2008	X				
Soft Trust And Mobile commerce Shopping Behaviours	Hillman et al. 2012		x			
An Examination Of The Determinants Of Mobile Shopping Continuance	Hung et al. 2012			x		
An Empirical Examination Of The Determinants Of Mobile Purchase	Zhou 2013				x	
How Can A Mobile Vendor Get Satisfied Customers?	San-Martin et al. 2013				x	X
Exploring The Acceptance Of Technology For Mobile Shopping: An Empirical Investigation Among Smartphone Users	Groß 2014					X
Modelling Consumers' Adoption Intentions of Remote Mobile Payments in the United Kingdom: Extending UTAUT with Innovativeness, Risk, and Trust	Slade et all, 2015				x	
The Predictors and Consequences of Consumers' Attitude Towards Mobile Shopping Application	Musa et all, 2016					x

Source: Author

As a variable to be analysed in this thesis, trust is measured by the level of concerns of possible monetary loss or potential financial fraud (Wang et al., 2006), the level of concerns about the leakage of privacy (Wang et al., 2006), the level of concerns about service and product quality (Groß, 2014), and the level of concerns about possible time wasted due to technical problems (Groß, 2014).

Gefen et al. (2003) confirmed that trust has a significant effect on perceived usefulness and intention to purchase online. In mobile commerce context, trust is also confirmed to be an implication of perceived usefulness (Wang et al., 2006). Zhou (2013b) argued that trust does not affect perceived usefulness, however, it is notable that Zhou's research data was collected based on the respondents' shopping experience of the "big 4" shopping websites in China. Those sites were well established and therefore potentially dilute the effect of trust on perceived usefulness.

High levels of a causal relationship between trust and intention to adopt mobile commerce was found in mobile commerce research – trust directly affects intention to use mobile commerce; higher trust will lead to higher behavioural intention (Fang et al., 2005, Wang et al., 2006, Zhou, 2013b, Groß, 2014). Park et al. (2006) claimed that trust is a moderator that indirectly affects the intention to adopt mobile technology, in their research, the researchers conducted a split testing between high trust respondents and low trust respondents, and found that the high trust group showed greater path coefficients than the low trust group in terms of the relationship between attitude toward mobile technology and intention to use. However, one study argued that trust does not influence mobile commerce adoption (see López-Nicolás et al., 2008). Notably the sample of that study is not representative enough – more than half (52%) of the respondents were below 20 years old, whilst the reset respondents were parsimoniously split by only two other groups: age 20-25 (40.4%) and older than 25 (7.6%). The imbalanced sample may therefore resulted in a biased view because the younger people usually have more experience with internet, whilst the older people perceive greater level of risks online (Morris and Venkatesh, 2000, Trocchia and Janda, 2000).

2.4.11 Innovativeness

Technology innovativeness refers to the extent to which an individual adopts new technologies at a relatively early stage than others (Rogers, 1993). Innovativeness is possessed by individuals in various degrees (Varma Citrin et al., 2000). Donthu and Garcia (1999) found that internet shoppers are more innovative than non-shoppers. Limayem et al. (2000) confirmed a strong positive effect of personal innovativeness on attitudes towards online shopping.

In addition to this, consumer innovativeness positively influences the ease of use perception of online shopping (Bigné-Alcañiz et al., 2008). Furthermore, innovativeness directly affects the intention to shop online (Limayem et al., 2000, Bigné-Alcañiz et al., 2008).

Similar findings were discovered in mobile commerce adoption research. Early studies in WAP (Wireless Application Protocol) service adoption in China discovered that personal innovativeness is positively correlated to an individual's attitude towards using WAP service (Hung et al., 2003). Later research by Mort et al. (2005) claimed that innovators have greater intentions to use value-added mobile shopping services (such as receiving coupons, personal shopping alerts and buying tickets). Research showed that personal innovativeness influences consumers' intention to shop on mobile either directly (see research in Spain, for example Aldás-Manzano et al., 2009), or indirectly (see the research in the United Sates, for example Yang, 2012). Yang (2005) pointed out that innovativeness also affects the ease of use perception and usefulness perception.

Following the above literature, innovativeness as a variable in this research is measured by perceived innovativeness (Kim et al., 2010, Slade et al., 2015), and the belief of being an early adopter of new things amongst peers (Aldás-Manzano et al., 2009, Kim et al., 2010, Slade et al., 2015).

2.4.12 Compatibility
Compatibility is the degree to which innovation is perceived to be consistent with the potential adopter's existing values, past experiences, and needs (Rogers, 2010). Research of mobile commerce has discovered that compatibility directly influences the use of mobile commerce (for example Wu et al., 2005, Mallat, 2007, Aldás-Manzano et al., 2009, Lu et al., 2009, Yang, 2010). It also confirmed that compatibility has an indirect effect on behavioural intentions through influencing on the usefulness perception (Wu et al., 2005, Yang, 2005) and the ease of use perception (Yang, 2005). Yang (2005) stressed that consumers who use a cell phone, PDA, Laptop computer, or phone with internet access are more likely to adopt mobile commerce, because technologically oriented consumers do not use technologies in isolation but

adopt a set of technologies to enhance their lifestyle (Aldás-Manzano et al., 2009). Consumers choose to buy the smartphone that fits their lifestyle and aesthetic standards. Lu et al. (2009) claimed that mobile technology is already been deeply adopted by many people. A high degree of consistency between user's values and experiences with mobile technology will lead to the adoption of other mobile services such as mobile shopping. Wu et al. (2005) stressed that compatibility is the most important determinant for behavioural intention to use mobile commerce. This is because a lack of experience of relevant technologies will increase the risk perception of using the technology (Van de Ven et al., 1976, Katz and Tushman, 1979). Non-experience or low-experienced consumers may seek information and the opinion of others in order to reduce the uncertainty (Burkhardt and Brass, 1990), therefore the effect of subjective norms will have a higher level of effect on a person's intention to adopt technology than those who have relevant experience (Triandis, 1971, Thompson et al., 1994).

Mobile commerce is a development of Electronic commerce, the two channels share some similar characteristics (Balasubramanian et al., 2002, Lee, 2016), it might be reasonable that conducting shopping on a smartphone could fit in the users' habit of online shopping. Indeed Kim et al. (2010) found the early adopters of mobile shopping are those who had previous knowledge of mobile payment system. In addition, Yang (2012) found that consumers who have previous mobile shopping experience will have a greater level of perceived usefulness on mobile shopping; the experienced mobile shoppers are more likely to enjoy mobile shopping, and less likely to rely on others' support on mobile shopping decisions.

In this research, compatibility is measured by the degree of which the practice of buying groceries on a mobile phone fits the consumers' lifestyle and pace of life (Wu et al., 2005, Lu et al., 2009), life and work (Wu et al., 2005, Kim et al., 2010), and existing online transaction activities and habits (Wu et al., 2005).

2.4.13 Affinity
Rubin (1981) defined 'affinity' as the perceived importance of the medium in the life of the individual. Previous studies indicate the closer the individual's

relationship with the medium, the greater likelihood that a purchase could happen because of the observed content (DeFluer et al., 1989). A study on online shopping intentions found a positive correlation between internet affinity and internet dependency, therefore a high level of internet dependency could be used a predictor of intention to shop via the internet (Ruiz Mafé and Sanz Blas, 2006).

British smartphone owners are using their phones more often. Research by Deloitte (2014) showed that more than 67% of UK smartphone owners look at their phone at least 10 times a day; 31% of the smartphone owners look at their phone within 5 minutes of waking, and 83% of owners look at their smartphone within 1 hour of waking. Niklas and Strohmeier (2011) suggested that people's mobile affinity increases the probability of acquiring more services through mobile devices. In mobile shopping research, it was found that affinity has a positive effect on the intention (Bigné et al., 2007, Aldás-Manzano et al., 2009, Zhou, 2013b) and frequency (Bigné et al., 2007) to conduct mobile shopping.

This leads to a suggestion that mobile affinity may influence the tendency to buy groceries on the smartphone. Following the mobile commerce adoption literature, mobile affinity can be measured in the following aspects: the role of a smartphone in people's life (Bigné et al., 2007, Aldás-Manzano et al., 2009), and people's addictiveness to using a smartphone (Bigné et al., 2007, Aldás-Manzano et al., 2009).

2.4.14 Anxiety

Anxiety is the tendency of an individual to be apprehensive about innovative technology (Bandura, 2002). It is a significant but negative inhibitor of Information Technology acceptance (McFarland and Hamilton, 2006). Anxiety has a strong impact on behavioural intentions, as individuals would be expected to avoid a behaviour that is associated with potential anxiety (Compeau and Higgins, 1995a). A smaller screen, together with an unstable internet connection on a mobile phone could raise a shopper's anxiety (Yang and Forney, 2013). Lu et al. (2009) confirmed a negative correlation between anxiety and intention to use mobile shopping websites. Yang et al. (2013) suggested that anxiety is a moderator, which influences the relationship

between mobile commerce usage intention and its determinants. Researches about mobile shopping anxiety were mainly concerned about users' negative emotion and frustrating experience. Yang et al. (2013) suggested that because mobile shopping activity is not limited to temporal and spatial boundaries, consumers in this shopping channel may have a higher anxiety than consumers using other shopping methods. Bahli and Benslimane (2004) supported this argument, and suggested that consumers may have a higher degree of anxiety when using services in a mobile environment, because there is a lack of transparency of responsibility – when failure or loss of a transaction arises, it is hard to make a complaint.

Following this literature, mobile anxiety in this research is measured by the fear of making a mistake, along with the concerns of potential failure or loss (Lu et al., 2009, Yang et al., 2013).

2.4.15 Social inequality

Consumers' opportunity and ability to access and use of internet and communication technologies varies, this creates potential barriers for certain population to participate in the information society. The OECE marked a term "digital divide" which refers to "the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the internet for a wide variety of activities." (OECD, 2006: 5). Early studies of digital divide as a result of social inequality suggested the adoption of internet in EU countries was affected by age, gender, income, and education level (European Opinion Research Group, 2000), specifically, Huesing (2002) identified the internet diffusion in EU countries exhibited difficulties for age 50+, female, low income, and low education groups. Some demographic variables were found to have an impact on mobile commerce adoption, see for example Yang (2005), Li et al. (2008), however Dabholkar et al. (2002) argued demographic variables are not critical considerations in explaining technology-based self-service, because in the modern society simple technology devices such as smartphone are easy accessible and familiar to the general public. In this study the focus is drawn upon online grocery shopping related demographic variables such as household

size, presence of child, online shopping experience, and household location (discussed in section 2.9), as well as mobile commerce related demographic variables such as age (Yang, 2005), gender (López-Nicolás et al., 2008), and education (Yang, 2005).

Age

According to Ofcom, seven in ten adults (72%) in the UK use a smartphone. Smartphones are mainly used by the age group of 16-64. While the use of smartphone is growing year-on-year, over-65s group saw a significant increase from 2015 to 2016 – the proportion of adults use a smartphone had increased from 28% to 39% for 65-74s, and increased from 8% to 15% for over-75s (Ofcom 2017). Figure 2.4 shows the penetration of smartphone by users' age, and the changes between 2015 and 2016.

Figure 2.4 Percentage of UK adults who own a smartphone
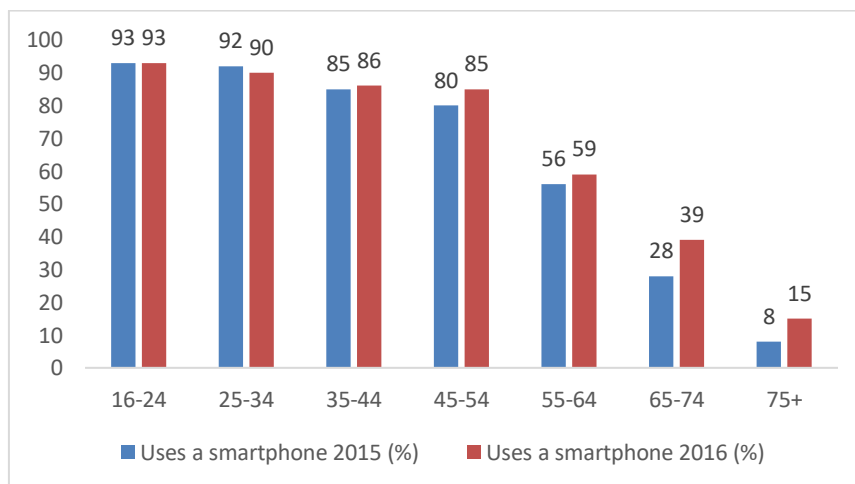
Source: Ofcom 2017

In the mobile shopping context, Yang (2005) pointed out that age negatively influences perceived usefulness, but it has no influence on perceived ease of use according to a research in Singapore. Similarly, a study of Spanish mobile commerce adoption showed that age has a significant and negative effect on mobile commerce usage frequency and the intention to use (Bigné et al., 2007). López-Nicolás et al. (2008) however claimed that age has no influence on

intention to adopt mobile commerce; notably the respondents in that research were boldly categorised into 3 age groups (below 20s, 20-25s, 25s above), and majority of the respondents were young people (92.4% were below age 25), therefore their conclusion could be skewed by the sampling issues.

Gender

Venkatesh and Morris (2000b) found that perceived usefulness is more important for men than women in making their decision to adopt the information technology; while perceived ease of use is more important for women to adopt information technology than men. Early research on e-commerce has drawn a significant amount of attention on gender influence (see for example Morganosky et al., 2000, Chang et al., 2005, Zhou et al., 2007, Slyke et al., 2010). Slyke et al. (2010) argued that gender is a strong moderator that influences the intention to use e-commerce; using the Innovation Diffusion Theory, they stressed that the Relative Advantage is more important for men, and Compatibility is more important for women. Rodgers and Harris (2003) claimed that men are typically shown to be the dominant online shoppers in nearly every study they examined. Zhou et al. (2007) concluded that men make more online purchases and spend more money than women; women are more sceptical of online business, and have a higher level of web apprehensiveness than men.

On the other hand, Rainer et al. (2003) claimed that gender gaps are lessening or disappearing, as increasing numbers of both men and women are using computers. In the mobile commerce literature, some research projects have drawn attention on the correlation between gender and behavioural intention, but the result is inconclusive. Yang (2005) found a significant but negative relationship between maleness and perceived usefulness, as well as maleness and perceived ease of use of mobile commerce adoption. However the conclusion may be owing to an imbalanced sample (respondents consisted of 67% female). Mort et al. (2005) claimed that the gender difference only affects mobile gaming, mobile sport services and mobile betting services, while no effect was found on other types of mobile services. López-Nicolás et al. (2008) suggested that mobile commerce diffusion rates are the same for both male and female in the United Sates (30%). By integrating demographic variables into the

TAM, they found that price, perceived usefulness, and perceived ease of use will have a greater impact on intention than consumer demographic variables (gender and age). Their study also showed that both men and women have similar patterns of preference for categories of mobile commerce: with entertainment services having the highest adoption rate, followed by communication services, information services, and monetary transactions. This suggests that mobile commerce adoption may follow a stage adoption pattern (starting with entertainment services) regardless the gender. Similarly, Bigné et al. (2007) found that gender has very low effect on mobile commerce adoption in Spain.

Education level

Yang (2005) claimed education background has no influence on the perceived usefulness and perceived ease of use of mobile commerce; however their study did not examine the influence of education level on usage intention. Bigné et al. (2007) also suggest that education level has a low effect on mobile commerce usage.

2.5 Intention - behaviour gap

Triandis (1980) described behavioural intentions as "instructions that people give to themselves to behave in certain ways" (Triandis, 1980 :203). Intentions are considered the most important implication of behaviour (Sheeran, 2002, Rhodes and Bruijn, 2013). Indeed, intention is the pivotal and immediate construct that explains behaviour in several key models of mobile commerce adoption research, including TRA, TPB, TAM, and TAM2. However, a gap exists between intention and behaviour, the discordance is resulted from the intenders who do not act (Rhodes et al., 2013). Sheeran (2002) conducted a meta-analysis, suggesting that intention explaining only 28% of variance in future behaviour. Furthermore, Sheeran (2002) pointed out that behavioural intention encompasses two aspects: the direction of behaviour (to do vs. not to do) and, the intensity of behaviour (how much effort to make).

Ajzen (1985, 1991) suggested that the discordance is due to the intender not always having a sufficient control over the intended action. Using mobile grocery shopping as an example, a consumer may have a strong intention to use his/her smartphone to buy groceries, but the action cannot be performed simply because the retailer cannot provide a delivery service in this customer's household area, or, there is insufficient mobile broadband coverage when the customer wants to shop. In this context, household location is a crucial, objective, and uncontrollable determinant of mobile grocery shopping.

On the other hand, the intention-behaviour gap may result from limitations of self-reported survey design. Sheeran (2002) suggested the intention-behaviour discordance may arise due to measurement errors, compatibility issues, scale correspondences, and mismatched marginal distributions. Fennis et al. (2011) pointed out planning to perform a behaviour in an unspecific time in the future, is a Goal-Intention, it would result in a considerable gap between intention and behaviour; in contrast, an Implementation-Intention specifies the time and context (where, when and how) in which the behaviour is to be performed, it would increase the likelihood of action as a consequence of their intention. Gollwitzer (1993) explains that this is because the Implementation-Intentions are specific plans that describe the process of how goal intentions are translated into behaviour; Implementation-Intention gives control to people: when a specific situation is encountered, the action would more likely be triggered.

In order to avoid survey-caused intention-behaviour disparity, the design of survey items for this study will specify the exact amount of shopping budget that the respondents plan to spend on their smartphone.

2.6 Innovation adoption and drop out

Rogers (2010) defined diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2010:5). The diffusion of innovation is not a straightforward process, and the individual users may drop out at any stage of adopting a new technology. The diffusion of innovation entails a mental process through which the adopter encounters several phases: from first hearing about

the mobile shopping to final adoption. Rogers (2010) suggested that the innovation decision follows a 5-stage process, see Figure 2.5. In the 5-stage process, "knowledge" is the stage when adopters firstly learn about the innovation; "persuasion" is the stage when adopters are persuaded to try the innovation and therefore form an opinion towards the innovation; "decision" is the stage they decide to accept or reject the innovation; "implementation" is the stage of initially utilising the innovation; "confirmation" is the stage in which the adopters decide to continue using the innovation.

Figure 2.5 Innovation adoption process
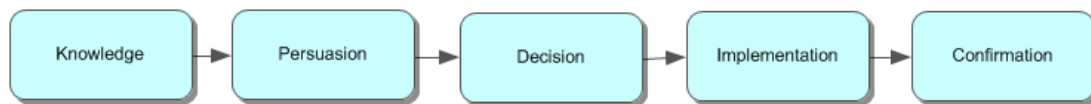
Source: Rogers (2010)

Many innovation diffusion studies focused on estimated rate of adoption, with some studies focused on measuring the level of adoption until it reaches the ceiling (Dinar and Yaron, 1992). It is important for the innovation facilitators (retailers) to estimate the expected intensity of adoption, and reasons and patterns for which the technology is abandoned. Everyone uses technology in a different way, the relationship between the user and the technology varies: some adopt the technology but feel discouraged, and eventually drop out; some persist to use the technology but only occasionally with limited purposes; some others become proficient through constant use (DiMaggio and Celeste, 2004).

The scale and effort input by the innovation provider at the early stage of diffusion plays a crucial role for diffusion, too. Unlike the early stage of self-service grocery shopping development, which was dominated by the Co-operative Societies and started in a timid manner (Shaw and Alexander, 2008), mobile grocery shopping became available across all the major grocers in Britain within a 5-year-period (2011-2014). The early providers (for example Tesco) and late providers (for example, Morrisons) launched their mobile sites or apps quickly thanks to the logistics infrastructure provided by the online

grocery retailing. Compared with early adopters of previous retail innovations, the early adopters of mobile shopping enjoyed a better retail environment because there were multiple grocers to choose from.

Innovation diffusion is about communicating a new idea (Rogers, 2010), the characteristics of "newness" imply that diffusion involves some degree of uncertainty. Thus, trust plays an important role in facilitating the diffusion and the continuous use of innovation, especially those involve monetary transactions – such as online shopping. Fung and Lee (1999) suggested that the distrust on e-commerce sites can result in a dropout. In the early stages of online shopping diffusion, there was a significant dropout rate because of the privacy concerns (Lohse et al., 2000). Luo (2002) added that the dropout at an early stage of diffusion is because of the lack of trust in the vendors. Newell and Lemon (2001) agreed that the diffusion of mobile transaction services is primarily depending on consumers' perception of risk.

In terms of the adopting process, a diffusion normally starts off slowly among a small number of early adopters, then picks up rapidly as the innovation is adopted by the mainstream of the population where early majorities and late majorities join in succession, this then finally slows down marked by the late laggards who start to adopt the innovation when the adoption reaches saturation – the pattern of innovation adopters' involvement is represented by a normal distribution (Rogers, 2010). To retain the retail innovation adopters, it is important to understand the behaviour of each type of adopter (early adopter, early majority, late majority, and late laggards). In mobile payment research, in order to test the early and late adopters' acceptance patterns, Kim et al. (2010) applied six variables (innovativeness, mobile payment knowledge, mobility, reachability, compatibility and convenience) as antecedents of Ease of Use and Perceived Usefulness from the Technology Acceptance Model. They found that early adopters respond very positively to ease of use, and that ease of use perception largely relies on the mobile payment knowledge for these early adopters. On the other hand, the late adopters value primarily on usefulness, which is affected by reachability and convenience of use. López-Nicolás et al. (2008) suggested that users adopting mobile commerce would follow a staged pattern – this begins with adopting entertainment and communication services, followed by information and transaction services. Furthermore, their study

showed that men move through the staged adoption process faster than women. However, their research was conducted using the undergraduate students' sample, the demand of online transaction service among university students could be relatively low at that time, hence the conclusion may be biased.

2.7 Cultural differences in online shopping behaviour

Boundaries across nations, cultures and economies are dissolving, facilitated by the interactions among powerful forces in globalisation, such as capitalism, global transport, communication and marketing (Cleveland and Laroche, 2007). However, people from different countries maintain their distinct habits and tastes as well as their values and norms that are rooted in their culture, especially when they use IT products (Mingxia et al., 2006). This is because people from different cultures have different values and different shopping behaviours that tend to persist over time (Chun-Tung Lowe and Corkindale, 1998). Culture is therefore the prime determinant of a consumer's attitude, behaviour and lifestyle (Cleveland et al., 2007).

Hofstede's cultural dimensions (Hofstede, 1983) is seen as one of the most influential culture theories. His study was generated through extensive examination of a sample across 40 countries with more than 116,000 respondents. Hofstede (1983) claimed that different cultures can be separated on the basis of four dimensions, this includes individualism-collectivism, power distance, uncertainty avoidance, and masculinity-femininity.

According to Hofstede (1983), the first dimension is Individualism-Collectivism which refers to the basic level of relationship between an individual and his/her fellow. An individualist society is loosely integrated; "everybody is supposed to look after his or her own self-interest and maybe the interest of his or her immediate family" (Hofstede, 1983 :79). In contrast, a collectivist society is tightly integrated; individuals are supposed to concern the in-group's interest, and reconcile their opinions and beliefs with their in-group. Mingxia et al. (2006) pointed out that social norms have a greater influence on the consumers' decision to adopt IT products in a collectivist's society than in an individualist's society. Pavlou and Chai (2002) agreed that by applying TPB to online

shopping studies, cultural dimension differences between individualists and collectivists have a strong moderating power in explaining the adoption of online shopping. Britain and North American countries, according to the research, are individualist oriented countries; looking at the literature, the majority of mobile commerce adoption studies were conducted in the Far East, including Taiwan, Singapore and Korea, those are classified as collectivist countries.

The second dimension is termed "Power Distance", it measures the degree of how society tolerates inequality. Inequality exists in every culture, and the degree of inequality varies (Hofstede, 1983). Hofstede (1983) measured inequality by a scale from 0 (small power distance) to 100 (large power distance). Britain falls into the category of small power distance, in contrast, Spain, France, and some Far East countries have high power distance. As discussed earlier in the chapter, social influence is a commonly measured variable in mobile shopping adoption, however, the subject who imposes the influence varies: some literature emphasised that the influence comes from the powerful people, for example "people I look up to" (Nysveen et al., 2005 :339), whereas some focus on the influence from the general public, for example "people around me" (López-Nicolás et al., 2008 :363) or "my friends" (Yang, 2012 :488). Due to the low level of power distance in British culture, the survey items measuring social influence for this research focus on pressure from the general public and the respondents' social circle; instead of the expectations from other powerful individuals.

The third dimension is "Uncertainty Avoidance" which is the extent at which people within a culture deal with the unknown future. Cultures with a weak level of uncertainty avoidance have a tendency to feel relatively secure (Hofstede, 1983) and are described as "contemplative, less aggressive, unemotional, relaxed, accepting of personal risk, and relatively tolerant" (Hofstede, 1986 :308). Cultures with a strong uncertainty avoidance level tend to create stability, and to avoid risks. Hofstede (1986) describes people in a strong uncertainty avoidance culture as "active, aggressive, emotional, compulsive, security-seeking, and intolerant" (Hofstede, 1986 :308). According to Hofstede (1986), Britain has a weak level of uncertainty avoidance. In this research context, uncertainty avoidance may relate to the perceived risk of using mobile for grocery shopping. Lim et al. (2004) found that countries with a lower uncertainty

avoidance level have a higher rate of internet purchases. In spite of that Britain has a weak uncertainty avoidance level (Hofstede, 1986 ,1986), mobile grocery shopping entails multiple risks including monetary loss, leaking of personal information, and poor products or services, it is unclear if British consumers show low uncertainty avoidance towards all risks involved in mobile grocery shopping. Due to this uncertainty, the survey testing perceived risk include items such as the perception of monetary transactional risks, concerns about the security of personal information, and the perception of the product and service quality.

The fourth dimension of Hofstede's culture model is Masculinity - Femininity. It measures the extent at which a society minimises or maximises the social sex role division. A masculine culture maximises the distinction between men and women's roles in a society. In a masculine culture, men are expected to be "assertive, ambitious and competitive, to strive for material success, and to respect whatever is big, strong, and fast" (Hofstede, 1986 :308) whereas in a feminine culture the social sex roles are vague, the society is concerned about quality of life, interpersonal relationships and helping others (Hofstede, 1983). Britain is a masculine society according to Hofstede (1983, 1986). Women are the main task performers of shopping for food for the family in the UK. The responsibility of grocery shopping is perceived to be proud, and is seen as a strong identity in spite of increasing numbers of women entering the paid labour market (Shaw et al., 2008). However, recent research shows that two masculine countries, Britain and America, are changing in terms of the sex role division for grocery shopping. Both British men and women claimed that they did the majority of grocery shopping (62.3% of men and 83.3% of women) according to (Key Note Ltd, 2012); on the other hand, study from Daymon Worldwide (2014) showed that men now make up 51% of the primary grocery shopper for all households in America. Compared with supermarket grocery shopping, mobile grocery shopping is easily accessible. It is possible that men now have more opportunities to complete the shopping task than before because of the multiple shopping channels available. The social sex role division in buying grocery products is likely to be diluted with the increasing adoption of smartphones. In order to identify the social sex role in mobile grocery shopping, gender differences between users and non-users is examined in this study.

Comparing and contrasting the different cultural dimensions is crucial to the understanding of consumer behaviour (Maheswaran and Shavitt, 2014). Pavlou et al. (2002) suggested cultural effect significantly moderates the key relationships in the TPB for e-commerce adoption. Because values and lifestyles can be very different between cultures, findings of mobile commerce studies conducted in other countries may not be appropriate for the British retailers. Hence this thesis focuses on the UK market in order to gain an understanding of consumers behaviour in a local level.

2.8 Mobile shopping satisfaction, repeat purchase, and loyalty: learning from e-commerce

The number of mobile shoppers in Britain are growing (see section 2.2). A mobile shopper may switch between retailers, or give up on using mobile for grocery shopping for various reasons however there is a lack of literature relating to mobile customer loyalty (Shang et al., 2017), especially in the context of grocery shopping. Through a review of e-commerce literature, this section aims to identify the possible drivers for customer satisfaction and loyalty that are applicable in a mobile shopping study.

Devaraj et al. (2003) stated consumer loyalty towards online shopping and online stores is significantly higher than towards traditional shopping and physical stores. Rechinhheld and Sasser (1990) found that loyal customers are less likely to switch because of price, and that they make more purchases than non-loyal customers. Furthermore, the author argued that a company's profits may increase by 25–125% if they are able to retain just 5% more of their customers. Loyal customers would even help to promote the retailer or brand through strong word of mouth. Knox and Denison (2000) confirmed a strong positive correlation between consumers' monthly grocery budget and their loyalty towards their first-choice grocery store in the UK. They further pointed out that loyal customers tend to spend a higher percentage of their budget than people frequently switch stores. Hallowell (1996) concluded that loyal customer behaviour is reflected through continuous and increasing scope of the vendor-customer relationship, this will result in the customers' recommendation through their positive belief of value received from the vendor.

Early studies of customer loyalty focused on the repeat purchases (see, for example, Brown, 1953, Lipstein, 1959). The singular focus on repeat purchase behaviour was criticised, because there was a lack of alternative brands or shops for consumers to choose from; or, the alternative brands or shops were hard to reach (Day, 1976, Bass, 1974), hence customers may have to stick with one particular retailer despite the fact that they do not like them. Jacoby and Kyner (1973) suggested that customer loyalty should take customer attitudinal aspects into account. Customer loyalty expressed in attitudinal aspects relate to different degrees of cognitive behaviour created by an individual's overall attachment to a product, service or organisation (Fornier, 1994). In today's online and mobile shopping environment however, it is appropriate to focus on customers' repeat purchase behaviour as a sign of loyalty – there is a vast freedom of switching because of various brands available online and on mobile. Hence analysing customer attitude toward the shopping experience may not be necessary in this context. Therefore in this research, customer loyalty is conceptualised as the likelihood of repeat purchase and providing recommendations.

Previous studies have discovered consistent and strong effects of brand reputation on loyalty (Selnes, 1993). Danaher et al. (2003) compared 100 brands in 19 grocery product categories and found that well-known brands were sold a lot more than expected online, whereas the smaller brands did not sell very well. They concluded that online shoppers would perceive less risk in buying a well-known brand, which is owing to the lack of human interactions on the internet. Horppu et al. (2008) found the reputable offline parent brand would have a positive impact on online customer satisfaction. In addition, Jin et al. (2008) found brand reputation would have a greater impact on customer satisfaction in collectivism culture, than individualism culture.

Customer satisfaction is another important determinant of customer loyalty according to the literature: Kassim and Abdullah (2008) found that customer satisfaction has a direct and positive effect on customer loyalty. Selnes (1993) added that customer satisfaction has a direct effect on loyalty when customers have evaluated the product or service received; therefore they argued the main antecedent of customer satisfaction is the product or service performance. Anderson and Srinivasan (2003) agreed that in e-commerce, customer loyalty is

determined by customer satisfaction, but there are a few variables moderate the relationship: on the vendor's side the variables may include trust, and the perceived value they can offer; on the shopper's side the variables may include convenience motivation, inertia and purchase size. Szymanski and Hise (2000) found that convenience, product offering, product information, site design and financial security are the key determinants of online shopping satisfaction. Evanschitzky et al. (2004) re-tested Szymanski and Hise's findings in a German online shopping context, they found that apart from product information, all other variables were proved to have a significant impact on online shopping satisfaction. Kassim et al. (2008) added that perceived service quality is another determinant for online shopping satisfaction, and customer satisfaction is a causal driver for re-purchase behaviour.

Oliver (1980) developed the Expectancy Disconfirmation Theory (EDT), which seek to explain the post purchase satisfaction by addressing the functions of pre-purchasing expectations and expectancy disconfirmation. The theory was well suited to explain continued use of information system (Bhattacherjee, 2001) as well as repurchasing intentions for online shopping (McKinney et al., 2002, Hsu et al., 2006). The EDT assumes that consumer satisfaction comes in stages (Oliver, 1980): before making a purchase the consumer forms an expectation, after the purchase or after a period of use they compare the perceived performance with their prior expectation and confirm if their expectation was met by the perceived performance. Consumer satisfaction or dissatisfaction arises based on the disconfirmation level (perceived performance above, equal or below expectation) and determines the intention to repurchase in the future. Shang et al. (2017) found the ECM is appropriate to analyse the post-acceptance behaviour, especially for the mobile shopping continuance intention. Hew et al. (2016) applied the ECM for a mobile social commerce study, they found users' post-purchase satisfaction is determined by the confirmation of their expectation.

Lu (2007) pointed out that e-commerce loyalty should take into account the product or service categories. Peterson et al. (1997) also claimed that the characteristics of the products and services should be considered for customer loyalty studies. In the online grocery shopping context, Sirohi et al. (1998) found that when competitors possess a high degree of attractiveness, the perceived

value may become a strong determinant of store loyalty; they stressed that service quality, merchandise quality perception and perceived value have a direct impact on loyalty intentions; promotion perception and perceived relative price has an indirect effect on loyalty through impacting the perceived value. Srinivasan et al. (2002) reported that the outcomes of e-loyalty include willingness to spend more and word of mouth; and the e-loyalty is affected by the "8C's": convenience, customisation, contact interactivity, care, community, convenience, cultivation, choice, and character.

Coursaris et al. (2002) suggested that m-commerce is a natural extension of e-commerce. Therefore, reviewing online shopping loyalty, with the combination of some initial findings from mobile loyalty studies, would be useful to shed light on mobile grocery shopping loyalty. Despite it is in the early stages of mobile shopping loyalty research, there are some early findings of implications in this field: Lin and Wang (2006) examined 255 young mobile users (age 18-39) in Taiwan and found that mobile loyalty is largely influenced by perceived value, habit, trust and satisfaction. San-Martín et al. (2015) argued that mobile satisfaction is the determinant for generating word-of-mouth in a mobile shopping environment; and the crucial determinants for satisfaction are subjective norms and perceived entertainment.

2.9 Features of online grocery shopping

Going to a traditional grocery store is sometimes considered as a chore by shoppers (Småros and Holmström, 2000) due to the psychological costs and non-monetary costs such as time, effort and stress (Aylott and Mitchell, 1999, Geuens et al., 2003). A survey found that grocery shopping is ranked in next-to-the-bottom of the favourite 22 household tasks, see Richards (1996). Because of the physical needs such as travelling, queuing, carrying and lifting groceries (Jiang et al., 2013, Bevan et al., 2001, Pozzi, 2013), going into a grocery store is regarded as the most disliked activity next to going to the dentist (Corral, 1999). Nowadays the image of grocery shopping is changing, thanks to the internet and the birth of smartphone, customers can choose to buy groceries from a computer or a mobile phone, which are very different experiences to shopping in a traditional shop or food market.

The experiences of shopping online and on mobile share some similarities, especially when the order is confirmed. It is therefore useful to review features and issues relating to online grocery shopping, as a reference for the research of mobile grocery shopping.

Many studies have investigated the demographic characteristics of online grocery shoppers (Verhoef and Langerak, 2001, Pechtl, 2003). Their key focuses were on the correlation between usage intention and users' demographic variables such as gender, education level, household size, household income, presence of child, and household location. Zhou et al. (2007) argued that education level has no effect on online shopping tendencies, because online shopping is a relatively easy task, and does not require education. Early studies of online grocery shopping, such as Priluck (2001)'s work however suggested that education level is the main demographic variable affecting usage intentions, whilst other demographic variables has less impact on the usage tendency. Morganosky et al. (2000) agreed that education is a major variable, but they added that the income of online grocery shoppers is higher, age is younger, and they are more likely being female. Hiser et al. (1999) also had similar findings which show that education and age are the main demographic variables that determine online grocery shopping: people of 50 years and older are less likely to be familiar with online grocery shopping than those 18-29 years old. In addition, they also suggested that the number of people in the household, the income of the household and the number of children in the household are not significant determinants for online grocery shopping tendency. Yet a number of studies suggested the household income positively affect to online grocery shopping intention (see for example Morganosky et al., 2000, Zhou et al., 2007). Hiser et al. (1999) argued that lower income families are less likely to be familiar with online food shopping than those with a higher income, although income is not a significant determinant of willingness to use online food shopping services.

Another important determinant is the shoppers' home location. According to Ofcom 87% of smartphone users are urban residents and 13% are rural residents (Ofcom 2014). Comparing urban residents, rural residents may have a greater need to shop online for their groceries because they have less accessibility to a bricks-and-mortar shop. This was also mentioned by Doherty

et al. (2006) who discovered that consumers demonstrate less concerns about delivery cost if they need to spend more than 15 minutes to travel to the grocer.

A number of drivers for adopting online grocery shopping were discovered in the past literature: the primary reason for purchasing groceries online is the convenience offered from this channel, such as time saving, the enjoyment of shopping from home, and the effort-free delivery. Verhoef et al. (2001) claimed that the main advantage of using online grocery shopping in comparison with in-store shopping is convenience and time saving. Morganosky et al. (2000) added that the hatred of grocery shopping, the hatred of standing in a queue, and the ability to control spending, are all part of the appeal for grocery shoppers who buy online. Others claimed the situational factor, such as life style changes, including physical constraints to lifting and driving groceries (Park et al., 1996, Morganosky et al., 2000) or the presence of small children in the household (Morganosky et al., 2000), would trigger the need to shop online for groceries.

Nevertheless, there are four main features that differentiate online and offline grocery shopping. These are: abundant products and information, product delivery method, shopping experience and marketing channel.

Firstly, online shoppers are presented with more detailed product information than traditional shopper. In fact, the online shopping journey is heavily relied on the product information presented on the website – unless the shopper is familiar with the site layout and product. A great deal of product information available online provides the consumer a wider choice of product range, it also attracts consumers who have specific needs (such as healthy eating) to go online, because there are detailed nutritional information and ingredient specifications presented. On the other hand, there is a number of add-on information for the products that are exclusively online. For example the product reviews by other customers, recipes and suggested products to purchase. These information and digital content provide a different shopping experience compared to shopping in a traditional store.

Secondly, unlike traditional shopping, consumers shopping online do not have to carry their products home. Products purchased online are delivered to the customer's doorstep by the retailer– this is particularly beneficial to those who have children, those who do not have a car, those who have mobility problems,

and those who dislike grocery shopping. However the side effect is that product delivery may cause anxiety to some shoppers when they are waiting.

Thirdly, as consumers themselves complete a form of self-service, online grocery shopping navigation, whilst in a traditional shopping environment consumers can interact with store staff. Lim et al. (2009) indicated that because of a low level of customer support, online grocery shoppers have a negative perception on compatibility; they argued that by taking advantage of increased profitability from digital channels, online grocers should "maximise facilitation of applications to create a customised service and boost customers' perceived relative advantages in the self-service environment" (Lim et al., 2009 :848-849).

Fourthly, the marketing communications are different between online and offline. In a traditional shop, the available communication channels are limited – retailers often deliver shopping information to customers through in-store broadcast, posters, and banners. Whereas for an online retailer, there are multiple communications channels available, such as social media posts (for example Facebook and Twitter), or email newsletter (for example sending special offers and coupons to customers' email inbox), to deliver marketing messages. This enables online retailers to reach their customers with modern digital technologies. On the other hand, consumers rarely communicate to each other in a traditional store; whereas online shopping platforms often encourage consumers to interact with each other virtually by writing product reviews or sharing experiences in online communities.

2.9.1 Disadvantages of online grocery shopping
Due to the nature of internet-based shopping, there are several issues associated with the experience of online grocery shopping.

The first issue is about the attributes of grocery products. A grocer is made up of a great deal of food and drink categories. Consumers buying food and drink in a grocery shop often check the quality of the product before putting into their shopping basket. However it is impossible for the online shoppers to examine their products. Some British grocers, for example Tesco, tag a dynamic banner on their web page to indicate the guaranteed remaining on-shelf days, in order to reduce customers' concerns over product freshness. Concerns of freshness

of product may be an important reason that makes shoppers sceptical to go online, however Park and Stoel (2005) argued that despite not being able to touch, feel or try the product, consumers may perceive less risk if they have a positive web-browsing experience. Premium grocers, for example Waitrose, do not put a shelf date indicator or akin guarantee; instead they encourage online customers to give reviews on the products, the word-of-mouth would help other customers to make shopping decisions online. Despite all those efforts made by the retailers, it is believed that many shoppers remain uncomfortable allowing somebody else to pick out the meat and vegetables for their dinner table.

The second issue is about the delivery of groceries. The underlying matters include delivery fee, time, and service availability. In order to meet the preservation temperature requirement and the tight delivery lead time, grocery delivery service requires special operations (Punakivi and Saranen, 2001). Such delivery system is expensive to operate, therefore it requires a minimum level of customers per region in order for such systems to be economically feasible (Grunert and Ramus, 2005). Despite Punakivi et al. (2001) claimed the cost of paying online grocery delivery can be as much as 43 per cent cheaper than the cost of customers visiting the traditional store using their own car and spare time, many customers refuse to shop online because of the concerns with delivery. Hand et al. (2009) pointed out that consumers may reduce the frequency or even stop buying online groceries if they have a negative experience of delivery.

Having reviewed the issues around the experience of online grocery shopping, it appears that the root of these issues is largely relating to the customers migrating their in-store experience from a traditional store to an online store. Indeed, Verhoef et al. (2001) pointed out that online shopping lacks the ability to fulfil personal needs which "encompass the need for sensory stimulation, physical activity and learning while shopping" and the social needs which comprise the need for "social experiences, communication with other shoppers and the pleasure of bargaining while shopping" (Verhoef et al., 2001 :276). A change from in-store shopping to online shopping, may entail an experiential and habitual change. Triandis (1980) claimed that habits sometimes have greater control over conscious intentions depending on type of behaviour. Ji and Wood (2007) agreed that a consumer develops purchasing habits when the

underlying behaviour is repetitive in customary places; a behavioural change may only take place in the absence of strong habits. Therefore a shift of habits is a major impediment to customers adopting online grocery shopping.

2.10 Towards a conceptual framework of mobile shopping behaviour

The constant mobile technological advances developing around the retail sector, and the complexity of mobile shopping decision making process have made the prediction of mobile shopping behaviour a challenge task. Through the review of literature, the preliminary factors that affect mobile shopping behaviour have become apparent. The detailed analysis of the measures has made it possible to disaggregate the variables of TAM, TPB, TRA, IDT, and UTAUT; hence to elaborate a conceptual framework based on those elements. See figure 2.6.

Figure 2.6 A conceptual framework of mobile shopping behaviour

- Perceived usefulness
- Perceived ease of use
- Perceived enjoyment
- Behaviour control
- Social influence
- Trust
- Innovativeness
- Compatibility
- Affinity
- Anxiety
- In-store experience

- Product quality
- Delivery
- Category management

Perception

Service quality

Intention

Satisfaction

Social inequality

Marketing engagement

- Age
- Gender
- Education level

- Digital communication
- Reputation
- App/Site design

Source: author

The conceptual framework integrated key variables relating to behaviour prediction and online shopping satisfaction, and it provides a cohesive view of mobile grocery shopping behaviour. The existing studies associated with mobile shopping behaviour is mapped into two domains: customer acquisition and customer retention. In terms of acquisition, the study is focused on the acceptance and intention of mobile shopping, hence the customers' perception of mobile shopping, and customers' socio demographic factors are included. In terms of retention, the study is focused on the factors affecting the customer satisfaction, and so a range of factors relating to customers' evaluation of the service quality and digital marketing engagement are analysed in the study.

The analysis and review of literature provided the foundation for conceptualising factors affecting mobile grocery shopping behaviour. Due to the complexity to conceptualise and develop the mobile shopping behaviour model, each factor involved is evaluated and analysed accurately in this chapter. This also suggests further investigations to explore and analyse factors that affect mobile shopping behaviour are essential.

2.11 Information search for the literature review

In order to ensure the quality of the literature and data, the author carried out a wide scan of journal articles and grey literature. The main tool adopted for the academic literature search is the Google Scholar. Despite its ease of use, Google Scholar has some noticeable disadvantages: firstly, the search engine only provides search results that are digitally available; secondly, the unique algorithm of Google Search may not return comprehensive results, nor will it rank the most useful resource in the top result; thirdly, the preciseness and appropriateness of the search terms largely affect the quality of the search result. To reduce the risk of not capturing the most relevant publications, the author did not use Google Scholar exclusively; other individual databases such as Science Direct, JSTOR, and the University library's online database were also used to compensate and enhance the Google Scholar.

During the literature scan in Google Scholar, the results were sorted by relevance, in order to filter out noises. "Sort by relevance" is a search function in Google Scholar that ranks the search result by weighing the author, the number of citations and the ranking of the publication where the journal is situated (Google Scholar, 2015). In addition to this, the author extended the result by going up to 20 pages for some key term searches. Search terms used for literature about mobile grocery shopping adoption were widely tested through various related phrases, such as "mobile commerce", "mobile e-commerce adoption", "mobile shopping", "mobile shopping adoption", "mobile grocery shopping", "online grocery shopping", "mobile marketing", and "mobile retailing", etc., as well as their variances alike, such as "m-commerce", "e-grocery shopping", etc.

Because mobile commerce is a relatively new academic research topic, the literature only started to develop since the smartphone entered the mass market. Therefore the author only considered literature resources published from the year 2000 onwards. The main journal articles were accessed through the following online databases: Science Direct, Emerald Insight, Taylor & Francis Online, JSTOR, etc.

The main tools used by the author for grey literature search were Google Search and the British Library Business & IP Centre. Data and publications accessed as part of grey literature in this research project were accessed through the following databases: the UK government website, Office of National Statistics website, The Office of Communications website, The International Telecommunication Union website, Mintel Company research, Nielsen Company research, the Institute of Grocery Distribution research, eMarketer research, Key Note research, etc. In addition, Google news alert was turned on throughout the study, in order to capture the mobile shopping research news and press release conducted by agencies such as Nielsen company.

2.12 Chapter summary

This chapter has reviewed the existing literature that relates to the main topics in this thesis. This review prepared the theoretical background for this study, it also identified a gap between the existing literature and the aim of this study.

The chapter began with an introduction to the smartphone and the development of mobile commerce in the UK, which revealed that the field of mobile grocery shopping behaviour is relatively neglected both conceptually and empirically in management studies. The aim of this study is to investigate factors affecting the purchase behaviour of mobile grocery shoppers in the UK. Therefore, the chapter has brought together several theoretical models explaining the acceptance of mobile commerce. It was maintained that the majority of the studies were focused on the mobile commerce or mobile shopping in general, and were typically conducted in North America, Far East and some European countries. It was suggested that there is a lack of research on the sector level of mobile commerce such as grocery shopping behaviour using a smartphone, it was also clear that a study of mobile shoppers in the UK is needed.

This background helped to provide inspiration for proposing a conceptual framework. Consequently, section 2.4 summarised a meta-analysis table that captured the main influencing factors extracted from existing publications which relate to the customers' intention to use a mobile phone for shopping. Section 2.5 argued that the usage intention may not eventually result in the behaviour of actual purchase on a smartphone, therefore a review of the intention-behaviour gap was provided.

Having discussed the possible variables affecting mobile shopping decisions, the chapter reviewed the process that an innovation is diffused, and Hofstede's cultural dimensions. An important contribution of this section is the identification of cultural influences on the acceptance of mobile shopping.

One research objective of this study is to examine customer loyalty and its antecedents in mobile grocery shopping. To provide a better understanding of the underlying process of loyalty involved, this chapter reviewed the features and key issues relating to online grocery shopping, and customer satisfaction. Due to the nature of mobile shopping, this research stands by Hallowell (1996) and Lipstein's (1959) proposition that customer loyalty will result in repeat purchase and recommendations. A review of previous literature has tracked the factors affecting mobile loyalty and online grocery shopping satisfaction, in order to prepare the discovery of antecedents in mobile grocery shopping.

Finally, the chapter provided an explanation of how the literature used in this study was searched and collected.

Overall, the literature relating to the diffusion of mobile commerce is accumulating, but is at its early stage with a limited focus into the UK market. The majority of relevant literatures in this field were drawn upon factors influencing mobile commerce adoption, but there is a lack of sector-level focus. The outcomes of this chapter will enable this research to develop an appropriate set of research methods, which is discussed in the next chapter.

Chapter 3 Methodology

3.1 Introduction

This chapter provides an explanation of research paradigms, approaches, and methodology with the aim of providing convincing reasons on the choice of research methodology for the current study. Specifically, the chapter discusses and justifies the primary methods and research approaches to collect and process the research data. In order to obtain in-depth knowledge of mobile grocery shopping behaviour and to achieve the aims and objectives of this research project, the thesis adopts a mixed methods approach that captures both quantitative and qualitative approaches by employing semi-structured interviews and a questionnaire survey. To recapitulate, the aim of this research is to investigate factors affecting the purchase behaviour of mobile grocery shoppers in the UK.

The chapter starts by discussing types of research approaches and the justification of adopting mixed methods for this study. The chapter also reviews the research methods used in the past literature relating to mobile commerce adoption, in order to provide further guidance of research methods for this study. This is followed by a review of research objectives by adapting the appropriate methods and sequences of research. A detailed explanation of research implementation for both qualitative research and quantitative research is given in the later section, which includes the design of the interview schedule and survey questionnaire. Specifically, the interview schedule, sampling process, and piloting are discussed. Consequently, the data analysis techniques for both qualitative and quantitative research are explained. At the end of this chapter, research ethics are discussed.

3.2 Research approaches

Research approaches are the plans and procedures for research that span the steps from broad assumption to detailed methods of data collection analysis and interpretation (Creswell, 2013). The aim of designing a research approach is to arrive at a conclusion through deductive reasoning and/or inductive

reasoning. In other words, a research approach entails the consideration of the relationship between theory and research. Bryman (2012) stated in a deductive reasoning, the research is undertaken in order to answer questions posed by theoretical considerations; data collection and analysis are guided or influenced by the theory. Whilst in an inductive reasoning, theory occurs after data collection and analysis.

Deductive research starts with a theory and deduces to a specific case through testing collected data. Saunders et al. (2011) mentioned that deductive research is a highly structured approach in the form of moving from theory to data; it collects quantitative data and explains the causal relationship between variables. Bryman (2012) added that deductive research is conducted on the basis of a known domain and theoretical consideration in relation to that domain; the researcher deduces a hypothesis from the domain to drive the process of gathering data.

In contrast, inductive research generates theory through specific research data and builds a theory to account for the data. Saunders et al. (2011) suggested that inductive research is a more flexible structure; collecting qualitative data to gain an understanding of the meanings humans attach to events. Bryman (2012) highlighted that an inductive research theory is "the outcome of research", the process involves "drawing generalisable inferences out of observation" (Bryman, 2012: 26). According to Easterby-Smith et al. (2012), an inductive research is more appropriate when the researcher is trying to gain an understanding of why something is happening; it is useful to researchers when there is a lack of prior knowledge in the research domain.

Before developing a research methodology, one critical consideration is the research paradigm upon which the research is situated (Maxwell, 2012). Scientists determine problems that are a worthy exploration and methods available to attack them by understanding the nature of paradigm (Deshpande, 1983). Paradigms are fundamental to the daily work of any science (Kuhn, 2012). A paradigm specifies a general set of philosophical assumptions about the nature and knowledge of the world, this includes ontology (reality: what is assumed to exist), epistemology (knowledge of that reality: the nature of valid knowledge), ethics or axiology (what is valued or considered right), and methodology (the particular way of knowing that reality) (Mingers, 2003,

Mingers and Brocklesby, 1997, Iivari et al., 1998, Tashakkori and Teddlie, 1998).

Traditionally, there are two types of research methods: qualitative and quantitative research methods that belong to two different paradigms. Table 3.1 outlines the differences between quantitative and qualitative research focusing on the key aspects, including the connection between theory and research, epistemological considerations, and ontological considerations:

Table 3.1 Fundamental differences between quantitative and qualitative research strategies.

	Quantitative	Qualitative
Principal orientation to the role of theory in relation to research	Deductive: testing the theory	Inductive: generation of theory
Epistemological orientation	Natural science, in particular positivism	Interpretivism
Ontological orientation	Objectivism	Constructionism

Source: Bryman (2012)

Social science research is generally based upon epistemological and ontological orientations. Epistemology is a field of philosophy relating to the possibility, nature, sources and limits of human knowledge. It considers what should be regarded as acceptable knowledge in a discipline (Sumner, 2006, Bryman, 2012).

Epistemological basis for quantitative research is typically, but not exclusively characterised as positivism (Jupp, 2006). The Positivists position of epistemology only recognises scientifically verified results that are capable of logical and mathematical proof, and therefore receive criticism for ignoring the importance of individual subjectivity and consciousness in shaping the social world (Jupp, 2006). Interpretivism is contrasting epistemology to positivism (Bryman, 2012). Epistemology relies on qualitative approaches to interpret or understand a humans attachment to their actions. Interpretivists believe that the

subject matter of social science is fundamentally different from that of natural science; this is because they view individuals as actors of society rather than acting on the social structure and external factors. In order to understand the social world, the study should start with the individual character (O'Reilly, 2009, Bryman, 2012).

Ontology is a field of philosophy relating to the nature of social entities. Ontology considers the relationship between different aspects of things which exist in society such as social phenomena, social actors, culture norms and social structure (Bryman, 2012). The objectivists position is one of ontological consideration, objectivists consider social entities as objective entities that have a reality external to social actors. In other words, social phenomena are external facts that are beyond the reach or influence of individual people (Barron, 2006, Bryman, 2012). As an alternative ontological point of view, constructionists believe that social entities are social constructions built up from the perceptions and actions of social actors. In contrast to objectivists, constructionists argue that social phenomena are not pre-given, instead social phenomena are being continually accomplished by individual people (Bryman, 2012).

Quantitative research methods attempt to maximise objectivity, replicability, and generalisability of findings, and are typically interested in prediction (Harwell, 2011). Quantitative research methods usually use surveys in order to collect data and to test statistical hypotheses relating to research questions. Bryman (2012) described quantitative research methods "… exhibiting a view of the relationship between theory and research as deductive and a predilection for a natural science approach (and of positivism in particular), and as having an objectivist conception of social reality" (Bryman, 2012 :160). According to Bryman (2012), there are four distinctive preoccupations that discern quantitative research. These are: measurement (constructs are quantitatively measurable), causality (identify cause and effect relationships), generalisation (sample to be as representative and not unique to the particular group upon who the research was conducted) and replication (results are not affected by the researcher's special characteristics or expectations, and is reproducible in other experiments).

In contrast, qualitative research methods usually emphasise words rather than quantification in the collection and analysis of data (Bryman, 2012). Research methods focus on discovering and understanding the experiences, perspectives and thoughts of participants (Harwell, 2011). This type of research method typically collects information through case studies, ethnographic work, interviews and focus groups. Bryman (2012) suggest qualitative research would have a monopoly of the ability to study meaning, with some distinctive features. Firstly, it is an inductive approach of generating theory from research; secondly, it is an epistemological position described as interpretivism which focuses on understanding the social world through interpretation of the social participants; thirdly, it is an ontological point of view as a constructionist who believes social properties emerge from an individuals' creation rather than from a pre-existent phenomena.

Both quantitative and quantitative research methods have their own advantages and disadvantages, table 3.2 outlines the strengths and weaknesses of quantitative and qualitative research summarised by Johnson and Onwuegbuzie (2004:19-20)

Table 3.2 Strengths and weaknesses of quantitative and qualitative research

	Quantitative Research	Qualitative Research
Strengths	• Testing and validating already constructed theories about how (and to a lesser degree, why) phenomena occur. • Testing hypotheses that are constructed before the data are collected. Can generalise research findings when the data is based on random samples of sufficient size. • Can generalise a research finding when it has been replicated on many different populations and subpopulations. • Useful for obtaining data that allow quantitative predictions to be made. • The researcher may construct a situation that eliminates the confounding influence of many variables, allowing one to more credibly assess *cause-and-effect* relationships. • Data collection using some quantitative methods is relatively quick (e.g., telephone interviews). • Provides precise, quantitative, numerical data. • Data analysis is relatively less time consuming (using statistical software). • The research results are often independent of the researcher (e.g., effect size, statistical significance). • It may have higher credibility with many people in power (e.g., administrators, politicians, people who fund programs). • It is useful for studying large numbers of people.	• The data is based on the participants' own categories of meaning. • It is useful for studying a limited number of cases in depth. • It is useful for describing complex phenomena. • Provides individual case information. • Can conduct cross-case comparisons and analysis. • Provides understanding and description of people's personal experiences of phenomena (i.e., the "emic" or insider's viewpoint). • Can describe, in rich detail, phenomena as they are situated and embedded in local contexts. • The researcher identifies contextual and setting factors as they relate to the phenomenon of interest. • The researcher can study dynamic processes (i.e., documenting sequential patterns and change). • The researcher can use the primarily qualitative method of "grounded theory" to generate inductively a tentative but explanatory theory about a phenomenon. • Can determine how participants interpret "constructs" (e.g., self-esteem, IQ). • Data is usually collected in naturalistic settings in qualitative research. • Qualitative approaches are responsive to local situations, conditions, and stakeholders' needs. • Qualitative researchers are responsive to changes that occur whilst the study is being conducted (especially during extended fieldwork) and may shift the focus of their studies as a result. • Qualitative data in the words and categories of participants lend themselves to exploring how and why phenomena occur. • One can use an important case to vividly demonstrate a phenomenon to the readers of a report. • Determine *idiographic* causation (i.e., determination of causes of a particular event).
Weaknesses	• The researcher's categories that are used may not reflect local constituencies' understandings. • The researcher may miss out on phenomena occurring because of the focus on theory or hypothesis *testing* rather than on theory or hypothesis *generation* (called the *confirmation bias*). • Knowledge produced may be too abstract and generic for direct application to specific local situations, contexts, and individuals.	• Knowledge produced may not relate to other people or other settings (i.e., findings may be unique to the relatively few people included in the research study). • It is difficult to make quantitative predictions. • It is more difficult to test hypotheses and theories. • It may have lower credibility with some administrators and commissioners of programmes. • It generally takes more time to collect the data when compared to quantitative research. • Data analysis is often time consuming. • The results are more easily influenced by the researcher's personal biases and idiosyncrasies.

Source: Johnson and Onwuegbuzie (2004: 19-20)

There have long been disagreements amongst researchers who believe in either one of the paradigms; the paradigm debate has coincided with the rapid development of mixed methods. Mixed methods is a research strategy that combines qualitative and quantitative methods in ways that ostensibly bridge the differences in the service of addressing a research question (Harwell, 2011). Brewer and Miller (2003) suggested that combining quantitative and qualitative methods could mean that the weaknesses of one method would be cancelled out by the strength of another methods. The mixed methods approach is recognised as 'the third major research approach or research paradigm' (Johnson et al., 2007: 112).

Lewis et al. (2007) pointed out that no one research method is better than another; and that the choice of the appropriate method much depends on the research question. Creswell mentioned stated in relation to mixed methods that "These procedures also developed in part to meet the need to help researchers create understandable designs out of complex data and analyses" (Creswell, 2013: 208-209), identifying whether to use qualitative, quantitative, or mixed methods design should be based on "bringing together a worldview or assumption about research, the specific strategies of inquiry, and research methods." (Creswell, 2013: 21), therefore decisions about choice of a design are influenced by research objectives and questions.

Information Systems research is seen as a combination of computer science and business management study with different perceptions and approaches to conducting research (Checkland and Holwell, 1997). Lee (1999) suggested that Information Systems research can be viewed as multidisciplinary research. The mixed methods approach has proved to be valuable in the Information Systems study (Kaplan and Duchon, 1988). Although the mixed methods approach is well established in some disciplines, there is not enough coverage in marketing; however it is encouraged to use mixed methods in marketing research, because the methods have a complementary nature that adopts strengths of both quantitative and qualitative methods, without overlapping the weaknesses from both methods (Hanson and Grimmer, 2007, Harrison and Reilly, 2011). This thesis involves research about information technology adoption as well as consumer behaviour, which entails both information systems and marketing

research; the mixed methods would therefore, be the most suitable approach for this specific study.

In the meta-analysis (see chapter 2) a selection of published journal articles in the field of mobile commerce adoption were discussed. To extend the review, the methods used in these studies are summarised in table 3.3; which helps to guide the methods selection for this research. The meta-analysis indicates 15% of studies used mixed methods, 15% used qualitative methods, and 71% used quantitative methods.

Table 3.3 Previous research methods on mobile commerce adoption

Author	Article	Region	Research approach	Research method
Coursaris et al, 2003	M-Commerce in Canada: An Interaction Framework for Wireless Privacy	Canada	Qualitative	Ethnography and Secondary data, information from government official statistics, research agencies, and online articles.
Wu & Wang, 2004	What drives mobile commerce? An empirical evaluation of the revised technology acceptance model	Taiwan	Quantitative + Qualitative	questionnaire survey n=310 followed by semi structured interview with university stakeholders (faculty and students)
Nysveen et al, 2005	Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons	Norway	Quantitative	4 questionnaire surveys, of which one was payment research with n=495
Yang, 2005	Exploring factors affecting the adoption of mobile commerce in Singapore	Singapore	Quantitative	questionnaire survey n=866
Mort & Drennan, 2005	Marketing m-services: Establishing a usage benefit typology related to mobile user characteristics	Australia	Quantitative	questionnaire survey n=250

Fang et al, 2005	Moderating Effects of Task Type on Wireless Technology Acceptance	US	Quantitative	questionnaire survey n=101
Wang et al, 2006	Predicting consumer intention to use mobile service	Taiwan	Quantitative	questionnaire survey n=258
Park & Yang, 2006	The moderating role of consumer trust and experiences: Value driven usage of mobile technology	Korea	Quantitative	questionnaire survey n=252
Mallat, 2007	Exploring consumer adoption of mobile payments – A qualitative study	Finland	Qualitative	Total 46 subjects, classified into 6 focus groups with semi-structured guide
Kim et al, 2007	Value-based adoption of mobile internet: An empirical investigation	Singapore	Qualitative + Quantitative	15 people focus group pre test the questionnaire, followed by questionnaire survey n=161
Bigné et al, 2007	Key Drivers of Mobile Commerce Adoption. An Exploratory Study of Spanish Mobile Users	Spain	Quantitative	questionnaire survey n=606 with 270 purchasers, 336 non purchasers
Li et al, 2008	The Influence of Gender on New Technology Adoption and Use– Mobile Commerce	US	Quantitative	questionnaire survey n=372
Lo´pez-Nicola´s et al, 2008	An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models	Netherlands	Quantitative	questionnaire survey n=900
Wei et all, 2008	What drives Malaysian m-commerce adoption? An empirical analysis	Malaysia	Quantitative	questionnaire survey n=222

Ko et al, 2009	Modelling Consumer Adoption of Mobile Shopping for Fashion Products in Korea	Korea	Qualitative + Quantitative	semi structured interview with university stakeholders (faculty and students) to refine factors identified from literature review, followed by questionnaire survey n=511
Lu & Su, 2009	Factors affecting purchase intention on mobile shopping web sites	Taiwan	Quantitative	questionnaire survey n=369
Alda´s-Manzano et al, 2009	Exploring individual personality factors as drivers of M-shopping acceptance	Spain	Quantitative	questionnaire survey n=470
Yang, 2010	Determinants of US consumer mobile shopping services adoption: implications for designing mobile shopping services	US	Quantitative	questionnaire survey n=400
Kim et al, 2010	An empirical examination of factors influencing the intention to use mobile payment	Korea	Qualitative + Quantitative	interview with mobile commerce scholar and 15 heavy user, followed by questionnaire survey n=400
Zhou, 2011	An empirical examination of the determinants of mobile purchase	China	Quantitative	questionnaire survey n=285
Niklas & Strohmeier, 2011	Exploring the Impact of Usefulness and Enjoyment on Mobile Service Acceptance: A Comparative Study	Germany	Quantitative	questionnaire survey n=108
Yang, 2012	Consumer technology traits in determining mobile shopping adoption: An application of the extended theory of planned behaviour	US	Quantitative	questionnaire survey n=400

San-Martín et al, 2013	Mobile Shoppers: Types, Drivers, and Impediments	Spain	Quantitative	questionnaire survey n=471
Yang & Forney, 2013	The Moderating Role Of Consumer Technology Anxiety In Mobile Shopping Adoption: Differential Effects Of Facilitating Conditions And Social Influences	US	Quantitative	questionnaire survey n=400
Ferri et all, 2013	Factors Determining Mobile Shopping. A Theoretical Model of Mobile Commerce Acceptance	Italy	Qualitative	interview with 30 mobile shoppers, followed by Open Space Technology
Groß, 2014	Exploring the acceptance of technology for mobile shopping: an empirical investigation among Smartphone users	Germany	Quantitative	questionnaire survey n=286
Agrebi & Jallais, 2015	Explain the intention to use smartphones for mobile shopping	France	Qualitative + Quantitative	semi structured interview with 13 purchasers and 13 non purchasers, followed by questionnaire survey n=400 with 200 purchasers, 200 non purchasers
Slade et all, 2015	Modelling Consumers' Adoption Intentions of Remote Mobile Payments in the United Kingdom: Extending UTAUT with Innovativeness, Risk, and Trust	UK	Quantitative	questionnaire survey n=268
Pantano et all, 2016	The effect of mobile retailing on consumers' purchasing experiences: A dynamic perspective	Italy	Qualitative	interview with 29 Italian experienced mobile shoppers
Musa et all, 2016	The Predictors and Consequences of Consumers' Attitude Towards Mobile Shopping Application	Malaysia	Quantitative	questionnaire survey n=218

Hubert et all, 2017	Acceptance of Smartphone-Based Mobile Shopping: Mobile Benefits, Customer Characteristics, Perceived Risks, and the Impact of Application Context	UK	Quantitative	questionnaire survey n=410
Chen et all, 2017	Impact of flow on mobile shopping intention	Taiwan	Quantitative	questionnaire survey n=310
Fuentes et all, 2017	Mobile phones and the practice of shopping: A study of how young adults use smartphones to shop	Sweden	Qualitative	9 focus group interviews with 55 young adults,
Gupta et all, 2017	Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory	India	Quantitative	questionnaire survey n=237

Source: Author

Mobile grocery shopping is a relatively new social phenomenon with less than a decade's history. In addition, the volume of mobile commerce research in the UK market is far less than that of North America and East Asia. This research attempts to use the mixed methods approach to accomplish the research objectives as a means to explore the indigenous factors that affect UK consumers adopting mobile shopping through a qualitative study, and to determine the findings with meta-analysis through quantitative methods, therefore, to minimise or offset weakness inherent within one method with the strengths of the other methods.

Based on the priority of research design decision and sequence of research design decision, Bryman (2012) summarised nine possible types of mixed methods research (see Figure 3.1). In the chart, upper case indicates priority, lower case indicates a more subsidiary role, arrows refer to the sequence, plus signs (+) mean that the collection of quantitative and qualitative data is conducted more or less concurrently.

Figure 3.1 Nine possible mixed methods in research, as classified by priority and sequence
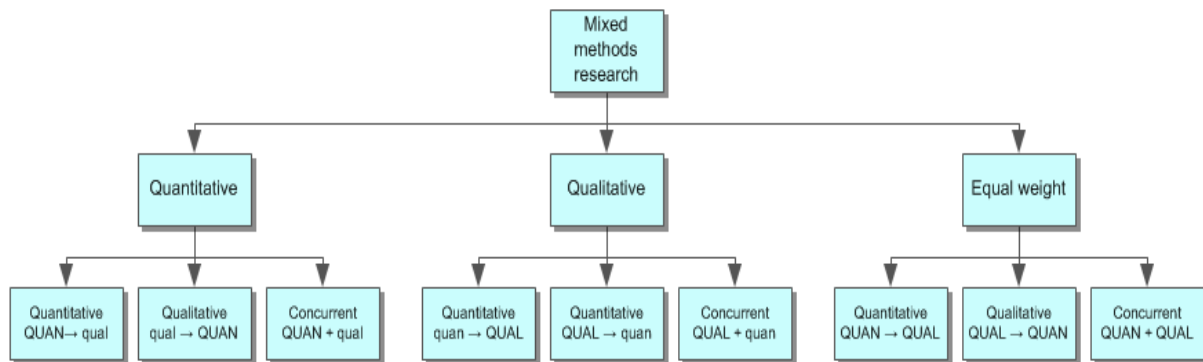
Note: Capitals and lower case indicate priority, arrows indicate sequence, plus signs (+) indicates concurrent.

Source: Bryman (2012)

As shown in Figure 3.1 the two main themes of mixed methods design are concurrent research design and sequential research design. In a concurrent research design, quantitative and qualitative research methods are used at more or less the same time, in an attempt to confirm, contrast or corroborate findings within a single study. In this type of design, the quantitative and qualitative data collection may be presented in separate sections, but the analysis and interpretation of the data may be presented as a combination of the two types of data which emerge from the two strategies. In a sequential design, the study may start with a qualitative interview for exploratory purposes, followed by a large sample survey and quantitative data analysis. Alternatively the quantitative data collection and analysis may come first to test a theory or concept, followed by qualitative methods involving a detailed exploration on how the qualitative findings helped to elaborate on or extend the findings of quantitative methods (Creswell, 2013).

A mixed methods approach with sequential of "Qual → Quan" equal weight design, was used as the main strategy of the study, as shown in table 3.4. This is because the two-phase, sequential mixed methods study was a suitable way of summarising the indigenous factors that affect the British grocery shopper to adopt, and use a mobile phone for shopping.

Table 3.4 Research objectives and survey design stages

	Research objectives	Research strategies
Stage 1	Objective one: to identify and investigate the factors that influence the intention of consumers to use mobile applications for grocery shopping.	Qualitative: semi-structured interviews with 32 grocery shoppers who own a smartphone ------------------------------------ Quantitative: online questionnaire survey with 300 respondents
	Objective two: to compare the factors influencing the purchasers and non-purchasers decisions to use mobile grocery shopping.	
Stage 2	Objective three: to explore the factors influencing consumers' repeat purchases and loyalty in mobile shopping.	Qualitative: semi-structured interviews with 12 purchasers ---------------------------------- Quantitative: online questionnaire to 150 purchasers

Source: Author

In order to best use the time and available resource for this study, the three research objectives were accommodated in two research stages – with the first stage focusing on the analysis of total sample, the second stage focusing on research participants who have previous experience of using mobile grocery shopping. The following sections discuss the sampling and the details of the research design.

3.3 Sampling

Before carrying out the research, it is important to identify the sample. A sample is a subset of the population; it is the segment of the population that is selected for investigation (Bryman, 2012). Sampling methods are usually classified into

two types: probability (random sampling) and non-probability (purposive sampling) (Cohen et al., 2000).

In a purposive sampling process, a researcher selects units based on subjective judgement to form a sample, this type of sampling is useful when the researcher needs to reach a targeted sample quickly, and where sampling for proportionality is not the main concern (Leviton, 2006), the main disadvantage is the representativeness of the sample, also it is not possible to determine the sampling error.

In a random sampling process, each unit is selected independently; each unit of the population has an equal chance to be included in the sample. This method is suitable for data analysis which involves inferential statistics. The researcher should be aware that sampling error may arise if the sample is not representative enough.

Because this study employed a mixed methods approach (see section 3.2), two samples were collected for the qualitative and quantitative study respectively. Table 3.5 below shows the features of the sample for this study, the following subsections (3.3.1-3.3.2) provide a detailed explanation of the sampling method.

Table 3.5 Sample framework

	Qualitative study	Quantitative study
Sample source	Researcher's contacts and some strangers	Online panel from SSI Inc.
Sample size	32	300
Sampling method	Convenience sample	Quota sample
Data collection	20 from convenience sample (author's friends + snowball sampling) 12 from street interview (random collection)	150 purchasers' responses collected randomly 150 non-purchasers' responses collected randomly
Instrument	Semi-structured interview	Questionnaire survey

Source: Author

3.3.1 Sampling for the qualitative study

In order to draw respondents for the qualitative study, convenience sampling and the snowball technique were used. Initially, the author contacted his friends and colleagues who own a smartphone, during the process, the author deliberately included a few people who worked in marketing and retailing in order to gain their professional opinions. 15 respondents were collected through convenience sampling, and 5 additional respondents were recruited through snowball sampling (friends' referral). In order to dilute the representativeness issue of purposive sampling, the author went to the Wimbledon Championships in July 2015, and randomly approached people queueing outside the stadium. A further 12 respondents were recruited from a 3-day-long campaign of street interview. All respondents joined the interview voluntarily. Prior to the interview, the author explained the purpose of the research, as well as the format and the length of the interview. Permission and consent (see appendix 3.3) were gained from all participants before the interview was conducted. In total, the sample is consisted of 32 respondents.

3.3.2 Sampling for the quantitative study

In order to gain the views from both purchasers and non-purchasers, a quota sampling method was used. Quota sampling is a type of survey sampling in which researchers directly to gather information from a specified number of

members of the population belonging to certain subgroups; this technique is commonly used in marketing research (Salkind, 2007). In this research, quota sampling enabled the author to quickly access the views from equal and large amount of purchasers and non-purchasers. The only criterion of the quota was set to be the respondents' experience of using a smartphone for grocery shopping (see preliminary question 3 in appendix 3.2). Because the proportion of purchasers in the UK population is unknown, the author aimed to collate 150 responses from purchasers and another 150 responses from non-purchasers in order to gain a fair view from the two groups using available research budget.

A nationwide survey campaign was implemented to collate the data. The author employed a market research company, Survey Sampling International Inc. (SSI), to launch the survey. The company has a panel consisted of 5,680 British households. The form of the survey was online self-administrated questionnaires. Using online surveys could help the researcher to reach large amount of audiences in the UK, and to gain a more accurate representation of the UK population. The key advantage of using online surveys is that the collection of data gathered is not limited to certain geographical locations in the country, and is randomly distributed; on the other hand, online surveys allow respondents to access the questionnaire at anytime and anywhere anonymously so that the convenience and confidentiality is ensured.

The survey campaign lasted 5 days, the author received 360 responses at the end of the campaign. However some low quality responses were identified, the author reviewed the responses, and removed those responses based on three criteria: 1) submitting time (those spent less than 3 minutes to submit the questionnaire); 2) singular answers (those who chose only one scale answer for entire questionnaire, for example "neither agree nor disagree", throughout the questionnaire; 3) wrong logic (for example those claimed they have children in their household but household size being only one). After a careful selection, the author collected 300 completed questionnaires that were deemed to be high-quality and usable.

3.4 Research design

As discussed in the prior section, a 'Qual → Quan' sequential research design strategy (see Figure 3.1) was implemented for this study. A reason for this approach is that the author aimed to explore the phenomenon and to expand on the qualitative findings – while qualitative phase enables the author to conduct in-depth conversations with the shoppers before designing the questionnaire, the quantitative phase helps to overcome the drawbacks of interview, for example sample size issues.

The diagram below (Figure 3.2) shows the flow and the structure of the research design: the research project started with a literature review, this was followed by a series of semi-structured interviews. After analysing the interview data against the constructs identified from the literature review, an initial set of questionnaires was built. The questionnaire was piloted and validated prior to be launched nationally.

Figure 3.2 Research flow and structure
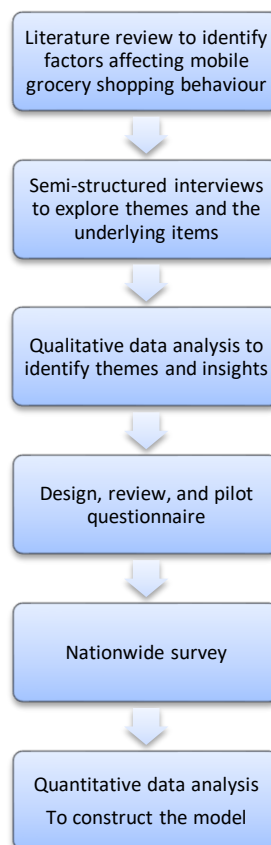
Source: Author

Specifically, in order to gain a comprehensive view of mobile grocery shopping acceptance and loyalty, the research was designed to have 6 phases. The first phase of the research was to review a range of literature relating to mobile commerce acceptance and issues around online grocery shopping, in order to gain knowledge for the current research context. After the literature review, a series of in-depth interviews were carried out, in order to discover consumers' perceptions toward mobile grocery shopping. Data collected from these semi-structured interviews were analysed and categorised in different themes relating to the acceptance and loyalty of mobile grocery shopping. Those themes provided the author a fundamental guidance to design the survey questionnaire. Before the survey was launched nationally, the question items were piloted and reviewed by industrial and academic experts for validation and refinement. After the survey responses were collected, the quantitative data was analysed using statistical methods to accomplish the research objectives.

The purpose of designing this six-phase research is to provide the author with a deep understanding of a consumer's perception of mobile grocery shopping activities. During the process, data from the qualitative research was constantly compared and contrasted with the existing literature, so that the author was able to further develop the survey items that were used for a larger sample survey. The reason for collecting qualitative data as the first step was due to the lack of guiding theory in the study of mobile grocery shopping, and the indigenous factors that influence UK customers to shop on-mobile for their groceries was somewhat unclear and inadequate.

3.4.1 Semi structured interview
Semi-structured interviews were planned after a wide range review of literature, to explore the customer behaviour in grocery shopping. As discussed in the above section, the information observed from interview data, together with variables identified in the literature review, became fundamental guidance for producing the questionnaire survey.

The sample for the semi-structured interview consisted of 32 British residents, although the sample size was relatively small, the author attempted to diversify

the respondents' occupation to increase the sample's representativeness. As a result, the sample included respondents from the following occupations: cleaner, child minder, builder, hedge fund trader, brand manager, trip advisor, engineer, salesman, student, teacher, housewife, and postman.

The interviews with these 32 respondents were scheduled between July 2015 and March 2016. On average, each interview session lasted approximately half an hour with purchasers; and approximately fifteen minutes with non-purchasers. The interviews with purchasers took longer; this is because purchasers were asked to answer questions about customer loyalty. The interviews were recorded in an audio recorder, and then transcribed to Microsoft Word documents. Data gained from the semi-structured interviews were thematically analysed, in order to generate qualitative insight, it was then used to verify or compare with the existing literature.

3.4.2 Semi structured interview questions

In order to filter out interviewees who are not qualified for this research, respondents were asked if they have access to a smartphone (definition of a smartphone was provided if the interviewee was unsure), and whether they shopped groceries for the household. Respondents who answered "no" to any of those two questions were opted out from the interview because he/she was not the research object of this study.

For those who were qualified for this research, their demographic information was collected, this includes their gender, age, household size, presence of child, education level, online grocery shopping experience, and household location. In the meantime, respondents were asked if they have experience of using a smartphone for grocery shopping. Those experienced respondents were labelled as "purchaser"; inexperienced respondents were labelled as "non-purchaser".

The interview questions were built upon the purpose of gaining insight from participants' experience and perception of mobile grocery shopping. In order to explore the themes relating to their decision of using mobile grocery shopping, the interview captured several topical questions: experience of mobile commerce and online grocery shopping, perception of mobile grocery shopping,

pros and cons of mobile grocery shopping, occasions they would use, future expectation / suggestions to the retailer, etc. For purchasers' interview, more topics were discussed, including their first mobile grocery shopping experience, favourite feature, product and service they receive, the use of digital marketing, and their satisfaction and loyalty, etc. The topics were reflected through the overall structure of the interviews (see appendix 3.1): the purchaser version of interview has an additional section with questions about respondents' satisfaction and loyalty (3 sections in total); while the non-purchaser version only has 2 sections because non-purchasers are those who has not had previous experience of using mobile grocery shopping. The other difference between the two versions of questions lies on the way the questions were asked: for purchasers, the questions were asked in a form of discussing their real experience; while for non-purchasers the questions were asked in a form of discussing their perception.

3.4.3 Triangulation

Cohen et al. (2000) defined triangulation as "an attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint"(Cohen et al., 2000: 254). Triangulation is also seen as "the cross-checking of inferences by using multiple methods, sources, or forms of data for drawing conclusions" (Aydin and Anderson, 2005: 50). The process of triangulation may involve multiple perspectives, by using different methods, different sources of data, or different researchers within the same study (Denscombe, 2014).

This research triangulated multiple perspectives and data. Firstly, the author reviewed a set of theories in order to reduce the bias of employing a singular theory, this process is known as Theory Triangulation. Triangulating theories pertains to use of more than one theoretical schemes utilised to examine a research phenomenon (Denzin, 1978). This form of triangulation was addressed within this research by converging six individual theories, including TRA (Theory of reasoned action), TPB (Theory of planned behaviour), TAM (Technology Acceptance Model), TAM2 (Technology Acceptance Model 2), UTAUT (Unified theory of acceptance and use of technology), and DOI (Diffusion of Innovation). The variables used in multiple theories were identified and compared, and

eventually de-duped, for example "subjective norm", which was used in several theories including the TRA, TPB and TAM2.

On the other hand, a range review of literature relating to mobile commerce acceptance exhibited a few variables that are beyond this current research context, these variables and underlying items were reviewed and excluded from the consideration (for example, "perceived expressiveness" from Nysveen et al., 2005, and "perceived status benefits" from López-Nicolás et al., 2008).

Triangulation can also be achieved through comparing data collected at various times and/or in different locations (Tones and Tilford, 2001); data generated from different methods, observations, interviews and questionnaires can be compared and gathered for triangulation purposes (Denzin, 1978, Denscombe, 2014). In this study, the form of triangulation is reflected through the combination of findings from semi-structured interviews with the literature review: findings from the interview study were examined against the selected variables from the literature review: if there are any statements or new concepts identified from the interview which are not identified in the literature review, these elements are to be added to the questionnaire by the author for further quantitative validation.

3.4.4 Survey questionnaire design and implementation

Quantitative data analysis is generally objective compared to the subjectivity results from qualitative research, and the research objectives are typically satisfied through the application of scientific procedures (Denzin and Lincoln, 2008). The quantitative method offers a means of testing objective theories through examining the relationship amongst variables in statistical approaches (Creswell, 2013), questionnaire surveys are the most common quantitative method to generate primary data (Bowling, 2005). One of the main advantage of using questionnaires is the ability to capture a great deal of data over a short period (Creswell, 2013).

When designing the questionnaire (see appendix 3.2), the author developed the questions from existing literature through adding content from the interviewees' narratives, in order to enhance the context of the questions. Also, some additional questions were added, these questions were developed or informed

by the interview data. Appendix 3.2 indicated the literature foundation from which the question item was designed or developed.

An introductory statement was provided at the beginning of the survey questionnaire, including the purpose of the study, estimated time required to answer the questionnaire, a confidentiality guarantee, and consent agreement – once the "disagree" button is pressed, the survey terminates automatically. The consent was followed by three preliminary questions – the first two were to verify the respondents' eligibility for this study, i.e. 1) he/she must be a groceries purchaser, and 2) he/she has a smartphone. Unqualified respondents were opted out. The third preliminary question distinguished purchasers and non-purchasers: respondents subject to answer the relevant version of questionnaire (purchaser or non-purchaser version) depend on their actual experience of using mobile grocery shopping, which is defined by the third preliminary question.

The main body of the survey consists of three parts for the Purchaser version; the Non-purchaser version consists of two parts of survey questions. Part one and two are almost identical between the two versions of questionnaire, the only difference lies on the grammar and the way the question was asked. See question 1 for example: "Buying groceries on a smartphone saves my time" (Q1 purchaser version), compared to "Buying groceries on a smartphone would save my time" (Q1 non-purchaser version).

The first part of questions (part one) were designed to collect respondents' opinion about mobile grocery shopping. The second part of the questions were used to collect respondents' basic demographic information. Part three was only available in the purchaser version; The third part of questions were designed to examine the purchasers' satisfaction and loyalty.

The questionnaire was designed with closed questions to make it easier and quicker for the respondents to answer. The five-point Likert item scale was used in the first and third part of the survey. The scaled items were coded as following: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, and 5 = Strongly Agree. Respondents were asked how strongly they agreed or disagreed with each of the statements by choosing one of the five positions. The scale consists of a series of statements expressing a number of

issues in mobile grocery shopping, which were identified from the literature review and semi-structured interviews.

3.4.5 Piloting the questionnaire

Prior to the nationwide online survey campaign, the questionnaire was piloted to 27 of the author's friends and colleagues, a total of 25 valid responses with feedback were received. The use of the feedback helped the author to improve the relevance and wording of the questionnaire items. Meanwhile, with the help from behavioural science and retail research experts from the university, individual items in the questionnaire received further development.

The primary purpose of piloting, is to ensure that the questionnaire provides the respondent a set of clear and understandable questions, and to make sure the questions are relevant to the research objectives.

3.5 Data analysis

The purpose and process of analysing quantitative data differs from that of qualitative data. Quantitative data analysis aims to seek patterns and insights from numerical and statistical analysis; whilst qualitative data analysis aims to recognise patterns and insights from extracting meanings from non-numerical data and words. In other words, quantitative analysis focuses on gathering measurements; qualitative research focuses on analysis of verbal data (Explorable, 2009, McGivern, 2013).

3.5.1 Data analysis for the semi-structured interviews (qualitative data analysis)

Qualitative data analysis of this research aims to induce insights by extracting meanings from the interviews. Bryman (2012) pointed out that qualitative research may generate a large and cumbersome database, it could therefore be difficult to find analytic paths through the amount of data; therefore it is important to "guard against failing to carry out a true analysis" (Bryman, 2012: 565). Following the extensive review of literature, an exploratory qualitative phase was conducted to grasp the individual grocery shopper's view on mobile

grocery shopping, in order to seek new variables and a deeper understanding of the consumers' perception of mobile grocery shopping.

3.5.1.1 Type of interviews

An interview involves asking questions and getting answers from the interviewee. There are several types of interview, including semi-structured interview, unstructured interview, structured interview, group interview and focus group. Bryman (2012) suggested the term "qualitative interview" is often used to encapsulate the two main types of interview: unstructured and semi-structured interviews.

Unstructured interviews are interviews which ask relatively open-ended questions in order to discover the participants' perception on the research issue. It is more like a guided conversation than a pre-arranged and structured series of questions and answers. Semi-structured interviews on the other hand are interviews which involve asking a list of predetermined questions, during the interview process the interviewer can adjust questions accordingly to adapt to different participant's situations.

The semi-structured interview could help the author to gain a deeper understanding of the issues under study, or to generate new ideas. It also allows the author to manipulate or adjust the questions during the interview process, so that more attention could be addressed accordingly; individuals can express their opinion, experience and view in more detail regarding the topic. In addition, the author was able to understand different dimensions of the participants' views about mobile grocery shopping, including their perception, experience, reason of using and expectations. Therefore, the semi-structured interview was adopted to carry out the exploratory phase of this study.

The conversations from the semi-structured interviews were audio recorded for this research. The qualitative data was extracted from the audio recorder, and was analysed by using computer assisted content analysis technique, the software employed was Microsoft Word. The technique that was used to analyse the interview data is called Textual Analysis. This is a technique that is suitable to be used "for making inferences by objectively and systematically identifying specified characteristics of messages" (Holsti, 1969 :14). Bryman

(2012) also suggested it can be used to evaluate textual or audio content. Denscombe (2014) added that the technique involves a series of tasks, which include coding raw data, categorising codes, and possibly generating concepts. Based on this, the author conducted a content analysis which captures these tasks in order to interpret and derive meanings to develop an understanding of what is being raised from the interviewees.

3.5.1.2 Content analysis

Coding was the first stage of analysing the raw qualitative data, it was a process of tagging or labelling the interview data in order to interpret the interview transcriptions. During the content analysis, the researcher decides which pieces of data are to be coded; data can be words, sentences or paragraphs in various lengths (Denscombe, 2014). At this stage, the researcher reads through the interview transcripts and condenses the data into smaller and analysable units. Bryman (2012) suggested the researcher should review the codes along with the coding process, which entails the following practices: use a minimum number of words or phrases to describe the same phenomenon; consider using concepts and categories from existing literature that are relating to the codes; identify any causation or association between the codes.

Categorising was the second step. During the coding process, a researcher explores a set of themes, which are embedded in their contextual position (Sharon Lockyer, 2004). When searching for themes and sub-themes that are relevant to the research questions, Ryan and Bernard (2003) suggested researchers should look for: repetition of topics, unfamiliar expressions, metaphors and analogies, transition or shift of topics, similarities and differences among interviewees discussing a similar topic, usage of linguistic connectors such as "because" or "since", clarification from interviewee when they omit their answers, and concepts or material that are relating to existing theory.

At this stage, a researcher classifies the codes and then groups the individuals' codes with the similar features, properties, or attributes, under the same category. During the practice of merging and categorisation, the number of codes and categories are likely to be reduced, relationship and hierarchy

among codes and categories are to be identified by the researcher (Denscombe, 2014). The above process which involves generating codes and thematic categories is known as thematic analysis.

Coding is a key procedure in the thematic analysis. It facilitates the author to organise, retrieve and interpret the interview data, and lead the author to systematically grasp the consumers' views on mobile grocery shopping through the process. However, there are several issues relating to coding based content analysis that the researchers need to be aware of: Bryman (2012) stressed that during the coding process, the context or the social setting may be lost. Coffey and Atkinson (1996) pointed out the narrative flow from the interview may be lost due to fragmentation of data. Riessman (1993) added that there are some forms of data which may not be suitable for the coding method. Nevertheless, Bryman argued that the coding approach is widely accepted and is "unlikely to become less prominent" (Bryman, 2012 :578), and there is a growing number of computer software for qualitative research that use the coding method. Although computer software assistance is popular, the sample size of this research was relatively small therefore software such as NVivo was not used. Instead, the Microsoft Word processor was used to highlight and cut and paste data from the transcriptions which had relevant concepts or themes and put it into a separate document file.

3.5.2 Data analysis of survey results (quantitative data analysis)

The survey is an effective and widely used technique for collecting data as it can be administered simultaneously to a large number of people (Lewis et al., 2007). As discussed in section 3.4.4, apart from the questions about respondents' demographics information, each question represents a variable (or scale). Variables can be classified into four categories, including interval/ratio variables, ordinal variables, nominal variables and dichotomous variables. Adopted from Bryman (2012:336), table 3.6 summarises the main characteristics of the types of variables, along with examples from the survey questionnaire.

Table 3.6 Types of variable

Type	Description	Example in the survey
Nominal	Variables comprise categories that cannot be rank ordered	Where do you normally buy groceries on your mobile?
Ordinal	Variables whose categories can be rank ordered but the distances between the categories are not equal across the range	How long have you used mobile internet? (answer less than a year, 1-2 years, 2-5 years or more than 5 years)
Interval	Variables where distances between the categories are identical across the range of categories	On average how much do you spend on buying groceries at a mobile grocery store every week?
Dichotomous	Variables containing data that have only two categories	What is your gender?

Source: Author summarised from Bryman (2012:336)

Statistical analysis is fundamental to all experiments that use statistics as a research methodology, it is important to choose the most appropriate statistical procedure to analyse the data in order to solve appropriate questions raised in the research (Kalla, 2011, Creswell, 2013). SPSS version 21 was used to code and analyse the data because the software provides all required modules for this research. The quantitative phase of this study employed a few fundamental statistical techniques which are achievable using SPSS, these are: descriptive analysis, reliability analysis, factor analysis, multi-regression analysis, and Chi-square analysis.

3.5.2.1 Descriptive analysis

Descriptive analysis is a simple quantitative summary of a data set that has been collected; it helps the researcher to put the data in perspective. Specifically, it was used to describe the number of people belonging to the categories for the research. A frequency table usually provides these features, it is preferred to a single number when more detailed information is needed (Creswell, 2013). The frequency table gives some basic statistics information of the data, for example in this research, it was used to describe the sample characteristics (see section 5.2).

3.5.2.2 Reliability analysis

The reliability of a measure refers to its consistency, which entails both external and internal reliability. External reliability measures the degree of consistency over time; a test-retest approach is the main way to check external reliability (Bryman and Cramer, 2011). For this research the survey was sent via a one-off email campaign, therefore external reliability checking was not considered. Internal reliability measures whether the underlying items within a scale are internally consistent (Bryman et al., 2011). A widely used approach, Cronbach's alpha, was employed in this research. Cronbach's alpha measures the interrelatedness of a set of items; it is a coefficient that describes how well a group of items focuses on a single idea or construct (Cronbach, 1951). Cortina (1993) parameterised the formula as:

$$N^2(\text{Mean(Cov)} / \text{Sum(Var/Cov)})$$

where N is the number of items in the scale, Mean(Cov) is the mean inter-item covariance, and Sum(Var/Cov) is the sum of all the elements in the variance-covariance matrix.

By convention, an alpha value above 0.7 is considered an acceptable scale (Bryman et al., 2011). A low level of alpha often suggests multidimensional data, however a high alpha value may not guarantee unidimensionality (Cortina, 1993). Cronbach and Shavelson (2004) suggested the Cronbach's alpha can be used for heterogeneous scales, however additional analysis, for example, confirmatory factor analysis is required to clear up uncertainty. In this research Cronbach's alpha was used to assess the internal consistency of those items used for measuring individual construct, the calculation was conducted using the entire sample.

3.5.2.3 Factor analysis

Factor analysis is essentially a data reduction technique; it helps the researcher to identify a smaller set of variables from a large set of variables. Bryman et al. (2011) suggested that there are three main purposes of using factor analysis. Firstly, it assesses the degree to which items are constituting the same concepts or variables so that the factors are conceptually distinguished. In other

words, it helps the researcher to identify factors by aggregating the items sharing the same characteristics. Secondly, it helps the researcher to determine the degree to which the number of variables can be reduced to a smaller set. Thirdly, it helps the researcher to aggregate the factors sharing a similar description (or synonyms), in order to reduce the number of factors.

In general, there are two types of factor analysis, these are confirmatory factor analysis (CFA) and exploratory factor analysis (EFA). Confirmatory factor analysis is used when the researcher wants to test the hypotheses about the commonality amongst variables in a strong presence of theory or strong empirical base. The main purpose of CFA is to verify the dimensions underlying a construct. Exploratory factor analysis is used when there is not a pre-defined structure or the number of dimensions in a set of variables is unclear. EFA helps the researcher to identify the relationships between various variables without knowing the results that fit a particular structure or model. EFA is useful when new items are found from qualitative study, and to be proposed or constituted possible new factors. As suggested by (Pallant, 2013), EFA is often used in the early stages of research when the researcher is uncertain about the interrelationships among a set of variables, this study employed EFA, because the research was conducted in the early stage of mobile commerce and the purpose was to determine the number of factors.

Hair (2009) suggested several steps of conducting exploratory factor analysis: first of all, the correlation matrix of all proposed variables should be produced, this is followed by a decision to extract the number of factors. To make the data and factors more understandable and meaningful, the choice of selecting the rotation method should be decided.

Using the correlation matrix is the first step of factor analysis. The matrix provides the strength of the correlation between variables. If there is no significant relationship between variables (Pearson's r lower than 0.3), factor analysis may be deemed to be inappropriate (Bryman et al., 2011). In addition, Barlett's test of sphericity and the Kaiser-Meyor-Olkin (KMO) are used to verify the appropriateness of factor analysis for this study. According to Pallant (2013), Barlett's test of sphericity must be significant ($p < 0.05$), and in the KMO value ranges from 0 to 1, with 0.6 being the minimum value appropriate for factor analysis.

There are two mostly widely used forms of factor extraction: principal component analysis (PCA) and factor analysis (labelled as "principal-axis factoring" in SPSS) (Bryman et al., 2011). The key difference between these two techniques lies in the way they treat unique variance. In PCA, all score variances are analysed and the total variance score set is 1; In FA, on the other hand, only common variances are analysed and the total variance varies from 0 to 1 (Bryman et al., 2011).

In terms of the minimum number of factors to be retained and excluded, two main techniques are Kaiser's criterion and the scree test (Pallant, 2013, Bryman et al., 2011). In Kaiser's criterion, factors with an eigenvalue of 1 or greater should be retained, factors which have an eigenvalue of less than 1 are considered insignificant and are disregarded (Bryman et al., 2011, Hair, 2009). In addition, Monte Carlo PCA is used to further confirm the number of factors to be retained.

After the number of factors were determined, the last step was to rotate factors. This final stage helps the author to make an easier interpretation of factors by rotating them. The two main approaches to rotation are orthogonal and oblique; both were employed in this study to enhance clarity and interpretation in the report (Pallant, 2013).

3.5.2.4 Multiple regression analysis

Multiple regression is the most popular method for multivariate analysis, especially when three or more variables are involved, it is an extension of simple liner regression (Bryman et al., 2011). The technique was used to predict the value of dependent variable based on the value of two or more independent variables; it was also used to determine the overall fit of a model and the relative contribution of each of the predictors to the total variance explained. In general, the multiple regression equation is expressed as:

$$Y = a + b_1 X_1 + b_2 X_2 + \ldots\ldots + b_k X_k$$

Where X_1, X_2 …X_k are independent variables, k is the number of variables, b_1, b_2 …b_k are the regression coefficients for the independent variables, a is the intercept (or constant). In this research, multi-regression was used to determine the overall fit of two models, one that predicts the mobile shopping adoption,

and another predicts the customer loyalty. The relative contribution from the factors that explain the variances were also to be determined.

Bryman et al. (2011) suggested researcher to check the correlation between any pair of independent variables are not too high, where an excess threshold of 0.8 may be suspected of exhibiting multicollinearity. The existence of multicollinearity would suggest the regression coefficients may be unstable from one sample of data to another (Howell, 2013); diagnostic tools are available in SPSS should this happen.

One output of multiple regression is R^2. R^2 is the multiple coefficient of determination for the collective effect of all the independent variables. In other words, the R^2 value indicates the percentage of variability of the model, this is accounted by the overall variables in the equation. Another important output of multiple regression from SPSS is the standard error, including standard error of estimate (from the multiple regression model summary table) and standard error of the regression coefficient (from the multiple regression coefficients table). Standard error of the estimate refers to the limits of the confidence that the regression model exhibits. Standard error of the regression coefficient exhibits the confidence interval for any chosen confidence level, for example given a 95% confidence level, the confidence interval would be:

$$[b + (1.96 \times s.e), b - (1.96 \times s.e)]$$

where "b" is the regression coefficient, "s.e" is the standard error. The calculation of the confidence band is helpful for the researcher to make predictions and to make sense of the likely accuracy (Bryman et al., 2011).

3.5.2.5 Chi-Square test for independence

Chis-square test is a statistical technique to examine if there is any relationship between two categorical variables. This study used the Chi-square test for independence technique to investigate the difference between purchasers and non-purchasers in terms of their demographic information. This is incorporated with research objective two of this study. One key output of this technique is the Chi-square tests table, it provides the Pearson Chi-square and the significance level between groups – if the number found in the Sig. column is less than the

critical value of alpha (usually 0.05), it suggests a rejection of null hypothesis and concludes there is a statistically difference between the means in comparison.

3.5.2.6 Structural equation modelling and its limitations

According to the literature review, one popular statistical technique adopted in mobile commerce acceptance studies is the Structural Equation Modelling (SEM). In those studies, empirical data were collected to test upon the classic framework such as the Technology Acceptance Model, or the Theory of Planned Behaviour, and their variants. In contrast to regression analysis, SEM deals with several equations simultaneously – same variable may represent a regressor in one equation and a regressand in another equation (Nachtigall et al., 2003).

The key advantage of using SEM is that it is free of measurement error; it is also very useful to examine complex patterns of relationships – when the relationships are complex and multidimensional, SEM allows simultaneous tests of all relationships while other methods of analysis may require several separate analyses.

However, the disadvantage of SEM is not ignorable. Tabachnick et al. (2001) addressed that SEM should be developed with solid underlying theory. Although pre-existing theory is important for multivariate procedure, it is particularly important for SEM because the technique is built upon a confirmatory analysis to test a pre-specified relationship. Therefore, SEM was not appropriate for this study because the aim was to explore the behaviour of mobile grocery shopping, and there was a lack of solid theoretical model to explain customer behaviour in this channel.

3.6 Research ethics

The integrity of a piece of research is linked to the discipline involved with ethical issues (Bryman, 2012). The author followed four ethical principles provided by Diener and Crandall (1978), and Bryman (2012), to ensure the research was conducted in an ethical manner:

- Avoid harm to participants: the researcher should ensure the research cannot harm the respondent. Harm entails a number of facets: physical harm, mental harm, legal harm, and harm to participants' development.

- Avoid the lack of informed consent: the researcher has the responsibility to explain the nature and purpose of the research to participants in detail.

- Avoid invasion of privacy: the researcher should ensure the participants' information is treated anonymously and confidentially.

- Avoid deception: the researcher should not lure research participants from hiding, lying or deceiving the research subjects.

(Diener et al., 1978, Bryman, 2012)

3.6.1 Ethics in qualitative research

Ethical issues can arise at any stage of research (Bryman, 2012) but are more likely and more serious in qualitative research, This is because the researcher can be more intrusive in the interview (Punch, 2013). In this study, all interviewees were treated with respect. To ensure the participants were comfortable with the interview, a consent letter with the interview questions were given to the interviewee prior to the interview. The purpose of the interview and confidentiality of the data were emphasised by the author before the interview start. All participants agreed to let the author recording the conversation by an audio recorder.

3.6.2 Ethics in quantitative research

The issue of confidentiality was also considered in quantitative research. It was clearly explained to the participants at the beginning of the survey that all data collected was for academic research purposes, respondents are anonymous, and survey results are confidentially protected. The questionnaires were deployed through Survey Gizmo and Google Forms; the privacy and cookie statement of Survey Gizmo and Google Forms were carefully checked by the author to ensure the survey data was securely protected. Throughout the research there was no leakage of data to a third party.

3.7 Chapter summary

This chapter outlined the research methods and procedures employed in this thesis. It provided a set of strategies and research techniques used in the research, along with a review of previous research methods on mobile commerce acceptance. It also discussed the advantages and limitations of each technique, which helped to justify that a mixed method approach is the most appropriate way to meet the aim and objectives of this study. Specifically, the author pointed out there is a lack of literature of mobile commerce studies in the UK context, and due the complexity of grocery shopping behaviour, implementation of a sequential, Qual→Quan two-phase mixed methods approach, is needed for this study. The conclusion led to a further discussion of the design, samples, procedures, analytics techniques, and ethical issues of this research.

Regarding the qualitative research, a sample of 32 people were recruited to take part in semi-structured interviews. The interview questions were designed to explore respondents' experience and perception; the interview captured various topical questions which led interviewees to provide a detailed view of their experience or perception of buying groceries on a smartphone. To analyse the qualitative data, a thematic analytical approach was employed. The qualitative insight along with the literature review were used to guide the design of quantitative study. In the quantitative study, a questionnaire was launched nationally, in order to acquire a larger sample of information for further analysis. The author employed an online survey company SSI Inc., as a result of this, a total of 300 valid respondents were received. Factor analysis and multiple regression analysis were used in SPSS programme. The quantitative and qualitative findings were consolidated in order to form a comprehensive view of mobile grocery shopping behaviour.

Having discussed the research methods of this study, the following three chapters present the findings from the qualitative and quantitative data analysis.

Chapter 4 Factors affecting the intention to shop groceries by smartphone: qualitative results

4.1 Introduction

The previous chapter discussed the methodological foundation for this research, which confirmed that a mixed methods approach that employs semi-structured interviews and a questionnaire survey is the best way to identify the factors affecting consumers' intention to use smartphones for grocery shopping. This chapter provides an analysis of the in-depth interview data. It aims to build an understanding of shoppers' decision-making process focusing on their perception and real-life experience before and during the key stages of conducting grocery shopping on a smartphone, and issues associated. The results from this chapter are used in the quantitative study in the next chapter. Consolidating results from chapter four and five will provide a comprehensive view of issues around mobile grocery shopping behaviour, which underpins the following two research objectives:

- Objective one: to identify and investigate the factors that influence the intention of consumers to use mobile applications for grocery shopping.
- Objective two: to compare the factors influencing the purchasers and non-purchasers decisions to use mobile grocery shopping.

The structure of this chapter is as follows: section 4.2 presents the sample characteristics of the semi-structured interview. Section 4.3 discusses the procedures of making grocery purchase on a smartphone in order to establish the context for the consequent data analysis. The subsequent sections discuss the results of the semi-structured interview. Specifically, section 4.4 presents an analysis of the interview data in terms of the drivers of using mobile grocery shopping; section 4.5 on the other hand, discusses the impediments of adopting mobile grocery shopping. The following section (section 4.6) discusses other factors and topics relating to the shoppers' decision to use mobile grocery shopping; section 4.7 provides a discussion of how the customers discovered

the app or shopping website on their smartphone for the first time. The last section (section 4.8) summarises the chapter.

4.2 Characteristics of the interview sample

This section provides the sample characteristics of those who took part in the semi-structured interview.

As discussed in the methodology chapter, a consensus view that incorporates opinions from both experienced and inexperienced respondents is necessary, in order to understand the drivers and barriers that they have. On the other hand, it could highlight the key differences between the purchaser and non-purchasers. To do this, the author recruited both purchasers and non-purchasers to take part in the semi-structured interviews.

Before the interview, the author confirmed with individual respondents that: 1) the respondent must be a UK resident, 2) the respondent must own or have access to a smartphone, 3) the respondent buys grocery products. Table 4.1 presents the demographic profile of the interviewees.

Table 4.1 Demographic profiles of the interviewees

Name	Gender	Purchaser / Non-purchaser	Occupation	Household size	Education	Sampling source
Andrew	Male	Non-purchaser	Travel consultant	3	Degree	Convenience sample
Barbara	Female	Non-purchaser	Admin support	1	Degree	Street interview
Basia	Female	Non-purchaser	Pharmacist	2	Degree	Street interview
Bill	Male	Non-purchaser	Care home worker	2	High school	Convenience sample
Cathy	Female	Non-purchaser	Sales assistant	4	GCE	Convenience sample
Charlotte	Female	Non-purchaser	Teacher	2	Primary teaching	Street interview
Claire	Female	Non-purchaser	Counsellor	2	Degree	Convenience sample
Dan	Male	Non-purchaser	Software engineer	3	Masters	Convenience sample
Dom	Male	Non-purchaser	Sales manager	2	Degree	Convenience sample
Heather	Female	Non-purchaser	Personal assistant	3	City & Guilds	Convenience sample
Helen	Female	Non-purchaser	Marketing project manager	2	Degree	Convenience sample
Iain	Male	Non-purchaser	Engineer	8	Scottish higher	Street interview
Isgush	Male	Non-purchaser	IT software engineer	1	Degree	Street interview
Jane	Female	Non-purchaser	Self-employed HR consultant	3	Degree	Street interview
Julia	Female	Non-purchaser	Programme manager	2	MBA	Street interview
Lindsey	Female	Non-purchaser	Not employed	2	Diploma	Convenience sample
Matthew	Male	Non-purchaser	Primary school teacher	2	Degree	Street interview
Steve	Male	Non-purchaser	Sales manager	3	A level	Convenience sample
Naomi	Female	Non-purchaser	Brand manager	2	Degree	Convenience sample
Will	Male	Non-purchaser	Postman	2	GCSE	Convenience sample
Caroline	Female	Purchaser	Primary school teacher	2	PGCE	Street interview
Che	Female	Purchaser	Business manager	3	Masters	Convenience sample
Derri	Female	Purchaser	Child minder	7	GCSE	Convenience sample
Julie	Female	Purchaser	Housewife	3	A level	Convenience sample
Kate	Female	Purchaser	Cleaner	8	A level	Convenience sample
Monica	Female	Purchaser	Trader	3	PhD	Convenience sample
Robert	Male	Purchaser	Student, engineer intern	5	Masters	Street interview
Robert B	Male	Purchaser	Engineer	1	Degree	Street interview
Romi	Female	Purchaser	Unemployed	4	A level	Convenience sample
Tom	Male	Purchaser	Car dealer	2	A level	Convenience sample
Waithera	Female	Purchaser	Midwife	4	Degree	Convenience sample
Zoten	Male	Purchaser	Builder	1	N/A	Street interview

Source: Author

As shown in table 4.1, 32 respondents were interviewed (N=32). In terms of their profile, 20 are non-purchasers (63%), 12 are purchasers (37%); 13 are male (41%), 19 are female (59%); the average household size is 3 persons. Respondents' occupations are well-diversified (see table 4.1). The author deliberately included a selection of professional people such as Dan (software engineer from JP Morgan), Dom (sales manager from Unilever), and Helen (Marketing project manager from Coty), in order to get a better understanding of professional views from those who work in a related sector. There are also a few people who may have greater knowledge of computer than others, for example the two software engineers. It is possible that due to the nature of their work, they may be pro-computer, and fastidious about the smartphone.

For non-purchaser sample (n=20), 9 respondents are male (45%), 11 are female (55%); their average household size is 3 persons. For purchaser sample (n=12), 4 respondents are male (33%), 8 are female (67%); the purchasers' average household size is 4 persons.

Comparing the non-purchaser and purchaser sample, it seems females are more likely to use smartphones for grocery shopping than males. Also, household size may have an impact on the intention to use. The demographic insight will be unveiled more clearly through the quantitative data analysis in the next stage.

4.3 The procedure of grocery shopping by mobile phone

From the consumers' perspective, grocery shopping by mobile phones involves several stages of decision making and corresponding efforts. Figure 4.1 illustrates the key stages of buying groceries on a smartphone. First of all, shoppers need to use their mobile phones to land on the grocer's mobile website – some prefer to download the shopping app instead. Then, they need to find the groceries they want from the app or mobile website. This involves either navigating on the app/website or using the search bar to look for the products they want to buy. At this stage, some shoppers know what they want hence their aim is to be able to find the products as quickly as possible; whilst some other shoppers may have a less clear goal of shopping, therefore they may aim to get some inspirations and suggestions while browsing around the

app/mobile website, before they start to purchase. The next step involves adding "products" into the "basket". Experienced shoppers may find this step easy because they know where to find the products, they may even be able to retrieve the shopping list from their "favourite items" or "shopping history" so that they can add multiple products into the basket with only one click. Whilst inexperienced shoppers may perceive this process to be a difficult task because of the effort involved with searching, reading, and comparing, before products are added to the basket. In some cases, those inexperienced shoppers may fear that they would make mistakes by adding products they were not intended to buy. This is sometimes owing to the lack of skill or knowledge on a new shopping platform, and the lack of confidence in new technology. After building up the basket, the same as shopping in the supermarket, consumers need to check out, this process involves sending the shoppers' bank card details to the grocer, in the meantime, shoppers need to choose a time slot for delivery. Finally, they need to wait for the delivery at an agreed time slot.

Figure 4.1 Key stages of buying groceries on a smartphone

| Discover the | → | Browse/Searc | → | Add to "basket" | → | Check out | → | Wait for delivery |

Source: Author

For potential shoppers, their usage intention may be affected if they perceive or anticipate any of the above process being a barrier for them to complete the purchase. Consequently, they may decide not to adopt mobile grocery shopping. Meanwhile for new mobile grocery shoppers, they may drop out at any stage of the above process if they perceive a high level of difficulty, inconvenience, or a barrier. An interviewee, Heather, who is a non-purchaser (see table 4.1) from this research commented the process:

"If it's tricky to use, then I would just abandon it, and go to Sainsbury's store."
(Heather)

On the other hand, experienced mobile grocery shoppers may have less problems or concerns to accomplish above process, they believe using the app is more efficient than other ways of buying groceries. Those shoppers found mobile grocery shopping beneficial to themselves; and consequently they became loyal customers. In the following sections, the focus is drawn upon the analysis of the interview data, and the connections between existing literature and the qualitative insights.

4.4 Drivers influencing the decision to use mobile grocery shopping

Throughout the qualitative data analysis, themes are generated in light of the literature that relates to user acceptance of mobile commerce. This section presents the drivers influencing customers' intention to use a smartphone for grocery shopping. According to the interview data, the author discovered 9 themes that relate to the drivers of mobile shopping intention. Table 4.2 lists the individual themes mentioned by the respondents regarding the drivers or benefits of using mobile grocery shopping. The pattern of the table indicates that purchasers mentioned a greater number of benefits or drivers in comparison to non-purchasers. Amongst non-purchasers, few respondents mentioned Compatibility, Social influence, and Perceived skill as a driver of their intention to use; none of them mentioned Enjoyment during the interview. The Usefulness perception was the most mentioned theme by both purchasers and non-purchasers. For purchasers, other popular mentions include Compatibility, Ease of use, and Past experience. For non-purchasers, Ease of use and Past experience were also frequently mentioned. The following sections discuss these individual themes.

Table 4.2 Factors influencing the intention to use mobile grocery shopping

Name	Purchaser / Non-purchaser	Usefulness	Compatibility	Ease of use	Affinity	Enjoyment	Social influence	Perceived skill	Past experience	In-store experience
Andrew	Non-purchaser	x	x	x	X				X	x
Barbara	Non-purchaser									
Basia	Non-purchaser	x			X					
Bill	Non-purchaser	x								
Cathy	Non-purchaser	x							X	
Charlotte	Non-purchaser	x		x						
Claire	Non-purchaser	x					X		X	
Dan	Non-purchaser	x		x						
Dom	Non-purchaser									
Heather	Non-purchaser									
Helen	Non-purchaser	x		x	X				X	
Iain	Non-purchaser	x	x							X
Isgush	Non-purchaser	x								
Jane	Non-purchaser	x		x	X					
Julia	Non-purchaser	x								
Lindsey	Non-purchaser	x						x		
Matthew	Non-purchaser	x		x						X
Steve	Non-purchaser	x								
Naomi	Non-purchaser	x							X	
Will	Non-purchaser	x								
Caroline	Purchaser	x	x	x	X			x		
Che	Purchaser	x	x	x					X	X
Derri	Purchaser	x	x	x		x	X		X	
Julie	Purchaser	x		x		x	X			
Kate	Purchaser	x	x	x	X			x	X	
Monica	Purchaser	x	x			x			X	
Robert	Purchaser	x	x	x	X			x	X	
Robert B	Purchaser	x	x		X				X	
Romi	Purchaser	x	x	x	X	x		x		
Tom	Purchaser	x							X	
Waithera	Purchaser	x	x	x		x				X
Zoten	Purchaser	x			X					

Source: Author

4.4.1 Perceived usefulness

Davis (1989) defined "Perceived Usefulness" is individual adopter's belief that using a particular information system would enhance the job performance. During the interview, a number of aspects relating to perceived usefulness were mentioned by the respondents. The theme is relating to the improvement of shopping performance facilitated by the smartphone. Table 4.3 is an overview of the descriptors (sub-theme) of perceived usefulness.

Table 4.3 Descriptors of perceived usefulness

Name	Purchaser / Non-purchaser	Avoid using computer	Convenience & mobility	Time saving	Budget control	Better shopping decision / healthy eating	Editing order before delivery
Andrew	Non-purchaser	x	X	x	X	x	
Barbara	Non-purchaser						
Basia	Non-purchaser		X	x			
Bill	Non-purchaser		X	x			
Cathy	Non-purchaser		X				
Charlotte	Non-purchaser			x			
Claire	Non-purchaser	x	X			x	
Dan	Non-purchaser		X	x		x	
Dom	Non-purchaser						
Heather	Non-purchaser						
Helen	Non-purchaser			x		x	
Iain	Non-purchaser		X	x			
Isgush	Non-purchaser		X	x			
Jane	Non-purchaser		X				
Julia	Non-purchaser		X				
Lindsey	Non-purchaser		X				
Matthew	Non-purchaser		X	x			
Steve	Non-purchaser			x			
Naomi	Non-purchaser		X		X	x	
Will	Non-purchaser		X	x			
Caroline	Purchaser	x	X	x	X		
Che	Purchaser	x		x			
Derri	Purchaser	x	X			x	X
Julie	Purchaser	x			X	x	X
Kate	Purchaser	x	X			X	

Name	Role						
Monica	Purchaser	x		x		x	
Robert	Purchaser			x		x	
Robert B	Purchaser			x			
Romi	Purchaser		X			x	X
Tom	Purchaser					x	
Waithera	Purchaser	x	X	x	X	x	
Zoten	Purchaser	x					

Source: Author

Above table shows both purchasers and non-purchasers thought mobile grocery shopping is a useful practice in a number of dimensions. For purchasers their understanding of usefulness is more specific – they pointed out facts such as: avoid using computer, controlling the budget, seeing detailed product information, and editing order at any time. In comparison, non-purchasers' usefulness perception is more generic, such as "convenient", or "time saving". Although non-purchasers thought it is useful to buy groceries on their smartphone, they hardly gave a detailed example, because they did not have relevant experience. Most non-purchasers only imagined a situation where mobile grocery shopping was being useful.

In total, purchasers mentioned 6 sub-themes for Perceived usefulness, compared to 3 by non-purchasers (see table 4.3). The difference indicates a lack of understanding of the benefits by non-purchasers. Below sections provide discussions on the sub-themes of Perceived usefulness.

Avoid the computer

Using a laptop or PC to do online shopping is believed to be a complicated process by some respondents. This is because starting up a computer may require more time and effort than a smartphone. One purchaser, Kate (see table 4.1), who is a cleaner with a large family, mentioned she could use the computer to buy groceries, but she preferred a smartphone:

"I wouldn't mind going on to the laptop but I've got to load it up and look up, so it's easy just to tap on your phone." (Kate, purchaser)

Meanwhile, a shopper may adopt mobile grocery shopping only because he/she does not have access to a computer, for example one respondent Zoten (see table 4.1), who is a builder lives alone, mentioned the following:

"Actually I'm just using on the phone because I don't have a laptop here. So I use it for all the reasons on the smartphone." (Zoten, purchaser)

On the other hand, shoppers choose smartphones over computers for shopping because they believe a certain knowledge is required to use a computer. One respondent, Derri (see table 4.1), possibly due to her job as a childminder, a job which does not involve using computer, mentioned:

"I think I'm not very good on the computers, I thought I'd never get the hang of this, because I didn't have my own computer or anything when we got together. I probably did the first couple of times with computer and then I went straight to the mobile app." (Derri, purchaser)

This purchaser thought she is not a proficient computer user, therefore she moved to mobile to buy groceries. Also, setting up the laptop is considered to be a time consuming practice, for example this respondent mentioned she gets home late as she is a school teacher, so shopping on a smartphone seems to be more efficient for her:

"It's on the mobile phone, because it's with you all the time, and especially we haven't got things like iPad or anything. On a computer you know you have to set up your laptop and wait for it to load, so sometimes it's quicker just do it on your mobile." (Caroline, purchaser)

The comment suggests that customers believe mobile phones could browse to the shopping site faster, because a computer takes more time to load up the system. Another respondent added the physical restrictions involved with a computer:

"I guess it's time constrained to shop groceries on a computer – if you do it on your computer, you have to be in front of a desk and do it there. Mobile – you can pretty much do it anywhere, as long as there's a signal, so it's the mobility makes the difference." (Che, purchaser)

This respondent mentioned she has young child at home, it is possible she has less opportunities to work on a computer at home. Similarly, one other respondent mentioned:

"I found the app is much easier to use, it's more user friendly to be honest; I don't want to boot up my laptop, then going to the site, go on an order, I mean it's bigger screen it's lovely, but the actual site, I think my app is better ..." (Julie, purchaser)

This respondent suggested despite the computer screen being bigger, the mobile app is preferred because it requires less effort.

Two non-purchasers (see table 4.3) also mentioned shopping on a smartphone is useful because they are reluctant to use a computer:

"It's mainly what I just being lazy, not opening my laptop up, or not getting my iPad out… although I usually carry one, or I don't usually have wifi." (Claire, non-purchaser)

"Also, with laptops… the battery life can be easily drain; or you might not find a plug point, but usually always the phone lasts at least a whole day, and you know you have more reliability using your mobile over the PC." (Andrew, non-purchaser)

The non-purchasers' narrative also confirmed the requirement of wifi or power socket for a laptop may lead to a consideration of using a smartphone for grocery shopping.

Convenience & mobility

Using a smartphone for grocery shopping is regarded as a convenient practice by both purchasers and non-purchasers (see table 4.2). Because of the mobility feature of buying groceries on the smartphone, shoppers can buy groceries whenever and wherever they want. A few non-purchasers mentioned:

"… the ability to add products on my go. I do out and about quite a lot, I can do it anywhere – I often have my laptop with me, cos I work for different places, but I don't always have wifi connection on my laptop, but my phone is always 4G –

pretty much in this area anyway. for me that's a big advantage, especially when I'm waiting for something." (Claire, non-purchaser)

This respondent is a counsellor who goes out to see her clients frequently at different locations, she suggested the mobility feature of mobile shopping would be beneficial to her. Two other women, who have full-time jobs mentioned mobility being useful:

"You can do it anywhere and do it while you think about it, so rather than having to write it down and do it later you see. Perhaps you can do it more immediately." (Jane, non-purchaser)

"When you are out and about, you can book a shopping slot when you are out, and you can go back in later on when you got perhaps 15 minutes and add to the shopping, so you don't have to do it in one go, you can do it and amend it when you are out and about, as oppose to handle it all at home, so that's quite convenient." (Cathy, non-purchaser)

On the other hand, a few purchasers confirmed this point by providing more specific examples, one respondent said:

"The phone is more portable, I can be in the soft play with the kids, and be adding things to my ASDA order as you think of things." (Derri, purchaser)

The respondent further explained she likes using her mobile phone for grocery shopping, it seems mobile shopping is well fitted to her lifestyle because of the mobility:

"How portable it is, how easy I can do that on the go, I don't have to sort of go to the shop, I can just be sat on the soft play, or sat at home, in my pajamas in the evening and just sit, and do the shopping, and not having to go out, because fitting that trip to the shop is really difficult for me." (Derri, purchaser)

Another respondent mentioned convenience as a driver of her decision to use the mobile shopping app, this respondent was looking for job, it appears mobile shopping helped her to be more organised at home:

"The main benefits is definitely convenience, it's built in your head, when you open the fridge, and you suddenly: 'right, there's not enough cucumber.' So I quickly find the cucumber on my phone, type in, and you look at your shelf and think 'I need this, I need that', you can do it straight away, you don't even close

the fridge or leave the house before you finish the shopping. They are all there, you just type in; it's less likely to forget what you want to buy because you are still in the room. You don't have to worry about the list – it just makes a lot more sense to use it on your mobile. You just order in front of your fridge and you know what to order." (Romi, purchaser)

One respondent mentioned that mobile grocery shopping is convenient because she always forgets what to buy when she physically walks into a supermarket; mobile shopping allows her to stand in front of the fridge at home, so she knows what to buy. She also mentioned the delivery of the goods made shopping convenient, one other purchaser agreed by saying:

"It was really good we didn't have to go to shop after work, you know, we knew it's always gonna be there when we get back from work, so really for convenience, and if things are closed on Sunday, we can still have it (groceries delivered) on Monday night." (Caroline, purchaser)

Those who have a full-time job, or night shift workers, may benefit from using mobile grocery shopping more than others. One respondent who works as a midwife mentioned:

"With me, my job and my colleagues … we all shift workers so it's really good thing, even when it's quiet in the night shift, we can do the food shopping on the phone, it's really convenient." (Wai, purchaser)

Typically, the convenience aspect is reflected through the fact that shoppers can conduct the shopping without physical or time restrictions. In addition, it could help shoppers to avoid going to the physical stores. One respondent said:

"I don't want spend the whole day walking around the shops, I kind of want doing things with the children. So it's easier to get all that stuff done on the mobile, and another reason I do that is I don't drive, I can't get out." (Derri, purchaser)

The respondent mentioned that not having access to a car made it difficult for her to go to do the food shopping. She also mentioned that in-store shopping is a stressful experience especially with children:

"If I go to the shop it would be more stressful for the kids and everything" (Derri, purchaser)

Two female respondents mentioned the lack of access to a car, concerns about petrol cost are also a motivation to use a mobile shopping app, see below statements:

"It's just convenience I didn't have the car, I had to go up to the Tesco express which is so much more expensive because it's a small shop." (Caroline , purchaser)

"… I think if I ought to drive to ASDA it probably cost me the same on petrol so it saves me money really, or time, saves time." (Kate, purchaser)

Kate also mentioned it is particularly useful for bulk purchase:

"I use ASDA app every time when I do a big and bulk shop, it's easier to have it delivered than carry it all around and back to the car and so on." (Kate, purchaser)

As shown from the above data, the convenience provided by the mobile shopping channel would be one major reason for customers to adopt the service, according to table 4.3 and table 4.1, amongst all respondents (19) who mentioned mobility and convenience as a driver of their decision to use mobile shopping, 12 were female (63%). It is possible that females value convenience more than males. With regards to the fact that customers try to avoid going to the physical store, it is linked to the customers' perception of in-store shopping, which is a separate theme discussed in the later section.

Time saving / quick shopping

For those shoppers who have a busy schedule, they may seek to use the quickest method to buy groceries. For example, these respondents mentioned:

"I think the first and for most thing is definitely time saving, especially in weekends… you can revisit the previous shopping you had, and just do very little changes to it. So because the week on week grocery shopping is probably highly repeating, so I found it's very helpful to get it done quite quickly." (Che, purchaser)

"It's really quick, especially if you've got your details saved then you can just go on there, you would just literately press that one button and that's done." (Caroline, purchaser)

"I think it's good, I like it, because it saves me time, when we are all busy, anything saves time, is a godsend." (Derri, purchaser)

"It saves my time, if I go to the shop, by the time I drive there, and shop and come home, it probably takes an hour and half or two hours. Whilst I can just use my list, it takes me about five minutes maximum to do my shopping." (Wai, purchaser)

According to the narratives above, mobile shopping helps customers save time, this is particularly useful for grocery shopping because it usually takes a long time. However, because the process is very quick, a drawback is that shoppers have less opportunity to explore other products on the smartphone. As one respondent mentioned:

"The previous shopping list is definitely helpful because I can easily repeat and make minimum changes, I guess in a way because the function that I use… turns to go for the same thing again and again, and maybe limits the way I choose my groceries etc. I could have explored different brands, different type of products." (Che, purchaser)

During the interview, time saving is one of the most frequently mentioned motivations by non-purchasers (see table 4.3). A few examples are given below:

"It's more convenient you know, it's less time consuming, more efficient … they deliver the groceries to your house, so it's just the time saving aspect of it and convenient." (Basia, non-purchaser)

"It's quick… just the fact that it's easy, it saves time." (Charlotte, non-purchaser)

Despite the lack of experience, non-purchasers suggested a few situations that they would adopt mobile shopping: when they are physically restricted, or in transit, or when they are waiting for someone. Using spare time to do grocery shopping is considered productive. The service is therefore seen to be useful:

"…so using your mobile you normally use it on the go, maybe on the train on the way to work, or you are outside waiting for someone and it's always with

you, so it's always convenient cos you can do anytime at anyplace." (Naomi, non-purchaser)

"Instant, you can do it instantly, quickly. Mobility you can do it on the move, you could do if you're traveling to work, or at any time." (Will, non-purchaser)

"…on a mobile you can… kind of… do on the go, you know if you are on transport or something, you have nothing productive to do with your time, again, I guess it could be time saving probably." (Iain, non-purchaser)

The above narratives from the non-purchasers suggest the situational factors, especially when they wish to save time, could trigger their intention to adopt the service. This aspect was mainly mentioned by respondents who work in office environments (see table 4.1), mobile shopping saves their time because they can buy groceries in transit.

Budget control

Barque-Duran et al. (2017) found when viewing on a smartphone screen, people are more likely to make unemotional decisions. In the shopping context, the app provides the basket value in real-time, customers can monitor the bill before they make payment. Whilst in a conventional store, customers would not know the final bill until they go to the cashier. Therefore, mobile shopping provides customers more control on their budget, and facilitates rational shopping decisions. Shoppers in a supermarket are immersed into all kinds of products on the shelf, they can see large amount of products in one glance. Whilst shoppers on the smartphone are restricted by the mobile phone screen, the amount of products that shoppers can see are limited. Shoppers therefore have less chance to make impulse purchases. Because of these, a number of interviewees mentioned buying groceries on their smartphones could help save money (see table 4.3). One respondent said:

"You know exactly how much in total as you go alone, so every time you add something in it, it tells you, it updates you…they are telling me the running total of my bill… so you can control the budget, and other thing as well." (Caroline, purchaser)

The narrative shows that customers find it useful to buy groceries on their smartphones because they can see the total amount during the shop. It helps customers to know the basket value in real time, and consequently control the basket size. Another respondent said:

"And you got the budget… you know exactly what your shopping should come through. And if you go in the day before (delivery) you can at least double check if that is going to be roughly around the price you have in mind, so that is very useful." (Julie, purchaser)

The respondent claimed her budget is under control when shopping on her smartphone, she could check the price of the shopping basket just before the delivery, to make sure the budget is under her management. On top of this, the respondent also mentioned there are less impulse purchases when shopping on the app:

"You are not so attempted to buy other things as when you walk around the store you would: 'wow that's on offer, wow that looks good, I want two of these!' – It helps you keep within a budget, definitely a lot of less impulse buys… The urge to impulses buy is greater when you walk around the store … It definitely costs me less than if I go down the store." (Julie, purchaser)

Similarly, another respondent mentioned that mobile shopping enables her to save money:

"The most important is if I'm buying from my list I won't get distracted by other things I seeing in the shop. So I rarely… I rarely go to the offers section on the phone, whilst in the shop I see them all the time, so on the phone I just shop from my list where it tells things I bought recently, and I will do a search if I need something specific… I found it a bit cheaper than walking around the shop. I impulse shop a lot, if I go to the shop I might pick a lot of cakes and sweets that I don't need. Whilst if I just look on the list on the smartphone, and I just think what we need." (Wai, purchaser)

From the narrative above, it confirms that impulse buying could be limited on the smartphone, therefore customers found it useful.

Some non-purchasers also mentioned mobile grocery shopping could help them to discover new deals and promotions, hence save money, for example:

"It will give more inspiration, it would probably save me money. I would spend money but I would be able to get a deal that I wouldn't necessarily had. And I will have wider choice of food because I would experiment with different things." (Naomi, non-purchaser)

"I think also it saves me money because I get impulse shopping, when you go into the supermarket you see things you don't necessarily need – and I can spend more money. And I can use the mobile to keep them in my list, I think it's gonna be a lot better so I'm really looking forward to using it." (Andrew, non-purchaser)

Although only 5 respondents mentioned the budget control aspect of mobile shopping as a driver of their usage decision (see table 4.3), 4 of those respondents are female (see table 4.1). The female shoppers could be more sensitive to the money spent on food shopping compared to males, and the sense of regret from overspending as result of impulse purchase could be more common amongst the female shoppers.

Better shopping decisions / Healthy eating

When customers are shopping in-store, they may be distracted by broadcast, trolleys, and people. Therefore, they may not be able to concentrate on reading product specifications. While shopping on a smartphone, the app or website would be able to provide richer information about the product. During the shopping process, customers are forced to concentrate on the mobile phone, with each product information displayed in one screen. Some apps even automatically alert possible allergies. A shopping app therefore facilitates better shopping decisions because of the amount of information available, and the way the product information is displayed. One respondent mentioned:

"Lot of time I feel like when I'm in the supermarket I kind of forget what I want to get, you know … seeing a lot of items around me, I'm gonna get kind of confused." (Andrew, non-purchaser)

It appears that the exposure to all products physically in-store may distract shopper's attention to the specific product he/she wanted to buy. Another respondent mentioned she could discover new products easily on the app:

"Maybe it would made me aware something I don't normally buy. So if they send you coupons or 'this is new' which you might not necessarily see when you're walking around the supermarket, you always go to the same things you always know." (Naomi, non-purchaser)

This narrative suggests that customers may not necessarily see the new products in the supermarket because they always focus on the products that they know about. Whilst the smartphone provides push notifications, automatic shopping suggestions, and the dynamic layout of the shopping page, which enable customers to discover new products.

A lot of purchasers also mentioned the app provides in-depth information that helps shopping decisions, for example:

"It's easy to see what the products look like, and it's clearly priced." (Julie, purchaser)

"I found the app shows you the correct price, and the delivery price, and also the calories in food and things you need to know say if you have nut allergy it says nut, so it would actually tells you that on there so you don't worry. Cos you go to shop you check everything, but the app tells you the right information which is quite good." (Kate, purchaser)

"Somehow I read the ingredients of the products more carefully on the app, and choose the organic, healthy options … in the shop, you turn to just grab and go… and move on to the next shelf." (Monica, purchaser)

The price, calories, and allergy information are clearly presented on the app, which facilitated a useful perception to the customers. In addition, thanks to the nutritional information, smartphones could easily sync the grocery purchase history to the health monitoring apps. Using tools such as ShopWell, customers can monitor their sugar, calories, sodium, saturated fat, protein and fibre consumptions. British consumers are increasingly concerned about healthy eating, according to a report from the Department for Environment, Food and Rural Affairs (Defra, 2011), more than 80% of UK households are actively seeking to buy healthy food, and rated healthy food as being the most important factor affecting their buying decisions. Using the smartphone to track calorie intake is becoming a new fashion (*The Guardian, 2016*). Some respondents mentioned using the smartphone to buy groceries for healthy eating lifestyle:

"I'm interested… if the website could build me a meal would be useful, or give me the nutritional information, and dietary information, looking more towards health side of things... the calorie or nutritional information could improve." (Robert, purchaser)

"I read before I buy, to make sure that I buy was what I want, like organic food." (Julia, non-purchaser)

"Shopping by calories, so have an easy toggle, sort of count up calories ... If I do my shopping maybe I will set a limit of x amount per item or whatever it'd be, and the app sort of highlighting it's quite high calorie content, quite salt content…to be honest all the bits make the difference, so sugar, salt, and fat content would extremely useful to compare against, if possible recommend better, more healthier products." (Tom, purchaser)

The above quotes suggest that healthy eating is likely to have an increasingly positive impact on the intention to use mobile grocery shopping because of the product information provided on the app.

Editing order before delivery

Grocery shopping online allows customers to edit their order even after they pay the bill. This feature is particularly useful for smartphone users – because of the mobility, shoppers can go back to edit the order whenever and wherever they want. Some purchasers claimed they love this feature; they use smartphones as a modern shopping list (see table 4.3). For example those respondents mentioned:

"I kind of book the slot for three days' time, and you then got them three days to compile your shopping, you can keep on going back to amending it, which I found valuable, cos I turn to do a shop and realise I forgot ten things …or the children say they fancy eating something and I can go in and add it. That's a huge benefit for me." (Derri, purchaser)

"Because you can change the order up to certain time before they deliver, you know it's almost serves as your shopping list – you already ordered your items, you can still amend it whenever you like, so it makes a lot easier for me." (Romi, purchaser)

Some shoppers mentioned the feature allows them to review and edit the shopping basket whenever they want, so that they can stretch the shopping session to be a week-long-activity. For example this respondent mentioned:

"Because I can go on to it at any time, even right up to the midnight to the day of my delivery. So if I forget something or I need something I might be able to amend it right up till then, it makes shopping less stressful." (Julie, purchaser)

As discussed in the literature review chapter, the physical needs in a conventional grocery shop involve activities such as travelling, queuing, carrying and lifting groceries. People may find grocery shopping a stressful experience (Bevan et al., 2001, Jiang et al., 2013, Pozzi, 2013). On a smartphone, editing order before delivery made the shopping less stressful; the feature is particularly useful for smartphone users because of the mobility, therefore it provides customers motivations to use the service. Also noticeably all of the statements relating to this sub-theme were mentioned by female respondents.

4.4.2 Compatibility

Table 4.2 indicates that 9 out of 12 purchasers mentioned compatibility acts as a driver for using smartphones in grocery shopping. In the literature review chapter, the thesis discussed that compatibility is the degree to which an innovation is perceived to be consistent with the potential adopter's existing values, past experiences, and needs (Rogers, 2010) . Compatibility is measured by the degree of which the practice of buying groceries on a mobile phone fits the consumers' lifestyle, life and work, and past online transaction activities. The narratives below confirm that lifestyle plays an important role in customer decisions when using a smartphone for grocery shopping:

"You can choose the delivery time, you know if you are going to be late from work, so you can pick up a later slot." (Caroline, purchaser)

"Just really the laziness and trying to minimise how much time I spent walking around the supermarket, so I tried to use it. Mainly just because I'm feeling lazy, and I don't have time for the week, it becomes more convenient to use that." (Robert, purchaser)

"I'm a full time working mum with a young child, so I have to squeeze anytime I have to try to get as much done as possible during the short time frame I found 20 minutes in the train is probably the time that I can make the most of, and hmm… that's why I start to think what I can do to save me some more time, so I can spend more time with the family and the little one." (Che, purchaser)

The above information shows that working late, feeling lazy, or being a full time working parent would result in choosing mobile for grocery shopping. One other respondent also mentioned:

"I don't have time to shop now because of work being so busy, so if I want something I can sit while the kids are playing, I just order it, and it's here the next day. I'm kind of hooked of buying things online now, because it's so easy and I don't have time to go shopping." (Derri, purchaser)

The respondent mentioned she has a busy lifestyle, and therefore buying groceries on a mobile is becoming a "daily routine" – she plans the food shopping on her smartphone when she has a spare moment:

"During the day, when the kids are playing. Or if I'm sitting on the table and they are having their lunch when I'm doing the menu plan…you can fit in to my daily routine." (Derri, purchaser)

These accounts help to confirm that some purchasers adopt mobile grocery shopping because of a busy lifestyle – especially when their work takes up long hours or they have children at home. The interview data also indicates that most purchasers use smartphones to buy weekly or fortnightly groceries; but they also go into the local convenience stores to top-up daily consumptions such as milk and bread. See these statements:

"I buy the big weekly shopping that would be from my phone at Asda… I go to Tesco it's different from my mobile because it's the closest to my house. Tesco is just for milk and bread." (Kate, purchaser)

"The co-op is local, so when I get my ASDA delivery, and little things like fresh food, milk, bread I go to co-op." (Derri, purchaser)

Compatibility is also an important predictor for non-purchasers intention to use the service, according to data analysis. The intention of using mobile grocery shopping is likely to be linked to their lifestyle:

"My first impression is that it's very good for people who have very busy schedules." (Matthew, non-purchaser)

"I think just generally when I'm busy and I don't have time to go to the supermarket, in my job… I have a lot of 'dead time' … because I'm a counsellor, I have time between clients, I can see that would be a quite useful time… I can do it on my phone. Especially when the client cancels at the last minute, then I would have an hour there, that would be quite useful time if I can open the app or go on the browser and start plunking stuff in the basket – even I don't purchase then, the fact that it's … I've started thinking about it. It has to… would just be easy and quickly for me to use, that would be the main benefit to me – it's fitting in my life you know, around different things I do." (Claire, non-purchaser)

If however one thinks mobile grocery shopping does not fit his/her lifestyle, this person will be motivated to adopt the service, see below statements for example:

"It's not for me because my lifestyle doesn't fit in shop with smartphone."(Barbara, non-purchaser)

"Now I'm not working, I'm in a different situation, so rather than shopping once a week for a very big shop, I turn to shop maybe 3 or 4 times a week, much smaller amount, much fresher products. It doesn't really fit into my lifestyle." (Lindsey, non-purchaser)

"Because I only work part time, I have more time at home. If I perhaps have to travel on the train to work something like that, I think possibly I may will do it on my phone." (Cathy, non-purchaser)

"I think when I was younger it would probably work better because when I was younger the children were younger, I was more organised I had to have meals prepared because I knew people are coming back from school. Now there's only 3 adults in the house, so to do it on your phone is … I'm just not organised enough to do it." (Heather, non-purchaser)

These respondents are less likely to use mobile for grocery shopping. Those respondents who said mobile shopping does not fit into their lifestyle, share some commonalities. First of all, they are all female; secondly, they all

mentioned that their children no longer lived with them, the average household size of these respondents is 2.5 which is below the average of 2.9. According to the narratives above, a change of employment status, or a change of household size would trigger a change of lifestyle, and consequently influence customers' decisions of using mobile shopping.

4.4.3 Ease of use

The pattern of table 4.2 shows that ease of use is a frequently mentioned theme, with greater proportion of purchasers than non-purchasers mentioned this. Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989 :320). As discussed in the literature review chapter, ease of use is another important variable to predict individuals' intention to adopt a technology. In this research, ease of use is defined as a cognitive belief that using mobile grocery shopping is intuitive, and is free from making physical and mental effort.

According to the interview data, 8 out of 12 purchasers (67%) had a strong belief that buying groceries on a smartphone is easy, and is free of effort; while only 30% of non-purchasers had such belief (see table 4.2). See below statements for example:

"I found it an easy process, it's quite relaxing … It does make my life easier… I find the sites are fairly easy to use, it's quite clear, the prices are well presented, it's quite simple to add and remove items. You can go in to it and amend it anytime you want. I just find the whole process quite easy, although I do miss going around the shops." (Julie, purchaser)

"The app is convenient and quick and easy to use, so I get all of that, I get the value proposition, and I understand that so I use it."(Romi, purchaser)

"It works quite intuitively so it's quite good... I enjoy the process, cos I find it quite easy."(Wai, purchaser)

"The website is easy to use… it's pretty simple, because if you think what you need and write on your list, I can just search what I want, click it, done, pay, delivery, pay by card, finish and it comes on your chosen time. It's quick and

easy and simple to do and I reckon anyone can do if they have the right technology." (Kate, purchaser)

"You can just quickly whip on, it takes 30 seconds to nip on the site cos it's all set up with my password and so on, I don't even have to log in, it's just there ready. So I can just press the button, and add something in. It's all … all the cards are stored, and everything, so it's easy! easy and easy! You can do it when you are walking down the street." (Derri, purchaser)

"I expect it to be quite nice and easy in the eye …It sounds like it could be easy on the go, you can build up a list of products you want while thinking about it when you don't have your laptop or computer nearby, could be quite good to build a wish list or some kind of err, weekly thing or, scanning the code and remembering to get it later on." (Andrew, non-purchaser)

In general, purchasers thought the shopping is easy to conduct on a smartphone (see table 4.2). The positive perception acts as a driver for them to choose mobile for grocery shopping. The belief comes from purchasers' experience of using the service; they seem to have a better understanding of the process than non-purchasers. Specific areas such as the ease of browsing, ease of making order, ease of using past shopping list, were mentioned.

A few respondents mentioned the user experience on the app is more important than price, those respondents are young females who work full time, see these statements for example:

"I mean cost is not important to me, it's more of the convenience of it. So I think for me if I was going to use it, it would just be a really good user experience, easy process." (Claire, non-purchaser)

"I would rather to pay a bit more to get a better experience – if the app is very easy to use, very friendly, etc., and if the price (difference) is marginal then I don't really mind that." (Che, purchaser)

She added that her criteria of judging an easy-to-use experience would be:

"I think it's more of the user interface to be friendly, little things like err… Can you easily go back one step? Can you easily compare umm… similar products? Can you easily refer to the promotions and offers available? Can you easily

view, umm… and switch between what's in your basket, and what other options are there?" (Che, purchaser)

To summarise the narrative above, an ease of use perception comes from the intuitive browsing experience and the minimum physical efforts to be made, which is in-line with findings from Wu et al. (2005), Aldás-Manzano et al. (2009). In addition to these features, a few respondents mentioned some advanced functions in the app made the shopping easy. For example this respondent mentioned recipe function:

"So the speed is a big thing so maybe if you could say I want to make lasagne you can click lasagne, and they will deliver the cheapest options to make the lasagne, direct you to the ingredients you can choose the cheaper ones or the better ones or whatever." (Robert, purchaser)

After choosing a recipe, the app could guide the customers to add the ingredients quickly to their shopping basket. This unique feature also facilitates the ease of use perception.

Another respondent mentioned mobile grocery shopping is easy to do because she can quickly retrieve the previous shopping history, and is not restricted by location or time. The weekly household shop is highly repetitive; this feature helps to ease the shopping process:

"(mobile grocery shopping is) easy, you can do it anywhere, and also everything you bought is already saved, so you can just log on, and as I said you can find your last shopping list, and just buy all again, just done in two minutes as opposite to an hour with trolley around the store." (Helen, non-purchaser)

The ease of use perception not only comes from the advanced app functions, but also the effort-free experience of completing the shopping task. The above interview data suggests the ease of use perception is an important predictor for customer decision when using mobile grocery shopping. Respondents who perceive it is easy to use, are those who work in an office environment, and their age seem to be younger, according to tables 4.1 and 4.2. Those people are likely to have worked with a computer in their earlier careers, and therefore they have a better understanding or tolerance for the effort required for information technology related work.

4.4.4 Affinity

Affinity is another frequently mentioned theme in the interview (see table 4.2). Similar to the prior theme (Ease of use), affinity received greater proportion of mentions by purchasers than non-purchasers. The literature review chapter discussed that mobile affinity influences customers decision to use mobile commerce (Bigné et al., 2007, Aldás-Manzano et al., 2009). The interview data confirmed that mobile affinity drives customers' intention to buy groceries on their smartphone, see below statements for example:

"Because I carry my mobile phone all the time, I would do something useful when I have a moment, such as grocery shopping." (Monica, purchaser)

In fact, a number of respondents, particularly purchasers have mentioned they were highly dependent to their smartphone, for example:

"I got a bit panicky because I think I've lost it. If on holiday it's fine, because I know you're on holiday, but yes if I forgot it on a normal day-to-day, it's a bit annoying, a bit panicky if I miss my phone." (Caroline, purchaser)

This respondent wanted her smartphone to stay with her at all-times, otherwise she would feel uncomfortable. Similar narratives were mentioned by other purchasers:

"I feel panicking, because if someone needs to get hold of me and if my battery dies, it's painful."(Kate, purchaser)

"I feel lost but at the same time quite relieved, because it's nice to have a separation." (Robert, purchaser)

Another respondent mentioned she spent a large amount of time on the smartphone to do different tasks. Consequently she became a mobile grocery shopper:

"I'm a gadget freak, I like the technology, I like my phone, I like spending time on my phone. Because I spend lots of time on it. I like the fact I can connect to everything I want to connect to, the smartphone gives me the freedom of flexibility to do what I want whenever I want; what made me to come to the app was a bit of exploration really." (Romi, purchaser)

This customer indicated that because of a large amount of time spent on the mobile device, she consequently discovered the shopping app. This piece of data suggests that the longer smartphone users spend time with their device, the more likely they are to discover the grocery shopping app, or to form a tendency to buy groceries.

On the other hand, a low level of mobile affinity could mean a low likelihood of using the shopping app. See this statement for example:

"I only use my smartphone to check emails, I'm not attached to it." (Barbara, non-purchaser)

According to the non-purchasers' interview data, a few respondents said they did not plan to use mobile grocery shopping, those people also mentioned they have low attachment to their smartphones. One commonality of these respondents is that they were females in their later stages of their careers.

4.4.5 Enjoyment

None of the non-purchasers mentioned the enjoyment of mobile shopping (see table 4.2). This theme was only mentioned by female purchasers. These respondents considered making purchases on a smartphone as a pleasant and enjoyable experience; and possibly because of this perception or experience, they are more likely to use their smartphone for grocery shopping. See below narratives for example:

"I love shopping, I love using my phone… the smartphone enables me to buy whenever I want to, I think buying stuff on the smartphone is generally an enjoyable experience." (Monica, purchaser)

"I found the experience quite straight forward and quite pleasant." (Che, purchaser)

Another purchaser explained further:

"I found it an easy process, it's quite relaxing, I can just do some of it when I feel like it. It's something I can just keep going in and then out of, I don't feel it's a chore I find it something enjoyable. It does make my life easier." (Julie, purchaser)

Similarly, another regular mobile grocery shopper mentioned:

"I enjoy the process of buying groceries on the smartphone, this is all about my life you know – mobile phone and grocery shopping. I enjoy the fact it makes my life easy." (Romi, purchaser)

Perceived enjoyment is another factor influencing the tendency of mobile shopping, according to Koufaris (2002). Perceived enjoyment could be reflected through mobile shopper's hedonistic value and therefore drive the usage intention (Yang, 2010, Yang, 2012).

4.4.6 Social influence

Social influence is another theme discovered in the interview, however it was mentioned only by 3 respondents (both purchasers and non-purchasers, see table 4.2), as a driver that influenced their decision to use a mobile phone for grocery shopping. Social influence (or Normative Pressure) was found to have positive influence on mobile commerce adoption, see Yang (2012), and Nysveen et al. (2005). Empirical evidence showed users' intention to adopt mobile commerce can be influenced by other important people, friends, families or social circle. The interview data also confirmed that social influence has a positive impact on the usage intention, for example this respondent said:

"A lot of people do use apps on their phone now…I think I follow the trends, I think I'm a bit of a sheep, you know other people had their app, they said how good it was, so I kind of follow what other people do. And I kind of think if my friends can do, then I can probably work it. That's my kind of gauge, we are all in the same age, if my friends can work on the phone, well, maybe I can do it too." (Derri, purchaser)

This respondent mentioned she follows what other people do, and she believed that if her peer can make a purchase on the mobile, she would be able to do the same.

Similarly, non-purchasers would be influenced by the general public to adopt mobile grocery shopping too:

"I think when you … I don't know nowadays especially younger people they do all their shopping online anyway, so I think it feels natural and intuitive for me to do that." (Claire, non-purchaser)

Noticeably a negative experience from non-purchasers' social circle, would largely affect their intention in a negative way. See below quotes for example:

"I would be worried if I get the wrong product, because I know … from the stories I've heard they can either deliver bad fruit and vegetables, or they can deliver… they can't get the thing that you want, and therefore they give you something else." (Dom, non-purchaser)

"I've heard sometimes they don't deliver the freshest food or if they don't have something in stock they will replace it." (Naomi, non-purchaser)

"And then also I heard from people… friends of mine, they don't deliver the right stuff they miss things out, so I don't think it's totally 100% trustworthy." (Barbara, non-purchaser)

"I have heard stories that people are given things there were no relationship to what they order. That's one reason why I haven't got the experience." (Bill, non-purchaser)

The data suggests a positive social influence may drive people to consider mobile grocery shopping; however when the underlying message is negative, the social influence may largely affect a potential adopter's decision. The negative stories from social circles are more likely to affect prospect male adopters (4 mentions) than females (2 mentions).

4.4.7 Perceived skill

As mentioned in section 4.3, the first step of mobile grocery shopping requires shoppers to discover the app or mobile website on their smartphone. Therefore, it is likely that users with high confidence with their mobile skill may overcome the fear of making a mistake, they may have less difficulties with technological problems, so they are more likely to adopt mobile grocery shopping. The interview data showed most purchasers are confident about their skills when using a smartphone, however there is no commonality amongst those respondents. See these statements:

"I'm quite skilful with my smartphone, I can use lots of different apps, different media, outlook, so yeah, I think I probably use it more for the apps rather than actually the calls and texts… I think if you are confident with a phone, you know you have that option." (Caroline, purchaser)

"I'm quite skilful, I get used to get all the apps from the app store and download things from there." (Kate, purchaser)

"(my skill is) Moderate to advanced, I can use Whatsapp, Tinder, Snap chat and a few others." (Robert, purchaser)

While those who believed themselves less skilful with their smartphones or mobile technology were less likely to consider using their smartphone for grocery shopping, all of the respondents who mentioned this fact were female. See section 4.5.7 for details.

4.4.8 Past experience
This section discusses the relationship of past online grocery shopping experiences (using a PC), and the tendency to use a mobile phone for grocery shopping.

Almost all the purchasers we interviewed had previous experience of online (PC) grocery shopping, however the qualitative evidence is not clear enough to conclude that previous online shopping is an essential experience to adopt mobile for shopping. For example a few purchasers who had limited online grocery shopping experience, did not enjoy it. As soon as they discovered the app, they moved to the mobile channel straight away:

"That (online grocery shopping) was before I had my iPhone, and I found it took longer, and it's less convenient for me cos we haven't got computer desk, it wasn't convenient. That defect my objective of online shopping which is quick, convenient and comfortable…on a smartphone, the whole experience is so different, you can do everything with one hand on mobile. When I'm feeding the baby I can still do it. While computer you have to login and everything." (Wai, purchaser)

"I have done it on computer before, but I find it more difficult, it's typy, you have to open it up, set, get it turned on, log in, and it's the boringest thing. And on my

app on my phone, I can just pick it up, finger print scan, press the app, and I'm there I'm done." (Derri, purchaser)

These purchasers thought smartphones were a lot easier to use than computers. This is in-line with section 4.4.1 that one motivation of using mobile is to avoid using a computer.

After having experienced online shopping, consumers may have a better understanding of the process of buying on a mobile phone. Those who had previous experience on the PC may therefore have a greater tendency to use mobile. For example these respondents mentioned:

"I think it would be a benefit to me if I have done online grocery shopping before I use my phone. I think it would make me more likely to choose my phone." (Claire, non-purchaser)

"I've done it twice with Ocado on a computer. So … it's all set up … I think I know the brand." (Andrew, non-purhaser)

"I have already setup online on the computer, I can just login on the app, and it's all there already. So mine would be very easy I assume, cos all my information from my account online is on the app once I login to it from the first time, it's just there." (Helen, non-purchaser)

These respondents possessed a positive view towards mobile grocery shopping. They were keen to try the service because they shopped with the grocer online in the past. With the knowledge and experience gained from the PC, they believed it would be an easy process to switch from computer to mobile.

On the other hand, if customers believe it is easier to shop on a computer, they may refuse to adopt a smartphone. For example one respondent (Dan, non-purchaser), who uses computer to do most of his job (software engineer, see table 4.1), thought his computer provided a better shopping experience:

"Mobile phone has got limitations, you don't get the same kind of…level of experience as you get from the PC – the big monitor. On the PC with a big monitor you can see more than one item in one page, and you can easily open multiple tabs, browser tabs, to check items." (Dan, non-purchaser)

Table 4.4 summarises the main difference between the grocery shopping experience on a PC and on a smartphone:

Table 4.4 Perceived differences between PC and mobile grocery shopping experience

Online grocery shopping (via PC)	Mobile grocery shopping
Large screen	Small screen
Multiple window/browsers	Single window/browser
Keyboard and mouse control	Finger tab control
Landline broadband (sometimes require a cable)	Wifi / mobile broadband (sometimes signal is not stable)
Un-portable	Portable
Longer time to load up	Quicker to load up
Use internet browser to buy from a desktop site (full website)	Use internet browser or app to buy from app or mobile site.

Source: Author

Table 4.4 provides individual features that differentiate mobile and online grocery shopping. Both channels have their own comparative advantages, for example a smartphone is portable, so shoppers may be able to buy groceries whenever and wherever they want to make the order; a computer has a larger screen with multiple windows/browsers that open simultaneously so shoppers may be able to make better comparisons between brands.

Past experience of online grocery shopping positively influences the intention to shop on mobile in the following two aspects: firstly, the two channels share similar procedures of shopping, hence experienced online shoppers may have

less concern about the potential risks, and they have the knowledge of ordering and delivery. Secondly, consumers who have both experience of online grocery shopping and mobile grocery shopping would be able to compare the two channels. Consequently the mobile application's features would be recognised – according to Musa et al. (2016), mobile app replicates website interface with an interactive outlook, therefore, the mobile-only features stand out, and positively influence shoppers' attitude towards the shopping app.

4.4.9 In-store shopping experience as a driver

The interview data shows that some consumers' aversion to in-store grocery shopping could be a driver in using mobile for grocery shopping. If consumers perceive in-store shopping as a burden, in the form of reluctance to drive a car, lifting groceries, queuing, taking public transport, or parking, they may seek to buy groceries in other ways. Hence, in-store experience becomes a driver for consumers to shop online or on mobile. For example these respondents mentioned:

"I think for me grocery shopping is one of the things is necessities in life…but no one enjoys doing it." (Tom, purchaser)

"I do enjoy grocery shopping in store, but sometimes it's so busy and I get a bit stressed – they don't always have things I want, it would take the stress out a bit." (Claire, non-purchaser)

Shoppers do not have to go to the store if they have a smartphone. Mobile shopping saves them time with family:

"It frees up my time, I don't have to visit the store over the weekend, so I can spend more time with my family…" (Che, purchaser)

"But I guess if you could buy online you could just know what to be ordered, and you can probably spend or find something more productive to do, that means people don't have to waste a weekend spending time in a supermarket. I guess, for me I would imagine to be the primary benefit." (Iain, non-purchaser)

This respondent added that shopping on the app is helpful for a large family like his, especially when they "have works to do for the weekend, but want to take their kids somewhere." (Iain, non-purchaser)

These quotes demonstrate a link between the dislike of in-store shopping and tendency to use mobile or online, because of the time pressure.

A few other respondents also mentioned:

"I can do it at home, taking the kids out to the shop is one of the things I don't want to, it's difficult to make sure they behave whilst I'm doing my shopping. It's so convenient on the phone you can do it and finish it, not allowing them saying: 'oh I want this one, can we buy this mum?'." (Wai, purchaser)

"The last thing he wants is to go to the supermarket with a trolley, shopping, and queue up the till, and pop into the car, drive back and hump it all back home, when it can cost you £1 to get delivered. On Saturday morning we don't have to go: 'oh god, we've go around the supermarket with everybody else and the car park is going to be full, and it's raining'." (Julie, purchaser)

These respondents mentioned about their family members in this context; it appears that using mobile grocery shopping could help consumers avoid going to the store, so that they can achieve other goals such as spending time with family. The presence of young children further enhances a reluctance for in-store shopping.

On the other hand, mobile grocery shopping could help those who are reluctant to interact or speak to others in store:

"I also remembered the first time we did… I was like: 'I've just done that on my phone – I haven't spoken to anybody!' – that's other thing actually – you don't have to speak, you don't have to ring anybody, you get a confirmation of it." (Caroline, purchaser)

The self-service on smartphone would be a useful solution for those who are less in favour of talking to strangers.

The interview data also discovered the context of cost saving when travelling to a store:

"I would say it has the potential to save money, and obviously for no traveling, and expenses." (Matthew, non-purchaser)

"I was having lots of people over and I needed to buy a lot of food, I don't want to carry – I don't have a car, so the alternative would be to get a taxi back from

the supermarket. And because I don't live near a big supermarket, it would be difficult for me to get a chance that I wanted for this occasion." (Naomi, non-purchaser)

One other respondent mentioned the distance from the supermarket:

"I've just moved house, all the supermarkets are quite far away, so you gonna find it really hard to carry it home on the bus and on the train with heavy items. So I'm gonna use it to test it out. Also, carrying … you know large bottles of water, heavy items like big bags of pasta, cleaning like bleach and things like this, all of it weighs quite a lot of err… you know … when travelling as well, so I think it's gonna make that experience a lot better for myself." (Andrew, non-purchaser)

Another noticeable fact from the data is that some respondents mentioned they like to touch and feel the products in-store (see section 4.5.5); however the stress or situational restrictions of going into a store tend to override the joy of hand-picking products, and consequently become a significant driver for this type of shopper to use mobile for grocery purchasing.

4.4.10 Demographics variables

Some demographic variables seem to have an influence on the usage intention. According to the interview, foremost is the size of the household. Purchasers' household size is slightly bigger than non-purchasers (see table 4.1).

One respondent mentioned she lived by herself therefore it is not necessary to use mobile for grocery shopping:

"It would be useful to people has big family, I can see it's good for working mother who's got children, husband at work or they are single parent family."(Barbara, non-purchaser)

Another respondent also said:

"I would imagine … big family … who know exactly what they need each week … that would be more beneficial to them. Unlike someone like me … I wondered way home, grab something to eat… For me I'm less planned, I have

plenty of time to myself, so I reckon it's probably more beneficial for people who…like …have limited time in their house." (Iain, non-purchaser)

The narratives suggest mobile grocery shopping would be more suitable for bigger families. The presence of children would be another facilitator. During the interview three respondents, who are purchasers, (Derri, Wai, and Che, see table 4.1) mentioned their children frequently.

In addition, household location may also be a predictor of intention to use mobile grocery shopping because of the mobile signal problem involved; in some areas the delivery service is difficult to arrange. One respondent mentioned:

"Maybe in this part of the country it's not quite as good, because we don't have that many big shops. So if you try to get a slot for something, you can't get one until 2 or 3 days' time or you have to pay the premium price for the slot you do want… the slots are difficult to get … I'm not a big commuter or something, I can understand people doing it on their way home, and get it delivered tomorrow, but that's not really the situation in this area of the country because we don't have that sort of commute." (Heather, non-purchaser)

This respondent lived near Exeter, and she thought the delivery slots could be hard to choose. This piece of data could be representative of the non-purchasers who live away from metropolitan areas; these people were concerned that there are fewer choices for a convenient delivery slot.

Two other respondents who lived in remote areas, however said their home location does not affect the usage decision – Iain who came from a village near Glasgow mentioned: "I guess buying remotely by a laptop or phone I guess would benefit, it saves times for travel."; Steve from a village near Doncaster mentioned: "Location wouldn't have an impact with me." It appears people who live remotely could benefit more from shopping online or on mobile. Because of the different views held by the non-purchasers in terms of effect from their household location, the importance of household location is somewhat unclear when determining the customers' intention of using mobile grocery shopping.

During the interview the author also noticed a difference between purchaser and non-purchaser's age (note: their age was not asked) – the screen size to be more of an issue for elderly respondents because of their eye sight; on the other

hand, younger age users may have greater dependence on their mobile phones because of their lifestyle.

4.5 Impediments to grocery shopping by mobile

This section discusses the interview data that relates to respondents' problems, concerns, and bad experiences of shopping for groceries on the smartphone. Some of these barriers are relating to the immaturity of the technology and service, these barriers will become less relevant in future because of the constant development of mobile technology. Some of the barriers may be persistent, and consequently they affect customers' intention to use the service.

Through the interview data analysis, the author summarised 8 themes under this topic, including Trust, Infrastructural constraint, Financial constraint, Ease of use, In-store experience, Anxiety, Perceived skill, and Innovativeness. Table 4.5 denotes these themes mentioned by the individual interviewees. The pattern of the table exhibits that in general, there is not much distinct between purchaser and non-purchaser, but more of commonalities. For purchasers, their concerns are mainly relating to trust, ease of use and in-store experience; whilst for non-purchasers, their concerns and barriers are across all 8 themes. The following sections discuss these themes individually.

Table 4.5 Barriers influencing the intention to use mobile grocery shopping

		Trust	Infrastructural constraint	Financial constraint	Ease of use	In-store experience	Anxiety	Perceived skill	Innovativeness
Andrew	Non-purchaser		x						
Barbara	Non-purchaser	x	x	x	x	x	x	x	
Basia	Non-purchaser	x				x			
Bill	Non-purchaser	x	x		x	x			x
Cathy	Non-purchaser		x	x	x		x	x	x
Charlotte	Non-purchaser	x							
Claire	Non-purchaser	x	x				x		
Dan	Non-purchaser	x	x		x	x			
Dom	Non-purchaser		x	x	x		x		
Heather	Non-purchaser	x	x		x		x		

Name								
Helen	Non-purchaser	x	x			x			
Iain	Non-purchaser				x				
Isgush	Non-purchaser	x					x		
Jane	Non-purchaser				x			x	
Julia	Non-purchaser		x		x				
Lindsey	Non-purchaser		x						
Matthew	Non-purchaser	x			x				
Naomi	Non-purchaser	x	x						
Steve	Non-purchaser	x	x	x		x			
Will	Non-purchaser	x	x						
Caroline	Purchaser	x	x			x			
Che	Purchaser		x		x	x			
Derri	Purchaser	x			x	x			
Julie	Purchaser	x			x	x			
Kate	Purchaser	x	x						
Monica	Purchaser								
Robert	Purchaser	x							
Robert B	Purchaser	x			x	x			
Romi	Purchaser				x	x			
Tom	Purchaser	x	x			x			
Wai	Purchaser					x			
Zoten	Purchaser	x			x				

Source: Author

4.5.1 Trust/perceived risk

As shown in table 4.5, trust is the most mentioned theme by both purchasers and non-purchasers. The low level of trust may relate to a low perception of services quality provided by the grocer; including poor quality products, poor customer service, unsuitable substitution and unpunctual delivery service. The low quality of service is seen as a risk of buying groceries on the mobile. If non-purchasers perceive a low level of trust, they are less likely to adopt. For purchasers, if they had a poor experience in the past, they would consider another retailer; some may hesitate to use the service again.

One respondent summarised that the trust issues are owing to a lack of control by the customers:

"Maybe they get my order wrong… maybe they are late so causes other plans to cancel, and I have no control when the delivery's gonna come. I will have no

control of what they are replacing with. So, loss of control." (Naomi, non-purchaser)

According to the data analysis, customers perceive two tiers of trust: tier one relates to the customers' trust of the technology itself. They were concerned about the security of their bank card and personal information stored on their mobile phone. Tier two on the other hand, relates to the trust of the retailer, especially the quality of product and service to be received. Table 4.6 presents the identification of tier 1 and tier 2 trust mentioned by purchasers and non-purchasers.

Table 4.6 A comparison of two tiers of trust mentioned by purchasers and non-purchaser

		Tier 1: security concerns	Tier 2: quality concerns
Andrew	Non-purchaser		
Barbara	Non-purchaser		
Basia	Non-purchaser		X
Bill	Non-purchaser	x	
Cathy	Non-purchaser		
Charlotte	Non-purchaser	x	
Claire	Non-purchaser		X
Dan	Non-purchaser		X
Dom	Non-purchaser		
Heather	Non-purchaser	x	
Helen	Non-purchaser	x	
Iain	Non-purchaser		
Isgush	Non-purchaser		X
Jane	Non-purchaser		
Julia	Non-purchaser		
Lindsey	Non-purchaser		
Matthew	Non-purchaser		X
Naomi	Non-purchaser	x	
Steve	Non-purchaser		X
Will	Non-purchaser	x	

Caroline	Purchaser		X
Che	Purchaser		
Derri	Purchaser		X
Julie	Purchaser		X
Kate	Purchaser		X
Monica	Purchaser		
Robert	Purchaser		X
Robert B	Purchaser		X
Romi	Purchaser		
Tom	Purchaser		X
Wai	Purchaser		
Zoten	Purchaser	x	

Source: Author

As shown in table 4.6, both tier one and tier two risk perceptions are mentioned by non-purchasers – they are in doubt of the safety of using the technology. In the meantime, they also question the reliability of the grocer. In contrast, it seems purchasers are not too worried about giving bank card details to the grocer. Their risk perception is much related to receiving poor products and services.

Past online grocery shopping experience provides customers with a certain level of confidence of bank card safety. According to the non-purchaser interview data, those who had previous online grocery shopping experience are more likely to adopt mobile shopping (for example Andrew, who is a male non-purchaser), because they believe it is safe to provide bank card details. Whilst those who didn't use online grocery shopping before, are sceptical to the service because of various risk perceptions. Retailers may need to treat those two types of potential shoppers separately where possible, when they are promoting the mobile channel to the public.

Tier 1 trust: security concerns

Some customers refuse to use mobile shopping because the concerns of their personal information and bank card security. New adopters have to accept the fact that they need to provide their bank card details and home address to the

vendor. According to table 4.5 and table 4.1, amongst 6 of the non-purchasers who were concerned about security, 4 were female (67%). It could be that female shoppers are more cautious about the potential fraud and security risks before they adopt the service. See the statements below for example:

"Probably the safety of the card." (Charlotte, non-purchaser)

"The concern is security."(Helen, non-purchaser)

Some respondents explained the risk perception is relating to the concerns of giving away their bank card and personal information to the grocer:

"…is it safe? I'm putting in my bank details, do I trust this supermarket to look after my details, so bank details and addresses. So if there's some way for someone can get both of these bits of information, it would mean I would be in risk of fraud." (Naomi, non-purchaser)

This respondent expressed her concern of fraud because she did not trust the grocer to look after her bank detail and home address. A few other non-purchasers also mentioned they feel unsafe when giving away these details to the grocer via a smartphone:

"I'm not keen on putting my bank details into an app; I would rather use a PC, and put in physically my card details on that transaction, rather than having them embedded in my phone. I don't know anything about the security of it, I just feel it's more secure on a PC than on a mobile phone." (Heather, non-purchaser)

"When you press the smartphone they may start to charge you, and you don't know what's gonna happen, so I trust it on my laptop a little bit more."(Babara, non-purchaser)

"Someone could hack my phone or I could lose my phone, so my personal information leakage. I think computer as a technology it has got better maturity, so the security is more refined and more stable, and proven. And also it's at home, it's in my house I don't take it out and about so my computer is secure in terms of access because it's in the cupboard in my house." (Will, non-purchaser)

Above comments show that non-purchasers are concerned about invisible charges when using a mobile phone to make purchases. They somehow trust computers more than smartphones.

One respondent explained the concern is relating to a low confidence of technology and potential virus on the smartphone:

"I think I'm a little bit suspicious about the technology, the possibility of viruses getting into the smartphone, if I'm using my credit card or put my banking details into my smartphone, so I'm a little bit concern about the security aspect of it … Probably once I overcome the concerns I would be prepared to try it. If I can get some assurances, I mean have security software on my phone." (Bill, non-purchaser)

As this respondent concluded, a few non-purchasers were only prepared to use it when the mobile phone is proved virus free.

One respondent mentioned that before adopting mobile grocery shopping a few years ago, she was concerned about the safety of her bank details:

"I worried about the safety of my credit card details." (Julie, purchaser)

The respondent further explained that she is now not too concerned because the technology is improving and her bank would take care of her:

"There is a risk on any app, I'm not saying there's a chance something could happen but I'm not too concerned, I think the technology today I fell reasonably safe, I'm pretty sure if there's a problem my bank will sort it out." (Julie, purchaser)

There is wide concern about security among non-purchasers, a few of the respondents, particularly male respondents claimed they have no problem with providing the bank card and personal information to the grocer:

"I don't think concerns would be security."(Dom, non-purchaser)

Another respondent, Dan, explained the reason why he is not concerned about the security issues:

"…If I trust the store, I don't mind they store my card details. I know people concerns cards stolen or lose of personal information… and sensitive information. Come on if you lose your sensitive information you can lose your sensitive information anywhere, so for the trustworthy of the store, you know that your information is protected – from your past experience, why wouldn't you just trust them, let them to protect your information and to let your shopping more efficient." (Dan, non-purchaser)

This respondent argued there is a minimum risk of privacy leakage from the retailer. Allowing the grocer to keep customer information however will help customers shop more efficiently online. For example some app features such as finger print one-click purchase can be achieved on the mobile.

Another respondent agreed that it is safe to present a bank card to the grocer, she mentioned:

"I kind of trust the big companies I would shop from they have a secured website, I have a faithful confidence they have got security measures in place it's not too risky when I buy it on my mobile." (Lindsey, non-purchaser)

There are mixed views of risk perception according to the data from non-purchasers interview. Despite the fact that mobile shopping is substantially less risky than online shopping, a number of potential adopters are not aware of this. Retailers operating on the mobile channel should consider promoting the safety fact in order to attract non-purchasers' attention.

Tier 2 trust: quality concerns

The second tier of trust is relating to the customers' concerns of product quality and service quality. In general, shoppers are worried about these aspects: receiving low quality products, having to deal with customer service centres, receiving unsuitable substitutions, and receiving poor delivery service.

Product quality

In America, one of the main motivations customers to buy groceries online is that they believe the product quality is better (Nielsen, 2016). In contrast, the

concern of receiving low quality products is one of the main barriers for British shoppers to going online or mobile for grocery shopping. See quotations below for example:

"You don't really see the product, so you are not really sure about the quality you're getting, especially the quality of the vegetables maybe." (Basia, non-purchaser)

"Because it's not you actually picking up the product, you can't check it yourself to see the quality of it. And that's the only problem." (Matthew, non-purchaser)

"For convenience I found it easier to go in store, get exactly what I want, and buy it. Because that comes from the concern I won't get exactly what I want from mobile or delivery service." (Tom, purchaser)

"In the shop you can knock on the grapefruit and know it's the right kind of deal, but when you buy on the smartphone someone else send you the grapefruit you don't know if that's gonna be good or not." (Robert B, purchaser)

The concern of receiving low quality products may equate to a low trust to the retailer. This is particularly obvious among the non-purchasers who have not had any online grocery shopping experience, for example:

"When you are selling something that is perishable… how do you ensure the quality that I'm buying is the quality that I'm receiving? … Let's say, I just don't believe it' reliable." (Isgush, non-purchaser)

Usually shoppers concern more about the perishable products than packed products. Their attitude toward buying perishable and non-perishable products online affect their intention to choose the alternative shopping channel, see below statements for example:

"I can divide into two categories, one is the groceries have standard packaging, and those groceries I'm confident … it's always the same packaging, always the same quantity, always the same quality. It's only when the part of the groceries where the weight and size that matters. They are different from each batches, week by week, that's the part that I'm not confident." (Dan, non-purchaser)

"When buying online you don't really know what to expect from the quality sometimes. Unless you know the brands, so you know what to expect. When it

comes to vegetables or food, you are not always sure what you can get from the quality, it can vary." (Basia, non-purchaser)

Picot-Coupey et al. (2009) explained that consumers fear buying fresh food online because of the quality concern – online grocery shoppers prefer packaged products, bulky products, high quality products that can be stored at home, and routine products consumers know well.

A few of the purchasers shared their experiences of receiving low quality products, particularly meat and vegetables:

"When you going to the shop you would go to the back and pick the fresh or put the longest date, You get something like: 'oh…I've only got 2 days to eat a massive bag of coleslaw' – we had salad for 2 days, you know they don't give enough dates on things sometimes." (Derri, purchaser)

"Some inferiors products … making sure strawberries they haven't got any things on them. We had some salad, the use-by date was like the next day, whilst if I was in store I wouldn't pick it up, I would pick it up a few days later." (Caroline, purchaser)

"I ordered seafood salad when I checked the date it was 2-days out of date. Most people do online shopping they do it for a week, it's no good to put fresh stuff in if they only got 2 days life on it. If you are buying meat or dairies having a very very short life is very inconvenient, it just means you have to go out shopping again, it defects your object of ordering all these stuff online. You don't always have time to check on the doorstep, you just unload it, you are not always checking because you know the driver has other people to deliver, you don't have the time. So it's annoying you ordered something and it says used by tomorrow. It can be very frustrating. It's such a waste, I still have the product, I know I can apply for a refund, but it's surely not helping the supermarket because the lost the product and they need to pay me as well." (Julie, purchaser)

"My god mum… she's got Sainsbury's deliver to her, put it all away, about six things she received were all out of date, which is terrible they shouldn't do that. And plus they were late because they have to come from a different store. So that was a really bad experience but she gets the money off the next shop she did in Sainsbury's and her delivery charge taken off and they replace the items

so that was a good part of it, but it shouldn't have happened in the first place." (Kate, purchaser)

Those narratives above show receiving low quality products seems to be a common problem amongst UK consumers, despite retailers nowadays refund quickly to their customers for low quality products. Online shopping offers convenience to the customers, however if refund activity is always involved in the process, customers will hesitate to shop from these alternative channels because of the inconvenience.

During the interview, only one respondent believed the products are carefully picked by the retailer:

"The quality of the products – I'm happy to see they picked up the products with customer in mind, with the same way I would do when I'm in store." (Che, purchaser)

She also argued the sell-by date is assured when she ordered on the app:

"It always marks that… if you buy this particular product… how long is the shelf time; it always tells you… like… that it expires one week plus or two weeks plus." (Che, purchaser)

One respondent mentioned the order fulfilment is also important; grocers should bag the products carefully:

"I think having people pick personally, you know, proper food. Not giving you the stuff from the front of the shelf. That would be a big difference, if they actually got their staff to pick as if they are buying for themselves, not just throwing things in there." (Derri, purchaser)

Despite the quality concerns and bad experiences, purchasers continue to order groceries on their apps. This could be as a result of the effort of quality control made by the grocers. According to the interview data, respondents mentioned that some progress was already made regarding the product quality control:

"I think they are getting… I think the people that pack now are getting better."(Caroline, purchaser)

"In the last 4 years they addressed that, the quality of their meat and their fresh stuff are awful a lot better now. The quality is actually quite consistent now… as

the things got improved especially the quality, it just makes things much easier." (Julie, purchaser)

While the grocers are improving the product quality, some non-purchasers argued there is a lack of a policy or "industrial standard" in place to protect consumers:

"what I would really need before switching my shopping habit would be until to ensure there are standards the grocery supplying agency, … I'm waiting for it becomes mature.'" (Isgush, non-purchaser)

"They are not necessarily standardised in quantity or in size, for example if you buy lettuce sometimes for this batch it can be big, for the next batch it can be small, you can't tell from online grocery shopping, so basically I still need to physically go to the store to buy those kind of… you know… groceries, I need to check the size." (Dan, non-purchaser)

These respondents thought the mobile shopping function is not mature enough. They would rather wait until explicit regulations are put in place to assure the product quality.

Customer service experience

Most grocers refund or compensate their customers for low quality product or service, however consumers still hesitate to contact the customer service team for a refund because of the potential hassle involved. Noticeably only female respondents mentioned they would hesitate to use the service because of potential efforts required to deal with customer service. See below statements for example:

"I think if they have their call centre in the UK that will be good, because you talk to people that are a million miles away where English isn't their first language, sometimes it's really hard to communicate where the problem was." (Derri, purchaser)

This respondent argued that the customer service team should be based in the UK otherwise it would be difficult to communicate.

Another respondent also mentioned her reluctance to deal with customer service:

"If anything is out of date I may have to call the customer service, which means I need to spend time to deal with return and refund, this is the least thing I want to do with my shopping, it is a small amount of money but it makes you uncomfortable." (Monica, purchaser)

One reason customers choose mobile for shopping is to save time. They may have a busy lifestyle and are therefore reluctant to spend time to refund defect groceries. A certain level of risk perception arises because of this.

Unsuitable substitution

Shoppers do not always receive what they order. When a product is out of stock, the grocer will provide a similar product as substitution. Substitutions are inevitable because of the high turnover rate of grocery products. The concerns about inappropriate substitutions are frequently mentioned in the interviews. See below statements for example:

"I do quite a lot of grocery shopping on my phone, it's unusual not to have at least one substitution, and most of the time they are very good – not always, so it depends on who's done your shopping to be honest, if it's someone who does shopping for her family, you will have better chance for getting something nearer to what you want. If you've got a … possibly a younger person or student who possibly doesn't cook very much then you will get some interesting choices. So it's difficult, they perceive it's the right substitution but luckily you have the right to say this is not a suitable – ok it's inconvenience because it means you have to go out to the shop to choose what you want, but then something you can go to the supermarket and they don't have it anyway, so at least they tried to replace it, for most of the time, the substitutions are all right. It's just occasionally they are not suitable." (Julie, purchaser)

This respondent's attitude towards substitutions was neutral, although she occasionally received unsuitable substitutions. Whilst most other respondents had a negative view on the substitutions, for example:

"My worry is that … what you were ordering may not be what you would get, because they might not have it, they might just change up for something or you might not get it. You are relying on something you ordered, but when it's get delivered they either replaced something they don't have, or they don't have at all." (Tom, purchaser)

"It does save your time but maybe you don't receive the exact goods you want, you know, so times they put strange swaps. The shop would make the swap, when they see fit, but sometimes the swap isn't what you would have done when you have in store." (Robert, purchaser)

"When you order something and when it got delivered it's not what you ordered… Nearly every time, there is always one item they have to change, always! It's quite annoying when they do the wrong things." (Kate, purchaser)

"Sometimes the substitutes were quite weird. You asked for something and they sent you something completely odd. But the good thing is you don't have to take their substitutes. You can get some weird wonderful substitutes." (Derri, purchaser)

Few respondents mentioned they were happy with substitutions as long as the grocer provided a clear explanation:

"When they do have problem offering the product you ordered, for Tesco at least they do put the substitution separately in a different bag, and explain to you that this is the… actually substitution, they always offer you the substitution with exact the same price, so I don't really mind to try a different brand or a slightly variety of what I ordered or what I used to. The guys explained by the door very clearly to you what has happened, and gave you the option whether to accept it or refuse it, I do feel I'm respected, and I have the free choice, so I'm happy to accept it." (Che, purchaser)

From the interview data it appears customers have different opinions on substitutions. The shopping app should provide the option of accepting or rejecting substitutions before the order is made. With the preference set in advance, it could reduce the customers' concerns if they are not in favour of substitutions.

Two male respondents (non-purchasers) claimed the risk of receiving inappropriate substitutions being the main reason they hesitate to use the service:

"The only concern is sometimes your products don't get substituted correctly… so that's my only concern really." (Matthew, non-purchaser)

"One of the reasons why I hadn't decided to go ahead with it, is because I think with grocery shopping online, you have the option to give the supermarket err, you can give them an OK to substitute goods if it's not in stock; and to be honest I don't trust supermarkets to choose something for me if something is out of stock. I think the people who pick goods in the supermarket are lazy so, maybe choose something completely wrong." (Bill, non-purchaser)

According to this statement above, it appears customers repel substitutions because of a lack of trust on the person who fulfils the order. The respondent also mentioned he would use the service if stock availability was provided:

"If they could give – it would be difficult – if they could give guarantee on their website what's available, is available, and not … is gonna be out of stock. So present to me on their website the goods are available at that point of time." (Bill, non-purchaser)

Through the review of all the mentions of substitution, it appears that female respondents were more tolerant on receiving substitutions. On the other hand, substitutions of groceries probably mean the shopping is not in control, and male respondents demonstrated greater concerns of this.

Not receiving items on time

As shown in figure 4.1, delivery is the final stage of mobile grocery shopping. This is the only stage that shoppers can meet the grocer's staff face-to-face. During the interview purchasers were asked to share their poor shopping experiences, a large proportion of respondents, particularly female respondents (5 female compared to 1 male) mentioned unpunctuality of delivery. As a result of this they hesitate to make purchases on their mobile because of potential delay in delivery. One respondent complained about ASDA taking too many

orders without considering their capability to deliver on time during the Christmas season:

"The only other time we had real big problem was last Christmas, it was the 23rd they texted me saying it was delayed, and I'm waiting to go out. They take so many bookings over Christmas but they didn't have enough drivers or vans, physically enough to actually make the delivery. In Christmas Eve, you were still waiting for the grocery delivery for the day before; there was an awful lot people who didn't get anything. Having had the experience, for next Christmas I may only order probably half of what I would need, because I wouldn't like to leave it to chance, and I would go down to Sainsbury's (for the rest of the shopping). Because I have the house full in Christmas, if it doesn't come then it's a real problem. I wouldn't be ordering everything I want from the app, I would do more than one supermarket, to be honest that's the most sensible thing to do. They had too many openings but not enough staff to fulfil the orders. I know it's a stressful time of the year but ASDA shouldn't make promise if they can't deliver." (Julie, purchaser)

This female respondent was responsible for hosting a family Christmas dinner, she almost missed her deliveries. This was due to a high level of demand on delivery service during the holiday season. Owing to this bad experience, the respondent mentioned she rely less on mobile grocery shopping for the next Christmas meal; she would use the local grocer instead. She made a recommendation to the retailer that they should stop taking orders if they could not meet the customer demand.

Some other purchasers also mentioned unpunctuality as key issues they had:

"Sometimes they are rather late, we had one who actually couldn't find our address and so just went back to their shop. That was ASDA. That is the down side. We had this week or last week, and they were 20 minutes late, and we had 7 till 9 (o'clock) slot so that's quite late for turning up, so yeah the slot is pretty rubbish sometimes." (Derri, purchaser)

"I think before it was like late, but they were really apologetic they give us some money back, but to be fair they are always pretty good so yes we have been pretty pleased so far." (Caroline, purchaser)

Both two purchasers had a late delivery, with Caroline (purchaser, see table 4.1) received an apology from the driver, therefore her sentiment is more positive than Derri's (purchaser, see table 4.1). Another purchaser mentioned:

"Normally (the delivery is) always on time, sometimes they are early but you get phone call they say: 'can I pop around?' Yes they are quite good, I like ASDA."(Kate, purchaser)

The respondent experienced an early delivery, but she was content with the fact that the driver kept her updated and asked permission to come early. These narratives highlight the importance of communicating delivery status.

Some purchasers were less tolerant to unpunctuality, for example:

"Sometimes I get phone calls when they are running late – but again you don't really want. I don't want them communicating me rather than just… I told them what to do and they did it, which is selfish but … well communication is useful but it would better they don't have it and they just did what you wanted when you wanted." (Robert, purchaser)

"If I have plans to go out in the evening, or the baby is in bed, it would be messed up if the delivery didn't turn up in the right slot. Luckily it has never happened but it is always one of my concerns." (Monica, purchaser)

The data above shows that shoppers are fearful of not receiving items on time. Unpunctuality disrupts the shoppers' schedule, and consequently undermine customers' trust towards the mobile grocer. However road traffic is often unpredictable. When the driver is experiencing difficulty arriving on time, good practice is to keep them informed (mentioned by several respondents), instead of leaving customers anxiously waiting.

4.5.2 Infrastructural constraint

Some limitations from the smartphone were seen as barriers to adopting mobile grocery shopping. The infrastructural constraint is seen as another major barrier of using smartphone for grocery shopping (see table 4.5). According to the interview data, the author discovered three aspects relating to infrastructural/hardware constraints. These are: battery life, mobile broadband signal, and screen size.

Battery life

For those who spend a long time on their mobile phone, daily battery charge is required. Users may try to avoid the battery drainage by reducing the app usage, including the use of shopping apps. Some respondents mentioned their concerns about battery life:

"Sometimes my phone is not the updated version, that's probably just my phone, so sometimes it just like freeze and it might log out when I was shopping, I had to quickly charge my phone, and it takes a while to load on my screen." (Caroline, purchaser)

"*If the phone is really slow or it is running out of battery, stuff like that then I would go to the shop.*" (Kate, purchaser)

"The concerns might be relating to my battery – has my phone got enough power if I'm out and about." (Bill, non-purchaser)

These narratives indicate that the intention of using mobile grocery shopping could be limited by the battery life of the mobile phone.

Unstable mobile signal

When shopping on the commute, shoppers rely heavily on mobile broadband because wifi is not available. An unstable mobile signal affects the shopping experience. One respondent mentioned her frustration of signal issues:

"The first thing is definitely around the signal stability, when I was on train. Cos when I reach certain stops, I definitely seen sharp drop of the signal stability, and it affects it. And secondly I can only do it when I was on train, so the fact that London underground doesn't have signal is one of the down sides as well." (Che, purcahser)

Because this respondent buys groceries on the train, the sudden loss of mobile signal made her frustrated; she was unsure if the payment was made successfully:

"I had experience before that I'm in the process of authenticating my payment, and suddenly the signal has gone, … if your payment goes through and your order goes through, you get the confirmation via your email account etc. But when you don't have signal, it's kind of… you are very uncertain about that, and you don't want to double pay, so that was probably my biggest concern." (Che, purcahser)

Despite the growth of mobile broadband and free wifi coverage in the UK, there are still a number of blind spots for mobile signal especially on the train lines. This type of infrastructural constraint affects the overall mobile shopping experience and therefore customers may refuse to use the app in transit.

The instability of mobile phone signal is also mentioned by non-purchasers:

"Using your mobile device, you always suffer from you know… signal strength, you can't do anything. But I think in London underground they provide wifi access right now, so I think the wifi coverage is wide enough but it's still not everywhere. So you suffer from your signal loss from time to time." (Dan, non-purchaser)

"I worried … there will be a lot of scrolling involved, and then my phone might loss connection or something, my basket can be wiped… it might lose everything. I don't know with shopping… grocery shopping from your mobile how long things stay in the basket, but if they stayed in there for a few hours that would be quite useful for me I think." (Claire, non-purchaser)

The concerns of signal loss and the consequent erase of shopping baskets were mentioned by these non-purchasers. Mobile grocers should consider developing features such as offline shopping, so that customers can add products to the basket even when the internet is unavailable. This would largely reduce the customers' concerns of signal stability. Nowadays most mobile grocery shopping apps keep the shopping basket for a long period; but the feature is not communicated to the public. Grocers should demonstrate these app features, instead of letting customers guess or explore by themselves.

Screen size

Problems with the size of the mobile phone screen were briefly mentioned by a few purchasers:

"Unlike a laptop you can see a lot more, on the one screen, you can't on your actual phone."(Caroline, purchaser)

"The experience … it is difficult to view everything online due to the screen size."(Tom, purchaser)

"I think maybe like the screen size of the phone restricts that (view) as well, and how the web designer actually fit their text or pictures within a very small screen could affect your experience as well." (Che, purchaser)

The issues of screen size on the other hand, are frequently mentioned by non-purchasers. They are concerned about the palm-size screen's capability to make grocery purchases:

"For me the disadvantage is the phone screen because it's small, I have to put my glasses on." (Cathy, non-purchaser)

Some elderly shoppers refuse to adopt the service only because they could not see things clearly on a smartphone. One younger respondent mentioned the virtual keyboard is too tight thus inhibits his ability to type and search for products:

"...disadvantage would be… umm… not having a big enough screen to look for the products, also can be quite tight having to key in the products on a small keypad, when I'm searching." (Andrew, non-purchaser)

A few respondents argued that compared to a computer, the small screen of a smartphone could not display the full list of the groceries:

"Maybe the screen is too small so I never tried… in the PC it's much better because you've got the big screen when you are shopping. Because groceries' catalogue is very big." (Julia, non-purchaser)

"With computer you have larger screen, you can see more of what's going on…If I don't really know what I want to buy, but I know I need to buy something, it's like I know I want to buy something but I'm not quite sure what I'm getting, it's good to have a big screen to search." (Andrew, non-purchaser)

Non-purchasers believed a bigger screen could display more products, and therefore is helpful in making shopping decisions. In particularly, they thought that comparing price would be a difficult activity on the mobile device.

4.5.3 Financial constraint

Another constraint of mobile shopping intention relates to the consumers' financial situation. Respondents worried that their dated smartphone may not be capable of running shopping apps. They also worried that mobile shopping incurs unnecessary charges for mobile data and the product delivery service.

Smartphone out of date

Some non-purchasers indicated that their decision to use a mobile for grocery shopping is restricted by the age of their smartphone. An out-of-date smartphone may give them the impression that the device is not powerful enough to complete mobile shopping tasks:

"My mobile phone is ok, it's not fantastic, it's a pretty basic smartphone, so it can be a bit slow, so I think perhaps if I had a better phone, then it might encourage me to use it." (Cathy, non-purchaser)

"Unless you have a really really good phone, when it comes mobile shopping you may end up screwed I think." (Dom, non-purchaser)

"… That means I have to change my smartphone, to get an iPhone or something, you know this current one is due for upgrade, that's something I couldn't be bothered with." (Barbara, non-purchaser)

"I have only recently purchased a phone which is capable." (Steve, non-purchaser)

The reality is even a very basic smartphone can carry out shopping tasks, shopping apps takes very little resource to operate on a smartphone.

Mobile data

Some female respondents said their mobile data could be drained by the shopping app, therefore they were hesitate to try the service.

"If perhaps you are out and about, and if you are using your phone, if you are not in the wifi area, that is something to bear in mind how much data you are using, you are using your own data allowance. I would probably worry I may eat up too much of my data and then I have to pay extra for the data." (Cathy, non-purchaser)

"I've got free data from my laptop so I don't want to messing around my mobile data, I know younger people doesn't care, how much their bill costs, and I don't want to pay any more than I have to." (Babara, non-purchaser)

Delivery cost

When shopping online or on mobile, customers are responsible for the cost of delivery service. During the interview, some purchasers mentioned they signed up to the retailer's delivery plan, which entitles them to have a free delivery service if they pay a monthly subscription fee:

"I signed up for their delivery savers plan which entitles me to have free delivery between certain days during the week that's the key drive why I always when I do online grocery I always go with them… Delivery cost does lift your … your overall bill, or budget, so delivery cost is one of the concerns, but because of the promotions and the savers' plan they offer you, I think overall I see the trend by offering the promotions, delivery cost is being absorbed. I guess that potentially encourage online shoppers – like myself." (Che, purchaser)

Another respondent mentioned she preferred to search for cheaper slots instead of buying the monthly delivery plan:

"I think they do charge quite a bit for delivery in prime times, so I turn to try to get my delivery outside the prime times, just shop around for my deliveries. So I turn to try to do them in a cheaper slot. I know we can buy delivery pass and pay certain amount per month, but I hadn't really bothered – if I have done a massive shop I might not need to do another one until the following month, so I haven't bothered with that." (Derri, purchaser)

Despite the purchasers understanding the necessity of a delivery cost, they perceive a threshold for the charge – if the delivery fee goes up too much, they will switch to in-store shopping. For example this respondent mentioned:

"If delivery cost goes up significantly, then I probably have to go back to the actual shop again. I think on average if I can keep it between £1-£2 per week is probably reasonable, because you pay petrol anyway if you go there physically." (Che, purchaser)

Another respondent also mentioned a concern with the delivery cost, but she took into account the overall cost of the shopping:

"If the delivery prices went up, and it depend maybe the meat got better in certain places. If the delivery went up, and the other one is cheaper, then I would rather go for that, but then it all depends on the price of the groceries, and I want it works out. But I would probably try both and put all the same thing in both, and see which one comes up cheaper." (Kate, purchaser)

Meanwhile, the delivery cost also affects non-purchasers' intention to use the service, for example:

"It's the slots problem, and the cost of the slot. I don't approve of paying £5 to get my groceries delivered. I'm not keen on the cost of the slots and they go up and down depending on when it's convenient. So that's probably the biggest deterrent to me for using any kind of mobile shopping." (Heather, non-purchaser)

4.5.4 Ease of use

The previous section (section 4.4.3) discussed the ease of use as a driver to adopt mobile grocery shopping. This section focuses on customers' negative perception of ease of use; and how it affects consumers' intention to use mobile for grocery shopping. According to table 4.1 and table 4.5, a large number of female non-purchasers and one male respondent believed shopping on a mobile would be a difficult task. This belief affects their decision to use the service. The perceived difficulties may result from their experience with other tasks on the mobile phone. Because of the absence of relevant experience, non-purchasers focus on their inability to conduct advanced tasks such as

searching for information, typing words, and making payments. See these statements for example:

"I can't imagine the browsing of the items on the shelf, I can't imagine being very user friendly… I haven't tried it but it's what I imagine."(Jane, non-purchaser)

"Maybe something wouldn't work."(Julia, non-purchaser)

"It sounds complicated; I think there's list of things you need to press."(Barbara, non-purchaser)

"I think it's too complicated process for smartphone be able to do." (Dom, non-purchaser)

Because of the lack of instructions from the grocers, non-purchasers could only rely on an imagined process when they are considering using the service; and sometimes they believe it is a difficult task and therefore decided not to adopt the service. During the interview, one purchaser mentioned the shift of her perception when she started to try mobile grocery shopping for the first time:

"I was surprised, I was surprised how easy it was, I was very unsure that I would find everything I wanted to buy."(Julie, purchaser)

The data indicates that certain educational communications are needed from grocers. It would lift up the potential customers' interest by assuring them the task is not as difficult as they thought. Some respondents mentioned the perceived difficulty may come from the readability problem:

"On the website they have very small subheadings such as groceries, food cupboard, household, so it's all quite small writing, if it's the same layout on the mobile, you're gonna really struggle to see and click which subheading you want – I'm assuming the layout is the same, I don't know." (Cathy, non-purchaser)

This respondent guessed the font size would be too small to read on the mobile, and difficult to navigate. Another respondent mentioned she may not use the app if it required effort to read:

"I probably wouldn't use it if it's something need to read a lot about."(Claire, non-purchaser)

The interview data suggest customers' perception of difficulty, is relating to issues around navigation and search. Female respondents (non-purchasers) in particular, were particularly sceptical with the service because they were not sure how intuitive the process is. The most frequently mentioned aspects under this theme, are navigation issues and search issues, these are discussed in the following sections.

Navigation issues

Grocery shopping apps only provide single-window user-interface (UI), shoppers therefore may not be able to open multiple window for shopping like they did on a computer. One respondent mentioned:

"The switch between the views (windows) is always a bit tricky, so if I … I want to see what's in my basket, and then make choice or add extra things I always have to kind of like go back one step, but not very easy to navigate between the two views." (Che, purchaser)

Another respondent said:

"It is far better now than it was first started, you get all sorts of problems where sometimes you go to the check-out it just wouldn't update, so you'd had to go back and start again, so that was very frustrating. By the time you've done that you might not get the booking slot you had previously because it's gone and somebody else had it. So in the very beginning it was very hard, very frustrating. The technology is a lot better, and the site is much easier to use. The way they categorise the shop just made it a lot easier to find what you want." (Julie, purchaser)

This respondent claimed that the browsing experience has become easier, particularly the navigation of going backwards and forwards, and the effort to book a delivery slot. One purchaser mentioned that mobile grocery shopping authentication needs to develop:

"The payment process should improve … At the moment even though I saved my card, I always have to go to certain authentication to… to reach the final payment stage, which in the changing signal environment I it's not particularly easy. If you are a regular user of that website that links to your profile or sign in

… err account, you don't necessarily need to go through all the steps." (Che, purchaser)

The data highlights that mobile grocery shopping check-out process could be simplified; at the moment customers are required to make multiple clicks and page load. When the mobile signal is unstable, the multiple stages of checking out would irritate the users, consequently they may give up the shopping.

Search issues

When they are shopping in a physical store, customers can talk to a member of staff verbally if they could not find what they want; whilst shopping on the mobile, searching for products is purely relying on the customers themselves. Customers have to use their fingers to type or browse in the app in order to find the products; this is sometimes seen as a difficult task. What makes the experience even worse is the inaccurate search results provided by the app. Consequently, a strong perception of difficulty is formed. One respondent highlighted a search issue with Sainsbury's:

"I've been to Sainsbury's site, and I found their site wasn't as easy, I can't find everything I want, I have searched, but when it comes up it wouldn't be in the department I would normally think it would be in, I don't find their categories are quite so easy." (Julie, purchaser)

This respondent used to go to Sainsbury's local store before she adopted the mobile app. However she discovered the products on the app are not categorised in the same way she saw in-store. This suggests that the categorisation rule on the app should be in-line with the physical shop to avoid confusion.

Another respondent mentioned a good search function ensures a good experience on the mobile:

"A good search functionality… so I don't want to be chorening around the website trying to find something on my mobile, because it seems difficult. I just need to type in a few words, and they just suggest things that I should be buying or I want to be buying." (Tom, purchaser)

The interview data also suggest that an accurate search result could facilitate ease of use perception:

"The accuracy of the search result is definitely a critical factor to keep the shopping journey smooth and easy." (Monica, purchaser)

"You don't have to do about an hour walking to the shops, looking for different foods and it's all in categories and it's easy to find and you can literarily type what you want instead of look for everything." (Kate, purchaser)

The aim of providing search facilities is to enable customers to find products quicker; it could save them time for browsing in the app. But it appears the function needs further development to improve the accuracy, for example one respondent mentioned:

"I remember putting in the right words, it wouldn't come up. So it's a trial and error, try to get the right words in the search box. To find the product you wanted… Tesco I found it's … very tough. Cos they can be very annoying if you type in something and they give you wrong thing. Generally ASDA had a glitch recently which really annoyed me, you put in 'cucumber', and they would give you 'cucumber facewash'… everything, everything but 'cucumber'. So Tesco is very much like that, but it's just 'cucumber' with ASDA for some reason, but with Tesco's it's really difficult to find what you wanted. I got really crossed actually.It was on the app, it's rather strange." (Derri, purchaser)

According to this respondent's narrative, Tesco keeps having problems with search results. A low level of search accuracy may give shoppers the impression that the app is difficult to use. Because of the search problems, the respondent concluded that it is difficult to shop with Tesco and therefore switched to ASDA. The information also suggests mobile grocers need to further develop their app, enhance its vocabulary, in order to provide better search results for a better shopping experience.

Another respondent also mentioned that because of the poor search results, he would move to another retailer:

"If I can't find what I want, then I will probably try a different retailer." (Robert B, purchaser)

A few non-purchasers also claimed the search facilities might be difficult to use, thus affect their intention to shop on their mobile device. This respondent provides a good summary:

"I know through using app or websites – this can be any kinds of shop – sometimes it's very hard to understand even the categories they are talking about. Let alone the actual product that you are after. I don't want have to see through certain type of you know… chilled categories just to get an ice cream. Or I don't want go just specifically search for ice-cream and realise the hyphen is in a wrong place or doesn't have to have a hyphen, or that kind of stuff, I don't want that sort of hassle in my life." (Dom, non-purchaser)

This respondent commented that the confusing categorisation on the app made it difficult to find the products, and the app does not recognise what he types in the search bar.

While the search accuracy needs to be improved, some respondents had a high expectation of the search facilities:

"I would probably prefer that … if I'm logged in, it would show me what my favourites are. For example when I type in 'baked beans', it would show me my history first before showing me what's there. It would be nice to have the search function smarter, I came across recently when I was searching for sausages, I didn't remember what type of sausage it was called, so I just typed in 'sausages'. I was hoping the search to be a lot smarter to tell me: 'ok over the last 2 or 3 orders, you had ordered these sausages, you might want those as well.' So they would prioritise the search results based on my shopping history. It doesn't do it at the moment, not in the Tesco app anyway. What they do now is just give you a selection of what most relevant to your search term, but there's no correlation to what you have ordered in the past, so they would basically give you the most popular items first rather than what you like." (Romi, purchaser)

This respondent complained that the search result is not tailored to her shopping habit – when she searches a product that she bought before, she would like to see her relevant shopping history come in to the top of the search results. However the actual search result did not sort the products by relevance, but by the popularity of the products.

Another respondent mentioned:

"if you had a product, for instance, say, like apples, you wanted to search apples, and you pressed on the apple you are looking at and it comes with a pop up screen with different type of apples and different costs. So you will have more choice." (Andrew, non-purchaser)

This respondent also suggested a smarter search function, which is to provide shopping suggestions while customers search for products. The respondent also claimed an intelligent search function would make mobile grocery shopping more attractive to him.

To improve the search experience, grocers need to upgrade the search functions, including the spelling auto-corrections, recognition of root words, predictive text, and the ability to suggest while the user enters text (Google Analytics, 2016). Improved search function would facilitate a good shopping experience.

4.5.5 In-store shopping experience as a barrier

Shopping in a conventional store provides some un-replicable features compared to shopping remotely. For example, in-store shopping customers can touch and examine the products; they can interact with other people both verbally and physically, and they can take the advantage of buying mark-down products. This experience is not available when customers shopping on their smartphones. According to table 4.5, the absence of in-store shopping experience is another major impediment that influence customers' decision to use the shopping app.

Quite a few consumers are obsessed by the experience of hand-picking products from the shelf in self-service stores. In-store shopping enables customers in charge of the product selections. Clark and Wright (2007) found less than a quarter of shoppers felt buying groceries online gave them increased control, because the products are picked by other people. One female respondent, Claire who is a counsellor with 2 members in her family, mentioned she is very cautious about the product quality; and she believed the products picked by herself would be fresher:

"You can't always see, you can't always pick up the product from the shelf. I'm quite fussy about something like meat for example I would spend a bit of time looking for them, for the ones I think with the least fat or looks nicest or at least has the longest sell-by date. Whereas when you shop online you don't get that luxury of being able to pick it yourself. So I guess with mobile I worried that I can't pick up products myself." (Claire, non-purchaser)

Owing to a lack of trust, the problem is not only for mobile, but is a common for all sorts of online shopping. One other issue raised in the interview is that customers will miss the opportunity to buy mark-down products if they are not visiting the store:

"Certain places like a big store they've got more stock and they need to get rid of it, or certain things that go out of date especially in the grocery which they would do, like you know the mark-down is a lot better in the store, you don't get the mark-down online, because it hasn't got those err sort of things like they haven't got the bakery right there to say: 'we can't sell this bread for tomorrow, you can have it for 5p'. – you miss on those sort of stuff." (Helen, non-purchaser)

Helen is a young marketing manager works in a consumer product company, she was very keen to buy mark-down products in-store and believes this is a unique feature that she would miss.

Regarding the in-store experience, purchasers were more cautious of the absence of the physical activities and atmosphere in-store, rather than the products:

"I like grocery shopping in-store, it's fun, like walking alone the aisles and decide what you can do with those products."(Robert B, purchaser)

Similarly, another respondent mentioned:

"The reason why I might still want to go back to the store and do it in person is again about the experience, because you do like the feeling of picking up things freshly by yourself, I think for me with the little one growing I'd love to show her in store that the variety of products available and give her chance to learn all the fruits and vegetables and different things, just enjoy the fact that we can pick

them up together. So I guess if I go to the store it's for the experience, for different purpose … it's kind of like a family activity together." (Che, purchaser)

This female respondent mentioned despite enjoying using mobile for grocery shopping, she believed in-store grocery shopping is an essential family activity, because it is an opportunity to work with family members, and to show different products to the children.

A few other respondents mentioned that reading product information on a smartphone is stressful; while in-store shopping requires less reading:

"I wanted to order a loaf of bread and it came up with half loaf of bread. I found it quite tough – at least in the shop you can see what you are buying… You're gonna read the size of the product, and the weight of the things. That could be quite stressful for the first a few times." (Derri, purchaser)

"I wondered about whether it might be difficult to see all… the different kinds of… size and pack stuff; you know you can buy things in different sizes, sometimes I bought the wrong size cos I don't know what size I usually but in store, sometimes something really big, or really small turns up. I guess it's online shopping in general not just for mobile." (Claire, non-purchaser)

Shopping in-store, customers get a sense of the size or weight of the product on the shelf. Whilst on the mobile screen, shoppers acquire product information through reading the texts from the product description. Some shoppers are not used to reading the metrics on the mobile, such as loaf, kilogram, or pound. The fear of making mistakes on ordering the wrong size, would prevent them from adopting mobile shopping.

One respondent mentioned the importance of product information:

"I think the product information is very important, sometimes there isn't enough information especially it's a new product. It might look very nice, but there's no information then you think hmm do I want that product? And sometimes the lack of information is enough for me to say: 'I won't try it'. Especially the information about the ingredients, that put me off ordering things because I don't know what's in them… And also cooking information, you can buy products especially chill product, it might not suitable for microwave, two or three times we bought ready meals on the app, only to find they are oven only – that's no good, but the

information wasn't there, so that's quite important piece of information." (Julie, purchaser)

A few respondents who are in the later stages of careers, mentioned they prefer to go to the store because it gives them the feeling of being part of the community. For example:

"I don't mind going to the shop to buy groceries, because you can see the choice, how fresh it is; you can see what's available; you can see what's the special offers are, very easily; it also gets me out of the house, it's like being in the community as well, so there's a social aspect of it." (Bill, non-purchaser)

"I'd like to pop into the local shop instead, I can get out and interact with others, otherwise you will have no social contacts. I go to Sainsbury's every Friday and I always see a lady called Pat or something, and we always have a laugh ask how are you etc etc, and maybe youngsters are not so social as we older people are, you know it's nice to have that interaction with people, saying 'have a nice weekend' – you wouldn't have that on your smartphone would you?" (Barbara, non-purchaser)

The interview data shows that purchasers were less worried about the absence of the joy of hand-picking products in-store. In contrast, non-purchasers showed a greater level of concern for the absence of an in-store shopping experience. For elder generations who grew up with the concept of a self-service supermarket, it is more of a habit to go in-store, therefore it would be difficult for them to adopt mobile shopping.

4.5.6 Anxiety

The fear of making a mistake whilst completing tasks on the smartphone could create a great deal of anxiety for novice smartphone users. This anxiety plays a strong part in putting off potential adopters. Some non-purchasers mentioned buying groceries on the mobile is a bit fiddly task; they could not imagine buying dozens of items on a smartphone, and they worried about mistakes (see table 4.5). The interview data indicates customers' anxiety may rise during shopping, it could also rise during the account sign-up and login process.

Anxieties caused by the shopping activity

The concerns of making a mistake were mainly mentioned by female non-purchasers, with only one male respondent having such concerns. See below narratives:

"I'm always a bit concerned it's gonna go wrong or, something's gonna happened… I think it's too small and fiddly for big shopping… I'm just too busy doing other things, it's just too fiddly I think on my phone." (Heather, non-purchaser)

"My concern is I would make mistake on it, and then the products wouldn't get sent." (Barbara, non-purchaser)

"I concerned about … maybe I pressed a wrong thing or accidently added the things in my basket, and I can't see my basket, I've only got an electronic list, if the list is big because I want to do a big shop, rather do my convenient … you know one shop down the road just for the dinner tonight, if I'm doing a big shop I don't want to scroll through the list just to check if I had accidently added a hundred pots of creams that I don't want." (Dom, non-purchaser)

"Maybe I added lots of things in it, it might go wrong, and then I would loss a good wifi connection or something, and I loss everything in the basket." (Claire, non-purchaser)

One respondent mentioned the concern of making mistakes on the touch screen:

"With the touch screen you may tap the wrong thing, so you have to keep going back because you hit the wrong thing, I'm assuming you may add something to your basket by mistake more easily cos you didn't realise you tapped it." (Cathy, non-purchaser)

These narratives show non-purchasers were cautious when buying groceries on the mobile, because of the concern of making mistakes with their order. Anxiety would be a barrier for them to adopt the service.

Anxieties caused by the login and sign up process

Customers may be apprehensive if the sign-up process is too long. On a touch screen, consumers are more likely to get frustrated when they have to go through an arduous, multi-step task to register an account and password. A lot of personal information, such as name, telephone number and home address, need to be typed on the mobile screen. Retailers are hungry for their customer details, but sometimes the lengthy sign up process drives a poor user experience. During the process, some customers are afraid of making mistakes, thus drop off:

"I think it's gonna be very hard to setup the logins and that sort of stuff, and I can't be bothered. Maybe something like Tesco it would the case that I can just scan my club card or something, and just going like that. But I'm assuming the technology is not there for me to do that, instead of having me putting my name, my surname my date of birth, all these kind of information and I need to click ok and then like 'oh you've already registered', or 'you put the date of birth in a wrong format'. I'd rather it be less time consuming for me to just carry on shopping where I am, and not go through the patronising process of setting up at the first place." (Dom, non-purchaser)

This respondent believed it would be difficult to register a new account, because he thought that the process is long and tedious.

It is therefore an essential practice for grocers to provide their customers a frictionless experience to fill the registration form. Simplifying the registration process could help reduce the abandonment rate. This involves minimising the number of steps required, or using a third-party login for example Facebook or other popular app where the mobile user has an account.

The interview also unveiled that experienced online shoppers may have less perceived difficulties for sign-up, for example:

"Well, I think at this point of time from what I used online shopping, now it's much much better, it's far easier than what I used to have to do with the sign up process, now you just have to provide your email address, your err… your password, your home address, and that's pretty much is; and your billing card, to your… to your account, but that's optional. And that's the absolute minimum information you need to provide for the registration. I don't think there's any complication for that." (Dan, non-purchaser)

This respondent has rich experience of online grocery shopping on a computer, he thinks the online shopping sign up process is simpler than it used to be, and he understands there is a minimum amount of information required to complete the purchase. The narrative shows that people who have past online grocery shopping experience possess a good understanding of the sign-up process, thus they have higher tolerance.

On the other hand, some respondents thought they had to memorise their account and password:

"I'm worried I might just not gonna remember my password, and I'd rather use my main computer cos I know my password saved on it. And one of other things going on the mobile app is 'oh if I do have to remember my own?', honestly sometimes I can't be bothered, I'd rather not have to go back the process of re-setting my password, and just use my own cookies on my computer." (Dom, non-purchaser)

Another non-purchaser mentioned she "hopes" the sign up would be quick and easy:

"If I download the app I would hope I can easily going into my account rather than having to put all your email address, password again to register." (Cathy, non-purchaser)

Above narratives indicate anxiety is more of a barrier for non-purchasers than purchasers. Non-purchasers usually have no clue of the registration process on the app. If they have a negative perception, they may not adopt it. The interview also unveiled a lack of explanation, clarification or education from grocers to communicate the sign up process to the potential users.

4.5.7 Perceived skill

Some respondents, especially female non-purchasers (see table 4.1 and table 4.5), mentioned they were not very skilful with smartphone usage. A low level of skill when using a smartphone, is a barrier of using the device for grocery shopping. Despite the proportion of smartphone ownership being high in the UK, many people may have a smartphone but not be very confident or able to use its potential. See below statements:

"On my smartphone I've got unlimited texts, some megabytes of data I don't really know what that means… I might give it a go if someone showed me on my phone and set it all up for me." (Babara, non-purchaser)

"Using my phone er, I'm probably not very good… so I keep calendar on my phone, I don't do grocery shopping on my phone." (Jane, non-purchaser)

"I downloaded the app to buy ticket – the experience was better than I expected. I'm not very good at this. That's part of the reason I haven't tried to buy groceries." (Cathy, non-purchaser)

It is therefore possible that the familiarity of a smartphone's features may affect the users' decision to use advanced functions such as a grocery shopping app. A low level perception of their smartphone skill could be a barrier for non-purchasers to use mobile for grocery shopping.

The experience of intensive use of mobile apps would lead to a higher level of confidence with their mobile phone, and therefore, it influences the intention and somehow overcomes the perceived difficulty of using shopping apps. For example this respondent mentioned:

"It might be difficult to use or not straightforward to use for the first time. Whereas when you have some experiences of that, then you would probably be more confident to use your mobile. I'm not sure I would gone straight from only shopping in store to use my mobile phone. Although that's just me I know other people are a lot more confident with their phones." (Claire, non-purchaser)

4.5.8 Innovativeness

According to the literature review chapter, personal innovativeness is likely to influence the use of mobile commerce. During the interview, some non-purchasers (see table 4.5) mentioned they were not very interested in new technologies and therefore not keen on the innovative way of purchasing. See these statements for example:

"I'm less innovative, I use clock radio, whilst young people use all these on their smartphone." (Cathy, non-purchaser)

"Any new technology or any new service came out… ok somethings I think are great, let's try it; other things I think I will let other people to try that out first, let it develop, I will see how it develops." (Bill, non-purchaser)

"They have been talking about robots probably since I was born in the 50s, I don't think all these things technology will take over otherwise we will all end up at home! And in a way, if I take that business from the store, it's gonna take other people's job away isn't it?" (Barbara, non-purchaser)

The above statements were mentioned by some elderly respondents; they were sceptical with new technology. A low level of personal innovativeness is likely labelling them as "late laggard" and "late adopter" according to Rogers (2010). Those people are less likely to adopt mobile grocery shopping until the technology is accepted by the vast majority.

4.6 Other factors derived from in-depth interviews

Previous two sections discussed the possible drivers and impediments that influence consumers' decision to use smartphones for grocery shopping. According to the interview data there are other facts or elements that may influence shopper's intention or behaviour using mobile grocery shopping. These elements may not necessarily relate to drivers or barriers to adoption, or be less quantitatively-measurable; but they still have impact on shoppers' decision to use mobile. The author summaries these findings into the following individual topics: 1) First mobile grocery shopping experience; 2) when and where do they normally conduct mobile grocery shopping; 3) better communications are needed; 4) grocers' social media engagement; 5) tips and instructions are needed; 6) immature app launch; 7) the demand of mobile exclusive discount; 8) environmental concerns; 9) situational factors; and 10) attitude towards waiting for delivery. These areas are individually discussed in the subsections below.

4.6.1 First mobile grocery shopping experience

During the interview, a few purchasers described their first-time experience of using a smartphone for grocery shopping. This information explain what would

drive shoppers to use this technology for the first time. See following statements:

"Quite a few years back when I was working, one of my colleagues used to do her online grocery shopping during lunch time. So I was aware of it, but I never trusted online shopping, for some reason I just didn't feel I would get thing I wanted, or it would be … if they substituted something, would I like the substitution. There were lots of things about online shopping I really wasn't sure, I worried about the safety of my credit card details, and I just couldn't see me using it. But then I had to give up my work, and I thought it might be easier, I will give it a try, and that was it. And I thought why I didn't try this before? It does make life a lot more easier… I used the search facility but they don't have everything I need, I can find these in the local big store, but they didn't have them online, so I used to find it annoying and frustrating. But it's a lot better now, there's very few things I find now they don't actually have on the app. Most of the time everything I do need is on there. In the beginning it was a bit awkward, somebody else has got it all for you, but it makes the shopping quicker. As I got more confident in using it, I found it so much easier now." (Julie, purchaser)

This purchaser saw her colleagues use the computer to buy groceries, but she did not follow because she felt insecure at the beginning. This indicates that social influence may not be enough to override a low level of trust. During the process of adoption, the respondent mentioned there were worries about security and product quality. After she tried, she found the process easier than she thought, in addition to be experience reduced her concerns. This respondent adopted mobile shopping in an early stage, and she experienced some frustrations relating to the availability of products on the app, but the problem seems to be resolved now by the grocer.

Another respondent described her first experience like this:

"I was working in London, so it was quite difficult to do everything, I was out of the house like 12 hours a day because of work, and that really did not allow me to do a lot of things. I couldn't clean the house when I wanted, I couldn't do my washing when I wanted, I couldn't do my shopping when I wanted. So I felt that… you know it was important for me to find an easy… quick and easy tool to

fix my weekly shopping trip. So that was perfect to find Tesco app, I could do it on my train to work or from work…I was nicely surprised, because I have used online grocery shopping in the past, I understand the development of this context over the time, so I was nicely surprised it was quite quick to use the app – I could find the products quickly, the speed of the app was quick." (Romi, purchaser)

This respondent decided to use mobile grocery shopping when she was working long distance from home, and could not manage to do housework; she discovered shopping on the train was a good practice to save her time for other responsibilities.

Another purchaser mentioned he previously walked into the store, and found the mobile shopping experience strange because all the groceries are concentrated on the mobile phone screen:

"I'm used to going to the physical grocery store – that's the problem for me (when shopping on the mobile for the first time), it's really weird not being able to hold the thing I was buying as I was buying, even though it's grocery product… in the shop I can read the label, and it feels really weird it abstract that out on a mobile phone screen." (Robert B, purchaser)

Another respondent mentioned her family member helped her with account set up for online grocery shopping, and when she becomes more confident about her mobile skill, she downloaded the app and abandoned the PC:

"My husband set me up an online account… I wasn't able to set up an account, I was that rubbish, so he sets up my account for me, and I kind of do them online from there… and then when I start to get a bit more technology wise, I downloaded the app on my phone… and it saves me a lot of time." (Derri, purchaser)

When asking if she was confident of first time shopping on the mobile phone, the respondent answers:

"No, it was odd, but I've got used to it now, I can't live without it. The first time was a bit stressful, cos I didn't know as I said what to type in, how to find things I wanted, so yeah it was a bit anxious to start with, but you seemed get used to it, and it becomes quite easy after a while, I think it's just getting to know the

site, once you know how to work on their site you kind of feel … less stressed, but yeah it was quite difficult. I remember the first time I said to Simon: 'Why don't we just go to the shop – it's easier!' – because I have never done that before, because it's a hard work to get my head around." (Derri, purchaser)

The respondent was unfamiliar with the website, therefore felt stressed and anxious, she even wanted to give up because she believed shopping in store is easier, but after she overcame the anxiety, she became a heavy user.

As shown from the above data, a few purchasers describe the first mobile grocery shopping experience as being "weird", "awkward" or "odd", mainly because they are used to walking in the store and picking products by hands. Moves to the mobile, shoppers have to complete the task using a palm-size screen. The experience could be difficult for most users especially in the early years of diffusion of smartphone.

One respondent mentioned receiving an incentive, and a "personal approach" of customer engagement, would be attractive when shopping on the mobile for the first time:

"When the first time we shop Morrisons we had a free little ginger bread man, it says welcome to Morrisons online or something, so you know these little things, whilst in ASDA there's nothing like that, I think with Morrisons it's just more personal." (Caroline, purchaser)

Another noticeable fact from the first-time mobile grocery shopping insight is, shoppers are more likely to download the app / navigate to the mobile site provided by their local grocer or the grocer they are familiar with. See below narratives for example:

"ASDA was my first choice on mobile cos I always physically went to their shop, because it's the closest."(Derri, purchaser)

"Tesco is my closes local grocer, I'm familiar with the brand, I'm familiar with the goods they have. So I know what I would expect when they deliver."(Romi, purchaser)

Non-purchasers also claimed they would likely to use the app from the grocers they are familiar with:

"I would probably choose Sainsbury's (app) because I would prefer to go to Sainsbury's, I would choose whichever shop I generally shopping." (Heather, non-purchaser)

"I got used to it, I've been shopping there for several years with Sainsbury's, so I would tend to stick with Sainsbury's app, I know what their products are like, I prefer to buy from Sainsbury's, like they have that type of bread I like, and some frozen food as well, so that's the main reason for choosing Sainsbury's mobile, I already loyal to their brand." (Bill, non-purchaser)

"I guess I would start with Tesco's because that's the one I'm used to, I normally shop with them, and that's the products I want to buy." (Cathy, non-purchaser)

"I don't think Marks and Spencer's do delivery, I use to do food shopping in Marks and Spencer's, but stopped because they didn't do home delivery. So they lost me as a customer ... I use Waitrose now because I live local, I perceive it being a quality supermarket." (Lindsey, non-purchaser)

"In my mind … I would trust Sainsbury's have a good mobile experience; but also because when you go into the store their staff seems to be quite good generally, so I think as a company it's good… I do shop with Aldi sometimes, but I wouldn't go to them on mobile – just because I don't feel like they … cos they are more budget supermarket, I wouldn't think they would have the resource to put into a good user experience, but also they are newer to the UK, I don't know whether they have the same heritage, but Sainsbury's been here for so long, so I sort of trust them more." (Claire, non-purchaser)

Above narratives suggest the shoppers are likely to start with the apps / mobile site provided by the grocers that are local or familiar to them; especially, those with an English heritage may give non-purchasers the impression that they are more reliable than other foreign cost-saving grocers. Also, one respondent raises a fact that there is a lack of premium supermarkets online, which restricts her choice to local Waitrose. The data also indicates it could be difficult for the new comers such as Ocado or Amazon Fresh to attract customers who are first-time mobile shoppers, because these retailers have no physical stores and are new to UK shoppers.

4.6.2 When and where do they normally conduct grocery shopping by mobile?

The interview with purchasers discussed the time and location they usually use mobile for grocery shopping. There is no common or fixed time that shoppers are buying groceries on their mobile, see statements below:

"When we get back home sometimes it was late, so we do it on the mobile phone, you might get one slot for the next day (delivery), but if you are massively late, the chance is slim, you are not gonna have them for the next day, so you might have to wait a little bit, but it's not too bad." (Caroline, purchaser)

"Well whenever is convenient while I'm at home, there's no specific moment to buy, I would do it when I get a few spare minutes. I usually get the delivery between 7 and 8 in the morning, only because it brings me milk and bread for my breakfast… It would usually at home, in front of the fridge or cupboards in the kitchen. But when I use to work it was on the train." (Romi, purchaser)

In terms of location, some purchasers mention they buy groceries on transport:

"I do all in one session because otherwise I forget, and probably normally travelling to or from work, but never at work." (Kate, purchaser)

"I found 20 minutes in the train is probably the time that I can make the most of…" (Che, purchaser)

The data above suggests that in transit, particularly on trains, it is common place that purchasers use their mobile for grocery shopping, although a few others mention they do it at home (for example Julie). The decision of buying on a train may relate back to the busy lifestyle mentioned in the earlier section. If grocers are planning an off-line marketing campaign to promote their app or mobile site, it is likely that train carriages would be an ideal place to start with.

4.6.3 Better communications are needed

Smartphone is after all a mobile phone; the traditional ways of communication, such as voice call, text message, are enhanced with smartphone exclusive communication tools such as app notification, and email. These features are

assembled and keep the customers well updated about their order and the offers available online. One respondent mentioned:

"You have the push notifications: 'By the way, you have that much of time to change your order, if you changed your mind'. It sort of… alerts you. If you have people coming in the weekend you can think ahead, and ask the guests' preference, give them time to make decisions, it helps me to organise the dinner." (Romi, purchaser)

This respondent uses smartphone to maximise her efficiency for hosting parties dinner: the use of app notification makes her aware of the last chance to edit the order, so that she can check the guest's eating preference and their arrival time while she organises the party.

Another respondent suggests mobile grocers should improve their communication:

"I would say the communication should improve, say if they do have to swap something because they don't have in stock they could phone you up and say 'we haven't got this can I swap for…' or 'can I cancel that' and give you the money back form – instead of coming all the way to your door when you really get no choice, cos that what for the dinner tonight. So the communication could be better." (Kate, purchaser)

The data shows grocers do not treat mobile customers and online customers separately in terms of their communication method. Grocers can contact their mobile customers much easier because they all have a smartphone, yet the experience from Kate shows that the grocer did not make the effort to communicate the issues with her order until the delivery man turned up on her door step. The data also shows some purchasers are open to communications from the retailer to discuss their order. By taking the advantage of ease of communication on smartphone, it is possible for the grocer to gain permission from the shopper to schedule a phone call to discuss the substitutions.

One purchaser mentioned she chooses not to receive any communications by the grocer because they may be relating to promotions and are not relevant:

"I just chose not to receive any newsletter or push notifications, I don't want to know. I just want to do my shopping, see it at that time and just leave it. I don't need any suggestions on offers." (Wai, purchaser)

This shopper thinks the push notifications and email communications from the grocer relate to the sales offers, and therefore she decides to turn off these communication channels. This could be representative to a portion of shoppers who turns off communication channels from the grocer because of the refusal to receive marketing materials. When signing up to the account on the smartphone, grocer should explicitly indicate the use of different communication channels, and give customers options to choose relevant information from appropriate channels, instead of allowing them to turn off all communication channels.

4.6.4 Grocers' social media engagement is unnecessary

At present, all major UK grocers engage in social media. Shoppers can follow grocers on Facebook, Twitter and other social media platforms. The author investigated purchasers' views towards using social media to get updates. Analysis show that most shoppers are not interested in seeing grocers on a social media platform:

"No, it's (to follow grocers on social media) not for me. I make my own choice of purchase. I don't remember ever seen any advertisement on Facebook from Tesco… I have so many other interests you know, I don't think that's important to me." (Romi, purchaser)

"Facebook is fine for many things, but waving about how my Sainsbury's shop wasn't one of those."(Julie, purchaser)

"I've got enough on Facebook I don't need ASDA as well." (Derri, purchaser)

Most of the respondents do not follow grocers on social media, and would not plan to follow. Only one respondent (Caroline, purchaser) mentioned she could consider following Morrisons on Facebook. Another respondent mentioned her friends on social media may have greater influence for her purchase decision:

"I'm pretty much on everything (social media websites). It's nice because you can be a bit nosy… the other day I was on Facebook, and one of my friends

bought an aloe vera plant then she said it's like £4, so the next thing I did was went to see if I can get an aloe vera plant. So things like that when you notice things, it makes you think 'ah I could deal with that' or 'I want that'. So yes, they are quite good especially social media." (Kate, purchaser)

The data from above shows when it comes to the power of social media, shoppers' friends may have greater influence than a grocers' social media team. Given the fact that shoppers are not interested in seeing grocers on social media, the grocers should re-consider their digital strategy, allocating less budget to social media.

4.6.5 Tips and instructions are needed

Although most purchasers agree it is an easy process to buy groceries by mobile, some suggest tips and instructions would be a good thing to have, so that the shopping process could potentially become easier and even more efficient. One respondent stated:

"Tips could be useful, or recipe might be handy…. and maybe how you use the products might be useful."(Julie, purchaser)

Another respondent suggested possible ways a grocer could deliver the tips and instructions about grocery shopping:

"It would be good to have more mobile specific communications I suppose, you know, like when they send emails to you … err to attach a barcode to download the app, or some sort of tips, you know, on how to use the app the best. So I'm using it, am I maximising my usage? Am I doing the right thing? How can I improve my experience by using the app? – I don't know, and I don't have the time to explore all the different options that they have, so I usually find features by chance or by accident, you know. Are there other cool things I could use in the app? That would be good to know!" (Romi, purchaser)

This respondent mentioned earlier that she discovered the shopping app on her own initiative when browsing online, and believed there are hidden features that she was not aware of, because she did not have enough time to research. Therefore, she suggests the grocer provides tips to make the mobile shopping more efficient.

Another respondent mentioned that, for new purchasers without tips and instructions, it could be a "trial and error" experience:

"The first time I did them, I struggled a little bit … I found it quite tough to get my head around …it's a trial and error … but now I've got the hang of it." (Derri, purchaser)

The context of this piece of narrative is relating to the respondent's first experience of searching products on ASDA's app; it shows a new mobile shopper has to explore the process solely by him/herself without other's help. Therefore it would be hugely beneficial to first time shoppers if the mobile grocer offered tips and instructions for first time shoppers who are not confident with their skills. The respondent has now become a heavy user of mobile grocery shopping, despite this, she claimed there are some other functions in the app that she did not make the most, there are certain functions available but she does not have time to learn how to use them:

"I think you can set up a shopping list on ASDA, I haven't done that yet, I haven't really got around to do it, cos I know it would take me a bit of time to do, but really I should do it because it will save me time when I do my orders… I don't know how it works, I might need to learn how to use it." (Derri)

This data suggests that no matter how experienced shoppers are, there is a demand of tips and instructions of using the app. The demand of tips and tricks may be related to shoppers' perceived skilfulness. Yet few effort was made by the grocers to support their customers in this new channel.

4.6.6 Immature app launch

During the interviews, the author noticed a few early adopters who used Sainsbury's mobile app a few years ago, but they all had a very poor experience. These purchasers downloaded the app when it was released in the app store, however due to the immature technology and logistics, the app did not function properly at that time:

"I use very much my local ones, so I chose Sainsbury's app – but I've thrown away, cos it's a terrible experience on mobile" (Tom, purchaser).

The respondent described his first experience of using Sainsbury's app:

"Sainsbury's online, the grocery experience is just not what you expect; to me, it feels like their mobile website is very much directing myself through going to their shops, and so they don't allow me to get a lot of information of their mobile website, that's quite difficult, so for example when I wanted to do grocery shopping, their website is very much direct towards electronical devices or things like that, so it's not a grocery website that I'm aware of… it tries to direct me in-store!" (Tom).

The respondent reiterates it happened "a couple of years back", but since then he got the impression that mobile grocery shopping is inconvenient and time consuming. He stated:

"It was difficult, not as convenient as I like it to be, and just more time consuming than it should be." (Tom, purchaser)

Another respondent also had a poor experience with Sainsbury's app when the app was initially launched:

"Well I tried Sainsbury's in the past but I had bad experience with them but that was long time ago so, I would hope them have improved." (Romi, purchaser)

The respondent further described her experience of using the Sainsbury's app:

"I use to live near a Sainsbury's local, it's a small store and they look at the products in that store in correlation to where you are, so when I was searching for a specific toothpaste they wasn't able to find it online because it's on a link to the local store stock, which, to me was just weird, it's terrible you know – you are offering online service, which is unlimited, you should have everything not just what's in the local stock, so I didn't enjoy that, but that was long time ago, that was probably 3 or 4 years ago now." (Romi, purchaser)

Both respondents are early adopters of mobile grocery shopping, and they both selected Sainsbury's app because they live near the grocer's local convenience store. Their experiences are the same – the app did not function as they expected, instead of ordering groceries online and delivering the products to their house, the app directed them to go to the local store. Both of them were disappointed – Respondent Romi uses the word "terrible" to describe the experience; Respondent Tom is less patient, and decides to give up, and has never used the mobile app to buy groceries since the bad experience. Romi on

the other hand, tries Tesco's app instead, and kept shopping with the retailer since then. The two respondents never tried Sainsbury's app again despite the app significantly developed, and now functioning as other grocery shopping apps do.

This case indicates that grocers' early entrance to the mobile channel without proper development of their app and corresponding logistics could result in losing their shoppers permanently. It would also undermine the brand image – as Tom mentioned:

"It (Sainsbury's app) was difficult, and not user friendly", he mentioned the poor design of the app made him not wanting to use it again: "There's a few poorly design websites, so like I mentioned Sainsbury's before it's just not user friendly enough for me to want to use it. Actually that gives me some bad experience of the brand if you like." (Tom, purchaser)

The immature app not only made the grocer lose early adopters, but lead those shoppers to suspect the quality and service provided by the grocer as a whole was poor. Therefore those grocers are facing the challenge of shifting potential shoppers' impression created by the immature apps a few years ago; this would mean necessary investments in communications about the improvement of the app they made, and a change of brand image.

4.6.7 The demand of exclusive discounts on mobile
A few respondents, both purchasers and non-purchasers mention their desire for mobile exclusive discounts. For example:

"Maybe like a discount code, I usually found them from like cloth stores, so that's quite good if I got from the supermarket chain."(Caroline, purchaser)

"(I need) More promotions – I probably do missed some of promotions they have in store, so maybe they can offer … like special online only offers, could be incentives there." (Che, purchaser)

This is mainly caused by a combination of a low cost perception and change of shopping environment:

Shoppers think they deserve exclusive discounts because of the belief that the operating cost is lower online than in-store: savvy shoppers may have recognised selling groceries online would save the grocer's costs, including premises rental, labour and utilities. Therefore consumers thought they deserve better promotions online than in-store. For example:

"I'm thinking a discount for not having a customer service point aspect, cos you are not using members of staff to err ask where things are or check out things like that. I want a discount or maybe a cashback, or maybe a point system – points!" (Andrew, non-purchaser)

This respondent thinks grocers should reward him for using self-service because he is not using the members of staff from the retailer.

On the other hand, the desire for mobile exclusive offers may be caused by the knowledge transferring from in-store to mobile: Consumers get used to the ubiquitous promotion banners, Gondola-end, radio broadcast, and FSDU (free standing display units) in the supermarket. During the process of transferring the experience of in-store shopping to smartphone based shopping, consumers may fear that they missed the promotions in-store. Retailers could bombard promotions to the customers in store, but they could not replicate such impact on mobile or online due to the limited space to display. The only way to showcase promotions on mobile website or app is through tagging a promotion banner on the product image, with a few words to describe the offer. Visually, the promotion density creates a huge contrast between in-store and on mobile. See figure 4.2 below, a visual comparison of Tesco promotion between in-store and on mobile.

Figure 4.2 The visual contrast between Tesco promotions in store and on mobile

On mobile A:
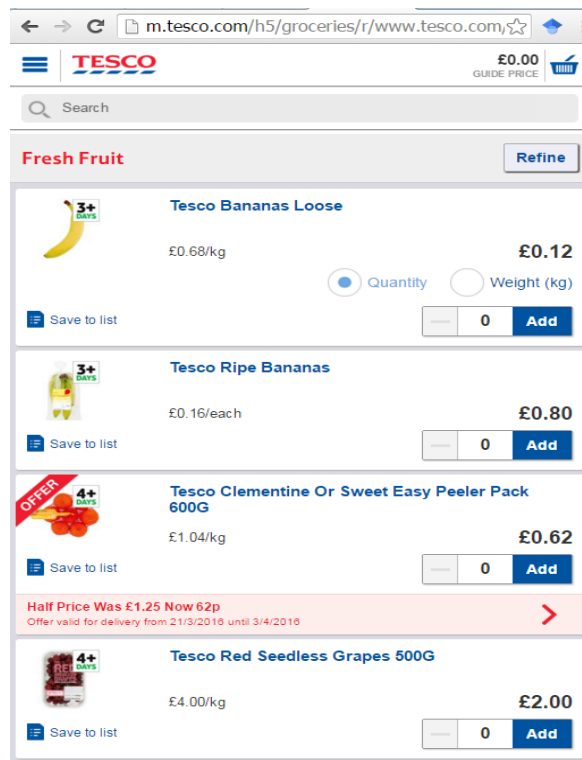
In store B:

Source: Author

The upper image, Figure 4.2A is a screenshot from the landing page of fresh fruit section on Tesco mobile site, the lower image is a snapshot from a Tesco store. On the mobile site, the screen displays 4 items, with 1 item under a price-cut promotion. The execution of promotion on the mobile is through tagging a red banner at the top left of the product image, with some red-colour text

explaining the offer (half price, was £1.25, now 62p), the space taken up by the promotion accounts for less than 10% of the screen. Whilst the lower image, Figure 4.2B is a photograph taken in a Tesco store, it presents a much stronger visual impact to deliver promotion to customers. Although the number of items under "half price" promotion maybe the same on mobile and in store, the visual contrast may give shoppers the impression that there are less promotions on mobile than in-store. As one respondent mentioned:

"I think the only thing is, you know when you are walking into the store, you are automatically slapped in the face with offers, you know, a lot of offers! You literately entered a big pile of aisle, well, an aisle which gives you a lot of seasonal offers. I suppose you don't have that luxury on your phone, I suppose it could be a disadvantage because you aren't automatically aware of the offers." (Romi, purchaser)

This respondent mentioned that she loves mobile grocery shopping, but still spends a great deal of time in the physical stores because she can see more promotions.

The narrative indicated that some shoppers believe certain categories are cheaper in-store, and considered the promotions in-store is a "luxury" experience because of the amount of offers they are exposed to. Therefore grocers may need to consider the balance of promotion width and depth between in-store and on mobile, to ensure mobile shoppers are enjoying the same level of discount compared to in-store shopping.

Another respondent mentioned the visual contrast of promotions she can see in store versus mobile:

"I think you get much better deal going into the store. You can see every single offer in front of you. Whereas on a screen, especially small mobile screen, you have one product with its offers on, and I can't see actually there's another product that's exactly the same but it's actually on a better deal, I would choose that in the store, whereas I can't see it on the screen so I might not necessarily get the deal or the best offer by doing it online or on a mobile. Whereas in store you can see everything." (Helen, non-purchaser)

The narrative reflects the image contrast show above (Figure 4.2). It is hard to see many promotions with one glance. Consumers' perceive a gap in terms of

promotions available between mobile and in-store, the grocer may need to consider a certain approach to convincing the non-purchaser that buying on mobile or online would not let them miss the promotions and deals they found in store. Grocers should at least make the customers aware that they enjoy the same discounts across all channels (in store, on-line or on mobile). As one respondent said:

"The other target I'm looking for is to … to be able to compare the price online – I don't have to go … physically going to the store and check the price…You have to be consistent, to be consistently having higher quality … cheaper than other stores, for me to stay with you." (Dan, non-purchaser)

Similarly another respondent mentioned:

"My concern is that I receive less promotions on the mobile than in store, I wouldn't get the same benefits from going into the store… (they should) make sure that their offers in store are gonna be available on their app as well. So I think the assurance is I get the same benefits if I was in the store, including any reductions they might have on that day as well." (Bill, non-purchaser)

It is important to retain the consistency of promotions across different channels, according to the narratives. Also, due to the fact that there are less promotions executed in smaller convenience stores compared to bigger supermarkets, consumers may perceive the idea that "the bigger (store) the better"; and lead to a lower confidence about the depth of promotion or the availability of products when they shop on even smaller devices. One respondent mentioned the effect between small and big screen:

"I think you just feel you will be having a bigger vision of things, if you've got it on a PC you have more items in front of you, so in a way it's like going to a bigger shop, you are going to a little shop if you are going on your mobile, you only have maybe 1 or 2 items on a screen at a time, and you won't have the selections to choose from. So you wouldn't be able to compare the prices of things as well. Whilst if you got them on your PC, you normally have a range of things, and the prices of what they are. I suppose… (shopping on the mobile) I would subconsciously think I'm in a smaller store, so I'm limited to what I can buy because I can't see as much." (Heather, non-purchaser)

Those above narratives confirm shoppers perceive a strong contrast of promotion in-store and on mobile in terms of density. This also relates to the factor "in-store shopping" mentioned in the previous section (4.5.5).

4.6.8 Environmental concerns

A number of respondents mentioned environment concerns during the interview. Some thought avoiding the conventional store may reduce car pollution:

"Yeah I guess you know it probably, saves people wasting of fuel, save the environment; that is one car (delivery) rather than everyone's one hundred cars all drive to the store, of course this would benefit to the environment." (Iain, non-purchaser)

While another argued that the delivery van from the grocers would cause more pollution:

"It's adding to the pollution to the road –the vehicles going around delivery and parking and all that sort of stuff." (Barbara, non-purchaser)

Because the level of carbon dioxide emissions is increasing, British shoppers are increasingly aware of the environmental issue. Shoppers like Iain (purchaser, see table 4.1), see mobile grocery shopping as a solution to protect the environment. Drawing from this idea, grocers should consider using electronic / low emission vans to do the delivery. Low emission vans on the street would be a good way to showcase the grocers' social responsibility, and hence draw attention from customers:

"If they said: 'our vehicles are electric', it's probably a dream – if the vehicles were electric, maybe it would being better for the environment, that would probably be a benefit – but that's online and mobile." (Claire, non-purchaser)

4.6.9 Situational factors

Hand et al. (2009) argued situational factors are often ignored in consumer behaviour research, yet it plays an important role in triggering online grocery shopping. By extending the argument in a mobile grocery shopping context, the

qualitative data indicates that certain situations would facilitate non-purchasers to consider adopting mobile grocery shopping.

Some non-purchasers mentioned that their first mobile grocery purchase may happen from an unreflective urge or desire, in most cases it could be when they are up against constrains such as time pressure or physical incapability. For example:

"I guess having it on your mobile it means you can do when you have down time, like I had imagination for example if you have half an hour commute each day on the bus or something, this is something you can do to fill up the time and do something beneficial I guess." (Iain, non-purchaser)

"Maybe if I'm not at home, or there's problem with my laptop, or I can't get out, I might be ill. I might be busy, I think that will be the occasion when I use the smartphone... maybe in the future I won't have a car, who knows, that type of situations I might use." (Bill, non-purchaser)

"When I haven't got time to get the car, drive up to the big super store, spend an hour or two hours walking around it, slash can't be bothered – it's cold, dark and rainy outside, I would do it then." (Helen, non-purchaser)

These narratives confirm that situational factors, particularly physical restrictions, such as illness or travelling on a bus, would trigger non-purchasers' intention to buy groceries on their smartphone.

One other respondent mentioned another situational factor that does not relate to physical/body constraints:

"So, in the office so sometimes when I'm working I have my laptop and my desktop on, but I will be doing things on my mobile at the same time, so maybe I'm reviewing something, I'm seeing some recipes online that I've got on my big screen, and then I go 'oh I want to buy x y z', so added it on my phone for the shopping list." (Naomi, non-purchaser)

This situational factor is relating to the working environment where computer screens are used for other activities, and she would consider using a smartphone to complete other non-work related tasks such as grocery shopping.

A few others mention they may use the service during holidays:

"I think I might use it if I was going on a self-catering holiday in this country. And if I can have food delivered to the specific place, other than my home, ready when I'm arrived, or within certain hours of arriving, and because you'd only have the access to your mobile – probably, that would be the only way of doing it. So I think on that occasion I might consider it." (Heather, non-purchaser)

"I suppose if I was gone away on holiday I wanted to order shopping for when I came home, I might not take my laptop with me cos it's big and bulky so that is the situation I would consider using my phone."(Cathy, non-purchaser)

"If you are on holiday, they will actually deliver your groceries to the cottage or the self-catering. I was in holiday in Cotswolds, we were in a cottage, I got my groceries delivered to me on the day I arrived. There's no extra cost. That is very useful, it helps you get settled. There is a lot of advantages like this, which I wasn't aware of." (Julie, purchaser)

These different situations provided by the respondents would be a good reference to understand the situational factors triggering mobile grocery shopping intention.

4.6.10 Attitude towards waiting for delivery

After making the order on a smartphone, shoppers need to wait for a certain period to allow the groceries to be delivered. Up against the need of waiting for delivery, a shopper may not be able to arrange the delivery properly in accordance to his/her diary. In such case, he/she may feel being restricted to stay home and wait for the delivery, and consequently a sense of anxiety may arise. The author asks their attitude towards delivery, some respondents have a negative perception:

"…you may have to wait 2 or 3 days, to actually get a slot you want that is convenient to you… It's not convenient to have to wait. I don't want to wait 2 or 3 days, I want it tomorrow or later on that day – if I'm thinking what I need I may need it now probably, rather than in 2 or 3 days' time, I don't think I have enough time to do that." (Heather, non-purchaser)

Due to the difficulty of getting hold of early delivery slots, consumers may consider the shopping process as not straight-forward, and consequently give up. Another respondent also mentioned:

"I guess sometimes when you would go to the shops because you want something right in the second rather than having to going to your phone, search, take a while to find these items that you want to order then to arrive, so that would probably the main frustration." (Robert, purchaser)

The respondent explained that waiting for groceries to arrive is the main concern of making the purchase:

"If you arrange things be delivered between a certain time and you have to leave, or if it they are late, that would be the concerns. If you are not at there for their delivery in your house, you would mess it." (Robert, purchaser)

Some consumers may just simply dislike the idea of delivery:

"I don't like to wait for delivery, that's very inconvenient, I'm a busy person I'm not at home that often, it's like waiting for the gardeners to come or someone comes to clean your window, I don't like it." (Barbara, non-purchaser)

Another one mentioned:

"I just hate when I buy something, it's like: 'it will be delivered between 8am and 7pm', you know, like something set you in the house and wait around, for me that sounds cost more time for me than going to the shop and buying it myself." (Iain, non-purchaser)

This respondent thought the delivery slot would be as long as 12 hours. Although this is a wrong estimate because the actual slot is far shorter than 12 hours; but this reflects that some non-purchasers have no knowledge about grocery delivery, and there is a lack of education from the retailer to inform them the procedure.

In contrast, most purchasers argued the amount of time for groceries' delivery is reasonable, for example:

"I give them one hour slot, that's quite important, cos I don't like… well it's not grocery shop but some other shops they give quite wide window, so you end up like waiting them for two hours, but Tesco for example they give you one hour

delivery slot so you know within that hour you can plan your own stuff." (Che, purchaser)

To resolve potential concerns of waiting for delivery, a leading Swedish grocer has started delivering groceries straight to the shoppers' fridge (Postnord, 2016), this is a pioneering practice to extend the usefulness perception of buying groceries on the smartphone, and shoppers can be keep updated regarding the delivery progress using their phone even when they are not at home. This solution was also mentioned by one of the respondents:

"Unless the course of … concept that the Americans have … that they have a large room at the back of the house, and they can load in there, that would be fantastic – I'm sure it's a good concept, I read it on paper – from outside … the outside wall the deliveryman can open it and load their stuff into the garage where they have their fridge or freezer, can you imagine that could happen? It could be hugely popular." (Barbara, non-purchaser)

4.7 How did customers discover the app / mobile website?

As figure 4.1 showed, the first step to buying groceries on a smartphone is for shoppers to discover the app or mobile website on their device. How did the purchasers come across mobile device as a new shopping channel in the first place? The author discussed this with the purchasers during the interviews regarding their experience and procedure of encountering the grocery shopping app / mobile website on their mobile phone for the first time. Most of the purchasers had never seen any advertisement or promotions from grocers regarding the mobile shopping channel – same for non-purchasers. Below is a selection of narratives stated by the purchasers describing the first time they discovered the app or engaged with mobile grocery shopping:

"It was about 2 years ago, probably for about half a year I used computer, and my friend said: oh you can get the app and do it on your phone. And then I changed, and used my phone. I prefer to use app, it's definitely easier for me." (Wai, purchaser)

This respondent's first mobile grocery shopping experience was introduced by her colleague who suggested using the app to replace her computer.

Another respondent came across the idea in a magazine:

"I read from … I can't remember … an article it's like '10 ways to help working mum to save your time' and so on so forth, and one of the tips is 'to do your grocery shopping online while you are on your journey'. And I found the tips quite helpful, so started that, so the main motivation is to save time as a working mum." (Che, purchaser)

Whilst most other respondents have never seen any hints or suggestions, they came across the idea of mobile grocery shopping through their past knowledge of using a smartphone:

"I think I was looking online on a laptop about how to order things online, because I couldn't get there – the car's broken down, and I was looking and ASDA came up when I first typed in, and then I thought it would be easier on my phone, so I went to the app store download the app and did it for the first time, so it's a lot easier than I thought." (Kate, purchaser)

"It was a weekend we got out and we probably got back maybe something until Sunday so the shops were closed… so my mum works for Morrisons, and now they've got all the new deals as well – they match Aldi and Lidls… when I had that on my phone, everything has gone through and it was absolutely fine. We have said: 'I can't believe I just ordered my shop on my phone!'" (Caroline, purchaser)

As shown from the narratives, grocers have done little to make shoppers aware that they can buy from their mobile devices. Because of the lack of promotion and awareness, respondents adopt mobile grocery shopping in various ways; the common factor is that the source is not provided by the grocers themselves, these respondents found the app or mobile website by their own initiative, for example through exploring the app store (Romi, purchaser), or suggested by a magazine (Che, purchaser) or colleague (Wai, purchaser).

So why did non-purchasers, having known the advantages or benefits of using mobile grocery shopping, not adopt earlier? Put aside the barriers they perceive, the main factor is the lack of awareness of the mobile website and app. This study discovers that a large proportion of non-purchasers have never seen a grocery shopping app or mobile website before. While the smartphones provide a wide range of apps to substitute computers, the smartphone users'

knowledge of using the device maybe only focused on a few apps, they may therefore possess limited knowledge about shopping or grocery shopping apps.

A few non-purchasers know their smartphones have the ability to buy groceries, but the knowledge is based on their previous experience of using a smartphones for other mobile commerce activities, therefore they deduced that the function of buying groceries on their mobile does exist.

For example by asking if they know they can buy groceries on the mobile device, these narratives were collected:

"… I just assume people buy stuff online. You can buy cloths you can buy CDs, why wouldn't you be able to buy food online?" (Naomi, non-purchaser)

"I haven't seen an app, I've seen apps for the nectar card, but it's for the loyalty, rather than the actual grocery buying. I'm just assuming you can go on the Tesco or whatever Sainsbury's via…you know via browser on your phone. But I haven't done it. I don't know for a fact you can do it, I think I just don't know enough about it at the moment, I don't know supermarkets have apps for example." (Claire, non-purchaser)

"Well yes I guess so, we can do online shopping so I guess we can do it." (Basia, non-purchaser)

"I suppose they will have app for you to … download the relevant supermarket app. But I have never seen groceries app."(Cathy, non-purchaser)

When grocers encourage customers to shop online, first of all they should make sure consumers know they can do so. The delivery van is probably the most effective way to promote online shopping. Those vans create millions of impressions to the people on the street every day. Unfortunately, those vans currently miss a huge "call to action" opportunity, i.e. encouraging customers to use their mobile for shopping (see figure 4.3).

A simple icon of "Apple app store" and "Google play store" painted on the van would fit for this purpose; and it would not take much space. Most vans only emphasis is online shopping – the underlying shopping tool is a computer, not a mobile device. Tesco's previous van even had a computer mouse cursor, which may have prevented consumers to consider mobile apps.

When seeing online grocery shopping, consumers may subconsciously think of a computer, which entails a series of actions, including go home, sit down, plug in power, load up computer system, connect to internet, and open the internet browser – a series of tasks ahead of them before they can navigate on to the grocer's website, this would potentially create a barrier for the prospect shopper who wants to buy online immediately.

Figure 4.3 UK "Big 4" grocery vans do not highlight mobile applications

Source: Author

In addition to the delivery vans the grocers should consider using other media channels, including TV, radio, online and offline advertisements, to provide mobile grocery enlightenment, rather than letting potential consumers guess or assume there is an app or mobile website.

The interview data shows that in order to encourage existing online shoppers to buy from mobile sites or apps, the grocer should try to make online shoppers (who use PCs to buy) aware that their shopping accounts are usable on the app, and all their historical data can be synced from computer to mobile. That way, it would encourage more online shoppers to go on mobile, which would

potentially lift sales because the mobile shops can be accessed more frequently.

One other respondent questioned why the grocers are not promoting the mobile channel, he suspects the technology is not mature enough so retailers are fearful of letting their customers use the app:

"I don't understand there isn't a download for Tesco app because you never seen a Tesco app, or an Asda app or Sainsbury's app advertised anywhere, and I think, you know… why not…? – clearly it's either primitive or not very good… I think: why haven't they advertised this better? Umm… cos it's almost like why they don't want me to use my mobile phone to do it? Umm… and then my concern is it's just being rubbish." (Dom, non-purchaser)

The respondent also shares his knowledge in the retail industry:

"I know through my job, that websites are always afterthoughts of what we have done in store, and only recently it started to become … you know as more people shop online they start to try very very slowly to get to the best place, but it's still nowhere near ... I know the mistakes they made online because it requires another team to set it up, and those kind of things are just put them off the process. I just think they need to embrace technology a lot more." (Dom, non-purchaser)

This piece of data further confirms that retailers have not done enough to promote or develop the mobile shopping channel; the grocer's prudence has made shoppers timid about adopting the technology because they think it is not mature enough and may be difficult to use, or causing unnecessary troubles.

4.8 Chapter summary

This chapter aimed to build an understanding of consumers' experience and perception of mobile grocery shopping through an analysis of the qualitative data; this relates to research objective two and three. The author conducted a series of semi-structured interviews, where 32 respondents (including 12 purchasers and 20 non-purchasers) provided in-depth information about drivers and impediments influencing their decision to use a smartphone for grocery shopping. Through content analysis guided by the literature review chapter, the

author identified 15 themes from the interview data that are highly relevant to the research objectives, these themes are: Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Financial Control, Infrastructural Control, Perceived Skill, Past experience, Social Influence, Trust/Perceived Risk, Compatibility, Affinity, Anxiety, Innovativeness, In-store shopping experience, and Demographic Characteristics. Where applicable, the similarity and difference between purchasers and non-purchasers narratives were also discussed throughout the content analysis in each of the above themes.

As shown in section 4.6 and 4.7, a few other topics that are not related to the drivers and barriers of using mobile grocery shopping were discussed in this chapter, although these elements are unquantifiable, the insight highlighted a few important issues for retailers to consider.

The research will now turn to the next chapter, which details the results and analysis of the questionnaires, and where possible makes reference to the differences and similarities of the qualitative research.

Chapter 5 Factors affecting the intention to shop groceries by smartphone: quantitative results

5.1 Introduction

Following the previous chapter on the analysis of interview data, this chapter presents the quantitative analysis of the survey questionnaire. The aim of this chapter is to seek statistical evidence to support the qualitative study, so that research objectives 2 and 3 can be achieved.

The structure of this chapter is organised as follows: first of all, because the chapter provides quantitative data analysis, a descriptive analysis of the survey sample is provided in section 5.2, the key demographic characteristics that distinguish purchasers and non-purchasers are also reported in this section. This is followed by a discussion of the source of the questionnaire items in section 5.3. The main focus of this chapter draws upon the multivariate data analysis. Multivariate analysis are statistical techniques that simultaneously multiple measurements on individuals of a research (Hair 2009). The multivariate data analysis of this study, concerns mainly the Chi-Square Analysis, Exploratory Factor Analysis, and Multiple Regression Analysis, because of the research objectives. In section 5.4, Exploratory Factor Analysis is conducted using the total sample in order to identify the possible factors under investigation. In parallel, two separate factor analysis are carried out, one using the purchasers sample, another one using the non-purchasers sample. This is discussed in section 5.5. In section 5.6, the validity of factor analysis of this study is verified. The survey items that examine respondents' behavioural intention are discussed in section 5.7. The following section (section 5.8) is the main part of this chapter, it provides a detailed procedure explaining how the multiple regression analysis is conducted for this study. Specifically, 5.8.1 explains the key indicators that examine the suitability of multiple regression technique for this study. The next section (5.8.2) discusses the first regression model using the total sample, where the dependent variable is "Behavioural Intention", independent variables are the variables extracted from the factor analysis in section 5.4. The procedure to construct the model, and the final equation of the regression model are also provided in this section. In a similar

fashion, section 5.8.3 discusses the regression models that are constructed in the purchasers sample and the non-purchasers sample. A summary of the regression models is provided in section 5.8.4. In addition, the relationship between two variables, Behavioural Intention and Actual Behaviour, are discussed in section 5.8.5.

5.2 Descriptive statistics for survey sample

The previous chapter identified a set of themes relating to customers' decisions of using a smartphone for grocery shopping. The author carefully compared the existing literature against the themes and narratives from the interview. Consequently, a set of survey items were developed. The survey questionnaire was launched between October and November of 2016 in the United Kingdom, where 300 valid responses were collected online, including 150 purchasers and 150 non-purchasers.

This section presents the sample characteristics from the survey respondents. Table 5.1 shows the demographic information of the respondents for total sample, purchaser sample and non-purchaser sample.

Table 5.1 Respondents' demographic characteristics

	Total sample N=300			Non-purchaser sample n=150			Purchaser sample n=150	
Gender								
	Frequency	Percent		Frequency	Percent		Frequency	Percent
Male	140	46.7		67	44.7		73	48.7
Female	160	53.3		83	55.3		77	51.3
Age								
	Frequency	Percent		Frequency	Percent		Frequency	Percent
Under 25	22	7.3		5	3.3		17	11.3
25-39	129	43.0		49	32.7		80	53.3
40-54	95	31.7		56	37.3		39	26.0
55-64	44	14.7		30	20.0		14	9.3
Above 65	10	3.3		10	6.7		0	0.0
Household Size								
	Frequency	Percent		Frequency	Percent		Frequency	Percent
1	41	13.7		28	18.7		13	8.7
2	102	34.0		57	38.0		45	30.0
3	70	23.3		36	24.0		34	22.7
4	59	19.7		22	14.7		37	24.7
5 or more	28	9.3		7	4.7		21	14.0
Presence of Child(ren)								
	Frequency	Percent		Frequency	Percent		Frequency	Percent
No	169	56.3		110	73.3		59	39.3
Yes	131	43.7		40	26.7		91	60.7
Education Level								
	Frequency	Percent		Frequency	Percent		Frequency	Percent
No formal education	4	1.3		2	1.3		2	1.3
GCSE	69	23.0		39	26.0		30	20.0
A Level	60	20.0		27	18.0		33	22.0
Other	11	3.7		5	3.3		6	4.0
Degree level or higher	156	52.0		77	51.3		79	52.7
Household Location								
	Frequency	Percent		Frequency	Percent		Frequency	Percent
City	201	67.0		96	64.0		105	70.0
Rural area	99	33.0		54	36.0		45	30.0
Online Grocery Shopping Experience (on a PC)								
	Frequency	Percent		Frequency	Percent		Frequency	Percent
No	53	17.7		46	30.7		7	4.7
Yes	247	82.3		104	69.3		143	95.3

Source: Author

The frequency table shows a clear contrast between purchasers and non-purchasers in certain demographics, for example 61% of purchasers have child or children at home, compared to only 27% for non-purchasers. In order to explore the difference in a meaningful way, Chi-Square Test for Independence was used to discover whether is a difference between purchasers and non-purchasers in terms of their gender, age, household size, presence of child, education level, online grocery shopping experience, and household location. See table 5.2 below.

Table 5.2 Pearson's Chi-Square Tests comparing demographics between purchasers and non-purchasers

	Chi-sq value	Asymptotic Significance (2-sided)	Variables
Gender	.5	.487	Male, Female
Age	32.9	.000	Under 25, 25-39 … Above65
Household size	17.8	.001	1,2,… 5 or more
Presence of child	35.2	.000	Have child, No child
Education Level	1.9	.756	No formal education, GCSE, A level, … Degree or higher
Online Grocery Shopping Experience	34.8	.000	Yes, No
Household Location	1.2	.269	City, Rural Area

Source: Author

The inspection of Chi-Square test suggests that the mean of following demographics are statistically different (P<=0.05) between purchasers and non-purchasers:

Age (purchasers are younger), Household size (purchasers have a larger household), Presence of Child (purchasers more likely are those have child), and Online grocery shopping experience (purchasers are more likely to have previous experience of buying groceries on a PC).

On the other hand, according to the Chi-Square analysis, there is no significant difference between purchaser and non-purchaser in terms of gender, education level, and household location (city or rural).

5.3 Development of questionnaire items and survey construct

Through the analysis of the interview data, a few useful narratives were identified by the author. These narratives were used by the author either 1) to develop survey items adapted from existing literature, or 2) to enhance the underlying concept as new survey items. The narratives that served as new survey items were carefully selected by the author to ensure the relevance. Table 5.3 below lists all the survey items, related theme, and the source of literature.

Table 5.3 Item development for mobile grocery shopping intention survey

Code	Theme	Item	Source
PU1	Perceived Usefulness	save time	Adapted from Aldás-Manzano et al. (2009), Davis et al. (1989), Ahn et al. (2005), Wu et al. (2005)
PU2		make better decisions	
PU3		enable healthy eating	
PU4		makes grocery shopping easier	
PU5		Convenient	
PU6		spend money wisely	
PU7		purchase when I want	
PU8		purchase where I want	
PEOU1	Perceived Ease of Use	has clear content category	Adapted from Aldás-Manzano et al. (2009), Davis et al. (1989), Ahn et al. (2005), Wu et al. (2005)
PEOU2		app is intuitive	
PEOU3		can use without help	
PEOU4		can use without effort	
PEOU5		easy find stuff	
PEOU6		has simple checkout process	
PEOU7		easy to arrange delivery	
PE1	Perceived Enjoyment	is fun	Adapted from Lu et al. (2009), Groß (2014)
PE2		is relaxing	
PE3		is enjoyable	
PE4		is pleasant	
PS1	Perceived Skill	able to download app	Adapted from Lu et al. (2009)
PS2		able to navigate site	
PS3		able to make purchases	
PS4		able to shop quickly	
SI1	Social Influence	influenced by important people	Adapted from Yang (2012), López-Nicolás et al. (2008), Nysveen et al. (2005)
SI2		influenced by social circle	
SI3		influenced by colleagues	

SI4		influenced by family members	
SI5		influenced by mass media	
TRUST1	Trust	concern credit card*	Adapted from Wang et al. (2006), Groß (2014)
TRUST2		concern providing personal information*	
TRUST3		concern inappropriate substitution*	
TRUST4		concern low quality item*	
TRUST5		concern customer service*	
TRUST6		concern late delivery*	
PI1	Perceived Innovativeness	try experiment innovation	Adapted from Kim et al. (2010), Slade et al. (2015), Aldás-Manzano et al. (2009)
PI2		excited about innovation	
PI3		first to try innovation	
PI4		know more about innovation	
CMPT1	Compatibility	fit lifestyle	Adapted from Kim et al. (2010), Wu et al. (2005)
CMPT2		balancing work time	
CMPT3		pace of life compatible	
CMPT4		online shopping habits compatible	
AFNT1	Affinity	smartphone for daily activities	Adapted from Aldás-Manzano et al. (2009), Lu et al. (2009)
AFNT2		really miss smartphone	
AFNT3		cannot leave smartphone	
AFNT4		panic without smartphone	
ANXT1	Anxiety	feel apprehensive*	Adapted from Lu et al. (2009)
ANXT2		fear of making mistake*	
ANXT3		intimidate task*	
ANXT4		fiddly task*	
FC1	Financial Control	sufficient mobile data	Adapted from Nysveen et al. (2005), Wang et al. (2006)
FC2		accept delivery cost	
FC3		buy delivery pass	
FC4		up to date smartphone	
IC1	Infrastructural Control	internet speed*	Adapted from and Yang (2012), Coursaris et al. (2003)
IC2		screen size*	
IC3		mobile phone signal*	
IC4		battery life*	
IC5		age of phone*	
ISSE1	In-store Shopping Experience	like to examine products*	Adapted from Hand et al. (2009), Morganosky et al. (2000), Bigné et al. (2007)
ISSE2		enjoy interact with others*	
ISSE3		enjoy walking in supermarket*	
ISSE4		consider a leisure activity*	
ISSE5		travel parking hassle	
ISSE6		carrying lifting annoying	
ISSE7		reluctant to queue	
ISSE8		not environmental friendly	

*Reverse coding

Source: Author

The literature sources of the survey items were mainly adapted from the mobile commerce and online grocery shopping related studies, most of the items were further developed using the related narratives collected from the interview data. Because there is a lack of strong prior theories about the nature of the underlying factors, exploratory factor analysis is appropriate to discover the underlying structure of correlations among observed variables (Salkind, 2007).

5.4 Factor analysis – total sample

This section presents the output of exploratory factor analysis from the total sample (N=300); with its following section (section 5.5) discusses factor analysis for purchaser sample (n=150) and non-purchaser sample (n=150). Section 5.6 provides the suitability of the analysis and validity and internal consistency of the factors analysis.

The 67 items (see table 5.3) from various themes were subjected to principal components analysis (PCA) using SPSS version 21. Prior to performing PCA, the suitability of data for factor analysis was assessed (see section 5.6).

The PCA revealed 12 components with eigenvalue greater than 1, each component and the variance explained, are given in table 5.4. Further inspection on scree plot also exhibited a break after the 12th component (Figure 5.1).

Figure 5.1 Scree Plot for factor analysis (total sample)
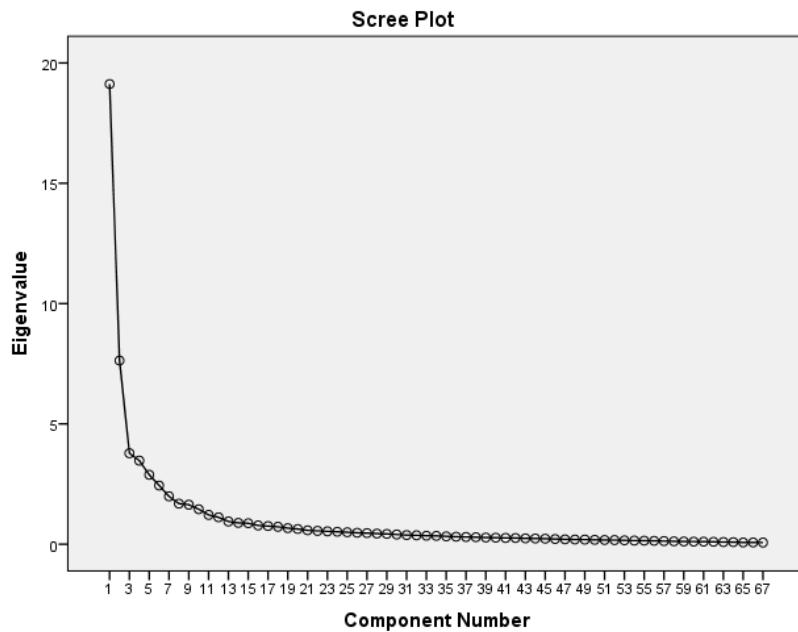
Source: Author

The 12 components explained a total of 72.3% of the variance. To aid in the interpretation of these components, Varimax Rotation was performed. The rotated solution presented a clear structure, with each component showed a number of strong loadings (see table 5.4). The 12 components from the PCA match up with the themes identified from the qualitative study, except two themes, perceived usefulness and compatibility, were merged into one component according to the factor analysis. Through the analysis of the descriptors from these two themes, the author concluded it is feasible to aggregate these two. According to the items, the new component is named as "Lifestyle enhancement". While the rest of the components (11) from PCA reconciled seamlessly to the 11 themes explored from the interview, therefore the names of the themes were transferred directly to label the factors from PCA extraction.

Because of the strong evidence from the qualitative study, and the close connection of the results between the factor analysis and the interview content analysis, the author decided to retain those 12 components for further investigation.

At the end of the factor analysis, each of the 12 factors was scored using the mean of items that belong to the same factor (Factor-Based Scores). For

example, the mean of "Lifestyle enhancement" was calculated as 3.6, this piece of information is also recorded in table 5.4.

Table 5.4 Factors affecting the intention to adopt mobile grocery shopping–
Factor Analysis Results (Varimax Rotation) from total sample

Factors	% of Variance	Reliability (α value)	Items	Mean	Factor loading
Lifestyle enhancement (mean=3.59)	28.542	.951	PU1 save time	3.81	.792
			PU4 makes grocery shopping easier	3.68	.774
			PU5 convenient	3.91	.754
			PU2 make better decisions	3.32	.707
			PU6 spend money wisely	3.37	.683
			CMPT1 fit lifestyle	3.48	.669
			CMPT3 pace of life compatible	3.57	.665
			PU7 purchase whenever I want	3.98	.660
			CMPT4 online shopping habits compatible	3.46	.632
			PU3 enable healthy eating	3.05	.631
			PU8 purchase wherever I want	3.94	.624
			CMPT2 balancing work time	3.45	.599
Perceived ease of use (mean=3.95)	11.391	.917	PEOU6 has simple checkout process	4.06	.798
			PEOU3 can use without help	3.98	.777
			PEOU7 easy to arrange delivery	4.10	.761
			PEOU5 easy find stuff	3.88	.759
			PEOU4 can use without effort	3.97	.734
			PEOU1 has clear content category	3.92	.694
			PEOU2 app is intuitive	3.73	.619
Social influence (mean=2.98)	5.643	.947	SI3 influenced by colleagues	2.85	.831
			SI2 influenced by social circle	2.93	.823
			SI4 influenced by family members	3.19	.777
			SI1 influenced by important people	3.13	.747
			SI5 influenced by mass media	2.80	.732
Trust (mean=2.54)	5.184	.889	TRUST4 concern low quality item	2.47	.824
			TRUST6 concern late delivery	2.57	.777
			TRUST2 concern providing personal information	2.56	.773
			TRUST1 concern credit card	2.50	.744
			TRUST3 concern inappropriate substitution	2.29	.730
			TRUST5 concern customer service	2.82	.725
Infrastructural control (mean=2.75)	4.306	.884	IC4 battery life	2.82	.843
			IC3 mobile phone signal	2.70	.829
			IC1 internet speed	2.76	.807

			IC5 age of phone	3.09	.774
			IC2 screen size	2.36	.704
Affinity (mean=3.78)	3.639	.879	AFNT2 really miss smartphone	3.81	.840
			AFNT3 cannot leave smartphone	3.83	.827
			AFNT4 panic without smartphone	3.53	.797
			AFNT1 smartphone is daily activities	3.95	.704
Financial control (mean=3.63)	2.968	.817	FC2 accept delivery cost	3.62	.775
			FC1 sufficient mobile data	3.79	.746
			FC4 up to date smartphone	3.77	.740
			FC3 buy delivery pass	3.34	.628
Perceived innovativeness (mean=3.41)	2.516	.893	PI3 first to try innovation	3.18	.762
			PI1 try experiment innovation	3.70	.732
			PI4 know more about innovation	3.29	.728
			PI2 excited about innovation	3.46	.715
Anxiety (mean=3.10)	2.447	.881	ANXT2 fear of making mistake	3.18	.813
			ANXT3 intimidate task	3.38	.793
			ANXT1 feel apprehensive	2.93	.738
			ANXT4 fiddly task	2.91	.721
Perceived enjoyment (mean=3.33)	2.169	.923	PE3 enjoyable	3.28	.742
			PE2 relaxing	3.27	.713
			PE1 fun	3.23	.688
			PE4 pleasant	3.52	.665
In-store shopping experience (mean=2.95)	1.816	.734	ISSE3 enjoy walking in supermarket	2.40	.779
			ISSE2 enjoy interacting with others	2.68	.687
			ISSE4 consider a leisure activity	2.89	.660
			ISSE1 like to examine products	1.94	.492
			ISSE5 travel parking hassle	3.37	.444
			ISSE7 reluctant to queue	3.81	.424
			ISSE6 carrying lifting annoying	3.46	.389
			ISSE8 not environmental friendly	3.05	.337
Perceived skill (mean=3.90)	1.667	.904	PS2 able to navigate site	4.02	.735
			PS3 able to make purchases	3.90	.697
			PS1 able to download app	4.02	.689
			PS4 able to shop quickly	3.68	.538

Source: Author

5.5 Factor analysis – purchasers and non-purchasers sample

Following the same procedure from the factor analysis in the total sample, further factor analysis was implemented (PCA with Varimax Rotation) for the purchaser sample and the non-purchaser sample separately. The factor

analysis ran on the purchaser and non-purchaser sample showed a similar result to the total sample, where 12 factors were extracted; items were loaded strongly to the underlying component. See table 5.5 below, the table is an extended version of table 5.4, which shows the factor analysis result from a total sample, a purchaser sample, and a non-purchaser sample.

The purpose of conducting three individual phases of exploratory factor analysis for total sample, purchaser sample, and non-purchaser sample, was to discover if a same list of factors can be generated from different samples, in other words, the practice provided a factorial ground for the upcoming regression analysis for those three samples. As discussed in the methodology chapter, multiple regression analysis is a useful technique to assess the relative influence of a number of independent variables when they are used to predict a dependent variable (Foster et al., 2006). In this study, the independent variables are the products from the factor analysis, and the dependent variable is customers' intention to use mobile for grocery shopping.

The factor analysis proved statistically that no matter what the sample being used, there are 12 individual factors that can be extracted. See table 5.5 for a detailed comparison.

Table 5.5 Factors affecting the intention to adopt mobile grocery shopping– Factor Analysis Results (Varimax Rotation) for total sample, purchaser sample, and non-purchaser sample

Factors	Items	Total Sample		Purchaser Sample		Non-purchaser sample	
		Mean	Factor loading	Mean	Factor loading	Mean	Factor loading
Lifestyle enhancement	PU1	3.81	.792	4.32	.669	3.31	.667
(total sample mean=3.59)	PU4	3.68	.774	4.15	.671	3.21	.681
(purchaser sample mean=4.06)	PU5	3.91	.754	4.27	.633	3.55	.643
(non-purchaser sample mean=3.11)	PU2	3.32	.707	3.90	.545	2.73	.801
	PU6	3.37	.683	3.81	.535	2.93	.735
	CMPT1	3.48	.669	4.07	.523	2.88	.558
	CMPT3	3.57	.665	4.09	.596	3.05	.551
	PU7	3.98	.660	4.29	.562	3.68	.361
	CMPT4	3.46	.632	4.05	.606	2.87	.480
	PU3	3.05	.631	3.55	.425	2.56	.757

	PU8	3.94	.624	4.25	.531	3.62	.299
	CMPT2	3.45	.599	3.99	.388	2.91	.535
Perceived ease of use	PEOU6	4.06	.798	4.20	.665	3.93	.858
(total sample mean=3.95)	PEOU3	3.98	.777	4.15	.692	3.81	.858
(purchaser sample mean=4.11)	PEOU7	4.10	.761	4.25	.676	3.95	.823
(non-purchaser sample mean=3.78)	PEOU5	3.88	.759	4.02	.612	3.73	.831
	PEOU4	3.97	.734	4.12	.620	3.81	.783
	PEOU1	3.92	.694	4.13	.652	3.71	.735
	PEOU2	3.73	.619	3.93	.571	3.54	.705
Social influence	SI3	2.85	.831	3.29	.823	2.41	.852
(total sample mean=2.98)	SI2	2.93	.823	3.35	.828	2.50	.880
(purchaser sample mean=3.43)	SI4	3.19	.777	3.66	.817	2.71	.829
(non-purchaser sample mean=2.53)	SI1	3.13	.747	3.57	.776	2.69	.841
	SI5	2.80	.732	3.27	.720	2.33	.790
Trust	TRUST4	2.47	.824	2.47	.697	2.47	.863
(total sample mean=2.54)	TRUST6	2.57	.777	2.55	.655	2.59	.796
(purchaser sample mean=2.55)	TRUST2	2.56	.773	2.59	.856	2.53	.741
(non-purchaser sample mean=2.53)	TRUST1	2.50	.744	2.51	.793	2.49	.730
	TRUST3	2.29	.730	2.37	.651	2.21	.784
	TRUST5	2.82	.725	2.79	.620	2.86	.724
Infrastructural control	IC4	2.82	.843	2.68	.743	2.96	.848
(total sample mean=2.75)	IC3	2.70	.829	2.65	.721	2.74	.866
(purchaser sample mean=2.70)	IC1	2.76	.807	2.70	.819	2.83	.839
(non-purchaser sample mean=2.79)	IC5	3.09	.774	2.99	.705	3.19	.802
	IC2	2.36	.704	2.46	.770	2.26	.647
Affinity	AFNT2	3.81	.840	3.93	.771	3.68	.859
(total sample mean=3.78)	AFNT3	3.83	.827	3.99	.836	3.66	.868
(purchaser sample mean=3.97)	AFNT4	3.53	.797	3.77	.715	3.29	.863
(non-purchaser sample mean=3.59)	AFNT1	3.95	.704	4.19	.599	3.72	.753
Financial control	FC2	3.62	.775	3.83	.621	3.41	.837
(total sample mean=3.63)	FC1	3.79	.746	3.93	.543	3.65	.741
(purchaser sample mean=3.83)	FC4	3.77	.740	3.97	.491	3.57	.807
(non-purchaser sample mean=3.43)	FC3	3.34	.628	3.59	.246	3.09	.765
Perceived innovativeness	PI3	3.18	.762	3.61	.737	2.74	.831
(total sample mean=3.41)	PI1	3.70	.732	3.91	.775	3.49	.760
(purchaser sample mean=3.74)	PI4	3.29	.728	3.65	.673	2.92	.815
(non-purchaser sample mean=3.07)	PI2	3.46	.715	3.79	.761	3.13	.693
Anxiety	ANXT2	3.18	.813	3.24	.742	3.13	.844
(total sample mean=3.10)	ANXT3	3.38	.793	3.38	.747	3.37	.802

		Total		Purchaser		Non-purchaser	
(purchaser sample mean=3.21) (non-purchaser sample mean=2.99)	ANXT1	2.93	.738	3.07	.735	2.79	.667
	ANXT4	2.91	.721	3.17	.786	2.66	.716
Perceived enjoyment (total sample mean=3.33) (purchaser sample mean=3.58) (non-purchaser sample mean=3.07)	PE3	3.28	.742	3.57	.779	3.00	.713
	PE2	3.27	.713	3.53	.779	3.02	.645
	PE1	3.23	.688	3.53	.748	2.93	.643
	PE4	3.52	.665	3.70	.732	3.35	.560
In-store shopping experience (total sample mean=2.95) (purchaser sample mean=3.02) (non-purchaser sample mean=2.88)	ISSE3	2.40	.779	2.36	.020	2.44	.690
	ISSE2	2.68	.687	2.57	.066	2.78	.683
	ISSE4	2.89	.660	2.71	.014	3.07	.644
	ISSE1	1.94	.492	2.02	.050	1.85	.382
	ISSE5	3.37	.444	3.65	.742	3.08	.603
	ISSE7	3.81	.424	3.85	.770	3.77	.630
	ISSE6	3.46	.389	3.64	.592	3.27	.679
	ISSE8	3.05	.337	3.37	.499	2.74	.629
Perceived skill (total sample mean=3.90) (purchaser sample mean=4.27) (non-purchaser sample mean=3.54)	PS2	4.02	.735	4.35	.745	3.69	.796
	PS3	3.90	.697	4.26	.752	3.55	.667
	PS1	4.02	.689	4.37	.652	3.67	.774
	PS4	3.68	.538	4.11	.580	3.24	.485

Source: Author

5.6 Suitability, validity, and internal consistency of factors and factor analysis

Conducting exploratory factor analysis is a complex process that requires a number of decisions to be made for each step (Salkind, 2007). The criteria and procedure of factor analysis was discussed in section 3.5.2.3. Following the instructions from Bryman et al. (2011), this study examined following aspects to ensure the appropriateness of performing exploratory factor analysis:

First of all, Bryman et al. (2011) suggested the number of respondents should be more than the number of variables to be analysed. This study met the criterion, because the number of variables subjected to factor analysis was 67, compared to the sample size of 150 for purchasers, 150 for non-purchasers, and 300 for the total sample.

Secondly, through the observation of correlation matrix (appendix 5.1), the author identified a number of coefficients above or equal to 0.3 – if no

correlation is found between variables (Pearson's r lower than 0.3), factor analysis may be deemed to be inappropriate.

Thirdly, Barlett's test of sphericity and the Kaiser-Meyor-Olkin (KMO) were examined to verify the appropriateness of factor analysis. Barlett's test of sphericity examines whether the correlations between variables differ significantly from zero (Bryman et al., 2011), in this study, the Bartlett's test of sphericity was significant (p<0.05, see appendix 5.1) which suggests correlation matrix was not an identity matrix. KMO is an indicator of the strength of relationships among variables in a correlation matrix, the value of 0.7 is often considered a minimum for conducting a factor analysis (Vogt, 2005, Bryman et al., 2011). In this study, the KMO value was reported as follow: 0.9 for total sample, 0.8 for purchaser sample, and 0.8 for non-purchaser sample, which is above recommended value of 0.7 (see appendix 5.1).

Therefore, a factor analysis is suitable and valid for this study. In addition, the internal reliability of the factors was examined. Cronbach's alpha value was reported greater than the suggested threshold of 0.7 (Bryman et al., 2011) for each of the factor extracted (see table 5.4), which indicated an internal reliability of the factors.

5.7 Behavioural intentions

Having extracted those factors that may have potential impact on whether to use mobile grocery shopping, the author carried out further analysis in the same fashion, to examine those survey items that explain the behavioural intention. There were 4 questions from the questionnaire that examined the respondents' intention to use mobile for grocery shopping (see Question 10 from appendix 3.2), these items were adapted from Yang (2012) and were refined through the interview narratives (Question for purchasers: Do you want to use mobile for shopping again? Question for non-purchasers: Would you like to try buying groceries on your mobile in the near future?). The factor analyses performed in the total sample, purchaser sample, and non-purchaser sample, showed that these 4 items were strongly loaded to the factor "Intention", with all of the suitability and validity tests passed (see appendix 5.1). In the total sample, these items explain 75.4% of the variance of behavioural intention (see table

5.6 below). Therefore, the behavioural intention can be explained by customers' willingness to buy groceries, to learn, or to browse the shopping app.

The factor analysis of this study summarised a set of independent variables (section 5.4 and 5.5) that may fluence customers' decision to use a mobile phone for grocery shopping. It also discussed Behavioural Intention as a dependent variable through factor analysis. In the next section (section 5.8), the analysis is focused upon the relationship between the independent variables and the dependent variable.

Table 5.6 Factor analysis for the components of behavioural intention – total sample

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
INT1 intend to buy	3.016	75.404	75.404	3.016	75.404	75.404
INT2 intend to start	.469	11.726	87.129			
INT3 intend to learn	.313	7.833	94.962			
INT4 intend to browse	.202	5.038	100.000			

Extraction Method: Principal Component Analysis.

Source: Author

5.8 Regression analysis

This section presents the results from the multiple regression analysis. The independent variables are those 12 factors extracted from the factor analysis; the dependent variable is the user's intention of buying groceries on a smartphone.

5.8.1 Preliminary Analysis

The aim of the preliminary analysis for multiple regression is to ensure the regression analysis complies with its underlying assumptions so that the regression analysis is appropriate and suitable for the research. Following the instructions from Tabachnick et al. (2001) and Pallant (2013) examinations were undertaken, namely: multicollinearity and singularity check, and the check of outliers, normality, linearity, homoscedasticity, and independence of residuals.

First of all, the correlation table (see appendix 5.2a) was checked to ensure the absence of multicollinearity and singularity; each pair of dependent and independent variables exhibit a fair correlation (Pearson's r). Furthermore, the tolerance statistic (Tolerance) and variance inflation factor (VIF) were examined. The tolerance statistic (Tolerance) measures collinearity and multicollinearity, it is an indicator of the amount of variability of the specified independent is not explained by the other independent variables (Hair 2009). Tolerance is calculated as 1 minus the multiple R for each independent variable (Bryman et al., 2011). A tolerance value of 1 indicates that a variable is not correlated with others, and a value of 0 one that is perfectly correlated, a low tolerant statistic indicates a likelihood of multicollinearity (Foster et al., 2006). VIF is calculated as 1 divided by the tolerance value (Bryman et al., 2011), therefore a low tolerance results in high VIF and vice versa. When the tolerance is close to 0, or VIF greater than 10, it indicates a presence of multicollinearity (Bryman et al., 2011). On inspection of the tolerance values and VIF, it was found that the tolerance values were greater than zero and the VIF values were less than 10 (see appendix 5.2b). Therefore, multicollinearity was unlikely to be a case in this study.

Secondly, normality was examined – multiple regression analysis relies on the assumption that the variables have normal distribution (Salkind, 2010). The normal P-P plot chart displayed a reasonably straight diagonal line from bottom left to top right, suggesting no violate of normality (see appendix 5.2c).

Thirdly, homoscedasticity was examined. Homoscedasticity is the assumption that the residuals at each level of the predictors should have the same variance (Salkind, 2010). The Residual Statistics of this study indicated a zero mean of standardised residual; the Residual Scatterplot also displays most points were

randomly spread in the chart, which indicated there is no violation of Homoscedasticity (see appendix 5.2d).

Fourthly, the presence of outliers was checked. The sample was pre-scanned to exclude low quality responses; no major outliers were found and therefore no action was needed to reshape the sample.

Lastly, the Durbin-Watson statistic for total sample, purchaser sample, and non-purchaser sample are 1.9, 1.9, and 2.0 respectively, lie within the interval of (1.5, 2.5), suggesting that no first-order linear auto-correlation in the regression data therefore no violation of independence of residuals.

According to the indicators above, the assumptions of regression analysis were not violated.

5.8.2 Constructing a model that predicts the usage intention – total sample

The first regression analysis used the total sample (N=300) in order to gain a generic view. The author firstly carried a multiple regression analysis using a "enter" method to force all 12 variables into the model. Based on the Beta value and the significance from each of the variables, the author made decisions to keep or remove variables accordingly, in order to construct a final model.

The first model comprised all 12 independent variables extracted from the factor analysis; all variables were loaded into the model simultaneously (enter method). The SPSS output indicated a low Beta value and low statistical significance for these variables: trust (beta=0.044, Sig=0.266), perceived innovativeness (beta=0.077, Sig=0.088), in-store shopping experience (beta=0.034, Sig=0.352), infrastructural control (beta=0.004, Sig=0.917), perceived enjoyment (beta=-0.001, Sig=0.983), and perceived ease of use (beta=0.096, Sig=0.050). The Sig. value of these variables is greater than 0.05 (p>=0.05) indicating the acceptance of the null hypothesis that there will be insignificant prediction of behavioural intention by these variables. Therefore these variables are subjective to further view:

The variable "trust" has a mean value of 2.5 (reversely coded, 1=strongly agree; 5=strongly disagree), which indicated that the respondents in general have a moderate level of trust towards the retailers. The factor loading suggested these

aspects were perceived as a low trust by shoppers, in a descending order: product quality, punctuality of delivery, safety of personal information, safety of credit card information, receiving inappropriate substitution, and having the need to deal with customer service. However the low level of Beta value and statistical significance suggested that despite shoppers have a moderate-low expectation on the product and service provided by the retailer, their intention to use their app or mobile website is unaffected.

The variable "perceived innovativeness" is relating to respondents' own personality. Through a review of interview data, it is understandable that the variable has a low effect in predicting usage intention: despite a number of respondents claimed a possible connection between their low level of perceived innovativeness and hence a low usage intention (see section 4.5.8), a few young professionals (such as respondents Dan and Dom, see table 4.1) who actually perceived themselves being very innovative, they argued that the current grocery app is not advanced enough to meet their expectation of mobile shopping experience. Despite these 2 respondents could be exceptional cases, it is possible that when users are highly innovative, they may not be satisfied with the capability of current app, and therefore their usage decision is affected.

The variable "in-store experience" captured various aspects of in-store shopping experience. The insignificance of this variable in the model, suggested that a customer in traditional grocery store may have mixed feelings, for example he/she dislikes queueing, but likes to examine the products. Because of the mixed feelings about in-store shopping, the positive and negative attitude compensates each other, and resulted in a low effect of the variable in the model.

The variable "infrastructural control" focused on examining the natural disadvantages of mobile phones in a shopping environment. The variable showed a low effect in the model, in addition it has a low mean. This implies customers acknowledge the natural disadvantages of smartphone (such as small screen, unstable signal etc.), however their decision of shopping on the smartphone is not affected by these constraints.

The variable "perceived enjoyment" examined respondents' joyfulness when shopping on their smartphone. The variable demonstrated the lowest

significance in predicting the usage intention. This means the decision of using a smartphone for grocery shopping is not defined by the hedonism value.

The statistical significance of "perceived ease of use" is at its threshold (Sig=0.050), due to the importance of this variable in predicting technology adoption according to literature, the author decided to keep it in the model for further inspections. While the other 5 variables were removed from the final model, because of the statistical evidence from the SPSS output together with the above analysis provided.

After removing those variables, the second (final) model captures seven variables. The result shows lifestyle enhancement, perceived ease of use, social influence, affinity, financial control, anxiety, and perceived skill, could predict shoppers' intention to use mobile grocery shopping vigorously. Amongst these factors, lifestyle enhancement (Beta=0.438, p ≤ .00), affinity (Beta=0.173, p ≤ .00), and anxiety (Beta=0.154, p ≤ .00) contributed significantly in the model.

The regression equation is presented as:

Mobile grocery shopping intention (Y) = -0.257 + 0.414xLifestyle Enhancement + 0.90xPerceived Ease of Use + 0.101xSocial Influence + 0.146xAffinity + 0.107xFinancial Control + 0.122xAnxiety + 0.94xPerceived Skill

The regression model is a good fit of data, the results of the regression indicated that the model explained 69.3% of the variance (R^2=0.693), and that the model was a significant predictor of mobile grocery shopping intention, with F = 94.3, P<0.0005. See model 2 from table 5.7 for details.

Table 5.7 Factors affecting the intention to use mobile grocery shopping – total sample

Model	R Square	R Square (Adj.)	Std. Beta / Sig.	F / Sig.	Status
Model1: Twelve-variable model	.699	.686		55.557 / 0.000	Discard
lifestyle enhancement			0.390 / 0.000		

perceived ease of use			0.096 / 0.050		
social influence			0.143 / 0.002		
trust*			0.044 / 0.266		
infrastructural control*			0.004 / 0.917		
affinity			0.159 / 0.000		
financial control			0.091 / 0.020		
perceived innovativeness*			0.077 / 0.088		
anxiety			0.133 / 0.002		
perceived enjoyment*			-0.001 / 0.983		
In-store shopping experience*			0.034 / 0.352		
perceived skill			0.104 / 0.035		

Model 2: Seven-variable model	.693	.686		94.322 / 0.000	Accept
lifestyle enhancement			0.438 / 0.000		
perceived ease of use			0.079 / 0.082		
social influence			0.135 / 0.003		
affinity			0.173 / 0.000		
financial control			0.109 / 0.003		
anxiety			0.154 / 0.000		
perceived skill			0.109 / 0.026		

*removed from the final model

Source: Author

5.8.3 Constructing a model that predicts the usage intention – split samples

One of the research objectives is to compare the factors influencing the purchasers and non-purchasers decisions to use mobile grocery shopping. In order to achieve this using a quantitative method, further multiple regression analyses were carried out using the purchaser sample and non-purchaser sample respectively.

Non-purchaser sample:

The 12 variables were loaded into the non-purchaser sample for regression analysis. According to an analysis of the regression output from SPSS, the author removed 5 variables based on their statistical significance. After the removal of these 5 variables, the R square saw a small change, reduced from 0.691 to 0.680. The final model possesses 7 independent variables, these are:

lifestyle enhancement, perceived ease of use, social influence, affinity, anxiety, perceived skill, and perceived innovativeness. See table 5.8 below, a significant regression equation was found (F = 43.1, P<0.0005) with an R^2 value of 0.680.

The regression equation is presented as:

Non-purchasers intention to use mobile for grocery shopping (Y') = -0.327 + 0.215xLifestle Enhancement + 0.128xAffinity + 0.216xPerceived Ease of Use + 0.094xSocial Influence + 0.132xPerceived Innovativeness + 0.143xAnxiety + 0.112xPerceived Skill

Comparing the model generated from the non-purchaser sample against the model generated from the total sample, it appears the remaining independent variables are similar: lifestyle enhancement, perceived ease of use, social influence, anxiety, and perceived skill have direct influence on the intention to use a smartphone for grocery shopping. The only difference between the two models lies in the absence of financial control, and the presence of perceived innovativeness in the non-purchaser model. The difference implies non-purchasers are particularly cautious about their financial situation when deciding to buy groceries on their smartphone; in addition, the self-innovativeness appears to be impactful for non-purchasers decisions.

Table 5.8 Factors affecting the intention to use mobile grocery shopping – non-purchaser sample

Model	R Square	R Square (Adj.)	Std. Beta / Sig.	F / Sig.	Status
Model 1: Twelve-variable model	.691	.664		25.564 / 0.000	Discard
lifestyle enhancement			0.186 / 0.027		
perceived ease of use			0.218 / 0.003		

social influence			0.142 / 0.032		
affinity			0.173 / 0.002		
financial control*			0.050 / 0.360		
anxiety			0.151 / 0.013		
perceived skill			0.128 / 0.073		
trust*			0.050 / 0.380		
infrastructural control*			0.007 / 0.900		
perceived innovativeness			0.146 / 0.020		
perceived enjoyment*			0.046 / 0.551		
in-store shopping experience*			0.076 / 0.158		
Model 2: Seven-variable model	.680	.664		43.052 / 0.000	Accept
lifestyle enhancement			0.236 / 0.002		
perceived ease of use			0.229 / 0.000		
social influence			0.129 / 0.039		
affinity			0.171 / 0.002		
anxiety			0.179 / 0.001		
perceived skill			0.148 / 0.035		
perceived innovativeness			0.141 / 0.016		

*removed from the final model

Source: Author

Purchaser sample:

The author inspected the 12-variables model in the purchaser sample. Individual variables were examined, the result indicates that after removing 9 variables, the model retains a strong the explanatory power. The new model (model 2) captures 3 independent variables: lifestyle enhancement, affinity, and financial control. The SPSS output shows these are the main predictors of usage intention for purchasers. See table below (table 5.9) for details. The regression model exhibits a good fit of data, with F = 45.5, P<0.0005. R^2=0.483.

The regression equation is presented as:

Purchasers intention to use mobile for grocery shopping (Y") = 1.119 + 0.378xLifestle Enhancement + 0.156xAffinity + 0.202xFinancial Control

Table 5.9 Factors affecting the intention to use mobile grocery shopping – purchaser sample

Model	R Square	R Square (Adj.)	Std. Beta / Sig.	F / Sig.	Status
Model 1: Twelve-variable model	.512	.469		11.975 / 0.000	Discard
lifestyle enhancement			0.428 / 0.000		
perceived ease of use*			-0.021 / 0.832		
social influence*			0.107 / 0.169		
affinity			0.309 / 0.000		
financial control			0.307 / 0.000		
anxiety*			0.131 / 0.118		
perceived skill*			-0.084 / 0.331		
trust*			-0.027 / 0.748		
infrastructural control*			0.028 / 0.712		
perceived innovativeness*			-0.09 / 0.264		
perceived enjoyment*			-0.038 / 0.64		
in-store shopping experience*			0.051 / 0.453		
Model 2: Three-variable model	.483	.473		45.539 / 0.000	Accept
lifestyle enhancement			0.403 / 0.000		
affinity			0.250 / 0.000		
financial control			0.271 / 0.000		

*removed from the final model

Source: Author

5.8.4 Summary of regression analysis

Taken together, these results provide evidence that in the total sample (N=300), the intention to use mobile grocery shopping is influenced by following factors: lifestyle enhancement, perceived ease of use, social influence, affinity, financial control, anxiety, and perceived skill.

In the purchasers sample (n=150), a different model was generated. It indicated that the purchasers' usage intention is primarily predicted by lifestyle enhancement (Beta=0.403, p ≤ .00), affinity (Beta=0.250, p ≤ .00) and financial control (Beta=0.271, p ≤ .00). This result suggests that existing users believe the shopping app would help them to achieve a certain efficiency that fits their lifestyle. On the other hand, their attachment to smartphone, and their concerns of the additional costs, is equally important in explaining their usage intention.

The non-purchaser model (n=150) is slightly different from the purchaser model – it exhibits a larger set of variables that influence the intention to use. In the

non-purchaser model, lifestyle enhancement shows a lower impact on intention, compared to the purchaser model. On the other hand, perceived ease of use is as important as lifestyle enhancement for non-purchasers. It also appears that non-purchasers are less concerned about financial constraints – this is possibly due to a lack of awareness of the underlying charges of the service (such as mobile data and delivery fee). Also, comparing to purchasers, non-purchasers' decisions to use mobile grocery shopping are more likely being influenced by their social circle, their perceived mobile skill, and their personal innovativeness. Anxiety is the third most powerful predictor in the non-purchaser model, which implies that non-purchasers' imagined difficulties and their worries of making mistakes are main barriers for them to use the service.

5.4.5 The relationship between intention and behaviour

Intention-behaviour gap is a popular topic in behavioural science literature (see section 2.5). In this research, the author deliberately designed a question asking the percentage of the grocery shopping budget that respondents will spend on a smartphone (see appendix 3.2). The actual percentage of budget is not analysed as part of this research – the purpose of specifying the shopping budget is to minimise measurement error caused by self-reported survey that contributes to intention-behaviour gap (see section 2.5). The data was transformed into a dichotomous variable, where 1 means performing mobile grocery shopping, 0 means not performing.

A simple linear regression analysis was implemented to examine the relationship, where dependent variable is the actual behaviour (BHV), the independent variable is the usage intention (INT). The SPSS output shows the intention of using mobile grocery shopping explains 39.0% of variance for actual behaviour (F=190.7, P<0.0005) – a gap between intention and behaviour remains despite intention being considered as the proximal antecedent of behaviour (Rhodes et al., 2013). That is, a consumer may intend to use a smartphone for grocery shopping, but his/her actual behaviour of shopping may be influenced by other constructs. To further reduce the gap in addition to the "goal specified" technique, which was used in this study, Bhattacherjee and Sanford (2009) argued that a consideration of individuals' attitudinal strength as

a moderator for the intention – behaviour gap in technology usage. On the other hand, Sheeran and Webb (2016) suggested interventions such as monitoring goal progress as a means of closing the gap between intention and behaviour, the technique involves comparing the rate of progress against the standard specified in the relevant intention, and the need of self-regulation should discrepancies occur.

5.9 Chapter summary

This chapter discussed the results of the quantitative research using a nationwide survey of grocery shoppers in the UK. The survey questionnaire consisted of previously developed and validated items. The adopted measurements were derived from well-established theories and have been validated and developed through the qualitative research. In addition, the questionnaire received careful validations and piloting stage before it was launched nationally. The survey had 300 valid responses including 150 purchasers and 150 non-purchasers. The preliminary analysis showed an excellent validity and reliability which confirmed the appropriateness of the instrument for the quantitative study.

The demographic difference between purchasers and non-purchasers was identified in this chapter: comparing purchasers and non-purchasers, purchasers are younger, they are more likely to have child at home, and have had previous experience of shopping on a PC.

Factor analysis was conducted in the total sample (n=300), the purchaser sample (n=150), and the non-purchaser sample (n=150) respectively. The result suggested a total of 12 independent variables for further multiple regression analysis.

With regards to the insights of factors influencing consumers' decision making, the outcomes of multiple regression analysis revealed that consumers' intention to use a smartphone for grocery shopping is driven by several factors namely: lifestyle enhancement, perceived ease of use, social influence, and affinity. The prevention factors such as financial control, anxiety, and perceived skill, were also found to have an impact on the behavioural intention.

Additional analysis of multiple regression modelling was implemented in the purchasers sample and non-purchasers sample respectively. The output from SPSS suggested that for purchasers, their behavioural intention is affected by lifestyle enhancement, affinity, and financial control; for non-purchasers, their behavioural intention is affected by lifestyle enhancement, perceived ease of use, social influence, affinity, anxiety, perceived skill, and perceived innovativeness.

This chapter also points out that despite an Implementation-Intention strategy being deployed in the questionnaire design, which specified the time and context (where, when and how) in which the behaviour is to be performed, a considerable gap remained between intention and actual behaviour. Apart from the survey-caused intention-behaviour disparity, it could be that other control factors that have a direct impact on behaviour, were not examined by this study. According to the qualitative data, a previous poor experience of mobile shopping due to the immature app development, a poor eyesight, or a lack of instructions to use the app, could have a negative effect on actual behaviour despite the consumer has an intention to shop on a smartphone.

Having discussed and conceptualised the factors affecting consumers intention to buy groceries on a smartphone, the next chapter will provide an in-depth analysis of mobile customer loyalty.

Chapter 6 Customer Loyalty

6.1 Introduction

The importance of customer loyalty in the conventional and online retail environment have been well established in the marketing literature (see section 2.8). The rise of mobile shopping opens a new question: whether the knowledge formed in other retail channel to be applicable in the mobile channel? Very few studies have addressed mobile loyalty in any depth, especially in the grocery sector. This chapter focuses on analysis of factors affecting mobile shoppers' satisfaction, and why they become a loyal customer. Chapter 5 discussed the factors affecting the intention to shop groceries by mobile phone. It did not provide the context of purchasers' satisfaction and loyal behaviour towards a mobile grocer. This section fills this gap through the analysis of semi-structured interview data and questionnaire survey data, directed towards research objective three, namely:

- To explore the factors influencing consumers' repeat purchases and loyalty in mobile shopping.

The first part of this chapter presents the analysis of interview data. Themes relating to mobile shoppers' satisfaction and hence their loyalty, are discussed. Based on the results from thematic analysis, the author developed a survey questionnaire to further investigate the factors affecting the customer loyalty. The survey questionnaire was launched nationally in 2016. The second part of the chapter focuses on the quantitative analysis on the survey data. Based on such, a conceptualisation and the underlining interrelationships between the factors that affect mobile shopping loyalty are developed.

6.2 Mobile grocery shopping satisfaction

Derived from Johnson and Fornell (1991), mobile grocery shopping satisfaction in this thesis is defined as a shopper's overall evaluation of the performance of the mobile grocer. Customer satisfaction have been recognised as a strong antecedent of customer loyalty in many studies (see, for example, Hallowell,

1996), the relationship is also found in online shopping customer loyalty research (Shankar et al., 2003), and mobile customer loyalty research (Lin et al., 2006). Lee et al. (2000) suggested customer satisfaction/dissatisfaction is generated immediately after the service quality is examined based on their perception and expectation. Therefore in this study, the analysis of customer satisfaction focuses on the examination of customers' overall attitude after the product and service are received.

6.3 Mobile grocery shopping loyalty

The literature review chapter discussed the idea that there is a positive relationship between mobile shopping satisfaction, intention to repurchase (Hung et al., 2012) and the intention to make recommendation (Barutcu et al., 2015). In this study, the interview data confirmed that satisfied purchasers are likely to continue shopping with the same mobile grocer. A number of respondents (see table 4.1) mentioned they were unlikely to change supplier because of the satisfaction, for example:

"I'm satisfied with the experience, I will continue to buy from the app." (Monica, purchaser)

"I have never thought about it (switching), and I don't think it's ever gonna happened… I can't think of any situation they will make me leave, it would have to being repeat bad service… in terms of technology the only thing they can go wrong, is internet goes offline, apart from that I can't think of anything that could stop me buying from them." (Romi, purchaser)

The interview data also confirmed those who were satisfied with their mobile grocery shopping experience, are likely to encourage others to use the service:

"If I had a great experience, I find it easy to use, I would probably recommend other people, and say: 'Look, I tried this, give it a try, see what you think', and then, go from there."(Tom, purchaser)

"I do like to encourage my friends to use the app, because I found the process easy and less stressful."(Julie, purchaser)

"I would definitely encourage them to use mobile to shop, whether it's Tesco or not, it's probably more of their choice, because everyone has their choice of day to day shopping. But yes I would definitely encourage them to use mobile for shopping." (Che, purchaser)

"I've tried to persuade my mum, and I've bought her a smartphone, and I'm trying to persuade her to do it because she's getting old now." (Derri, purchaser)

"I know a lot of people moan that 'oh I have got to go food shopping today' and then take up all their time doing it when they could order it in a week and have it done and they don't have to waste their time so yes I should have mentioned it to some people that moan about it." (Kate, purchaser)

These interview data evidenced and confirmed that satisfied mobile shoppers are likely to make repeat purchases, and pass on their recommendations to others.

Grocery shopping is a purposeful activity repeated at fairly regular intervals (Raijas and Tuunainen, 2001). Given the frequency and amount of time that customers spend on their smartphone, a grocery shopping app enables retailers more opportunities to interact with their customers than the conventional shopping channels. In this sense, establishing and retaining customer relationship on the mobile channel is particularly important for grocers to consider. Rafiq and Fulford (2005) suggested the success for conventional grocers to expand their business online is depending on their ability to retain their loyal customers, and to attract customers from their competitors. This concept can be extended to the mobile commerce scenario. According to a survey by *eMarketer* (2015), as many as 25% of app users open an app once and never return, customer retention is probably more of a challenge than new customer acquisition. Therefore, it is important for mobile grocers to understand the elements that affect the loyalty of their customers. In this study, the semi-structured interview questions were designed to discover respondents' reasons to stay loyal to a particular mobile grocer, and their switching experience before they found their favourite grocer (see appendix 3.1).

During the interview, two respondents mentioned they use to be loyal to a retailer in-store, however when they discovered the app, they became loyal to another retailer on the mobile. For example:

"I'm always a Sainsbury's girl, for years years and years, but now I turn to do most of my shopping with ASDA app." (Julie)

"I use to shop there (Tesco) anyway, so I thought I just go back on the phone, cos I know the supermarket, it's the one I grow up with, I used to go with my dad to shop there. And I have a Tesco local shop near where I live. Then I moved to Ocado app and then I kept using them because their service was good." (Wai)

A particularly good mobile shopping experience could drive customers changing their habit from offline shopping to mobile shopping, moreover, a change of shopping channel is likely associated with a change of retailer – despite they were loyal to a particular local retailer. The rise of mobile app changed not only they way they shop, but also the retailer they use. A few interviewees said that once they get used to a particular retailer's app or website, it would be difficult for them to switch again, because they do not want spending time to adapt a different system or retailer, see below statement for example:

"Once I get used to it, then you just keep doing it (on Tesco app), I know from time to time I receive information from Sainsbury's telling me they having good offer, but having the hassle to go through register again, to switch everything etc. is just … couldn't be bothered." (Che)

Customers become loyal to a particular mobile grocer once they become familiar with their app/mobile site, and getting use to their particular process of making grocery purchases by smartphone:

"…now I've got the hang of it, that's why I want to stick with ASDA cos I know what to put in to get what I need… my friend said other grocer give you £20 off for your first order etc. – but that's a pain in the bump, I can't be bothered rotating and messing around, I'd rather stick with what I know… I think it's such a pain to have sitting in there and go through all that registration with a new company." (Derri)

"I know the product, I know the price, I know what to expect, there is no other grocer that I have that much knowledge." (Romi)

"I do, with repeat purchase. Quite honestly, the only reason I do it, is because it's the only one I use, and I haven't got much time to switch." (Robert)

These narratives confirm that once shoppers become loyal customers to a certain mobile grocer, they would be reluctant to switch again, because they have gained knowledge from the current provider, and become familiar with the system. They are unlikely to switch because the need of learning a new system and layout, and the potential time and effort required to re-build the shopping list again in another app. According to the results from chapters 4 and 5, one important factor affecting the usage decision is lifestyle enhancement. Purchasers are likely being those who have a busy schedule or lifestyle; it could be difficult to encourage them spending time to start shopping on another app from scratch.

Therefore, it is important to understand how they became loyal to a particular retailer, and the critical factors affecting the shopping experience. The research of mobile loyalty not only provides guidance for grocers to improve their mobile channel operation, but also provides strategies to establish their customer loyalty from physical stores to a mobile app.

6.4 Factors affecting mobile grocery shopping satisfaction and loyalty – Qualitative data analysis

According to the interviews, 10 out of 12 purchasers (see table 4.1) regarded themselves as loyal to a certain mobile grocer. These shoppers were very satisfied with their current smartphone shopping experience and their favourite mobile grocer. The following narratives highlight this:

"So yes, it's a really really positive experience." (Caroline)

"I found the experience quite straight-forward and quite pleasant, so I kept using it afterwards." (Che)

Some interview questions were deliberately designed to ask respondents to describe their loyal behaviour and the reasons of becoming loyal, for example they were asked to discuss a particularly satisfied shopping experience. Focusing on the content analysis of the interview data, a number of themes relating to their satisfaction were discovered, namely: App/mobile website quality, Category management, Product quality, Delivery service quality, Digital communication, and Retailer reputation. The interview data was compared and

reconciled with literature review chapter. These themes are discussed below in terms of individual factors.

6.4.1 App/mobile website quality

The grocery shopping app or website quality is the forefront criteria that shoppers judging their mobile grocery shopping experience. The quality of the app or website creates the first impression to shoppers before the service and products are delivered. The readability and usability, in relation to the app/website were mentioned by the purchasers during the interview, it appears that shoppers established their own criteria of judging a good app/website when they were browsing on their smartphone. The design of the app/website affects shoppers' decision to stay or leave the mobile grocer. Specifically, shoppers are looking into the aspects such as whether the app/mobile site is professionally designed, visually appealing (Cyr et al., 2006), and the speed of loading a content (Szymanski et al., 2000). One customer mentioned the app she used was slow and not functioning well:

"Sainsbury's frustrating because their app, a lot of the time it freezes, and kicks you off, and you have to put all your information back again. So that was just like waste of time." (Wai)

As result of this, this shopper switched to another mobile grocer. After the first impression presented by the website/app along with some trial or light usage, customers may start to explore advanced functions that improve the shopping experience. At this stage, app/mobile website quality is reflected through the presence of personalised shopping features such as "my favourite products" or "my previous shopping list". A few customers mentioned the website/app remembers their shopping history so that they can retrieve the product list from the retailer, and make the shopping quicker and easier to conduct:

"They remember your basket, it was just so quick. You've got all your details saved, so I would like to make repeat purchase with them." (Caroline)

"In terms of the app, it is very good, I use all the categories, I know what I'm looking for, it saves … there's a box you can going to where anything you previously ordered as favourite you can go in and just select, you don't have to

search for it. As long as bulk of my order, as long as they've got good dates, quality, that's all I need." (Julie)

The most difficult part of mobile grocery shopping is probably the first purchase, because of the large number of items to be searched and added to the basket for the first time. This is the main difference between grocery shopping and non-food shopping on the mobile phone. Therefore it is important for the grocers to ensure a high quality app/website to be offered to the customers, so that shoppers can focus on building their shopping list and not being distracted by any difficulties resulting from the technology itself. When shoppers are making effort to look for products, any difficulties arise from the website/app would increase their anxiety.

Once they have done their first shopping, shoppers will start to benefit from features such as "my favourite products" and "my previous shopping list". This is because regular grocery shopping involves highly repetitive purchases of certain fast-moving consumer products (including food and drink). Apps or website equipped with these advanced features may drive customer satisfaction and the likelihood of repurchase.

According to the interview, there was another app feature that produced a satisfied shopping experience – the app reminds the customer if he or she missed a multi-buy promotion such as "3 for 2" or "buy one get second half price", etc. This feature is seen to be very useful because it helps to save money. The following narratives explain the benefit of having the reminder built in the app, and how the customers respond to this feature:

"I think one function I found quite useful on the Tesco website is they do remind you if you missed a promotion, i.e. if you choose two items from … like buy two get one free, they will pop up a text underneath, and saying 'you missed this promotion, do you want add another item?' – I found that really helpful to… to help me to make sure I get all the promotions and benefits I can." (Che)

"ASDA, I like their site, it's easy to work through. If you missed a deal, they highlight you missed a deal. They highlight when I miss deals. That's fantastic, cos I do sometimes I miss that, cos I'm always in a rush. So you can go back, if you buy one for something, or it's on buy 2 for £2, they will highlight that and you can go back to your shopping and rectify it, so you won't miss the

deals…cos if I'm buying I will just look through, sometimes I'm very busy, it might just: 'oh I want those', and the fact if I can get a better deal, I like the fact they highlight that. So ASDA is cheap and you get better deals." (Derri)

These quotes highlighted the fact that customers may worry about missing deals when shopping on a smartphone; but when they are being reminded at the check-out, they are very pleased and impressed with the service. The above narrative also suggest that the users of mobile grocery shopping often have a busy lifestyle. Because they are so busy, they may complete their shopping quicker with less attention to multi-buy deals. This advanced feature on the app therefore enhances the shopping experience, and potentially drives customer satisfaction.

6.4.2 Category management

Category management refers to retailers analysing category performance and adjusting products & promotion availability on shelf. According to the guidance from IGD (IGD Successful Category management 2011), supermarket category management involves information gathering (Electronic Point of Sales data and consumer profile), planning and measuring the category performance, and on-shelf activation. Good practice of category management involves: 1. The categorisation of products to be understandable and intuitive, 2. A sufficient range of items to be available, and 3. Effective promotions and deals to be available.

Fundamental to good category management is product segmentation is easy understandable by the customers. Previous definitions of category management focused on categorisation of products, for example Nielsen (1992) argued category management is a process that involves managing product categories as business units and customising them to satisfy customer needs. Categorisation is the core of category management. In the mobile store, it means the products are segmented intuitively. One respondent mentioned this aspect in the interview:

"I just find the layout is very user-friendly, where the departments are all segregated, and within that department you have more departments within that section, it makes just so much easier, say for example you click 'fruit', it would

bring up different categories of fruits whether it's citrus fruit or prepared fruit, they are all grouped, it just make so much easy to go to the section to find what you want, without having to go through pages and pages of things to find."(Julie)

This piece of narrative suggests that in customers' eyes the baseline is "user-friendly layout" and "departments well segregated".

Developed from the basic of category management rule, another focus is to ensure there are sufficient number of products and categories available. Shoppers are expecting to see more (or at least the same amount of) products on the app/mobile site than in-store because of a general expectation that the range of products is limited in a traditional store due to the space limitations. With this expectation in mind, when using the mobile app/mobile website, if customers could not find the products they used to buy in a physical store, they may get frustrated. Such experience may affect their satisfaction. For example:

"I used to buy a special oyster source from my local Waitrose, when I wanted to top-up recently, I went to the app but I couldn't find it, so I wasn't pleased." (Monica)

Another respondent mentioned:

"Something I might be buying on regular basis, when you are using your mobile and they are not there, and it's disappointing, why it isn't showing on the app? I will give you an example, Actimel, they do a 12-pack multi fruit; and some weeks it's not there on the app … you can go down the store and it's there! And in the end two weeks later it will be back online, and you think why is it there now? I ended up having to give up the whole basket and go down to the local store because it's just annoying. I find that just little bit frustrating." (Julie)

This shopper realised some products she regularly purchases in a local Sainsbury's store is not available on the app, so she had to give up the mobile shopping session, and went back to the local shop instead. She mentioned this was part of the reason she later on switched to ASDA:

"They (ASDA) do have a good selection, and good product range." (Julie)

The next aspect of category management relates to the effectiveness of the promotions on the mobile channel. The key challenge for the mobile grocer in

this context is to present the most suitable promotions to the customer on a small screen. A number of purchasers claimed they do not mind paying a little bit more money for a return of convenience. However, if shoppers are made aware of better promotions elsewhere, they may consider switching to another mobile grocer.

"ASDA do the price match… The price guarantee is definitely one thing to keep me shopping with ASDA." (Julie)

"I went to Sainsbury's before, then I changed to Asda that worked out cheaper for us, just stick with Asda." (Kate)

A low price is not the only strategy for promotion. One purchaser mentioned the loyalty card scheme and vouchers would keep her satisfied:

"I think number one reason (being loyal to Tesco on the mobile) would be the loyalty card scheme, and the promotion they offer me as a member of that... they do offer you a lot of ongoing vouchers… the overall experience was good so I just kept with them." (Che)

This respondent also suggested the consistency of promotions is important for customer satisfaction. She mentioned her experience with Ocado in regard to this matter:

"Ocado, it's also very good, the reason I didn't go with them, is they gave you very good offer for the first time when you signed up, you probably were given £15 off for your first shop. And then they stop to give you any promotion, I was like: 'ah? You tempted me in, but once I signed up you then forget about me!' then I start to forget about them as well. It's a good incentive to join, but the follow up actions of on-going activity is poor … I think the retention of your customers is very important, it's important to tempt them in but then how to main them is probably also important. I don't think Ocado does as good as Tesco, because they don't have loyalty scheme or these kinds of things, so you don't get on going offers. Or maybe they do have offers nowadays; it was probably two or three years ago, the first offer was really attractive, but then nothing to come afterwards, so I stopped using them." (Che)

Another purchaser mentioned despite it is cheaper to shop with ASDA app, she was disappointed with the fact that she was not rewarded as a loyal customer:

"I think they should reward us for loyalty actually, because I spent a fortune in ASDA – that's a good thing with Tesco, cos in Tesco you get Tesco points, ASDA don't do that. So that's something I'm thinking about, they can maybe improve that, cos I'm very loyal to them." (Derri)

According to the interview, customers are not easy to switch to another retailer unless the promotion is significantly better. The threshold for them to consider switching is high:

"Everybody's doing offers, so it should be attractive enough for me to consider (to move away from Tesco app). It has to be amazing offers: I don't worry about peanuts, I don't worry about apples, if someone offers £25 off I would go with them." (Romi)

From the above narratives it appears that the aggressive promotions could attract new customers from other retailers, but when it comes to the customer retention and satisfaction, sustainable and on-going promotion is the key to keep them continue shopping with the same grocery shopping app/website.

6.4.3 Product quality

Another key theme that customers mentioned is the quality of products they received from the mobile grocer. Product quality directly reflects the result of the shopping, poor quality of product will damage the overall experience of shopping. Groceries consist mostly of food and drink, so it is important to keep delivering a high quality so that customers are satisfied. Many online grocery shopping studies focused on internal factors such as cognitive and personality traits as determinants of customer satisfaction, but lacked the presence of external factors such as product quality and service quality (See, for example, Morganosky et al., 2000, Hansen et al., 2004). In this study, the interview data unveiled that product quality, particularly the freshness of the food and drink is amongst the key elements that affect mobile grocery shoppers' satisfaction. See below narratives:

"I used ASDA and I don't think the quality is as nice, it didn't taste as nice, so it didn't feel as good quality… I think Tesco is fine, but some of their vege isn't the best. I compared the product quality, Ocado is better… so I switched to

Ocado… It's a bit more expensive, but you got the consistent quality… so I continue to do it." (Wai)

This customer mentioned she compared the food quality delivered from various grocers, and stayed with Ocado later on because it provided better quality products – despite the price was more expensive. Another respondent also stated product quality is an important criterion he would consider:

"I don't care who I shop from, they just need to have quality product, and…yeah just good value, I will go whoever is providing that." (Tom)

Similarly, one respondent mentioned the quality of product determines a good shopping experience.

"When I judge a good shopping, I like good dates, I like they look fresh and I like my things delivered how I would deliver something to somebody... if the products kept coming with short life, or the fresh stuff wasn't of good quality, I would change it." (Julie)

The respondent further provided an example of an occasion when she received low quality products, and wrong quantity of products from ASDA, and consequently she considered to switch to another app:

"I had 2 items out of date, 1 item with short life which was the day it was delivered. And something else was damaged. And you think to yourself what on earth happened to my delivery? I couldn't understand how you deliver things out of date, because I think they would check the dates. It was from ASDA, I wasn't very happy. That experience was really bad, so I thought I would give them another chance, and if it's not good I'm goona go somewhere else." (Julie)

The narratives above confirm that the consistency of providing good quality products especially for food and drink, is a key element to retaining customers. Low quality products or products with short sell-by dates provided to customers would undermine their loyalty to the grocer, and they may start to seek an alternative provider.

6.4.4 Delivery service quality

In late 1990s there were several online grocery delivery concepts created by American companies. Online grocery retailer Webvan stood out by launching the concept of "home delivery within a customer specified 30 minutes window". Despite the failure of the business along with the "dot-com bubble" later on, the concept of groceries delivery to the doorstep within a short time slot is widely adopted by other grocers globally nowadays. Other business models, such as partnering with postal and courier service, were sifted out because of the poor adaptability with the needs in grocery business, which requires different preservation temperature, short dispatching (from order to deliver) time and short delivery time. Punakivi et al. (2001) claimed that the lack of logistical home delivery structure is the main barrier for online grocery to grow. At present, most of the UK online grocers are able to provide one-hour delivery slot, and the service is becoming standardised. According to the interview data it was discovered that the quality of delivery service remains an important determinant of shopping satisfaction. Below are examples of some positive sentiments that customers described their satisfaction from the delivery service:

"The quality of the delivery service would be a maintainer … I think the delivery service is very good, they always on time, I never experienced any problem in terms of punctuality. And the guys are very friendly; I used to live in a flat, back then it was difficult to find; they have your information, they always call you up to confirm the exact address, so yeah it was a really good experience." (Che)

Similarly those customers mentioned they were satisfied with the shopping because of the good delivery service:

"I judge a good service to see whether is it on time; and for me you get one hour delivery window, so that's quite useful… the drivers are generally really polite and brings the food to our kitchen… I like the person's kind of telling me what's missing, and things like that, generally they do, and then just the friendly, which they are, normally my girl comes and say hello to them, that's what I like." (Wai)

"The delivery guys are usually very friendly when they arrive, and very helpful, they unpack the crates, and ask your day and things." (Robert)

According to the analysis of interview data, a good delivery service can be summarised into following aspects: Punctuality of the delivery, Friendliness and helpfulness of the driver, Availability of convenient delivery slots.

A punctual delivery service would keep shoppers satisfied, however if the driver failed to arrive on time, consumers may start losing trust on the mobile grocer. On top of this, a few customers mentioned the friendliness of driver is also a criterion to keep them happy:

"They are very nice, friendly, always on time, so I'm quite happy with the delivery service." (Romi)

"If somebody is really rude or they, say if change up late and they didn't apologise. I think it's just really poor or bad customer service that kind of thing would make us think 'oh, you know what, we are not gonna shop there anymore.'" (Caroline)

The respondent mentioned she used Tesco before she became loyal to Morrisons, and the switch was because of the poor delivery service provided by Tesco:

"I think it was maybe with the delivery, and I just thought it's just not as good." (Caroline)

Another respondent also mentioned some problems with the driver:

"Amazon fresh used a white van without any logo, when I opened the door I thought he was a salesman or a builder… and the driver wore jeans and T-shirt, I had no clue he's from Amazon for food delivery – he was not professional looking at all. Amazon fresh is a new trial for me, but it seems to me they didn't take delivery service seriously, so I got bad impressions with Amazon fresh." (Monica)

From the narrative above it appear that customers care about the professionalism of the delivery; a poor appearance or unfriendly driver would affect their satisfaction of the overall shopping experience.

On the other hand, some potential improvements were suggested in the interview, for example some customers suggested to improve the service by narrowing down the window for delivery:

"If they had a little window in the day like first thing in the morning where they give you half an hour slot that would be amazing. An hour isn't unreasonable, but if it's shorter it would be better." (Wai)

Some mentioned the grocers should offer more slots, including some premium priced slots for urgent delivery:

"When you have urgent request, when you really need them, I don't even mind paying premium amount for that service. I should get the opportunity to say: 'right, guys, I need you, I really need these stuff now, you know I haven't got time to do it earlier or in-store.' I think it would be really helpful." (Romi)

From the above narratives, it suggests that retailers providing enhanced flexibility of delivery slots would be another driver of customer satisfaction.

6.4.5 Mobile & digital communication

Developing communication channels would facilitate the flow of information between buyers and sellers (Peterson et al., 1997). Li et al. (1999) suggested that effective use of a communication channel could meet online shoppers' information needs for decision making. The internet provides effective communication medium between retailer and customers, therefore it has a great deal of potential to facilitate the development of customer relationships (Wang et al., 2000). Derived from Zeithaml et al. (1988) who found communication effectiveness affects service quality, Lin and Sun (2009) claimed communication is a measure of online shopping service quality, which influences customer satisfaction. Retailers have more opportunities to communicate with their customers on the mobile than any other channels, because mobile phones are more approachable than other devices or physical shops. In addition, there are multiple tools available in a smartphone for communications, such as app notifications, text messages (SMS), voice calls, email etc. Marketing messages can be delivered from those tools to customers via a smartphone; on the other hand, customers can use these tools to receive order update and delivery status.

When the quality of app, products, delivery service, and category management are standardised, and are of a similar level across all retailers, the effectiveness

of digital communication turns to be the only aspect that differentiate the shopping experience. In that sense, a retailer would gain comparative advantage through creating an effective communication system. A well-established communication system would facilitate better engagement between a retailer and its customers –customers would feel well informed, as such they would feel satisfied with the experience.

One respondent shared a particular experience:

"That was a time they did phone me … which was about an hour early … I was waiting for it anyway … I thought it was quite nice that they rang and they didn't just turned up… so that was quite good. I'm happy about that." (Kate)

Similarly, another respondent mentioned she was satisfied because of the promotion and order updates were well communicated:

"The app kept me well informed all the time regarding the latest offer and my order status, I feel like being respected and am in control, so I was very satisfied with the shopping." (Monica)

Another customer mentioned she was satisfied with the shopping because of the effort of communication made by the retailer:

"Being able to track – they let me know whether it's gonna be late or if it's on time, things like app notifications to do with my delivery… and also if you use regularly like Easter or Christmas, that will give you an alert to say you can now book slot for Christmas delivery, and then you can do that early, so if I try to get for Christmas Eve or something so it's fresh and guaranteed delivery. So yeah, I like that." (Wai)

As the operation of mobile retailing becomes mature across all the providers, it is likely that the competition of wining customer satisfaction lies on the effective communications.

6.4.6 Retailer's reputation

A brand is an unique symbol or name to identify both products and services; reputation of a brand is customers' perception of quality associated with the name (Aaker, 2000). Selnes (1993) asserted customer loyalty is driven by

strong brand name. The majority of the main UK grocers have launched their shopping app or mobile website, with a few new comers on the way. At present, the most successful online grocers in the UK are those traditional retailers with high profile and wide brand recognitions. The brand image helps retailers to nurture customer relationship online through brand extension. That is because a brand provides customer a perception of "overall quality not necessarily based on knowledge of detailed (intrinsic) specifications associated with it" (Selnes, 1993 :19). Selnes (1993) argued brand name is regarded as an extrinsic cue or attribute related to the product but not part of the physical product. As such, a retailer's reputation seem to be a warrantee of a good shopping experience that further drives customer satisfaction; customers believed that only big retailers have the infrastructure and resource to establish a good logistics system and user-friendly mobile store on their smartphone. Horppu et al. (2008) confirmed the online shopping satisfaction is affected by the reputation from offline parent brand. In this study, the interview data also identified a similar theme, that is mobile grocery shopping satisfaction may be affected by the retailer's reputation. For example, one respondent mentioned:

"It's (Tesco) always my first choice… big brand made me feel safe." (Romi)

On the other hand, customers may switch from a smaller retailer to a bigger one because they become more satisfied with mobile shopping experience offered by the bigger retailer:

"The retailer must be reputable… I shop from a Korean supermarket quite often, and I tried their app once and gave up, I think it's not well developed like other retailers, Tesco or Sainsbury's for example. I'm happy to keep on shopping in store with this Korean supermarket, but I'm more satisfied with Tesco and Waitrose app, maybe that's because the Korean retailer is not as big to develop their app." (Monica)

Above narratives indicate that customers' familiarity with the retailer, and the retailers' size and reputation, would be elements affecting mobile shopping satisfaction. It seems the most welcomed mobile grocers are those traditional firms with high profiles, whose brands are already familiar to the public. Extending the brand influence from offline to mobile channel brings more opportunities to the established retailers because it enhances their customer

relations; however, it turns to be a challenge for those smaller or less reputable retailers who have limited resource to expand business on the mobile channel.

6.5 Quantitative data analysis for loyalty of mobile grocery shopping

The themes identified from the semi-structured interviews were conceptualised and examined with scale questions. This section provides a quantitative analysis of the results from the survey questionnaire. First of all, it discusses how the survey questions are developed. This is followed by the survey data analysis, including factor analysis and regression analysis, in order to achieve research objective three.

6.5.1 Survey item development

As mentioned in the methodology chapter, respondents who labelled as "purchaser" received additional questions which aim to examine the factors affecting their satisfaction and loyalty. This section examines the detailed source of the measurements.

In general, the design of the survey item of this study is pivoted on the interview findings, and is incorporated with existing knowledge in customer satisfaction studies. According to the content analysis in section 6.3 and 6.4, there are 6 themes relating to customer satisfaction, namely: app/mobile site quality, category management, product quality, delivery service quality, digital communication effectiveness, and retailer's reputation; there are 2 themes relating to the mobile shopping loyalty, namely: intention to repurchase and intention to recommend. The existing literature (table 6.1) provided support to the themes and underlying measures that identified from the interview data. In order to examine these items, and to classify these items using quantitative data, a factor analysis should be performed, the result of which is discussed in section 6.5.2.

Because there is a lack of an established framework to explain the customer loyalty of mobile grocery shopping, and the inter-correlations between the survey items are unclear, an exploratory factor analysis is needed to categorise the items quantitatively, and subject to further regression analysis.

Table 6.1 Item development for mobile grocery shopping satisfaction survey

Code	Theme	Item	Source
SAQUA1	Site and App Quality	easy to navigate	Cyr et al. (2006), Szymanski et al. (2000), Srinivasan et al. (2002)
SAQUA2		present grocery information well	
SAQUA3		professional design	
SAQUA4		visually appealing	
SAQUA5		load content fast	
SAQUA6		has useful features	
CMNT1	Category Management	products well segmented	Ramus and Asger Nielsen (2005), Sirohi et al. (1998), Szymanski et al. (2000)
CMNT2		comprehensive categories	
CMNT3		large range of products	
CMNT4		appealing promotions	
PQUA1	Product Quality	product quality meet expectation	Hansen (2006), Ramus et al. (2005), Doherty et al. (2006)
PQUA2		product quality competitive	
PQUA3		reasonable sell by date	
DQUA1	Delivery Service Quality	delivery on time	Kim et al. (2009a), Doherty et al. (2006)
DQUA2		friendly helpful driver	
DQUA3		convenient slots to choose	
DCOM1	Digital Communication Effectiveness	connected through digital channels	Srinivasan et al. (2002), Li et al. (2012), Ramus et al. (2005)
DCOM2		connected through live update	
DCOM3		connected through interesting promotion	
BRAND1	Brand Reputation	good reputation	Selnes (1993)
BRAND2		major retailer	
BRAND3		well established retailer	
BRAND4		familiar to me	
SAT	Satisfaction	Satisfaction	Szymanski et al. (2000)
RPT1	Intention to Repurchase	buy again	Anderson et al. (2003), Zhou (2013a)
RPT2		seldom consider switching	
RPT3		not to buy elsewhere	
RPT4		first choice	
RPT5		best app for groceries	
RECM1	Intention to Recommend	recommend mobile grocery shopping	San-Martín et al. (2015)
RECM2		recommend app	
RECM3		share experience	

Source: Author

6.5.2 Factor analysis

At present, the knowledge of factors affecting mobile shoppers' satisfaction and loyalty are fragmented (see section 2.8). Bryman et al. (2011) pointed out that exploratory factor analysis is suitable for aggregating variables and generating theory, therefore an exploratory factor analysis is performed. One purpose in using factor analysis is to reduce the number of variables to a smaller amount of categories so that it could provide a set of more meaningful information. Factor analysis in this research context facilitates the author to attribute the variables into groups, and to gain a clearer insight of the key drivers of customer loyalty.

According to Ryan (1995), factor analysis is "essentially the same as multiple regression, except that the observed variables are regressed on unobservable factors" (p. 259). In this study, two series of factor analysis were performed. The first phase of factor analysis aimed to condense the variables that are deemed to affect purchasers' satisfaction, a total of 23 items covering themes such as site/app quality (SAQUA, 6 items), category management (CMNT, 4 items), product quality (PQUA, 3 items), delivery service quality (DQUA, 3 items), and brand reputation (BRAND, 4 items), are subject to phase 1 factor analysis. The explanation of these items is presented in table 6.1. The second phase of factor analysis aimed to condense the items relating to customer loyal behaviour, covering the following two themes: intention to make repeat purchase (RPT, 5 items), and intention to make recommendations (RECM, 3 items). Table 6.2 provides an overview of the 2 phases of factor analysis.

Table 6.2 Details of 2-phase factor analysis

Phase	Purpose	Pre-FA variables
Phase 1 Factor Analysis	Identify factors deemed to affect satisfaction	23 items: SAQUA(1-6), CMNT(1-4), PQUA(1-3), DQUA(1-3), DCOM(1-3), BRAND(1-4)
Phase 2 Factor Analysis	Aggregate loyal behaviour	8items: RPT(1-5), RECM(1-3)

Source: Author

These above items for two-phase factor analysis were subjected to principal components analysis (PCA) using SPSS version 21.

6.5.2.1 Suitability of conducting factor analysis

Bryman et al. (2011) suggested the number of respondents should exceed the number of variables to be analysed. In this research there are 150 respondents (see section 3.3) and 31 variables (see table 6.1). On the other hand, inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. KMO value exceed the recommended value of 0.6 (Kaiser, 1970, 1974) for both 2 phases of factor analysis (0.9 for Phase 1 Factor analysis; 0.9 for Phase 2 Factor analysis); and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix. See appendix 6.1 and 6.2.

6.5.2.2 Factor extraction

Following the suitability analysis, the next step is to decide the number of factors to be extracted (Hair, 2009). The methodology chapter discussed there are two approaches for factor extraction, i.e. the principal component analysis (PCA) and factor analysis (FA). PCA was employed for this study because the primary concern was data reduction (Pallant, 2013). Kaiser's criterion, screeplot and the Monte Carlo PCA for Parallel Analysis were employed to assist with the decision of the minimum number of factors to be retained.

Phase 1 Factor Analysis (Factors affecting satisfaction):

Four components were extracted after the examination of Kaiser's criterion. The screeplot (appendix 6.3) however showed a break after the third component, a decision was made by the author that the fourth component is to be retained, this is because the qualitative study showed that issues around digital communication tend to be a widely mentioned theme; and the cumulative percentage of variance would be 65.5% for four-factor solution, which is higher than 60.9% for three-factor solution. In order to gain further evidence, a Parallel Analysis was conducted, the results showed the Eigenvalue for each extracted

factor was greater than the first four Eigenvalues generated by Monte Carlo PCA (see appendix 6.4). Indicating the four-factor solution is appropriate.

Phase 2 Factor Analysis (Consumer loyal behaviour):

After Kaiser's criterion had been examined, only one component was extracted, which explained 58.1% of variances. The screeplot (appendix 6.5) and Monte Carlo PCA further confirmed the appropriateness of one-factor solution (appendix 6.6).

6.5.2.3 Factor rotation and interpretation

Section 6.5.2.2 determined the number of factors retained for this study. This section analyses and interprets the factors. Factors were rotated in order to acquire a clearer pattern, and increase the interpretability of these factors. The two most commonly used factor rotations are orthogonal rotation and oblique rotation – orthogonal rotation produces factors that are unrelated; oblique rotation products factors that are correlated (Bryman et al., 2011). Both types of rotation were used in this study in an attempt to obtain the clearest and easiest result. In this case, the orthogonal rotation provides a better interpretation, the output of the rotation (Varimax) is showed in table 6.3.

Phase 1 Factor Analysis (Factors affecting satisfaction):

After the rotation, factors need to be labelled in order to summarise the categories of variables. There is no naming convention, and the practice can be highly subjective. A common rule used to reduce subjectivity is to use the variables with loading greater than 0.4 (Ford et al., 1986). Hair (2009) on other hand suggested only focus on the variable with the highest loading. A summary of the rotated factors with individual names given by the author is provided in table 6.3.

Table 6.3 Factor affecting mobile grocery shopping satisfaction – Factor
Analysis Results (Varimax Rotation)

Factors	% of Variance	Reliability (α value)	Items	Mean	Factor loading
Merchandising (mean=3.97)	45.23	.927	have comprehensive categories	3.94	.798
			have appealing promotions and deals	3.93	.758
			have a large range of products	4.03	.711
			is visually appealing	3.95	.683
			are well segmented and organised	3.93	.669
			loads its content fast	3.86	.659
			has a lot of useful features such as retrieving previous shopping list	3.95	.637
			looks professionally designed	4.01	.621
			presents grocery information well	4.03	.594
			is easy to navigate	4.07	.571
Branding and Service (mean=4.11)	9.65	.887	is one of the major retailers in the UK	4.23	.802
			is a well-established retailer	4.20	.800
			provides convenient delivery slots	4.09	.758
			is familiar to me before I shop it on my smartphone	4.18	.727
			has friendly and helpful drivers	4.15	.705
			is always on time	3.92	.577
			has a good reputation	3.99	.533
Product Quality (mean=3.96)	6.03	.820	products have a reasonable sell-by date	3.87	.735
			products generally meets my expectation	4.10	.720
			quality of groceries are competitive	3.92	.700
Digital Communication (mean=3.75)	4.58	.784	feel better informed from various channels such as app notification	3.65	.815
			feel better informed by receiving real time update about my order	3.87	.770
			feel better informed by receiving promotions I am interested in	3.73	.685

Source: Author

Phase 2 Factor Analysis (Consumer loyal behaviour):

Because only one factor was extracted from the factor analysis (see section 6.5.2.2), factor rotation was not applicable in this context. The factor was named "Mobile grocery shopping loyal behaviour", the underlying explanation of loyal behaviour is that customers making repeat purchase with the same app/mobile site, and passing recommendations to other people. See table 6.4 for details.

Table 6.4 Loyal behaviour and its components – Factor Analysis Results

Factor	% of Variance	Reliability (α value)	Items	Mean	Factor loading
Loyal behaviour (mean=3.96)	58.14	.895	RECM2 recommend app	3.98	.80
			RPT5 best app for groceries	3.77	.78
			RECM1 recommend mobile grocery shopping	3.99	.76
			RPT4 first choice	4.01	.75
			RECM3 share experience	3.97	.73
			RPT1 buy again	4.27	.71
			RPT3 not to buy elsewhere	3.99	.65
			RPT2 seldom consider switching	3.73	.58

Source: Author

The phase 1 factor analysis suggested that the following factors are deemed to be effective in the study on mobile shopping satisfaction, namely: Merchandising, Branding and service, Product quality, and Digital communication.

The first factor was labelled as "Merchandising". This factor captures 10 items covering themes such as "App/site quality" and "Category management" from the qualitative study. According to the descriptors of these 10 items, mobile grocery merchandising can be conceptualised as the availability and visibility of products and offers on the shopping app/mobile site. A high-quality merchandising practice enables customers to discover the groceries efficiently

on their smartphone; it also enables the product offering and promotions to be more visible.

The second factor extracted was labelled as "Branding and service". This factor consolidates 2 themes, "Retailer's reputation" and "Delivery service quality", from the qualitative study. The underlying items of this factor indicate that a mobile retailer's branding and service level is reflected through its effort of building its reputation, and the delivery experience it provides to the customers. Section 2.9 discussed the fact that grocery delivery service requires special operations – unlike other types of online retailing, the delivery service is provided by the grocer itself instead of a courier. During the whole process of shopping (see figure 4.1), the product delivery stage is the only opportunity that a customer meets a member of staff from the grocer. The delivery service level and the retailer's reputation may therefore interact retrospectively, and eventually bring together a criterion for customers to evaluate the branding and service level.

The third and fourth factors were labelled using the same name from the related theme ("Product quality" and "Digital communication"). Both factors match up to the related themes discovered from the qualitative study, hence the names were unchanged.

The phase 2 factor analysis suggested that customers making repeat purchases and passing recommendations can be consolidated as one factor, to reflect the customer loyalty. "Loyal behaviour" is labelled for this factor, it captures 8 items (table 6.4).

6.5.2.4 Reliability of the scale
Cronbach's alpha was used to examine the reliability of the scales. In this research, individual Cronbach's alpha values surpassed the commonly adopted threshold value of 0.7 (Nunnally, 1978), see alpha value in table 6.5 and 6.6 for details. The indicators suggested an internal consistency (unidimensionality) of the items measuring the extracted factors.

6.5.3 Theory development and multiple regression analysis

The previous section presented the output of factor analysis. This section provides a multiple regression analysis in order conceptualise the model of mobile grocery shopping loyalty. Specifically, it presents how well the four factors (independent variables) predict mobile grocery shopping satisfaction (dependant variable), and the relationship between customer satisfaction and customer loyalty. The aim of this multiple regression analysis is to understand how well the individual independent variables (identified in section 6.5.2) predict customers' satisfaction of mobile shopping.

6.5.3.1 Preliminary Analysis

Prior to the multiple regression analysis, the author carried out an inspection to ensure no missing value is included in the dataset. The author followed the instructions from Tabachnick et al. (2001) and Pallant (2013), to ensure the basic assumptions of multiple regression were not violated, these assumptions are: Multicollinearity and singularity check, and the check of outliers, normality, linearity, homoscedasticity, and independence of residuals.

Multicollinearity and singularity check is to ensure the absence of multicollinearity and singularity amongst the independent variables. Pallant (2013) suggested the threshold of avoiding multicollinearity is that the correlation (Pearson's r) between independent variables are lower than 0.9; the threshold of checking singularity is that the correlation between independent variables are above 0.3. In this research each pair of independent variable falls under the (0.3-0.9) interval (see appendix 6.7a and 6.8a). In addition, the collinearity diagnostic from IBM SPSS showed the Tolerance value was above 0.10 and VIF was under the cut off value of 10, which suggested there was no presence of multicollinearity or singularity in the model (see appendix 6.7b and 6.8b).

Normality check was conducted through the inspection of the Normal Probability Plot of the Regression Standardised Residual and the Scatterplot. In the Normal P-P Plot, the points lie close to a straight diagonal line from bottom left to top right, which suggested no major deviation from normality (see appendix 6.7c and 6.8c).

Homoscedasticity check was conducted to examine if the variances of the error terms are constant, and have a mean of 0 – this is another underlying assumption for regression analysis. The observation on Residual Scatterplot indicated that most points on the chart were randomly spread, and were concentrated in the centre (see appendix 6.7d and 6.8d); in addition, the assumption of zero mean was met by checking the mean of the standardised residual from Residual Statistics, which was 0, suggesting this assumption was not violated.

Outlier affects small-sample regression analysis. Tabachnick et al. (2001) suggested outliers are those cases of a standardised residual outside the interval of (-3.3, 3.3). In this research few offending cases were detected, and Pallant (2013) suggested action of outlier-removal may not necessarily be taken.

Independence was evaluated by examining the Durbin-Watson statistic, the value (2.0 and 1.7 for each regression model) fell within the interval of (1.5, 2.5), suggesting there was no first-order linear auto-correlation in the regression data.

6.5.3.2 Multiple regression analysis – Factors affecting customer satisfaction

The first multiple regression model captured all 4 independent variables extracted from the factor analysis, the dependent variable is Customer Satisfaction. Table 6.5 shows the mean, standard deviation of the variables in the model, as well as the correlation between the dependent variable and each independent variable.

Table 6.5 Descriptive Statistics and correlation between variable and independent variable (N=150)

	Mean	Std. Deviation	Correlation (Pearson's r) with Satisfaction
Satisfaction	4.28	0.696	
Merchandising	3.97	0.643	.449**
Branding and Service	4.11	0.629	.539**
Product Quality	3.96	0.664	.488**
Digital Communication	3.75	0.819	.263**

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author

The first multiple regression model (integrates all 4 independent variables, see model 1 from table 6.6), explains 33.1% of the variance in mobile grocery shopping satisfaction (P<0.0005). Of these 4 variables, "Branding and Service" makes the largest unique contribution (beta=0.351, Sig=0.000), followed by Product Quality (beta=0.201, Sig=0.040), Merchandising (beta=0.096, Sig=0.365), and Digital Communication (beta=0.004, Sig=0.961). The low-value beta and low significance for "Digital Communication" along with the factor analysis provided in the prior sections suggested it is possible to remove the variable whilst retaining a fair R square of the model. Also, the Sig. value for "Digital Communication" and "Merchandising" are larger than 0.05, which is a sign that these two variables may not make significant unique contribution to the prediction of the dependent variable.

Following the observation of output from the first regression model, the second regression model removed "Digital Communication", and retained the other 3 independent variables. The new model retained its explanatory power, with a minor improve of Adjusted R Square. The third regression model further removed "Merchandising", the explanatory power of this model saw a minor decline but remained statistically significant (R Square=0.327, P<0.0005 see table 6.6).

Table 6.6 Evaluating the models in predicting mobile grocery shopping satisfaction

Model	R Square	R Square (Adj.)	Std. Beta / Sig.	F / Sig.	Status
Model 1: Four-variable model Merchandising Branding and Service Product Quality Digital Communication	.331	.313	.096 / .365 .351 / .000 .201 / .040 .004 / .961	17.959 / .000	Discard
Model 2: Three-variable model Merchandising Branding and Service Product Quality	.331	.318	.098 / .310 .351 / .000 .201 / .040	24.109 / .000	Discard
Model 3: Two-variable model Branding and Service Product Quality	.327	.317	.385 / .000 .244 / .006	35.634 / .000	Accept

Source: Author

The author then conducted a further validation using a step-wise multiple regression method. The step-wise method is a useful tool in the exploratory stages when building a predictive model; during each step, the step-wise procedure systematically includes or excludes variable depending on its significance. The disadvantages of step-wise methods are: 1) If two predictors are highly correlated, the final model might only include one, regardless of the importance of individual predictors. 2) The automatic process may not always stop with the highest R Square value possible. Therefore, the step-wise method is not considered to build up the model, but rather to validate the model as a reference tool.

During the process of step-wise regression, all of the four independent variables were added to the model, in addition, demographic information, including Age, Gender, Education Level, Household Location, Online Grocery Shopping Experience, and Presence of Children, were added to the model as independent variables.

The step-wise regression output showed two-factor-solution (Branding and service, Product quality) is optimum for the model that predicts mobile grocery shopping satisfaction, whilst other factors failed to meet to the criteria for inclusion in the model because of a low significance in the model. This result reconciled the final model proposed by the author in table 6.6, that is, mobile grocery shopping satisfaction is determined by two factors: "Branding and services" and "Product quality". The regression equation is presented as follow:

Mobile grocery shopping satisfaction (Y) =1.516 + 0.426xBranding and Service + 0.256xProduct Quality

The regression model is a good fit of data, with F = 35.6, P<0.0005. R^2=0.327. Taken together, these results provide some evidence that "Branding and service" and "Product quality" contribute to the prediction of mobile grocery satisfaction.

6.5.3.3 Multiple regression analysis – Factors affecting the loyalty

One output from the factor analysis is the behaviour of customer loyalty. It comprises the behaviour of passing recommendations, and repeat purchases (see table 6.4). The marketing literature has evidenced that loyalty is directly affected by customer satisfaction. This proposed model examines the relationship in a mobile grocery shopping context. In addition, it explores whether the two discarded variables from the customer satisfaction model, "Merchandising" and "Digital communication", have any impact on customer loyalty directly.

The reason for testing the direct effect of "Merchandising" and "Digital communication" on customer loyalty is that the underlying concepts for these two factors were frequently mentioned by the respondents in the interview. Since these 2 factors were proved to have low significance in explaining customer satisfaction, the author suspects that they may have a direct influence on customer loyalty (passing recommendations and repeat purchases). Logically this direct relationship makes sense because regardless of product

and service they receive, consumers may recommend an app anyway if they found the app is of high quality with sufficient product lines. In addition, customer retention is one big reason for the grocer pushing digital communications to update its customer. Customers may make repeat purchase when they receive the right information from the right channel. Therefore these 2 independent variables were examined in the multiple regression analysis in order to understand their effect on customer loyalty.

A hierarchical multiple regression analysis was performed. The output showed "Digital Communication" again failed to improve the statistical significance (R Square change=0.001, F=0.200 Sig=0.656), and therefore this variable is removed from the model. Table 6.7 below shows the hierarchical multiple regression analysis with "Merchandising" was entered into the model on the first step. "Satisfaction" was entered on the second step. The dependent variable was "Loyal behaviour". Assumptions for multiple regression analysis were met.

Table 6.7 Evaluating the models in predicting loyalty of mobile grocery shopping

Step	Variables	R Square (Adj.)	F / Sig.	Beta
1	Merchandising	.465	130.721 / .000	.685
2	Merchandising Satisfaction	.535	23.146 / .000	.550 .301

Source: Author

The output of the regression model shows "Merchandising" and "Satisfaction" could predict customer loyalty, the model is denoted as below equation:

Mobile grocery shopping loyalty (Y) =0.481 + 0.568xMerchandising + 0.287xSatisfaction

The regression model is a good fit of data, with F = 86.7, P<0.0005. R^2=0.541. Taken together, these results provide some evidences that "Merchandising" and "Satisfaction" contribute to the prediction of customer loyalty.

6.6 Chapter summary

The purpose of this chapter is to identify the factors affecting customer satisfaction and customer loyalty. Guided by the existing literature relating to mobile commerce and online grocery shopping, the author conducted an exploratory study, where 12 shoppers who used their smartphone to buy groceries were interviewed. 6 themes related to mobile shoppers' satisfaction and loyalty were identified from the interview data. Based on the thematic analysis and its related descriptions, the author designed a survey questionnaire which was responded by 150 mobile grocery shoppers nationally. The factor analysis suggested customers' intention to make recommendation and re-purchase can be conceptualised as a customer's loyal behaviour. The factor analysis also suggested the 6 themes identified from qualitative study, can be categorised into 4 independent factors for multiple regression analysis. The result of regression analysis indicated that the "Branding and service" and "Product quality" explain 32.7% of variance of mobile grocery shopping satisfaction; further analysis suggested "Merchandising" and "Mobile grocery shopping satisfaction" explain 54.1% of variance of mobile grocery shopping loyalty.

This exploratory study provided some initial understanding of antecedents of mobile grocery loyalty: Branding and service entails the service quality provided by the grocer, it is the overall brand image created by the retailer through its reputation and service quality; and it has a strong impact on customer satisfaction. Product quality is an important predictor for online grocery shoppers' satisfaction; the result from this chapter evidenced that the relationship between product quality and customer satisfaction is also important in a mobile shopping context. This chapter also suggested customer loyalty is influenced by customer satisfaction and the merchandising quality. Merchandising has a low effect on satisfaction; however it has a direct and strong impact on customer loyalty, which highlights the importance of the app

design, in particular how the products are categorised and presented to customer.

Chapter 7 Conclusion

7.1 Introduction

Mobile commerce has enjoyed rapid development and acceptance in the UK since 2008, along with fast penetration of the market by smartphone and 3G/4G networks. According to Ofcom (2017), 72% of British adults own a smartphone; and more than a third of smartphone owners have purchased products or services from their device (Deloitte 2014). Buying groceries online is becoming increasingly popular in the UK (IGD 2016), however, there is limited understanding of consumer behaviour when it comes to purchasing groceries on their smartphone. The maturity of mobile commerce and grocery home-delivery service in the UK provides an excellent research environment to understand mobile grocery shopping behaviour. This study discovered the factors that drive consumer intentions to use smartphones for grocery shopping; it also identified the key elements that drive consumer loyalty to a particular mobile grocery provider.

This chapter highlights the main findings of this thesis in terms of its three main research objectives, as well as the contributions and implications derived from these findings.

The chapter begins with a discussion of the research objectives and the related findings. Following this, key contributions of this thesis, and managerial implications are provided. In addition, the limitations of the study and future research directions are suggested in this chapter.

7.2 Research objectives and findings

This section presents a summary of the research, and the extent to which the research objectives were met. To address the research aims and objectives, this study systematically reviewed existing literature on the factors affecting mobile commerce acceptance and issues around online grocery shopping. Multiple theoretical frameworks were reviewed, which consequently led to a demand for constructing a comprehensive list of factors affecting mobile grocery

shopping adoption and customer loyalty in the UK. In parallel, a mixed method has proved to be the best approach to conduct this study.

The research started with a series of semi-structured interviews (n=32), which helped the author to discover customers' thoughts about buying groceries on their smartphones. After analysing existing literature and the qualitative data, a questionnaire was designed and launched nationally (n=300) in order to conclude the factors affecting the acceptance of mobile grocery shopping and customer loyalty.

7.2.1 Objective 1

<u>To identify and investigate the factors that influence the intention of consumers to use mobile applications for grocery shopping</u>

The interview data indicated that the decision of using a smartphone for grocery shopping is a complex process – there is no singular behavioural predicting model that can fit the mobile grocery shopping context. According to the content analysis, a set of themes relating to drivers and impediments to adopt mobile grocery shopping were identified. The thematic analysis discovered that variables from TAM (Davis 1989), including Perceived usefulness and Perceived ease of use, are important elements to predict usage intention, this is consistent with majority of previous studies, (see, for example, Wu et al., 2005, Yang, 2005, Wang et al., 2006, Aldás-Manzano et al., 2009, Niklas et al., 2011, Groß, 2014, Slade et al., 2015). Meanwhile, variables from other mobile commerce acceptance studies, such as Perceived enjoyment (Nysveen et al., 2005, Lu et al., 2009), Perceived skill (Yang, 2005, Lu et al., 2009, San-Martín et al., 2013), Social influence (Slade et al., 2015, Yang et al., 2013), Trust (Slade et al., 2015, Groß, 2014, Zhou, 2013b), Perceived innovativeness (Slade et al., 2015, Yang, 2012), Compatibility (Wu et al., 2005, Mallat, 2007, Kim et al., 2010), Affinity (Niklas et al., 2011, Zhou, 2013b), Anxiety (Yang et al., 2013, Lu et al., 2009), Financial control (San-Martín et al., 2013), and Infrastructural control (Yang, 2012), also proved to be influential to the usage intention. In addition, In-store shopping experience, which is a variable affecting online grocery shopping intention (Hand et al., 2009, Morganosky et al., 2000) was also identified in the mobile shopping context.

Based on the qualitative results and related literature, a questionnaire was designed and launched nationally to collate quantitative data from a wide sample. With the help from an online survey agency, a total of 300 usable respondents are collected. This is followed by a series of statistical analysis of the survey data.

According to the factor analysis, a new variable, Lifestyle enhancement, was formed – two variables from different models (Perceived usefulness from TAM, and Compatibility from IDT) pertained to Lifestyle enhancement; while the factor extraction revealed another 11 individual variables (including Perceived ease of use, Perceived enjoyment, Perceived skill, Social influence, etc.) remain unchanged, compared to the thematic analysis. In addition, the factor analysis proved that Behavioural control from TPB is too general and should break down into two variables, namely Financial control and Infrastructural control, in a mobile grocery shopping context. The product of thematic analysis and factor analysis is therefore a set of 12 variables. These variables were loaded to multiple regression equation in order to identify those could explain usage intention vigorously. The results from multiple regression analysis showed that in the total sample, there are 7 factors that predict the consumers' intention to use mobile applications for grocery shopping. Ranked by the predicting power, these factors are: Lifestyle enhancement, Affinity, Anxiety, Social influence, Financial control, Perceived skill, and Perceived ease of use. Figure 7.1 provides a snapshot of the factors affecting consumers' intention to use a smartphone for grocery shopping.

Figure 7.1 Factors affecting the intention to shop groceries by smartphone: total sample
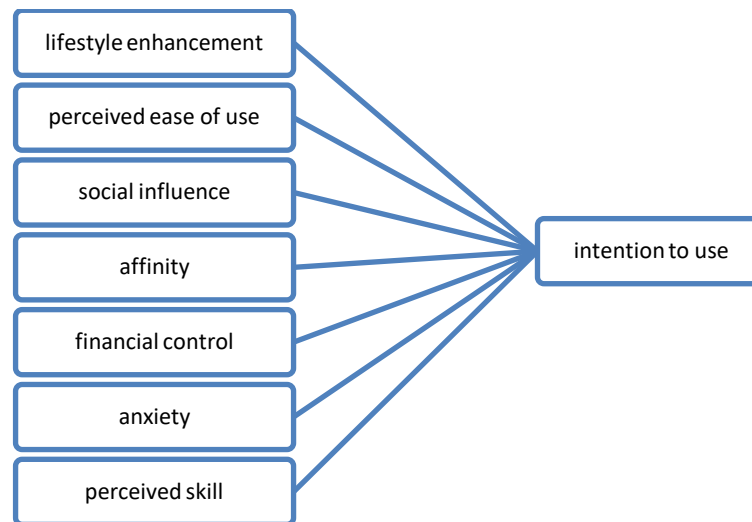
Source: Author

The results show that in order to understand the intention of mobile grocery shopping, adopting a singular behavioural theory is not enough. According to the quantitative analysis, the most important factor that predicts usage intention is the degree that users perceive that shopping on their smartphone would enhance their lifestyle (Lifestyle enhancement). In addition, a selection of variables from other models or theories were further proved to be suitable for understanding customer acceptance of mobile grocery shopping, these are: Affinity (by Rubin, 1981), Anxiety (by Bandura, 1986), Social influence (by Ajzen et al., 1980), Financial control (by Ajzen, 1991), Perceived skill (by Ajzen, 1991), and Ease of use (by Davis 1989).

On the other hand, a unique finding was found in relation to the Trust/Perceived risk, Perceived enjoyment, and Infrastructural control of mobile grocery shopping. In this study, Trust/Perceived risk showed no impact on usage intention; that is, unlike previous online shopping literatures (see, for example Jarvenpaa and Todd, 1996, Hansen, 2006) where Perceived risk was found to be a major impediment of online grocery shopping. Mobile shoppers however, whether purchasers or non-purchasers, are not concerned about the risks associated with their grocery purchases. Part of the reason could be that there are regulations in place (such as The Consumer Contracts Regulations 2013) to

protect online consumers' rights in the UK, and the grocers operating online are those well-established ones.

The absence of Perceived enjoyment contradicts the findings from some previous studies such as Park et al. (2006), Ko et al. (2009), Lu et al. (2009), which suggest that, despite the hedonistic aspects (Childers et al., 2002), grocery shopping, no matter which channel consumers choose to use, is seen as a burden. In addition, the Infrastructural control proved to have minimum impact on usage intention indicating that issues such as screen size, and mobile signal are improving (Flurry, 2015, UK Government, 2015); past literatures that hold a different view (see for example Lu et al., 2009, Yang, 2012) may have resulted from the fast development of the mobile technology, and may therefore require further refinement.

The findings relating to research objective 1 provide a comprehensive set of factors that predict consumers' intention to use mobile applications for grocery shopping; it also provides a complementary view to the existing studies such as Agrebi et al. (2015), Groß (2014), San-Martín et al. (2013), to help understand mobile grocery shopping motivation.

7.2.2 Objective 2

<u>To compare the factors influencing the purchasers and non-purchasers' decisions to use mobile grocery shopping.</u>

There are a lack of studies on the profile of the mobile shopping adopter and non-adopter (Agrebi et al., 2015, Bigné et al., 2007). The findings relating to research objective 2 complement the existing literature. In order to ascertain the difference between purchaser and non-purchaser and their acceptance of mobile grocery shopping, the in-depth interviews and nationwide questionnaire survey clearly distinguished purchasers and non-purchasers.

During the interviews, purchasers and non-purchasers received different questions. For purchasers, the questions were designed to ask about their real-life experiences of using mobile grocery shopping; for non-purchasers, the questions were focused on their perception and expectations of using mobile

grocery shopping. The themes and narratives raised by both groups were analysed and compared throughout the content analysis.

The qualitative data analysis showed that purchasers perceive a greater variety benefits of using their smartphone for grocery shopping (see section 4.4). On the other hand, themes relating to the barriers of using mobile grocery shopping, were proportionately higher among non-purchasers. (see section 4.5). The content analysis discovered that the root of non-purchasers' sceptical attitude likely relates to lack of awareness or knowledge of grocers' mobile shopping apps, caused by poor allocation of marketing resource from the grocers to promote the mobile channel. Rogers (2010a) claimed that innovation diffusion is about communicating a new idea; and it follows a 5-stage process to diffuse, whereby the first stage is when potential adopters initially learn about the technology. Usually, people are made aware of innovation by accident because they do not actively seek an innovation until they know it exists (Rogers, 2010), the interview finding also confirmed this point (see section 4.7). Therefore, without sufficient promotion of the mobile channel, grocers are missing opportunities to reach out to their potential mobile customers.

Using the existing theories and qualitative data from the interview, a questionnaire was distributed nationally to conduct the quantitative comparison in a larger scale of sample. The author collected two sets of high-quality responses from the purchaser and non-purchaser groups respectively; each set consists of 150 responses in order to achieve a fair comparison of purchasers and non-purchasers. Through analysis of the demographic difference between the purchasers and non-purchases using the Chi-square analysis, it was identified that purchasers and non-purchasers are differentiated by 3 characteristics: age, the presence of a child in the household, and possession of previous online grocery shopping experience on a computer. This is consistent with previous studies that the presence of a child or children in the household facilitates the future intention to shop for groceries online (Morganosky et al., 2000); the younger generation (Bigné et al., 2007) and those who had previous online shopping experience (Bigné et al., 2007), are likely to be mobile shoppers. Meanwhile, to the contrary of some previous studies, gender (Rodgers et al., 2003, Slyke et al., 2010), education level (Priluck, 2001, Morganosky et al., 2000), and household location (Doherty et al.,

2006), showed no significant difference between purchasers and non-purchasers. Bigné et al. (2007) provided similar results to this study, where gender and education level showed no impact on mobile commerce usage intention.

On the other hand, a factor analysis was conducted for the purchaser and non-purchaser samples separately. The results showed 12 variables could be extracted for both purchaser and non-purchaser samples. A multiple regression analysis was followed to examine the impact of these variables on usage intention for both groups. From this perspective, results from research objective 2 compensate research objective 1, through providing insight that distinguish purchasers and non-purchasers. Figure 7.2 shows the factors affecting purchasers (Figure 7.2A) and non-purchasers (Figure 7.2B) intention to use a smartphone for grocery shopping

Figure 7.2A Factors affecting the intention to shop groceries by smartphone: purchasers sample
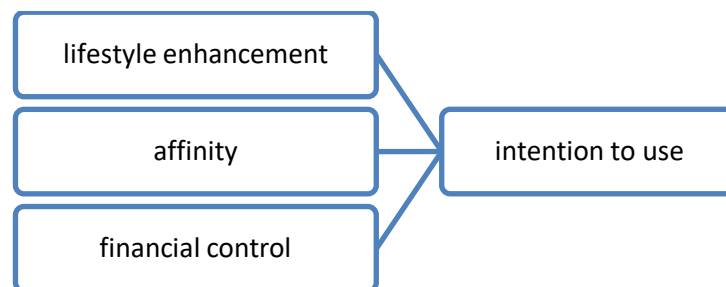
Figure 7.2B Factors affecting the intention to shop groceries by smartphone: non-purchasers sample
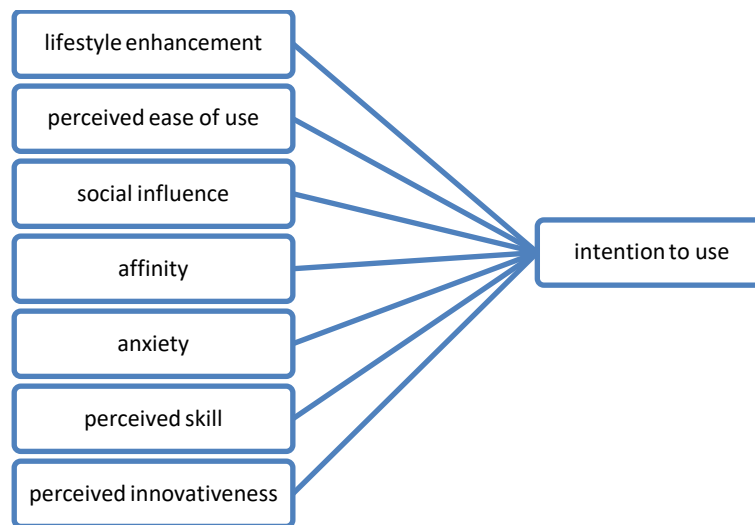
Source: Author

The results indicated that for non-purchasers, there are 7 factors affecting their intention to use mobile grocery shopping, namely: Lifestyle enhancement, Perceived ease of use, Social influence, Affinity, Anxiety, Perceived skill, and Perceived innovativeness. In comparison, a multiple regression analysis for the purchasers' sample suggested there are 3 factors influencing their intention to use mobile grocery shopping, these are: Lifestyle enhancement, Affinity, and Financial control. The fact that there are more factors affecting non-purchasers' usage intention than purchasers, suggests that non-purchasers have wider considerations when adopting the new shopping channel, and they are more cautious about their shopping decisions. Similar results were found in e-commerce studies, for example Karayanni (2003), Liebermann and Stashevsky (2002), Kaufman-Scarborough and Lindquist (2002), where non-adopters generally indicated a wider range of considerations and concerns than adopters. Because of the increasing scale of retail sales on mobile (see section 2.2.4), and the amount of concerns non-purchasers perceive, non-purchasers are likely being classified as "late majority" and "laggards" (Rogers, 2010: 247). These shoppers are less motivated to adopt the retail innovation because of a

sceptical and cautious attitude, which is probably resulted from a lack of resource (Rogers, 2010).

For the purchaser sample, the absence of Perceived ease of use, Social influence, Anxiety, Perceived skill, and Perceived innovativeness suggest that compared to its counterpart non-purchaser sample, the Perceived ease of conducting mobile grocery shopping may be less relevant – this would be relating to the fact that purchasers are already aware of (or familiar with) the process of making a purchase on a smartphone and therefore the perception of ease of making a purchase is somehow less effective. The result also indicated that comparing to the non-purchasers, purchasers' decision to use the technology is less likely to be affected by their social circle. Rogers (2010) explained early adopters have the greatest degree of opinion leadership in most social systems; therefore, they are more likely to be the influencers in their social circle when it comes to the decision to use smartphones for grocery shopping. In addition, the result of this study showed that purchasers tend to be less cautious about making mistakes, and are not afraid of completing shopping tasks on their smartphones. Their role of innovation diffusion is to decrease the uncertainty around the innovation in order to communicate their subjective evaluation of it to their social circle (Rogers, 2010). On the other hand, this study suggested that purchasers' skill of using mobile phones and their interest in technological innovations were proved to be insignificant for accepting mobile grocery shopping. Moreover, the inclusion of financial control as an influential factor for purchasers suggested that they are more aware of the cost of using mobile grocery shopping compared to non-purchasers. This may come from the actual experience of using mobile grocery shopping, where additional costs such as mobile data usage or delivery charges appearing on their bill may influence their decision to use.

Both purchasers and non-purchasers' usage intention are influenced by two factors, lifestyle enhancement and affinity, according to this study. The significance of lifestyle enhancement in both samples suggested that it didn't matter whether they had relevant mobile grocery experience or not, the usage intention is determined by the fact that the mobile channel would be compatible to their lifestyle and it enhances the overall performance of the grocery shopping task. The presence of affinity in both samples confirmed there is a

positive relation between usage intention and the level of mobile phone attachment – the impact on purchasers is higher. A similar conclusion was provided by Bigné et al. (2007) that mobile affinity has a significant and positive effect on usage intention for both mobile shoppers and non-shoppers.

The contrast between factors affecting purchaser and non-purchasers' usage intention suggested that previous studies of mobile shopping acceptance (for example Lu et al., 2009, Aldás-Manzano et al., 2009, Yang, 2010) lacked distinction between user and non-user, and therefore may be subject to re-validation. On the other hand, in comparison to those studies where user and non-user were treated separately, this thesis provided a more comprehensive list of factors – Agrebi et al. (2015) examined only three candidate factors (perceived usefulness, perceived ease of use, and perceived enjoyment) in a confirmatory analysis; their study highlighted only one factor, perceived usefulness affecting non-users intention to use mobile commerce. In comparison, this study identified 7 factors that have positive and significant effects on non-purchasers' usage intention; this is owing to the effort of the qualitative study which provided a larger set of candidate factors to examine.

7.2.3 Objective 3

<u>To explore the factors influencing consumers' repeat purchases and loyalty in mobile shopping.</u>

The third research objective of this study relates to the critical factors affecting customer loyalty in the mobile store. This is a standalone study from research objective one and two, although the research data is collected along with the other two research objectives. The accomplishment of research objective 3 provided complementary insight to the study of repeat usage of mobile shopping (Hung et al., 2012, Cyr et al., 2006) and online grocery shopping loyalty (Morganosky et al., 2000, Rafiq et al., 2005, Hansen, 2006).

This research objective is again achieved through a mixed methods approach. Semi-structured interviews were scheduled as the first stage of the research. With literature relating to antecedents of online customer loyalty as guidance, the qualitative data analysis identified 6 themes relating to their mobile grocery shopping satisfaction and loyalty, namely: Site and app Quality (Cyr et al., 2006,

Szymanski et al., 2000, Srinivasan et al., 2002), Category Management (Ramus et al., 2005, Sirohi et al., 1998, Szymanski et al., 2000), Product Quality (Hansen, 2006, Ramus et al., 2005, Doherty et al., 2006), Delivery Service Quality (Kim et al., 2009a, Doherty et al., 2006), Digital Communication Effectiveness (Srinivasan et al., 2002, Li et al., 2012, Ramus et al., 2005), and Brand Reputation (Selnes, 1993).

Based on these themes and related interview narratives, a nationwide questionnaire survey was launched; at the end of the survey, 150 purchasers' responses were collected. The factor analysis results showed that the 6 themes identified from the in-depth interview can be further condensed into 4 distinct variables, these are: Merchandising, Branding and Service, Product Quality, and Digital Communication. Noticeably those 4 variables were built on the foundation of respondents' actual shopping experience rather than their perception or expectation. The factor analysis result also suggested that mobile grocery shopping loyalty is reflected through customers' intention of making repeat purchase with the same mobile grocer, and the intention of making recommendations to their social circle.

A multiple regression analysis was used to identify the key factors affecting mobile grocery shopping satisfaction and customer loyalty. The result suggested that Branding and Service, together with Product Quality could predict the satisfaction of mobile grocery shopping. This is in-line with Delone and McLean (2003), that information quality, system quality, and service quality are found to have direct influence on information system users satisfaction. In addition, the study showed the level of Merchandising quality and Customer satisfaction have direct and positive effect on Customer Loyalty. Figure 7.3 below illustrates the process of which the factors affecting mobile loyalty were identified.

Figure 7.3 From qualitative to quantitative analysis, shaping the mobile grocery shopping loyalty model

Themes from interview data:

Site and app quality
Category management
Product quality
Delivery service quality
Digital communication effectiveness
Brand reputation
Recommendation
Repeat purchase

Factor analysis:

Merchandising
Branding and service
Product quality
Digital communication
Loyalty behaviour

Regression analysis :

Branding and service
Product quality
Satisfaction
Loyalty behaviour
Merchandising

Source: Author

The result indicated that mobile grocery shopping loyalty is largely affected by the retailers' efforts and customers' post-purchase evaluation. Unlike existing literature about mobile customer loyalty, where focus were on variables from the TAM and website design aesthetics (Cyr et al., 2006), trust and post purchase evaluation (Hung et al., 2012), perceived value, trust, and habit (Lin et al., 2006), the finding of this study drew upon the foundation of exploratory study from in-depth interviews. As a result of this, it highlighted the importance of the retailers' efforts to build its brand and service level, and the importance of assuring product quality because these are the key determinants of mobile shoppers' satisfaction. In addition, this study discovered that mobile customer loyalty is affected not only by customer satisfaction, but also by the merchandising quality of the mobile app.

7.2.4 Objective 4

<u>To develop a conceptual framework of factors influencing use of mobile devices for online grocery shopping.</u>

Following the literature, this study has examined several sets of variables, and integrated these variables into a conceptual framework of factors affecting customer acquisition and customer satisfaction (see figure 2.6). By utilising mixed methods, this study analysed data from literature, semi-structured interview and online survey, and consequently provided empirical evidence to further developed the conceptual framework.

Regarding the customer acquisition, this study proposed a coherent framework that explains factors affecting customer intention to use smartphones for grocery shopping (see figure 7.1). The model has consolidated existing frameworks including the Technology Acceptance Model (Davis 1989), the Theory of Planned Behaviour (Ajzen 1991), and the Diffusion of Innovation (Rogers 2010). The model confirmed a direct link between usage intention and variables from TAM and TPB, including Subjective norm, Behavioural control, Perceived usefulness, and Perceived ease of use. In addition, it established an interrelationship under one comprehensive investigation by adding additional variables including Affinity, Anxiety, Perceived skill. The results have refined the mobile commerce adoption model produced by Wu and Wang (2005), and the mobile shopping adoption models produced by Yang (2012) and Groß (2014).

Regarding the customer satisfaction, this study analysed factors affecting online shopping satisfaction in a mobile shopping context. The model produced by this study refined and integrated key variables from previous studies, including Site quality (Cry et al. 2006, Srinivasan et al. 2002, and Szymanski et al 2000,), Category management (Ramus nd Asger Nielsen 2005, Szymanski et al. 2000, and Sirohi et al. 1998), Product quality (Hansen 2006, Doherty et al 2006), Delivery service quality (Kim et al. 2009a, Doherty et al. 2006), Digital communication (Li et al. 2012, Srinvasan et al. 2002), and Brand reputation (Selnes 1993). The model (see figure 7.3) introduced a new set of factors affecting customer satisfaction based on the empirical evidence.

The conceptual framework proposed in the literature review was developed through the completion of research objective one and three. The developed

framework is expressed graphically in figure 7.4. It draws together key variables relating to the customers acquisition domain and customer satisfaction domain, into a cohesive framework of factors influencing the use of mobile devices for online grocery shopping.

Figure 7.4 A developed conceptual framework

- Lifestyle enhancement
- Perceived ease of use
- Social influence
- Affinity
- Financial control
- Anxiety
- Perceived skill
- Perceived innovativeness

Perception

Service quality

- Product quality
- Merchandising

Intention

Satisfaction

Socio-demographics

Marketing engagement

- Age
- Household size
- Presence of child
- Online grocery shopping experience

- Branding and service

Source: author

7.3 Key contributions

This study contributes to the advancement of existing knowledge in social sciences and marketing literatures by identifying and developing an integrated model that addresses the factors that influence the consumers' grocery purchase decision in the mobile channel. In this attempt, the study has identified and examined a number of significant variables influencing consumers' intention to use mobile phone for grocery shopping, and their satisfaction. To the best of the author's knowledge, this study is the first attempt to investigate customer

mobile grocery shopping intention and loyalty in the UK. In fact, such research is virtually non-existent, especially in a grocery shopping context. This section discusses the key contributions of this study.

First, this study is amongst the first to conduct a sector-level analysis of the mobile commerce discipline. While most studies in this realm were concerned with the acceptance of mobile commerce (Wu et al., 2005, Yang, 2005), and mobile shopping (Musa et al., 2016, Lu et al., 2009) in general, with some studies focused on smaller categories of retailing such as tickets (Mallat et al., 2009, Agrebi et al., 2015) or fashion products (Ko et al., 2009), there is limited research so far on the decision making of mobile shopping in the grocery sector. Food and drink sales represent a large proportion of the UK retail sector (ONS, 2016), as such, the model proposed by this study provided early evidence of mobile shopping behaviour, and is more appropriate and robust in explaining grocery shopping behaviour. On the other hand, this study further developed the online grocery shopping models proposed by Kurnia et al. (2003), Hansen (2008), and Hand et al. (2009), and added the mobility dimensions as part of the usage motivation.

In addition, according to Hofstede (1983), different cultures may exhibit different consumer behaviour. While there is a continuous refinement and development of mobile commerce research in North America (Yang, 2010), West Europe (Bigné et al., 2007), and East Asia (Wu et al., 2005), this study proposed a model that explicitly explains customer behaviour in the UK. The empirical evidence drawn from the local sample indicated that the models proposed in other countries are not adequate to understand UK customers. This study fills the knowledge gap between the UK and other mature markets.

Secondly, this study has an important contribution on the methodological perspective - as it is unlike the majority of existing mobile commerce acceptance literature which is built upon a confirmatory study using a singular model (see table 3.3), such as the Theory of Planning Behaviour (TPB), or the Technology Acceptance Model (TAM) and its derivatives (UTAUT for example). With a rapid development of mobile commerce in recent years (Office for National Statistics, 2017) and the complex nature of mobile grocery shopping, this study adopted a mixed methods approach, to explore the factors affecting the purchase behaviour of mobile grocery shoppers. The use of mixed methods,

meant that the foundation of this study was not restricted to any singular theory, instead, through both qualitative and quantitative data analysis it was able to examine the variables from multiple theories that are appropriate to explain the acceptance of mobile grocery shopping. A few variables identified from the previous studies, such as trust, perceived enjoyment (see table 2.4) were proved to be insignificant; while a new variable, lifestyle enhancement, was identified.

Finally, this study produced two different models explaining purchasers (Figure 7.3a) and non-purchasers' (Figure 7.3b) intention to use a smartphone for grocery shopping. The distinction of purchaser and non-purchaser with the evidence of the two different models been produced, indicated that ignoring the respondents' experience (see for example Yang, 2012, San-Martín et al., 2013, Groß, 2014, Slade et al., 2015) may result in a model that is too general. In addition, the focus of purchaser sample with regards to the factors affecting their mobile shopping satisfaction contributes to the theories of customer loyalty with a mobile shopping perspective.

7.4 Managerial implications

This research helps marketers to understand consumers' mobile shopping values. The research objectives of this study were generated from some key challenges to retail management today – customer acquisition and customer retention. It is close to the key topics of retail marketing and digital marketing in the grocery sector. This thesis has a number of important implications for marketing management.

Firstly, the findings of this study can be used by retailers to formulate a more effective strategy for encouraging consumers to use mobile grocery shopping. Retailers' in-house data is cumulating thanks to the EPOS system and CRM system; however, this sales data can hardly reflect a customer's cognitive decisions when shopping behind a screen. When marketers are designing the marketing plans and promotion calendar, the results from this study provides an important supplement to existing customer data, which can be used as a customer acquisition tool to help prioritise the communication of mobile grocery shopping benefits.

The most important determinant for behavioural intention is lifestyle enhancement, it is referred to as time saving, making better shopping decisions, more convenience, and enabling work-life balance etc. These are the main triggers of mobile grocery shopping intention. That is, to boost the effectiveness of using mobile grocery shopping, grocers should launch / develop app and mobile sites with a careful consideration for speed of shopping, and the ability to compare price and nutrition information easily on the move. The development of shopping app should consider offering customers the flexibility to customise functions and layout within the app, in order to fit individual shopper's need and lifestyle.

The other key determinant of mobile grocery shopping is the ease of use, such as ease of check out, ease to navigate throughout the shopping journey, and the ease of building a basket. The focus for the grocer should therefore be on minimising the customers' effort of shopping through building up a supporting experience, clear and readable content and a categorical hierarchy of products, and a high accuracy search application.

The study also highlighted the social influence on the intention of using mobile grocery shopping. The factor analysis suggested comparing mass media (such as TV and radio broadcast), shoppers' colleagues and social circles play a more important role in influencing their usage decision. This implies in terms of customer acquisition, there is a need to shift the focus from mass media to online social media platforms, and the necessity to build customer loyalty. This is mainly because the social influence and word-of-mouth recommendations are more effective than investing in traditional media for advertising.

The effect of mobile affinity on usage intention was also identified in this study, in that those who spend a long time on their mobile phones are more likely to make a grocery purchase on their device. The managerial applications from this finding suggest that grocers should promote their apps or mobile sites on other popular apps, such as games and social media, to facilitate the appearance of the shopping app to potential shoppers.

This research also indicated financial control is a barrier to mobile grocery shopping especially for experienced shoppers (purchasers). The managerial application of this point is to reduce cost concern, especially the delivery cost

amongst mobile shoppers. Grocers should address the monetary benefit of using the mobile channel, such as reminder of missed multi-buy promotions, also the saving on travel, and car pollution.

The anxiety associated with mobile grocery shopping, especially the fear of making a mistake on the mobile device was highlighted by this study. The impact of anxiety as a barrier to adopting mobile grocery shopping is particularly significant amongst non-purchasers. This research suggested that marketing for customer acquisition should focus on demonstrating the process of making an order, with an emphasis on mistake recovery from the app, for example, the app provides opportunities to edit the order before the products are dispatched from the warehouse.

Consumers with a low level of smartphone usage skill may perceive a barrier of adopting mobile grocery shopping, especially for non-purchasers; this fact was discovered in this study, which suggested marketing campaigns should pay attention to low-skilled mobile users, including easy to follow instructions either on the app or in offline material such as magazine; also, the app or mobile site should provide helpline number to enable users to easily call for support on their orders.

Secondly, marketing strategy can be effectively formulated for customer retention by using the results from research objective 3. According to chapter 6, shoppers' satisfaction on the mobile channel is determined by the product quality they receive, the grocer's own branding and the customer service level. Key priorities to retain customer satisfaction are: to focus on ensuring a high standard of product quality through a careful selection of product supplier, and building a mechanics to guarantee the freshness of the products to meet what consumers see on their app; to maintain the brand exposure and reputation on the mobile channel, such as mobile ads, digital content on social media, and blogs, while providing a hospitable product delivery experience.

The study also highlighted that on top of customer satisfaction, mobile customer loyalty is determined by the grocer's merchandising quality. The in-store execution of merchandising requires physical change and movement of product display, while the merchandising on mobile is different. The managerial insight from this study suggest mobile merchandising quality should focus on improving

the comprehensiveness of the product categories available on the app; in the meantime the content that showcases the products should be concise and clear with a fast loading speed – high resolution picture and text heavy content needs to be resized for optimum load-up speed, with a careful consideration of retaining a professional presentation of the layout and information architectural design. Features such as retrieving previous shopping list to facilitate an ease of navigation experience is a must.

Other un-quantifiable insights discovered from the in-depth interview provided useful managerial suggestions, especially the emphasis of the place for marketing communication. The qualitative study identified the weakness of previous marketing, especially the poor effort made on promoting the mobile channel. The research suggested that public transport with stable mobile signal, such as underground / over-ground trains and stations, buses, or ferries, would be a good focus for advertising. It also suggested using the environment friendly vans with the shopping app logo painted, would attract more customers.

7.5 Limitations of the study

Several limitations in this research need to be addressed and taken into consideration. Foremost the limitation is relating to the sampling for quantitative research. Due to the exploratory nature of this study, and the fact that the ratio of purchasers to non-purchasers is unknown in the population, the total sample (N=300) was built upon a quota sampling method, which consists of 150 purchasers and 150 non-purchasers. The total sample may not representative of the population, and therefore the data can not be used to predict the market share of purchasers and non-purchasers in the UK.

Secondly, there is limited research on lapsed purchasers. Rogers (2010) pointed out an innovation adopter may drop out at any stage. In this research there were respondents who only experienced mobile grocery shopping a few times and dropped out. The presence of these respondents would dilute the contrast between purchaser and non-purchaser.

Thirdly, the quantitative data was gathered through an online panel in the form of self-administrated online survey questionnaire. The online technique is useful for the survey instrument because it offers a timely, inexpensive approach to

obtain important information. However the use of an online panel survey for social research was widely criticised because it may be associated with specific socioeconomic status (Selwyn and Robson, 1998). On the other hand, due to the nature of the internet, it is not possible to check the honesty of the participants' answer – their demographic information could be wrong, and moreover, their answers to the scale questions may not be honest. Despite this, the author managed to remove the low-quality respondents based on submission time and the presence of an artificial pattern of answering the scale questions. The sample is not flawless.

Fourthly, the qualitative study generated more than 10 themes that relate to mobile grocery shopping acceptance, it was expected to obtain a similar amount of salient beliefs held by consumers in the quantitative study; however there were fewer beliefs reported to be statistically significant. This may relate to the issues around the online survey, yet arguably such smaller sets of beliefs may be a result of the novelty of mobile grocery shopping itself.

The other limitation is that the research data was obtained in only one period of time. Therefore the result does not reflect the change in user reactions over time; on the other hand, current knowledge will quickly become obsolete due to the high speed of mobile shopping development.

7.6 Future research recommendations

This study has several limitations, therefore, there are a number of possible avenues for future research and improvement.

This research synthesised several theoretical perspectives and exploratory interviews, in order to develop a model that explains shoppers' adoption of mobile grocery shopping and customer loyalty, but other external factors may also be critical and missed. As such, the addition of other variables as direct factors influencing intention or moderators, could extend the understanding of the consumer decision making. For example, this study only examined two categories of geographic location, i.e. rural and urban; the definition of rural and urban by individual respondents can be different. More precise survey questions can be adopted such as asking the distance between respondent's home to the

local supermarket. Distance to the local supermarket may be an important external factor in understanding the consumer behaviour.

Another direction for research could focus on the lapsed users. Investigating the reasons for lapsing could provide important managerial insight. Some of the quantitative data in this study could be used to contribute to future research into lapsed users.

Furthermore, another extension of customer loyalty could consider customers' basket weight. This current research only focused on the intention to shop exclusively with a mobile grocer. Future research would focus on those who use multiple grocers, to examine the reason they spend more money with one grocer than the other.

As mentioned in the limitations of the study, the knowledge of mobile commerce acceptance could be quickly refined due to the rapid development of the mobile technology. Therefore a longitudinal research project would help to develop a better grasp of the interrelationships among variables over time, and the change of consumers' perception of mobile commerce when they become familiar with the app and service. Moreover, a longitudinal study could help to understand how a non-purchaser becomes a purchaser, in terms of their expectation before using mobile for grocery shopping, and their actual experience. In fact, the longitudinal research data was gathered during the study, however due to the limitation of word-count, the topic is not discussed in this thesis.

Lastly, the research model can be examined using more sophisticated statistical techniques such as Structural Equation Modelling (SEM). A major advantage of SEM is that it provides an analysis of dependencies of psychological constructs without measurement error, leaving only common variance (Nachtigall et al., 2003). Another advantage is that dependent variables can be used as independent or predictor variables in the same theoretical model (Schumacker and Lomax, 2004).

As such, future works in these areas would build a more comprehensive understanding of mobile shopping behaviour.

Appendices

Appendix 3.1 Semi-structured interview questions (purchaser version)

Section 1: Demographics and experiences

Could you please tell me your name?

………………………….

How many people live in your household?

…………………………

What is your occupation?

…………………………………………………..

What is your highest education qualification?

…………………………………………………..

Section 2: Adopting mobile for grocery shopping

How many grocery websites / app have you viewed on your mobile?

(further question: can you give me an example?)

…………………………………………………..

Which grocer is your first choice when shopping on your smartphone?

(further question: Why?/ what made you make that decision?)

…………………………………………………..

Can you describe your first experience of mobile grocery shopping?

(further question: What was your motivation?)

…………………………………………………..

From your own experience, what are the main benefits of buying grocers on mobile?

(further question: do you enjoy it, why/example?)

…………………………………………………..

What are the disadvantages of buying grocers on mobile?

(further question: do you hate it, why/example?)

…………………………………………………..

When do you normally buy groceries on your mobile?

……………………………………………………..

Where do you normally buy groceries on your mobile?

……………………………………………………..

What information or function do you find particularly useful on the grocer's mobile website/app?

(further question: Is there any information or function do you think is being missed on the mobile shopping website/app?)

……………………………………………………..

When buying groceries on the smartphone, do you have any concerns?

……………………………………………………..

Do you have any concerns about the delivery? Such as delivery cost?

……………………………………………………..

How do you find their delivery service?

(further question: how do you judge a good delivery service?)

……………………………………………………..

Is there any good or bad experience of mobile grocery shopping you would like to share?

……………………………………………………..

In what situation would you consider giving up buying groceries on the smartphone, and seek to buy from other channels (e.g. going to store or use personal computer)?

……………………………………………………..

Which grocer do you go physically the most, is it different from your most used mobile grocer? (further question: Why they are / are not different?)

……………………………………………………..

Please describe your overall attitude about mobile grocery shopping.

……………………………………………………..

What should your mobile grocer to improve in the future? (such as online experience, communication, service, information, or any other aspect)

……………………………………………………..

Do you want to use mobile for shopping again? If not, could you tell me why?

……………………………………………………..

Do you receive marketing information from your mobile grocer? (Such as Email newsletter, or app notifications)

……………………………………………………..

Do you follow the grocer on social network? (Such as Facebook or Twitter)

…………………………………………………..

Do you find it (receiving marketing information and following social network) useful?

(further question: How does the marketing information affect your purchase decision?)

…………………………………………………..

Can you list a few names of mobile grocers you used before, and use one or two words to describe the shopping experience with each of the grocer?

…………………………………………………..

Have you ever bought groceries on your computer before? What do you think the difference between mobile grocery shopping and online grocery shopping?

…………………………………………………..

Section 3: Loyalty

I'm going to talk about loyalty now.

Do you regard yourself loyal to an app/grocer website? / Is there any grocer that you most frequently use?

(further question: What makes you make the repurchase?)

…………………………………………………..

You mentioned xxx is your first choice for mobile shopping, is it always your first choice?

(further question: if it wasn't your first choice, why switch to this one? What was the turning point / critical experience that make you particularly satisfied? Could you describe a mobile grocery experience that you were particularly satisfied?)

…………………………………………………..

In what situation would you consider to change to another mobile grocer?

…………………………………………………..

Would you like to encourage your friend or family to use mobile to shop with a particular grocer? What make your make the recommendation?

…………………………………………………..

Appendix 3.2 Survey questionnaire (purchaser version)

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EXETER

Dear sir or madam,

Thank you very much for agreeing to participate in this survey. I would like you to answer some questions about buying groceries on a smartphone. It takes no longer than 10 minutes to complete.

This is a part of my PhD research, the questionnaire is anonymous and the information you provide will be confidential and used only for research purposes.

I would be extremely grateful for your help. If you would like to enter the prize draw of £50 Amazon voucher please provide your email address at the end of the survey. Thank you for your cooperation!

Yours,

Junxiong Li

University of Exeter Business School

Exeter EX4 4ST

United Kingdom

Instruction

Please tick in the appropriate places, the questionnaire has 3 parts:

Part 1: Your opinion about mobile grocery shopping

Part 2: Your opinion about your favourite grocer when buying on your mobile

Part 3: General information about yourself

1. Do you have a smartphone?

☐ Yes

☐ No

2. Do you buy groceries?

☐ Yes

☐ No

3. Have you used a smartphone to buy groceries?

☐ Yes

☐ No

Part 1: Your opinion about mobile grocery shopping (16 questions)

Using the scales provided, please indicate your agreement or disagreement with the following statement about buying groceries on the smartphone

Usefulness adapted from Aldás-Manzano et al. (2009), Davis et al. (1989), Ahn et al. (2005), Wu et al. (2005)

1. Buying groceries on a smartphone …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
saves my time					
helps me to make better grocery shopping decisions					
helps me to eat a healthier diet					
makes grocery shopping easier					
is convenient					
helps me to spend money wisely					
enables me to buy groceries when I want to					
enables me to buy groceries where I want to					

Ease of use adapted from Aldás-Manzano et al. (2009), Davis et al. (1989), Ahn et al. (2005), Wu et al. (2005)

2. The grocery shopping app/mobile website I shopped with …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
has clear and understandable categories and content					
is intuitive					
can be used without help from someone experienced					
does not require great mental or physical effort					
can easily find what I want					
has a simple checkout process					
has an easy-to-arrange delivery service					

Enjoyment adapted from Lu et al. (2009), Groß (2014)

3. Accessing the grocery shopping app/mobile website …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
is fun					
is a relaxing process					
is enjoyable for my own sake					
is a pleasant experience					

Perceived Skill adapted from Lu et al. (2009)

4. I am comfortable using my smartphone to …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
download the app, or browse to the grocery					

shopping website					
browse in a shopping app/website					
make a purchase or payment					
complete grocery shopping in a short time					

Social influence adapted from Yang (2012), López-Nicolás et al. (2008), Nysveen et al. (2005)

5. My decision to use (or not to use) mobile grocery shopping would be influenced by…

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
people important to me					
people around my social circle					
my colleagues					
my family members					
mass media (e.g. newspapers, radio, television, etc.)					

Trust adapted from Wang et al. (2006), Groß (2014)

6. When shopping for groceries on my smartphone, I am concerned about …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
providing my credit card details					
providing my personal information					
receiving inappropriate substitutions (e.g. another brand of bread than the one ordered)					
receiving low quality items					
having to deal with customer service					
not receiving my items on time					

Innovativeness adapted from Kim et al. (2010), Slade et al. (2015), Aldás-Manzano et al. (2009)

7. When innovation or new technology comes out, I would …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
try to experiment with it					
get excited					
be amongst the first to try it					
know more about it than my circle of friends					

Compatibility adapted from Kim et al. (2010), Wu et al. (2005), Lu et al. (2009)

8. Buying groceries on the smartphone …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
fits my lifestyle					
fits well with balancing my time at work					
is compatible with the pace of my life					
fits my online shopping habits					

Affinity adapted from Aldás-Manzano et al. (2009)

9. Please indicate how important your smartphone is

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Using smartphone is one of my main daily activities					
If my smartphone is not with me I would really miss it					
I cannot go for several days without using a smartphone					
I would feel panic or lost without my smartphone					

Intention adapted from Yang (2012)

10. Please indicate your future intention of using a smartphone for grocery shopping:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Given the chance, I intend to shop for groceries from my smartphone					
I intend to start / continue buying groceries on the smartphone					
I intend to learn tips and tricks for mobile grocery shopping					
I intend to browse the grocer websites or apps (e.g. Tesco.com) on my smartphone					

Behaviour

11. What percentage of your grocery shopping budget do you plan to spend using your smartphone?

	0%	1-24%	25-49%	50-74%	75% or more
Future expenditure					

Anxiety adapted from Lu et al. (2009)

12. Please indicate your level of anxiety-if any- associated with mobile grocery shopping

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I feel apprehensive about using my mobile for grocery shopping					
I hesitate to use mobile grocery shopping because of the fear of making					

mistakes					
Using mobile grocery shopping is somewhat intimidating to me					
Using mobile grocery shopping is somewhat a fiddly task to me					

Financial resource constraint adapted from Nysveen et al. (2005), Wang et al. (2006)

13. My financial situation allows me to …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
have sufficient mobile data allowance for grocery shopping					
accept the delivery cost					
buy monthly delivery pass (e.g. ASDA Delivery Pass or Tesco Delivery Saver Plan)					
have an up-to-date smartphone to use the shopping apps					

Infrastructural resource constraint adapted from and Yang (2012), Coursaris et al. (2003)

14. Buying groceries on my smartphone is somewhat constrained by …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
the internet speed					
the screen size					
the mobile phone signal					
the battery life					
my phone / phone's age					

In store shopping experience adapted from Hand et al. (2009), Morganosky et al. (2000), Bigné et al. (2007)

15. When buying groceries in a physical store …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I like to examine grocery products before I buy					
I enjoy interacting with other people					
I enjoy walking along the supermarket aisle to touch and feel products					
I view it as a leisure activity					
traveling or parking is a hassle					
carrying and lifting my shopping is annoying					
having to wait in a queue is annoying					
is not environmental friendly					

Part 2: Your most used mobile grocer (9 questions)

Please indicate your agreement or disagreement with the following statement about your frequently visited grocer on a smartphone

App/mobile website quality adapted from Szymanski et al. (2000), Cyr et al. (2006), Srinivasan et al. (2002)

1. The mobile grocer I shop with the most has an app/mobile website that …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
is easy to navigate					
presents grocery information well					
looks professionally designed					

is visually appealing					
loads its content fast					
has a lot of useful features such as retrieving previous shopping list					

Category management adapted from Ramus et al. (2005), Sirohi et al. (1998), Szymanski et al. (2000)

2. The groceries on my most used app/mobile website …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
are well segmented and organised					
have comprehensive categories					
have a large range of products					
have appealing promotions and deals					

Product quality adapted from Hansen (2006), Ramus et al. (2005), Doherty et al. (2006)

3. The quality of groceries from my most used mobile grocer …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
generally meets my expectation					
are competitive					
have a reasonable sell-by date					

Delivery service quality adapted from Kim et al. (2009a), Doherty et al. (2006)

4. The delivery service from my most used mobile grocer …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
is always on					

time					
has friendly and helpful drivers					
provides convenient delivery slots for me to choose from (interview data)					

Mobile & digital communication adapted from Srinivasan et al. (2002), Li et al. (2012), Ramus et al. (2005)

5. I feel better informed from my most used mobile grocer …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
on my smartphone through various channels such as app notification, SMS, social media, and e-newsletter					
by receiving real time update about my order					
by receiving promotions I am interested in					

Retailer reputation adapted from Selnes (1993)

6. Consider the brand image, my most used mobile grocer …

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
has a good reputation					
is one of the major retailers in the UK					
is a well-established retailer					
is familiar to me before I shop it on my smartphone					

Satisfaction adapted from Szymanski et al. (2000), Anderson et al. (2003)

7. How satisfied are you with your most used mobile grocer?

	Very Dissatisfied	Dissatisfied	Neither Satisfied nor Dissatisfied	Satisfied	Very Satisfied
Rating					

Intention to repurchase adapted from Anderson et al. (2003), Zhou (2013b)

8. Please indicate your intention to shop with your favourite mobile grocer in the future:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I would buy from my favourite mobile grocer again					
I seldom consider switching to another grocer					
As long as the present service continues, I doubt that I would switch to elsewhere					
When I need to make grocery purchase on my smartphone, this app/ mobile website is my first choice					
To me this is the best app/ mobile website to buy groceries					

Intention to recommend adapted from San-Martín et al. (2015)

9. Please indicate if you would recommend the grocer's app/mobile website:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I would recommend my friends or family to use mobile for grocery shopping					
I would recommend my					

favourite grocer's app or website to my friends or family					
I would share my mobile grocery shopping experience to my friends or family					308

favourite grocer's app or website to my friends or family					
I would share my mobile grocery shopping experience to my friends or family					

Part 3: General information (7 questions)

1. What is your gender?

☐ Male

☐ Female

2. Please indicate your age group

☐ Under 25

☐ 25-39

☐ 40-54

☐ 55-64

☐ Above 65

3. How many people live in your household including yourself?

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5 or more

4. How many children (under age 18) live in your household?

☐ 0

☐ 1

☐ 2

☐ 3

☐ 4 or more

5. What is your highest level of education?

☐ No formal education

☐ GCSE

☐ A Level

☐ Other

☐ Degree level or higher

6. Do you have previous online grocery shopping experience (e.g. using a PC or tablet to buy groceries)?

☐ Yes

☐ No

7. Where do you live

☐ City

☐ Rural area

Appendix 3.3 Interview consent letter

UNIVERSITY OF
EXETER

Dear Sir/Madam

Thank you very much for agreeing to participate in this study. This letter explains what the interview is about and how we would like you to take part in. A copy of the interview questions is enclosed with this letter.

The purpose of the study is to understand the consumer's behaviour and attitude about buying grocers on smartphone.

In order to elicit your views, I would like you to be interviewed. If you agree to this, the interview will be audio recorded and will last approximately 20 minutes.

The information provided by you in the interview will be used for research purposes, and will not be revealed to people outside the research project. Your words may be quoted in publications, reports, web pages and other research outputs but your name will not be used.

Once again, I would like to thank you for agreeing to take part in this study. If you have any questions about the research at any stage, please do not hesitate to contact me.

Junxiong Li

PhD candidate, University of Exeter

Junxiong Li   Telephone: 07985336899
University of Exeter Business School   Email: jl603@exeter.ac.uk
Streatham Court
Rennes Drive
Exeter EX4 4ST
United Kingdom

Appendix 5.1 KMO and Bartlett's Test

KMO and Bartlett's Test – Total sample

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.912
Bartlett's Test of Sphericity	Approx. Chi-Square	16837.453
	df	2211
	Sig.	0.000

KMO and Bartlett's Test[a] – Non-purchaser sample

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.829
Bartlett's Test of Sphericity	Approx. Chi-Square	9506.678
	df	2211
	Sig.	0.000

a. Purchaser or Non-purchaser = Non-purchaser

KMO and Bartlett's Test[a] – Purchaser sample

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.808
Bartlett's Test of Sphericity	Approx. Chi-Square	7710.382
	df	2211
	Sig.	0.000

a. Purchaser or Non-purchaser = Purchaser

KMO and Bartlett's Test – Behavioural intention (total sample)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	717.013
	df	6
	Sig.	.000

Appendix 5.2 Assumptions of regression analysis

Appendix 5.2a Pearson Correlation

| Pearson Correlation	Mean intention	Mean lifestyle enhancement	Mean perceived ease of use	Mean social influence	Mean affinity	Mean financial control	Mean anxiety	Mean perceived skill
Mean intention	1.000	.767	.591	.552	.449	.440	.256	.656
Mean lifestyle enhancement	.767	1.000	.626	.626	.356	.381	.143	.640
Mean perceived ease of use	.591	.626	1.000	.355	.235	.408	.257	.597
Mean social influence	.552	.626	.355	1.000	.331	.297	-.143	.436
Mean affinity	.449	.356	.235	.331	1.000	.138	-.027	.425
Mean financial control	.440	.381	.408	.297	.138	1.000	.137	.432
Mean anxiety	.256	.143	.257	-.143	-.027	.137	1.000	.259
Mean perceived skill	.656	.640	.597	.436	.425	.432	.259	1.000

Appendix 5.2b Coefficients

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	-.257	.182		-1.408	.160	-.615	.102		
Mean lifestyle enhancement	.414	.050	.438	8.234	.000	.315	.513	.372	2.689
Mean perceived ease of use	.090	.052	.079	1.746	.082	-.011	.191	.514	1.947
Mean social influence	.101	.033	.135	3.044	.003	.036	.166	.532	1.879
Mean affinity	.146	.031	.173	4.695	.000	.085	.207	.775	1.291
Mean financial control	.107	.036	.109	2.946	.003	.035	.178	.763	1.310
Mean anxiety	.122	.028	.154	4.279	.000	.066	.178	.809	1.237
Mean perceived skill	.094	.042	.109	2.233	.026	.011	.177	.442	2.264

a. Dependent Variable: Mean intention

Appendix 5.2c Normal P-P Plot

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Mean intention
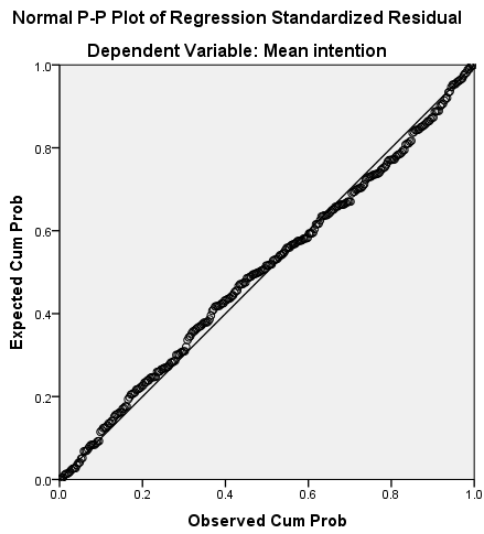
Appendix 5.2d Residual Scatterplot

Scatterplot

Dependent Variable: Mean intention
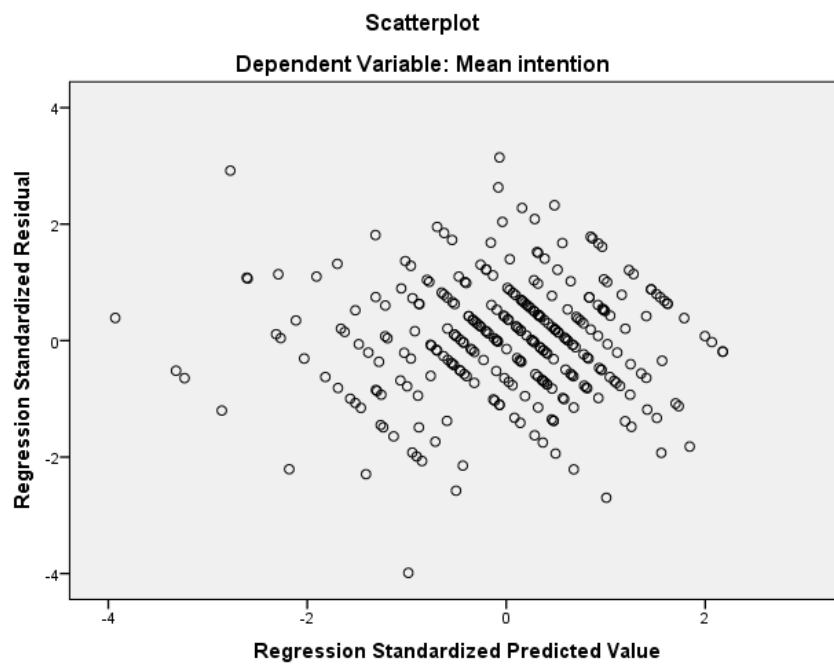
Appendix 6.1 KMO and Bartlett's test for Phase 1 Factor Analysis (Factors affecting satisfaction)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.892
Bartlett's Test of Sphericity	Approx. Chi-Square	2316.976
	df	253
	Sig.	.000

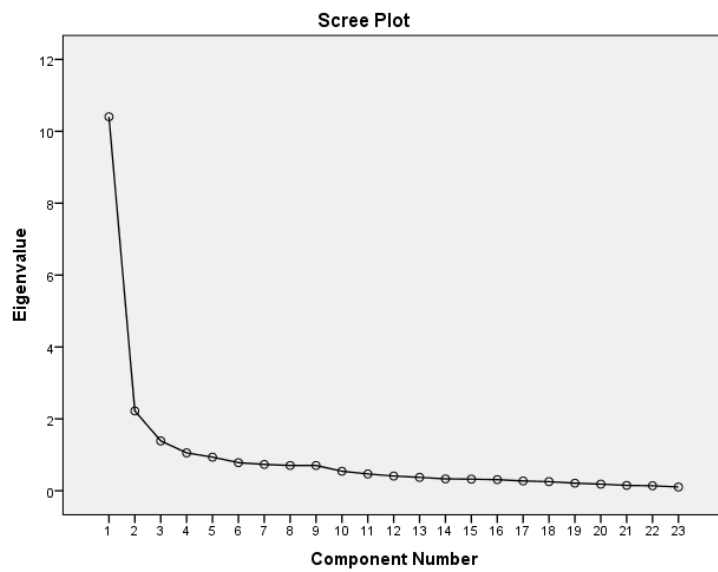## Appendix 6.2 KMO and Bartlett's test for Phase 2 Factor Analysis (Consumer loyal behaviour)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.896
Bartlett's Test of Sphericity	Approx. Chi-Square	609.549
	df	28
	Sig.	.000

Appendix 6.3 Scree plot for phase 1 factor analysis

Appendix 6.4 Monte Carlo PCA for Parallel Analysis – result for

Phase 1 Factor Analysis

```
Monte Carlo PCA for Parallel Analysis

Version .

19/11/2016   14:33:40

Number of variables:     23

Number of subjects:     150

Number of replications: 100


+++++++++++++++++++++++++++++++++++++++++++++++++++++

Eigenvalue #     Random Eigenvalue     Standard Dev

+++++++++++++++++++++++++++++++++++++++++++++++++++++

        1             1.7896              .0754

        2             1.6468              .0536

        3             1.5458              .0405

        4             1.4575              .0431

        5             1.3809              .0388

        6             1.3072              .0385

        7             1.2387              .0328

        8             1.1750              .0318

        9             1.1137              .0279

       10             1.0550              .0275

       11             1.0077              .0299

       12             0.9565              .0272
```

13	0.9058	.0252
14	0.8537	.0282
15	0.8031	.0294
16	0.7604	.0273
17	0.7119	.0270
18	0.6637	.0273
19	0.6189	.0246
20	0.5748	.0245
21	0.5293	.0275
22	0.4807	.0253
23	0.4232	.0349

++

19/11/2016   14:33:42

Monte Carlo PCA for Parallel Analysis

****

Appendix 6.5 Scree plot for phase 2 factor analysis
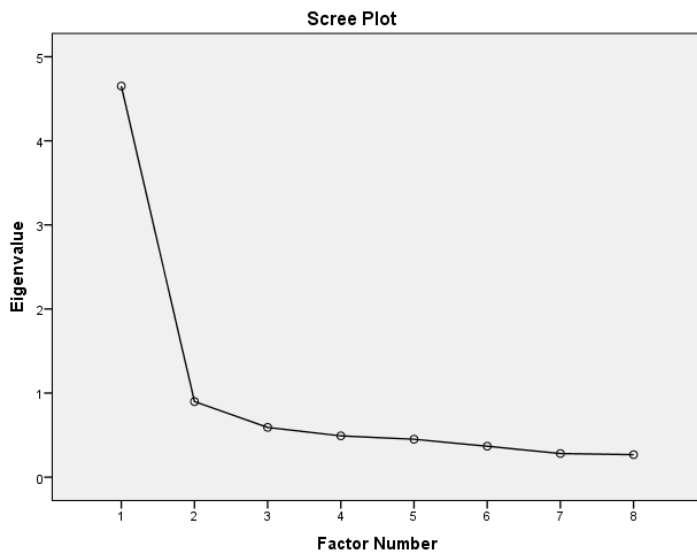
Appendix 6.6 Monte Carlo PCA for Parallel Analysis – result for

Phase 2 Factor Analysis

Monte Carlo PCA for Parallel Analysis

Version .

19/11/2016   15:10:38

Number of variables: 8

Number of subjects: 150

```
Number of replications: 100

++++++++++++++++++++++++++++++++++++++++++++++++++++++

Eigenvalue #     Random Eigenvalue     Standard Dev

++++++++++++++++++++++++++++++++++++++++++++++++++++++

        1              1.3842              .0607

        2              1.2067              .0307

        3              1.1130              .0307

        4              1.0164              .0324

        5              0.9483              .0277

        6              0.8786              .0322

        7              0.7762              .0376

        8              0.6766              .0442

++++++++++++++++++++++++++++++++++++++++++++++++++++++

19/11/2016   15:10:38

Monte Carlo PCA for Parallel Analysis
```

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*******************************************************
```

Appendix 6.7 Assumptions of regression analysis – factors affecting customer satisfaction

Appendix 6.7a Pearson Correlation

Correlations

|		SAT Satisfaction	Branding and Service	Product Quality
Pearson Correlation	SAT Satisfaction	1.000	.539	.488
	Branding and Service	.539	1.000	.633
	Product Quality	.488	.633	1.000

Appendix 6.7b Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.516	.331		4.584	.000	.863	2.170					
	Branding and Service	.426	.097	.385	4.401	.000	.235	.617	.539	.341	.298	.600	1.667
	Product Quality	.256	.092	.244	2.795	.006	.075	.437	.488	.225	.189	.600	1.667

a. Dependent Variable: SAT Satisfaction

Appendix 6.7c Normal P-P Plot
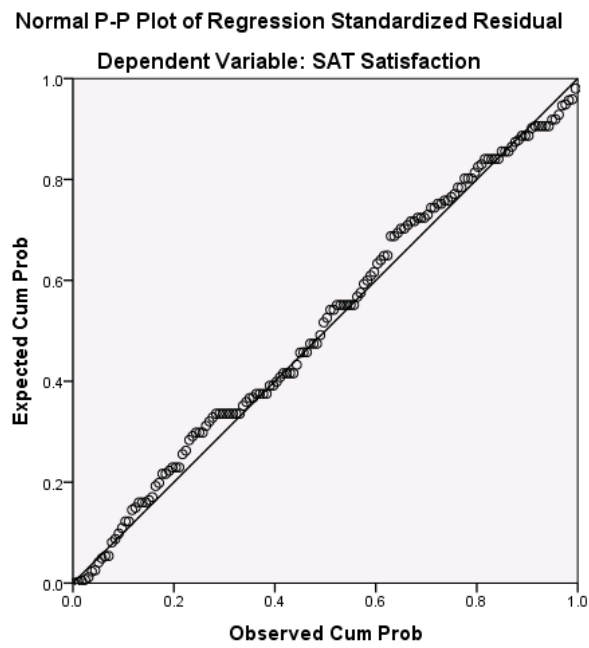
Appendix 6.7d Residual Scatterplot
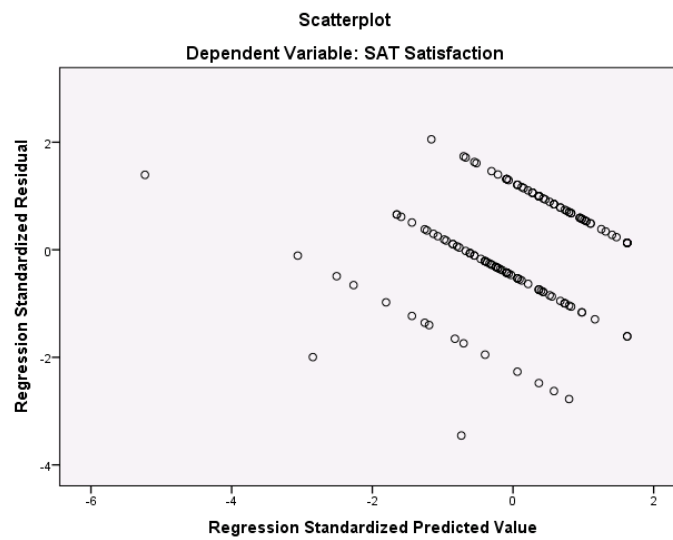
Appendix 6.8 Assumptions of regression analysis – factors affecting customer loyalty

Appendix 6.8a Pearson Correlation

Correlations

|		Loyalty Behaviour	Merchandising	SAT Satisfaction
Pearson Correlation	Loyalty Behaviour	1.000	.685	.548
	Merchandising	.685	1.000	.449
	SAT Satisfaction	.548	.449	1.000

Appendix 6.8b Coefficients

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	.481	.271		1.777	.078	-.054	1.017					
Merchandising	.568	.065	.550	8.795	.000	.440	.695	.685	.587	.491	.799	1.252
SAT Satisfaction	.287	.060	.301	4.811	.000	.169	.404	.548	.369	.269	.799	1.252

a. Dependent Variable: Loyalty Behaviour

Appendix 6.8c Normal P-P Plot

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Loyalty Behaviour
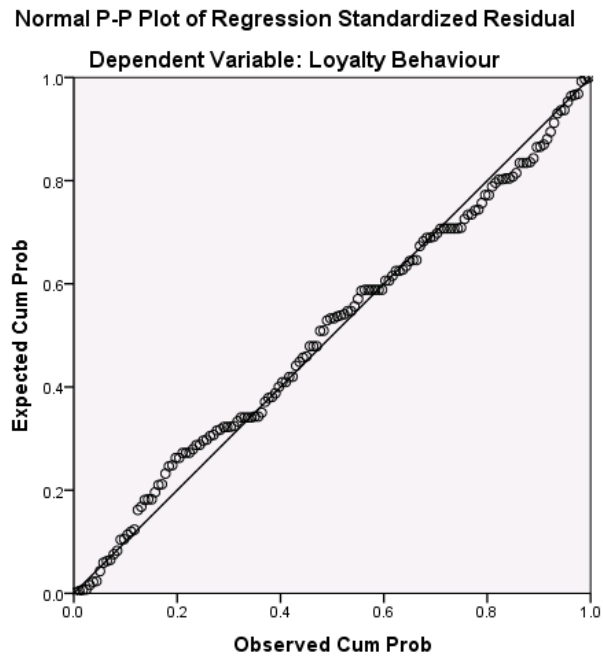
Appendix 6.8d Residual Scatterplot

Scatterplot
Dependent Variable: Loyalty Behaviour
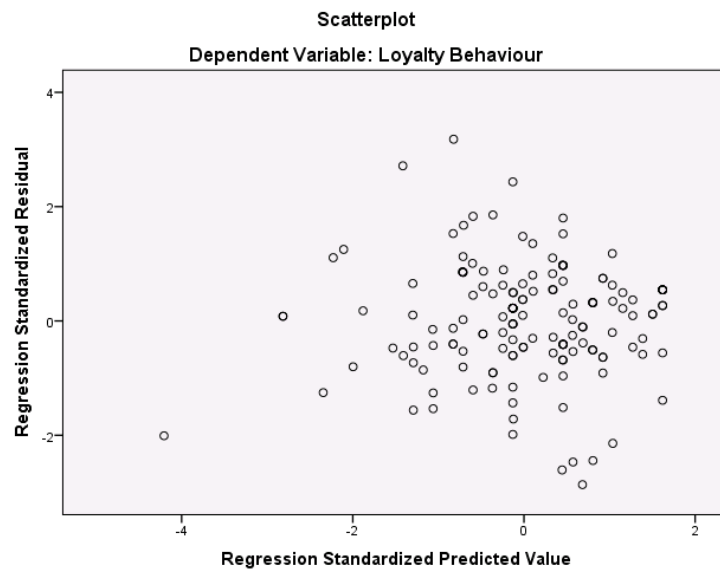
Bibliography

AAKER, D. A. 2000. Managing Brand Equity: Capitalising on the Value of a Brand Name, 1991. *Mc Millan, New York*.

AGREBI, S. & JALLAIS, J. 2015. Explain the intention to use smartphones for mobile shopping. *Journal of Retailing and Consumer Services,* 22**,** 16-23.

AHN, T., RYU, S. & HAN, I. 2005. The impact of the online and offline features on the user acceptance of Internet shopping malls. *Electronic Commerce Research and Applications,* 3**,** 405-420.

AJZEN, I. 1985. *From intentions to actions: A theory of planned behavior*, Springer.

AJZEN, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes,* 50**,** 179-211.

AJZEN, I. & FISHBEIN, M. 1980. Understanding attitudes and predicting social. *Behaviour. Englewood Cliffs, NJ: Prentice-Hall*.

AKTURAN, U. & TEZCAN, N. 2012. Mobile banking adoption of the youth market: Perceptions and intentions. *Marketing Intelligence & Planning,* 30**,** 444-459.

ALDÁS-MANZANO, J., RUIZ-MAFE, C. & SANZ-BLAS, S. 2009. Exploring individual personality factors as drivers of M-shopping acceptance. *Industrial Management & Data Systems,* 109**,** 739-757.

ALEXANDER, A., SHAW, G. & CURTH, L. 2005. Promoting retail innovation: knowledge flows during the emergence of self-service and supermarket retailing in Britain. *Environment and Planning A,* 37**,** 805-821.

AMBERG, M., HIRSCHMEIER, M. & WEHRMANN, J. 2004. The Compass Acceptance Model for the analysis and evaluation of mobile services. *International Journal of Mobile Communications,* 2**,** 248-259.

ANDERSON, R. E. & SRINIVASAN, S. S. 2003. E-satisfaction and e-loyalty: a contingency framework. *Psychology & marketing,* 20**,** 123-138.

AYDIN, C. E. & ANDERSON, J. G. 2005. *Evaluating the organizational impact of healthcare information systems*, Springer.

AYLOTT, R. & MITCHELL, V.-W. 1999. An exploratory study of grocery shopping stressors. *British Food Journal,* 101**,** 683-700.

BAHLI, B. & BENSLIMANE, Y. 2004. An exploration of wireless computing risks: Development of a risk taxonomy. *Information management & computer security,* 12**,** 245-254.

BALASUBRAMANIAN, S., PETERSON, R. A. & JARVENPAA, S. L. 2002. Exploring the implications of m-commerce for markets and marketing. *Journal of the academy of Marketing Science,* 30**,** 348.

BANDURA, A. 1977. Self-efficacy: toward a unifying theory of behavioral change. *Psychological review,* 84**,** 191.

BANDURA, A. 1986. Social foundations of thought and action: A social cognitive perspective. *Englewood Cliffs, NJ: Princeton-Hall*.

BANDURA, A. 2002. Social foundations of thought and action. *The health psychology reader***,** 94-106.

BARCLAYS BANK PLC. 2015. *The future of m-commerce* [Online]. Available: https://www.barclayscorporate.com/content/dam/corppublic/corporate/Documents/research/Future-of-m-commerce.pdf [Accessed 15 Aug 2015].

BARQUE-DURAN, A., POTHOS, E. M., HAMPTON, J. A. & YEARSLEY, J. M. 2017. Contemporary morality: moral judgments in digital contexts. *Computers in Human Behavior,* 75**,** 184-193.

BARRON, L. 2006. *Ontology. The SAGE Dictionary of Social Research Methods. SAGE Publications, Ltd,* London, England, SAGE Publications, Ltd.

BARTLETT, M. S. 1954. A note on the multiplying factors for various χ 2 approximations. *Journal of the Royal Statistical Society. Series B (Methodological)***,** 296-298.

BARUTCU, S., AKGUN, A. A. & AYDIN, H. U. D. 2015. AN ASSESSMENT OF M-CUSTOMER SATISFACTION DRIVERS AND LEVELS FROM M-SHOPPING APPLICATIONS WITH KANO'S MODEL Prof. Dr. Süleyman BARUTÇU. *Manas Journal of Social Studies*.

BASS, F. M. 1974. The theory of stochastic preference and brand switching. *Journal of marketing Research***,** 1-20.

BATESON, J. E. & HUI, M. 1987. Perceived control as a crucial perceptual dimension of the service experience: an experimental study. *Add Value to Your Service, CF Surprenant,(Ed.), Chicago: American Marketing Association***,** 187-192.

BEVAN, J. & MURPHY, R. 2001. The nature of value created by UK online grocery retailers. *International Journal of consumer studies,* 25**,** 279-289.

BHATTACHERJEE, A. 2001. Understanding information systems continuance: an expectation-confirmation model. *MIS quarterly***,** 351-370.

BHATTACHERJEE, A. 2012. Social science research: principles, methods, and practices.

BHATTACHERJEE, A. & SANFORD, C. 2009. The intention–behaviour gap in technology usage: the moderating role of attitude strength. *Behaviour & Information Technology,* 28**,** 389-401.

BIGNÉ-ALCAÑIZ, E., RUIZ-MAFÉ, C., ALDÁS-MANZANO, J. & SANZ-BLAS, S. 2008. Influence of online shopping information dependency and innovativeness on internet shopping adoption. *Online Information Review,* 32**,** 648-667.

BIGNÉ, E., RUIZ-MAFÉ, C. & SANZ-BALZ, S. 2007. Key Drivers of Mobile Commerce Adoption. An Exploratory Study of Spanish Mobile Users. *JTAER,* 2**,** 48-60.

BOWLING, A. 2005. Mode of questionnaire administration can have serious effects on data quality. *Journal of public health,* 27**,** 281-291.

BREWER, J. & MILLER, R. 2003. The AZ of social research. London: Sage Publishers Limited.

BROWN, G. H. 1953. Brand Loyalty-fact of fiction. *Trademark Rep.,* 43**,** 251.

BRYMAN, A. 2012. *Social research methods*, Oxford university press.

BRYMAN, A. & CRAMER, D. 2011. *Quantitative data analysis with IBM SPSS 17, 18 and 19*, Routledge.

BURKHARDT, M. E. & BRASS, D. J. 1990. Changing patterns or patterns of change: The effects of a change in technology on social network structure and power. *Administrative science quarterly***,** 104-127.

BUSINESS INSIDER UK. 2017. *Mobile sales drive unexpected UK e-commerce growth* [Online]. Available: http://uk.businessinsider.com/mobile-sales-drive-unexpected-uk-e-commerce-growth-2017-1 [Accessed 10 Feb 2017].

BYRNE, B. M. 2016. *Structural equation modeling with AMOS: Basic concepts, applications, and programming*, Routledge.

CENTRE FOR RETAIL RESEARCH. 2015. *Online Retailing: Britain, Europe, US and Canada 2015* [Online]. Available: http://www.retailresearch.org/onlineretailing.php [Accessed 15 Aug 2015].

CHAE, M. & KIM, J. 2003. What's so different about the mobile Internet? *Communications of the ACM,* 46**,** 240-247.

CHAE, M. & KIM, J. 2004. Do size and structure matter to mobile users? An empirical study of the effects of screen size, information structure, and task complexity on user activities with standard web phones. *Behaviour & Information Technology,* 23**,** 165-181.

CHANG, M. K., CHEUNG, W. & LAI, V. S. 2005. Literature derived reference models for the adoption of online shopping. *Information & Management,* 42**,** 543-559.

CHECKLAND, P. & HOLWELL, S. 1997. Information, systems and information systems: making sense of the field.

CHEN, Y.-M., HSU, T.-H. & LU, Y.-J. 2017. Impact of flow on mobile shopping intention. *Journal of Retailing and Consumer Services*.

CHEN, Z.-S., LI, R., CHEN, X. & XU, H. 2011. A survey study on consumer perception of mobile-commerce applications. *Procedia Environmental Sciences,* 11**,** 118-124.

CHILDERS, T. L., CARR, C. L., PECK, J. & CARSON, S. 2002. Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of retailing,* 77**,** 511-535.

CHIU, C.-M., CHANG, C.-C., CHENG, H.-L. & FANG, Y.-H. 2009. Determinants of customer repurchase intention in online shopping. *Online information review,* 33**,** 761-784.

CHO, J. 2004. Likelihood to abort an online transaction: influences from cognitive evaluations, attitudes, and behavioral variables. *Information & Management,* 41**,** 827-838.

CHONG, A. Y.-L., CHAN, F. T. & OOI, K.-B. 2012. Predicting consumer decisions to adopt mobile commerce: Cross country empirical examination between China and Malaysia. *Decision Support Systems,* 53**,** 34-43.

CHOU, Y., LEE, C. & CHUNG, J. 2004. Understanding m-commerce payment systems through the analytic hierarchy process. *Journal of Business Research,* 57**,** 1423-1430.

CHUN-TUNG LOWE, A. & CORKINDALE, D. R. 1998. Differences in "cultural values" and theireffects on responses to marketing stimuli: A cross-cultural study between Australians and Chinese from the People's Republic of China. *European Journal of Marketing,* 32**,** 843-867.

CHUN, H.-J. & WEI, J. 2004. Development of interface feature-based m-ticket framework for air travel industry. *Proceedings of ISECON, Rhode Island*.

CITY A.M. 2015. *Now Lidl's getting into the online grocery delivery business after Amazon Fresh's UK debut and Aldi's plans, taking on Tesco, Sainsbury's, Asda and Morrisons* [Online]. Available: http://www.cityam.com/229434/now-lidls-getting-into-the-online-grocery-delivery-business-after-amazon-freshs-uk-debut-and-aldis-plans-taking-on-tesco-sainsburys-asda-and-morrisons [Accessed 10 Feb 2017].

CLARK, L. & WRIGHT, P. 2007. Off Their Trolley—Understanding Online Grocery Shopping Behaviour. *Home informatics and telematics: ICT for the next billion.* Springer.

CLARKE, I. 2001. Emerging value propositions for m-commerce. *Journal of Business Strategies,* 18**,** 133.

CLEVELAND, M. & LAROCHE, M. 2007. Acculturaton to the global consumer culture: Scale development and research paradigm. *Journal of business research,* 60**,** 249-259.

COFFEY, A. & ATKINSON, P. 1996. *Making sense of qualitative data: complementary research strategies*, Sage Publications, Inc.

COHEN, L., MANION, L. & MORRISON, K. 2000. Research Methods in Education [5 th edn] London: Routledge Falmer. *Teaching in Higher Education,* 41.

COMPEAU, D. R. & HIGGINS, C. A. 1995a. Application of social cognitive theory to training for computer skills. *Information systems research,* 6**,** 118-143.

COMPEAU, D. R. & HIGGINS, C. A. 1995b. Computer self-efficacy: Development of a measure and initial test. *MIS quarterly***,** 189-211.

CORRAL, C. B. 1999. On-line grocery shopping heats up despite concern over big issues. *Discount Store News,* 38**,** 18-20.

CORTINA, J. M. 1993. What is coefficient alpha? An examination of theory and applications. *Journal of applied psychology,* 78**,** 98.

COURSARIS, C. & HASSANEIN, K. 2002. Understanding m-commerce: a consumer-centric model. *Quarterly journal of electronic commerce,* 3**,** 247-272.

COURSARIS, C., HASSANEIN, K. & HEAD, M. 2003. M-commerce in Canada: an interaction framework for wireless privacy. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration,* 20**,** 54-73.

CRESWELL, J. W. 2013. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, SAGE Publications.

CRITEO. 2017. *UK FMCG Trend Report: Taking Stock of the Future of Grocery* [Online]. Available: http://www.criteo.com/resources/uk-fmcg-trend-report-taking-stock-of-the-future-of-grocery/ [Accessed 23rd June 2017].

CRONBACH, L. J. 1951. Coefficient alpha and the internal structure of tests. *psychometrika,* 16**,** 297-334.

CRONBACH, L. J. & SHAVELSON, R. J. 2004. My current thoughts on coefficient alpha and successor procedures. *Educational and psychological measurement,* 64**,** 391-418.

CYR, D., HEAD, M. & IVANOV, A. 2006. Design aesthetics leading to m-loyalty in mobile commerce. *Information & Management,* 43**,** 950-963.

DABHOLKAR, P. A. & BAGOZZI, R. P. 2002. An attitudinal model of technology-based self-service: moderating effects of consumer traits and situational factors. *Journal of the Academy of Marketing Science,* 30**,** 184-201.

DANAHER, P. J., WILSON, I. W. & DAVIS, R. A. 2003. A comparison of online and offline consumer brand loyalty. *Marketing Science,* 22**,** 461-476.

DAVIS, F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly***,** 319-340.

DAVIS, F. D. 1993. User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International journal of man-machine studies,* 38**,** 475-487.

DAVIS, F. D., BAGOZZI, R. P. & WARSHAW, P. R. 1989. User acceptance of computer technology: a comparison of two theoretical models. *Management science,* 35**,** 982-1003.

DAVIS, F. D., BAGOZZI, R. P. & WARSHAW, P. R. 1992. Extrinsic and intrinsic motivation to use computers in the workplace1. *Journal of applied social psychology,* 22**,** 1111-1132.

DAY, G. S. 1976. A two-dimensional concept of brand loyalty. *Mathematical models in marketing.* Springer.

DAYMON WORLDWIDE. 2014. *Men on the mission- Understanding the New Male Grocery Shopper* [Online]. Available: http://www.daymon.com/wp-content/uploads/2014/06/MenonaMission_Web.pdf [Accessed 29 Aug 2015].

DEFLUER, M. L., BALL-ROKEACH, S. J. & DEFLEUR, M. L. 1989. Theories of mass communication.

DEFRA 2011. Attitudes and Behaviours around Sustainable Food Purchasing. *In:* AFFAIRS, D. F. E. F. R. (ed.).

DELOITTE 2014. Mobile consumer 2014: the UK cut - revolution and evolution.

DELONE, W. H. & MCLEAN, E. R. 2003. The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems,* 19**,** 9-30.

DENSCOMBE, M. 2014. *The good research guide: for small-scale social research projects*, McGraw-Hill Education (UK).

DENZIN, N. 1978. The research act: A theoretical orientation to sociological methods. New York: McGraw-Hill.

DENZIN, N. K. & LINCOLN, Y. S. 2008. *Collecting and interpreting qualitative materials*, Sage.

DESHPANDE, R. 1983. "Paradigms Lost": On Theory and Method in Research in Marketing. *Journal of Marketing,* 47**,** 101-110.

DEVARAJ, S., FAN, M. & KOHLI, R. 2003. E-loyalty: elusive ideal or competitive edge? *Communications of the ACM,* 46**,** 184-191.

DIENER, E. & CRANDALL, R. 1978. *Ethics in social and behavioral research*, U Chicago Press.

DIMAGGIO, P. & CELESTE, C. Technological Careers: Adoption, Deepening, and Dropping Out in a Panel of Internet Users. Eastern Sociological Society Annual Meetings, New York City, 2004.

DINAR, A. & YARON, D. 1992. Adoption and abandonment of irrigation technologies. *Agricultural economics,* 6**,** 315-332.

DOHERTY, N. F., ELLIS-CHADWICK, F., HUANG, Y. & OPPEWAL, H. 2006. Why consumers hesitate to shop online: An experimental choice analysis of grocery shopping and the role of delivery fees. *International Journal of Retail & Distribution Management,* 34**,** 334-353.

DONTHU, N. & GARCIA, A. 1999. The internet shopper. *Journal of advertising research,* 39**,** 52-58.

DUMERESQUE, D. 2013. The corporate digital footprint: exactly who owns and controls it? The emergence of the digital director. *Strategic direction,* 29**,** 34-36.

EASTERBY-SMITH, M., THORPE, R. & JACKSON, P. R. 2012. *Management research*, Sage.

EMARKETER. 2015. *App Marketing 2015: Fighting for Downloads and Attention in a Crowded Market* [Online]. Available: https://www.emarketer.com/Report/App-Marketing-2015-Fighting-Downloads-Attention-Crowded-Market/2001610 [Accessed 13 Apr 2016].

EMARKETER. 2016a. *Most Retailers Offer Mobile Coupons, Payments* [Online]. Available: https://www.emarketer.com/Article/Most-Retailers-Offer-Mobile-Coupons-Payments/1014321 [Accessed 16th June 2017].

EMARKETER. 2016b. *Smartphones Drive Increased Time Spent with Digital Media for UK Adults* [Online]. Available: https://www.emarketer.com/Article/Smartphones-Drive-Increased-Time-Spent-with-Digital-Media-UK-Adults/1013884 [Accessed 16th June 2017].

ESSENTIAL RETAIL LTD. 2014. *How online grocery will grow in the next 5 years* [Online]. Available: http://www.essentialretail.com/ecommerce/article/53dbaa7b33fa9-comment-how-online-grocery-will-grow-in-the-next-5-years [Accessed 10 Feb 2017].

EUROPEAN OPINION RESEARCH GROUP 2000. Europeans, Information and Communication Technologies and Employment. Eurobarometer survey - final report.

EVANSCHITZKY, H., IYER, G. R., HESSE, J. & AHLERT, D. 2004. E-satisfaction: a re-examination. *Journal of retailing,* 80**,** 239-247.

EXPLORABLE. 2009. *Quantitative and Qualitative Research* [Online]. [Accessed 19 June 2015].

FANG, X., CHAN, S., BRZEZINSKI, J. & XU, S. 2005. Moderating effects of task type on wireless technology acceptance. *Journal of Management Information Systems,* 22**,** 123-157.

FENNIS, B. M., ADRIAANSE, M. A., STROEBE, W. & POL, B. 2011. Bridging the intention–behavior gap: Inducing implementation intentions through persuasive appeals. *Journal of Consumer Psychology,* 21**,** 302-311.

FISHBEIN, M. & AJZEN, I. 1975. *Belief, attitude, intention and behavior: An introduction to theory and research*.

FLURRY. 2014. *Apps solidify leadership six years into the mobile revolution* [Online]. Available: http://flurrymobile.tumblr.com/post/115191864580/apps-solidify-leadership-six-years-into-the-mobile [Accessed 25 July 2015].

FLURRY. 2015. *The Phablet Revolution* [Online]. Available: http://flurrymobile.tumblr.com/post/117769261810/the-phablet-revolution [Accessed 29 July 2015].

FORD, J. K., MACCALLUM, R. C. & TAIT, M. 1986. The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel psychology,* 39**,** 291-314.

FORNIER, S. 1994. A Consumer-based Relationship Framework for Strategic Brand Management, published PhD dissertation. *University of Florida*.

FOSTER, J., BARKUS, E. & YAVORSKY, C. 2006. Understanding and Using Advanced Statistics. London: SAGE Publications, Ltd.

FUNG, R. & LEE, M. 1999. EC-trust (trust in electronic commerce): exploring the antecedent factors. *AMCIS 1999 Proceedings***,** 179.

GEFEN, D., KARAHANNA, E. & STRAUB, D. W. 2003. Trust and TAM in online shopping: An integrated model. *MIS quarterly,* 27**,** 51-90.

GEUENS, M., BRENGMAN, M. & S'JEGERS, R. 2003. Food retailing, now and in the future. A consumer perspective. *Journal of Retailing and Consumer Services,* 10**,** 241-251.

GOLLWITZER, P. M. 1993. Goal achievement: The role of intentions. *European review of social psychology,* 4**,** 141-185.

GOOGLE ANALYTICS. 2012. *Apps are fun and useful, but many prefer mobile sites for shopping* [Online]. Available: https://plus.google.com/+GoogleAnalytics/posts/dpdQAkJgDC1 [Accessed 25 July 2015].

GOOGLE ANALYTICS. 2014. *The Customer Journey to Online Purchase* [Online]. Available: https://www.thinkwithgoogle.com/intl/en-gb/tools/customer-journey-to-online-purchase.html#!/the-us/arts-and-entertainment/large/generic-paid-search [Accessed Feb 10 2017].

GOOGLE ANALYTICS. 2016. *Principles of Mobile App Design: Engage Users and Drive Conversions* [Online]. Available: https://www.thinkwithgoogle.com/articles/chapter-4-registration.html [Accessed 16 Apr 2016].

GOOGLE ANALYTICS. 2017. *Find Out How You Stack Up to New Industry Benchmarks for Mobile Page Speed* [Online]. Available: https://www.thinkwithgoogle.com/marketing-resources/data-measurement/mobile-page-speed-new-industry-benchmarks/ [Accessed 16th June 2017].

GOOGLE SCHOLAR. 2015. *About the Google Scholar* [Online]. Available: https://scholar.google.co.uk/intl/en/scholar/about.html [Accessed 29 Aug 2015].

GROß, M. 2014. Exploring the acceptance of technology for mobile shopping: an empirical investigation among Smartphone users. *The International Review of Retail, Distribution and Consumer Research*, 1-21.

GRUNERT, K. G. & RAMUS, K. 2005. Consumers' willingness to buy food through the internet: a review of the literature and a model for future research. *British Food Journal,* 107**,** 381-403.

GUPTA, A. & ARORA, N. 2017. Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory. *Journal of Retailing and Consumer Services,* 36**,** 1-7.

HAIR, J. F. 2009. Multivariate data analysis.

HALLOWELL, R. 1996. The relationships of customer satisfaction, customer loyalty, and profitability: an empirical study. *International journal of service industry management,* 7**,** 27-42.

HAND, C., DALL'OLMO RILEY, F., HARRIS, P., SINGH, J. & RETTIE, R. 2009. Online grocery shopping: the influence of situational factors. *European Journal of Marketing,* 43**,** 1205-1219.

HANSEN, T. 2005. Consumer adoption of online grocery buying: a discriminant analysis. *International Journal of Retail & Distribution Management,* 33**,** 101-121.

HANSEN, T. 2006. Determinants of consumers' repeat online buying of groceries. *International Review of Retail, Distribution and Consumer Research,* 16**,** 93-114.

HANSEN, T. 2008. Consumer values, the theory of planned behaviour and online grocery shopping. *International Journal of Consumer Studies,* 32**,** 128-137.

HANSEN, T., MØLLER JENSEN, J. & STUBBE SOLGAARD, H. 2004. Predicting online grocery buying intention: a comparison of the theory of reasoned action and the theory of planned behavior. *International Journal of Information Management,* 24**,** 539-550.

HANSON, D. & GRIMMER, M. 2007. The mix of qualitative and quantitative research in major marketing journals, 1993-2002. *European Journal of Marketing,* 41**,** 58-70.

HARRISON, R. L. & REILLY, T. M. 2011. Mixed methods designs in marketing research. *Qualitative Market Research: An International Journal,* 14**,** 7-26.

HARWELL, M. R. 2011. Research design in qualitative/quantitative/mixed methods. *The Sage handbook for research in education. 2nd ed. Los Angeles, CA: Sage***,** 147.

HEINEMANN, G. & SCHWARZL, C. 2010. *New online retailing: Innovation and transformation*, Springer Science & Business Media.

HEW, J.-J., LEE, V.-H., OOI, K.-B. & LIN, B. 2016. Mobile social commerce: The booster for brand loyalty? *Computers in Human Behavior,* 59**,** 142-154.

HILLMAN, S., NEUSTAEDTER, C., BOWES, J. & ANTLE, A. Soft trust and mCommerce shopping behaviours. Proceedings of the 14th international conference on Human-computer interaction with mobile devices and services, 2012. ACM, 113-122.

HISER, J., NAYGA, R. M. & CAPPS, O. 1999. An exploratory analysis of familiarity and willingness to use online food shopping services in a local area of Texas. *Journal of Food Distribution Research,* 30**,** 78-90.

HOFFMAN, D. L. & NOVAK, T. P. 1996. Marketing in hypermedia computer-mediated environments: conceptual foundations. *The Journal of Marketing***,** 50-68.

HOFFMAN, D. L., NOVAK, T. P. & PERALTA, M. 1999. Building consumer trust online. *Communications of the ACM,* 42**,** 80-85.

HOFSTEDE, G. 1983. The cultural relativity of organizational practices and theories. *Journal of international business studies***,** 75-89.

HOFSTEDE, G. 1986. Cultural differences in teaching and learning. *International Journal of intercultural relations,* 10**,** 301-320.

HOLSTI, O. R. 1969. *Content analysis for the social sciences and humanities,* Reading [etc.], Addison-Wesley.

HORPPU, M., KUIVALAINEN, O., TARKIAINEN, A. & ELLONEN, H.-K. 2008. Online satisfaction, trust and loyalty, and the impact of the offline parent brand. *Journal of Product & Brand Management,* 17**,** 403-413.

HOWELL, D. 2013. *Fundamental statistics for the behavioral sciences*, Cengage Learning.

HSU, M.-H., YEN, C.-H., CHIU, C.-M. & CHANG, C.-M. 2006. A longitudinal investigation of continued online shopping behavior: An extension of the theory of planned behavior. *International Journal of Human-Computer Studies,* 64**,** 889-904.

HUANG, L., LU, X. & BA, S. 2016. An empirical study of the cross-channel effects between web and mobile shopping channels. *Information & Management,* 53**,** 265-278.

HUESING, T. A. S., HANNES 2002. The Digital Divide Index-A Measure of Social Inequalities in the Adoptioon of ICT. 35.

HUNG, M.-C., YANG, S.-T. & HSIEH, T.-C. 2012. An examination of the determinants of mobile shopping continuance. *International Journal of Electronic Business Management,* 10**,** 29.

HUNG, S.-Y., KU, C.-Y. & CHANG, C.-M. 2003. Critical factors of WAP services adoption: an empirical study. *Electronic Commerce Research and Applications,* 2**,** 42-60.

HUTTER, K., HAUTZ, J., DENNHARDT, S. & FÜLLER, J. 2013. The impact of user interactions in social media on brand awareness and purchase intention: the case of MINI on Facebook. *Journal of Product & Brand Management,* 22**,** 342-351.

HWANG, W., JUNG, H.-S. & SALVENDY, G. 2006. Internationalisation of e-commerce: a comparison of online shopping preferences among Korean, Turkish and US populations. *Behaviour & information technology,* 25**,** 3-18.

IGD. 2015. *Why mobile dominates Walmart* [Online]. Available: http://retailanalysis.igd.com/Hub.aspx?id=23&tid=3&nid=14640&ecid=12829&uid=310152 [Accessed 04 Dec 2015].

IGD. 2016. *Five year forecast: the grocery market by 2021* [Online]. Available: http://www.igd.com/Research/Retail/Five-year-forecast-the-grocery-market-by-2021/ [Accessed 10 Feb 2017].

IIVARI, J., HIRSCHHEIM, R. & KLEIN, H. K. 1998. A paradigmatic analysis contrasting information systems development approaches and methodologies. *Information Systems Research,* 9**,** 164-193.

INTERNATIONAL TELECOMMUNICATION UNION. 2012. *IMT-Advanced standards announced for next-generation mobile technology* [Online]. Available: http://www.itu.int/net/pressoffice/press_releases/2012/02.aspx#.VbStYPlVgSU [Accessed 26 July 2015].

INTERNATIONAL TELECOMMUNICATION UNION. 2015. *ICT facts & Figures* [Online]. Available: http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015.pdf [Accessed 25 July 2015].

INTERNET RETAILING. 2016. *UK Internet Retailing Top 500 Report* [Online]. Available: http://internetretailing.net/iruk/download-the-internetretailing-uk-top500-2016/ [Accessed 16th June 2017].

JACOBY, J. & KYNER, D. B. 1973. Brand loyalty vs. repeat purchasing behavior. *Journal of Marketing research***,** 1-9.

JARADAT, M.-I. R. M. & AL RABABAA, M. S. 2013. Assessing key factor that influence on the acceptance of mobile commerce based on modified UTAUT. *International Journal of Business and Management,* 8**,** 102.

JARVENPAA, S. L. & TODD, P. A. 1996. Consumer reactions to electronic shopping on the World Wide Web. *International journal of electronic commerce,* 1**,** 59-88.

JI, M. F. & WOOD, W. 2007. Purchase and consumption habits: Not necessarily what you intend. *Journal of Consumer Psychology,* 17**,** 261-276.

JIANG, L., YANG, Z. & JUN, M. 2013. Measuring consumer perceptions of online shopping convenience. *Journal of Service Management,* 24**,** 191-214.

JIN, B., YONG PARK, J. & KIM, J. 2008. Cross-cultural examination of the relationships among firm reputation, e-satisfaction, e-trust, and e-loyalty. *International Marketing Review,* 25**,** 324-337.

JOHN LEWIS PARTNERSHIP PLC. 2015. *John Lewis Partnership Plc Annual Report* [Online]. Available: http://www.johnlewispartnership.co.uk/content/dam/cws/pdfs/financials/annual%20 reports/john-lewis-partnership-plc-annual-report-2015.pdf [Accessed 15 Aug 2015].

JOHNSON, M. D. & FORNELL, C. 1991. A framework for comparing customer satisfaction across individuals and product categories. *Journal of economic psychology,* 12**,** 267-286.

JOHNSON, R. B., ONWUEGBUZIE, A. J. & TURNER, L. A. 2007. Toward a definition of mixed methods research. *Journal of mixed methods research,* 1**,** 112-133.

JUPP, V. 2006. *The Sage dictionary of social research methods*, Sage.

KAISER, H. F. 1970. A second generation little jiffy. *Psychometrika,* 35**,** 401-415.

KAISER, H. F. 1974. An index of factorial simplicity. *Psychometrika,* 39**,** 31-36.

KALLA, S. 2011. *Statistical Analysis* [Online]. Available: https://explorable.com/statistical-analysis.

KAPLAN, B. & DUCHON, D. 1988. Combining qualitative and quantitative methods in information systems research: a case study. *MIS quarterly***,** 571-586.

KARAYANNI, D. A. 2003. Web-shoppers and non-shoppers: compatibility, relative advantage and demographics. *European Business Review,* 15**,** 141-152.

KASSIM, N. M. & ABDULLAH, N. A. 2008. Customer loyalty in e-commerce settings: an empirical study. *Electronic Markets,* 18**,** 275-290.

KATZ, R. & TUSHMAN, M. 1979. Communication patterns, project performance, and task characteristics: An empirical evaluation and integration in an R&D setting. *Organizational behavior and human performance,* 23**,** 139-162.

KAUFMAN-SCARBOROUGH, C. & LINDQUIST, J. D. 2002. E-shopping in a multiple channel environment. *Journal of Consumer Marketing,* 19**,** 333-350.

KENTICO. 2013. *Latest Kentico Digital Experience Research Shows 85% Use Smartphones to Comparison Shop; 44% Will Never Return to Sites That Aren's Mobile Friendly* [Online]. Available: http://www.kentico.com/company/press-center/press-releases/2013/latest-kentico-digital-experience-research-shows-8 [Accessed 10 Feb 2017].

KEY NOTE LTD. 2012. *Men and Women's Buying Habits Market Assessment 2012* [Online]. Available: http://www.mbsportal.bl.uk/taster/subjareas/marketing/keynote/men12.aspx [Accessed 30 July 2015].

KIM, C., MIRUSMONOV, M. & LEE, I. 2010. An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior,* 26**,** 310-322.

KIM, D., FERRIN, D. & RAO, R. 2003. Antecedents of consumer trust in B-to-C electronic commerce. *AMCIS 2003 Proceedings***,** 21.

KIM, H.-W., CHAN, H. C. & GUPTA, S. 2007. Value-based adoption of mobile internet: an empirical investigation. *Decision Support Systems,* 43**,** 111-126.

KIM, J., JIN, B. & SWINNEY, J. L. 2009a. The role of etail quality, e-satisfaction and e-trust in online loyalty development process. *Journal of retailing and Consumer services,* 16**,** 239-247.

KIM, J., JIN MA, Y. & PARK, J. 2009b. Are US consumers ready to adopt mobile technology for fashion goods? An integrated theoretical approach. *Journal of Fashion Marketing and Management: An International Journal,* 13**,** 215-230.

KIM, K. J. & SUNDAR, S. S. 2014. Does screen size matter for smartphones? Utilitarian and hedonic effects of screen size on smartphone adoption. *Cyberpsychology, Behavior, and Social Networking,* 17**,** 466-473.

KIM, K. J. & SUNDAR, S. S. 2016. Mobile persuasion: Can screen size and presentation mode make a difference to trust? *Human Communication Research,* 42**,** 45-70.

KNOX, S. D. & DENISON, T. J. 2000. Store loyalty: its impact on retail revenue. An empirical study of purchasing behaviour in the UK. *Journal of retailing and consumer services,* 7**,** 33-45.

KO, E., KIM, E. Y. & LEE, E. K. 2009. Modeling consumer adoption of mobile shopping for fashion products in Korea. *Psychology & Marketing,* 26**,** 669-687.

KO, H., JUNG, J., KIM, J. & SHIM, S. W. 2004. Cross-cultural differences in perceived risk of online shopping. *Journal of Interactive Advertising,* 4**,** 20-29.

KOUFARIS, M. 2002. Applying the technology acceptance model and flow theory to online consumer behavior. *Information systems research,* 13**,** 205-223.

KOUROUTHANASSIS, P. E. & GIAGLIS, G. M. 2012. Introduction to the special issue mobile commerce: the past, present, and future of mobile commerce research. *International Journal of Electronic Commerce,* 16**,** 5-18.

KUHN, T. S. 2012. *The structure of scientific revolutions*, University of Chicago press.

KURNIA, S. & CHIEN, J. The acceptance of the online grocery shopping. The 16th Bled Electronic Commerce Conference, Bled, Slovenia, 2003.

LEE, A. S. 1999. Rigor and relevance in MIS research: Beyond the approach of positivism alone. *Mis Quarterly***,** 29-33.

LEE, H., LEE, Y. & YOO, D. 2000. The determinants of perceived service quality and its relationship with satisfaction. *Journal of services marketing,* 14**,** 217-231.

LEE, H. J. 2016. The role of regulatory focus in online & mobile shopping: focused on shopping motivation and information quality. *Academy of Marketing Studies Journal,* 20**,** 138.

LEE, J., SIN, J., KIM, M. & KONG, H. 2002. A study on web shopping attitude and purchasing intention of internet self-efficacy. *Journal of Korean Academy Marketing Science,* 10**,** 1-26.

LEE, Y., KOZAR, K. A. & LARSEN, K. R. 2003. The technology acceptance model: Past, present, and future. *Communications of the Association for information systems,* 12**,** 50.

LEVITON, L. C. 2006. *The handbook of leadership development evaluation*, John Wiley & Sons.

LEWIS, P., THORNHILL, A. & SAUNDERS, M. 2007. *Research methods for business students*, Pearson Education UK.

LI, H., KUO, C. & RUSELL, M. G. 1999. The impact of perceived channel utilities, shopping orientations, and demographics on the consumer's online buying behavior. *Journal of Computer-Mediated Communication,* 5**,** 0-0.

LI, M., DONG, Z. & CHEN, X. 2012. Factors influencing consumption experience of mobile commerce: A study from experiential view. *Internet Research,* 22**,** 120-141.

LI, S., GLASS, R. & RECORDS, H. 2008. The influence of gender on new technology adoption and use–mobile commerce. *Journal of Internet Commerce,* 7**,** 270-289.

LI, Y.-M. & YEH, Y.-S. 2010. Increasing trust in mobile commerce through design aesthetics. *Computers in Human Behavior,* 26**,** 673-684.

LIEBERMANN, Y. & STASHEVSKY, S. 2002. Perceived risks as barriers to Internet and e-commerce usage. *Qualitative Market Research: An International Journal,* 5**,** 291-300.

LIM, H., WIDDOWS, R. & HOOKER, N. H. 2009. Web content analysis of e-grocery retailers: a longitudinal study. *International Journal of Retail & Distribution Management,* 37**,** 839-851.

LIM, K. H., LEUNG, K., SIA, C. L. & LEE, M. K. 2004. Is eCommerce boundary-less? Effects of individualism–collectivism and uncertainty avoidance on Internet shopping. *Journal of International Business Studies,* 35**,** 545-559.

LIMAYEM, M., KHALIFA, M. & FRINI, A. 2000. What makes consumers buy from Internet? A longitudinal study of online shopping. *Systems, Man and Cybernetics, Part A: Systems and Humans, IEEE Transactions on,* 30**,** 421-432.

LIN, G. T. & SUN, C.-C. 2009. Factors influencing satisfaction and loyalty in online shopping: an integrated model. *Online information review,* 33**,** 458-475.

LIN, H.-F. 2011. An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International journal of information management,* 31**,** 252-260.

LIN, H.-H. & WANG, Y.-S. 2006. An examination of the determinants of customer loyalty in mobile commerce contexts. *Information & management,* 43**,** 271-282.

LIPSTEIN, B. The dynamics of brand loyalty and brand switching. Proceedings of the fifth annual conference of the advertising research foundation, 1959. Advertising Research Foundation New York, NY, 101-108.

LOHSE, G. L., BELLMAN, S. & JOHNSON, E. J. 2000. Consumer buying behavior on the Internet: Findings from panel data. *Journal of interactive Marketing,* 14**,** 15-29.

LÓPEZ-NICOLÁS, C., MOLINA-CASTILLO, F. J. & BOUWMAN, H. 2008. An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information & Management,* 45**,** 359-364.

LU, H.-P. & SU, P. Y.-J. 2009. Factors affecting purchase intention on mobile shopping web sites. *Internet Research,* 19**,** 442-458.

LU, X. L. 2007. *Relationship quality and customer loyalty in internet grocery shopping in the UK,* © Xiaoming (Lucy) Lu.

LUARN, P. & LIN, H.-H. 2005. Toward an understanding of the behavioral intention to use mobile banking. *Computers in human behavior,* 21**,** 873-891.

LUNIEWSKI, P. 2015. *Responsive vs. Mobile: Never-Ending Battle* [Online]. Available: http://www.business2community.com/online-marketing/responsive-vs-mobile-never-ending-battle-01198626 [Accessed 19 July 2015].

LUO, X. 2002. Trust production and privacy concerns on the Internet: A framework based on relationship marketing and social exchange theory. *Industrial Marketing Management,* 31**,** 111-118.

LUQMAN, A., ISMAIL, M. & RAZAK, R. C. 2013. A short review on the trend of mobile commerce continuance intention studies and its underlying model.

MAHESWARAN, D. & SHAVITT, S. 2014. Issues and New Directions in Global Consumer Psychology. *Journal of Consumer Psychology,* 9**,** 59-66.

MAITY, M. & DASS, M. 2014. Consumer decision-making across modern and traditional channels: E-commerce, m-commerce, in-store. *Decision Support Systems,* 61**,** 34-46.

MALLAT, N. 2007. Exploring consumer adoption of mobile payments–A qualitative study. *The Journal of Strategic Information Systems,* 16**,** 413-432.

MALLAT, N., ROSSI, M., TUUNAINEN, V. K. & ÖÖRNI, A. 2009. The impact of use context on mobile services acceptance: The case of mobile ticketing. *Information & management,* 46**,** 190-195.

MARKETING CHARTS. 2017. *Mobile devices' share of website traffic, by country* [Online]. Available: https://www.marketingcharts.com/digital-75281/attachment/adobe-mobile-share-of-traffic-by-country-2014-2016-march2017 [Accessed 10 Feb 2018].

MARKETING LAND. 2014. *Push Mobile Marketing -- App Notifications vs. Messaging* [Online]. Available: http://marketingland.com/welcome-to-the-world-of-push-mobile-marketing-app-notifications-vs-messaging-70083 [Accessed 16th June 2017].

MARKS AND SPENCER PLC. 2013. *Marks and Spencer Plc Annual Report* [Online]. Available: http://corporate.marksandspencer.com/investors/bd98d01715ca4f688360624bb0486304 [Accessed 15 Aug 2015].

MARRIOTT, H. R. & WILLIAMS, M. D. Developing a Theoretical Model to Examine Consumer Acceptance Behavior of Mobile Shopping. Conference on e-Business, e-Services and e-Society, 2016. Springer, 261-266.

MATHIESON, K. 1991. Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior. *Information Systems Research,* 2**,** 173-191.

MATHIESON, K., PEACOCK, E. & CHIN, W. W. 2001. Extending the technology acceptance model: the influence of perceived user resources. *ACM SigMIS Database,* 32**,** 86-112.

MATHIESON, R. 2010. *The on-demand brand: 10 rules for digital marketing success in an anytime, everywhere world*, AMACOM Div American Mgmt Assn.

MAXWELL, J. A. 2012. *Qualitative research design: An interactive approach: An interactive approach*, Sage.

MCFARLAND, D. J. & HAMILTON, D. 2006. Adding contextual specificity to the technology acceptance model. *Computers in human behavior,* 22**,** 427-447.

MCGIVERN, Y. 2013. *The Practice of Market Research: An Introduction*, Pearson Higher Ed.

MCGUIRE, W. J. 1968. Personality and susceptibility to social influence. *Handbook of personality theory and research,* 2**,** 1130-1187.

MCKINNEY, V., YOON, K. & ZAHEDI, F. M. 2002. The measurement of web-customer satisfaction: An expectation and disconfirmation approach. *Information systems research,* 13**,** 296-315.

MCKNIGHT, D. H., CHOUDHURY, V. & KACMAR, C. 2002. Developing and validating trust measures for e-commerce: An integrative typology. *Information systems research,* 13**,** 334-359.

MINGERS, J. 2003. A classification of the philosophical assumptions of management science methods. *Journal of the Operational Research Society,* 54**,** 559-570.

MINGERS, J. & BROCKLESBY, J. 1997. Multimethodology: towards a framework for mixing methodologies. *Omega,* 25**,** 489-509.

MINGXIA, Z., QUAN, R. & XUAN, K. 2006. The impact of Sino-western cultural differences on IT products consumption. *Journal of Technology Management in China,* 1**,** 159-173.

MINTEL GROUP LTD. 2013. *Men's Fashion Lifestyles - UK - April 2012* [Online]. Available: http://academic.mintel.com/display/619598/?highlight#hit1 [Accessed 10 Feb 2017].

MINTEL GROUP LTD 2015. Online Grocery Retailing - UK - March - 2015.

MORGANOSKY, M. A. & CUDE, B. J. 2000. Consumer response to online grocery shopping. *International Journal of Retail & Distribution Management,* 28**,** 17-26.

MORRIS, M. G. & VENKATESH, V. 2000. Age differences in technology adoption decisions: Implications for a changing work force. *Personnel psychology,* 53**,** 375-403.

MORT, G. S. & DRENNAN, J. 2005. Marketing m-services: Establishing a usage benefit typology related to mobile user characteristics. *The Journal of Database Marketing & Customer Strategy Management,* 12**,** 327-341.

MUSA, R., SAIDON, J., HARUN, M. H. M., ADAM, A. A., DZAHAR, D. F., HAUSSAIN, S. S. & LOKMAN, W. M. W. 2016. The Predictors and Consequences of Consumers' Attitude Towards Mobile Shopping Application. *Procedia Economics and Finance,* 37**,** 447-452.

NACHTIGALL, C., KROEHNE, U., FUNKE, F. & STEYER, R. 2003. Pros and cons of structural equation modeling. *Methods Psychological Research Online,* 8**,** 1-22.

NATARAJAN, T., BALASUBRAMANIAN, S. A. & KASILINGAM, D. L. 2017. Understanding the intention to use mobile shopping applications and its influence on price sensitivity. *Journal of Retailing and Consumer Services,* 37**,** 8-22.

NEWELL, F. & LEMON, K. N. 2001. *Wireless rules: New marketing strategies for customer relationship management anytime, anywhere*, McGraw-Hill Professional.

NIELSEN 1992. *Category management: Positioning your organization to win*.

NIELSEN. How smartphones are changing consumers' daily routines around the globe. Mobile World Congress, 2014 Barcelona.

NIELSEN. 2016. *Overcoming barriers to buying groceries online* [Online]. Available: http://www.nielsen.com/au/en/insights/news/2016/overcoming-barriers-to-buying-groceries-online.html [Accessed 12 Mar 2016].

NIKLAS, S. J. & STROHMEIER, S. Exploring the impact of usefulness and enjoyment on mobile service acceptance: A comparative study. System Sciences (HICSS), 2011 44th Hawaii International Conference on, 2011. IEEE, 1-10.

NUNNALLY, J. 1978. C.(1978). Psychometric theory. New York: McGraw-Hill.

NYSVEEN, H., PEDERSEN, P. E. & THORBJØRNSEN, H. 2005. Intentions to use mobile services: Antecedents and cross-service comparisons. *Journal of the academy of marketing science,* 33**,** 330-346.

O'REILLY, K. 2009. *Interpretivism. Key Concepts in Ethnography. SAGE Publications Ltd,* London, SAGE Publications Ltd.

OCADO LTD. 2015. *Stratetic Report: Chief Executive Officer's Review 2015* [Online]. Available: http://results14.ocadogroup.com/strategic-report/chief-executive-officers-review [Accessed 15 Aug 2015].

OCADO LTD. 2016. *Ocado Group plc 2016 Half Year Results* [Online]. Available: http://www.ocadogroup.com/~/media/Files/O/Ocado-Group/reports-and-presentations/2016/fy16-half-year-results-presentation.pdf [Accessed 10 Feb 2017].

OECD. 2006. *Understanding the Digital Divide* [Online]. Available: https://stats.oecd.org/glossary/detail.asp?ID=4719 [Accessed 01 Sep 2018].

OFCOM. 2010. *The communications market 2010* [Online]. Available: http://stakeholders.ofcom.org.uk/binaries/research/cmr/753567/UK-telecoms.pdf [Accessed 25 July 2015].

OFCOM. 2014a. *Cost and value of communications services in the UK* [Online]. Available: https://www.ofcom.org.uk/__data/assets/pdf_file/0023/53735/cost_value_final.pdf [Accessed 10 Feb 2017].

OFCOM. 2014b. *Ofcom Technology Tracker main set wave 2 2014* [Online]. Available: http://stakeholders.ofcom.org.uk/binaries/research/statistics/2014sep/technology-tracker-wave-2-2014/main_set.pdf.

OFCOM. 2015. *The Communications Market Report 2015* [Online]. Available: https://www.ofcom.org.uk/research-and-data/cmr/cmr15 [Accessed 26 Feb 2017].

OFCOM. 2017. *Adults media use attitudes* [Online]. Available: https://www.ofcom.org.uk/__data/assets/pdf_file/.../adults-media-use-attitudes-2017.pdf [Accessed 16th June 2017].

OFFICE FOR NATIONAL STATISTICS. 2017. *Retail sales in Great Britain: Jan 2017* [Online]. Available: https://www.ons.gov.uk/businessindustryandtrade/retailindustry/bulletins/retailsales/jan2017 [Accessed 10 Feb 2017].

OKAZAKI, S. 2005. New perspectives on m-commerce research. *Journal of Electronic Commerce Research,* 6**,** 160.

OLIVER, R. L. 1980. A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of marketing research***,** 460-469.

ONS. 2016. *Retail sales in Great Britain: Dec 2016* [Online]. Office for national statistics. Available: https://www.ons.gov.uk/businessindustryandtrade/retailindustry/bulletins/retailsales/dec2016 [Accessed 28 Jan 2017].

OZOK, A. A. & WEI, J. 2010. An empirical comparison of consumer usability preferences in online shopping using stationary and mobile devices: results from a college student population. *Electronic Commerce Research,* 10**,** 111-137.

PALLANT, J. 2013. *SPSS survival manual*, McGraw-Hill Education (UK).

PARK, J. & STOEL, L. 2005. Effect of brand familiarity, experience and information on online apparel purchase. *International Journal of Retail & Distribution Management,* 33**,** 148-160.

PARK, J. & YANG, S. 2006. THE MODERATING ROLE OF CONSUMER TRUST AND EXPERIENCES: VALUE DRIVEN USAGE OF MOBILE TECHNOLOGY. *International Journal of Mobile Marketing,* 1.

PARK, J., YANG, S. & LEHTO, X. 2007. Adoption of mobile technologies for Chinese consumers. *Journal of Electronic Commerce Research,* 8**,** 196.

PARK, K., PEROSIO, D., GERMAN, G. A. & MCLAUGHLIN, E. W. 1996. What's In Store for Home Shopping? : Cornell University, Department of Applied Economics and Management.

PAVLOU, P. A. & CHAI, L. 2002. What Drives Electronic Commerce across Cultures? Across-Cultural Empirical Investigation of the Theory of Planned Behavior. *J. Electron. Commerce Res.,* 3**,** 240-253.

PEARL, J. 2017. Supermarkets 2017. *Which Magazine.*

PECHTL, H. 2003. Adoption of online shopping by German grocery shoppers. *The International Review of Retail, Distribution and Consumer Research,* 13**,** 145-159.

PERSAUD, A. & AZHAR, I. 2012. Innovative mobile marketing via smartphones: Are consumers ready? *Marketing Intelligence & Planning,* 30**,** 418-443.

PETERSON, R. A., BALASUBRAMANIAN, S. & BRONNENBERG, B. J. 1997. Exploring the implications of the Internet for consumer marketing. *Journal of the Academy of Marketing science,* 25**,** 329-346.

PICOT-COUPEY, K., HURÉ, E., CLIQUET, G. & PETR, C. 2009. Grocery shopping and the Internet: exploring French consumers' perceptions of the 'hypermarket'and 'cybermarket'formats. *The International Review of Retail, Distribution and Consumer Research,* 19**,** 437-455.

PITTA, D. & TAKEN SMITH, K. 2012. Longitudinal study of digital marketing strategies targeting Millennials. *Journal of Consumer Marketing,* 29**,** 86-92.

POSTHUMA, R. A. & DWORKIN, J. B. 2000. A behavioral theory of arbitrator acceptability. *International Journal of Conflict Management,* 11**,** 249-266.

POSTNORD. 2016. *Swedish companies first to test in-fridge delivery of groceries* [Online]. Available: http://www.postnord.com/en/media/press-releases/postnord-sverige/2016/swedish-innovation-takes-grocery-shopping-into-the-future-swedish-companies-first-to-test-in-fridge-delivery-of-groceries/ [Accessed 23 July 2016].

POZZI, A. 2013. E-commerce as a stockpiling technology: Implications for consumer savings. *International Journal of Industrial Organization,* 31**,** 677-689.

PRILUCK, R. 2001. The impact of Priceline. com on the grocery industry. *International Journal of Retail & Distribution Management,* 29**,** 127-134.

PUNAKIVI, M. & SARANEN, J. 2001. Identifying the success factors in e-grocery home delivery. *International Journal of Retail & Distribution Management,* 29**,** 156-163.

PUNCH, K. F. 2013. *Introduction to social research: Quantitative and qualitative approaches*, Sage.

RAFIQ, M. & FULFORD, H. 2005. Loyalty transfer from offline to online stores in the UK grocery industry. *International Journal of Retail & Distribution Management,* 33**,** 444-460.

RAIJAS, A. & TUUNAINEN, V. K. 2001. Critical factors in electronic grocery shopping. *The International Review of Retail, Distribution and Consumer Research,* 11**,** 255-265.

RAINER, R., LAOSETHAKUL, K. & ASTONE, M. K. 2003. Are gender perceptions of computing changing over time? *Journal of Computer Information Systems,* 43**,** 108-114.

RAMUS, K. & ASGER NIELSEN, N. 2005. Online grocery retailing: what do consumers think? *Internet Research,* 15**,** 335-352.

RECHINHHELD, F. & SASSER, W. 1990. Zero defections: Quality comes to service. *Harvard Business Review,* 68**,** 105-111.

RHODES, R. E. & BRUIJN, G. J. 2013. How big is the physical activity intention–behaviour gap? A meta-analysis using the action control framework. *British journal of health psychology,* 18**,** 296-309.

RICHARDS, B. 1996. Technology (a special report): let the buying begin. How big a bite? *The Wall Street Journal,* 17**,** R10.

RIESSMAN, C. K. 1993. *Narrative analysis*, Sage.

RODGERS, S. & HARRIS, M. A. 2003. Gender and e-commerce: an exploratory study. *Journal of advertising research,* 43**,** 322-329.

ROGERS, E. M. 1993. The Diffusion of Innovations Model. *Diffusion and Use of Geographic Information Technologies,* 70**,** 9-24.

ROGERS, E. M. 2010. *Diffusion of innovations*, Simon and Schuster.

ROWLEY, J. 2004. Online branding. *Online information review,* 28**,** 131-138.

RUBIN, A. M. 1981. An examination of television viewing motivations. *Communication Research--An International Quarterly,* 8**,** 141-65.

RUIZ MAFÉ, C. & SANZ BLAS, S. 2006. Explaining Internet dependency: An exploratory study of future purchase intention of Spanish Internet users. *Internet research,* 16**,** 380-397.

RYAN, C. 1995. *Researching tourist satisfaction: issues, concepts, problems*, Routledge.

RYAN, G. W. & BERNARD, H. R. 2003. Techniques to identify themes. *Field methods,* 15**,** 85-109.

SAGA, V. L. & ZMUD, R. W. The nature and determinants of IT acceptance, routinization, and infusion. Proceedings of the IFIP TC8 working conference on diffusion, transfer and implementation of information technology, 1993. Elsevier Science Inc., 67-86.

SAINSBURY'S PLC. 2014. *J Sainsbury Plc Annual Report 2014* [Online]. Available: http://www.j-sainsbury.co.uk/media/2064053/sainsbury_s_annual_report_and_accounts_13-14.pdf [Accessed 15 Aug 2015].

SALKIND, N. 2007. Encyclopedia of Measurement and Statistics.

SALKIND, N. 2010. Encyclopedia of Research Design.

SAN-MARTÍN, S., LÓPEZ-CATALÁN, B. & RAMÓN-JERÓNIMO, M. A. 2013. Mobile shoppers: Types, drivers, and impediments. *Journal of Organizational Computing and Electronic Commerce,* 23**,** 350-371.

SAN-MARTÍN, S., PRODANOVA, J. & JIMÉNEZ, N. 2015. The impact of age in the generation of satisfaction and WOM in mobile shopping. *Journal of Retailing and Consumer Services,* 23**,** 1-8.

SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2011. *Research methods for business students, 5/e*, Pearson Education India.

SCHUMACKER, R. E. & LOMAX, R. G. 2004. *A beginner's guide to structural equation modeling*, Psychology Press.

SELNES, F. 1993. An examination of the effect of product performance on brand reputation, satisfaction and loyalty. *European Journal of marketing,* 27**,** 19-35.

SELWYN, N. & ROBSON, K. 1998. Using e-mail as a research tool. *Social research update,* 21.

SHANG, D., SHANG, D., WU, W. & WU, W. 2017. Understanding mobile shopping consumers' continuance intention. *Industrial Management & Data Systems,* 117**,** 213-227.

SHANKAR, V., SMITH, A. K. & RANGASWAMY, A. 2003. Customer satisfaction and loyalty in online and offline environments. *International journal of research in marketing,* 20**,** 153-175.

SHAO YEH, Y. & LI, Y.-M. 2009. Building trust in m-commerce: contributions from quality and satisfaction. *Online Information Review,* 33**,** 1066-1086.

SHARON LOCKYER, A. C., P. ATKINSON, J. FIELDING, A. STRAUSS, A. STRAUSS, J. CORBIN 2004. *Coding Qualitative Data. The SAGE Encyclopedia of Social Science Research Methods. Sage Publications, Inc,* Thousand Oaks, CA, Sage Publications, Inc.

SHAW, G. & ALEXANDER, A. 2008. British co-operative societies as retail innovators: Interpreting the early stages of the self-service revolution. *Business History,* 50**,** 62-78.

SHEERAN, P. 2002. Intention—behavior relations: A conceptual and empirical review. *European review of social psychology,* 12**,** 1-36.

SHEERAN, P. & WEBB, T. L. 2016. The intention–behavior gap. *Social and personality psychology compass,* 10**,** 503-518.

SHEPPARD, B. H., HARTWICK, J. & WARSHAW, P. R. 1988. The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of consumer Research***,** 325-343.

SHIH, H.-P. 2004. An empirical study on predicting user acceptance of e-shopping on the Web. *Information & Management,* 41**,** 351-368.

SIAU, K. & SHEN, Z. 2003. Building customer trust in mobile commerce. *Communications of the ACM,* 46**,** 91-94.

SIROHI, N., MCLAUGHLIN, E. W. & WITTINK, D. R. 1998. A model of consumer perceptions and store loyalty intentions for a supermarket retailer. *Journal of retailing,* 74**,** 223-245.

SLADE, E. L., DWIVEDI, Y. K., PIERCY, N. C. & WILLIAMS, M. D. 2015. Modeling Consumers' Adoption Intentions of Remote Mobile Payments in the United Kingdom: Extending UTAUT with Innovativeness, Risk, and Trust. *Psychology & Marketing,* 32**,** 860-873.

SLYKE, C. V., BÉLANGER, F., JOHNSON, R. D. & HIGHTOWER, R. 2010. Gender-based differences in consumer e-commerce adoption. *Communications of the Association for Information Systems,* 26**,** 2.

SMÅROS, J. & HOLMSTRÖM, J. 2000. Reaching the consumer through e-grocery VMI. *International Journal of Retail & Distribution Management,* 28**,** 55-61.

SRINIVASAN, S. S., ANDERSON, R. & PONNAVOLU, K. 2002. Customer loyalty in e-commerce: an exploration of its antecedents and consequences. *Journal of retailing,* 78**,** 41-50.

SRIVASTAVA, S. C., CHANDRA, S. & THENG, Y.-L. 2010. Evaluating the role of trust in consumer adoption of mobile payment systems: An empirical analysis. *Communications of the Association for Information Systems,* 27**,** 561-588.

SUMNER, M. 2006. *EPISTEMOLOGY. The SAGE Dictionary of Social Research Methods. SAGE Publications, Ltd,* London, England, SAGE Publications, Ltd.

SZYMANSKI, D. M. & HISE, R. T. 2000. E-satisfaction: an initial examination. *Journal of retailing,* 76**,** 309-322.

TABACHNICK, B. G., FIDELL, L. S. & OSTERLIND, S. J. 2001. Using multivariate statistics.

TASHAKKORI, A. & TEDDLIE, C. 1998. *Mixed methodology: Combining qualitative and quantitative approaches*, Sage.

TAYLOR, S. & TODD, P. A. 1995. Understanding information technology usage: A test of competing models. *Information systems research,* 6**,** 144-176.

TESCO PLC. 2014. *Christmas ad New Year trading statement* [Online]. Available: https://www.tescoplc.com/files/pdf/results/2014/christmas_new_year_trading_statement.pdf [Accessed 10 Feb 2017].

THE DAILY TELEGRAPH. 2015. *Aldi steps up supermarket war by launching online shopping* [Online]. Available: http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/11895559/Aldi-steps-up-supermarket-war-by-launching-online-shopping.html [Accessed 10 Feb 2017].

THE DEVICEATLAS. 2016. *Most popular viewport size statistics for 2016* [Online]. Available: https://deviceatlas.com/blog/viewport-size-statistics-2016 [Accessed 16th June 2017].

THE GUARDIAN. 2015. *Online shoppers will wait just five seconds before switching brand* [Online]. Available: https://www.theguardian.com/media-network/2015/feb/12/online-shoppers-five-seconds-website [Accessed 16th June 2017].

THE GUARDIAN. 2016. *How MyFitnessPal, Lose It, Noom Coach and HAPIcoach could help you towards healthier eating habits in 2016* [Online]. Available: https://www.theguardian.com/technology/2016/jan/16/dieting-calorie-counting-four-of-the-best-food-tracking-apps [Accessed 10 Feb 2017.

THOMPSON, R. L., HIGGINS, C. A. & HOWELL, J. M. 1994. Influence of experience on personal computer utilization: testing a conceptual model. *Journal of management information systems,* 11**,** 167-187.

TIWARI, R., BUSE, S. & HERSTATT, C. 2006. From electronic to mobile commerce: Opportunities through technology convergence for business services. *Asia Pacific Tech Monitor,* 23**,** 38-45.

TONES, K. & TILFORD, S. 2001. *Health promotion: effectiveness, efficiency and equity*, Nelson Thornes.

TRIANDIS, H. Values, attitudes, and interpersonal behavior. Nebraska Symposium on Motivation. Nebraska Symposium on Motivation, 1980. 195.

TRIANDIS, H. C. 1971. *Attitude and attitude change*, Wiley New York.

TROCCHIA, P. J. & JANDA, S. 2000. A phenomenological investigation of Internet usage among older individuals. *Journal of consumer marketing,* 17**,** 605-616.

TSU WEI, T., MARTHANDAN, G., YEE-LOONG CHONG, A., OOI, K.-B. & ARUMUGAM, S. 2009. What drives Malaysian m-commerce adoption? An empirical analysis. *Industrial Management & Data Systems,* 109**,** 370-388.

UK GOVERNMENT. 2015. *The digital communications infrastructure strategy* [Online]. Available: https://www.gov.uk/government/publications/the-digital-communications-infrastructure-strategy/the-digital-communications-infrastructure-strategy [Accessed 25 July 2015].

UK GOVERNMENT 2017. Connectivity - building world-class digital infrastructure for the UK. *In:* DEPARTMENT FOR DIGITAL, C., MEDIA & SPORT (ed.).

VAN DE VEN, A. H., DELBECQ, A. L. & KOENIG JR, R. 1976. Determinants of coordination modes within organizations. *American sociological review***,** 322-338.

VARMA CITRIN, A., SPROTT, D. E., SILVERMAN, S. N. & STEM JR, D. E. 2000. Adoption of Internet shopping: the role of consumer innovativeness. *Industrial management & data systems,* 100**,** 294-300.

VENKATESH, V. & DAVIS, F. D. 2000a. A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science,* 46**,** 186-204.

VENKATESH, V. & MORRIS, M. G. 2000b. Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior. *MIS Quarterly,* 24**,** 115-139.

VENKATESH, V., MORRIS, M. G., DAVIS, G. B. & DAVIS, F. D. 2003. User acceptance of information technology: Toward a unified view. *Mis Quarterly,* 27**,** 425-478.

VERHOEF, P. C. & LANGERAK, F. 2001. Possible determinants of consumers' adoption of electronic grocery shopping in the Netherlands. *Journal of Retailing and Consumer Services,* 8**,** 275-285.

VOGT, W. 2005. Dictionary of Statistics & Methodology.

WANG, F., HEAD, M. & ARCHER, N. 2000. A relationship-building model for the Web retail marketplace. *Internet Research,* 10**,** 374-384.

WANG, R. J.-H., MALTHOUSE, E. C. & KRISHNAMURTHI, L. 2015. On the go: How mobile shopping affects customer purchase behavior. *Journal of Retailing,* 91**,** 217-234.

WANG, Y. S., LIN, H. H. & LUARN, P. 2006. Predicting consumer intention to use mobile service. *Information Systems Journal,* 16**,** 157-179.

WU, J.-H. & WANG, S.-C. 2005. What drives mobile commerce?: An empirical evaluation of the revised technology acceptance model. *Information & management,* 42**,** 719-729.

YANG, K. 2010. Determinants of US consumer mobile shopping services adoption: implications for designing mobile shopping services. *Journal of consumer marketing,* 27**,** 262-270.

YANG, K. 2012. Consumer technology traits in determining mobile shopping adoption: An application of the extended theory of planned behavior. *Journal of Retailing and Consumer Services,* 19**,** 484-491.

YANG, K. & FORNEY, J. C. 2013. The Moderating Role of Consumer Technology Anxiety in Mobile Shopping Adoption: Differential Effects of Facilitating Conditions and Social Influences. *Journal of Electronic Commerce Research,* 14**,** 334-347.

YANG, K. C. 2005. Exploring factors affecting the adoption of mobile commerce in Singapore. *Telematics and informatics,* 22**,** 257-277.

ZEITHAML, V. A., BERRY, L. L. & PARASURAMAN, A. 1988. Communication and control processes in the delivery of service quality. *The Journal of Marketing***,** 35-48.

ZHANG, J., FARRIS, P. W., IRVIN, J. W., KUSHWAHA, T., STEENBURGH, T. J. & WEITZ, B. A. 2010. Crafting integrated multichannel retailing strategies. *Journal of Interactive Marketing,* 24**,** 168-180.

ZHANG, L., ZHU, J. & LIU, Q. 2012. A meta-analysis of mobile commerce adoption and the moderating effect of culture. *Computers in human behavior,* 28**,** 1902-1911.

ZHOU, L., DAI, L. & ZHANG, D. 2007. Online shopping acceptance model-A critical survey of consumer factors in online shopping. *Journal of Electronic Commerce Research,* 8**,** 41-62.

ZHOU, T. 2013a. An empirical examination of continuance intention of mobile payment services. *Decision Support Systems,* 54**,** 1085-1091.

ZHOU, T. 2013b. An empirical examination of the determinants of mobile purchase. *Personal and ubiquitous computing,* 17**,** 187-195.