Exploratory Study of customer preferences in Smartphone Loyalty Apps

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Abstract

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Despite a proliferation of many variants of loyalty systems in retail organisations throughout the world, countless research papers into the benefits, drawbacks and costs associated with them, they have, in fact, remained largely unchanged over the decades.

With the penetration of the smartphone in modern day life, and the associated affordances they bring, many retailers have attempted to leverage these in order to increase sales and customer retention.

However, retail based Apps are amongst the lowest in retention and highest in churn rate amongst customers. Clearly they are not engaging the customers and the lack of retention means a lack of transactions.

This research aims to survey loyalty programme members to determine which functionality that they consider most important. The aim is to provide a framework for retailers and loyalty app designers, to that they can produce what their customers want, thereby increasing retention, loyalty and ultimately value.

The research found that overall the customers was primarily interested in managing the loyalty system itself. The top five most popular answers were all related to managing their loyalty balance. This was closely followed by stock functionality, the ability to find more information, check pricing, to see stock availability, all of which proved to be very popular. Of heartening news for the retailer, is the ability to purchase through the App was a very close third, proving that customers want this too, they just have more immediate priorities. Finally, and rather surprisingly in this digitally connected age, were the communication related functionality. This was the only group where there was a nett negative response from the surveyed members.

In conclusion, the data would support that the most important functionality for the end user is what is geared towards them and making their shopping easier.

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1. Introduction

1.1 Background to research

Loyalty programmes have become commonplace in the modern retailer's strategy to retain customers and reduce acquisition costs. For many retailers around the globe the loyalty programme has become the standard tool for enhancing customer retention and engagement (Schmid, 1997; Dowling and Mark, 1997). From their humble beginnings in the late 18th century where American retailers began giving out copper tokens to their customers for use against future purchases, the concept has remained largely unchanged, with one major exception- customer recognition. When American Airlines launched their Frequent Flyer program in 1981, they added this critical element: the ability to record and detail the specific customer and their purchase history. The "AAdvantage Programme", as it is still called today, currently has approximately 100m members (Schlangenstein, 2015). It was quickly replicated by other businesses in the U.S. that recognized the competitive advantage that it gave them (O'Brien and Jones, 1995). By the 1990s European companies were launching their own loyalty programmes (Disney, 1999) and currently loyalty programmes exist in all corners of the world.

A common view on loyalty programmes is that with their proliferation and in many cases, significant numbers of members, they must be an effective form of customer retention (O'Malley, 1998). However there is an alternative view point that they are costly, time consuming and not always effective (Gilpin, 1996). Clearly, like any process, a loyalty system will have a cost associated with it. In addition to the points, or discounts, that are given to the customers, there will also be marketing, system, material and staff costs. It is therefore imperative that the loyalty system actually performs and produces a return on what is essentially an investment like any other investment for the business. For the system to work, companies have to operate it in a way where the value shared with the customers is in proportion to value that the customer's loyalty creates

(O'Brien and Jones, 1995).

There can be little argument that the internet has had far reaching impacts on not only people's everyday lives, but also the business world (Feher and Towell, 1997). The retail business, in particular, has undergone major upheaval with customers now able to shop all over the world and they are no longer confined by geographical boundaries or ability to access locations (Alden, Steemkamp and Batra, 2006). Not only is the customers shop window significantly larger, the information availability and the enablement of price and service comparison has allowed them the shop for better value in a global market (Hoffman and Novak, 1996). The competitors for retailer's customers have been markedly increased.

In 2007, Steve Jobs and Apple changed the way that people communicate in the most significant way since the invention of the telephone in the late 19th century. Customers could now buy a "phone, iPod and internet communicator" in one device and use their fingers to control it. Not only that, the iPhone was built on an operating system that allowed independent developers to design and ship apps that had never been previously possible. Ten years later there are an estimated 2.3bn smartphones in the world, the vast majority running either Apple iOS or Google Android operating systems. The developers have been busy also and latest figures show that between iTunes and the Google Play store there are 4.2m apps (Statista, 2016). Most retailers have approached the technology to bolster their Omni channel presence. Users, however, are still lagging behind in sales conversion over traditional desktop e-commerce due to several friction points on mobile (Fulgoni, 2016). With a low retention rate of 18% over 3 months, e-commerce/Retail apps are not successfully engaging and retaining consumers (Localytics, 2016) even though they may be used with traditional loyalty programmes.

This thesis aims to provide retailers with recommendations to apply in order to optimize their smart-phone offerings to improve customer loyalty, engagement,

retention and ultimately purchasing.

1.2 Research Question(s)

Given the limitations of traditional card based loyalty programmes and the lack of familiarity with mobile habits of consumers, retailers are challenged on how to design and implement mobile loyalty programme which drives customer engagement and offers demonstrable value to their business. Retailers need clear and consistent guidance in how to harness mobile devices in order to build trust with the customers, impact sales conversion and provide for effective customer engagement.

A 2013 report by Deloitte highlighted the need for an integrated digital strategy for retailers. Despite the belief by many retailers that m-commerce is the way forward; the report finds that consumers want to use digital in-store to support their shopping experience.

	Price look up	Get product information	Check item availability	Checkout/ make payment	Navigate to an item
Own device	59%	52%	51%	48%	47%
Unmanned device	24%	28%	27%	28%	33%
Sales Associate	17%	20%	22%	24%	20%

Figure 1: Deloitte Report. (Lobaugh, Simpson and Ohri, 2014)

This dissertation aims to explore the functionality that the retail customers would most like to see in a Loyalty Smartphone App so that retailers can implement the features and thereby drive customer engagement.

1.3 Methodology

Both primary and secondary data, from existing research material, will be used to determine areas that customers wish to see addressed in a Loyalty App. Primary data will be collected using a survey, which will be a combination of both ranked and a small number of questions aimed towards providing demographic analysis. To help ensure validity, the questionnaire was pre-tested with a focus group or a small number of initial respondents. The results of the survey will be analyzed using a quantitative approach. This method relies

heavily on both data access and availability. With a potential for a large number of responses it is deemed the most appropriate. Three retailers have been identified and are willing to allow their existing customer base to be contacted with the questionnaire. These are across three different sectors and therefore will also help to bring validity to the results.

2. Literature Review

2.1 Introduction

In this chapter, the literature pertaining to this research is explored to set the context for the research questions. Loyalty programmes are defined with explanations of early implementations taken from peer reviewed works such as published reports, articles and research papers. The trajectory of the move of such programmes to high street stores is outlined and then the effect of smartphone and the influence in retailing is outlined with the gap for this research identified.

2.2 Definition of Loyalty in a Retail Context

In the context of this research, the loyalty that is being investigated is that between a customer and retailer. Customer loyalty has many potential aspects and can relate to a firm, a particular store and/or a brand (Bloemer and Odekerken-Schroder, 2002; Demoulin and Zidda, 2009). More than just a tendency to engage a particular relationship with a retailer, it involves a "*conscious"* tendency rather than one based on convenience or mere repetitive behaviour (Dick and Basu, 1994). Other research would indicate that the elements of trust and satisfaction should also be included (Dwyer, Schurr and Oh, 1987; Morgan and Hunt, 1994).

Loyalty programmes have become commonplace in the modern retailer's strategy to retain customers and reduce acquisition costs. Oliver (1999) defines loyalty as *"a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-*

brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior". More recently there is a general view that behavior and attitudes need to be also included when considering loyalty. Whereas the behavioral looks at repeat purchase frequency and brand switching, the attitudinal is a more holistic approach and includes psychological involvement and preferences (Santouridis and Trivellas, 2010). This blend of attitudinal and psychological blend is recognized in the definition for loyalty programmes which states that:

> *"A customer loyalty program is a structured and long-term marketing effort which provides incentives to repeat customers who demonstrate loyal buying behavior. Successful programs are designed to motivate customers in a business's target market to return often, make frequent purchases, and shun competitors." (Farfan, 2016)*

The long term costs of attracting new customers can be reduced by increasing the duration of their loyalty to the company (Gilbert, 1996). Additionally much research has been carried out in traditional marketing that concludes that increasing customer loyalty leads to increased profits.

> *"Across a wide range of businesses, the pattern remains the same the longer a company keeps a customer, the more money it stands to make" (Reichheld and Sasser, 1990).*

2.3 Rationale for Loyalty Programmes

For many retailers around the globe the loyalty programme has become the standard tool for enhancing customer retention and engagement (Schmid, 1997; Dowling and Mark, 1997). The value that the loyalty system bestows on to the customers is the benefit for which their loyalty is the assumed outcome. According to Reichheld and Teal (2001), retailers need to court customer store loyalty in order to increase store revenues by cross selling to customers, reduce operating costs, enhance the power of word of mouth (WOM) and by having switching barriers. However the values being offered by a given retailer will be very for different customers and in different contexts (O'Malley, 1998). In their Harvard Business Review article, O'Brien and Jones (O'Brien and Jones, 1995)

identified five key elements to value a loyalty scheme. These key elements are: cash value (proportional to spend), range of rewards and redemption options, aspirational value, relevance and ease of participation and convenience.

As mentioned earlier, there is obviously a cost associated with running a loyalty system, and although, for many businesses it has proven to be a cost effective approach to marketing, there are arguments that many loyalty systems are a knee jerk reaction to competitor's offerings and so have been implemented without enough planning or thought (Dowling and Mark, 1997). In fact, Meyer and Dornach (1998) revealed that loyal customers not only more likely to visit in future and purchase but they are also more proactive in recommending the store to others. It has also been shown that behavior and attitudes need to be also addressed when considering loyalty. Whereas the behavioral looks at repeat purchase frequency and brand switching, the attitudinal is a more holistic approach and includes psychological involvement and preferences (Santouridis and Trivellas, 2010).

To design a loyalty programme, Dowling and Mark (1997) propose 4 key guidelines:

1. The loyalty program should enhance the value proposition of the product or service.
2. It should be fully costed, including opportunity costs and compared with alternative use of funds.
3. The reward scheme should be designed to maximize the buyer's motivation to make the next purchase.
4. The specific market situations need to be considered. For example if the brand is highly fashionable or competitor brands are prone to imitating each other's strategies, then a loyalty system is unlikely to be cost effective.

Other research reiterates the need for proper design and suggest that certain retail store attributes such as atmosphere and environment play a vital role in store loyalty behavior (Baker et al., 2002; Pan and Zinkhan, 2006; Sirgy, Grewal

and Mangleburg, 2000)

According to Demoulin and Zidda (2009) the retailers' objectives for loyalty programs are threefold:

1. To retain customers.
2. To increase their loyalty.
3. To collect data about their customers shopping behavior.

These three objectives are the driving force behind the retailers' management of their loyalty programs.

2.4 The early implementations (Tokens, stamps)

The earliest mention of loyalty programmes is an anecdotal reference to a 1793 merchant in the United States who gave out copper tokens (Amalyan and Amalian, 2015). In the 19th century, other merchants such as Sweet Home laundry soaps came with certificates which could be exchanged for colour lithographs, and in 1872, the Grand Union Tea Company gave tickets to customers to be exchanged for catalogued merchandise in stores (Amalyan and Amalian, 2015).

The conceptual idea of collecting stamps as demonstration and validation of loyalty was first introduced in 1891 by Blue Stamp Trading and collected stamps were saved in a book and redeemed for store products (Lonto, 2004). Sperry and Hutchinson Company (S&H) became the first third party provider in 1896. Customers would fill the books with stamps and redeem for household products, kitchen items and personal items in merchants such as gas stations, dry goods dealers and later supermarkets. When WWII ended, the trading stamp business flourished. S&H Green Stamps at one point was issuing three times as many stamps as the US post Office and by the 1960's were the largest purchaser of consumer goods in the world (Friend, 2017). By this time 75 percent of US supermarket chains were involved in some form of stamp program (Pollack, 1988).

2.5 Purchase with identification (Airline Programmes)

By the 1980s, airlines started to take advantage of the information they held on customers in loyalty programmes to further build customer loyalty. Airlines already held a vast amount of information on their customers and in 1981, the world's first frequent flyer programme was offered by American Airlines, whereby customers could accumulate points or "airmiles" which could be redeemed for upgrades, tickets for companions or even free flights (Petersen, 2001). The scheme was quickly copied by not only other airlines but also other industries. All major U.S. airlines have some variation of a frequent flyer program, many cruise companies allow customers earn points towards future trips and Hotel chains such as the Hilton, Marriot and others encourage guests to accumulate points for future stays, discounts and other prizes (Xie and Chen, 2013).

2.6 The move to the High Street

The retail industry is very conscious of their retention strategies and the relative investment required to retain existing customers against that of acquiring new ones (Reichheld, 1994). The advent of the store credit card (Punch, 1993; Myatt, 1990; Worthington, 1986) was the forerunner to the loyalty card that is common place today as it was the only viable option for retailers to track customer behavior at the transaction level (Duffy, 1998). However the combination of bad debt (O'Connor, 1993) and the launch of multi-channel cards such as Visa and Mastercard (Barker and Sekerkaya, 1992; Credit Card News, 1993), signaled their demise as the retailers' primary form of direct customer marketing tools. In highly competitive markets where offerings are similar and there is high repeat purchasing, such as Grocery or Forecourts, the retention strategy is even more crucial (Leenheer and Bijmolt, 2008; Belizi and Bristol, 2004). Increases in customer retention causes both customer satisfaction and the retailer's bottom line to be positively affected (Gupta, Lehmann and Stuart, 2004). Loyalty systems are considered by retailers to be a major weapon in their arsenal in both customer retention and innovative

marketing (Leenheer and Bijmolt, 2008).

In 1993 Superquinn launched the *SuperClub* programme. Based on three years of research in the US and Europe, the scheme was developed and tailored to suit its own needs (O'Callaghan and Wilcox, 2000). The database built up allowed the management to ask the hard questions and more importantly to try and answer them.

> *"When 9,000 households shopped in your store last week, why did 1,200 households choose not to buy within certain departments within the store?"*
>
> Interview with Fregal Quinn (O'Callaghan and Wilcox, 2000)

Many retailers' loyalty programmes are based on the successful implementation by Superquinn. Soon after, in 1995, Tesco in the UK launched a similar program (Miles, 1995), followed By Sainsburys, Shell, C&A, Argos and many others (Wright and Sparks, 1999).

For most loyalty schemes currently on the high street, the customer is issued with a credit card sized membership card, some also offering smaller key fob sized, which has a unique identifier either encoded on the magnetic stripe (like a credit card) or a printed barcode. For collection and redemption of points the customer simply presents the card at the point of sale and the staff member processes the transaction. Whilst durable, convenient and relatively cheap to produce, many issues exist with the cards. Customers commonly forget them and frequently have just too many from various merchants to carry around.

2.7 The Growth of the smartphone

As of the end of 2016, it was reported that smart phones are the primary mobile device for Irish consumers with 86% owning or having access to a smartphone, and in the UK, smartphone penetration is at 81% (Deloitte, 2017).

This ubiquity of mobile devices along with improved and cheaper network connectivity, increasing range of affordances such fingerprint recognition, better quality cameras, retailers have started to embrace the use of smartphone as part of how customers interact with their businesses. Retailers are growing their Omni channel presence. No longer are bricks and mortar

shops sufficient, Omni channel creates opportunities for purchase through e-commerce and m-commerce, along with additional routes to customer service and convenience (Lin, 2012). The use of mobile devices amongst consumers is growing (Sterling, 2015) with many countries reporting penetration rates well above 60%. Recognizing this, the global leader in internet search engines, Google, announced in 2015 that they were implementing changes in their search algorithms that would have a significant result on sites that were not mobile friendly (Google, 2015).

2.8 Smartphone in retailing

While there is clear statistical data showing that the use of m-commerce is increasing (Meola, 2016) what is unknown, and as best can only be estimated, is the impact the using a mobile phone for purchase research has not only on on-line transactions but also on subsequent purchase in the traditional bricks and mortar outlet. As of 2017, there are many touchpoints for both the consumer and the retailer but little research on them. In the introduction to a special issue of the Journal of Retailing on Multi-Channel Retailing (Verhoef, Kannan and Inman, 2015) suggest a number of areas that they suggest require further research, specifying three in particular that are relevant

- The relationships between specific touchpoints and channel performance?
- How the use of mobile within stores affects both purchase behavior and store performance?

Can the different customer touchpoints be seamlessly integrated and if so does it actually result in a stronger performance for the retailer?

Historically lack of information and geographical location operated as a barrier for retailers, once a customer was in your store they had limited access to product information and competitor pricing. This is no longer the case, the always on, always connected smartphone now allows them to research and price compare even while queueing to pay. The rise and advancement in mobile technology is making Omni channel not only inevitable, it is also breaking down and removing traditional barriers, whilst on the other hand increasing the market by introducing new products to customers and also by extending the

market reach of retailers. As a result the future success of retailers will be based on their ability to adapt and utilize the new technology rather than hiding from the competition (Brynjolfsson, Hu and Rahman, 2013)

From Dec 2016 to summer of 2017, there have been announcements from Google, Apple and PayPal on enabling in-store payments with mobile devices. With the increased activity in using mobile devices as part of the purchasing flow, traditional card loyalty systems become a friction point in the customer's experience. Additionally, while many Apps exist to store loyalty cards, these are often just digital representations of the plastic card and do not take advantage of the features of the smart phones thereby offering nothing extra to the customer. The advent of the smartphone has created a tool and opportunity for the retailer. The vast majority do not know that a customer was, or currently is, in one of their outlets until they are leaving, and even then it is only if they have purchased. By the time the customer has presented the card at the till, the retailer has had no opportunity to influence their shopping experience. However, had the customer an App on their smartphone, the retailer could recognize and welcome them on entry to the store, remind them of their balance and tailor promotions uniquely to them and their shopping history (Berney, 2015).

The capabilities of the mobile devices offer the opportunity to provide personalized consumer experience and integrate with a retailer's multiple commercial channels. Historically, other studies have shown that timing of rewards impacts customer motivation and perception of the loyalty programme, citing the example that delayed rewards builds higher loyalty than immediate rewards when customers are satisfied, whereas immediate rewards build higher loyalty compared to delayed rewards when customers are dissatisfied (Xie and Chen, 2013).

It is also proposed that traditional loyalty programmes tend to suffer from all being too alike and not creating ultimate loyalty to one retailer (Zakaria et al.,

2013). Mobile devices provide a means to validate the purpose of a campaign and more specifically target the appropriate audience at the right time by taking advantage of the capabilities of the smartphone such as location awareness, Bluetooth, camera, and communication features including social media. By committing to a mobile and social media strategy, in July 2015, 20% of Starbucks payments in the US came through its mobile app and 94% of Facebook users were either fans of Starbucks or friends with someone who was (Murray, 2016).

Organizations need to identify the loyal behaviours that most deserve explicit recognition, reward, and investment (Scharge, 2015) especially when using their mobile devices. Unfortunately, unlike Starbucks most retailers do not have a clear understanding of the mobile habits of their customers and therefore need clear and consistent guidance in how to harness mobile devices as a mechanism for a loyalty programme.

3. Research Objective

The objectives of this research are as follows:

- Identify key features in a smartphone loyalty App from a customer perspective. This will be achieved by a questionnaire listing features applicable to loyalty apps and systems in general, and asking the respondents to rate their individual importance to them by means of a Likert scale.
- Provide a set of guidelines and recommendations for retailers to use in designing and developing apps for loyalty programmes. By analysing the data returned from the above questionnaire, the author aims to provide a list of key features that should be included in any app being deployed.

4. Methodology

4.1 Introduction

This chapter will cover the research methodology relating to the addressing the outlined research objectives. It will cover the rationale for the chosen

methodology, including collection of the data, sample selection and the method of analysing the data collected. Finally the ethical considerations and limitations will be outlined and discussed.

4.2 Research Process

Cooper and Schindler (2003) outline nine key steps to be followed in conducting research:

- Problem Identification
- Question definition
- Exploratory study, if required, to clarify and refine the research question
- Research proposal development
- Outline of the research design, scope, type, time frame etc.
- Develop and test a method of data collection. Use of pilot study if possible
- Collect the data
- Analyse the data
- Report on the research results

Saunders et al (2009) further state that although a sequence, such as that presented by Cooper and Schindler (2003) above, may form an outline for the research, oftentimes the researcher will find that they may be required to concurrently work on many aspects and frequently will have to revisit some steps.

Research can be broadly classified into two main categories, pure and applied. Pure, or basic, research is more theoretical in nature and aims to add to an existing body of knowledge (Sekaran and Bougie, 2010), whereas, according to Neuman (2004), applied research is "*designed to address a specific concern or to offer solutions to a problem identified by an employer, club, agency, social movement or organization".* It is within the applied category that this research is being conducted.

4.3 Proposed Methodology

Using the Research Onion (Saunders, Lewis and Thornhill, 2009) as a guide, the research

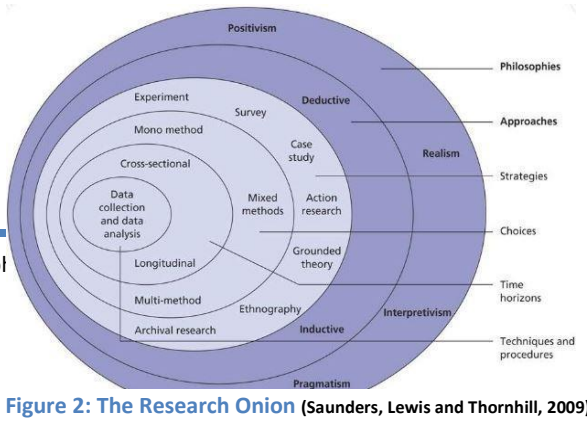


Figure 2: The Research Onion (Saunders, Lewis and Thornhill, 2009)

methodology adopted will aim to achieve the goal of providing a framework for retailers to use when considering or designing an app for a Loyalty program, in a structured and defined way.

4.3.1 Research Philosophy

From the Research Onion (Saunders, Lewis and Thornhill, 2009) the outer layers refer to research philosophy. These are

- **Positivism** is the approach refers to the principle of developing a theory or principle and then using logical deduction and measures to test outcomes (Neuman, 2004).
- **Realism** has the philosophical position that the reality that exists is independent of the researcher's mind and that a person's perceptions are just a view of that reality (Sobh and Perry, 2006)
- **Interpretivism** approach is to discover meaning and to place that in a specific social context. The researcher attempts to interpret other's subjective views and reasoning (Neuman, 2004).
- **Pragmatism** operates within the understanding and belief that there is no single point that can give a view of the entire picture and that there are many different ways of undertaking research (Saunders, Lewis and Thornhill, 2009).

The position adopted in this thesis is that of interpretivism. In order to propose a framework for retailers it is necessary to first collect and then interpret the responses from their program members.

4.3.2 Research Approach

There are two main approaches dealing with research, deductive and inductive.

The deductive approach deals with drawing conclusions from arguments and general principles. In order for the conclusion to be true, which in turn validates the argument, then the reasons or premises must also be true. "*Deductive logic is the study of validity and not the truth"* (Krishnaswamy, Sivakumar and Mathirajan, 2006).

Inductive logic, on the other hand, observed evidence or fact is where the

researcher begins. By looking at the evidence presented they draw conclusions which explain them. However this conclusion may be only one of many possible explanations and is therefore usually referred to as supporting the conclusion rather than proving it. Therefore when new contradictory evidence is observed, the conclusion has to be abandoned (Krishnaswamy, Sivakumar and Mathirajan, 2006).

This thesis therefore will be based on an inductive approach, analysing any patterns in the data collected to develop the framework for App design for the retailers.

4.3.3 Research Strategy

From the Research Onion (Saunders, Lewis and Thornhill, 2009) various strategies are available to the researcher. From those strategies, the researcher has chosen a survey in this instance, with the objective of collecting quantitative data in relation to end users' perspectives on the functionality most desired in a Retailer Loyalty App.

A survey was selected as it is has been a recognized technique to collect data and produce statistical information in research since the 1930s (Groves, 2011). Given the time constraints in producing this thesis, it was also considered as the method likely to illicit the most responses, thereby generating the most data for analysis. Surveys, in general, have three main uses: measurement of public opinion for reporting in newspapers and magazines, measurement of political perceptions and opinions in elections and finally, in market research to determine both consumer interests and preferences (Fowler, 2014). It is this third reason, to measure consumer interests and preferences, that this research will be focused on.

The survey was designed on Google Forms and a link was sent to the population from retailers whose loyalty programmes they were members of. Research has shown that when a survey request originates from unknown sources response rates are unpredictable and potentially very low (Fowler, 2014), therefore it was felt that having the retailer initiate the contact would provide a better response

rate. Like any data collection method, web based surveys have both advantages and disadvantages. While there is a reduced level of control they are cost effective, time efficient and reduce interviewer bias (Evans and Mathur, 2005). Further it has been shown that web based surveys and data collection can help in reducing the bottlenecks typically associated with data evaluations, particularly in relation to data entry and administration (Watt et al., 2002).

4.3.4 Research Choice

A quantitative study was chosen for this research. This was felt to be the most practical method to solicit as many views as possible from the population. Findings from quantitative studies with larger samples are more easily generalised to a whole population and allow a researcher to identify general patterns (Yilmaz, 2013). Qualitative research is more concerned with process, understanding and interpretation of results. It is more directed to experiences and feelings (Yilmaz, 2013). For these reasons the quantitative approach was felt to be more suitable, the desired outcome being a framework for a software system.

4.3.5 Research Time Horizon

Research timelines can take one of two forms. Longitudinal involves examining and observing the same data over a long period of time. This can either be historical data, such are records, or collection of new data, and may span may years. Cross-sectional studies, on the other hand, looks at data at a specific point in time. Although there has been significant research into the benefits of longitudinal research against cross-sectional as cited by Rindfleisch et al (2008), the limitations placed on this thesis by the virtue of being a taught programme, with a limited time frame, meant that only a cross-sectional study was feasible.

4.4 Data Collection

The questionnaire is made up of nineteen questions in total. The first four are used solely for the purpose of statistical analysis and comprise of:

- Gender.
- Age.

- Number of loyalty programmes that the respondent is a member of.
- The retailer sectors of the loyalty programmes that they belong to.

The remaining fifteen questions are designed to determine the features that the consumers would most like to see in a loyalty app. These are sub-divided into 4 distinct groups (though the respondents were not aware of this):

- Customer focused functionality
- Transactional functionality
- Stock information functionality
- Retailer driven messaging

The respondent is asked to rate each of the questions as to the importance to them using a seven point Likert scale, ranging from 'Not Important at all' to 'Very Important'. A seven point Likert scale was specifically chosen as research has shown that they are more suited to "*electronic distribution of usability inventories*" (Finstad, 2010) and is the ideal number of options (Cox, 1980).

4.5 Sample

Generally it is not possible for a researcher to observe or question the entire population in which they are interested. To overcome this they employ a technique known as sampling. This technique allows the researcher to examine a subgroup of the population and from that examination draw inferences about the population as a whole (Lind, Wathen and Marchal, 2015). The use of sampling allows the researcher access to information that may not be available by other means. Sampling can be broken into the two broad categories of probability and non-probability.

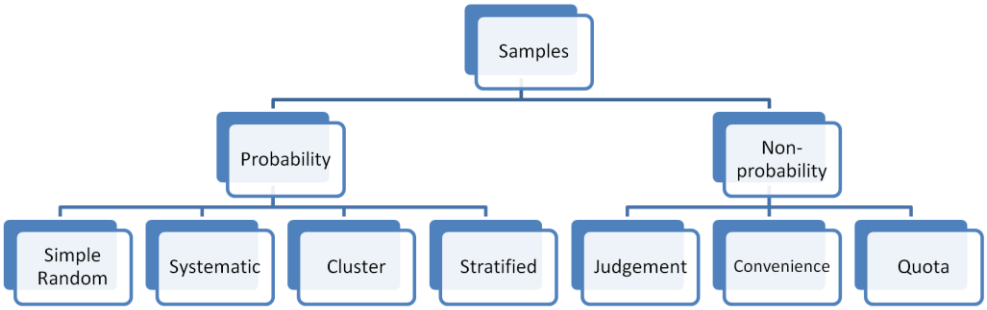


Figure 3: Categories of Sampling. (Source: Quantitative Research Methods lecture, Dr. Philip Hyland)

Probability sampling requires that the population size be known and participants can be select randomly. The following are the main types of probability sampling:

- **Simple Random Sampling**, participants are selected completely randomly.
- **Systematic Sampling**, participants are selected systematically, e.g., every 10th person.
- **Cluster Sampling**, the population is first broken into areas, e.g., geographical, and then a specific number of participants are selected from each.
- **Stratified Sampling**, the population is broken into homogenous groups, e.g., religion, and then participants are randomly selected from each.

Non-probability sampling, on the other hand, does not involve randomness, but is based on access. The main types of non-probability sampling are:

- **Judgement**, where the researcher uses their personal judgement to select participants.
- **Convenience**, where participants are chosen based on convenience and availability.
- **Quota**, similar to stratified but without any random element.

(Saunders, Lewis and Thornhill, 2009; Lind, Wathen and Marchal, 2015; Zukmund et al., 2013)

For the purposes of this research, convenience sampling, a subset of non-probability sampling, was chosen. The population was a subset of existing

members of loyalty card programmes in three retailers in Ireland. Each retailer selected a random number of members to distribute the questionnaire to, along with their senior staff. In total approximately 1,500 people were sent the survey link, a google form, and 460 responses were received, a response rate of 31%. Although a lower than hope for response rate, it should be noted that no follow up reminders were sent, as part of the initial agreement with the retailers in question was that no further communication would be sent. However it should also be noted that previous research has shown that low response rates can be more accurate than those with higher responses. By comparing the outcome of state elections over a 15 year period Visser et al (1996) found that the mail surveys with a response rate of 20% proved more accurate than the telephone surveys, which had a response rate of 60%, in both election outcomes and demographic characteristics. From this they concluded that a low response rate did not necessarily suffer from nonresponse error.

As all the questions on the questionnaire were mandatory there were no incomplete questionnaires and thus all were available for analysis.

4.6 Methods of Data Analysis

Researchers provide charts, graphs and tables to give condensed pictures of the data that has been gathered. In order for the data to reveal what is of interest to the researcher, it first has to be coded and then entered into a statistical analysis program. However, pre-coding the questions can significantly reduce the effort involved and increase the accuracy (Neuman, 2004). By using a web based survey, the data was pre-entered as the respondents completed the survey, thus removing the need for data entry and ensuring 100% accuracy.

The first four questions on the survey were in relation to statistical analysis of gender, age group, number of loyalty programmes that the respondent was a member of and the types of retailers involved. This data will be treated as nominal scales. Nominal scales are used only to help in the identification or grouping of responses, e.g., gender or age group (Zukmund et al., 2013)

The data from the main fifteen questions related to the functionality that the

respondents would like to see in a Loyalty App will be treated as an ordinal scale. An ordinal scale is one in which responses can be placed according to their magnitude in a logical order, but does not have units of equal intervals (Zukmund et al., 2013).

4.7 Pilot Study

"*Questionnaire pretesting identifies questions that respondents have difficulty understanding or interpret differently that the researcher intended*" (Krosnick, 1999). In order to minimize these possible issues a pilot study was carried out with eighteen people. These were across a range of age groups, split into ten females and eight males and various socio-economic groups. Each respondent was sent the survey link, asked to fill in the questionnaire and respond with any difficulties they had or areas that they felt required clarification. Five of the respondents had attempted to complete the questionnaire on mobile devices and expressed concern over the layout and pagination. This was subsequently redesigned and tested on numerous devices. Three people expressed a desire for a 'Prefer not to answer' option on both gender and age. These options were added in the final questionnaire, along with 'Other Identification' for gender (requested by one respondent). No feedback was received in relation to the questions themselves, so no changes were made to them.

4.8 Ethical Issues

All information and data gathered during the course of the research was completely anonymous. At no point during the process did the researcher have any access to personal details of the respondents, including their email address. Once the survey was designed it was passed to third parties for random distribution to members of their loyalty base. Any information and data that was gathered from the surveys was used only in this dissertation and participation was completely voluntary.

4.9 Limitations

The author is aware of a number of limitations in respect of this study. A longitudinal study would had allowed for more in-depth analysis and secondary

questioning, however with the limited time frame available this was not practical. Secondly it should be noted that the study was conducted exclusively in Ireland, a relatively small country, which therefore has an impact on the generalisability of the results. Finally the study uses a mono-method approach, in this case a quantitative study. Ideally an element of interviews and focus groups to gather qualitative data, particularly in relation to the proposed framework would have been very valuable.

Notwithstanding the above, the researcher feels that this study has a valuable contribution to make in the area concerned but would recommend that the highlighted limitations should be taken in consideration for future studies.

5. Findings

5.1 Introduction

This section is concerned with presenting the results of the survey. Demographic data will be presented first followed by an analysis of the respondent's current loyalty programme membership and finally the results for each question, both individually and by group. Divergent stacked charts are used for a graphical representation of the responses. These are recommended to visualize Likert-scale data (Robbins and Heiberger, 2011) as they allow the reader to visualize and therefore understand the divergence of respondents' opinion. The centres of the charts represent those respondents that neither agree nor disagree and are presented in a neutral colour. A faint dotted blue line signifies the mid-point of neither agree nor disagree. The left of centre represent those tending towards the 'not important at all' and are coloured from a light pink to dark red to signify negative reactions. On the right of the centre line are the positive answers, those tending towards 'Very Important', and are coloured in deepening shades of green to signify increasing positivity. Thus presented a reader can quickly evaluate the respondents' opinion by looking at the distribution of the bars (Cavalcanti et al., 2013).

5.2 Internal Consistency

Internal consistency refers to a measure used in statistics to determine the extent which items in a given scale or measurement produce consistent and reliable scores, which reflect the same underlying paradigm (Cooper and Schindler, 2003). The most common method of evaluating this internal consistency is Cronbach's Coefficient Alpha (Conbach, 1951). Without a report of this, the results are considered to be of low or unknown reliability. The Alpha coefficient has a range of 0 to 1 with results closer to 1 being the most reliable. A Cronbach's alpha score of 0.7 or higher is generally considered an acceptable result (Nunnally, 1967).

Using SPSS (Statistical Package for the Social Sciences) a Cronbach Alpha test was performed on the collected data. The results are as follows;

Case Processing Summary

		N	%
Cases	Valid	460	100.0
	Excluded[a]	0	.0
	Total	460	100.0

a. Listwise deletion based on all variables in the procedure.

Table 1: SPSS Case Processing Summary

Item Statistics

	Mean	Std. Deviation	N
Use the App to accumulate points	5.21	2.131	460
Use the App to redeem points	5.30	2.099	460
Check current loyalty balance	5.79	1.692	460
See your historic transactions	5.24	1.683	460
Add points from old receipts	5.66	1.668	460
Use one App for multiple loyalty programmes	4.71	1.881	460
Check pricing	5.08	1.691	460
Check stock availability	5.18	1.628	460
Find more information on a item	4.97	1.563	460
Purchase Items for In-Store Collection	4.75	1.858	460
Receive personalised offers from the Retailer	4.48	1.928	460
Receive personalised news from the Retailer	3.42	1.858	460
Interact with social media	3.12	1.918	460
Self scan whilst shopping in store	4.06	1.834	460
Purchase Items for Delivery	5.00	1.765	460

Table 2: SPSS Statistics by Question

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.312	.010	.898	.889	94.416	.030	15

Table 3: SPSS Summary of statistics for the 15 questions

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.868	.872	15

Table 4: SPSS Reliability Statistics

The resulting alpha coefficient is .868 which suggests that the responses to the questions have a relatively high internal consistency and indicates a valid test model.

However additional analysis can verify this further by examining the 'Cronbach's alpha if item deleted' property. This is a very important column produced by SPSS and allows the researcher to gauge the effect of removing one or more questions from the scale. If any individual piece of data has a significant effect

on the overall calculation, then it will be highlighted here (Gliem and Gliem, 2003).

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Use the App to accumulate points	66.75	223.834	.529	.848	.860
Use the App to redeem points	66.66	224.129	.534	.838	.859
Check current loyalty balance	66.18	225.609	.661	.737	.853
See your historic transactions	66.73	231.136	.550	.544	.859
Add points from old receipts	66.30	233.711	.502	.508	.861
Use one App for multiple loyalty programmes	67.26	232.423	.456	.325	.863
Check pricing	66.89	231.367	.542	.633	.859
Check stock availability	66.78	227.468	.651	.719	.854
Find more information on an item	66.99	232.706	.565	.525	.858
Purchase Items for In-Store Collection	67.22	224.076	.621	.646	.855
Receive personalised offers from the Retailer	67.48	229.379	.496	.522	.861
Receive personalised news from the Retailer	68.54	237.447	.370	.583	.867
Interact with social media	68.85	238.372	.338	.453	.869
Self scan whilst shopping in store	67.91	237.538	.375	.302	.867
Purchase Items for Delivery	66.97	227.733	.587	.653	.857

Table 5: SPSS Report on Cronbach's Alpha if item deleted

As can be seen from the above calculations, removing any single question would have a negligible effect on the original Cronbach's Alpha value of .868, in fact only removal of the question 'Interact with Social Media' would increase the original value and therefore one can be more confident of the internal consistency of the data (Gliem and Gliem, 2003).

5.3 General Statistics

In total there were 460 respones to the suryey. Approximately 1,500 invitations were sent out, giving a response rate of 31%. All forms were completed as each individual question was mandatory.

5.3.1 Gender Distribution

Of the 460 responses, 267 were females (58%), 163 males (35%), 8 who identified as other (2%) and 22 respondents preferred not to answer (5%).

Gender	Count	%
Female	267	58%
Male	163	35%
Other identification	8	2%
Prefer not to answer	22	5%

Table 6: Gender Distribution

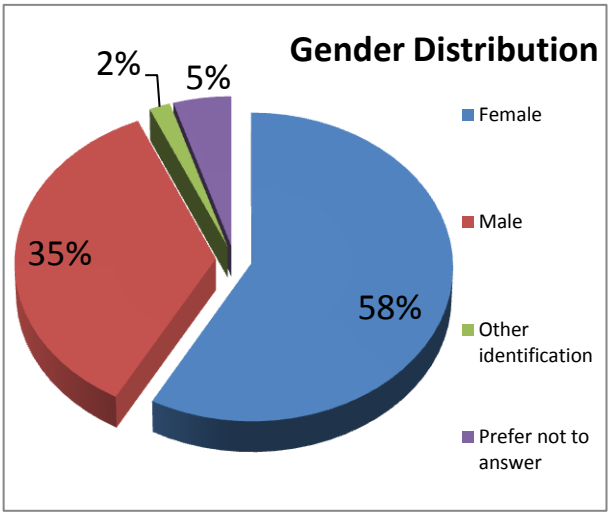


Figure 4: Gender Distribution

Whilst the ratio of female to male respondents is not representative of the population breakdown in Ireland, which stands at 51% female to 49% male (CSO, 2017) according to research (ShelfLife, 2017; Kelly, 2013) it is the Irish female that is predominately responsible for the shopping, particularily for groceries, and the resulting prevalence of female respondents would therefore have been expected.

5.3.2 Age Distribution

The majority of the respondents were within the 26-45 age group, 317 individuals (69%). Details of the age distribution are as follows:

Age	Count	%
18-25	45	10%
26-35	147	32%
36-45	170	37%
46-55	66	14%
56-65	13	3%
66+	7	2%
Prefer not to answer	12	3%

Table 7: Age Distribution

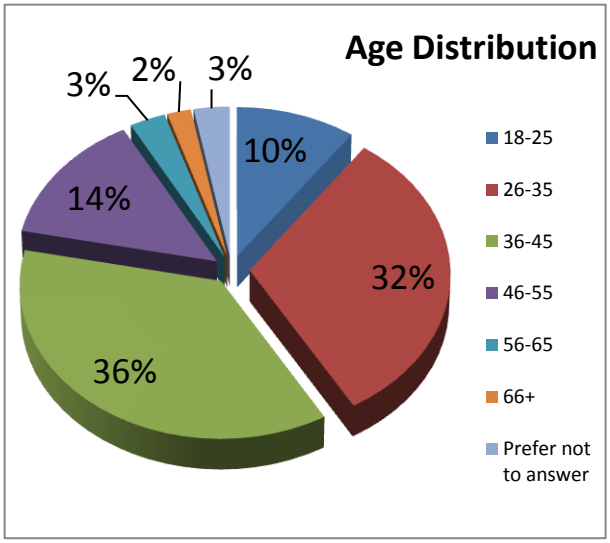
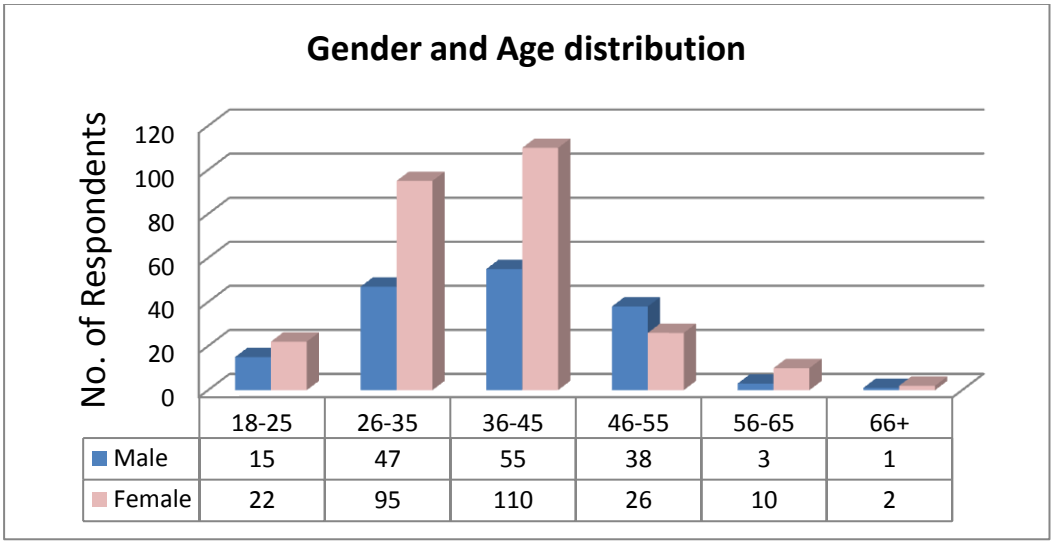


Figure 5: Age Distribution

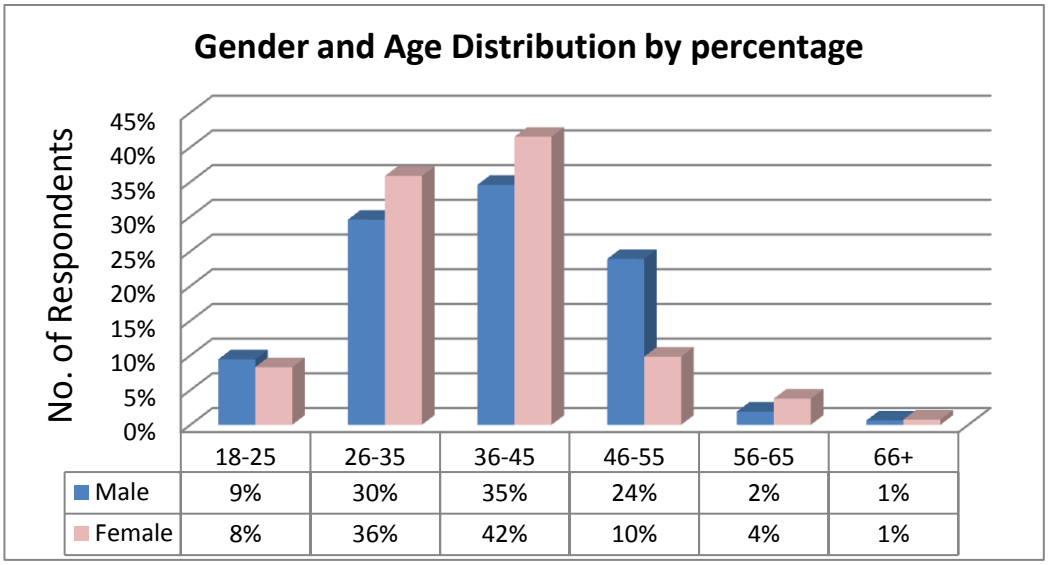
Of the total sample of 460, 424 (92%) respondents were willing to divulge both gender and age range. These are broken down as follows;



	18-25	26-35	36-45	46-55	56-65	66+
Male	15	47	55	38	3	1
Female	22	95	110	26	10	2

Figure 6: Gender and Age distribution

Figure 6 above, clearly shows both the predominance of female respondents and also that the majority of the population (69%) fall in the 26-45 age group.



	18-25	26-35	36-45	46-55	56-65	66+
Male	9%	30%	35%	24%	2%	1%
Female	8%	36%	42%	10%	4%	1%

Figure 7: Gender and Age distribution by percentage of respective gender

However, by looking at each gender as a percentage (Figure 7) we can see a more balanced representation between males and females across the age groups.

5.3.3 Respondents' Current Loyalty Programmes

In order to analyse the responses in relation to different types of retailers, the respondents were also asked how many loyalty programmes they were members of.

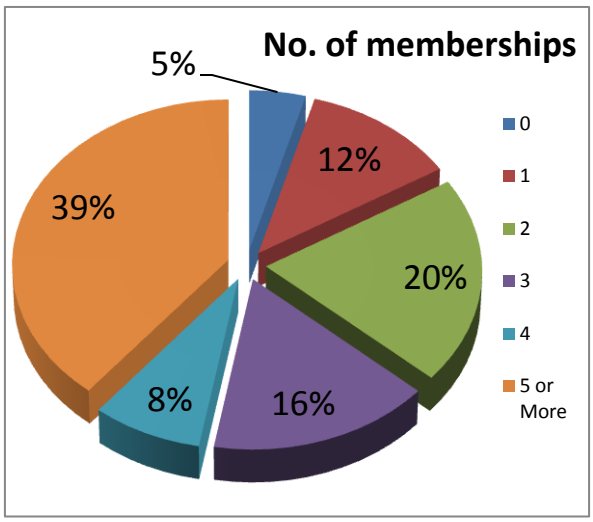
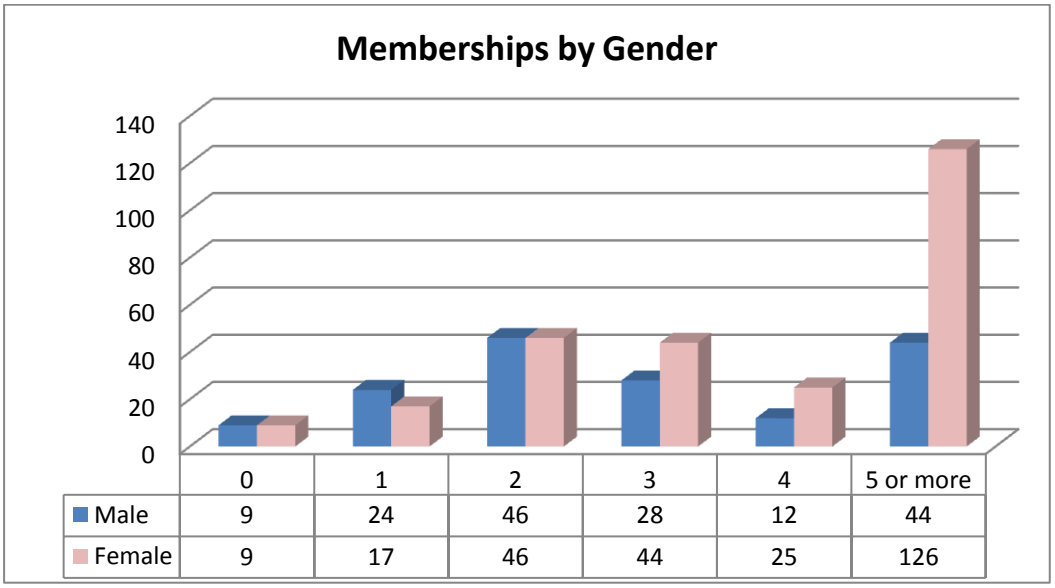


Figure 8: Number of memberships

180 (39%) of the respondents belong to 5 or more loyalty schemes. Of these 126 were female (27% of all respondents, and 47% of female respondents). 20 respondents (<5%) did not belong to any programme.

Looking at the number of memberships across the genders clearly shows this spike in female respondents, and is again likely due to the fact that the majority of shopping in Irish households is done by the female (ShelfLife, 2017; Kelly, 2013). For gender related data only male and female is being included.



	0	1	2	3	4	5 or more
Male	9	24	46	28	12	44
Female	9	17	46	44	25	126

Figure 9: Number of programme memberships by gender

Looking at the above data, by percentages of each gender rather than the absolute count, shows a much more balanced view, however females still dominate the '5 or more' category with 47% being members of 5 or more programmes, compared to 27% of males. 2 Loyalty programmes is, by a small margin, the most popular number for males.

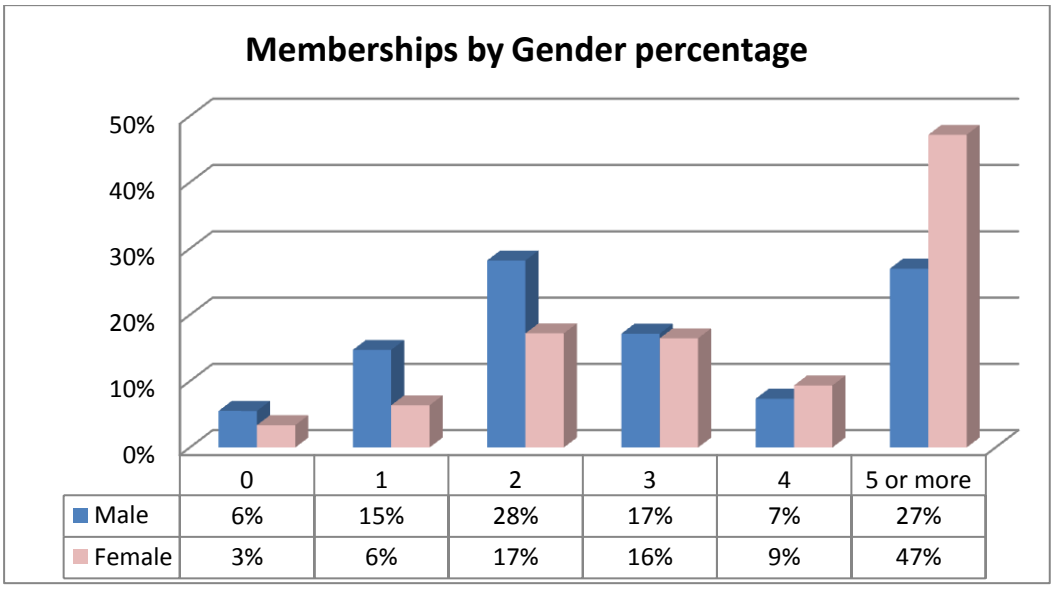


Figure 10: No of programme memberships by percentage of respective gender

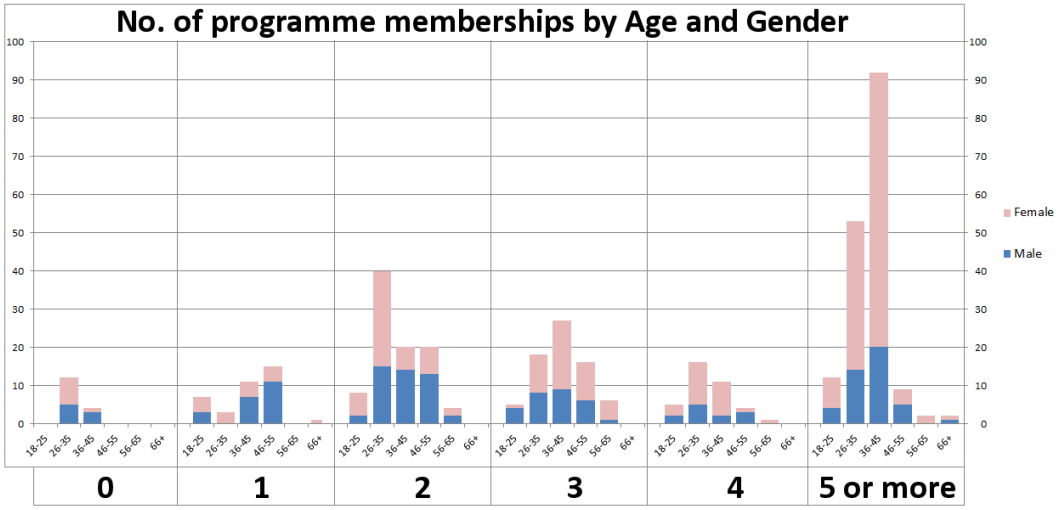


Figure 11: No of programme memberships by Age and Gender

5.3.4 Retail Sector of Loyalty Programmes

Respondents were also asked which retail sector the type the programmes they belonged to were in. In addition to the 9 pre-defined types of;

- Specialised Retailer (Books, Kids, Furniture)
- Department Store
- Fashion
- Off Licence
- Grocery
- Pharmacy
- Petrol Station
- Convenience Stores
- Coffee Shop or Fast Food

Respondents were also allowed to fill a free text box for 'Other'. There were 4 additional groupings identified;

- Hotels – 5 respondents
- Airlines – 3 respondents
- Health Food Shop – 8 respondents
- An Post – 3 respondents

Grocery (n=271) was the most popular, followed by department stores (n=207) and speciality retailers (n=198). Convenience stores were the least popular (n=24) and 20 respondents belonged to no programme.

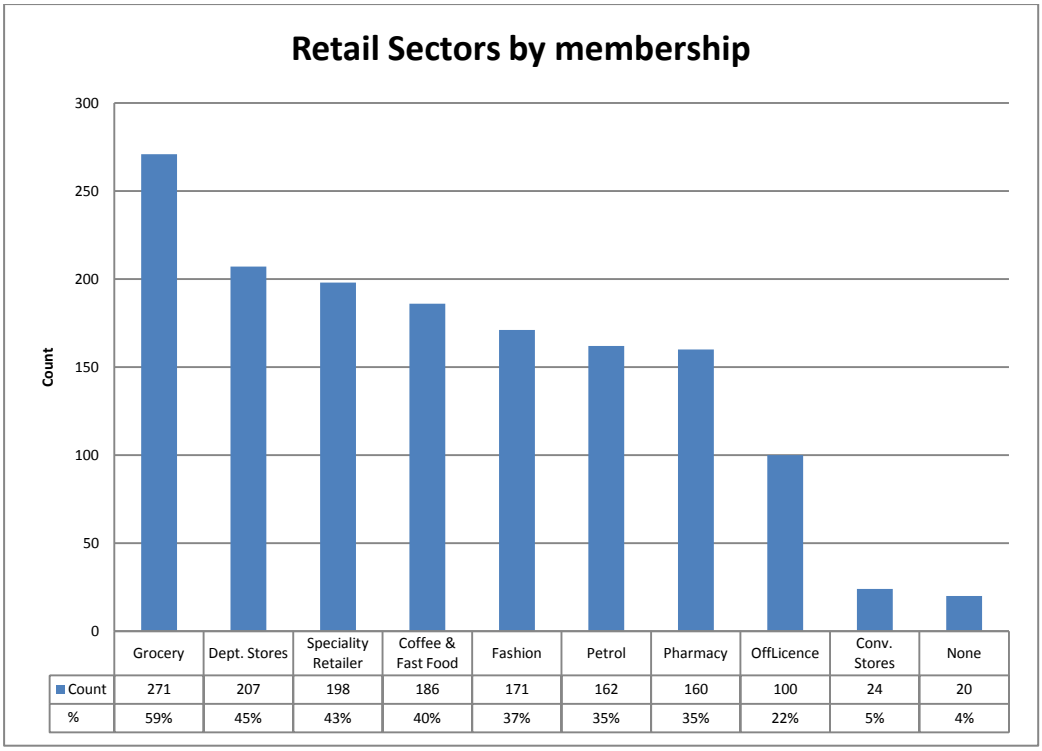


Figure 12: Retail Sectors by member count

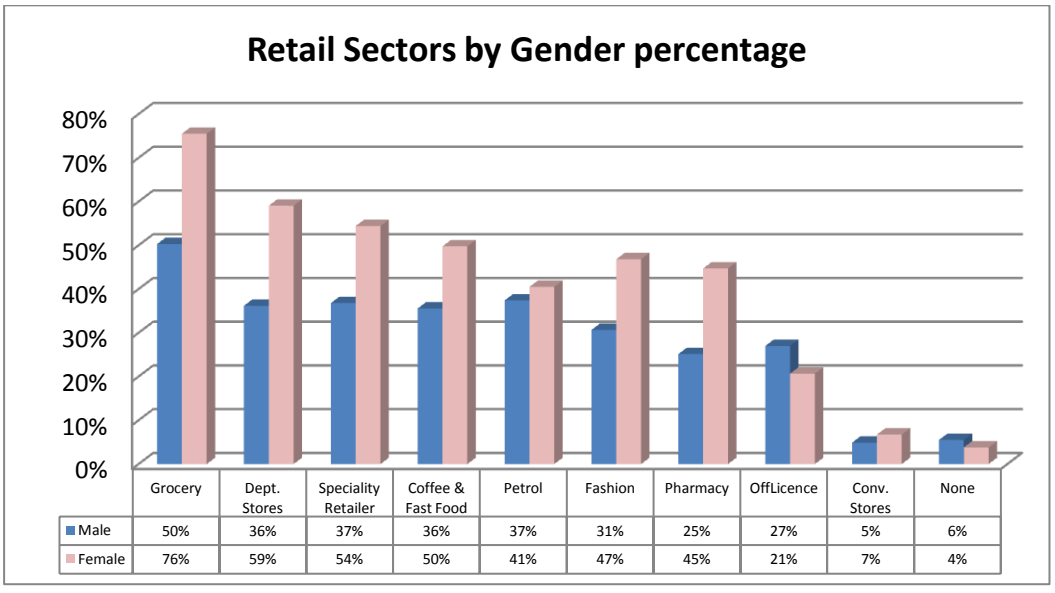
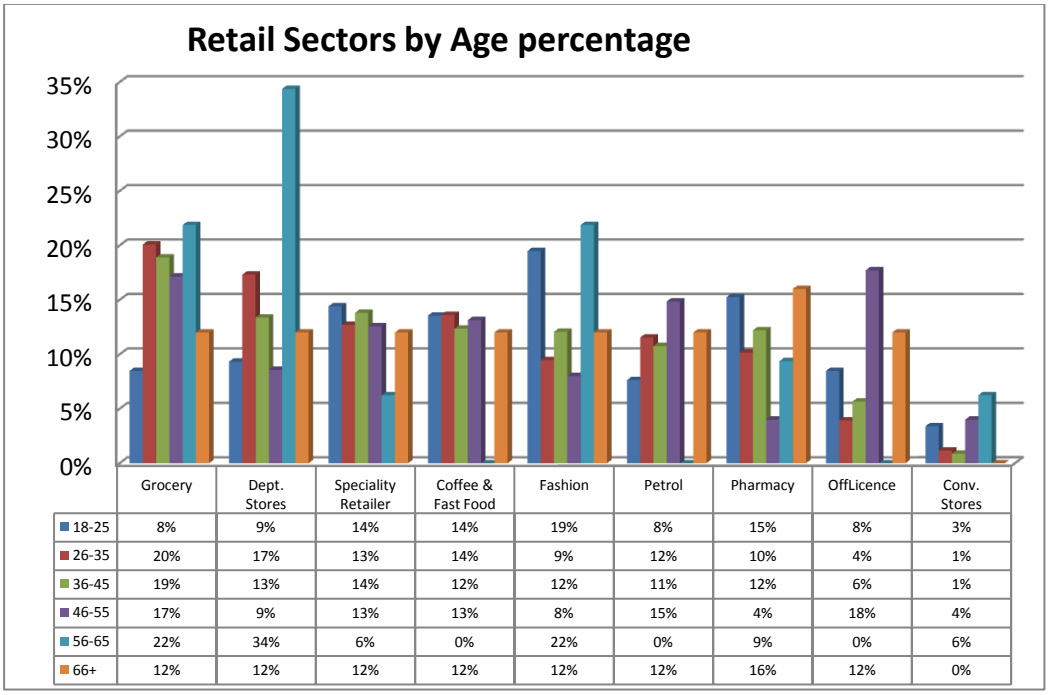


Figure 13: Retail Sectors by percentage of respective gender

The grocery sector was most popular for both females and males with 76% and 50% respectively of each being members. For males, four sectors had very similar membership rates, Department Store (36%), Speciality Retailers (37%), Coffee & Fast Food (36%) and Petrol stations with 37%. Although the popularity

of Department stores (59%), Speciality Retailers (54%) and Coffee & Fast Food (50%) was shared with the female audience, Fashion (47%) came in as fifth with Pharmacies (45%) a very close sixth. Convenience stores have the lowest membership rates for both females and males.



	Grocery	Dept. Stores	Speciality Retailer	Coffee & Fast Food	Fashion	Petrol	Pharmacy	OffLicence	Conv. Stores
18-25	8%	9%	14%	14%	19%	8%	15%	8%	3%
26-35	20%	17%	13%	14%	9%	12%	10%	4%	1%
36-45	19%	13%	14%	12%	12%	11%	12%	6%	1%
46-55	17%	9%	13%	13%	8%	15%	4%	18%	4%
56-65	22%	34%	6%	0%	22%	0%	9%	0%	6%
66+	12%	12%	12%	12%	12%	12%	16%	12%	0%

Figure 14: Retail Sectors by Age percentage

Figure 14 above shows a breakdown of the popularity of retail sectors by age. Fashion (19%) is the most popular for the 18-25s, Grocery leads in both the 26-35s (20%) and 36-45s (19%). Off-licences are the most popular among the 46-55s with 18% of that age bracket. Department stores have a significant lead in the 56-65 age group with 34% and finally the Pharmacies hold the lead in the 66+ group with 16%. However it should be noted that the 56-65 age group (n=13) and 66+ (n=7) had a small number of respondents and should not be therefore taken as a generalizable.

5.4 Analysis of responses by question

Research has shown that respondents generally perceive Likert scales as non-equidistant (Lee and Soutar, 2010; Kennedy, Riquier and Sharp, 1996) and therefore non-parametric methodology is the preferred choice for the analysis. With a population set that is also non-normal Lantz (2013) concludes that the Kruskal-Wallis (1952) test should be preferred as parametric methods are also more sensitive to non-normal data. The alternative Mann-Whitney U test (Mann and Whitney, 1947) is not suitable in this instance, as it is restricted to testing against two groups.

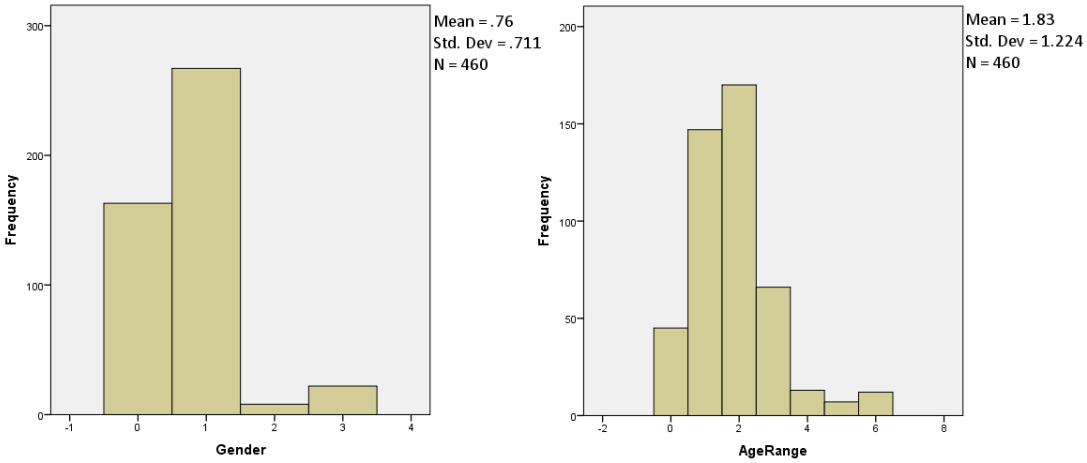


Figure 15: Population distribution by Age, Gender

The Kruskal-Wallis test is based on four fundamental assumptions:

- There is one dependent variable and it is measured on either a continuous or ordinal level.
- There is one independent variable which consists of two or more categorical and independent groups.
- There should be independence of observation.
- Interpretation of the results is first based on a determination of the distribution of group results for the independent variable. When distributions are of a different shape the Kruskal-Wallis test can determine whether there are differences within those distributions, however same shape distributions require a discussion on the difference in the medians of the groups.

  (Kruskal and Wallis, 1952).

The research approach for each question will be the same.

In order to determine whether there is a statistical difference in the responses a Kruskal-Wallis test will be performed for each of the independent variables collected as part of the questionnaire;

- Gender
- Age Range
- Retail Sector

Based on a visual inspection of a boxplot, to determine whether the distribution of scores was similar for all groups, the analysis will then either investigate the distribution difference or the median scores. Where the null hypothesis is rejected a further pairwise comparison will be performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons.

For each answer by group the hypotheses will be as follows:

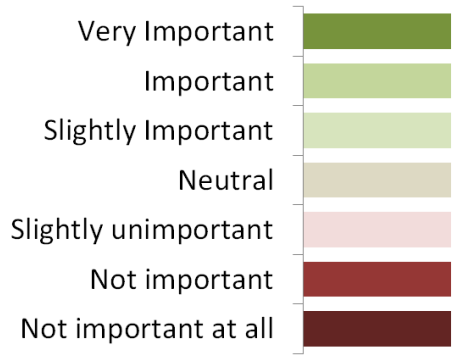
H_0: The distribution of the scores for the groups is equal.

H_A: The distribution of the scores for the groups is not equal.

or The mean ranks of the groups are not equal (in the case where the distribution of the scores has been confirmed as unequal by a visual inspection of the boxplot).

The data will then be presented as a divergent stacked bar chart as recommended by Robbins and Heiberger (2011) and the observations will be discussed.

The responses will be colour coded as follows;



Each bar will also include the percentage of respondents for that answer.

5.5 Q1 – Use the App to accumulate points

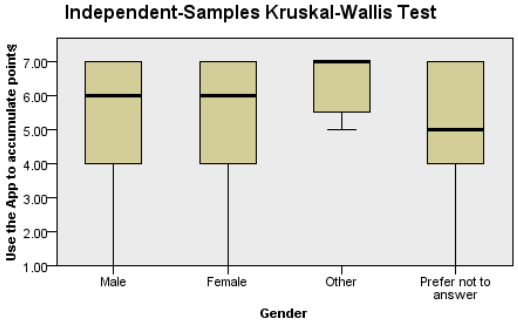
This question is intended to gauge the respondent's desire to use an App as a replacement for their current loyalty card or tag when processing a purchase.

5.5.1 Q1 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Use the App to accumulate points is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.367	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	3.163
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.367

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 16: Hypothesis test summary for Q1 by Gender

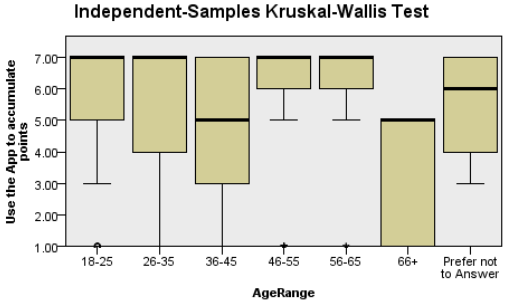
A Kruskal-Wallis H test was run to determine if there were differences in the Q1 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 3.163$, p=.367. The null hypothesis is therefore retained.

5.5.2 Q1 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Use the App to accumulate points is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



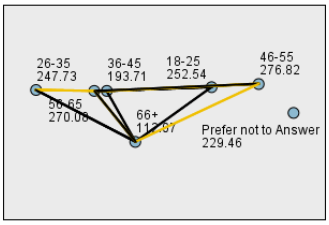
Total N	460
Test Statistic	35.292
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.000

1. The test statistic is adjusted for ties.

Figure 17: Hypothesis test summary for Q1 by Age

A Kruskal-Wallis H test was run to determine if there were differences in the Q1 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(6) = 35.292$, p=.000. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Pairwise Comparisons of AgeRange



Each node shows the sample average rank of AgeRange.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
66+-46-55	164.747	49.882	3.303	.001	.020
36-45-26-35	54.019	14.134	3.822	.000	.003
36-45-46-55	-83.109	18.200	-4.567	.000	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 18: Pairwise Comparisons for Q1 by Age

N.B. For brevity only pairings with a significant difference are shown.

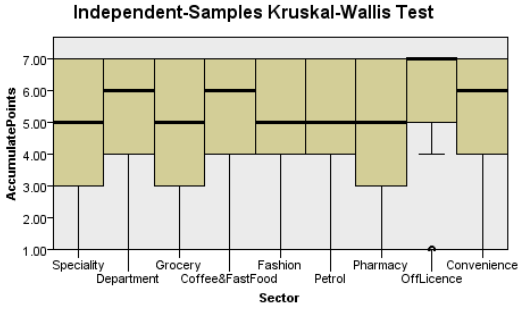
Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Q1 scores between 66+ (112.07) and 46-55 (276.82) (p=.020), the 36-45 (193.71) and 26-35 (247.73) (p=.002) and the 36-45 (193.71) and 46-55 (276.82) (p=.000) age groups, but not for any other group combination.

5.5.3 Q1 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of AccumulatePoints is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

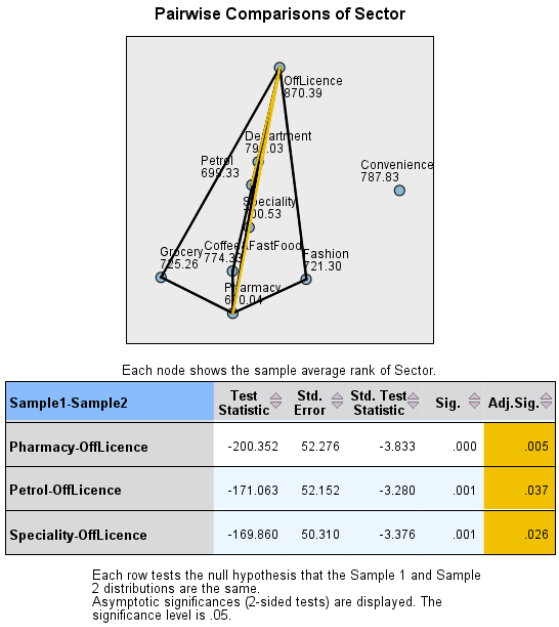


Total N	1,479
Test Statistic	24.819
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.002

1. The test statistic is adjusted for ties.

Figure 19: Hypothesis test summary for Q1 by Sector

A Kruskal-Wallis H test was run to determine if there were differences in the Q1 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 24.819$, p=.002. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.



Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Pharmacy-OffLicence	-200.352	52.276	-3.833	.000	.005
Petrol-OffLicence	-171.063	52.152	-3.280	.001	.037
Speciality-OffLicence	-169.860	50.310	-3.376	.001	.026

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 20: Pairwise Comparisons for Q1 by Sector

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Pharmacy (670.04) and Off-Licence (870.39) (p=.005), Petrol (699.33) and Off-Licence (870.39) (p=.037) and Speciality (700.53) and Off-Licence (870.39) (p=.026) sectors, but not for any other sector combination.

5.5.4 Discussion of responses to Q1

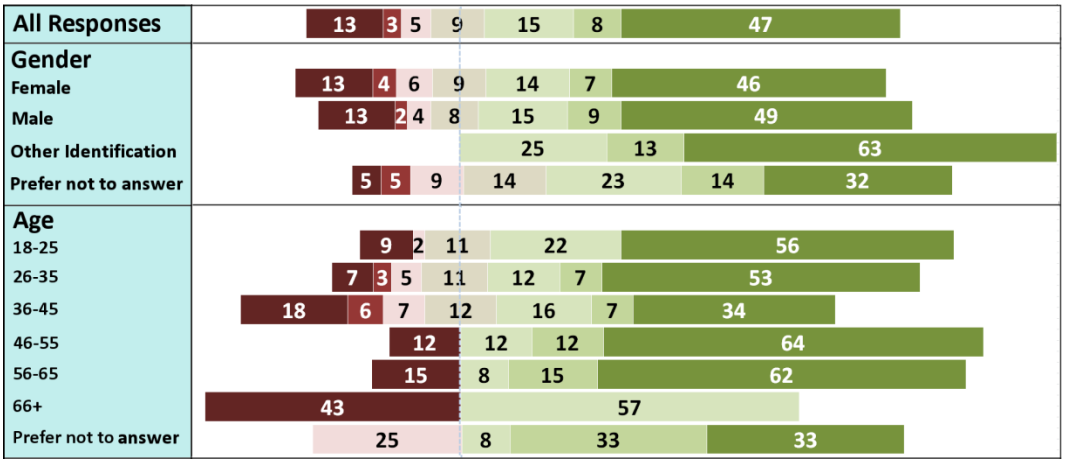


Figure 21: Q1 – Gender and Age

When asked to rate how important it was to 'Use the App to accumulate points' the response was very positive (joint 7th) with 47% of all respondents rating it as 'Very Important'. A further 23% gave a positive rating with only 21% overall rating the function negatively. There was no significant difference in the rating achieved by gender (p=.367). Within age groups the 46-55s and 56-65s gave positive ratings even stronger with 88% and 85% respectively, whereas the 66+ age group were quite negative with 43% rating the functionality as 'Not important at all' and the remaining 57% only rating it as a 4 on the 7 point scale.

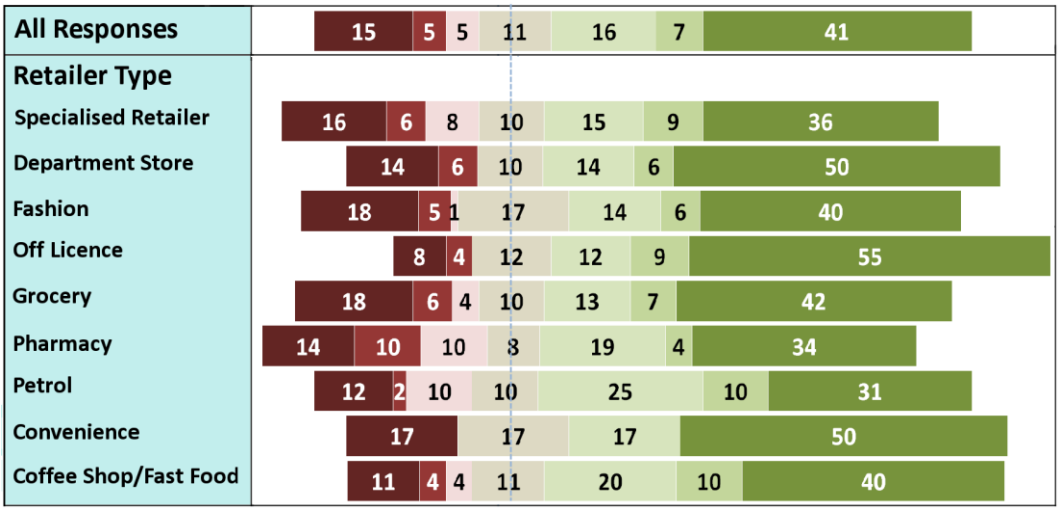


Figure 22: Q1 - Retailer Sector

Within Retail Sectors the respondents who were members of Off-Licence loyalty programmes were statistically more positive than the average respondent in an otherwise balanced group.

5.6 Q2 – Use the App to redeem points

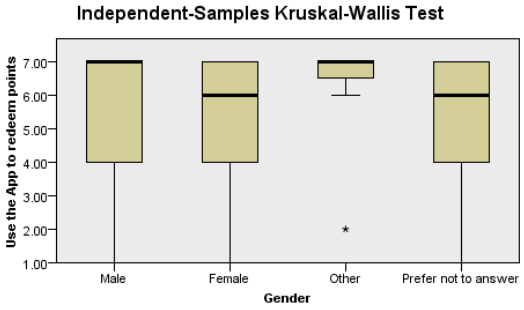
This question is intended to gauge the respondent's desire to use an App as a replacement for the current loyalty card or tag when redeeming points.

5.6.1 Q2 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Use the App to redeem points is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.186	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	4.814
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.186

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q2 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 4.814$, p=.186. The null hypothesis is therefore retained.

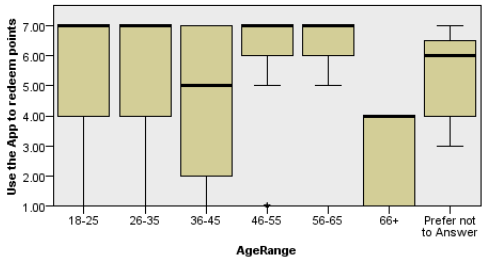
Figure 23: Hypothesis test summary for Q2 by Gender

5.6.2 Q2 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Use the App to redeem points is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



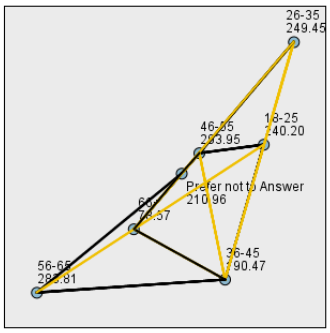
Total N	460
Test Statistic	50.713
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.000

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q2 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(6) = 50.713$, p=.000. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Figure 24: Hypothesis test summary for Q2 by Age

Pairwise Comparisons of AgeRange



Each node shows the sample average rank of AgeRange.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
66+-18-25	161.629	50.973	3.171	.002	.032
66+-26-35	170.874	48.534	3.521	.000	.009
66+-56-65	205.236	58.815	3.489	.000	.010
66+-46-55	215.383	49.870	4.319	.000	.000
36-45-26-35	58.972	14.130	4.174	.000	.001
36-45-46-55	-103.481	18.195	-5.687	.000	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 25: Pairwise Comparisons for Q2 by Age

N.B. For brevity only pairings with a significant difference are shown.

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Q2 scores between 66+ (78.57) and 18-25 (240.20) (p=.030), then 66+ (78.57) and 26-35(249.45) (p=.009), the 66+ (78.57) and 56-65 (283.81) (p=.010), the 66+ (78.57) and 46-55 (293.95) (p=.000), the 36-45 (190.47) and 26-35 (249.45) (p=.001) and the 36-45(190.47) and 46-55 (293.95) (p=.000) age groups, but not for any other group combination.

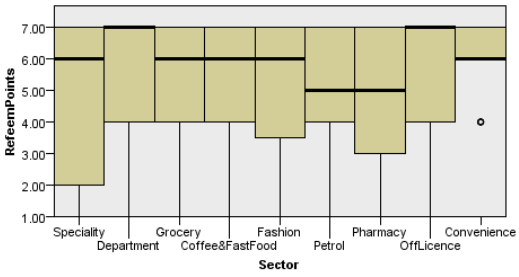
5.6.3 Q2 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of RefeemPoints is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Independent-Samples Kruskal-Wallis Test



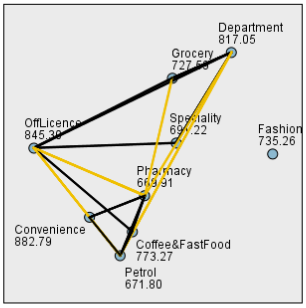
Total N	1,479
Test Statistic	30.286
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.000

1. The test statistic is adjusted for ties.

Figure 26: Hypothesis test summary for Q2 by Sector

A Kruskal-Wallis H test was run to determine if there were differences in the Q2 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 30.286$, p=.000. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Pairwise Comparisons of Sector



Each node shows the sample average rank of Sector.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Pharmacy-Department	147.141	43.152	3.410	.001	.023
Pharmacy-OffLicence	-175.396	52.256	-3.356	.001	.028
Petrol-Department	145.254	43.001	3.378	.001	.026
Petrol-OffLicence	-173.509	52.132	-3.328	.001	.031

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 27: Pairwise Comparisons for Q2 by Sector

N.B. For brevity only pairings with a significant difference are shown

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Pharmacy (669.91) and Department Store (817.05) (p=.023), the Pharmacy (669.91) and Off-Licence (845.31) (p=.028), the Petrol Station (671.80) and Department Store (817.05) (p=.026) and the Petrol Station (671.80) and Off-Licence (845.31) (p=.031) sectors, but not for any other sector combination.

5.6.4 Discussion of the responses to Q2

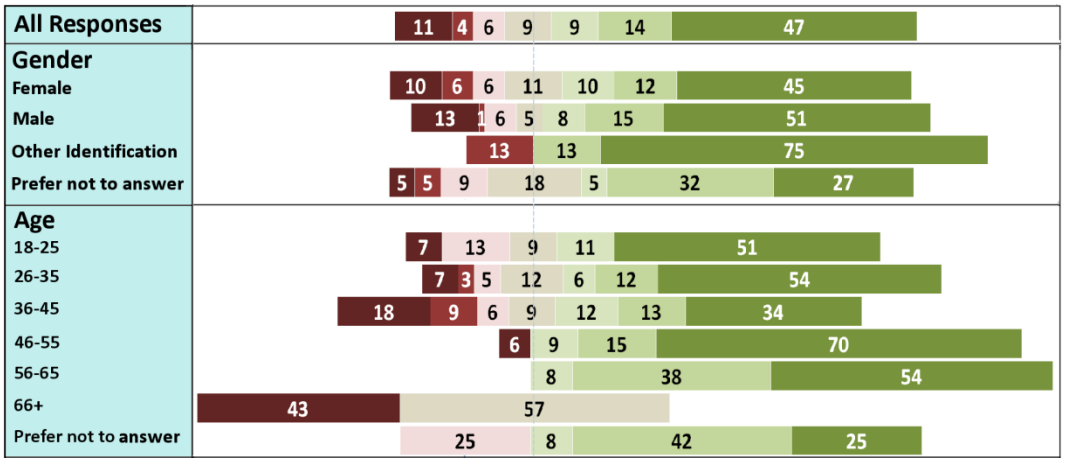


Figure 28: Q2 – Gender and Age

Unsurprisingly, the rating for 'Use the App to redeem points' was similar in every way to the previous question. The nett positive rating of 70% puts it in joint 7th place along with 'Use the App to accumulate points'. The responses by group were both statistically and visually almost the same as Q1.

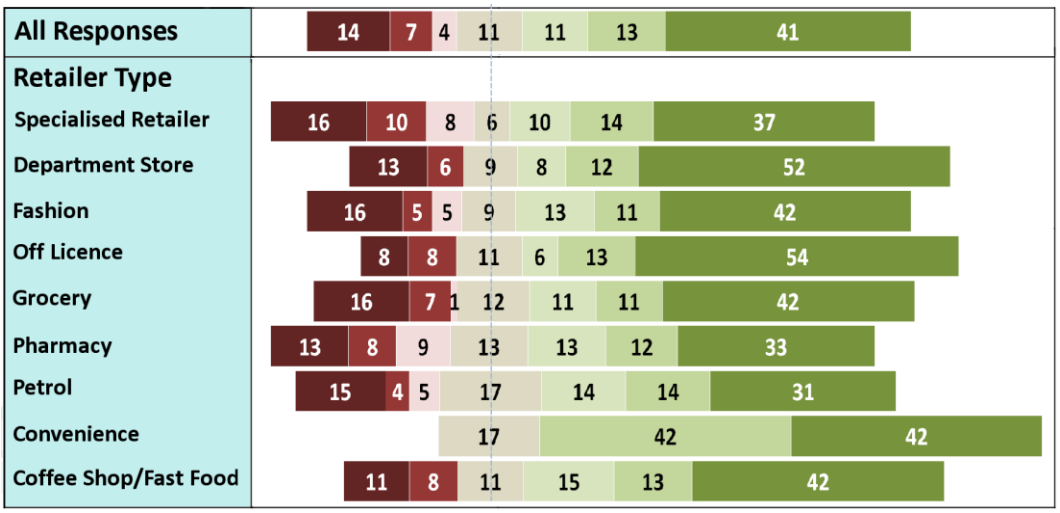


Figure 29: Q2 - Retailer Sector

The response breakdown by retail sector for this question is again very similar to the previous one, with the exception of those respondents who are members of Convenience store loyalty programmes. These were slightly more positive in their responses to this functionality.

5.7 Q3 – Check current loyalty balance

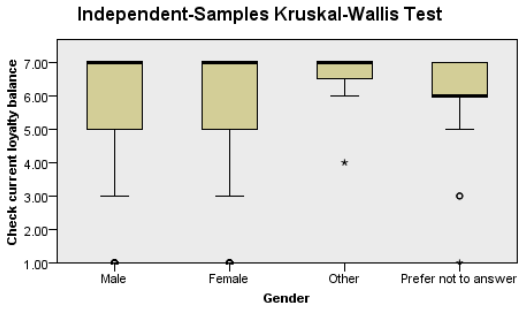
This question is intended to gauge the respondent's desire to use an App to check the current balance on their loyalty account.

5.7.1 Q3 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Check current loyalty balance is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.578	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	1.972
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.578

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 30: Hypothesis test summary for Q3 by Gender

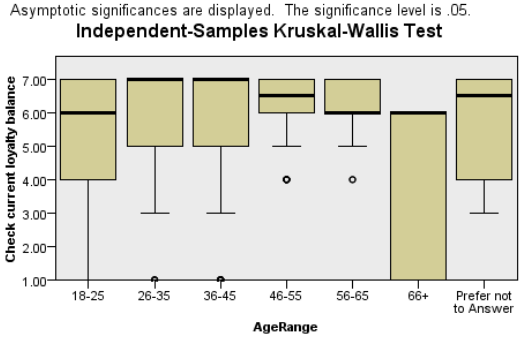
A Kruskal-Wallis H test was run to determine if there were differences in the Q3 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 1.972$, p=.578. The null hypothesis is therefore retained.

5.7.2 Q3 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Check current loyalty balance is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.063	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	11.967
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.063

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 31: Hypothesis test summary for Q3 by Age

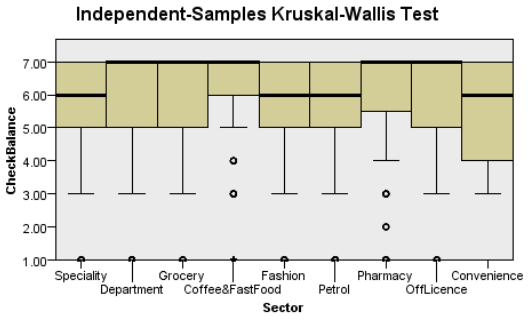
A Kruskal-Wallis H test was run to determine if there were differences in the Q3 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(6) = 11.967$, p=.063. The null hypothesis is therefore retained.

5.7.3 Q3 by Retail Rector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of CheckBalance is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.264	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	10.008
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.264

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q3 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 10.008$, p=.264. The null hypothesis is therefore retained.

Figure 32: Hypothesis test summary for Q3 by Sector

5.7.4 Discussion of the responses to Q3

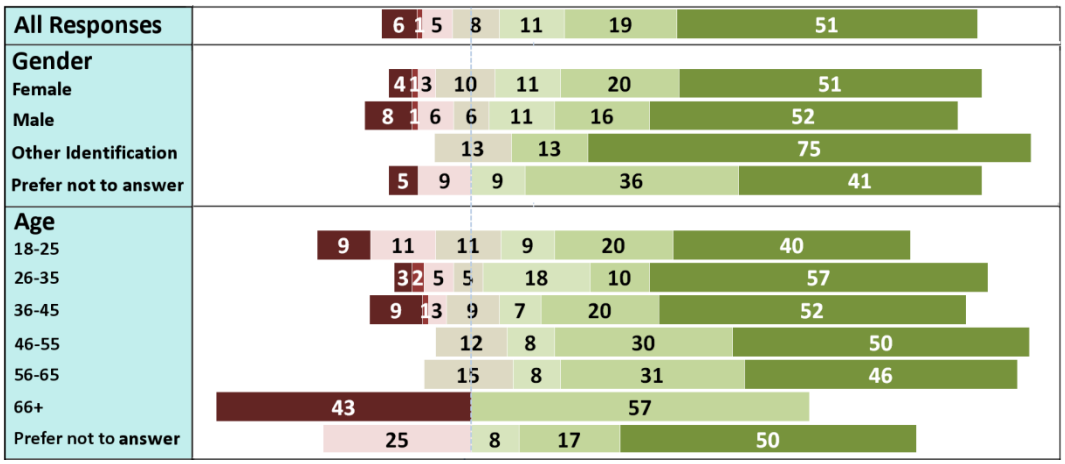


Figure 33: Q3 – Gender and Age

The function to 'Check Loyalty Balance' was the 2nd most popular of the 15 in the questionnaire. 235 respondents (51%) rated it as 'Very Important' and only 11% rated it negatively. There were no statistically significant differences in the responses based on gender (p=.578) or age (p=.063).

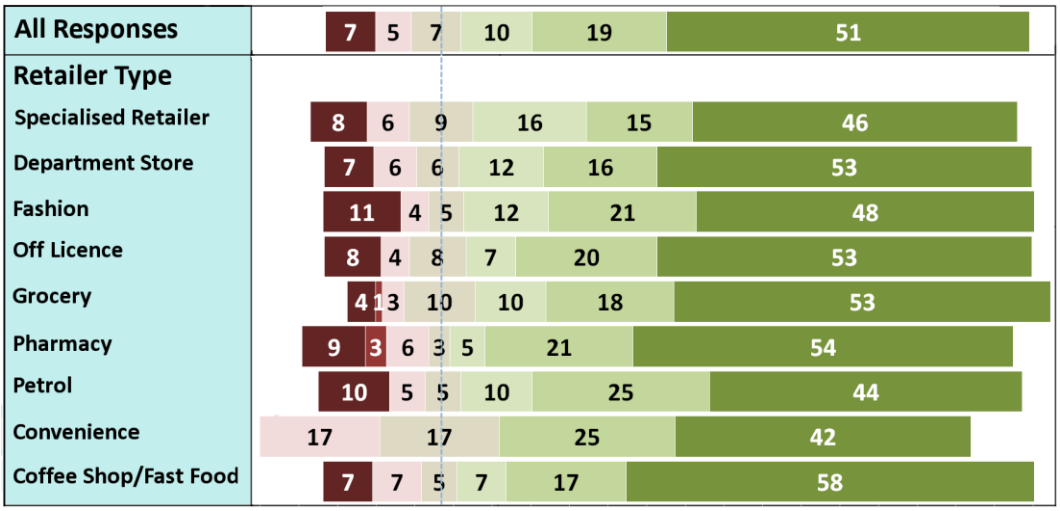


Figure 34: Q3 - Retailer Sector

There were no statistical differences (p=.254) between the median scores found across the various sectors; we can therefore surmise that this functionality would be very desirable for any retailer operating in these sectors.

5.8 Q4 – See your historic transactions

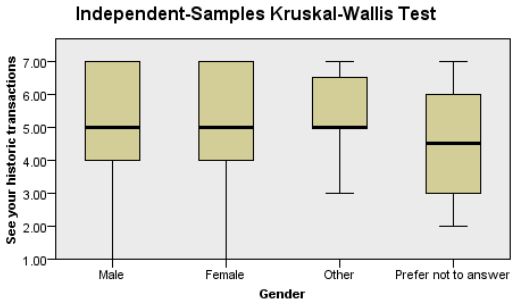
This question is intended to gauge the respondent's desire to see historic transactions on the App.

5.8.1 Q4 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of See your historic transactions is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.104	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	6.165
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.104

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 35: Hypothesis test summary for Q4 by Gender

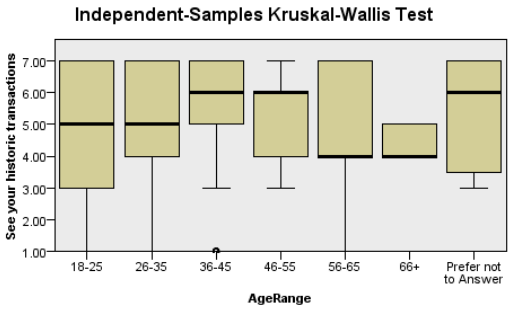
A Kruskal-Wallis H test was run to determine if there were differences in the Q4 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 6.165$, p=.104. The null hypothesis is therefore retained.

5.8.2 Q4 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of See your historic transactions is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.025	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	14.411
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.025

1. The test statistic is adjusted for ties.

Figure 36 Hypothesis test summary for Q4 by Age

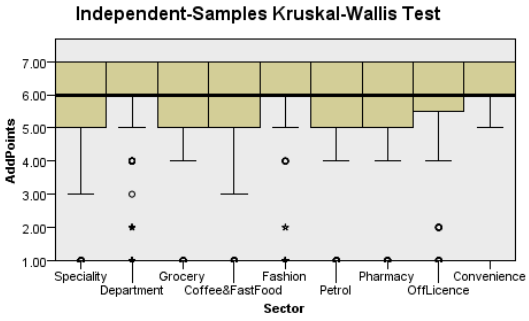
A Kruskal-Wallis H test was run to determine if there were differences in the Q4 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were statistically significantly different between the groups, $x^2(6) = 14.411$, p=.025. The null hypothesis is therefore rejected. A post hoc pairwise comparison was performed but no significant pair differences were reported.

5.8.3 Q4 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of AddPoints is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.758	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	4.997
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.758

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q4 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 9.822$, p=.278. The null hypothesis is therefore retained.

Figure 37: Hypothesis test summary for Q4 by Sector

5.8.4 Discussion of responses to Q4

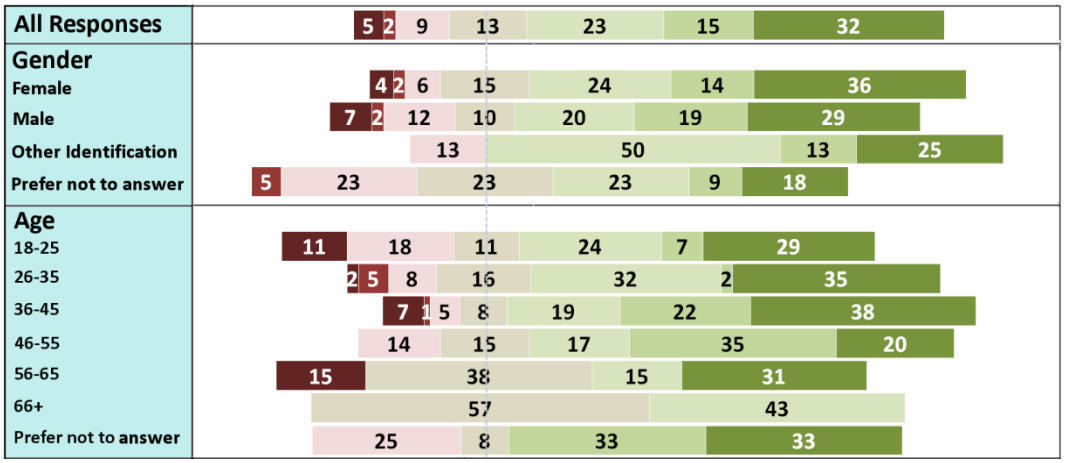


Figure 38: Q4 – Gender and Age

The ability to see historic transactions through the App was the 4th most popular function overall. There was no statistical difference (p=.104) across gender and although the null hypothesis was rejected for the age grouping (p=.025), no significant pairwise differences were found.

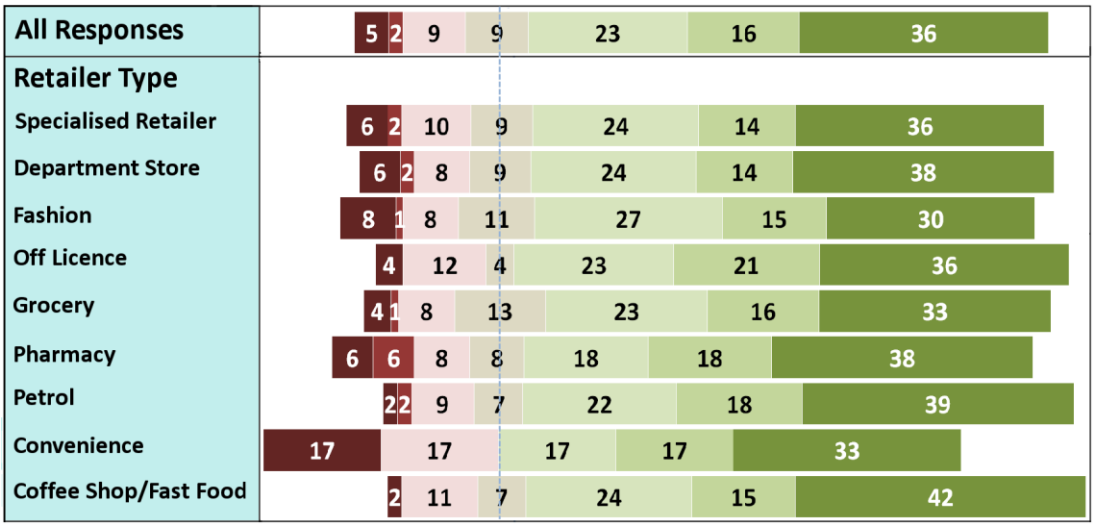


Figure 39: Q4 - Retailer Sector

With a p of .278 there were no statistical differences in the reported importance of this functionality across the various retail sectors.

5.9 Q5 – Add points from old receipts

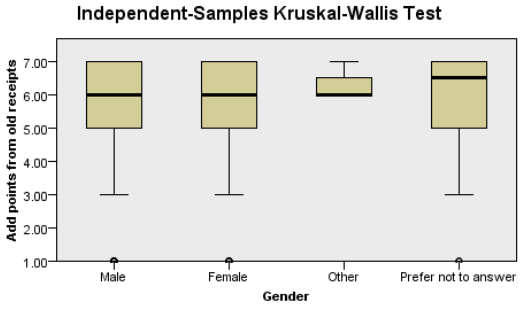
This question is intended to gauge the respondent's desire be able to add points from old receipts by using the App.

5.9.1 Q5 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Add points from old receipts is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.133	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	5.604
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.133

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 40: Hypothesis test summary for Q5 by Gender

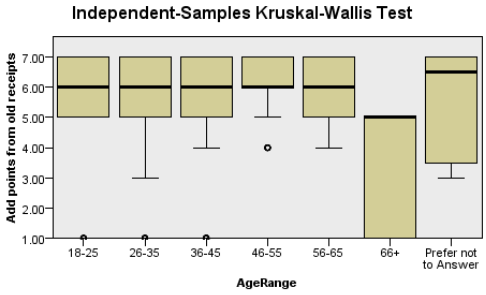
A Kruskal-Wallis H test was run to determine if there were differences in the Q5 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 5.604$, p=.133. The null hypothesis is therefore retained.

5.9.2 Q5 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Add points from old receipts is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



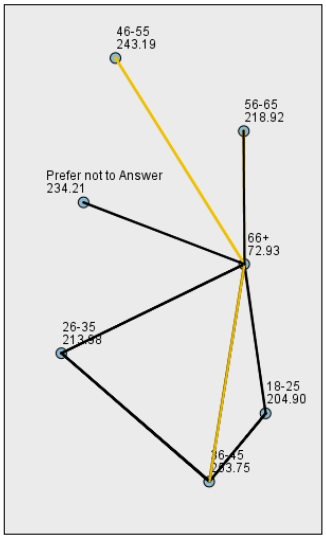
Total N	460
Test Statistic	21.689
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.001

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q5 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(6) = 21.689$, p=.001. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Figure 41: Hypothesis test summary for Q5 by Age

Pairwise Comparisons of AgeRange



Each node shows the sample average rank of AgeRange.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
66+-46-55	170.261	50.338	3.382	.001	.015
66+-36-45	180.818	48.839	3.702	.000	.004

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Q5 scores between 66+ (72.93) and 46-55 (243.19) (p=.015) and the 66+ (72.93) and 36-45 (253.75) (p=.004) age groups, but not for any other group combination.

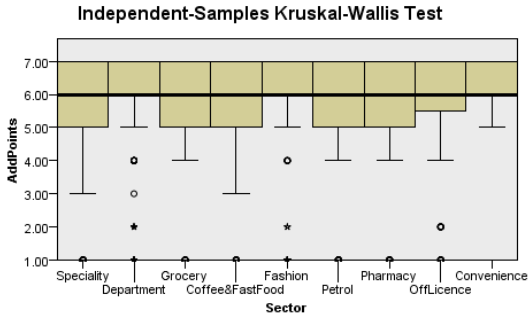
Figure 42: Pairwise Comparisons for Q5 by Age

5.9.3 Q5 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of AddPoints is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.758	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	4.997
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.758

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 43: Hypothesis test summary for Q5 by Sector

A Kruskal-Wallis H test was run to determine if there were differences in the Q5 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 4.997$, p=.758. The null hypothesis is therefore retained.

5.9.4 Discussion of responses to Q5

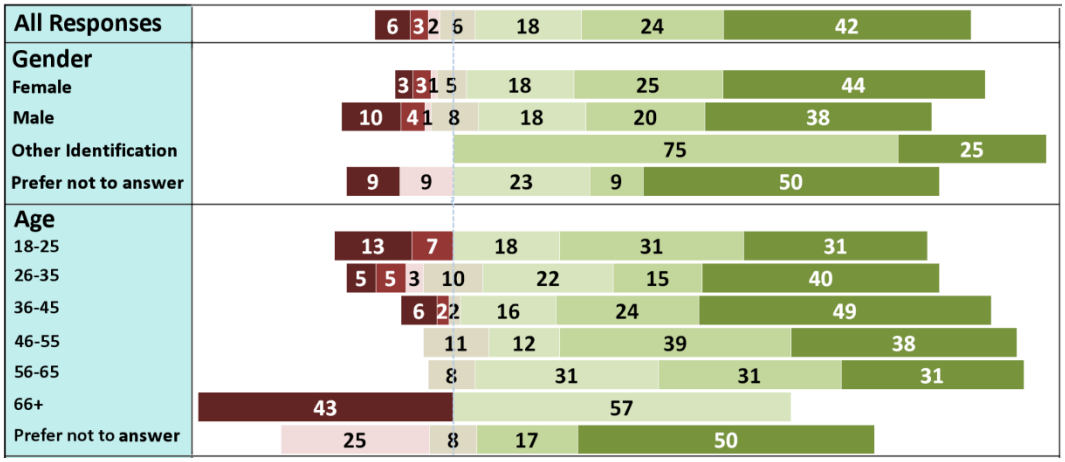


Figure 44: Q5 – Gender and Age

The most popular function in the questionnaire, with 84% of the respondents rating this positively and only 10% negatively. 64% rated it as either a 6 or a 7 on the response scale. There was no difference in the scores across gender (p=.133), however statistical differences (p=.001) were found in the age groups, most significantly between the 66+ age group and those of 36-45 and 46-55.

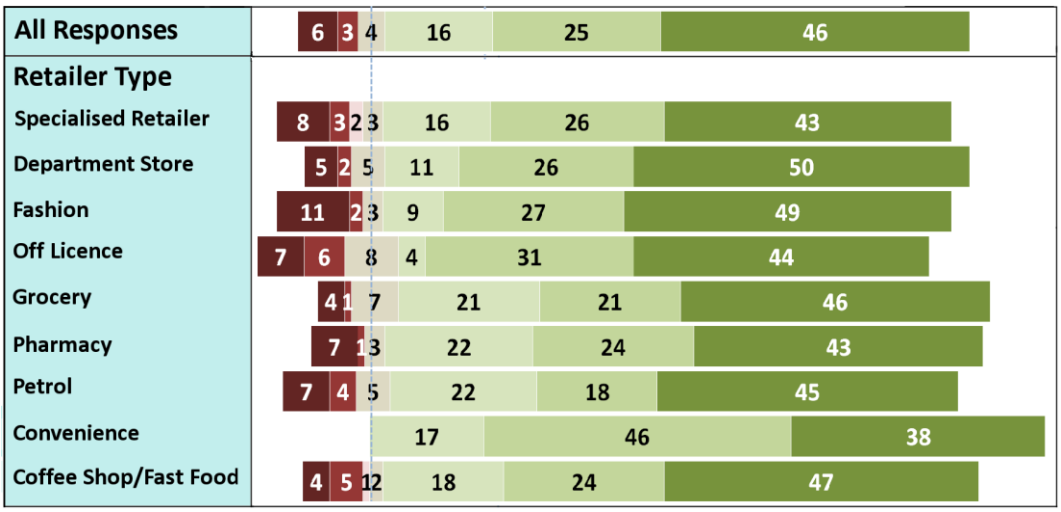


Figure 45: Q5 - Retailer Sector

This function proved to be equally popular across all reported sectors with no significant statistical difference (p=.758) found.

5.10 Q6 – Check pricing

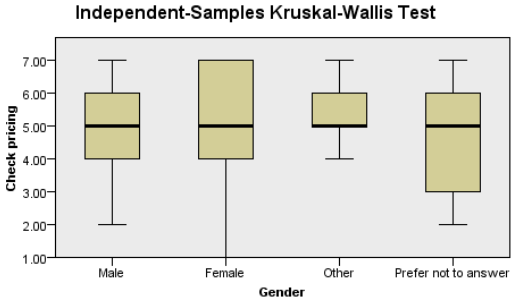
This question is intended to gauge the respondent's desire to use the App to check pricing of items.

5.10.1 Q6 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Check pricing is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.108	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	6.074
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.108

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 46: Hypothesis test summary for Q6 by Gender

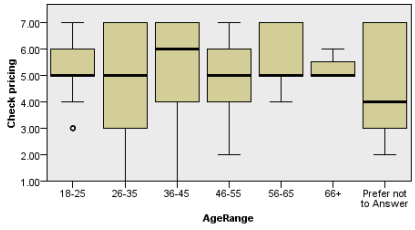
A Kruskal-Wallis H test was run to determine if there were differences in the Q6 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 6.074$, p=.108. The null hypothesis is therefore retained.

5.10.2 Q6 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Check pricing is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.427	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	5.965
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.427

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 47: Hypothesis test summary for Q6 by Age

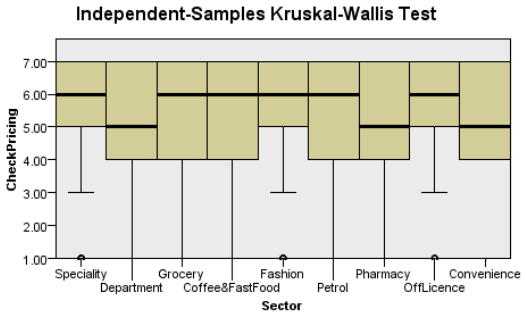
A Kruskal-Wallis H test was run to determine if there were differences in the Q6 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically significantly different between the groups, $x^2(6) = 5.965$, p=.427. The null hypothesis is therefore retained.

5.10.3 Q6 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of CheckPricing is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.385	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	8.512
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.385

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q6 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 8.512$, p=.385. The null hypothesis is therefore retained.

Figure 48: Hypothesis test summary for Q6 by Sector

5.10.4 Discussion of responses to Q6

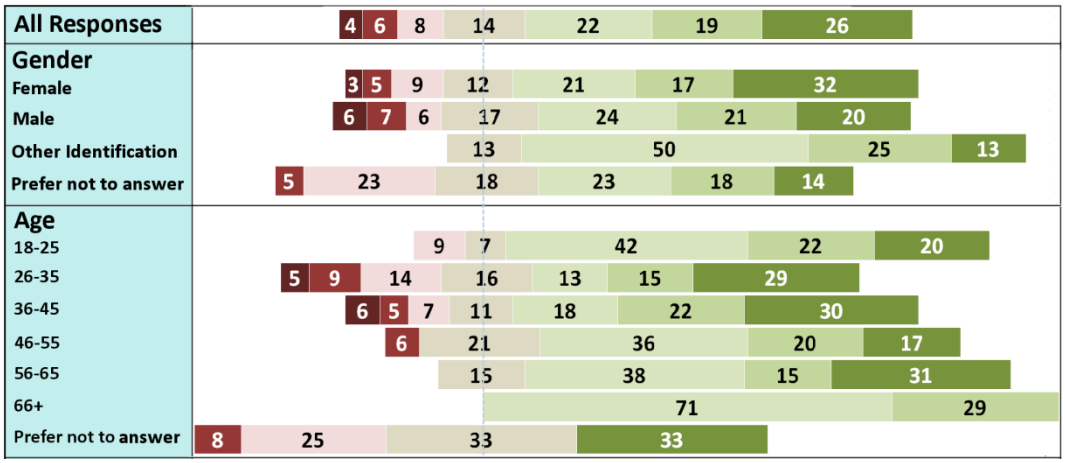


Figure 49: Q6 – Gender and Age

Check pricing as a function came in as the sixth most popular of the listed functionality. With 68% positive reaction and 18% negative it was popular across all genders (p=.018) and age groups (p=.427).

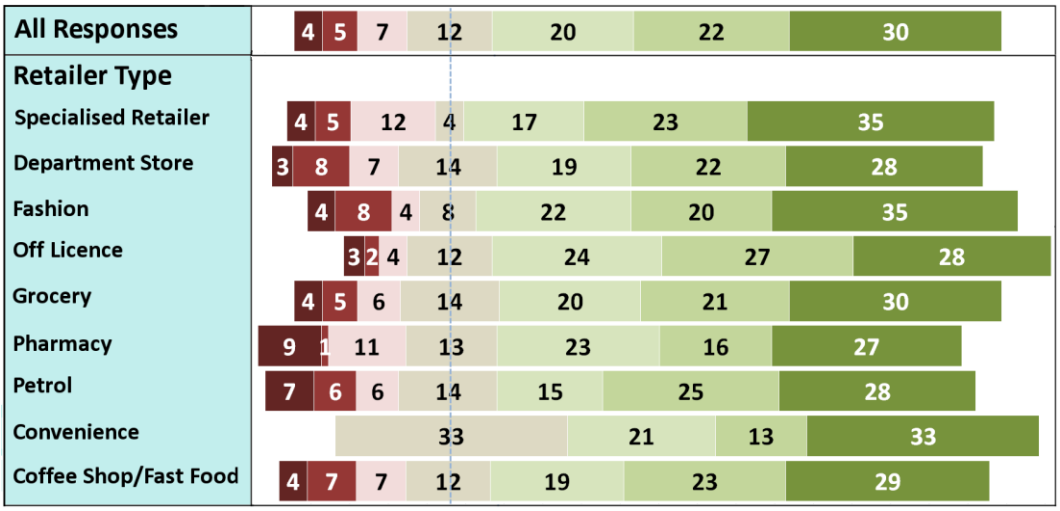


Figure 50: Q6 - Retailer Sector

There was no statistically significant difference with the popularity across all retail sectors (p=.385)

5.11 Q7 – Check stock availability

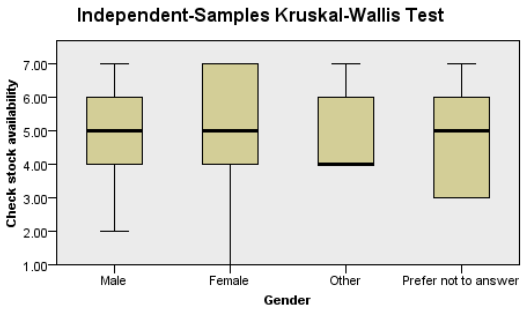
This question is intended to gauge the respondent's desire to use the App to check stock availability.

5.11.1 Q7 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Check stock availability is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.389	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	3.016
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.389

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 51: Hypothesis test summary for Q7 by Gender

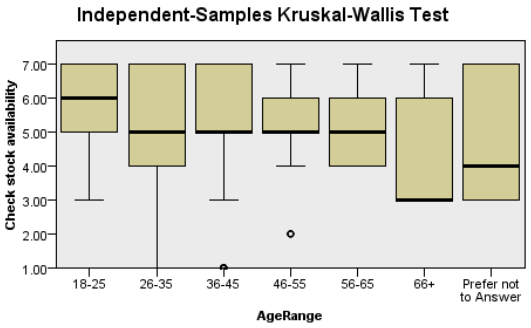
A Kruskal-Wallis H test was run to determine if there were differences in the Q7 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 3.016$, p=.389. The null hypothesis is therefore retained.

5.11.2 Q7 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Check stock availability is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.368	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	6.511
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.368

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q7 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(6) = 6.511$, p=.368. The null hypothesis is therefore retained.

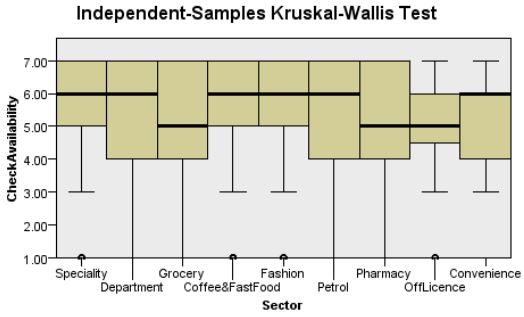
Figure 52: Hypothesis test summary for Q7 by Age

5.11.3 Q7 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of CheckAvailability is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.721	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	5.341
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.721

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q7 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 5.341$, p=.721. The null hypothesis is therefore retained.

Figure 53: Hypothesis test summary for Q7 by Sector

5.11.4 Discussion of responses to Q7

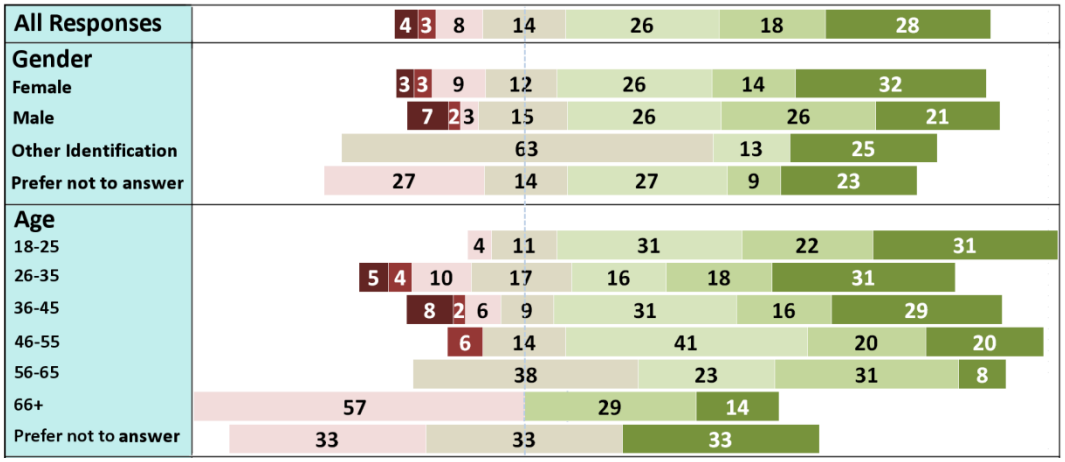


Figure 54: Q7 – Gender and Age

Check stock availability was the third most popular function overall in the survey. All genders (p=.389) and the different age groups (p=.368) were statistically equally positive.

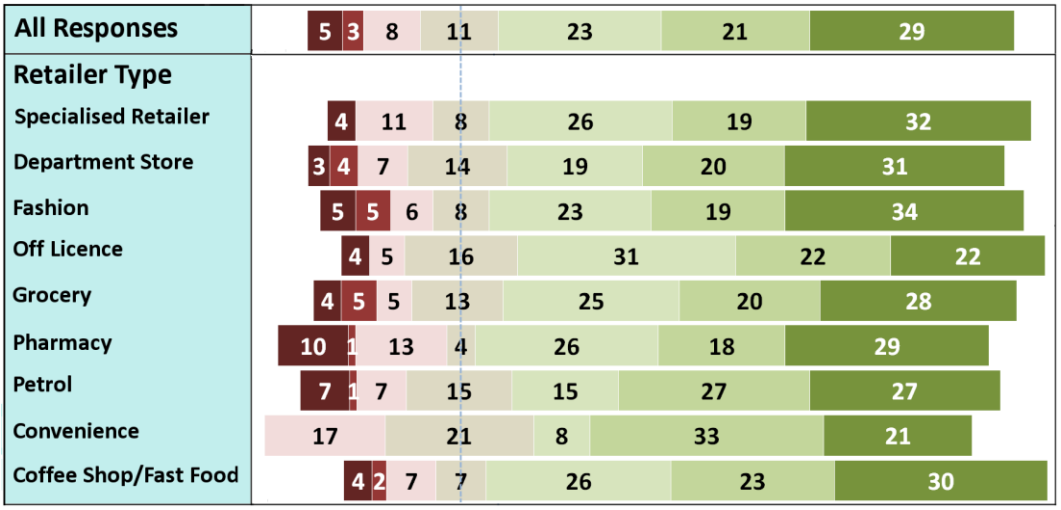


Figure 55: Q7 - Retailer Sector

This function was equally popular amongst all sectors with no significant statistical difference (p=.721) between them.

5.12 Q8 – Find more information on an item

This question is intended to gauge the respondent's desire to use the App to find more information about an item of interest.

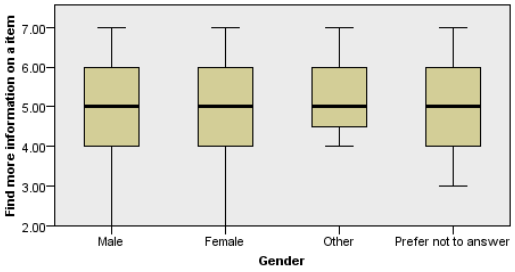
5.12.1 Q8 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Find more information on a item is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.932	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Independent-Samples Kruskal-Wallis Test



Total N	460
Test Statistic	.439
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.932

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 56: Hypothesis test summary for Q8 by Gender

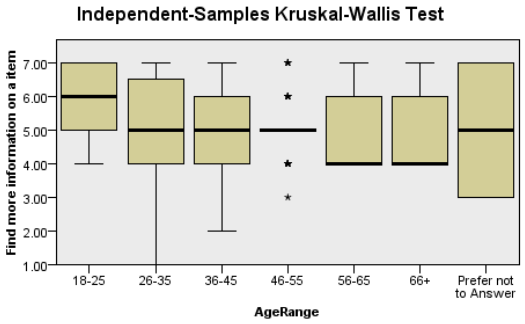
A Kruskal-Wallis H test was run to determine if there were differences in the Q8 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 0.439$, p=.932. The null hypothesis is therefore retained.

5.12.2 Q8 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Find more information on a item is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.267	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	7.618
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.267

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q8 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(6) = 7.618$, p=.267. The null hypothesis is therefore retained.

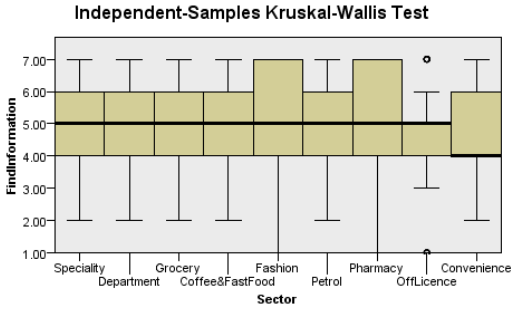
Figure 57: Hypothesis test summary for Q8 by Age

5.12.3 Q8 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of FindInformation is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.691	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	5.606
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.691

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q8 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 5.606$, p=.691. The null hypothesis is therefore retained.

Figure 58: Hypothesis test summary for Q8 by Sector

5.12.4 Discussion of responses to Q8

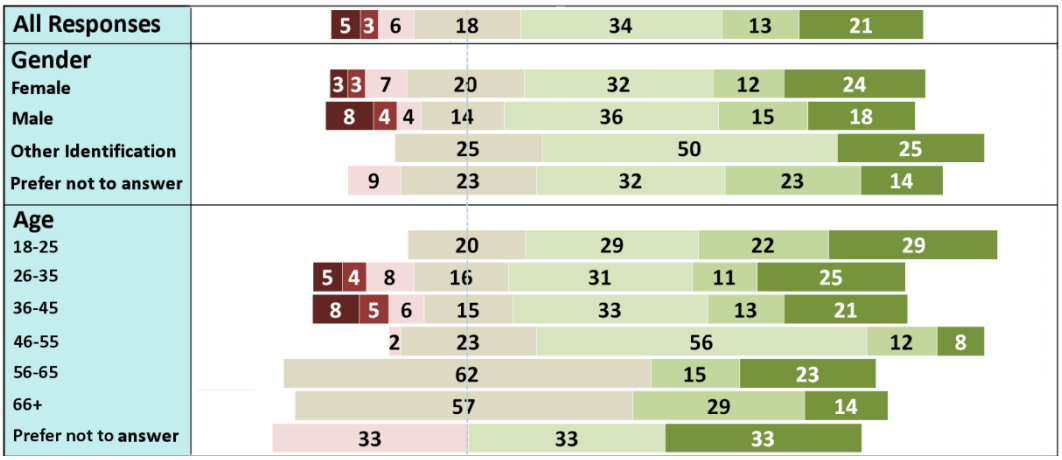


Figure 59: Q8 – Gender and Age

Liked rather than loved, the ability to find more information on an item still rated highly overall. 34% of respondents rated it as a 5, 12% as a 6 and 17.5% as a 7 on the questionnaire. This led it to achieving 5th place overall based on its nett positive score. There was no statistical difference across either gender or age groups.

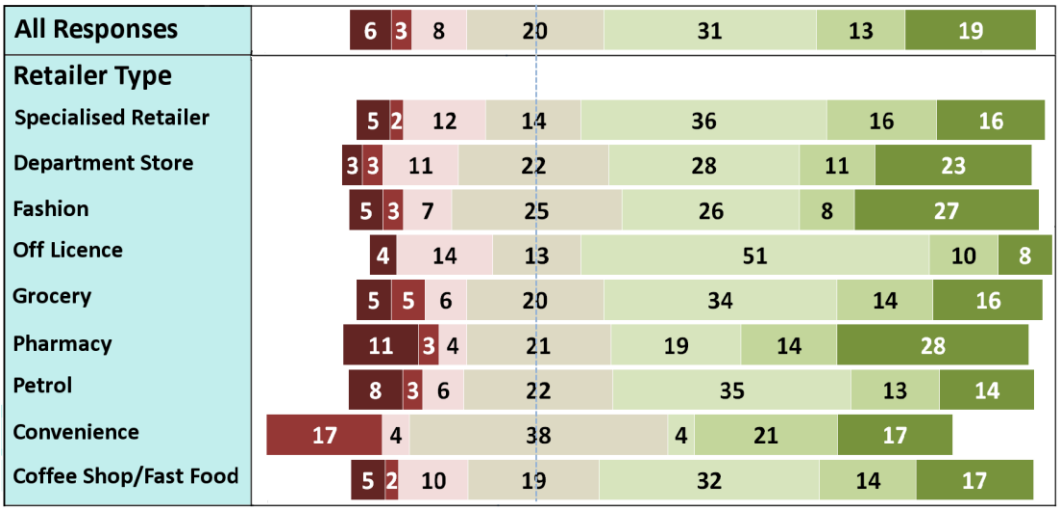


Figure 60: Q8 - Retailer Sector

With a p of .691 there was no difference across the retail sectors for the appreciation of this function.

5.13 Q9 – Self scan whilst shopping in store

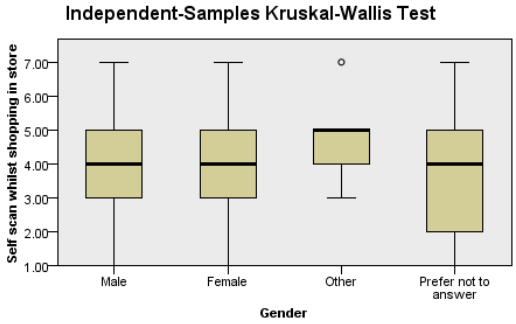
This question is intended to gauge the respondent's desire to use the App to self-scan their basket of goods while shopping.

5.13.1 Q9 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Self scan whilst shopping in store is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.296	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	3.694
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.296

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 61: Hypothesis test summary for Q9 by Gender

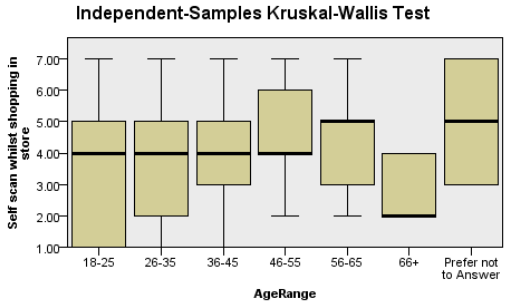
A Kruskal-Wallis H test was run to determine if there were differences in the Q9 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 3.694$, p=.296. The null hypothesis is therefore retained.

5.13.2 Q9 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Self scan whilst shopping in store is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.011	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	16.609
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.011

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q9 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(6) = 16.609$, p=.011. The null hypothesis is therefore rejected. A post hoc pairwise comparison was performed but no statistically significant differences were found.

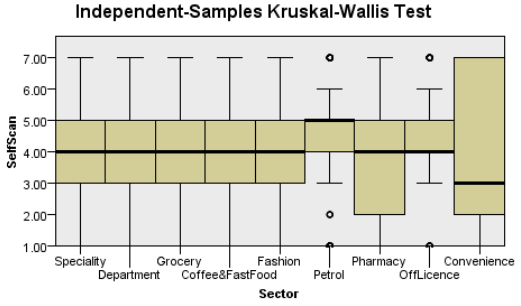
Figure 62: Hypothesis test summary for Q9 by Age

5.13.3 Q9 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of SelfScan is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

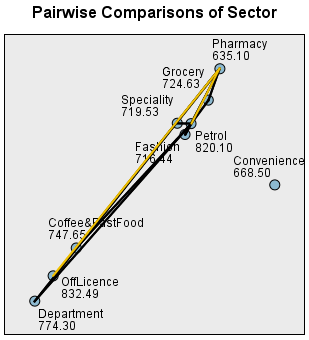


Total N	1,479
Test Statistic	24.342
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.002

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q9 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were statistically different between the groups, $x^2(8) = 24.342$, p=.002. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Figure 63: Hypothesis test summary for Q9 by Sector



Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Pharmacy-Petrol	184.996	46.705	3.961	.000	.003
Pharmacy-OffLicence	-197.390	53.417	-3.695	.000	.008

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 64: Hypothesis test summary for Q9 by Sector

N.B. For brevity only pairings with a significant difference are shown.

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Pharmacy (635.10) and Petrol Station (820.10) (p=.003) and the Pharmacy (635.10) and Off-Licence (832.49) (p=.008) group, but not for any other group combination.

5.13.4 Discussion of responses to Q9

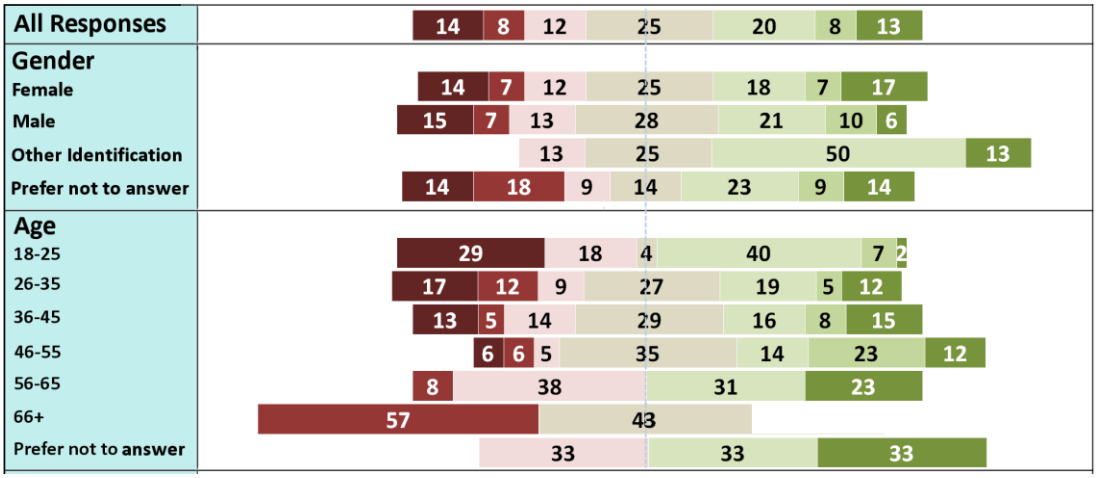


Figure 65: Q9 – Gender and Age

With only 41% reacting positively and 34% negatively, the ability to self scan products whilst shopping was poorly received. Disliked equally by all genders (p=.296) and based on the number of memberships (p=.453), and although there was a statistical difference in age groups (p=.011), a pairwise comparison was inconclusive, the general trend was negative. However, almost 13% of the overall population did rate the functionality as Very Important.

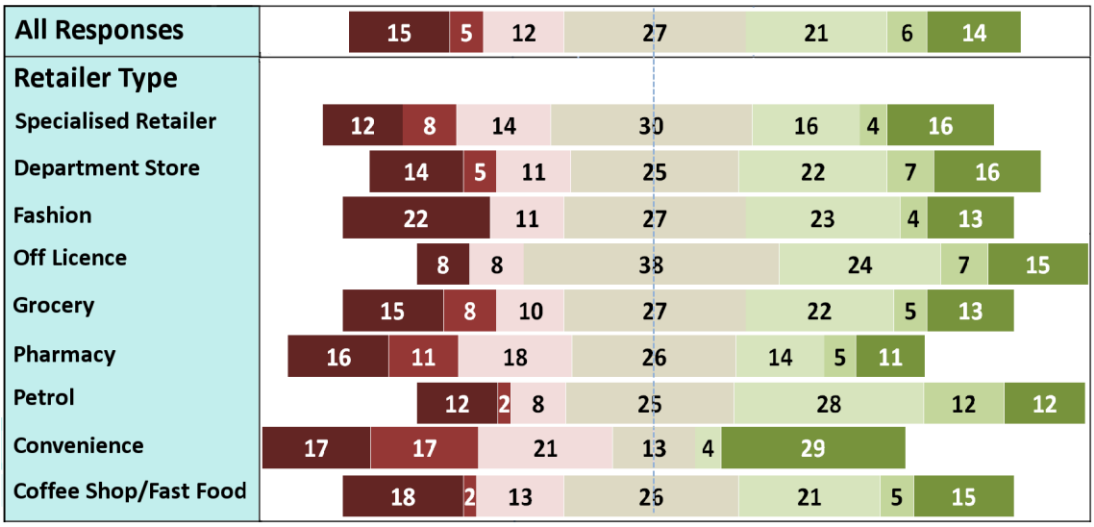


Figure 66: Q9 - Retailer Sector

The general negative trend continued across the sectors and a statistical difference was discovered between Pharmacy and Petrol Stations (p=.003) and also Pharmacy and Off-Licences (p=.008).

5.14 Q10 – Use one App for multiple loyalty programmes

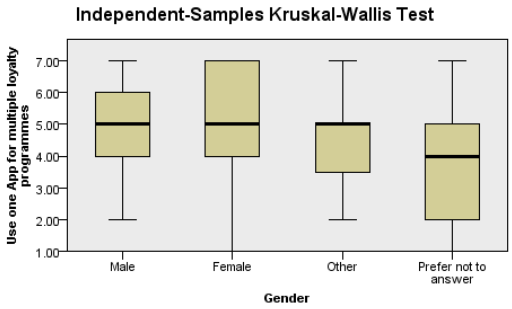
This question is intended to gauge the respondent's desire to use the App to access multiple loyalty programmes.

5.14.1 Q10 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Use one App for multiple loyalty programmes is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.044	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

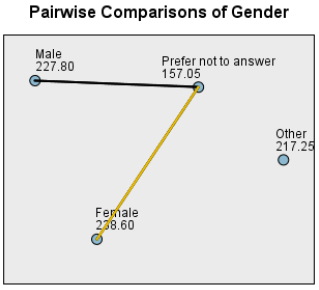


Total N	460
Test Statistic	8.122
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.044

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q10 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically different between the groups, $x^2(3) = 8.122$, p=.044. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Figure 67: Hypothesis test summary for Q10 by Gender



Each node shows the sample average rank of Gender.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Prefer not to answer-Female	81.554	28.997	2.812	.005	.029

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Q10 scores between Prefer not to answer (157.05) and Female (238.60) (p=.029) gender groups, but not for any other group combination.

Figure 68: Pairwise Comparisons for Q10 by Gender

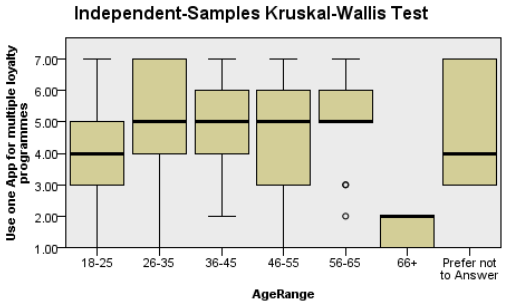
N.B. For brevity only pairings with a significant difference are shown.

5.14.2 Q10 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Use one App for multiple loyalty programmes is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



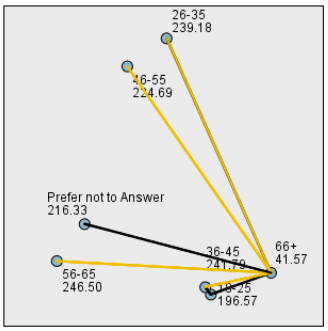
Total N	460
Test Statistic	20.033
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.003

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q10 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(6) = 20.033$, p=.003. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Figure 69: Hypothesis test summary for Q10 by Age

Pairwise Comparisons of AgeRange



Each node shows the sample average rank of AgeRange.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
66+-46-55	183.118	51.966	3.524	.000	.009
66+-26-35	197.609	50.574	3.907	.000	.002
66+-36-45	200.217	50.418	3.971	.000	.002
66+-56-65	204.929	61.287	3.344	.001	.017

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Q10 scores between 66+ (41.57) and 46-55 (224.69) (p=.009), the 66+ (41.57) and 26-35 (239.18) (p=.002), the 66+ (41.57) and 36-45 (241.79) (p=.002) and the 66+ (41.57) and 56-65 (246.50) (p=.017) age groups, but not for any other group combination.

Figure 70: Pairwise Comparisons for Q10 by Age

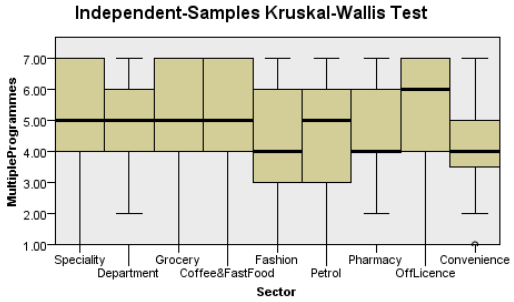
N.B. For brevity only pairings with a significant difference are shown.

5.14.3 Q10 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of MultipleProgrammes is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.016	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	18.839
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.016

1. The test statistic is adjusted for ties.

Figure 71: Hypothesis test summary for Q10 by Sector

A Kruskal-Wallis H test was run to determine if there were differences in the Q10 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were statistically different between the groups, $x^2(8) = 18.839$, p=.016. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed. However no statistically significant different pairwise comparisons were found.

5.14.4 Discussion of responses to Q10

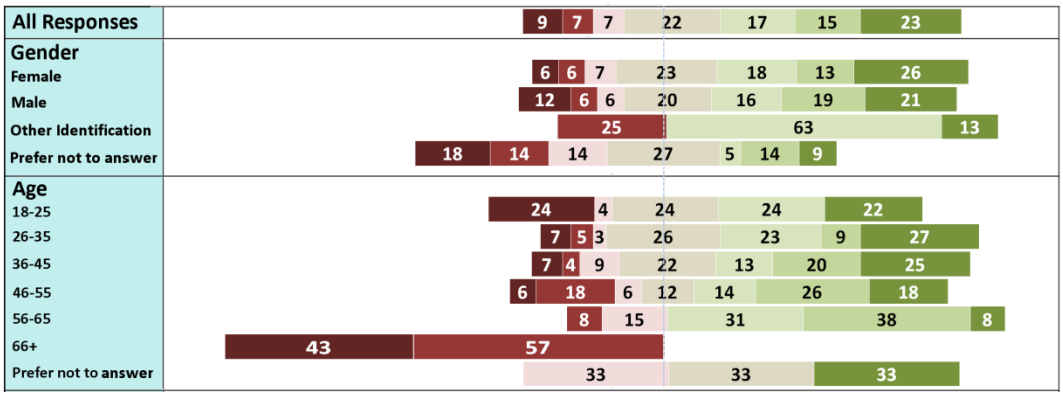


Figure 72: Q10 – Gender and Age

With statistical difference between Females and 'Prefer not to answer', the 66+s and every other age range and from those in no loyalty programme to the rest, the null hypothesis was rejected in all 3 categories. However the responses were largely balanced. A total of 56% responded positively, with 23% respondents classifying it as Very Important functionality. Although languishing in a low 11th place overall, it is functionality that should be considered seriously by retailers, perhaps most especially by those that may operate multiple brands.

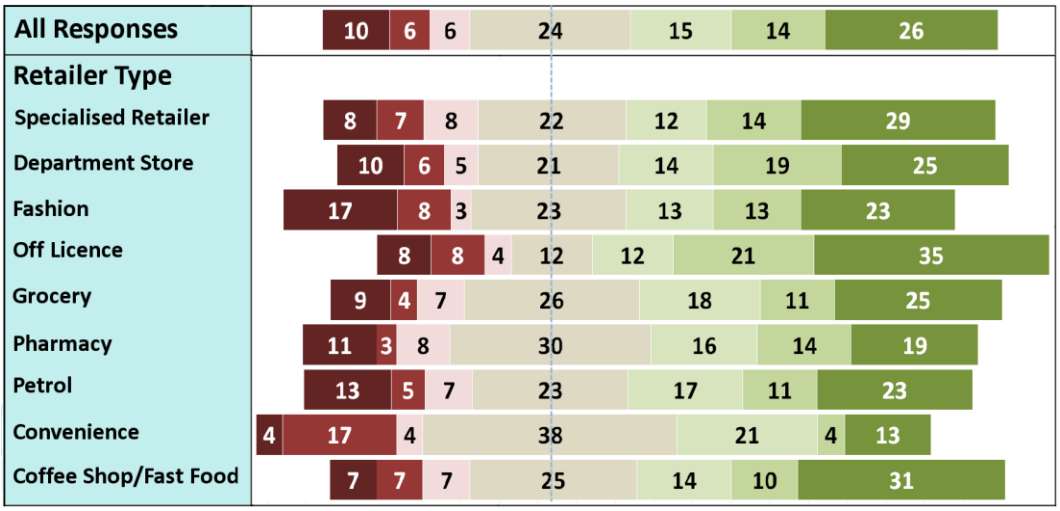


Figure 73: Q10 - Retailer Sector

Although the null hypothesis was again rejected for the sector group (p=.016) a post hoc pairwise comparison found no statistically significant differences between the groups. Those who are member of Off-Licence programmes appear to be slightly more positive with those in the Fashion or Convenience stores leaning more negatively.

5.15 Q11 – Receive personalised offers from the Retailer

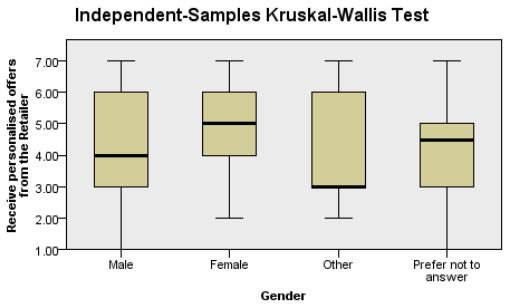
This question is intended to gauge the respondent's desire to receive personalised offers from the retailer via the App.

5.15.1 Q11 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Receive personalised offers from the Retailer is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



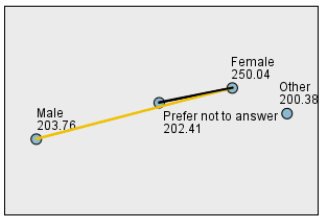
Total N	460
Test Statistic	14.126
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.003

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q11 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 14.126$, p=.003. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Figure 74: Hypothesis test summary for Q11 by Gender

Pairwise Comparisons of Gender



Each node shows the sample average rank of Gender.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Male-Female	-46.280	13.040	-3.549	.000	.002

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 75: Pairwise Comparisons for Q11 by Gender

N.B. For brevity only pairings with a significant difference are shown.

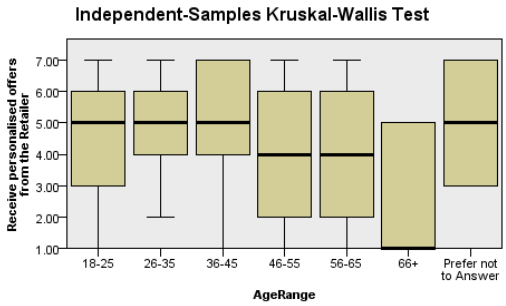
Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Male (203.76) and Female (250.04) (p=.002) group, but not for any other group combination.

5.15.2 Q11 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Receive personalised offers from the Retailer is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.022	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	14.840
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.022

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q11 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were statistically significantly different between the groups, $x^2(6) = 14.840$, p=.022. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed but no statistically significant differences were found.

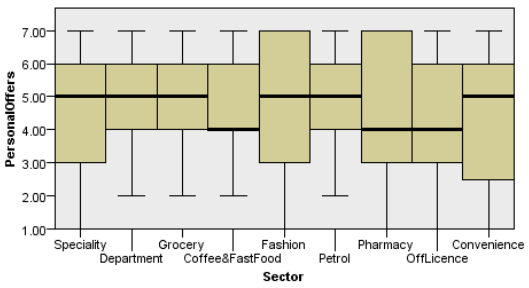
Figure 76: Hypothesis test summary for Q11 by Age

5.15.3 Q11 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of PersonalOffers is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.107	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	13.136
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.107

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q11 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 13.136$, p=.107. The null hypothesis is therefore retained.

Figure 77: Hypothesis test summary for Q11 by Sector

5.15.4 Discussion of responses to Q11

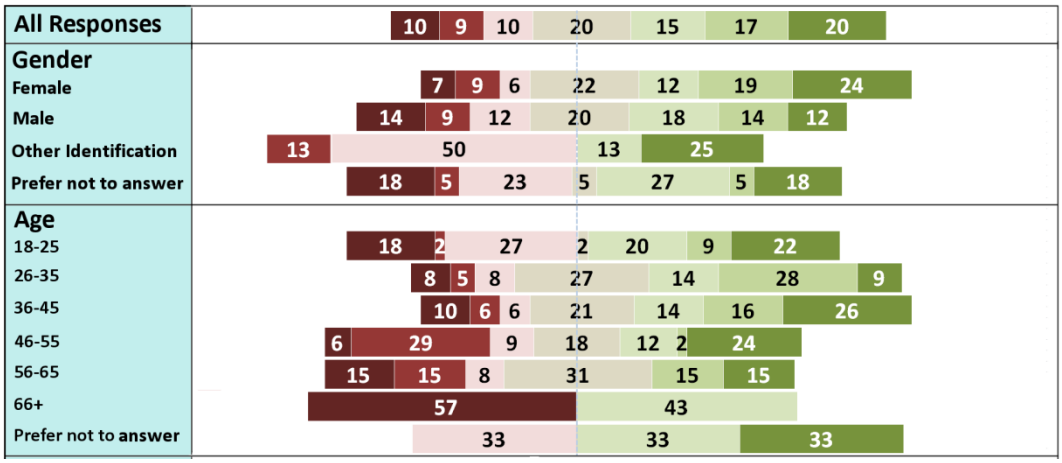


Figure 78: Q11 – Gender and Age

The lure of personalised offers is not enough to lift this functionality out of the bottom 4. Despite 20% of the population rating this as Very Important, the significant negative reaction was enough to keep this near the bottom of the table. Females were statistically more likely to rate this higher than their male counterparts. Despite the appearance of imbalance across age groups and the null hypothesis being rejected, a posy hoc pairwise comparison was unable to identify any statistically significant differences.

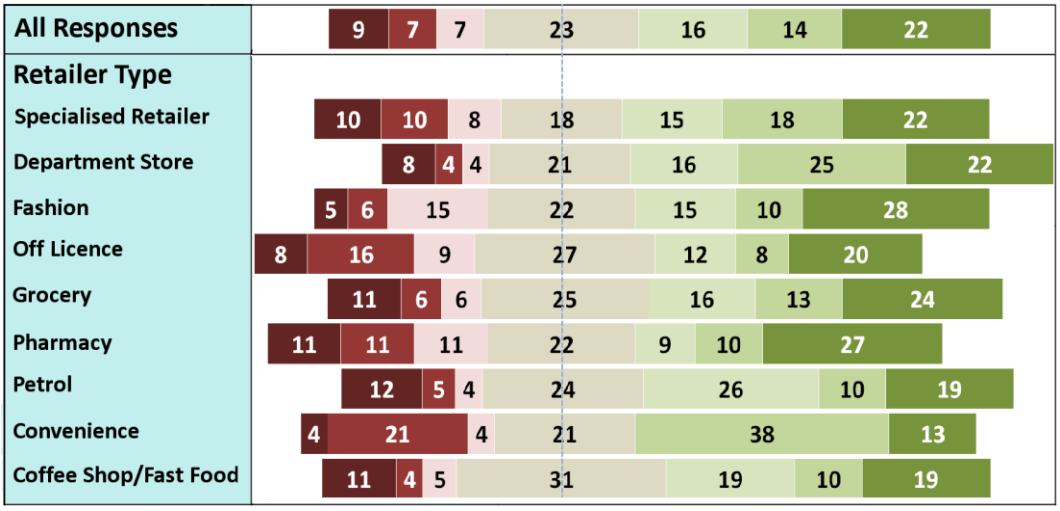


Figure 79: Q11 - Retailer Sector

There were no statistical differences across the retailing sectors (p=.107). The scores were equally distributed.

5.16 Q12 – Receive personalised news from the Retailer

This question is intended to gauge the respondent's desire to receive personalised news from the retailer via the App.

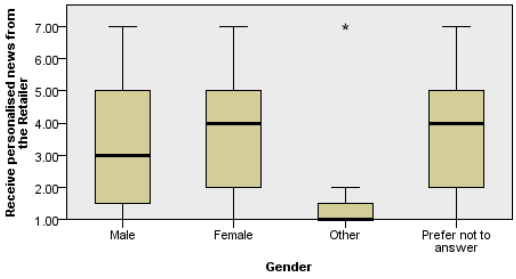
5.16.1 Q12 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Receive personalised news from the Retailer is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.011	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Independent-Samples Kruskal-Wallis Test



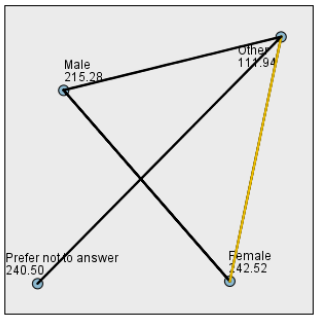
Total N	460
Test Statistic	11.155
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.011

1. The test statistic is adjusted for ties.

Figure 80: Hypothesis test summary for Q12 by Gender

A Kruskal-Wallis H test was run to determine if there were differences in the Q12 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically different between the groups, $x^2(3) = 11.155$, p=.011. The null hypothesis is therefore rejected and a post hoc pairwise

Pairwise Comparisons of Gender



Each node shows the sample average rank of Gender.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Other-Female	130.585	46.954	2.781	.005	.033

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 81: Pairwise Comparisons for Q12 by Gender

N.B. For brevity only pairings with a significant difference are shown.

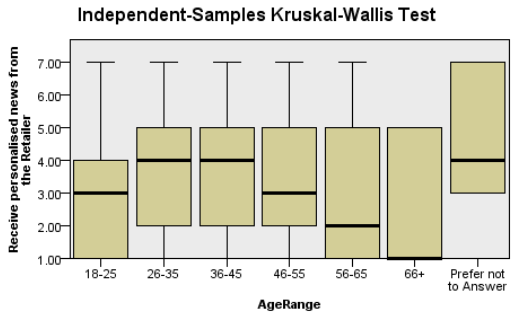
Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Other (111.94) and Female (142.52) (p=.033) group, but not for any other group combination.

5.16.2 Q12 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Receive personalised news from the Retailer is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.370	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	6.500
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.370

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q12 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were not statistically significantly different between the groups, $x^2(6) = 6.500$, p=.370. The null hypothesis is therefore retained.

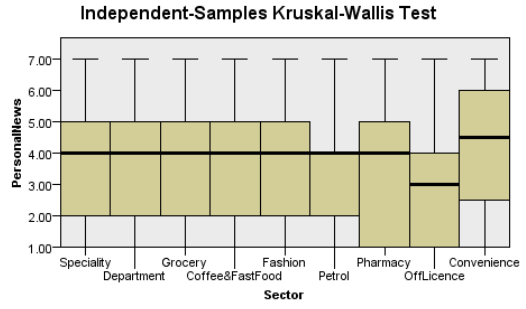
Figure 82: Hypothesis test summary for Q12 by Age

5.16.3 Q12 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of PersonalNews is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.004	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	22.272
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.004

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q12 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were statistically significantly different between the groups, $x^2(8) = 22.272$, p=.004. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed but no statistically significant differences were found.

Figure 83: Hypothesis test summary for Q12 by Sector

5.16.4 Discussion of responses to Q12

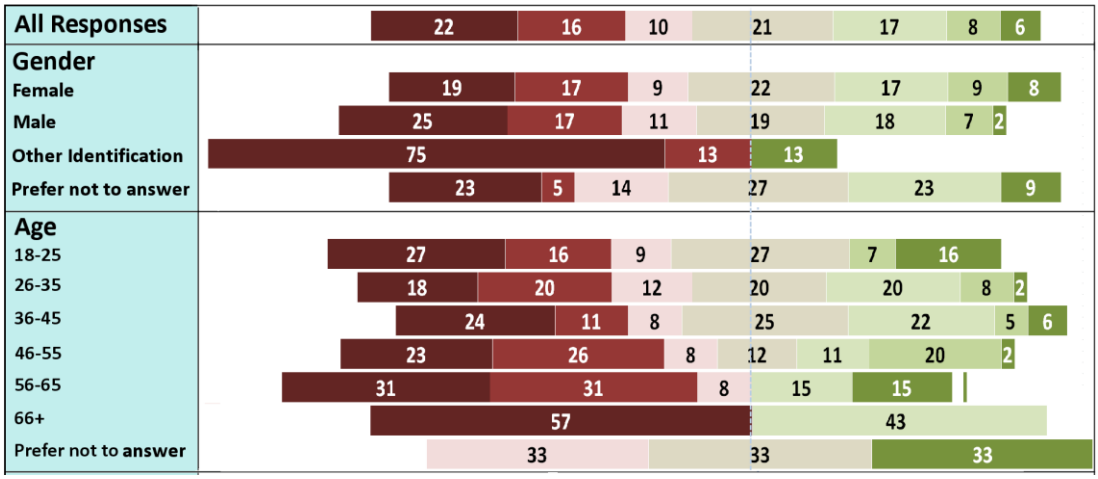


Figure 84: Q12 – Gender and Age

More negative responses, and based on the previous question where customers were at least getting offers, it is expected to find that they are even less likely to be interested in hearing from retailers with just news. Placing 14th overall, with 48% of respondents rating this negatively and only 31% in a positive way, the association with the previous question should not be overlooked. A statistical difference was found between Female and Other (p=.005). Statistically age group had no bearing on the ratings.

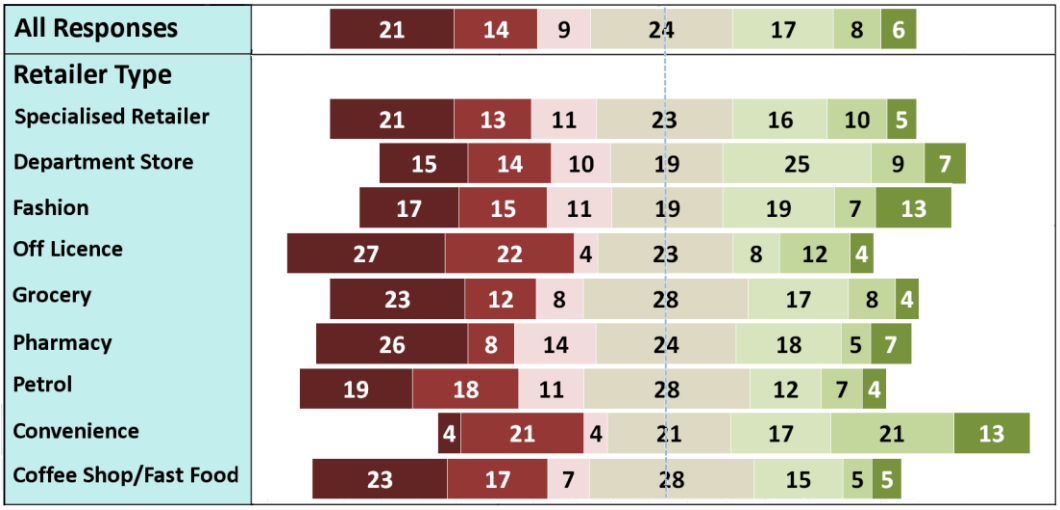


Figure 85: Q12 - Retailer Sector

Although the null hypothesis was rejected here with a p of .004, a pairwise comparison highlighted no significant statistical differences between the retail sectors as illustrated in the stacked chart above.

5.17 Q13 – Interact with social media

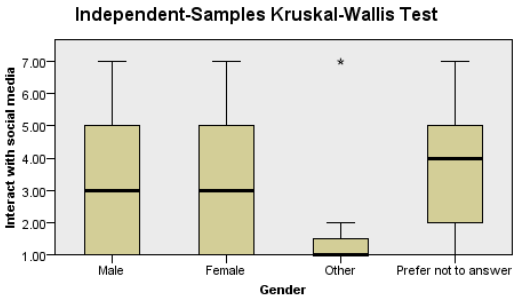
This question is intended to gauge the respondent's desire to use the App to interact with Social Media regarding the retailer and their products.

5.17.1 Q13 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Interact with social media is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.024	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

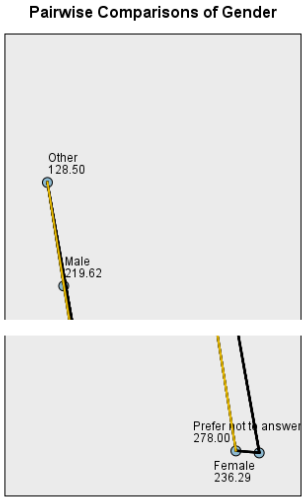


Total N	460
Test Statistic	9.476
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.024

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q13 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(3) = 9.476$, p=.024. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.

Figure 86: Hypothesis test summary for Q13 by Gender



Each node shows the sample average rank of Gender.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Other-Prefer not to answer	-149.500	53.834	-2.777	.005	.033

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 87: Pairwise Comparisons for Q13 by Gender

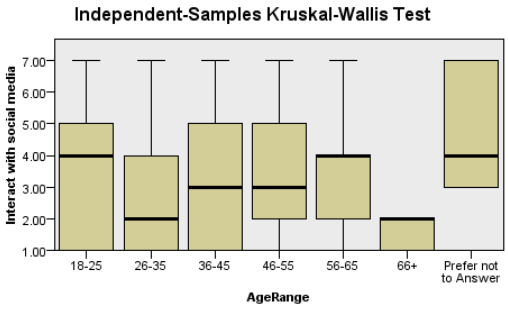
Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Other (128.50) and Prefer not to answer (278.00) (p=.033) group, but not for any other group combination.

5.17.2 Q13 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Interact with social media is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.004	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

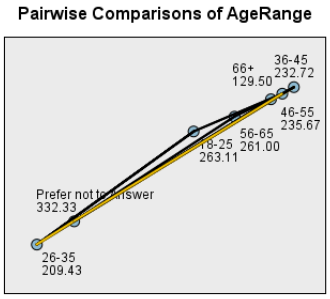


Total N	460
Test Statistic	19.037
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.004

1. The test statistic is adjusted for ties.

Figure 88: Hypothesis test summary for Q13 by Age

A Kruskal-Wallis H test was run to determine if there were differences in the Q13 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically significantly different between the groups, $x^2(6) = 19.037$, p=.004. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.



Each node shows the sample average rank of AgeRange.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
66+-Prefer not to Answer	-202.833	62.014	-3.271	.001	.023
26-35-Prefer not to Answer	-122.905	39.147	-3.140	.002	.036

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 89: Pairwise Comparisons for Q13 by Age

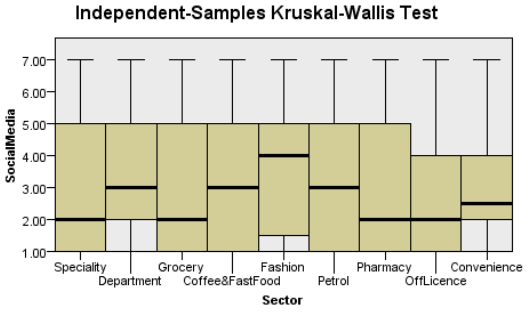
Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Q13 scores between 66+ (129.50) and Prefer not to answer (332.33) (p=.022) and the 26-35 (209.43) and Prefer not to answer (332.33) (p=.036) age groups, but not for any other group combination.

5.17.3 Q13 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of SocialMedia is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

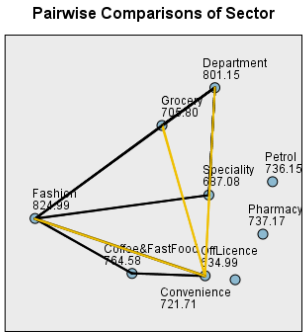


Total N	1,479
Test Statistic	23.581
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.003

1. The test statistic is adjusted for ties.

Figure 90: Hypothesis test summary for Q13 by Sector

A Kruskal-Wallis H test was run to determine if there were differences in the Q13 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 23.581$, p=.003. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed.



Each node shows the sample average rank of Sector.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
OffLicence-Department	166.165	50.829	3.269	.001	.039
OffLicence-Fashion	190.004	52.543	3.616	.000	.011

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 91: Pairwise Comparisons for Q13 by Sector

Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. Values are mean ranks unless otherwise stated. The analysis revealed statistically significant differences in the Off-Licence (534.99) and Department Store (801.15) (p=.039) and the Off-Licence (534.99) and Fashion (824.99) (p=.011) sectors, but not for any other group combination.

5.17.4 Discussion of responses to Q13

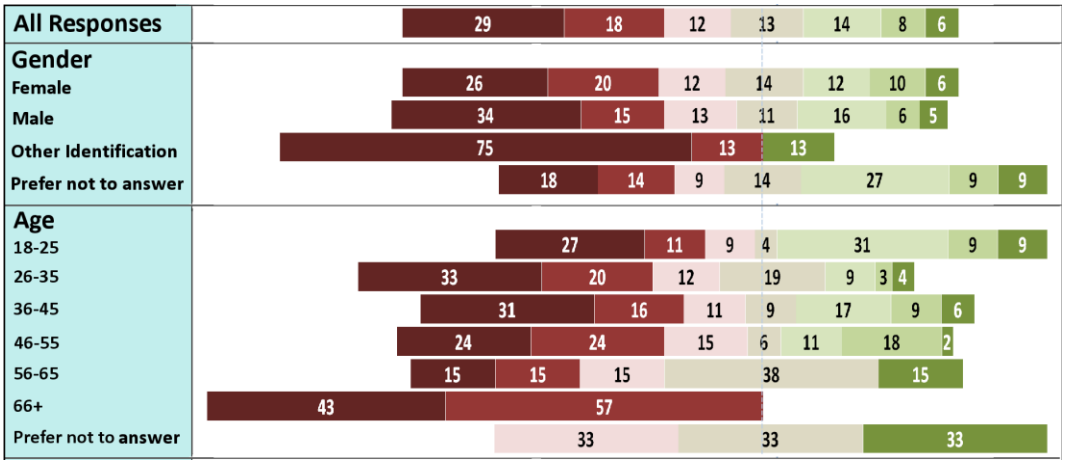


Figure 92: Q13 – Gender and Age

In the current digital age and the prevalence of Social Media in all walks of life, the negative reaction to this question was surprising. 29% of respondents rated it as not important at all and only 6% rated it as Very Important. 60% of the population gave this negative feedback and 28% positive. There was no statistical difference between males and females, although the null hypothesis by gender was rejected due to the reported pairwise difference between Other and Prefer not to answer (p=.033). A statistical difference was also detected between the 66+ and Prefer not to answer (p=.022) and the 26-35 and prefer not to answer (p=.036) age groups, but not for any other combination.

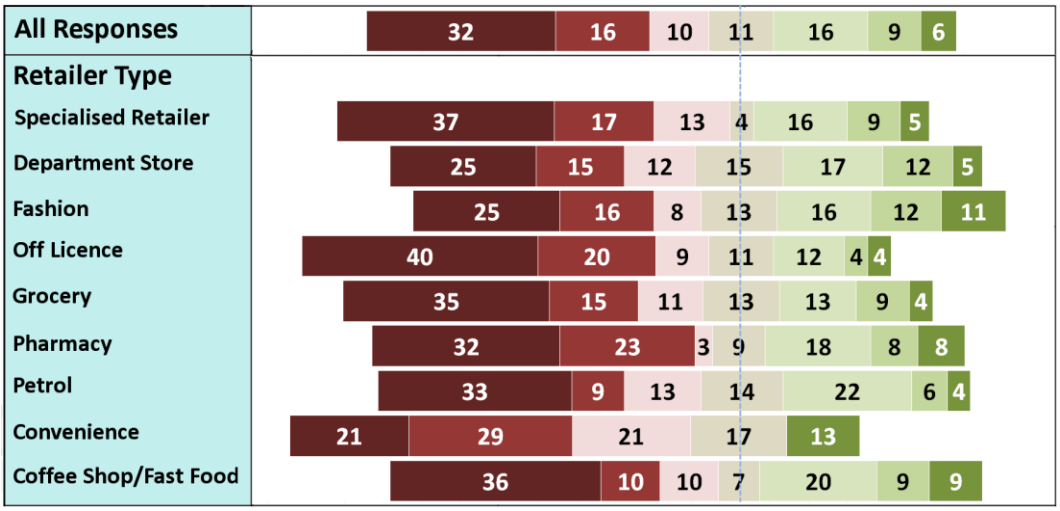


Figure 93: Q13 - Retailer Sector

Although visually quite balanced looking statistical differences were identified between those in the Off-Licence and Department Stores (p=.039) and the Off-Licence and Fashion (p=.011) sectors.

5.18 Q14 – Purchase items for delivery

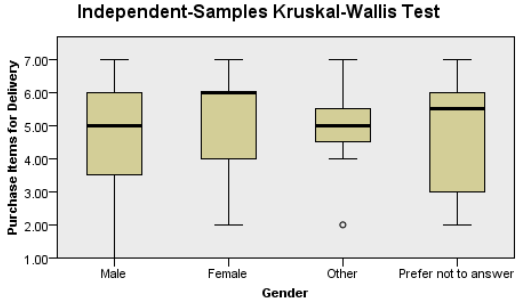
This question is intended to gauge the respondent's desire to use the App to purchase items for later home delivery.

5.18.1 Q14 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Purchase Items for Delivery is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.283	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	3.807
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.283

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 94: Hypothesis test summary for Q14 by Gender

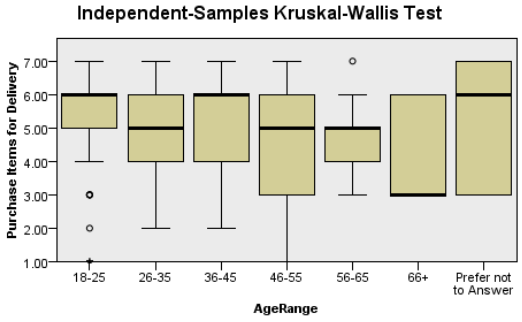
A Kruskal-Wallis H test was run to determine if there were differences in the Q14 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 3.807$, p=.283. The null hypothesis is therefore retained.

5.18.2 Q14 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Purchase Items for Delivery is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.341	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	6.784
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.341

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q14 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Media scores were not statistically significantly different between the groups, $x^2(6) = 6.784$, p=.341. The null hypothesis is therefore retained.

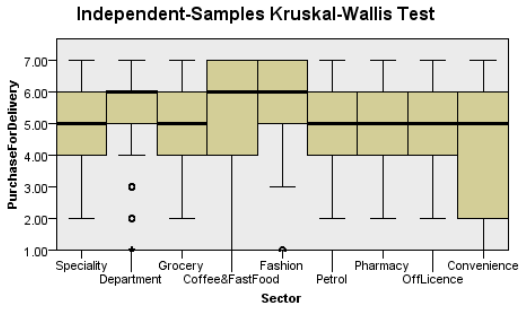
Figure 95: Hypothesis test summary for Q14 by Age

5.18.3 Q14 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of PurchaseForDelivery is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	21.730
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.005

1. The test statistic is adjusted for ties.

A Kruskal-Wallis H test was run to determine if there were differences in the Q14 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were not similar for all groups. The mean ranks for the scores were statistically different between the groups, $x^2(8) = 21.730$, p=.005. The null hypothesis is therefore rejected and a post hoc pairwise comparison was performed but no statistically significant differences were found.

Figure 96: Hypothesis test summary for Q14 by Sector

5.18.4 Discussion of responses to Q14

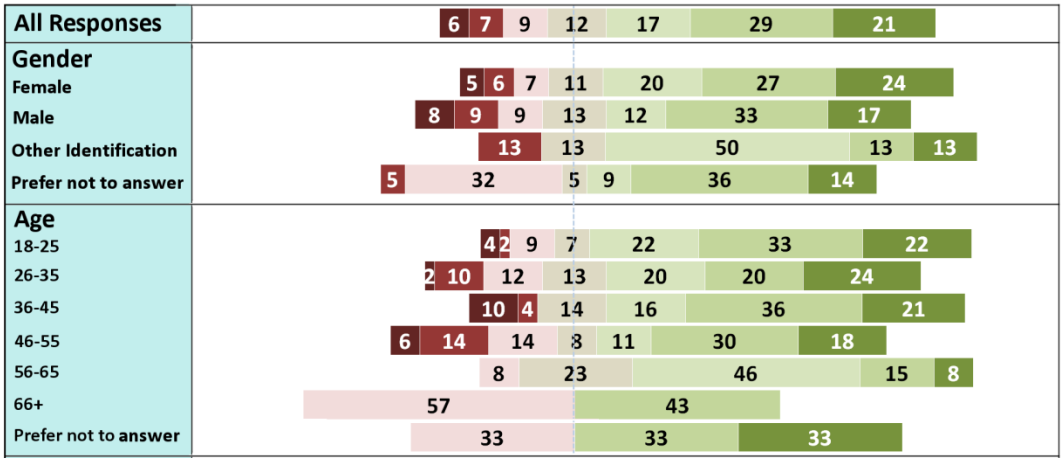


Figure 97: Q14 - Gender, Age and No. of Programmes

No. 9 on the preferences for customers is the ability to purchase items for delivery. 50% of respondents rated this as a 6 or 7 on the scale. There was no significant difference across the gender (p=.238) or age (p=.341) groups.

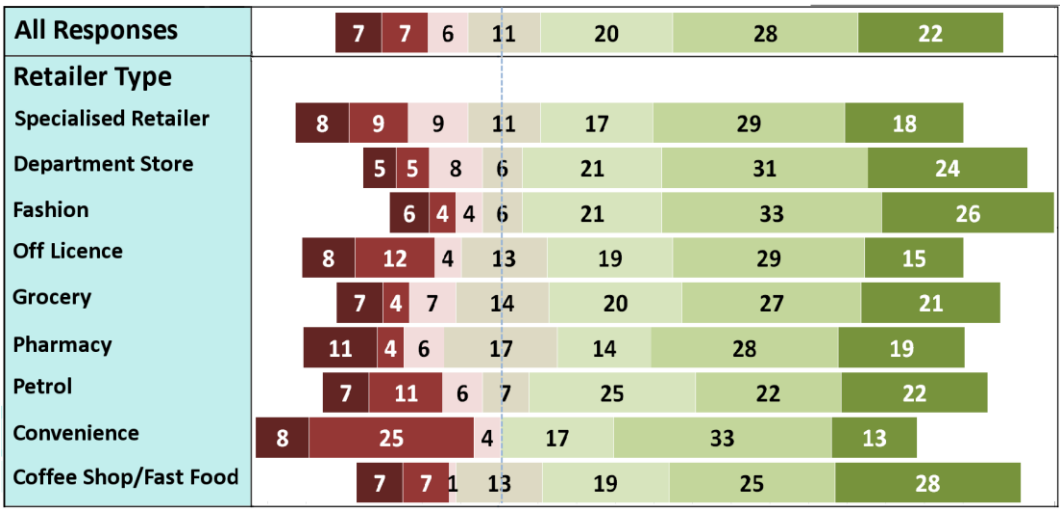


Figure 98: Q14 - Retailer Sector

The null hypothesis was rejected here (p=.005) but a subsequent pairwise comparison did not identify any statistical differences with the group.

5.19 Q15 – Purchase items for in-store collection

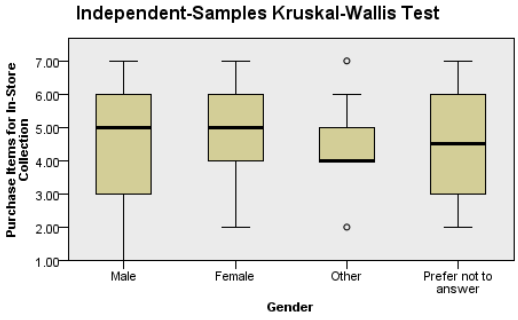
This question is intended to gauge the respondent's desire to use the App to purchase items for later in-store collection.

5.19.1 Q15 by Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Purchase Items for In-Store Collection is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.131	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	5.640
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.131

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

Figure 99: Hypothesis test summary for Q15 by Gender

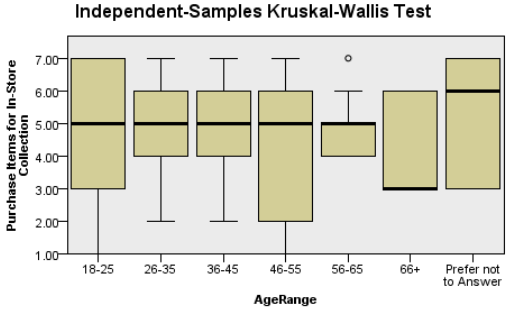
A Kruskal-Wallis H test was run to determine if there were differences in the Q15 score between the respondents on the group of gender. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(3) = 5.640$, p=.131. The null hypothesis is therefore retained.

5.19.2 Q15 by Age Range

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Purchase Items for In-Store Collection is the same across categories of AgeRange.	Independent-Samples Kruskal-Wallis Test	.638	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	460
Test Statistic	4.289
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.638

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q15 score between the respondents on the group of age. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically significantly different between the groups, $x^2(6) = 4.289$, p=.638. The null hypothesis is therefore retained.

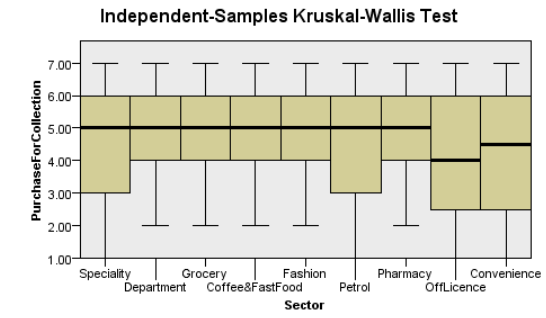
Figure 100: Hypothesis test summary for Q15 by Age

5.19.3 Q15 by Retail Sector

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of PurchaseForCollection is the same across categories of Sector.	Independent-Samples Kruskal-Wallis Test	.242	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	1,479
Test Statistic	10.339
Degrees of Freedom	8
Asymptotic Sig. (2-sided test)	.242

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples

A Kruskal-Wallis H test was run to determine if there were differences in the Q15 score between the respondents on the group of sector. A visual inspection of the boxplot confirmed that the distribution of answers were similar for all groups. Median scores were not statistically different between the groups, $x^2(8) = 10.339$, p=.242. The null hypothesis is therefore retained.

Figure 101: Hypothesis test summary for Q15 by Sector

5.19.4 Discussion of responses to Q15

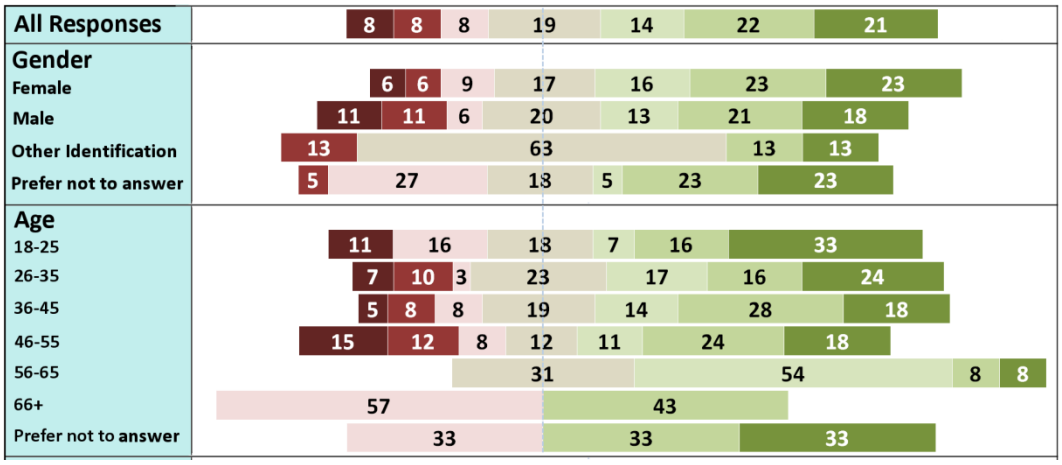


Figure 102: Q15 – Gender and Age

The question relating to purchasing for later in-store collection has very similar scores and profile to the previous question relating to purchasing for home delivery. Coming in as no. 10 in the list, 43% rated it as a 6 or 7, while 24% rated it negatively at 1, 2 or 3. There was no significant statistical difference in either the gender (p=.131) or age (p=.638) groups.

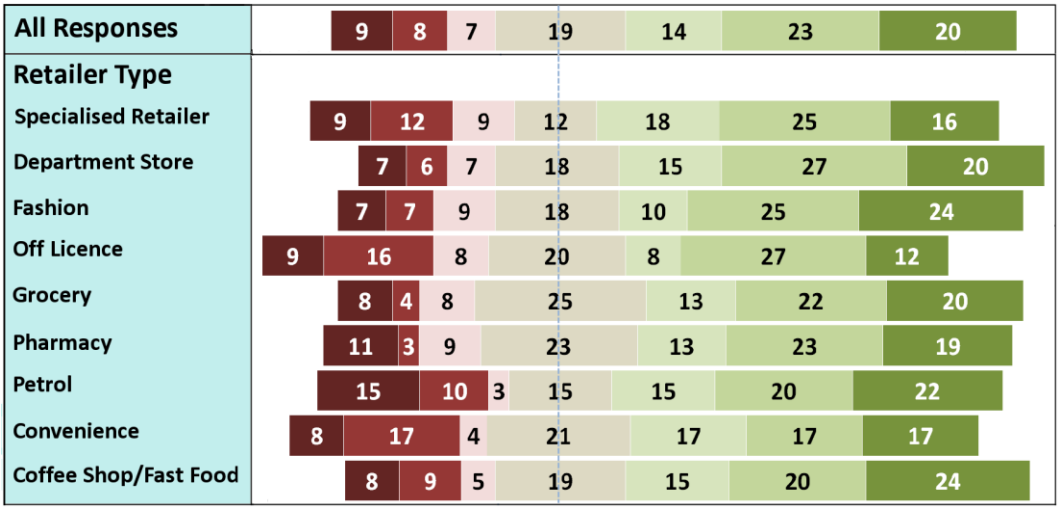


Figure 103: Q15 - Retailer Sector

There were no statistical differences (p=.242) identified across the retail sectors.

5.20 Overall Results

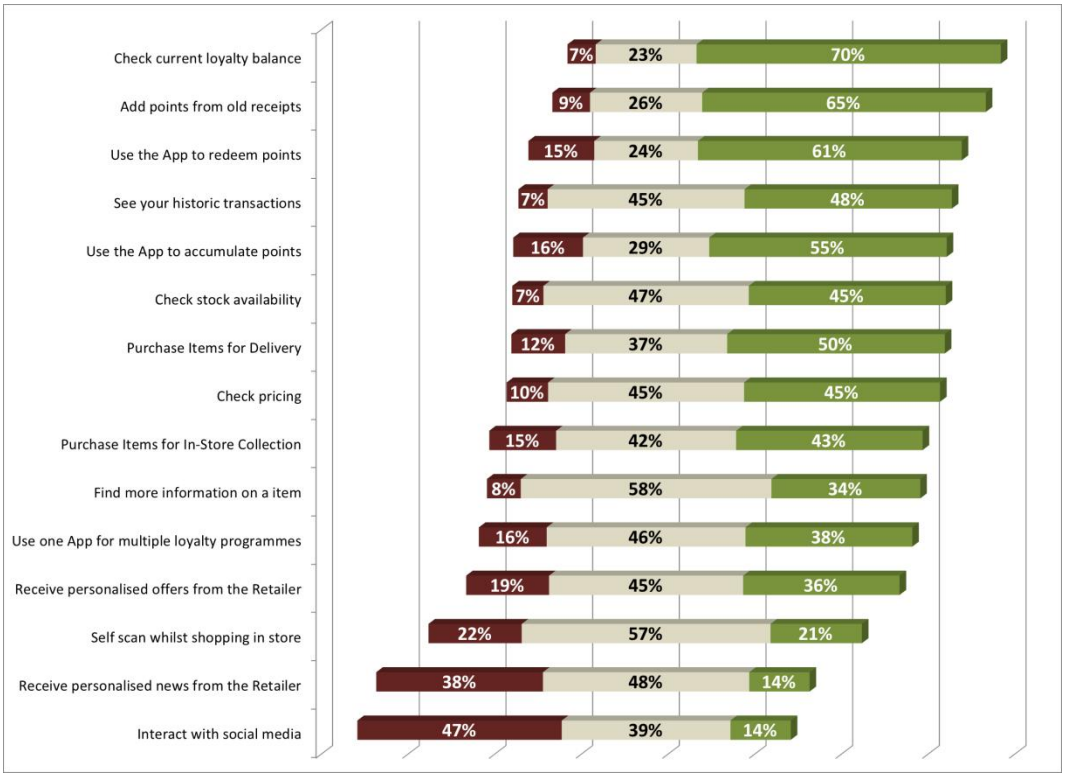


Figure 104: Overall Results

Figure 104 above shows the overall results of the survey highlighting negative feedback (red), neutral feedback (beige) and positive feedback (green) and their respective percentages, sorted by the nett popularity descending.

As outlined earlier the fifteen questions fall into four functional groups:

- Customer focused functionality.

  This relates to the functions aimed at making the loyalty programme more practical and transparent for the customer. These were questions 1 to 5;

  Use the App to accumulate points

  Use the App to redeem points

  Balance Enquiry

  See Historical Transactions

  Add Points from old Receipts

- Stock information functionality

  Questions 6, 7 and 8 related to in-App functions to allow the users find more information on items. These were;

  Check Pricing

Check Stock Availability

Find more information

- Transactional functionality.

  The questions within this group are the functions related to performing purchase transactions within the app. These were questions 9, 10, 14 and 15;

  Purchase items for home delivery

  Purchase items for in-store collection

  Ability to self-scan your shopping basket

  Support for multiple loyalty programmes

- Retailer driven messaging

  And finally questions 11, 12 and 13 relate to the ability of the retailer to communicate with the customer via the App and vice-versa;

  Receive personalised offers from the retailer

  Receive personalise news from the retailer

  Share information on your favourite social media platform

By graphing the total results by group one can get a clear indication of where the customer's preferences lie in respect of the functional groups.

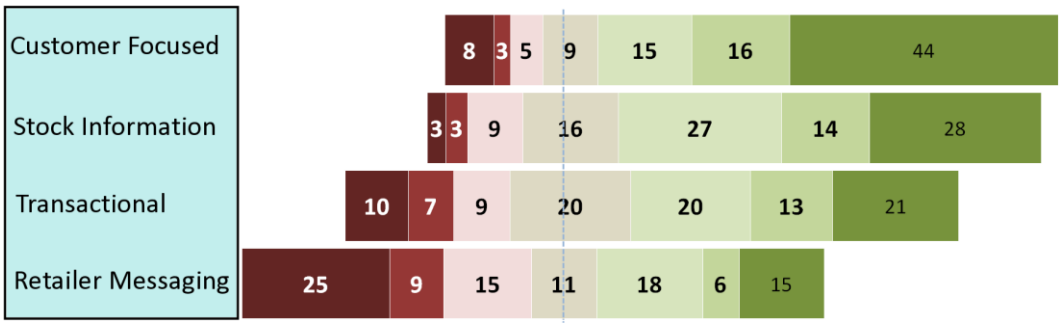


Figure 105: Customer responses by groups

This clearly demonstrates the groups that customers consider most important. 44% of the respondents rated questions relating to functionality aimed at practicality and transparency as 'Very Important'. At the other extreme 25% rated functionality aimed at messaging and sharing as 'Not important at all'.

Building on this information the framework can now be constructed.

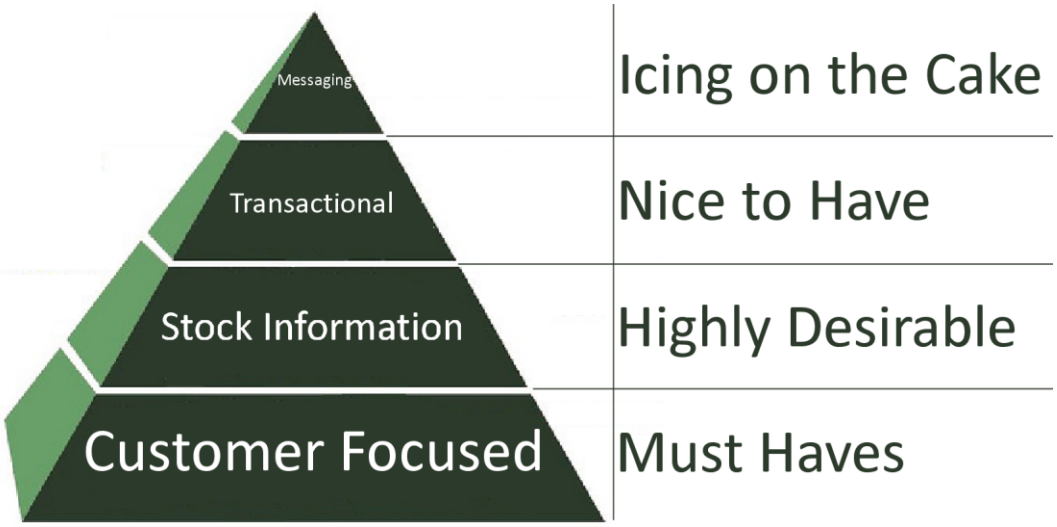


Figure 106: Suggested Functionality Framework

The framework proposes that designers of a Loyalty App for retail environments should first concentrate on a solid foundation of functionality aimed at making the App more practical and transparent for the end user, followed very closely by giving them the ability to check stock information. Only when these two core functional groups have been implemented should the designers consider implementing transactional based functionality followed by, as the last step, messaging, either by direct communication from the retailer or via social media.

6. Conclusions and recommendations

6.1 Introduction

The purpose of this study was to determine the functionality that consumers considered important in a Smartphone Loyalty App and to provide a framework for retailers to consider when designing or updating their own offerings. Although significant literature exists in regards to loyalty programmes, smartphone usage and retail marketing techniques, the lack of research into what it is that the end consumer would like to see as functionality in the Loyalty App, has the potential to open and new and lucrative insights for the retailer. It is hoped that this quantitative exploratory study will provide a foundation for future research in this area.

6.2 Implications

In the literature review it was noted that retailers aim to use loyalty programmes to retain customers, increase loyalty and collect data (Demoulin and Zidda, 2009). However many are implemented as knee jerk reactions to competitor's offerings (Dowling and Mark, 1997) and add little value. The provision of a Loyalty App that provides customers with identified requirements is likely to add value and make switching less likely. Areas relating to stock information, pricing and availability, identified by the Deloitte report (Lobaugh, Simpson and Ohri, 2014) have clearly come through this research as desirable requirements from the customers. Whereas tailored promotions and messages from the retailers (Berney, 2015) do not, from this research, feature prominently in users minds. There is the future possibility that a well-designed App could differentiate a retailer's loyalty programme and thus reverse the identified (Zakaria et al., 2013) current issue of perceived similarities.

6.3 Limitations

While much research exists on Loyalty Programmes and smartphone applications, there is little linking the two subjects. This thesis therefore stands on its own in respect of research and conclusions. A large amount of data was collected and presented, however in the confines of the word count limitations,

much could not be expanded on. For example analysis of functionality by gender and age was performed separately for each question, but the data exists to cross reference these and analyse the responses. For example, a retailer in the fashion industry which is aimed at young females may be very interested to investigate the 18-25 year old female demographic group.

6.4 Future recommendations

In addition to previously mentioned areas of additional data analysis and mono method approach, there are substantial opportunities to further research in this relatively unexplored area. The scope of this study was not able to include investigation into the many different strands of loyalty programmes that are available, from the typical coffee shop type of buy n and get the next free, the points based systems where users collect points and redeem them against future purchases or the coupon based systems where customers receive coupons towards their future purchases. Although there was only minor statistical difference across any of the retail sectors for which information was accumulated, the type of programmes being used is unknown.

An area that is very topical and contentious among European retailers that run loyalty programmes at this time is the forthcoming GDPR (General Data Protection Regulation) due to come into effect in 2018. This new regulation not only strengthens the powers and weapons of the Data Protection Commissioners across Europe, but also places a very serious onus on data collectors to ensure active consent from the individuals involved and also the ability to be forgotten amongst many other things. Smartphone loyalty Apps could go a long way in being able to ensure a private individual could remain anonymous and yet give the retailer the ability to collect the valuable shopping data required and communicate with their customers. Currently in order to make that connection with a customer the retailer commonly uses an email address or a mobile phone number for SMS, along with the more traditional standard mail. Many times a customer's decision to participate in a loyalty system is dependent on how much trust they place in the retailer. An app, which could be completely anonymous, could remove not only these barriers

but also the future onerous effort required to comply with data protection laws. However this anonymity without the required functionality would be less likely to be successful.

6.5 Conclusion

This research has clearly shown the preferred functionality of the respondents for a smartphone Loyalty App. However, though further down the list than many retailers might like, the ability to purchase for both home delivery and in-store collection were popular. An App that satisfies the basic requirements as identified in this study would likely have a better chance of beating the current churn rate and eventually provide another steady income stream for retailers.

7. References

Alden, D.L., Steemkamp, J.-B.E.M. and Batra, T. (2006) 'Consumer attitudes toward marketing globalizationglobalization: antecedent, consequent and structural factors', *International Journal of Research in Marketing*, vol. 23, no. 3, pp. 227-239.

Amalyan, N.D. and Amalian, A.W. (2015) 'Accounting Objects within the Framework of Customer Loyalty Programs', *Бізнес Інформ (Business Inform)*, vol. 11, pp. 282-288.

Baker, J., Parasuraman, A., Grewal, D. and Voss, G.B. (2002) 'The influence of multiple store environment cues on perceived merchandise value and patronage intentions', *Journal of Marketing*, vol. 66, no. 2, Apr, pp. 120-141.

Barker, T. and Sekerkaya, A. (1992) 'Globalization of credit card usage: the case of a developing economy.', *International Journal of Bank Marketing*, vol. 10, no. 6, pp. 27-31.

Belizi, J.A. and Bristol, T. (2004) 'An assessment of supermarket loyalty cards in one major US market', *Journal of Consumer Marketing*, vol. 21, no. 2, pp. 144-154.

Berney, P. (2015) 'The mobile transformation of loyalty and advocacy', *Journal of Direct, Data and Digital Marketin Practice*, vol. 16, no. 3, February, pp. 166-168.

Bloemer, J. and Odekerken-Schroder, G. (2002) 'Store Saitifaction and Store Loyalty explained by Customer and Store Related Factors', *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, vol. 15, pp. 68-80.

Brynjolfsson, E., Hu, Y.J. and Rahman, M.S. (2013) 'Competing in the age of Omni Channel Retailing', *MIT Sloan Management Review*, vol. 54, no. 4, Summer, pp. 23-29.

Cavalcanti, Y.C., Mota, P.A.d., Silveira, N., Machado, I.d.C., Almeida, E.S.d. and Meira, S.R.d.L. (2013) 'Towards understanding software change request assignment: a survey with practitioners', EASE '13 Proceedings of the 17th International Conference on Evaluation and Assessment in Software Engineering, Porto de Galinhas, 195-206.

Conbach, L.J. (1951) 'Coefficient alpha and the internal structure of tests', *Psychometrika*, vol. 16, no. 3, pp. 297-334.

Cooper, D.R. and Schindler, P.S. (2003) *Business Research methods*, 8th edition, USA: McGraw-Hill.

Cox, E.P.I. (1980) 'The Optimal Number of Response Alternatives for a Scale: A Review',

Journal of Marketing Research, vol. 17, no. 4, Nov, pp. 407-422.

Credit Card News (1993) 'An Irish retailer sees green by giving up its store cards', *Credit Card News*, vol. 5, no. 24, p. 5.

CSO (2017) *Summary Results Part 2*, [Online], Available: http://www.cso.ie/px/pxeirestat/Database/eirestat/Summary%20Results%20Part%202/Summary%20Results%20Part%202_statbank.asp?SP=Summary%20Results%20Part%202&Planguage=0 [02 Aug 2017].

Deloitte (2017) *Mobile Consumer Survey 2016: The Irish Cut*, [Online], Available: https://www2.deloitte.com/ie/en/pages/technology-media-and-telecommunications/articles/Mobile-Consumer-Survey-2016.html [11 Jul 2017].

Demoulin, N.T.M. and Zidda, P. (2009) 'Drivers of Customers' Adoption and Adoption Timing of a New Loyalty Card in the Grocery Retail Market', *Journal of Retailing*, vol. 85, no. 3, pp. 391-405.

Dick, A.S. and Basu, K. (1994) 'Ciustomer Loyalty: Toward in Integrated Conceptual Framework', *Journal of the Academy of Marketing Science*, vol. 22, pp. 99-113.

Disney, J. (1999) 'Customer satisfaction and loyalty: the critical elements of service quality', *Total Quality Management*, vol. 10, no. 4/5, Jul, pp. 491-497.

Dowling, G.R. and Mark, U. (1997) 'Do Customer Loyalty Program Really Work?', *Sloan Management Review*, vol. 38, no. 4, Summer, pp. 71-82.

Duffy, D.L. (1998) 'Customer Loyalty Strategies', *Journal of Consumer Marketing*, vol. 15, no. 5, pp. 435-448.

Dunn, O.J. (1964) 'Multiple comparisons using rank sums', *Technometrics*, vol. 6, no. 3, August, pp. 241-252.

Dwyer, F.R., Schurr, P.H. and Oh, S. (1987) 'Developing Buyer-Seller Relationships', *Journal of Marketing*, vol. 51, no. 2, April, pp. 11-27.

Evans, J.R. and Mathur, A. (2005) 'The value of onlie surveys', *Internet Research*, vol. 15, no. 2, pp. 195-219.

Farfan, B. (2016) *What is a Retail Customer Loyalty Rewards Program*, 14 Oct, [Online], Available: https://www.thebalance.com/customer-loyalty-program-2892218 [20 Jul 2017].

Feher, A. and Towell, E. (1997) 'Business use of the INternet', *Internet Research*, vol. 7, no.

3, pp. 195-200.

Finstad, K. (2010) 'Response Interpolation and Scale Sensitivity: Evidence Against 5-Point Scales', *Journal of Usability Studies*, vol. 5, no. 3, May, pp. 104-110.

Fowler, F.J. (2014) *Survey Research Methids*, 5th edition, Boston: Sage Publications.

Friend, M. (2017) *The History and Future of Loyalty Programs*, [Online], Available: http://www.futureofbusinessandtech.com/business-solutions/the-history-and-future-of-loyalty-programs [15 Jul 2017].

Fulgoni, G. (2016) *How mobile is transforming the digital commerce landscape*, 12 Oct, [Online], Available: www.comscore.com [28 Oct 2016].

Gilbert, D.C. (1996) 'Relationship marketing and airline loyalty schemes', *Tourism Management*, vol. 17, no. 8, pp. 575-582.

Gilpin (1996) 'Hospatility', in Buttle, F. (ed.) *Relationship Marketing: Theory and Practice*, London: Paul Chapman Publishing.

Gliem, J.A. and Gliem, R.R. (2003) 'Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales', 2003 Midwest Research to Practice Conference in Adult, Continuing, and Community Education, Columbus, Ohio, 82-88.

Google (2015) *Make sure your site's ready for mobile-friendly Google search results*, [Online], Available: https://support.google.com/adsense/answer/6196932?hl=en [11 Jan 2017].

Groves, R.M. (2011) 'Three Eras of Survey Research', *Public Opinion Quarterly*, vol. 74, no. 5, pp. 861-871.

Gupta, S., Lehmann, D.R. and Stuart, J.A. (2004) 'Valuing Customers', *Journal of Marketing Research*, vol. 41, no. 1, pp. 7-18.

Hoffman, D.L. and Novak, T.P. (1996) 'Marketing in hypermedia computer-mediated environments: conceptual foundations', *The Journal of Marketing*, vol. 60, no. 3, pp. 40-68.

Kelly, L. (2013) *Women are still relied upon to do the food shopping*, 07 Aug, [Online], Available: http://www.independent.ie/irish-news/women-are-still-relied-upon-to-do-the-food-shopping-report-29481026.html [05 Aug 2017].

Kennedy, R., Riquier, C. and Sharp, B. (1996) 'Practical Applications of Correspondence Analysis to Categorical Data in Market', *Journal of Targeting Measurement and Analysis for*

Marketing, vol. 5, pp. 56-70.

Krishnaswamy, K.N., Sivakumar, A.I. and Mathirajan, M. (2006) *Management Research Methodology*, 1st edition, Delhi: Pearson Education.

Krosnick, J.A. (1999) 'Survey Research', *Annual Review of Psychology*, vol. 50, pp. 537-567.

Kruskal, W.H. and Wallis, W.A. (1952) 'Use of Ranks in One-Criterion Variance Analysis', *Journal of the American statistical Association*, vol. 47, no. 260, pp. 583-621.

Lantz, B. (2013) 'The impact of sample non-normality on ANOVA and alternative methods', *British Journal of Mathematical and Statistical Psychology*, vol. 66, no. 2, pp. 224-244.

Leenheer, J. and Bijmolt, T.H.A. (2008) 'Which Retailers Adopt a Loyalty Program? Am Empirical Study', *Journal of Retailing and Consumer Services*, vol. 15, no. 5, pp. 429-442.

Lee, J.A. and Soutar, G. (2010) 'Is Schwartz's value survey an interval scale, and does it really matter?', *Journal of Cross-Cultural Psychology*, vol. 41, no. 1, pp. 76-86.

Lin, H.-H. (2012) 'The effect of multi-channel service quality on customer loyalty on an online and mobile retail context', *The Service Industries Journal*, vol. 32, no. 11, August, pp. 1865-1882.

Lind, D.A., Wathen, S.A. and Marchal, W.G. (2015) *Statistical techniques in business & economics*, International Student Edition edition, Mew York: mcGraw-Hill Education.

Lobaugh, K., Simpson, J. and Ohri, L. (2014) *The New Digital Divide*, [Online], Available: https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/us-rd-thenewdigitaldivide-041814.pdf [12 Dec 2016].

Localytics (2016) *Mobile Apps: Whats a good retention rate*, 29 Mar, [Online], Available: http://info.localytics.com/blog/mobile-apps-whats-a-good-retention-rate [28 Oct 2016].

Lonto, J.R. (2004) *The Trading Stamp Story*, Studio Z-7.

Mann, H.B. and Whitney, D.R. (1947) 'On a test of whether one of two random variables is stochastically larger than the other', *The annals of mathematical statistics.* , Mar, pp. 50-60.

Meola, A. (2016) *The rise of M-Commerce: Mobile shopping stats & Trends*, 27 Oct, [Online], Available: http://uk.businessinsider.com/mobile-commerce-shopping-trends-stats-2016-10?r=US&IR=T [11 Jan 2017].

Meyer, A. and Dornach, F. (1998) 'Annual Customer Satisfaction Report in Germany.',

Service Barometer, Munich.

Miles, L. (1995) 'Playing the Loyalty Card', *Marketing*, vol. 3, July.

Morgan, R.M. and Hunt, S.D. (1994) 'The Commitment-Trust Theory of Relationship Marketing', *Journal of Marketing*, vol. 58, no. 3, July, pp. 20-38.

Murray, M. (2016) *Starbucks' Loyalty Reigns*, 09 Feb, [Online], Available: https://hbr.org/product/starbucks-loyalty-reigns/UV7116-PDF-ENG [15 Jul 2017].

Myatt, L.H. (1990) 'Store-brand cards cultivate loyalty', *American Banker*, vol. 155, no. 181, Sep.

Neuman, W.L. (2004) *Basics of Social Research*, Pearso Education.

Nunnally, J.C. (1967) *Psychometric Theory*, 1st edition, New York: McGraw Hill.

O'Brien, L. and Jones, C. (1995) 'Do Rewards really create Loyalty?', *Harvard Business Review*, May-June, pp. 75-82.

O'Callaghan, E. and Wilcox, M. (2000) 'Superquinn Alive and Kicking - An Illustration of Innovation in the Irhsh Grocery Market', EAERCD Conference, Barcelona.

O'Connor, B. (1993) 'Internationa;@ Store cads lose their sheen', *Credit Card Management*, vol. 6, no. 4, JUl, p. 58.

Oliver, R.L. (1999) 'Whence Consumer Loyalty?', *Journal of Marketing*, vol. 63, Jan, pp. 33-44.

O'Malley, L. (1998) 'Can loyalty schemes really build loyalty?', *Marketing Intelligence and Planning*, vol. 16, no. 1, pp. 47-55.

Pan, Y. and Zinkhan, G.M. (2006) 'Determinants of retail patronage: a meta-analytical perspective', *Journal of Retailing*, vol. 82, no. 3, Sep, pp. 229-243.

Petersen, R. (2001) *History of Frequent Flyer Programs*, May, [Online], Available: http://www.webflyer.com/company/press_room/facts_and_stats/history.php [03 Jul 2017].

Pollack, M. (1988) 'A Company Study Green Stamps: A Case Study', *Journal of Services Marketing*, vol. 2, no. 4, pp. 37-40.

Punch, L. (1993) 'Store Cards: Loyalty just isn't what is tused to be', *Credit Card Management*, vol. 6, no. 3, JUl, p. 40.

Reicheld, F.F. and Teal, T. (2001) *The loyalty effect: The hidden force behind growth, profits, and lasting value.*, Boston: Harvard Business Press.

Reichheld, F.F. (1994) 'Loyalty and the renaissance of marketing', *Marketing Management*, vol. 2, no. 4, p. 10.

Reichheld, F.F. and Sasser, W.E. (1990) 'Zero Defections: Quality comes to services', *Harvard Business Review*, vol. 68, no. 5, September-October, pp. 105-111.

Rindfleisch, A., Ganeaan, A.J.M., Shankar, G. and Moorman, C. (2008) 'Cross-Sectional Versus Longitudinal Survey Research: Concepts, Findings, and Guidelines', *Journal of Marketing Research*, vol. XLV, pp. 261-279.

Robbins, N.B. and Heiberger, R.M. (2011) 'Plotting Likert and Other Rating Scales', Proceedings of the 2011 Joint Statistical Meeting, Miami, 1058-1066.

Santouridis, I. and Trivellas, P. (2010) 'Investigating the impact of service quality and customer satisfaction on customer loyalty in mobile telephony in Greece', *The TQM Journal*, vol. 22, no. 3, pp. 330-343.

Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research methods for business students*, 5th edition, Pearson Education Limited.

Scharge, M. (2015) *Why Your Customer Loyalty Program Isn't Working*, 10 Mar, [Online], Available: https://hbr.org/2015/03/why-your-customer-loyalty-program-isnt-working [12 Jul 2017].

Schlangenstein, M. (2015) *American Airlines Now Has the Industry's Largest Loyalty Program*, 24 Mar, [Online], Available: https://skift.com/2015/03/24/american-airlines-now-has-the-industrys-largest-loyalty-program/ [22 Jul 207].

Schmid, J. (1997) 'Loyalty Marketing: Boom or Bust', *Target Marketing*, vol. 20, no. 8, Aug, pp. 34-37.

Sekaran, U. and Bougie, R. (2010) *Research Methods for Business: A Skill Building Approach*, 5th edition, NMew Jersey: John Wiley and Sons.

ShelfLife (2017) *Research: Women still do most of the grocery shopping*, 12 Jan, [Online], Available: http://www.shelflife.ie/research-women-still-grocery-shopping-home/ [05 Aug 2017].

Sirgy, J.M., Grewal, D. and Mangleburg, T. (2000) 'Retail environment, self-congruity, and

retail patronage: an integrative model and a research agenda', *Journal of Business Research*, vol. 49, no. 2, pp. 127-138.

Sobh, R. and Perry, C. (2006) 'Research design and data analysis in realism research', *European Journal of Marketing*, vol. 40, no. 11/12, pp. 1194-1209.

Statista (2016) *Number of apps available in leading app stores as of June 2016*, [Online], Available: https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/ [11 Jan 2017].

Sterling, G. (2015) *Mobile drivers nearly half of e-Commerce traffic, but PC still rule sales*, 17 Feb, [Online], Available: http://marketingland.com/mobile-drives-nearly-half-e-commerce-traffic-pc-still-rules-sales-report-118629 [20 Jan 2017].

Verhoef, P.C., Kannan, P.K. and Inman, J.J. (2015) 'From Multi-Channel Retailing to Omni-Channel Retailing: Introduction to the Special Issue on Multi-Channel Retailing', *Journal of Retailing*, vol. 91, no. 2, pp. 174-181.

Visser, P.S., Krosnick, J.A., Marquette, J. and Curtin, M. (1996) 'Mail Surveys for Election Forecasting?', *The Public Opinion Quarterly*, vol. 60, no. 2, Jul, pp. 181-227.

Watt, S., Simpson, C., McKillop, C. and Nunn, V. (2002) 'Electronic Course Surveys: Does automating feedback and reporting give better results?', *Assessment and Evaluation in Higher Education*, vol. 27, no. 4, pp. 325-337.

Worthington, S. (1986) 'Retailer Credit Cards and Direct Marketing - A Question of Synergy', *Journal of Marketing Management*, vol. 2, no. 2, Winter, pp. 125-131.

Wright, C. and Sparks, L. (1999) 'Loyalty saturation in retailing: exploring the end of retail loyalty cards?', *International Journal of Retail & Distribution Management*, vol. 27, no. 10, pp. 429-440.

Xie, K.L. and Chen, C.-C. (2013) 'Progress in Loyalty Program Research: Facts, Debates and Future Research', *Journal of Hospitality Marketing and Management*, vol. 22, no. 5, pp. 463-489, Available: https://www.researchgate.net/profile/Karen_Xie2/publication/271757835_Progress_in_Loyalty_Program_Research_Facts_Debates_and_Future_Research/links/57b3b26808ae030fe246dac7/Progress-in-Loyalty-Program-Research-Facts-Debates-and-Future-Research.pdf [12 Jul 207].

Yilmaz, K. (2013) 'Comparison of Quantitative and Qualitative Research Traditions:

epistemological, theoretical, and methodological differences', *European Journal of Education*, vol. 48, no. 2, pp. 311-325.

Zakaria, I., Rahman, B.A., Othman, A.K., Yunus, N.A.M., Dzulkipli, M.R. and Osma, M.A.F. (2013) 'The Relationship between Loyalty Program, Customer Satisfaction and Customer Loyalty in Retail Industry: A Case Study ', International Conference on Innovation, Management and Technology Research, Malaysia, 23-30.

Zukmund, W.G., Babin, B.J., Carr, J.C. and Griffin, M. (2013) *Business Research Methods*, Cengage Learning.

8. Appendices

8.1 Questionnaire

The following questions are for statistical analysis only.

No personal information is captured during the questionnaire and the researcher has no access to your email address or any other personal information.

Gender *

Choose

Options:
Prefer not to answer
Male
Female
Other Identification

Age range *

Choose

Options:
Prefer not to answer
18-25
26-35
36-45
46-55
56-65
66+

How many loyalty programmes are you currently a member of? *

Choose

Options:
0, 1, 2, 3, 4, 5 or more

Please indicate the types of loyalty programmes that you are a member of

Please select all types that are applicable to you

- [ ] Specialised Retailer (Books, Kids, Furniture)
- [ ] Department Store
- [ ] Fashion
- [ ] Off Licence
- [ ] Grocery
- [ ] Pharmacy
- [ ] Petrol Station
- [ ] Convenience Stores
- [ ] Coffee Shop or Fast Food
- [ ] Other: _____

Functionality and Features

When thinking of a Loyalty App on your smartphone, please rate the following features and functionality based on their importance to you. 1 is Not Important at All, 2 Not Important, 3 Slightly Unimportant, 4 Neutral, 5 Slightly Important, 6 Important and 7 is very important

Use the App to accumulate points *

Use the App on you phone as a replacement for your current loyalty card or tag. Simply present your phone to the cashier for them to scan.

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Use the App to redeem points *

Use the App on you phone as a replacement for your current loyalty card or tag. Simply present your phone to the cashier for them to scan.

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Check current loyalty balance *

See the current balance of points (or money) on your account at any time.

1	2	3	4	5	6	7
○	○	○	○	○	○	○

See your historic transactions *

Would you like the ability to see previous transaction that you have made with the retailer?

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Add points from old receipts *

Be able to scan receipts from previous purchases where you were not able to present your card or phone and add the points to your account immediately

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Check pricing *

Scan the barcode of an item, or look it up by description, and see it's current price and offers

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Check stock availability *

See the current stock availability of an item across the retailer's locations

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Find more information on a item *

Scan the barcode of an item, or look it up by description, and see more detailed information on it.

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Self scan whilst shopping in store *

Scan the items on your phone and then pay at the till and go without the need for the cashier to re-scan your basket

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Use one App for multiple loyalty programmes *

Store more than one loyalty card within the same app

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Receive personalised offers from the Retailer *

Allow the retailer to send personalised offers to you based on your purchase history

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Receive personalised news from the Retailer *

Allow the retailer to send personalised news and events to you based on your purchase history

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Interact with social media *

Share information on items, the retailer or your new purchases on your favourite social media platforms. Also interact with the Retailer directly from within the App

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Purchase Items for Delivery *

Purchase items directly from within the App for later delivery

1	2	3	4	5	6	7
○	○	○	○	○	○	○

Purchase Items for In-Store Collection *

Purchase items directly from within the App for later In-Store collection

1	2	3	4	5	6	7
○	○	○	○	○	○	○

8.2 Submission of Thesis to Norma Smurfit Library

Submission of Thesis to Norma Smurfit Library, National College of Ireland

Student name: Paul Doyle Student number: 14130424
School: Business Course: MBA

Degree to be awarded: Master of Business Administration

Title of Thesis:

Exploratory Study of customer preferences in Smartphone Loyalty Apps

One hard bound copy of your thesis will be lodged in the Norma Smurfit Library and will be available for consultation. The electronic copy will be accessible in TRAP (http://trap.ncirl.ie/), the National College of Ireland's Institutional Repository. In accordance with normal academic library practice all theses lodged in the National College of Ireland Institutional Repository (TRAP) are made available on open access.

I agree to a hard bound copy of my thesis being available for consultation in the library. I also agree to an electronic copy of my thesis being made publicly available on the National College of Ireland's Institutional Repository TRAP.

Signature of Candidate: 

For completion by the School: The aforementioned thesis was received by_____ Date:_____

This signed form must be appended to all hard bound and electronic copies of your thesis submitted to your school