



Title:

The Impact of Mobile App-Based Digital Promotions on Customer Engagement and Digital Loyalty: Evidence from Tesco PLC in the UK Grocery Retail Sector

Student Name: MD:Robiul Islam

Student ID: 2437178

Supervisor: Ebad Banissi

Word Count: 15697

Date of Submission: 04/06/2026



PRIFYSGOL CYMRU
Y Drindod Dewi Sant
UNIVERSITY OF WALES
Trinity Saint David

Master's Degrees by Examination and Dissertation

Declaration Form

I, MD Robiul Islam, declare that this dissertation has been composed by myself, that the work contained herein is entirely my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or qualification, in whole or in part, except as specified.

Signature: Md Robiul Islam

Date: 04/06/2026

AI Acknowledgement

Limited and supportive use of Artificial Intelligence (AI) tools has been made in the preparation of this work, mainly for formatting assistance, language refinement and initial idea generation. The final work did not make use of AI-generated analytical output, calculations, interpretations, and conclusions. The author has conducted all substantive analysis, evaluation, judgments and content of the final content independently and reviewed it. The author is solely responsible for the accuracy, integrity and originality of the submitted work.

Acknowledgements

I would like to thank all the people who helped me in this work with their guidance, support and cooperation. Finally, special thanks are due to the respective supervisors, class mates, the survey respondents and stakeholders who have provided valuable insights, constructive feedback and constant encouragement throughout the period of the study. This work has been very much assisted by the data, technical assistance and professional guidance received.

Title: The Impact of Mobile App-Based Digital Promotions on Customer Engagement and Digital Loyalty: Evidence from Tesco PLC in the UK Grocery Retail Sector.

Abstract

The study investigates the effect of mobile app-based digital promotions on customer engagement and digital loyalty within the UK grocery retail sector, among Tesco PLC consumers. As e-commerce and mobile have gained significant momentum, retailers are turning to mobile apps for a more effective promotion approach to boost engagement, customer experience, and loyalty. The objective of this study is to explore the effect of personalised offers, app notifications, and app-based loyalty promotions on engagement and repeat purchase intention. This study helps develop knowledge of digital consumer behaviour in a highly competitive retail environment, where convenience, relevance, and timely communication play a significant role in shaping customers' expectations and purchasing decisions.

This research was carried out with a research philosophy of positivism and a research strategy of quantitative research with primary data collection techniques. The data are collected using a structured questionnaire survey method, which was carried out by collecting questionnaires from 200 customers of Tesco stores in the United Kingdom. The questionnaire comprised items which were based on Likert scales and targeted three key constructs: digital promotion and customer engagement, customer engagement and digital loyalty, and personalisation and digital loyalty programme effectiveness. The descriptive statistical analysis, reliability test based on the Cronbach Alpha coefficient, and simple linear regression analysis were used to assess the relationships between the variables of the study and the validity and consistency of measurements.

The results suggest that mobile app-based digital promotions do have a positive impact on customer engagement and digital loyalty. Personalised offers and timely app notifications found to be effective in boosting the interaction, satisfaction and repeat customers of the app. The reliability analysis confirmed that all constructs had high internal consistency, and the regression analysis showed statistically significant relationships between digital promotions, engagement behaviour, and customer loyalty. The research underscores the need for personalised digital

marketing campaigns to improve customer retention and maintain a competitive edge in the dynamic retail landscape.

Keywords: Digital promotion, Customer engagement and loyalty, Repeat purchase behaviour, digital integration in marketing, mobile app marketing, Customer loyalty and word-of-mouth.

Table of Contents

Chapter 1: Introduction	1
1.1 Problem statement	2
1.2 Theoretical justification.....	3
1.3 Research contribution and motivation.....	5
1.4 Research aim, objectives, question and dissertation structure	6
Chapter 2: Literature Review	8
2.1 Broad literature review on the research topic.....	8
2.1.1 The Effect of Digital Promotions with Mobile Apps on Customer Interaction in the Retail Industry	8
2.1.2 How the Involvement of Customers and Online Loyalty Interrelate with the Use of Mobile Applications in the Retail Industry	9
2.1.3 The Contribution of Individualistic Promotional Offers in Increasing Repetitive Purchase Intention in the Retail Industry	11
2.1.4 The Strategic Value of the Mobile App-Based Loyalty Systems as Applied in the Marketing of Digital Retail Outlets	12
2.1.5 Conceptual Framework Diagram and hypothesis.....	14
2.2 Theoretical Frameworks.....	16
2.2.1 Application of the Technology Acceptance Model (TAM)	16
2.2.2 Application of Relationship Marketing Theory (RMT) Model.....	19
2.3 Literature Gap	21
2.4 Conclusion.....	21
Chapter 3: Research Methodology.....	22
3.1 Philosophical aspects of the research	22
3.2 Research approach.....	25
3.3 Research design.....	26

3.4 Measurement of key constructs	27
3.5 Population definition and sampling strategy	29
3.6 Data analysis	29
3.7 Research ethics	30
3.8 Limitations of the study.....	30
3.9 Summary of the chapter	31
Chapter 4: Data analysis	32
4.1 Graphical Analysis	32
4.2 Cronbach's alpha reliability test	40
4.3 Regression analysis	41
4.4 Descriptive Analysis	44
Chapter 5: Discussion	47
Chapter 6: Conclusion.....	49
Chapter 7: References	52
Appendix:.....	59
Survey Questionnaire	59
Analysis and survey responses.....	60

Table of Figures

Figure 1: Conceptual framework (Source: Author)	14
Figure 2: Technology Acceptance Model (Source: Kim et al. 2021)	16
Figure 3: Relationship Marketing Theory Model (Source: Lucas et al. 2023).....	19
Figure 4: Research onion (Source: Snyder, 2019)	22
Figure 5: Relationship diagram (Source: Author)	27
Figure 6: Age Group composition (Source: Author)	32
Figure 7: Gender class composition (Source: Author)	33

Figure 8: Mobile app usage frequency (Source: Author)	34
Figure 9: Digital promotions and engagement perspectives (Source: Author).....	35
Figure 10: Engagement and loyalty perspectives (Source: Author)	37
Figure 11: Personalisation and loyalty perspectives (Source: Author).....	38

List of Tables in the study

Table 1: Digital promotion and engagement variables	27
Table 2: Loyalty Variables.....	27
Table 3: Personalisation variables	28
Table 4: Findings from the Cronbach's alpha reliability test	40
Table 5: Impact of Mobile App Promotions on Customer Loyalty in Tesco Plc in the UK	41
Table 6: Impact of App Notifications on Customer Engagement in Tesco plc in the UK	42
Table 7: Relationship Between Age and Interest in App Notifications Perception.....	44
Table 8: App Usage Frequency and Repeat Purchases.....	45

List of Abbreviation

TAM= Technology Acceptance model.....	12
UTAUT= Acceptance and Use of Technology.....	13
RMT= Relationship Marketing Theory	14
PEOU= Perceived ease of use.....	25
PU= Perceived usefulness.....	12
DPE = Digital promotion and engagement.....	37

Chapter 1: Introduction

Due to the fast development of digital technologies, the retailing sphere has been transformed, especially in the grocery market, where the competition is rather high, and customer demands are constantly changing. Mobile applications are now an important interface where retailers communicate with consumers, providing convenience, personalisation, and real-time access to promotional materials (Ferdous et al. 2024). Digital promotions through mobile apps, including personalised discounts, digital coupons, and reward systems, are becoming a crucial aspect of the retailer, as they tend to make decisions when purchasing products and services. These solutions allow companies to engage with clients in real-time and use data analytics to tailor offerings in accordance with their individual preferences (Paulino et al. 2025). One of the main ideas of this digital environment is customer engagement, which will represent the level of cognitive, emotional, and behavioural interaction of a customer with a brand. Mobile apps promote ongoing interactions through interactive and personal experiences that transcend conventional transactional relationships (Thai et al. 2025). By conducting specific promotions and providing convenient interfaces, retailers will be able to motivate users towards frequent app usage, more interaction, and closer brand associations. Due to this, engagement does not necessarily rely on the in-store experience, but expands on the digital platform and thus mobile apps play a very crucial role in the current marketing strategies.

Meanwhile, digital loyalty has become an important consequence of a long-term commitment. In contrast to the old-fashioned loyalty programs, digital loyalty is constructed by smooth and personalised digital experiences that increase customer satisfaction and perceived value (Ramirez, 2023). People who use mobile applications regularly and receive personalised offers are more prone to exhibit repeat buying behaviour and loyalty to a brand. Thus, it is crucial to comprehend the role of mobile app-based promotions in terms of engagement and loyalty to stay competitive as a retailer (Molinillo et al. 2022). In the UK grocery retail industry, firms like Tesco PLC have been at the forefront of embracing the use of mobile applications and online loyalty schemes. Mobile applications and loyalty programs have enabled retailers to offer promotions that are very personalised and to monitor customer behaviour more efficiently (Runge et al. 2022). Nevertheless, despite being commonly used, the effectiveness of these strategies in leading to meaningful engagement and long-term digital loyalty is under-researched.

Importantly, despite the tendency to believe that mobile app-based promotions promote better customer engagement, too much or inappropriate promotional content can cause customer fatigue and decrease customer engagement. Moreover, loyalty created through incentives via digital means could be temporary in nature, which begs the question of whether those kinds of efforts create long-term loyalty or just transactional loyalty (Son et al. 2020). Also, privacy issues pertaining to data gathering and customisation may adversely impact customer confidence, which may eliminate the desired advantages of online advertising (Huang and Zhu, 2024). This research paper aims to investigate these dynamics by investigating how digital promotions through mobile apps influence customer engagement and digital loyalty in the grocery retail setting. The proposed study will help fill the void in academic knowledge and practical use of digital promotional strategies by focusing on a leading retailer to offer empirical evidence on the effectiveness and constraints of digital promotion and its use within the dynamic retail landscape.

1.1 Problem statement

The study by Biedermann et al. (2023) indicated the increasing significance of digital promotions conducted by using mobile apps in shaping customer behaviour in the retail industry. Brown et al. (2024) and Mladenović et al. (2025) also showed that personalised digital promotions are likely to have a significant impact on customer engagement by increasing interaction, enhancing the user experience, and fostering frequent app use. Also, studies by Pereira et al. (2025) revealed that an increase in the level of customer engagement is positively related to digital loyalty, which results in repeat purchases and long-term, brand-related relationships. Numerous other researchers also highlighted the importance of information-driven personalisation as a way to enhance customer-brand relationships in online settings.

Nevertheless, in spite of such findings, the existing literature has a number of limitations. To begin with, most of the research concentrates on digital marketing, e-commerce platforms in general, and little is known about mobile app-based promotions in the grocery retail industry from the context of Tesco Plc in the UK. Second, the connection between customer engagement and customer loyalty is a well-known fact, but there is a lack of empirical data to investigate the specific ways in which the targeted characteristics of mobile app promotions (e.g., personalised offers or reward systems) directly impact customer engagement and digital loyalty, in turn. Moreover, the majority of the available research is carried out in generalised retail environments,

without specific data on specific companies and their distinct digital ecosystems. Tesco PLC companies and many more in the UK grocery industry have invested a lot in mobile applications and digital loyalty programs. Nevertheless, no scholarly studies have critically assessed the success of these tactics to create enduring engagement and authentic digital loyalty among clients. Also, the possible downsides, e.g., the promotion exhaustion or the temporary loyalty, fueled by the incentives, have not been discussed.

Consequently, the research gap is one of the most critical areas where a lack of company-specific, empirical research on the effects of mobile app-based digital promotions on customer interaction and digital loyalty in the UK grocery retail industry has been established. This paper seeks to fill this gap by studying the case of Tesco with a specific and evidence-based analysis of how online promotional campaigns influence customer behaviour. Through this, the study will help fill the gap between theory and practice and provide insights that will be of significance to academics and retail practitioners.

1.2 Theoretical justification

The theoretical bases of this study are three essential theoretical models: the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Relationship Marketing Theory (RMT). The theories offer a detailed basis for exploring the effects of digital promotions using mobile apps in customer engagement and digital loyalty in the grocery retail setting.

The Technology Acceptance Model (TAM) is a popular model that can explain the user acceptance of digital technologies (Sinemus et al. 2022). It hypothesises that the major determinant of technology adoption is perceived usefulness (PU) and perceived ease of use. Regarding the mobile retailing applications, customers are more apt to be interested in the app-based promotions when they feel that it is valuable (e.g., it saves money or time) and simple to utilise (Barbosa, 2024). TAM will be especially pertinent to the present research since it allows explaining why customers decide to engage with digital promotions provided via mobile apps. TAM has, however, been criticized to be too simplistic and too narrow in capturing social and contextual influences (Gupta and Madan, 2024). Though a good explanation of the initial adoption, it can be inadequate to explain the continued engagement or the formation of long-term

digital loyalty. As such, the application of TAM alone can ignore the crucial behavioural and relational aspects.

In order to overcome these shortcomings, the Unified Theory of Acceptance and Use of Technology (UTAUT) is included. UTAUT is a continuation of TAM that incorporates other variables, including social influence and facilitating conditions that can help gain a better insight into the behaviour of using technology (Mukhtar et al. 2023). When speaking of promotions via mobile apps, social influence (e.g., recommendations, peer usage) and facilitating conditions (e.g., internet access, app functionality) may have a great impact on customer engagement. UTAUT is also applicable when it comes to continued usage behaviour, which is closely associated with customer engagement (Vettriselvan et al. 2025). However, UTAUT has been criticised as being excessively complicated and overly rational and utilitarian in its assumptions about technology adoption (Lee et al. 2020). It might not be completely emotional and relationship-oriented in the customer behaviour, which is very critical in comprehending loyalty in the digital environment.

Relationship Marketing Theory (RMT) is used to supplement the technology-intensive views of TAM and UTAUT, with the argument being that long and enduring relationships between customers and retailers result in long-term loyalty (Daoud et al. 2023). RMT also stresses the value of establishing good and trusting relationships and not just transactional ones. The promotion of personalised offers and rewards in the framework of mobile app-based promotions may be regarded as relationship-building tools, trust, satisfaction, and commitment (Tarnanidis, 2024). This renders RMT very applicable in attributing digital loyalty as a result of ongoing interaction. Nonetheless, RMT is restricted in the digital sphere, as it was initially created in traditional relationship environments (Kang et al. 2023). It might be insufficient to accommodate the role played by technology-mediated interactions and effects of data-driven personalisation, which are the cornerstones of the current retail policies.

This research brings together TAM, UTAUT and RMT, hence forming a more comprehensive theoretical framework. The combination of TAM and UTAUT elucidates the technological and behavioural dimensions of mobile app use, such as factors of adoption, usability and engagement. Conversely, RMT offers an understanding of the relational consequences of these interactions, especially the formation of digital loyalty (de Sousa Pereira et al. 2025). This

integration will enable the research to go beyond a one-theory approach and consider both functional and emotional aspects of customer behaviour. Moreover, this syncretic method of theory allows a more critical perception of digital promotions based on mobile apps. Although TAM and UTAUT agree that good and easy-to-use promotions ought to increase engagement, RMT poses a question of whether the engagement will lead to loyalty or only transactional behaviour. It emphasises the need to consider not just the effectiveness of digital promotions but also their long-term effects on customer relations.

1.3 Research contribution and motivation

The purpose of this study is to contribute to the literature on digital marketing and customer behaviour in the retail industry both theoretically and practically. In theory, the study incorporates the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Relationship Marketing Theory (RMT) to offer a more detailed idea of how mobile app-based digital promotions affect customer engagement and digital loyalty. Although these relationships have been used separately in earlier studies, the current study presents a composite framework that considers the results of technology adoption as well as the relationships. This adds to the scholarly literature by filling the gap of combined models in the setting of mobile app-based retail settings. The study is empirically based on Tesco PLC, and it offers company-specific information in the UK grocery retail industry. This assists in closing the gap between the general research results and actual application, providing a more quantitative insight into customer behaviour. The results will help to determine the most important promotional characteristics that can successfully promote engagement and create sustainable digital loyalty, as well as point out possible restrictions, including promotion fatigue or temporary loyalty.

Practically, the study will have useful implications for retail managers and marketers as it will give evidence-based suggestions on how to develop and execute successful promotions using mobile apps. This is especially true in an extremely competitive and digitally-driven market where retention of customers is paramount. The rationale behind this research is that there has been a growing use of mobile applications as one of the main methods of interacting with the customer, and the necessity to consider this approach in a critical way, as well as to question its

effectiveness in the long term. By tackling these questions, the study aims to provide contribution to the academic literature and practice in the industry.

1.4 Research aim, objectives, question and dissertation structure

This study seeks to investigate how digital promotions are affected through mobile apps on customer engagement and loyalty towards digital promotions in Tesco PLC among customers of the UK grocery retail industry.

Research objectives

The objectives of this research are:

- To examine the effect of digital promotions via mobile apps on customer interaction among Tesco app users.
- To analyse how the involvement of customers and online loyalty interrelate with the use of mobile applications at Tesco.
- To assess the contribution of individualistic promotional offers in increasing repetitive purchase intention.
- To investigate the strategic value of the mobile app-based loyalty systems as applied in the marketing of digital retail outlets.

Research question

The research questions are –

1. What is the effect of mobile app digital promotions on customer engagement at Tesco PLC?
2. How is mobile app usage related to digital loyalty?
3. What is the impact of personalisation in the mobile application of Tesco on the repeat purchase intention?
4. How will mobile app-based loyalty systems in the UK grocery retail perform in the future?

Dissertation structure

This dissertation is organised into five segments. Chapter One introduces the research background, problem statement, research objectives, and overall significance of the study. The second part presents a critical review of the literature, focusing on key concepts and relevant theories, including TAM, UTAUT, and RMT. Thirdly, the study outlines the research methodology, including research design, data collection, and analysis techniques. Then it presents and analyses the research findings. Finally, the final discussion focuses on the key results, provides conclusions, highlights implications, and offers recommendations for future research scope.

Chapter 2: Literature Review

Advancements in digital technologies has altered the face of retail significantly, especially with mobile applications as an important tool for marketing and customer engagement. According to George et al. (2025), retailers are turning to mobile apps in growing numbers to serve up targeted promotions, drive customer engagement and foster long-term loyalty. Kambagowni (2025) added that with the rise of smartphones and mobile internet usage, there is now new opportunities for retailers to engage customers in real-time that directly impact purchase behaviour and brand perception. Thus, the role of mobile app-based digital promotions in influencing customer engagement and loyalty has become an essential subject for both academic research and practical implementation. This chapter provides a critical review of the literature regarding app-based (e.g. digital) promotions in retailing. This study explores the relationships between customer experience, online loyalty and their influence on mobile ecosystems, as well as the significance of personalized promotional tactics to the determination of repeat purchase intentions. Additionally, the chapter also highlights mobile app-based loyalty systems in the context of digital retail marketing. Returning back to the discussion and addressing some key elements of theory creates a holistic understanding of consumer behaviour by adopting an integrated approach in a mobile driven retail environment. This chapter broadens to highlight significant gaps in literature and provide a case for the present research.

2.1 Broad literature review on the research topic

2.1.1 The Effect of Digital Promotions with Mobile Apps on Customer Interaction in the Retail Industry

Sinemus et al. (2022) stated that the rise of mobile technology has transformed the marketing landscape in retail, with mobile applications becoming a dominant channel for engagement. In contrast to traditional media, digital promotions are immediate, personalized and interactive in nature, providing a compelling channel for customer engagement through their mobile app. Therefore, when utilising push notifications, location-based offers, and app-exclusive discounts to target customers at key moments in their shopping journey with relevant content, retailers significantly increase the chance of engagement and purchase. Parsons and Viljoen (2024) added that these marketing tools are typically viewed as triggers for engagement, as they generate an

interactive setting in which consumers can consume individualised material and instantly respond to it, promoting a dialogue rather than the monologue that the general reception of advertisements creates. However, if overused, those lead to disengagement.

Somavarapu and Gupta (2025) highlighted that digital promotions on mobile apps can greatly motivate customers to engage with an app, in terms of both amount and quality. Interactive experiences like gamified campaigns, reward structures for completing tasks, and in-app feedback systems motivate users to engage directly with the brand itself, which has been shown to increase dwell time and improve conversion rates. Malik et al. (2025) showed contradictory standing that because the greater perceived interactivity that a promotion has, the stronger the emotional bond it creates with its brand, which can enhance favourable long-term customer behaviours, at the same time the causal relationship is not simply linear and debatable. Moreover, mobile applications give merchants the opportunity to evaluate engagement metrics much more accurately than traditional channels, allowing them to adjust promotions for optimal effectiveness according to live customer data.

On the other hand, there are some challenges and limitations with the pros and cons arguments. Bajwa et al. (2025) emphasised that if a person is being inundated with promotional messages, it can lead to notification fatigue, where users are overwhelmed or annoyed by too many alerts and disable notifications or uninstall the app. Moreover, not all engagement is equally worthwhile. Not all clicks on promotional notifications mean there has been some sort of meaningful interaction or brand love. Yang et al. (2025) opined that superficial participation may increase engagement metrics, but this does not necessarily lead to developing long-lasting relationships with customers and must therefore be carefully designed and moderated. This dual perspective highlights the dynamic and complex nature of digital communication strategies: they can increase engagement, but might have adverse effects if executed incorrectly.

2.1.2 How the Involvement of Customers and Online Loyalty Interrelate with the Use of Mobile Applications in the Retail Industry

Ho et al. (2022) presented that customer engagement describes the extent of attention, interest and emotional investment a consumer gives to a brand or product. In mobile app-based retailing, involvement is crucial because it influences consumer perceptions and behaviours with a link to digital promotions. LOE et al. (2022) added that such mobile applications improve involvement

by providing personalised content options, interactive features, and a seamless shopping experience. However, George et al. (2025) contradicted that over-use can lead to perceived intrusive and overly commercialised approach by the businesses. Also, Personalization is now the name of the game (by using data analytics and AI-driven recommendations), where retailers can deliver offers customised based on individual store preferences, which not only improves the perceived relevance but also interactive engagements. Apps can recommend products based on previous purchases, send alerts for soon-to-expire loyalty points or provide time-sensitive offers that persuade people to act now.

According to Verma et al. (2023), high involvement is positively related to online loyalty, which comprises both attitudinal loyalty (emotional attachment and commitment toward a brand) and behavioural loyalty (repeated purchase behaviour). This is made possible through mobile apps, which allow for constant and frictionless engagement. Ahmad et al. (2022) commented that progress tracking in loyalty programs, gamified challenges and interactive surveys, for example, can engage customers at a deeper level and strengthen the commitment to encourage repeat purchases and positive word-of-mouth advertising. Jo and Bang (2024) showed a different view, stating that, though customers who are engaged are more likely to respond positively to promotional messaging, use app features, and engage others by recommending the app, creating a virtuous cycle between engagement and loyalty, frequent push notifications often disturb sensitive customers.

In contrast to these optimistic perspectives, these positives are accompanied by counterarguments in the literature. George et al. (2025) argued that high involvement does not guarantee loyalty; no matter how involved customers are with a mobile app, if they perceive those interactions in the app are intrusive or manipulative, it is unlikely to establish brand loyalty. Although over-personalisation can enhance relevance, it can also evoke privacy concerns and discomfort, resulting in consumers opting out. Alternatively, some may be heavy users of an app's features while still exhibiting a transactional mindset, willing to jump ship for competitors when better deals are presented, a type of "false loyalty" based on incentives rather than authentic brand attachment. The findings by Somavarapu and Gupta (2025) also indicated that the relationship between involvement and loyalty is complex; retailers should seek a balance between personalisation/promotion intensity and transparency/control from users.

Theoretical lenses such as Relationship Marketing Theory help to understand this dynamic. Thus, according to the theory, loyalty is developed with trust, commitment and satisfaction over-time using meaningful exchange interactions. According to Fernandes and Barfknecht (2020), mobile apps are the decisive enabler that operationalises these principles by providing multiple touchpoints where retailers can engage consumers and develop lasting, meaningful relationships. However, studies in the field demonstrate that these approaches are effective only under certain conditions of perceived value and engagement quality. Hamouda (2021) showed that customers need to feel that some benefit is being delivered or that an emotional connection is forged; loyalty may be hard to sustain even if a high level of involvement is generated. This highlights the strategic hurdle faced by retailers: developing mobile app elements to not only draw interest but also foster lasting emotional bonds.

2.1.3 The Contribution of Individualistic Promotional Offers in Increasing Repetitive Purchase Intention in the Retail Industry

Individual or personalised promotion incentives have proven very useful in mobile retail, which are expected to boost repeat purchasing behaviour based on specific consumer preferences and consumption patterns. According to Bhullar and Gill (2019), targets are more successful when it comes to personalised promotions versus generic campaigns because they increase perceived relevance and value for the customer. Specifically, mobile applications offer an immediate channel through which to deliver such offers using purchase history and browsing behaviour, as well as demographic data, to generate relevant discounts. For example, a retailer might provide a discount on an item the customer has previously browsed or purchased or inform them of special offers for items closely related to those interests.

Nguyen and Nguyen (2023) mentioned that customising offers for customers based on their previous purchases can drive repeat business by making them feel recognised and cared about, according to studies. If customers perceive a brand, be it commercial in nature or not, as knowing who they are (what their needs are through the preferred identity) and what their capabilities are (what they know about themselves through the expected dimension), they will respond more favorably which improves engagement as well, and repeated transactions can also occur. Moreover, Jo and Bang (2024) also found that mobile apps can incorporate real-time or geographical deals to create constraints and situational relevance that increase purchase

intention. Molinillo et al. (2022) showed concern that though these mechanisms leverage concepts from behavioural economics (such as scarcity and immediacy) to induce action and stimulate repeat engagement with the retail platform, the strategies employed lack the development of sustainable customer relationships.

However, counter-arguments highlight potential limitations. Sagar (2024) argued that over-personalisation may also be perceived as manipulation, around which customers feel watched or controlled, leading to discomfort during the shopping experience. Data-driven offers used excessively could cross ethical lines, compromising consumer independence and privacy in certain scenarios. Also, the phenomenon of “promotion wear out” threatens in its wake, where excess exposure to tailored offers yields diminishing effects over time. Haudi (2025) showed that customers can start to take for granted continuous incentives, leading them to become less responsive and internalise such offers as the least effective in the long run. Consequently, although individualised promotions drive repeat purchase intention, the effectiveness of these promotions will rely on a well-calibrated balance between relevance and frequency with perceived activated fairness.

A second critical view questions the sustainability of loyalty created by personalised promotions. Molinillo et al. (2022) claimed that short-term behavioural measures of ‘loyalty’ taken based on repeated purchases that are predominantly driven by discount offers should not be confused with true attitudinal loyalty. Customers motivated largely by promotional offers tend to switch brands once competitors present better deals, suggesting that the account-specific offerings must be complemented with a more holistic relationship-building plan. This means that effective implementation needs to include both personalised promotions as well as elements that nurture emotional attachment and perceived value, integrating these so that repeat purchases are a manifestation of deeper, lasting loyalty rather than simple (but familiar) transactional behaviour.

2.1.4 The Strategic Value of the Mobile App-Based Loyalty Systems as Applied in the Marketing of Digital Retail Outlets

According to Thakur (2018), mobile app-based loyalty systems are a broader but inherently strategic opportunity for digital retailers looking to build lasting customer relationships and sustained engagement. Some are inferring the combination of rewards, point accumulation, tiered benefit and exclusive offers to encourage repeat behaviour as both economic and emotional

stimuli for continuous patronage through such mechanisms. Sinemus et al. (2022) argued that mobile apps offer a straightforward delivery system, integrating loyalty programs within the store experience itself and increasing the likelihood of interaction, but still lack the long-term commitment by the customers in a competitive business environment.

Academic studies focus on several of the strategic advantages related to mobile app-based loyalty programs. Primarily, they enable brand consistent interaction with the customer via gamification elements, progress tracking and regular notifications of rewards or exclusive offers. Second, they provide rich data on consumer behaviour, preferences and engagement patterns that empower retailers to optimise marketing strategies and personalise promotions and make data-driven decisions. Thirdly, psychological ownership and emotional attachment are initiated by loyalty systems and lead to belongingness, which also helps in creating a stronger brand identity. Taken together, Zariman et al. (2022) showed that these benefits highlight how loyalty systems can pay strategic dividends by boosting customer lifetime value and competitive advantage.

However, this is also met with counter-arguments, which highlight possible limitations and cautions. According to Kim et al. (2021), how loyalty programs are designed and whether they speak of fairness is an essential factor in their success. Conversely, reward structures that are complex/opaque can confuse customers and decrease participation. Similarly, programs that seem biased toward a certain group, or otherwise unattainable, may frustrate customers and result in decreased engagement. Narang et al. (2025) opined that micro-targeting becomes an obsession with rewards over building real brand affinity. In these cases, loyalty tends to be conditional and impermanent, evaporating in the absence of incentives or when competitors provide better offers. This tension points to the importance of designing loyalty programs that balance immediate with relational store preferences, cultivating both behavioural and attitudinal loyalty.

Pantano et al. (2018) mentioned that strategically deploying loyalty systems also touches upon technological and experiential aspects. Therefore, the app must have an intuitive interface that is easy to navigate, and it should perform well in a shorter time to enhance user satisfaction with loyalty programs. Molinillo et al. (2022) showed a contradictory viewpoint that if the app is not user-friendly, has technical issues, or updates take too long to reach, it can undermine trust and lower engagement even if the loyalty program itself is appealing. Thus, technological

infrastructure and marketing strategy are interdependent: an effective loyalty system must align enticing incentives with a better digital experience to deliver against strategic goals. In addition, mobile app-based loyalty systems can strengthen the impact of user-specific promotion offers by providing a clear system for rewards and recognition. Thiruvayipati (2024) found that they also work synergistically with loyalty program-based personalised deals that offer a perceived higher value, further driving engagement and intention to repurchase. Yet, as it was with promotions alone, ethical concerns regarding data collection and privacy continue to be salient. Customers might view loyalty programs that manipulate personal information as too many to be overreaching and intrusive, resulting in reduced trust and potential withdrawal. So retailers should adopt practices that are transparent, secure and user-centric to unlock the strategic value of app-based loyalty programs.

2.1.5 Conceptual Framework Diagram and hypothesis

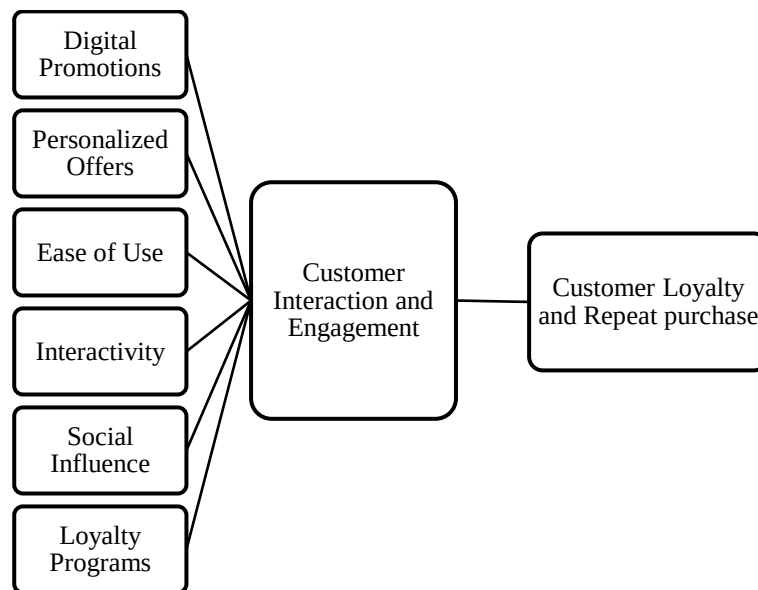


Figure 1: Conceptual framework (Source: Author)

The overall contribution of this study is a conceptual framework in figure 1 that combines (1) Digital promotions, personalized offers, ease of use, customer interaction and involvement, social influence and loyalty program; (2) Customer interaction and engagement; (3) customer loyalty and repeat purchase due to the mobile-app usage in the retail context. These variables also influence the way consumers view and interact with mobile apps, as well as how they engage with marketing efforts. When the customers have developed strong brand relations, it is

expected that there is an increasing engagement which could lead to repetition purchase intention and customer loyalty. Hence, the framework depicts a causal model in which a set of factors influences engagement, which then informs long-term behavioural outcomes. As illustrated in Figure 1, customer interaction and engagement act as the central mediating construct between mobile app features and long-term customer outcomes, leading to the following hypotheses. The proposed hypotheses are:

Hypothesis 1: Mobile app-based digital promotions are proposed to positively influence customer engagement in Tesco Plc of the UK in line with the TAM model.

Hypothesis 2: Customer engagement by the mobile app-based digital promotion is expected to lead to customer loyalty through both behavioural and attitudinal mechanisms in the context of Tesco Plc.

2.2 Theoretical Frameworks

The theoretical aspect of this study builds on the hypothesis through understanding how mobile applications are targeted at changing customer behaviour in the retail industry using digital promotions, loyalty programs and personalised offers. Three main approaches are particularly applicable: the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and Relationship Marketing Theory (RMT). Collectively, these frameworks help to examine not only the technological adoption but also the relational aspects of consumer behaviour, including engagement and involvement with mobile app ecosystems, leading to loyalty.

2.2.1 Application of the Technology Acceptance Model (TAM)

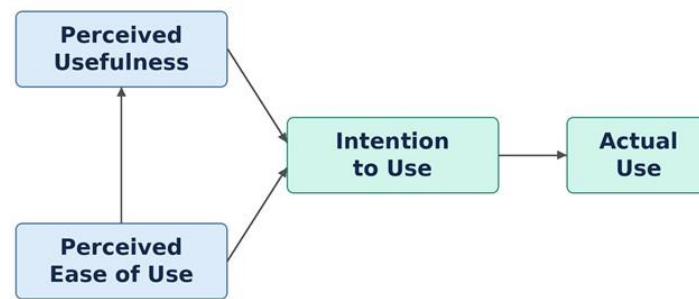


Figure 2: Technology Acceptance Model (Source: Kim et al. 2021)

According to Thiruvayipati (2024), the Technological Acceptance Model (TAM) is a basic theoretical foundation for understanding customers' use and adoption of mobile apps in the retail sector, where the applications consider digital promotions, loyalty programmes, and other customised offers. Consistent with the conceptual framework and hypotheses of this study, TAM suggests that mobile app features such as digital promotions and ease of use enhance customers' perceived value of the application, thereby increasing their engagement with the platform. Greater engagement, reflected through interactions with promotional offers and loyalty programme participation, is expected to strengthen customer loyalty and repeat purchase behaviour. Therefore, TAM provides a theoretical basis for the proposed positive relationship between digital promotions, customer engagement, and customer loyalty.

As per TAM, **perceived usefulness** (PU) and **perceived ease of use** (PEOU) are the key factors for technology adoption, as these variables affect users' attitudes towards technology directly, which subsequently influences their behavioural intention to continue using it. Narang et al. (2025) added that TAM offers a framework for understanding the factors that influence customers' attitudes and behaviours toward using retail apps and responding to mobile marketing efforts in this research.

Kim et al. (2021) mentioned that perceived usefulness in the mobile retail apps context means the extent to which a customer feels that the app makes their shopping process better, providing benefits like **personalised** offers, **convenience** and real-time promotions. An example of this would be a user who gets notified about discounts on things she has previously looked at or can easily keep track of loyalty points; one views the app as an integral part of making shopping more time-efficient and decisions easier. This perceived value leads customers to use the app more often, view advertisements and interact with in-app products more often, and be a member of loyalty programs. This notifies them about new arrivals (based on their preferences). Ultimately leading to an increase in repetitive purchase intention. This notion is corroborated by prior research such as Zhang et al. (2023) and Noor et al. (2024), who have found that higher rated usefulness levels indicate an increased level of adoption for the perceived concept, with further usage occurring over time.

Bayır and Akel (2024) depicted that equally important is **perceived ease of use** as an influential factor in adoption and engagement. An intuitive, user-friendly, and responsive mobile application minimises cognitive load and friction in interactions, leading users to use the app consistently. If their app offers a clear navigation experience and an uninterrupted interface, retail customers are more likely to run through the app features, check out promotional offers or redeem loyalty rewards. Haudi (2025) argued that poor **usability**, on the other hand, complex menu structures, slow response times or clutter, can undermine engagement even if the app is functionally useful.

Sari and Subriadi (2022) showed that TAM also identified the attitude toward use to function as a mediator between perceived usefulness, ease of use and behaviour intention. Towards this effect, positive perceptions of the app's utility and usability are conducive to favourable attitudes, which in turn increase the likelihood of sustained engagement with the app. Sagar (2024) added

that in the context of retail, this manifests as regular participation in promotions, recurrency across offer redemptions and repeat enrolment behaviour in loyalty programs. Therefore, TAM does not merely elucidate the factors that explain adoption processes; rather, it serves as a basis for identifying sustained patronage behaviours critical to sustaining customer loyalty over time. Nonetheless, the limitations of TAM in terms of its applicability were reflected by a few studies focused on retail-oriented mobile apps as well. According to Hsu (2023), it successfully outlines adoption around the cognitive and functional need area, but falls short of explaining affect-based/need-based, hedonistic/social-relational aspects driving customer behaviour. However, certain determinants such as trust in personalised promotions and having fun with gamified incentives and brand attachment are essential to create a loyal relationship, which is beyond the original scope of TAM. Therefore, this study corroborates TAM with not only various frameworks, such as UTAUT (that encapsulates social influence and facilitating conditions), but also Relationship Marketing Theory that stresses trust and commitment. When combined, they offer a more complete picture of the factors influencing mobile app adoption, engagement, and loyalty in retail environments.

In this research, TAM can be applied to study the impact of digital rewards on the issues of customer interaction and adoption in mobile apps, also focusing on how usability and perceived utility influence repetitive engagement. As an illustration, Castaldo (2024) opined that by quantifying PU and PEOU, the study would be able to establish which app elements (e.g., personalised notifications, loyalty points dashboards or exclusive discounts through apps) best fuel customer engagement and attitudinal loyalty. Therefore, TAM can be used as a theoretical perspective to assess not only the functional but also the behavioural constructs of mobile app acceptance that influence retailers in creating an app with customers in mind, which will lead to more repeat purchase behaviour.

2.2.2 Application of Relationship Marketing Theory (RMT) Model

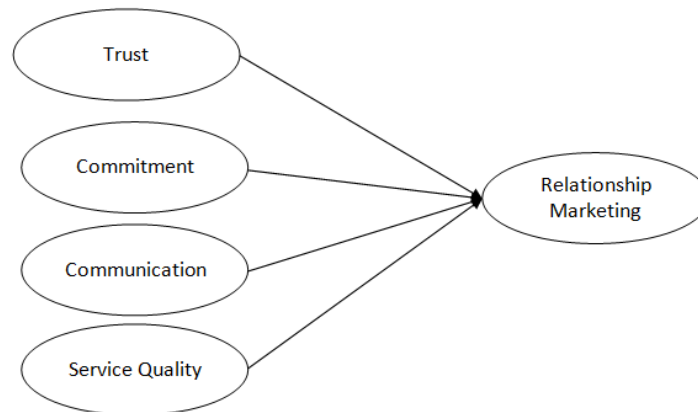


Figure 3: Relationship Marketing Theory Model (Source: Lucas et al. 2023)

According to Albrecht et al. (2023), the Relationship Marketing Theory (RMT) asserts that marketing is a management philosophy centred on developing long-term relationships with customers based on **trust** rather than short-term transaction interactions. Castaldo (2024) added that RMT demonstrates how **loyalty programs**, personalised promotions and continuous engagement help to achieve attitudinal and behavioural loyalty levels among mobile retail app users, resulting in long-term customer interactions with the platform. Using RMT, this study investigates how mobile apps can help build **trust and commitment**, raise effective communication, and enhance repeat purchase intention and long-term customer retention.

Trust is central to RMT, and it is essential in the context of mobile retail since applications usually seek some access to sensitive data, personal information, purchase history, and payment methods. According to Chen et al. (2025), when customers trust brands to handle their data responsibly, they are more likely to engage with promotions and participate in loyalty programs. Applications that are clear about how user data will be used and secure, with transparent payment gateways, terms of service and **privacy policies** are likely to engender trust and lead to more widespread interaction and engagement with the platform. According to Zariman et al. (2022), trust also moderates the effectiveness of personalised promotions, but people are more open to recommendations when they trust that the app knows their preferences, instead of just trying to influence buying behaviour.

Lucas et al. (2023) delineated that commitment is very important for RMT as well. Mobile app integrated loyalty programs (point accumulation, tiered rewards, or exclusive access to

promotions) evoke an impression of long-term engagement with the brand. Apps state that they do something for the user, creating a sense of reciprocity and encouraging engagement further and making more purchases with regular incentives. Haudi (2025) commented that this is consistent with previous findings that **commitment-driven** engagement results in behavioural loyalty (repeat transactions) and attitudinal loyalty (emotional attachment), both of which are crucial for achieving sustainable competitive advantage in digital retailing over time.

Goworek and McGoldrick (2024) revealed that brand communication (as defined in RMT) is more than a frequency of messages; with mobile apps, one can offer two-way communication via push notifications, in-app messages and personalised promos. Consistent, contextual communication drives perceived value and lets consumers know when deals are running while reiterating the brand's attentiveness to individual requirements. Gupta and Madan (2024) emphasised that product teams need to remember that too much, or misplaced communication, can cause notification fatigue and ultimately erode the consumer's trust, decreasing their engagement. Thus, RMT focuses on smart and consumer-oriented communication.

Utilising RMT in this research also facilitates an understanding of the relational versus transactional nature of mobile app-based promotions and loyalty systems. If TAM and UTAUT focus on exploring adoption and usage behaviour, RMT sheds light on the emotional and relational mechanisms such as trust, commitment, and communication, which in turn dive deeper into long-term engagement (repetitive purchase intention) and brand loyalty.

2.3 Literature Gap

There is also research on app-based mobile marketing in the retail sector, but there are still some gaps. First, a large part of the prior literature such as Thiruvayipati (2024), Tarnanidis (2024) and Sagar (2024) is concentrated on the general market context, while very little attention has been paid to a transitioning economy, including its retail industry, such as the UK, which recently faced Brexit. This leads to a lack of knowledge about customer behaviour across different contexts, notably because there is no translation of the social environment (cultural and economic factors) into generalisable information. Second, although studies of Zhang et al. (2023) and Verma et al. (2023) focused on how digital promotions are used to engage customers, they have inadequately addressed the long-term effects of these techniques on loyalty intention and repeat purchase. Furthermore, limited research has examined the mediating role of customer engagement in explaining how mobile app-based digital promotions translate into customer loyalty and repeat purchase behaviour which was the core research question to answer under this study. While previous studies have explored the direct effects of digital promotions or mobile app features on customer outcomes, insufficient attention has been given to understanding the mechanism through which engagement serves as an intermediary variable. This gap is particularly relevant in the UK grocery retail sector, where mobile applications have become an important channel for delivering personalised promotions and loyalty rewards.

2.4 Conclusion

The literature related to the role of mobile applications in retail marketing is reviewed critically within this chapter, emphasising digital promotions as well as customer interaction, involvement and loyalty. Its main agenda emphasises the mobile app's ability to engage customers at levels based on their personal needs through more engaging methods. Simultaneously, it addresses concerns around privacy issues, information overflow, and the long-term viability of marketing techniques. The combination of theoretical frameworks, including TAM, UTAUT, and Relationship Marketing Theory, can be leveraged to gain a more holistic understanding of consumer behaviour in mobile retail contexts. All of the frameworks emphasise both technological and relational aspects to differentiate customer experiences and loyalty. But the literature also shows several shortcomings that require further research opportunities within the academic and retail industries.

Chapter 3: Research Methodology

The chapter describes the research methodology used to explore the influence of digital sales promotions based on mobile application on customer interaction, engagement and contribution of repeat purchases within the retail value chain, considering the case of Tesco Plc. It presents the general research strategy and design employed in accomplishing the study goals and securing systematic exploration (Patel and Patel, 2019). It also elaborates on the data gathering, noting that structured questionnaires were employed to collect primary data and discussing the sampling techniques utilised to find adequate respondents. It also describes how variables are measured and the analytical tools used to analyse data. Reliability and validity, as well as ethical standards, are taken into account to both help with the credibility of the research findings and to establish the overall tone of the study.

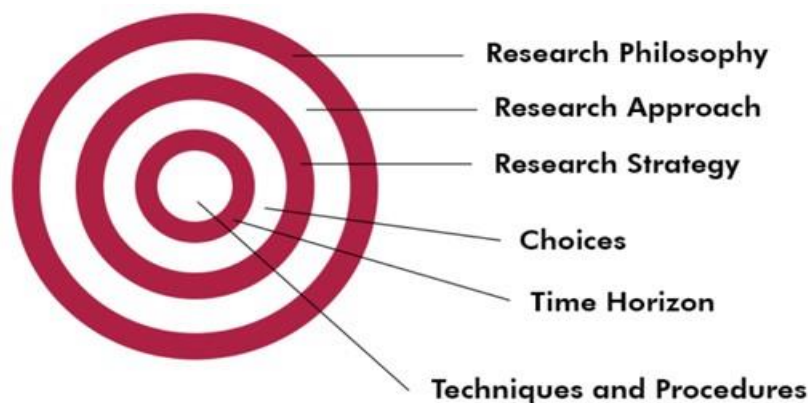


Figure 4: Research onion (Source: Snyder, 2019)

3.1 Philosophical aspects of the research

The researcher of this study has chosen **realism** from the ontological stance of the research philosophy to assess the impact of mobile app-based digital promotion on customer engagement and digital loyalty from the context of Tesco Plc in the UK grocery retail sector.

In this context, customer behaviours such as interaction, engagement, and purchase intention are viewed as real phenomena that can be observed, measured, and analysed regardless of individual perceptions (Snyder, 2019). In a research context, ontology covers the philosophical assumptions about reality and how it is determined. It explores questions about what reality is and whether or not it can actually be separated from human perception. On the ontological level, realism is the belief that reality exists independently of human thought and cognition while analysing impact of

mobile app based promotion on customer engagement and loyalty creation in Tesco UK. Before the research starts to approach actuality, in this mode of thinking, certain things like interaction or customer engagement or even purchase intention are treated as real phenomena that can be seen, measured and analysed without subjective interpretation (Gupta and Gupta, 2022). Relativism, on the other hand, holds that reality is constructed by social forces and differs according to personal experience and meaning. This would mean that the same mobile app engagement by a customer might be perceived in relative differences such as subjective perceptions, possibly influenced by cultural aspects or personal preferences, leading to multiple realities and not one objective truth. Although this viewpoint gives detailed knowledge of personal experiences, it challenges the extent to which it keeps findings extrapolated.

Justification for choosing realism philosophy from the ontological stance: This research adopts realism as a paradigm because it adheres to the purpose of this study to investigate the demonstrable and observable impacts of mobile app-based digital promotions on customer behaviour. Such relationships needing to define an assumption of objective reality which can be estimated like one see in this work looking for an association between variables such as digital promotions and loyalty, personalization and involvement. This facilitates a realistic approach where the researcher can consider customer interaction and purchase behaviour as real outcomes that are modifiable by known factors that exist within mobile retail settings. This is especially suited for studies that seek to produce empirical and generalizable results. Besides, realism enables the researcher to systematically cover how mobile app functionalities (i.e. push notifications, personalization of offers or loyalty programs) influence customer engagement. By contrast, relativism lends towards the subjectivity of interpretation and a diverse array of viewpoints, whereas realism maintains that findings are based on observed data and generalizable to wider trends in behaviour. The realist approach endorses the exploration of real-world phenomena by emphasizing causal relationships and measurable results, making it appropriate for research aimed at creating practical implications for industry stakeholders. Hence, realism facilitates the credibility and objectivity of the research, so could ensure that valid conclusions are based on actual action taken by consumers rather than a personal observation.

The researcher of this study has chosen **positivism** from the epistemological stance of the research philosophy to assess the impact of mobile app-based digital promotion on customer engagement and digital loyalty from the context of Tesco Plc in the UK grocery retail sector.

Epistemology concerns what constitutes valid knowledge and how such knowledge can be obtained. Within this study, positivism is especially fundamental as it assists the use of structured data collection methods and statistical analysis to assess the relationships between mobile application-centered marketing factors and buyer behaviour (Kapur, 2018). This study uses objective data (e.g., survey response measuring customer interaction, engagement level, purchase intention etc.) Through the use of a range of statistical methods, the analysis seeks to find meaningful connections between independent variables (e.g., digital promotions, usability and personalization) and dependent outcomes (such as customer engagement and loyalty). This is consistent with the positivist view that knowledge must rest upon observable facts and objective measures. On the other hand, interpretivism highlights subjective understanding that is grounded in the understanding of individual experiences, interpretations, and meanings. Though interpretivism might generate better insights into general customer feelings about mobile apps or promotions, it is not appropriate for this study as the study wants to draw generalized relationships between variables (Mukherjee, 2019). Since interpretivist approaches frequently employ qualitative tools (such as interviews or case studies), they might give rise to researcher bias, and lack the capacity for generating consistent, replicable results.

Justification for choosing positivism philosophy from the epistemological stance: The positivism research philosophy is adopted in this study as it allows for the collection and analysis of objective numerical data by examining the effect of mobile app-based digital promotions on customer interaction behaviour, as well customer's purchase behaviour. Structured questionnaires and statistical analysis make the outcomes sound, valid, and generalizable to a larger population of retail clients. This is especially adequate for testing hypotheses developed based on theoretical paradigms like TAM, UTAUT and the Relationship Marketing Theory. Furthermore, positivism advocates a rigorous and systematic way to critical thinking research and helps reduce subjectivity while increasing the reliability of findings. The researcher hope that such breadth and access will allow for relevant exploration of measurable variables and statistical relationships, hence fostering actionable results applicable to retailers looking to improve their

mobile application strategies. Positivist research is useful in identifying trends, patterns and cause-and-effect relationships that form the basis of evidence-based marketing.

3.2 Research approach

The researcher of this study has chosen a **deductive** research approach to assess the impact of mobile app-based digital promotion on customer engagement and digital loyalty from the context of Tesco Plc in the UK grocery retail sector.

A research approach is the broad and specific plan that helps guide how a study will be carried out, including how data are collected, analysed and interpreted (Sürücü and Maslakci, 2020). It sets the logical path of inquiry and makes sure that the study focuses on its goals. The research approaches mainly have two types: inductive and deductive. The inductive method is observation to patterns that grow into theories. It is widely employed in a range of exploratory research areas where established theories fall short (Dubey and Kothari, 2022). In contrast with this, the deductive approach begins with the existing theories or hypotheses on which empirical data is then tested. This method is commonly used in studies that seek to explore the relationships between variables and validate theoretical models with empirical evidence.

Justification for choosing the deductive research approach within the study: This study adopts the deductive approach to explore the influence of mobile app-based digital promotions on customer engagement and repeat purchase behaviour in the retail sector. This study borrows from well-understood theoretical models (TAM, UTAUT and Relationship Marketing Theory), providing a pre-existing set of constructs and relationships to be examined. A deductive approach was used by the researcher, whereby hypotheses could be derived from these theories and verified through quantitative data analysis. It helps make sure that the investigation around these themes is systematic and structured, increasing the reliability and generalizability of findings. Since this study aims at testing existing theories rather than developing new ones, an inductive approach would not be suitable. Moreover, there's the possibility that in such a study, an inductive approach is not suitable because it would make things more complex than needed, since this study is only testing whether previously estimated relations remain constant or change.

3.3 Research design

The researcher in this study has chosen **primary and quantitative research methods** to study the impact of mobile app-based digital promotion on customer engagement and digital loyalty from the context of Tesco Plc in the UK grocery retail sector.

The researcher has chosen primary research, which is when one collects data directly from users of retail mobile applications in order to achieve the research objectives and gain insights into customer engagement and loyalty. This aspect helps ensure that the study data is relevant, specific, and aligned with study objectives. It also offers more control over the data quality, reliability and validity of findings, as information is directly obtained from respondents (Mishra and Alok, 2022). Secondary analysis was ruled out due to existing literature possibly not paying attention to actual consumer behaviour or specific context data of mobile app usage and digital promotion in retail settings.

The research strategy is the general plan for how the researcher intends to go about collecting and analysing data in a way that is best suited to answering the research questions. Common methods of doing so include surveys, interviews, focus groups, and case studies. In this study, a survey strategy was adopted for collecting data because it enables the collection of a large volume of data quickly from respondents from an extensive range. The principal data collection tool was a closed-ended questionnaire (Opoku et al. 2016). Here, respondents are allowed to select from among predefined responses for consensus and easier analysis. Closed-ended questions allow responses to be quantified, enabling the application of statistical techniques to uncover correlations and trends (such as between digital promotions, customer engagement and purchase intention). This approach also facilitates comparability across responses, which is important for meeting one of the objectives of the study to derive valid, generalizable findings.

The variables in the study show a sequential relationship between different forms of mobile app promotion and customer engagement and loyalty in Tesco plc in the UK:

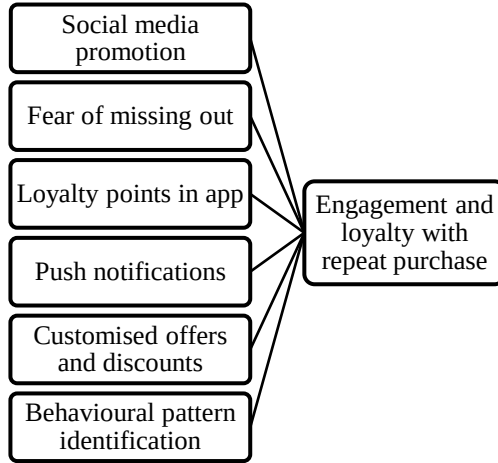


Figure 5: Relationship diagram (Source: Author)

3.4 Measurement of key constructs

Table 1: Digital promotion and engagement variables

Variables	Dimension	Code	Measurement item (Indicator)	Source	Scale
Digital promotion and engagement	Behavioural	DPE1	Mobile app promotions from Tesco Plc in the UK encourage me to engage more with the brand.	Ahmad et al. (2022)	5-point Likert scale
	Cognitive	DPE2	I frequently check the Tesco Plc app in the UK for offers and discounts.	Bayır and Akel (2024)	5-point Likert scale
	Emotional	DPE3	Digital promotions from Tesco Plc in the UK make my shopping more engaging.	Bayır and Akel (2024)	5-point Likert scale
	Behavioural	DPE4	App notifications from Tesco Plc in the UK increase my interest in deals.	Ahmad et al. (2022)	5-point Likert scale

Table 2: Loyalty Variables

Variables	Dimension	Code	Measurement item (Indicator)	Source	Scale
Loyalty	Emotional	L1	I feel more loyal to Tesco Plc in the UK because of its mobile app.	Chen et al. (2025)	5-point Likert scale
	Preference	L2	Using the Tesco Plc app in the UK increases my preference for Tesco over competitors.	Fernandes and Barfknecht (2020)	5-point Likert scale
	Emotional	L3	My engagement with the Tesco Plc app in the UK strengthens my loyalty.	Chen et al. (2025)	5-point Likert scale
	Experience	L4	I intend to continue shopping at Tesco Plc in the UK due to the app experience.	George et al. (2025)	5-point Likert scale

Table 3: Personalisation variables

Variables	Dimension	Code	Measurement item (Indicator)	Source	Scale
Personalisation	Preference	P1	Personalised offers from Tesco Plc in the UK match my preferences.	Haudi (2025)	5-point Likert scale
	Repeat purchase	P2	Tailored promotions from Tesco Plc in the UK encourage repeat purchases.	Jo and Bang (2024)	5-point Likert scale
	Motivation	P3	The loyalty programs of Tesco Plc in the UK motivate me to shop more often.	Kambagowni (2025)	5-point Likert scale
	Value addition	P4	Mobile app-based loyalty systems of Tesco Plc in the UK add value to my shopping.	Hsu (2023)	5-point Likert scale

The relationship that will be created from simple regression analysis using dependent and independent variable from the questionnaire are given below:

Regression 1: $\text{Loyalty} = \beta_0 + \beta_1(\text{Mobile Promotions}) + \epsilon$

The independent variable and dependent variable will be measured from the responses to the questions given below:

Independent variable (DPE1): Mobile app promotions from Tesco Plc in the UK encourage me to engage more with the brand.

Dependent variable (L1): I feel more loyal to Tesco Plc in the UK because of its mobile app.

Regression 2: $\text{App Checking Engagement} = \beta_0 + \beta_1(\text{Notifications}) + \epsilon$

The independent variable and dependent variable will be measured from the responses to the questions given below:

Independent variable (DPE4): App notifications from Tesco Plc in the UK increase my interest in deals.

Dependent variable (DPE2): I frequently check the Tesco Plc app in the UK for offers and discounts.

3.5 Population definition and sampling strategy

The sample size of **200 respondents** is sufficient to ensure reliability using quantitative techniques like correlation and regression analysis. The questionnaire was administered mainly through online platforms, networks and social media formats to enhance response rates and accessibility, allowing participants to complete the survey at their own convenience. This method helps to collect data with an intense amount of responses from the mobile application users, which is aligned with the goal of this study to analyse customer behaviours in digital retail-focused environments.

Data and information have been gathered by a **structured** questionnaire given to the respondents who are mobile retail application users. The questionnaire had a mix of categorical and five-point **Likert scale** questions. Categorical questions acquired demographic information, including age, gender and mobile app usage frequency, while items measured on a Likert scale were designed to measure key constructs such as promotional exposure, perceived personalisation, customer engagement, digital loyalty and repetitive purchase intention. It used a **convenience sampling** method for participant selection, which is the most common approach that gives easy access to relevant respondents at hand (Devi, 2017). This is appropriate as there are limits to time and resources, but it still allows a sufficient diversity of data for statistical analysis.

3.6 Data analysis

The data were sorted, coded and analysed using quantitative tools in Microsoft Excel after receiving the responses from participants. Mean, median, mode and standard deviation descriptive statistical techniques were used to analyse and summarise the central tendency and dispersion of data. These measures served to understand customer perceptions of digital promotions, personalisation, engagement, and loyalty in mobile retail applications. Hypotheses prepared for this study were tested through correlation and regression analysis to determine the relationship of independent variables with dependent variables (Acharyya and Bhattacharya, 2019). Correlation analysis identified the association and directionality of relationships between variables, while regression analysis extension determined the extent to which independent variables impact customer behaviour. The proposed hypothesis testing with the specific models are given below:

$$\text{Loyalty} = \beta_0 + \beta_1(\text{Mobile Promotions}) + \epsilon$$

This model will check the hypothesis whether mobile app-based promotion has significant influence on creating loyalty among the customers of Tesco UK.

$$\text{App Checking Engagement} = \beta_0 + \beta_1(\text{Notifications}) + \epsilon$$

This model will check the hypothesis whether notifications-based promotion has significant influence on creating engagement among the customers through app checking in Tesco UK.

Moreover, findings were illustrated by means of charts and graphs for better comprehension and interpretation purposes and should be treated as such. The researcher used a careful and systematic approach to analyse all the data collected. The methods used to analyse the different aspects of data highlight the robustness and credibility of the results, illustrating significant implications on how well mobile app-based marketing can perform and indeed achieve better sales in retail.

3.7 Research ethics

Ethical considerations were adhered to throughout the study, enabling fairness, transparency, and integrity in the research (Igwenagu, 2016). Participants gave consent to take part in the study, which was made clear at the start. Participants were also informed they could leave the study at any point without penalty. The collected data was used exclusively in aggregated form, which means that no direct personal identifying information was either collected or released. Participants were informed that the data would be used for academic purposes only and not shared with third parties. In addition, any participation was completely voluntary, with no pressure or coercion applied. The questionnaire was purposely seeking to avoid sensitive or intimate questions that might violate respondents' privacy. Moreover, literature sources used in the study were cited and referenced to prevent plagiarism. Honesty and transparency were followed throughout the entire research study during data collection, analysis, and reporting to ensure that the findings are credible, reliable, and ethically sound.

3.8 Limitations of the study

There are some limitations of this study despite careful planning. First, the use of convenience sampling may restrict the representativeness of the sample: survey respondents may not be fully

representative of the larger population that uses mobile retail apps, which in turn may limit the generalisability of findings. Second, the study is based on self-reported data, which can be susceptible to biases, including social desirability or misinterpretations of questions due to uncertainty (Kumar, 2018). Results can also be skewed because respondents do not always answer completely accurately or unbiased. The study design is cross-sectional, which means that data were collected at one point in time (Bloomfield and Fisher, 2019). This restricts the ability to analyse trends in customer behaviour, engagement and loyalty over time. In addition, other external factors might also affect customer behaviour, such as brand image, pricing models or market conditions not fully addressed in this research study. These limitations could be used as a foundation for future research using larger, more diverse samples, longitudinal designs and additional variables to achieve a more integrated understanding of mobile retail customer behaviour.

3.9 Summary of the chapter

This chapter delineates the methodology adopted to evaluate how mobile app-based digital promotions influence customer engagement and repetitive purchase behaviour within the retail sector. It covered the philosophy of realism and positivism and how that informed a deductive approach. This was quantitative, primary research employing a structured questionnaire format and convenience sampling of 200 respondents. A range of statistical tools and techniques was used to identify a relationship between independent variables and the dependent variable, in addition to descriptive statistics and graphical representation. All ethical considerations, such as informed consent, confidentiality, and voluntary participation sustained throughout the research process.

Chapter 4: Data analysis

This chapter outlines the analysis and interpretation of the survey data collected for the research on mobile app-based digital promotions and their influence on customer engagement and digital loyalty with Tesco PLC. This includes descriptive statistics, Cronbach's Alpha for reliability assessment and regression analysis for testing the relationships between variables. Descriptive statistics are used to describe the demographic profiles and behaviours of respondents, while regression analysis examines the impact of digital promotions, engagement, and personalisation on digital loyalty. The results are reported in a systematic way that meets the research goals and hypotheses of this study.

4.1 Graphical Analysis

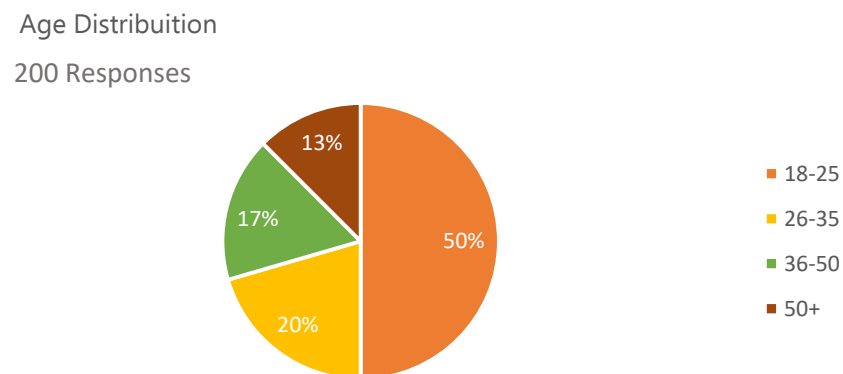


Figure 6: Age Group composition (Source: Author)

The age distribution of the survey sample is heavily weighted towards younger ages, with 50% (100 responses) 18-25 years old, 20% (40 responses) 26-35 years old, 17% (34 responses) 36-50 years old and finally 13% (26 responses) respondents are 50+ years old. This suggests that the insights reflect the attitudes and behaviours of a younger, tech-savvy group. This age distribution from an analytical point of view highlights that the mobile app engagement and digital marketing by Tesco PLC is more likely to appeal to younger people. Consumers aged 18-25 are likely to be more tech savvy, more likely to pay attention to the app, and more open to loyalty schemes. This over-representation explains why the survey findings see high positive scores for the engagement, personalisation and loyalty-related questions.

The 26-35 age group, though smaller, is still a substantial group that is likely trading off convenience and value, suggesting that the Tesco app features are attractive not only to students or younger consumers. But the small sample size for ages 36+ means that the researcher might have less confidence in the insights related to older age groups. This demographic could be less likely to use the app or may have different usage patterns. This study suggests that Tesco's digital engagement works well with younger consumers, but future studies need to include a more diverse age range for a better representation.

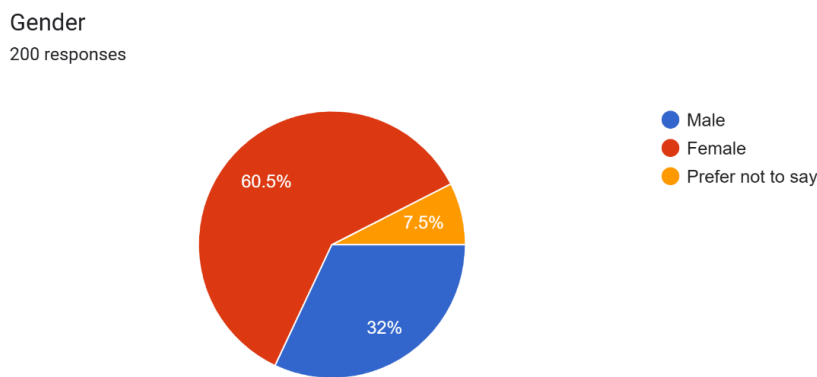


Figure 7: Gender class composition (Source: Author)

The sample distribution of the survey shows a gender bias, with females representing the majority (61% or 121 respondents), followed by males (32% or 64 respondents) and 8% (15 respondents) preferring not to answer. This indicates that the sample is more representative of female customers, which could affect the results, especially in terms of customer behaviour, engagement and loyalty.

In terms of customer insight, the prevalence of female representation may suggest that they are either more likely to use the mobile app of Tesco PLC or more likely to participate in survey studies. Given that women often play a pivotal role in grocery shopping decisions, their over-representation may give the researcher and academicians valuable clues into key consumer patterns. But the lower participation by men could also mean that future studies could strive to have a better balance in the sample for increased representativeness.

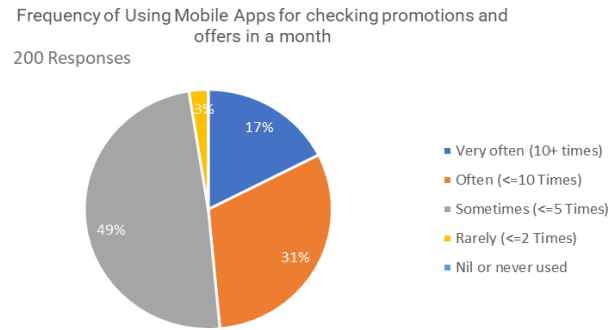


Figure 8: Mobile app usage frequency (Source: Author)

The findings indicate that Tesco PLC customers use mobile app-based promotions at an overall moderate level, with notable differences in the level of use. The most frequent use is "Sometimes" (49% of respondents or 98 respondents), which suggests that for the majority of customers, its use is sporadic. This implies that users are generally likely to check promotions when they are making shopping plans or need to respond to urgent shopping requirements, as opposed to being actively engaged with the app. There is also a large number of more engaged users, with 31% (62 respondents) responding that they use promotions "Often" and 18% (35 respondents) that they use promotions "Very often". This 49% suggests a robust active user group who consistently use promotions from the app, and that Tesco has a very successful promotional strategy for this group. These regular users are likely to be more price-conscious or tech-savvy customers who take promotions into account when making shopping decisions. A minimal number (3%, 5 responses) indicated they used promotions "Rarely", and none were reported as using promotions "Never", which is significant. This highlights near-universal penetration of Tesco's app-based promotions, showing that the app is highly relevant to the customer base. The results indicate that while Tesco's digital promotions reach and influence all users, there is potential to increase the frequency of user engagement with better personalisation, scarcity and urgency-based promotions, and push notification optimisation, to encourage more regular use of the promotions.

Using digital promotion for engagement through mobile-based digital promotion in Tesco Plc

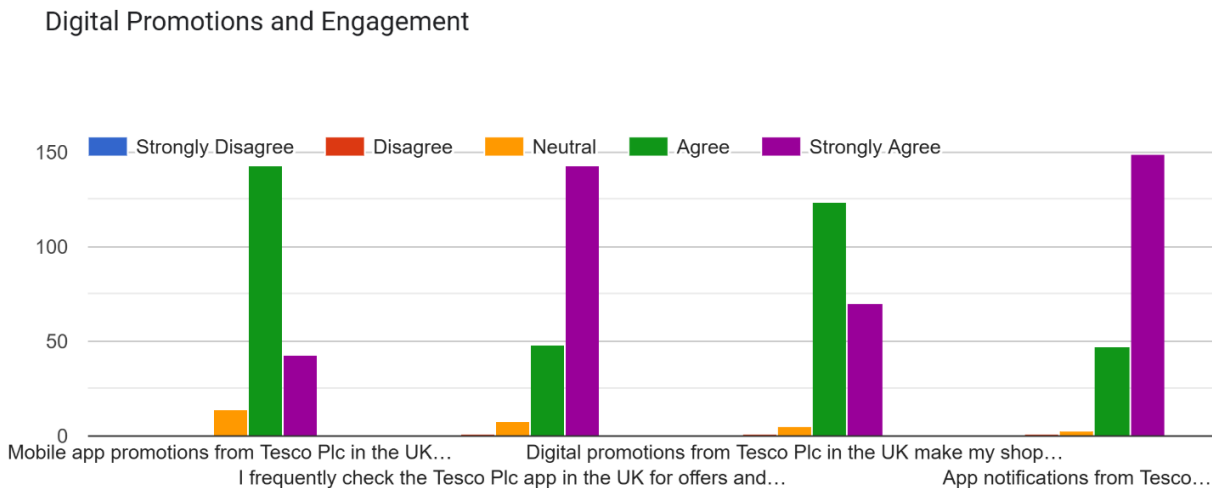


Figure 9: Digital promotions and engagement perspectives (Source: Author)

Evidence from the survey results is apparent that digital promotions via mobile application by Tesco PLC are noticed by customers. Every statement focuses on a different aspect of the interaction, and a positive reaction to all will sum up to a strong overall positive customer perception regarding mobile app-based digital promotion and its effectiveness. For the first statement, “Mobile app promotions by Tesco motivate me to interact with a brand more”, nearly all of the respondents chose “Agree” (143) and “Strongly Agree” (43), with 0 recorded on “Disagree”. From this, it can be inferred that app promotion is the key to better brand engagement. Not passive users, but users influenced to engage the Tesco digital ecosystem more frequently through promotional content. The absence of a negative response has indicated a promotional strategy that seems quite well connected to customer expectations.

With the second statement, the distribution is rather heterogeneous, although still strongly positive: “I frequently look at the Tesco app to see offers and discounts.” As illustrated by the numbers, with 143 of the respondents strongly agreeing and 48 agreeing, showing that users practice habits. Therefore, this suggests that the Tesco app has integrated seamlessly into shopping habits. The low neutral and disagree numbers indicate that most users are engagement-

ready, though a small number of the response pool is not yet fully engaged with the app due to possible usability preferences or infrequent shopping.

The third statement “Digital promotions from Tesco Plc make my shopping more interesting” is voted positively by 124 (agree) and 70 (strongly agree) over the disagreement or negative direction (disagree, neutral and strongly disagree). This shows that promotions are no longer only utilitarian (i.e., saving money) but also experiential. When digital promotions get involved, customers see shopping as more interactive and fun. This serves as a good reminder to obviously make promotions more than just simply transactional and make sure they enrich the user experience.

The last item, “App notifications of Tesco make me find my interest in deals,” was noted to get the strongest support (149). This simply means push notifications are best in catching attention and stimulating interest. Timely and relevant alerts lead customers to respond promptly and positively, indicating that the notifications strategy employed by Tesco achieves its goal of driving customers to the app when they are most likely to engage with it, thus boosting sales through impulse purchases.

The overall findings indicated successful promotion of behavioural (i.e., checking and interacting frequently with the app) and emotional (i.e., overall shopping experience) engagement with the app. A high positive skew across all questions demonstrates high levels of acceptance from customers, whilst negligible neutral or negative responses reflect only limited push-back on the use of digital methods to promote.

Engagement and loyalty creation using mobile-based digital promotion in Tesco Plc

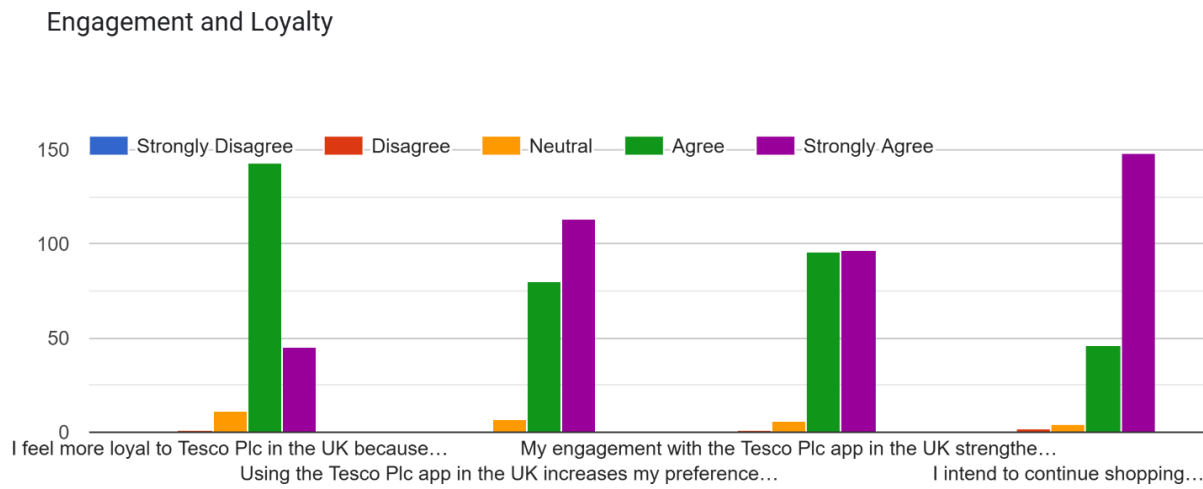


Figure 10: Engagement and loyalty perspectives (Source: Author)

The results for the statements regarding engagement and loyalty clearly indicate that the Tesco PLC mobile app is not just improving engagement with the product, but also contributing to the development of customer loyalty. The statements each reflect a different dimension of loyalty building, and the results demonstrate a very favourable attitude among customers. In the first statement, "I feel more loyal to Tesco because of its mobile app", most respondents chose "Agree" (143) and "Strongly Agree" (45), with very few disagreeing. This suggests that the app has an impact on emotional loyalty. Consumers are not only finding the app convenient, but they also link it to their brand relationship. The few neutral responses suggest that while most customers agree with this view, some may still be loyal for other reasons, such as price or product quality.

The second statement, "Using the app increases my preference for Tesco over competitors," has even better results with 113 strongly agreeing and 80 agreeing. This is a key strength for Tesco. Not only is the app helping Tesco retain customers, but it is also increasing their preference over other grocery retailers. This implies that digital attributes (including personalised offers and user-friendliness) are helping Tesco stand out in a highly competitive UK grocery retail sector.

The third point, "My use of the app helps build my loyalty," adds to the link between app use and loyalty. With 96 agreeing and 97 strongly agreeing, it is evident that the more often one uses the

app, the greater their loyalty. This is an example of behavioural-to-attitudinal loyalty transformation, where ongoing engagement translates into a higher preference for a brand and trust in it.

Lastly, the highest strong agreement (148) was found for the statement "I will shop at Tesco because of the app". This is especially important as this represents future intention to engage - a measure of true loyalty. Customers are directly attributing their future intention to continue shopping at Tesco to the "app experience" - showing that the mobile channel is a significant retention factor.

This indicates that Tesco's mobile app is very effective at translating customer interaction with the company into loyalty. The high level of positive feedback suggests that online engagement is driving positive emotions and purchase intentions. This highlights the value of mobile app engagement strategies in fostering long-term relationships with customers in retail.

Personalisation and loyalty programs using mobile-based digital promotion in Tesco Plc

Personalization and Loyalty Programs

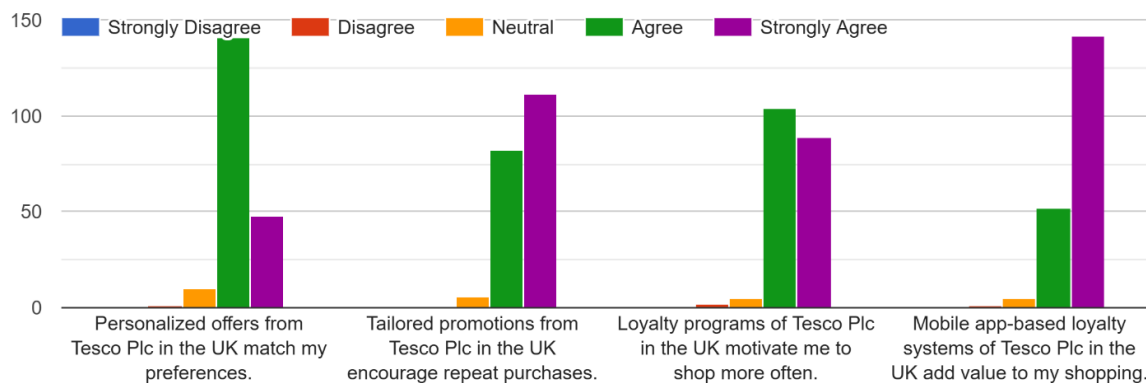


Figure 11: Personalisation and loyalty perspectives (Source: Author)

The responses to the personalisation and loyalty statements exemplify Tesco PLC's success in using data-driven approaches to build loyalty and customer relationships. The overwhelmingly positive responses to the four statements highlight the value that customers see in personalisation and app-based loyalty programs.

The responses to the first statement, "Personalised offers match my preferences", are overwhelmingly positive (141 "Agree" and 48 "Strongly Agree"), with very few disagreeing. This indicates Tesco's personalisation strategies are effectively addressing these preferences and needs. Matching preferences with offers increases the likelihood that they will be seen as helpful, rather than annoying, which boosts customer satisfaction and loyalty. The few neutral responses could be due to those who have not yet fully experienced the benefits of personalisation.

The second statement, "Personalised promotions lead to repeat purchases", has an even higher level of agreement, with 112 strongly agreeing and 82 agreeing. This highlights the behaviour-changing effect of personalisation. Not only does the customer notice personalised promotions, but these also motivate them to buy again. This is an important finding as it verifies that personalised marketing is an effective driver of repeat customers and revenue.

For the third statement, "Loyalty programs motivate me to shop more often", most again agreed (104) or strongly agreed (89), but there is a somewhat greater proportion of neutral or slight disagreement. This suggests that while loyalty programs work, they may not be as motivational for every customer. Customers may already be loyal, or may value other aspects of shopping - such as price and convenience - more than loyalty rewards.

Finally, the highest level of strong agreement (142) was found for the statement "Loyalty programs based on mobile apps increase the value of my purchase". This shows that customers perceive value from this integration. The ability to track rewards, use digital points and receive a reward exclusive to the app are likely to have contributed to this added value, as they add both functional and experiential value to the shopping experience.

These findings indicate that Tesco's personalisation and loyalty initiatives are effective in enhancing perceived value and driving loyalty and repeat purchase. Personalisation displays relevance, and loyalty programs display continued usage, which is a potent combination for developing long-term digital loyalty.

4.2 Cronbach's alpha reliability test

Table 4: Findings from the Cronbach's alpha reliability test

Construct	Number of Items	Cronbach's Alpha	Reliability Level
Digital Promotions and Engagement	4	0.88	Very Reliable
Engagement and Loyalty	4	0.90	Very Reliable
Personalisation and Loyalty Programs	4	0.90	Very Reliable

The scales used in the study were tested for reliability using Cronbach's Alpha, which measures the extent to which the items in a construct are related. The findings show that the three constructs used - Digital Promotions and Engagement, Engagement and Loyalty, and Personalisation and Loyalty Programs - are highly reliable. In particular, the Digital Promotions and Engagement construct has a Cronbach's Alpha of 0.88, which is a high level of internal consistency for the four items. This implies that the items measuring mobile app promotions, app usage and engagement are well correlated and measure the same concept. Likewise, the Engagement and Loyalty construct achieved an Alpha value of 0.90, which is considered very good. This suggests that the measures of loyalty, preference and future purchase intentions are extremely reliable.

The Personalisation and Loyalty Programs construct also produced a Cronbach's Alpha of 0.90, suggesting that the items measuring personalised offers, loyalty programs and perceived value are strongly and consistently measuring the desired construct. All scores are above the recommended cutoff value of 0.70, suggesting that the scales in this research are reliable. This indicates that the questionnaire used to study customer views of Tesco PLC is reliable. This enhances the validity of the next step of analysis, regression, and ensures that the results about mobile promotions, engagement and loyalty are based on consistent and coherent measures.

4.3 Regression analysis

Table 5: Impact of Mobile App Promotions on Customer Loyalty in Tesco Plc in the UK

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.954
R Square	0.910
Adjusted R-Square	0.910
Standard Error	0.158
Observations	200

<i>ANOVA</i>					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	49.96	49.96	2012.38	0.00
Residual	198	4.92	0.02		
Total	199	54.88			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.128	0.091	1.409	0.160	-0.051	0.306	-0.051	0.306
Mobile App promotion (DPE1)	0.973	0.022	44.860	0.000	0.930	1.016	0.930	1.016

The regression model is:

$$\text{Loyalty} = \beta_0 + \beta_1(\text{Mobile Promotions}) + \epsilon$$

Explanation of the model: The regression analysis analyses the effect of mobile app promotions on the brand loyalty of Tesco PLC. The findings show a very strong and statistically significant association between the independent variable ("mobile app promotions motivate me to engage more with the brand") and the dependent variable ("I am more loyal to Tesco due to its mobile app").

Interpretation from the analysis: The R-squared value of the model is an extremely high 0.910, which means that 91% of the variation in customer loyalty is explained by mobile app promotions. This indicates that online promotions play a significant role in customer loyalty. The Adjusted R Square is also 0.910, which suggests the model is reliable and stable.

The ANOVA also confirms the model as significant: the F-statistic is 2012.38, and the significance level is 0.000 ($p < 0.05$). This suggests that the regression model is significant and the correlation is not a coincidence. The coefficient of mobile app promotions is 0.973, which is positive and significant. This means that a unit increase in positive attitudes towards mobile promotions results in a significant increase in customer loyalty. The p-value of 0.000 indicates that this is a significant relationship. On the other hand, the intercept is not significant ($p = 0.160$), suggesting that loyalty depends mainly on the independent variable.

Managerially, this indicates that promotions within mobile apps are key to loyalty. For Tesco, this means that promotional content within the app that is engaging, timely and relevant will go a long way in improving customer retention and long-term customer relationships. In summary, the findings provide robust evidence that online promotions play a critical role in the loyalty process in today's retail landscape.

Table 6: Impact of App Notifications on Customer Engagement in Tesco plc in the UK

SUMMARY OUTPUT

<i>Regression Statistics</i>								
Multiple R	0.919							
R Square	0.845							
Adjusted R-Square	0.844							
Standard Error	0.228							
Observations	200							

ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	56.230	56.230	1078.366	0.00			
Residual	198	10.325	0.052					
Total	199	66.555						

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.228	0.150	-1.523	0.129	-0.524	0.067	-0.524	0.067
App Notifications (DPE4)	1.037	0.032	32.838	0.000	0.974	1.099	0.974	1.099

The model of the regression is:

$$\text{App Checking Engagement} = \beta_0 + \beta_1(\text{Notifications}) + \epsilon$$

Explanation of the model: The second regression model looks at the impact of app notifications on customer behaviour, and how it affects the use of the app of Tesco PLC for promotions and discounts. This model shows a significant positive relationship between app notifications and app-checking behaviour.

Interpretation from the analysis: The model exhibits a high R Square (0.845), meaning that 84.5% of the variance in the customers' app-checking behaviour can be explained by app notifications. This implies that notifications play a significant role in engaging customers with the mobile app. The Adjusted R Square (0.844) also suggests that the model is stable.

The ANOVA also supports the overall model significance with an F-statistic of 1078.366 and a p-value of 0.000 ($p < 0.05$). This suggests the model is statistically significant and that the link between app notifications and app-checking is not spurious.

Looking at the coefficients, the beta coefficient for app notifications is 1.037, a positive and greater than 1 value. This suggests a very large effect, implying that the higher the interest aroused by notifications, the higher the probability of customers checking the app. This impact is very significant, as shown by the p-value of 0.000. The intercept term is negative (-0.228) and not significant ($p = 0.129$), suggesting that the level of engagement without notifications is not significant.

In practical terms, this suggests the power of push notifications in promoting real-time engagement. For Tesco, this suggests that timely, relevant, and personalised notifications can play a crucial role in boosting user engagement with the app, thereby increasing promotion exposure and driving digital engagement.

4.4 Descriptive Analysis

Table 7: Relationship Between Age and Interest in App Notifications Perception

18-25		26-35		36-50		50+	
Mean	4.82	Mean	4.76	Mean	4.62	Mean	4.4
Standard Error	0.04	Standard Error	0.07	Standard Error	0.09	Standard Error	0.16
Median	5	Median	5	Median	5	Median	5
Mode	5	Mode	5	Mode	5	Mode	5
Standard Deviation	0.39	Standard Deviation	0.43	Standard Deviation	0.55	Standard Deviation	0.82
Sample Variance	0.15	Sample Variance	0.19	Sample Variance	0.30	Sample Variance	0.67
Kurtosis	0.88	Kurtosis	-0.49	Kurtosis	0.22	Kurtosis	1.75
Skewness	-1.69	Skewness	-1.24	Skewness	-1.08	Skewness	-1.40
Range	1	Range	1	Range	2	Range	3
Minimum	4	Minimum	4	Minimum	3	Minimum	2
Maximum	5	Maximum	5	Maximum	5	Maximum	5
Sum	482	Sum	195	Sum	157	Sum	110
Count	100	Count	41	Count	34	Count	25

The descriptive analysis looks at the responses to "App notifications increase my interest in deals" across various age categories for Tesco PLC. The findings show a high level of agreement across all age groups, implying that app notifications work well across age groups.

The mean scores are notably high for all groups: 4.82 for ages 18–25, 4.76 for ages 26–35, 4.62 for those aged 36–50 and 4.40 for aged 50+. These scores, which are all near "Strongly Agree", suggest that overall, customers find notifications to be very effective in creating interest in promotions. The median and mode scores are always 5 in all groups, thus supporting that the most frequent answer is Strongly Agree.

There are some differences in the dispersion. The standard deviation of 18-25 (0.039) and 26-35 (0.43) groups is rather low, showing that there are consistent responses in these groups. Conversely, the standard deviation value of the 36-50 group and 50+ age group is greater, which indicates that older users have more varied opinions.

All the values of skewness are negative, meaning that the responses are highly skewed towards the high end of the scale. The value of kurtosis is high, particularly when there is a higher value of kurtosis in the older group (1.75), which suggests that the distribution is peaked, i.e., there are a lot of people who strongly agree. These results indicate that app notifications are extremely

effective in capturing attention among all age segments, but are more stable among younger age groups.

Table 8: App Usage Frequency and Repeat Purchases

<i>Never</i>		<i>Rarely</i>		<i>Sometimes</i>		<i>Often</i>		<i>Very Often</i>	
Mean	N/A	Mean	3.800	Mean	4.347	Mean	4.903	Mean	4.486
Standard Error	N/A	Standard Error	0.374	Standard Error	0.053	Standard Error	0.044	Standard Error	0.095
Median	N/A	Median	4	Median	4	Median	5	Median	5
Mode	N/A	Mode	4	Mode	4	Mode	5	Mode	5
Standard Deviation	N/A	Standard Deviation	0.837	Standard Deviation	0.520	Standard Deviation	0.349	Standard Deviation	0.562
Sample Variance	N/A	Sample Variance	0.700	Sample Variance	0.270	Sample Variance	0.122	Sample Variance	0.316
Kurtosis	N/A	Kurtosis	-0.612	Kurtosis	-0.991	Kurtosis	16.151	Kurtosis	-0.816
Skewness	N/A	Skewness	0.512	Skewness	0.197	Skewness	-3.910	Skewness	-0.468
Range	N/A	Range	2	Range	2	Range	2	Range	2
Minimum	N/A	Minimum	3	Minimum	3	Minimum	3	Minimum	3
Maximum	N/A	Maximum	5	Maximum	5	Maximum	5	Maximum	5
Sum	N/A	Sum	19	Sum	426	Sum	304	Sum	157
Count	N/A	Count	5	Count	98	Count	62	Count	35

The second descriptive analysis looks at the impact of the frequency of mobile app use for promotions on the awareness of "personalised promotions to encourage repeat purchase" in the context of Tesco PLC. The responses reveal a positive association between the frequency of using apps for promotion and agreement with the statement, suggesting that users who use apps more frequently view the use of personalised promotions more positively.

The mean score of 3.800 among respondents who use apps is a moderate level of agreement among the respondents who use such apps on a Rarely basis. This implies that even rare users perceive that personalised promotions have some effect, although it is relatively less compared to others. Respondents who use apps "Sometimes" have a mean score of 4.347, which is a higher level of agreement, suggesting that "Sometimes" users are more influenced by tailored promotions and start to develop repeat purchase intentions.

The greatest consensus is on the highest level of agreement between the users of “Often”, where the mean score is 4.903, very near the Strongly Agree level. This shows that repeated exposure to app promotions has a positive impact on intentions to repurchase. Likewise, the "Very Often" users also have a high mean (4.486), which results in the fact that users highly engaged with apps see promotions that meet their individual needs as a key factor in repeat purchase intentions.

When comparing the dispersion, the standard deviation values tend to be lower in groups with higher frequencies (0.349 when it comes to Often), and there is a higher consistency in the answers and slightly higher dispersion in lower frequency groups. The "often" group also has an extremely high kurtosis (16.151), indicating a highly concentrated distribution with a strong clustering of responses towards strong agreement.

The results show conclusively that the closer the interaction (exposure) with mobile app promotions, the greater the perceived effectiveness of the personalised offers. This means for Tesco, increasing app usage would likely enhance customer appeal to personalised offers and increase repeat purchase intentions, and thus boost retention.

Chapter 5: Discussion

The results of this study can be regarded as good evidence to prove that digital promotions through mobile apps can have a great impact on improving customer engagement and digital loyalty in the context of Tesco PLC. Not only the findings of the descriptive and regression analysis, but also the findings of the statistical analysis reveal consistently that mobile promotions are very effective in influencing customer behaviour. The research points out the previous literature findings by the study of Vettriselvan et al. (2025) and Tarnanidis (2024) that online interactions, especially via app notifications and personalised offers, are important contributors to customer engagement, which in turn leads to more successful loyalty results. These results support the increasing significance of mobile applications as strategic instruments in contemporary retail marketing.

The **initial research objective** of the study is to investigate how digital promotions through mobile apps can impact customer interaction among Tesco app users. The present research discovered that mobile promotions, and specifically the notifications of the apps, affect customer engagement positively and significantly. In the regression analysis, the notifications of the apps have a significant influence on the frequency of customers checking the app for offers and discounts. The results also showed alignment with the findings of the study of Somavarapu and Gupta (2025) that there was a high proportion of agreement among the respondents concerning the efficacy of the promotions in improving engagement. These findings corroborate previous studies of Sinemus et al. (2022) and Ramirez (2023) that propose that the mobile app strategy by Tesco is effective in motivating users to engage in the competitive retail market context.

The **second objective of the research** is to examine the relationship between customer involvement and online loyalty with the use of mobile applications at Tesco. In this work, it was established that customer engagement is a very important mediating factor in the development of loyalty. The regression findings showed that there is a strong correlation between engagement and loyalty, which means that the more interaction with the app, the more customer loyalty. The results also indicated the results of Pereira et al. (2025) and Noor et al. (2024) that customers can develop loyalty by engaging with them continuously rather than by exposing them to a promotional event once. This reinforces other literature on engagement theory and confirms that it can be applied to the digital retail setting at Tesco.

The **third objective of the research** is to determine the role played by customised promotional transactions in enhancing the intention of repeat purchase. In this study, the researcher was able to conclude that personalised promotions do have a significant effect on the probability of customers making a repeat purchase. Descriptive analysis indicated that respondents are in strong agreement that personalised offers make them shop more frequently. The results by Narang et al. (2025) also revealed that more often users of apps feel more valued by personalised promotions, further supporting their behaviour influence. These findings also align with previous research by Mladenović et al. (2025) that showed the effectiveness of personalisation in online marketing, as well as underscoring its significance in the Tesco customer retention plan.

The **fourth research objective** of the study is to explore the strategic importance of mobile-based loyalty systems based on mobile apps in digital retail marketing. This research concluded that the loyalty systems embedded in the mobile application would add great value to the customer experience and help to retain them in the long term. The results indicated the insights concluded by the study of Paulino et al. (2025) and Sagar (2024) that loyalty is affected more by the total experience and engagement in the app and not by incentives only. This is also in line with past research, but it gives specific details on how the mobile application offered by Tesco helps to improve customer relationships through a mix of usability, rewards and customised customer interactions.

By doing so, the research contributes to the previous studies, but it also brings the context-specific research findings, which are the significance of engagement-based and personalised mobile marketing in the retail industry.

Chapter 6: Conclusion

The research investigated the influence of digital promotions through mobile apps on customer engagement and digital loyalty among Tesco PLC customers through a quantitative approach using primary data from a survey of 200 respondents. The questionnaire consisted of Likert-scale items to assess three constructs: digital promotions and engagement, engagement and loyalty, and personalisation and loyalty programs. The approach involved descriptive analysis, reliability analysis using Cronbach's Alpha coefficient, and simple linear regression to test variables' relationships. Descriptive analysis showed that, in general, respondents show high agreement with the statement that mobile app promotions and engagement, in particular mobile app notifications and personalised offers, contribute to increased engagement and repeat purchase. Reliability testing showed that all constructs had high levels of internal consistency with Cronbach's Alpha greater than 0.70, suggesting a valid and reliable measurement tool was used. The results of the regression analysis showed that there are statistically significant and positive relationships between mobile app promotions and customer loyalty, and between app notifications and app engagement behaviour. This suggests that digital promotions are very effective in shaping consumer behaviour, engagement, and attitudinal loyalty. This study suggests that mobile app-based marketing is critical in influencing contemporary consumer behaviour, through increased interaction, enhanced customer experience and increased customer loyalty. It also shows that a customised and timely digital promotion strategy is pertinent to maintain competitive advantage in the changing retail environment, where consumer expectations are based on convenience, relevance and timely engagement with the retailer.

Recommendations: For Tesco Plc in the UK

This study provides several key recommendations for Tesco PLC to improve interaction and digital loyalty using its mobile app-based digital marketing strategy.

First, Tesco should further develop sophisticated personalisation technologies through customer data analytics and artificial intelligence. The study clearly demonstrates that personalised offers greatly boost re-purchase (Ferdous et al. 2024). So, enhancing recommendation systems based on browsing and purchase history and real-time customer behaviour can increase the effectiveness of offers. This will, in turn, increase customer satisfaction and loyalty.

Second, the company should fine-tune its push notification. The research shows push notifications are a key driver of app engagement, with customers checking them often to look for discounts. But too many notifications can be off-putting. So, Tesco should adopt a smart notification strategy that manages the frequency, timing and relevance of notifications (Sinemus et al. 2022). Relevant, timely notifications (for example, location or basket-based alerts) should be favoured to keep users engaged without bombarding them.

Third, Tesco should try to increase the frequency of active use of the app by adding more interactive elements. More interactive features, including reward challenges, "spinning" for discounts and loyalty points, can be offered to increase usage frequency (Gupta and Madan, 2024). Given the link between usage frequency and perceived value of promotions, increased usage will boost loyalty results.

Fourth, Tesco should improve the design of loyalty programs in the app. The research demonstrates the added value of mobile loyalty programs. Thus, Tesco should make it easier to redeem rewards, promote points status, and provide exclusive rewards for app users.

Fifth, Tesco should segment its marketing efforts (particularly by age). This includes noting that younger shoppers (18-25) are particularly responsive to app notifications and digital communication, while older shoppers have more diverse reactions (George et al. 2025). Adjusting marketing approaches and promotional strategies for each age group will enhance communication across all users.

Finally, Tesco should track customer feedback and digital analytics to inform its digital marketing efforts. This will allow monitoring of the most effective promotions and how usage patterns change.

Recommendations: For retailers

The lessons learned from this study provide strategic insights for retailers, especially Tesco PLC, on using digital promotions via mobile apps that encourage customer engagement and loyalty. The results show digital promotions, particularly personalised promotions and app notifications, have a strong impact on consumer behaviour. This suggests retailers should focus on mobile-first marketing strategies as part of their customer relationship management rather than as an add-on.

Managerially, the influence of app notifications suggests that timely communication is crucial to engage customers. Consequently, companies should invest in smart notification systems to ensure timely, relevant and personalised communication to drive app engagement and more frequent purchases. Moreover, the strong impact of personalised promotions on loyalty suggests that personalisation through data analytics should play a key role in marketing strategies.

The findings also indicate engagement impacts loyalty, which means enhancing the user experience of mobile apps can result in higher retention rates. From a practical standpoint, this motivates companies to improve the user experience of apps, streamline loyalty policies and incorporate gamification elements to maintain customer interest.

Limitations

This research has some limitations which need to be considered when analysing the results. To begin with, the sample is largely skewed towards the younger age groups (18-25 years old), and this aspect can be a limiting factor of the findings as far as the older customer groups are concerned. As age groups do not respond the same to digital behaviour, the findings might not be entirely reflective of the overall customer base of Tesco PLC. Second, the research is based on one organisation within the UK grocery retail industry and thus limits the generalisation of results to other retail industries or geographical regions. Third, the study relies on self-reported survey responses, which could suffer from response bias, social desirability bias and self-assessment bias. Lastly, the cross-sectional study design does not allow tracking the dynamics of customer behaviour with time.

Future Research scopes

The mentioned limitations can be overcome by conducting research in the future which is diverse and balanced in terms of age groups and countries. There would also be wider insights in comparative studies across various retail brands. Furthermore, longitudinal studies would be beneficial in assessing changes in digital engagement and loyalty over time. Further application of advanced analysis methods like structural equation modelling (SEM) may be used to gain knowledge of the complex relationships among variables.

Chapter 7: References

1. Acharyya, R. and Bhattacharya, N. eds., 2019. *Research methodology for social sciences*. Taylor & Francis.
2. Ahmad, F., Mustafa, K., Hamid, S.A.R., Khawaja, K.F., Zada, S., Jamil, S., Qaisar, M.N., Vega-Muñoz, A., Contreras-Barraza, N. and Anwer, N., 2022. Online customer experience leads to loyalty via customer engagement: Moderating role of value co-creation. *Frontiers in Psychology*, 13, p.897851.
3. Albrecht, M.G., Green, M. and Hoffman, L., 2023. *Principles of marketing*. OpenStax.
4. Bajwa, F.A., Fu, J., Bajwa, I.A., Ahmad, S. and Mahmood, F., 2025. Factors influencing usage and loyalty for payment app customers in Saudi Arabia. *Acta Psychologica*, 255, p.104961.
5. Barbosa, B. ed., 2024. *Contemporary trends in innovative marketing strategies*. IGI Global.
6. Bayır, T. and Akel, G., 2024. Gamification in mobile shopping applications: A review in terms of the technology acceptance model. *Multimedia Tools and Applications*, 83(16), pp.47247-47268.
7. Bhullar, A. and Gill, P.S., 2019. Mobile Shopping Application Usability: An Empirical Study on Factors Affecting Continued Intention to Use and Mobile Application Loyalty. *IUP Journal of Marketing Management*, 18(4).
8. Biedermann, D., Schwarz, P.O., Yau, J. and Drachsler, H., 2023. The Effect of Social Support Features via Buddies in App-Based Habit Building. *International Journal of Mobile and Blended Learning (IJMBL)*, 15(2), pp.1-12.
9. Bloomfield, J. and Fisher, M.J., 2019. Quantitative research design. *Journal of the Australasian Rehabilitation Nurses Association*, 22(2), pp.27-30.
10. Brown, W., Johnson, O. and Wilson, G., 2024. Examining the Role of Mobile Applications in Transforming Retail Marketing Strategies.
11. Castaldo, S. ed., 2024. *Customer loyalty: Theory, measurement, and management*. EGEA spa.

12. Chen, C.C., Wahyudin, M., Wuryandani, S. and Sung, Y.H., 2025. Understanding Customer Expectations in the Digital Retail Era: A Study of Mobile Store Apps. *Advances in Consumer Research*, 2(4).
13. Daoud, M.K., Al-Qeed, M., Ahmad, A.Y.B. and Al-Gasawneh, J.A., 2023. Mobile marketing: Exploring the efficacy of user-centric strategies for enhanced consumer engagement and conversion rates. *International Journal of Membrane Science and Technology*, 10(2), pp.1252-1262.
14. de Sousa Pereira, M., Gonçalves, M.C., Castro, B.S., Cordeiro, B.A. and Castro, B.S., 2025. Factors of Customer Loyalty and Retention in the Digital Environment.
15. Devi, P.S., 2017. *Research methodology: A handbook for beginners*. Notion Press.
16. Dubey, U.K.B. and Kothari, D.P., 2022. *Research methodology: Techniques and trends*. Chapman and Hall/CRC.
17. Ferdous, A.S., Akareem, H.S., Viswanathan, M., Hollebeek, L.D. and Ringer, A., 2024. Boosting app-based mobile financial services engagement in B2B subsistence marketplaces: The roles of marketing strategy and app design. *Industrial Marketing Management*, 119, pp.147-161.
18. Fernandes, N. and Barfknecht, C., 2020. Keep customers coming back: Enhancing value and satisfaction in a mobile shopping application context. *Cogent Business & Management*, 7(1), p.1788874.
19. George, S.R., Edward, M. and Joseph, J., 2025. Mobile app engagement: scale development, validation and empirical test. *Marketing Intelligence & Planning*, 43(8), pp.1801-1820.
20. Goworek, H. and McGoldrick, P., 2024. *Retail marketing management*. BoD–Books on Demand.
21. Gupta, A. and Gupta, N., 2022. *Research methodology*. SBPD publications.
22. Gupta, R. and Madan, S., 2024. *Digital Marketing: The science and magic of digital marketing can help you become a successful marketing professional*. BPB Publications.
23. Hamouda, M., 2021. Purchase intention through mobile applications: a customer experience lens. *International Journal of Retail & Distribution Management*, 49(10), pp.1464-1480.

24. Haudi, H., 2025. The impact of digital transformation on consumer behavior and marketing strategies. *INTERNATIONAL JOURNAL OF FINANCIAL ECONOMICS*, 1(9), pp.167-179.
25. Ho, X.H., Nguyen, D.P., Cheng, J.M.S. and Le, A.N.H., 2022. Customer engagement in the context of retail mobile apps: A contingency model integrating spatial presence experience and its drivers. *Journal of Retailing and Consumer Services*, 66, p.102950.
26. Hsu, C.L., 2023. Enhancing brand love, customer engagement, brand experience, and repurchase intention: Focusing on the role of gamification in mobile apps. *Decision Support Systems*, 174, p.114020.
27. Huang, M. and Zhu, Y., 2024, July. An analysis of mobile APP evaluation dimension and measurement based on user perspective. In *Proceedings of the 2024 5th International Conference on Mental Health, Education and Human Development (MHEHD 2024)* (p. 412). Springer Nature.
28. Igwenagu, C., 2016. Fundamentals of research methodology and data collection.
29. Jo, H. and Bang, Y., 2024. Navigating the omnichannel landscape: unraveling the antecedents of customer loyalty. *Sage Open*, 14(1), p.21582440241233091.
30. Kambagowni, S., 2025. *Driving User Engagement and Outcomes Through Immersive Technologies* (Doctoral dissertation, University of Pittsburgh).
31. Kang, J.Y.M., Kim, J.E., Lee, J.Y. and Lin, S.H., 2023. How mobile augmented reality digitally transforms the retail sector: examining trust in augmented reality apps and online/offline store patronage intention. *Journal of Fashion Marketing and Management: An International Journal*, 27(1), pp.161-181.
32. Kapur, R., 2018. Research methodology: Methods and strategies. *Department of Adult Education and Continuing Extension, University of Delhi: New Delhi, India*.
33. Kim, Y., Wang, Q. and Roh, T., 2021. Do information and service quality affect perceived privacy protection, satisfaction, and loyalty? Evidence from a Chinese O2O-based mobile shopping application. *Telematics and informatics*, 56, p.101483.
34. Kumar, R., 2018. Research methodology: A step-by-step guide for beginners.
35. Lee, G.M., He, S., Lee, J. and Whinston, A.B., 2020. Matching mobile applications for cross-promotion. *Information Systems Research*, 31(3), pp.865-891.

36. LOE, K., TASIA, A., INDRA, R. and MANI, L., 2022. E-Satisfaction and E-Loyalty of Online Marketplace Mobile Applications: An Empirical Channel Study in Indonesia. *Journal of Distribution Science*, 20(9), pp.61-71.
37. Lucas, G.A., Lunardi, G.L. and Dolci, D.B., 2023. From e-commerce to m-commerce: An analysis of the user's experience with different access platforms. *Electronic Commerce Research and Applications*, 58, p.101240.
38. Malik, H.A.S., Abdullah, N.A.H.N. and Fakhrorazi, A., 2025. Understanding customer loyalty in mobile wallet apps: A post-pandemic analysis with customer involvement as moderator. *Innovative Marketing*, 21(1), p.338.
39. Mishra, S.B. and Alok, S., 2022. *Handbook of research methodology*. Educreation publishing.
40. Mladenović, S.S., Đukić, S. and Stanković, J., 2025. The influence of mobile applications on customer loyalty in omnichannel retail. *Ekonomski horizonti*, 27(2), pp.141-157.
41. Molinillo, S., Aguilar-Illescas, R., Anaya-Sanchez, R. and Carvajal-Trujillo, E., 2022. The customer retail app experience: Implications for customer loyalty. *Journal of Retailing and Consumer Services*, 65, p.102842.
42. Mukherjee, S.P., 2019. *A guide to research methodology: An overview of research problems, tasks and methods*. Crc Press.
43. Mukhtar, S., Mohan, A.C. and Chandra, D., 2023. Exploring the influence of digital marketing on consumer behavior and loyalty. *International Journal of Research-Granthaalayah*, 11(9), pp.1-18.
44. Narang, U., Shankar, V. and Narayanan, S., 2025. Cross-channel effects of failure in a retailer's mobile app. *Journal of Marketing Research*, 62(5), pp.796-817.
45. Nguyen, N.H. and Nguyen, L.T., 2023. The impact of online shopping motivation on customer loyalty in Mobile Applications.
46. Noor, S.K., Imran, M.A.U., Aziz, M.B., Biswas, B., Saha, S. and Hasan, R., 2024, December. Using data-driven marketing to improve customer retention for US businesses. In *2024 International Conference on Intelligent Cybernetics Technology & Applications (ICICyTA)* (pp. 338-343). IEEE.

47. Opoku, A., Ahmed, V. and Akotia, J., 2016. Choosing an appropriate research methodology and method. In *Research methodology in the built environment* (pp. 32-49). Routledge.
48. Pantano, E., Priporas, C.V. and Dennis, C., 2018. A new approach to retailing for successful competition in the new smart scenario. *International Journal of Retail & Distribution Management*, 46(3), pp.264-282.
49. Parsons, A. and Viljoen, S., 2024. Valuing social data. *Columbia Law Review*, 124(4), pp.993-1080.
50. Patel, M. and Patel, N., 2019. Exploring research methodology. *International Journal of Research and Review*, 6(3), pp.48-55.
51. Patel, V., Das, K., Chatterjee, R. and Shukla, Y., 2020. Does the interface quality of mobile shopping apps affect purchase intention? An empirical study. *Australasian Marketing Journal*, 28(4), pp.300-309.
52. Paulino, E.P., Aterrado, A.L. and Letrero, B.R., 2025. Impulse in motion: how hedonic behavior mediates the effect of online sales promotions on mobile apps shopping behavior. *Journal of Contemporary Marketing Science*, 8(1), pp.37-57.
53. Pereira, M.D.S., de Castro, B.S., Cordeiro, B.A., de Castro, B.S., Peixoto, M.G.M., da Silva, E.C.M. and Gonçalves, M.C., 2025. Factors of customer loyalty and retention in the digital environment. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), p.71.
54. Ramirez, J.G.C., 2023. How mobile applications can improve small business development. *Eigenpub Review of Science and Technology*, 7(1), pp.291-305.
55. Runge, J., Levav, J. and Nair, H.S., 2022. Price promotions and “freemium” app monetization. *Quantitative marketing and economics*, 20(2), pp.101-139.
56. Sagar, S., 2024. The impact of digital transformation on retail management and consumer behavior. *Journal of Business and Management*, 26(1), pp.06-14.
57. Sari, E.N. and Subriadi, A.P., 2022, January. Consumer behavior in mobile commerce adoption: a systematic literature review. In *2022 2nd International Conference on Information Technology and Education (ICIT&E)* (pp. 287-292). IEEE.

58. Sinemus, K., Zielke, S. and Dobbelsstein, T., 2022. Shopping app features: their impact on customer satisfaction and loyalty. *The International Review of Retail, Distribution and Consumer Research*, 32(4), pp.423-449.
59. Snyder, H., 2019. Literature review as a research methodology: An overview and guidelines. *Journal of business research*, 104, pp.333-339.
60. Somavarapu, S. and Gupta, V., 2025. Analysing and visualizing user behavior in e-commerce: A machine learning approach. *Unpublished manuscript*.
61. Son, Y., Oh, W., Han, S.P. and Park, S., 2020. When loyalty goes mobile: Effects of mobile loyalty apps on purchase, redemption, and competition. *Information Systems Research*, 31(3), pp.835-847.
62. Sürücü, L. and Maslakci, A., 2020. Validity and reliability in quantitative research. *Business & management studies: an international journal*, 8(3), pp.2694-2726.
63. Tarnanidis, T., 2024. Exploring the impact of mobile marketing strategies on consumer behavior: A comprehensive analysis. *International Journal of Information, Business and Management*, 16(2), pp.1-17.
64. Thai, T.D.H., Nguyen, T.T., Tran, T.P. and Kennedy, E.L., 2025. The path from customer brand engagement to value co-creation in mobile branded apps. *Journal of Marketing Analytics*, pp.1-15.
65. Thakur, R., 2018. The role of self-efficacy and customer satisfaction in driving loyalty to the mobile shopping application. *International Journal of Retail & Distribution Management*, 46(3), pp.283-303.
66. Thiruvayipati, J., 2024. Revolutionizing Customer Lifetime Value: A Comprehensive Review of AI and Machine Learning in Retail and E-commerce. *Available at SSRN 5339996*.
67. Verma, P., Pandey, R., Das, P. and Arora, N., 2023, December. Exploring the Influence of Mobile Apps on Customer Engagement and Loyalty. In *International Conference on Information Systems and Management Science* (pp. 130-143). Cham: Springer Nature Switzerland.
68. Vettriselvan, R., Velmurugan, P.R., Suresh, N.V. and Catherine, S., 2025. Strategies, best practices, and pitfalls in the era of digital transformation: Mastering mobile marketing.

In *Impact of Digital Transformation on Business Growth and Performance* (pp. 67-98). IGI Global Scientific Publishing.

69. Yang, K.F., Nalluri, V., Liu, C.C. and Chen, L.S., 2025. Discovering Key Successful Factors of Mobile Advertisements Using Feature Selection Approaches. *Big Data and Cognitive Computing*, 9(5), p.119.
70. Zariman, N.F.M., Humaidi, N. and Abd Rashid, M.H., 2022. Mobile commerce applications service quality in enhancing customer loyalty intention: mediating role of customer satisfaction. *Journal of Financial Services Marketing*, p.1.
71. Zhang, R., Jun, M. and Palacios, S., 2023. M-shopping service quality dimensions and their effects on customer trust and loyalty: an empirical study. *International Journal of Quality & Reliability Management*, 40(1), pp.169-191.

Appendix:

Survey Questionnaire

Full questionnaire (also available at: <https://forms.gle/3JTo7b4T3A4Suyjy5>)

<Your participation in this survey is completely voluntary, and you may withdraw at any time. All responses will remain anonymous and confidential. There are no risks or harms associated with participation. The data collected will be used solely for academic research purposes on the proposed study in compliance with ethical guidelines and data protection regulations.>

What is your age group?

- 18-25
- 26-35
- 36-50
- 50+

Gender:

- Male
- Female
- Prefer not to say

Frequency of Using Mobile Apps for checking promotions and offers in a month.

- Very often (10+ times)
- Often (≤ 10 Times)
- Sometimes (≤ 5 Times)
- Rarely (≤ 2 Times)
- Nil or never used

The questionnaire below is composed of a 5-point Likert scale questionnaire where 1= Strongly Disagree and 5= Strongly Agree:

Digital Promotions and Engagement					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Mobile app promotions from Tesco Plc in the UK encourage me to engage more with the brand.	1	2	3	4	5
I frequently check the Tesco Plc app in the UK for offers and discounts.	1	2	3	4	5
Digital promotions from Tesco Plc in the UK make my shopping more engaging.	1	2	3	4	5
App notifications from Tesco Plc in the UK increase my interest in deals.	1	2	3	4	5

Engagement and Loyalty					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
I feel more loyal to Tesco Plc in the UK because of its mobile app.	1	2	3	4	5
Using the Tesco Plc app in the UK increases my preference for Tesco over competitors.	1	2	3	4	5
My engagement with the Tesco Plc app in the UK strengthens my loyalty.	1	2	3	4	5
I intend to continue shopping at Tesco Plc in the UK due to app experience.	1	2	3	4	5

Personalisation and Loyalty Programs					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Personalized offers from Tesco Plc in the UK match my preferences.	1	2	3	4	5
Tailored promotions from Tesco Plc in the UK encourage repeat purchases.	1	2	3	4	5
Loyalty programs of Tesco Plc in the UK motivate me to shop more often.	1	2	3	4	5
Mobile app-based loyalty systems of Tesco Plc in the UK add value to my shopping.	1	2	3	4	5

Analysis and survey responses

