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# Digital Transformation in the UK Retail Sector

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**Definition**

Digital transformation is the process by which businesses adopt use of digital technologies to fundamentally change operations and customer interactions in order to optimize delivery and service. The UK refers to the United Kingdom which is shorthand for the United Kingdom of Great Britain and Northern Ireland which is a European country that primarily includes England, Wales and Scotland together with the northern part of Ireland. The retail sector includes businesses that sell goods or services directly to consumers for their personal use, opposed to selling to other organizations for business applications. Generation refers to a series of broad age groups that are considered to demonstrate different generalized characteristics.

**Keywords:** digital; transformation; UK; retail; generations; consumer

## 1. Introduction

According to the British Retail Consortium [1], the UK retail sector represents more than 3 million workers and contributes approximately 5% of the country's Gross Domestic Product (GDP). Many sectors, but particularly the retail sector, have been adopting new technologies over recent years to optimize the delivery of goods and services [2]. This process is known as digital transformation.

Digital transformation requires innovation of both business strategy and operational models. Chaffey and Smith [3] argue that a business idea can no longer be simply based on a single channel, i.e., online or offline selling, and that it now needs to incorporate both of these channels seamlessly alongside appropriate digital marketing. This is the new digital age, and the rapid transformation of e-commerce, mobile apps, and social media channels is significantly influencing how consumers evaluate their purchasing decisions [4].

This change in consumer attitudes has brought about the omnichannel retailing experience, in which consumers now expect the same familiarity if they are engaging in an online store compared to the equivalent offline experience [5]. Examples of digital transformation include the introduction of click-and-collect services, the implementation of data-driven marketing strategies, and the provision of self-checkouts to streamline in-store operations.

Whilst digital transformation itself is now vital to ensuring competitiveness across the UK retail sector [2], it is expensive, time consuming, and resource-intensive to implement [6]. Taking a customer perspective, one of the likely challenges faced is that various consumer age groups have distinctly different preferences for, and capabilities to use, new technologies. The concern is that the more we digitize services to support some consumer groups, the more we may alienate others who are less willing, or able, to engage.

To explore the dimensions of this phenomenon further, this paper considers digital transformation in the UK retail sector using an interpretive classification schema as the

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analytical framework (Figure 1) in which the categories of channels, barriers/challenges, evolving technologies, consumer behavior, generational differences, and consumer acceptance are each considered in turn.

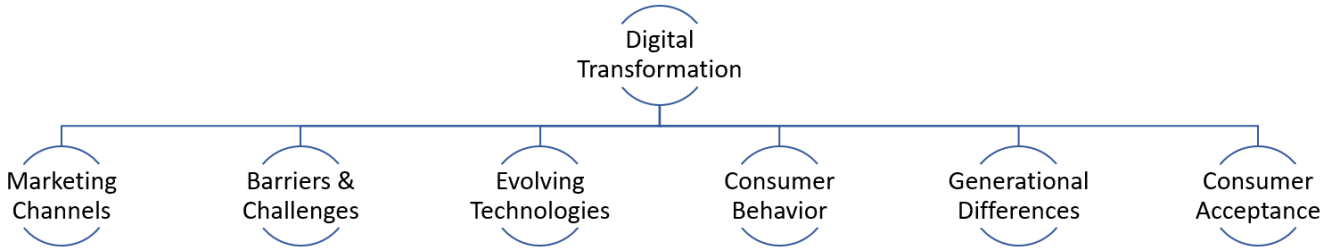


**Figure 1.** Interpretive classification schema and analytical framework for study.

## 2. Digital Transformation Channels

Digital transformation has disrupted consumer behavior by changing the way customers engage with brands and how they make their purchasing decisions. Each purchase decision is thought to be influenced by a combination of emotional, social, and cognitive factors, all of which are amplified in the digital environment [7]. Consumers are now able to buy their everyday products quite easily due to the expansion of mobile applications, social media, and e-commerce platforms [8].

Personalization is at the heart of retail digital marketing strategies. Artificial intelligence (AI) and data analytics can provide new insights into consumer behavior by understanding each individual customer's purchasing preferences [9]. This knowledge can be used to provide personalized product recommendations, and to target market campaigns driven by machine learning algorithms [3]. This development aligns with consumer psychology theories and suggests that by creating a tailored experience it is possible to enhance customer satisfaction and loyalty [10]. Furthermore, the insights gathered can predict future consumer behavior, thereby improving the overall shopping experience provided, and creating the motivation for consumers to make repeat purchases.

The phenomenon of omnichannel retailing has further amplified consumer behavior [11]. Consumers now expect a consistent shopping experience across multiple touchpoints including physical stores, online websites, and mobile applications to avoid becoming confused and dissatisfied [11]. Retailers therefore need to integrate their different digital and physical channels together to provide a seamless service. This is required because the adoption of digital channels is not universal and may depend upon a number of factors including the age profile of the consumer [12]. Younger demographics and tech-savvy individuals, such as Generation Z (born between 1997 and 2012), are thought to adopt digital channels, including mobile and e-commerce, more quickly than older demographics such as Generation X (born between 1965 and 1980) and Baby Boomers (born between 1946 and 1964), who may find doing so more challenging [6]. As an example, older generations might refuse to use e-wallets which then limits their ability to participate in electronic transactions [7]. Retailers therefore need to design strategies that are inclusive of diverse consumer groups, and their platforms need to be friendly for all demographics [9]. This also means that there is a need for more consideration when designing technologies to ensure that they are as inclusive as possible and so appeal to a variety of consumer segments irrespective of age group.

Furthermore, factors such as lifestyle, attitudes, and values are thought to also play a significant role in influencing digital adoption [12]. For instance, consumers who value traditional shopping experiences might be slower to adopt the new channels, while consumers who value convenience and integration of technology in every aspect of life are more likely to adopt digital platforms more quickly [11]. The identification of these differences is

important for retailers to consider to ensure that they invest in the right channels to target different consumers groups optimally, and so cater to their distinctive needs.

Widespread adoption of digital media is raising concerns about security and privacy [12]. In some circumstances, customers' willingness to engage with digital platforms is linked to their confidence in how the retailer will securely handle their data. In particular, consumers have a fear that their data might be misused or subjected to data theft [12]. As a result, many consumers are becoming more conscious of data collection activities by retailers [13] and their trust in digital platforms is now a critical factor that determines their level of engagement. Retailers therefore need to be more transparent regarding how they handle data collected, and how they are complying with laws such as the General Data Protection Regulation (GDPR) [14]. As more robust measures are implemented to enhance data security, they also have the potential to make the customer experience more complicated, which can further result in lower levels of engagement by customers [15].

Digital transformation has changed the way consumers may act, and retailers need be aware of this change and respond accordingly. However, retailers can now make, or improve, consumer engagement by using personalization and omnichannel strategies alongside demographic and psychographic factors [15].

## 3. Barriers and Challenges to Digital Transformation

There are multifaceted barriers and challenges to fully realizing digital transformation in the UK retail sector [4]. One of the most critical challenges is technological investment. Introducing advanced cutting-edge infrastructure and back-end systems, data aggregation, and supporting maintenance involves updates, or replacement, of existing systems to boost their performance and ensure security [8]. All of these processes can be highly costly. The cost of such systems significantly hinders business opportunities for those retailers with limited resources [6].

Even though the technologies themselves can provide large potential benefits, they require specific IT skills to use and support them, and these factors act as a further barrier to digital adoption, especially for small and traditional businesses [9]. Digital skill gaps, and workforce transformation, are other critical complex issues for retailers who are adopting digital transformation. Many retailers are facing digital skill gaps because their current workforce is not qualified and experienced enough to implement and manage the new systems being implemented. Bridging these gaps requires significant further investment to hire a new workforce, or to retrain the existing workforce [16]. Consequently, implementing digital transformation initiatives can be a relatively slow process.

The integration of physical and digital channels is the other challenge connected with digital transformation [16] as each retailer needs to integrate the physical and digital point-of-purchase touchpoints to provide a consistent and high-quality brand experience [11]. This is extremely difficult to achieve as it requires technically sophisticated systems to synchronize inventory, customer interactions, and marketing efforts [4].

Technologically advanced companies such as Amazon operate with minimal processes, and use streamlined procedures, without the burden of legacy systems that may hinder their ability to respond to markets [17]. More traditional retailers may not be able to transform all operations and activities simultaneously, and so may need to contend with new and old systems working alongside each other [17]. Such retailers may need to invest in significant organizational changes to compete with the more agile tech-based giants of the sector.

Because some customers will be eager to make use of any technological developments implemented, but many others will often remain reluctant to follow, businesses need to

consider their market carefully to ensure that they do not inadvertently damage their existing customer base when making changes [13,15].

## 4. Evolving Digital Technologies in Retail

The early 2000s saw the rise of multi-channel strategies, in which retailers would offer two different experiences for online and offline encounters [16]. Yet the disconnection between these channels would often confuse consumers who would seek continuity [18]. This period also witnessed the dawn of Customer Relationship Management (CRM) systems, which allowed retailers to analyze purchase data and personalize engagement with the customer [19].

The late 2000s witnessed the evolution of a new wave of retail innovation through the introduction of smartphones. Mobile commerce was becoming an increasingly essential channel for consumers to 'shop on the go' [20]. Retailers therefore designed mobile applications to enhance the user experience with features such as push notifications, location-based services, and digital wallets being added as integrated features for enhanced user experience [21]. Augmented Reality (AR) and Virtual Reality (VR) technologies also started to become popular during this period. Early adopters such as IKEA used AR to allow consumers to imagine furniture in their homes, bridging the gap between shop and digital experiences [22].

The 2010s saw AI and big data analytics became pivotal for digital transformation, enabling retailers to offer targeted recommendations to consumers and so optimize and streamline the entire inventory supply chain [23]. These applications of technology would include the use of chatbots for customer service, and predictive analytics to assess future consumer demand. However, whilst retail giants invested to secure a competitive edge through their use of AI, smaller retailers were somewhat left behind and struggled to keep pace with technology adoption [24].

The COVID-19 pandemic accelerated the pace of digital transformation as people moved over to online shopping in greater numbers due to lockdowns and social distancing measures. According to May et al. [25], during the lockdown, many consumers adopted online shopping for the first time, and the vast majority have continued to maintain these habits even after the end of these restrictions. This 'forced digital adoption' has had lasting effects on consumer preferences, especially in retail categories such as groceries, electronics, and fashion [26]. Responding to this, retailers have enhanced their e-commerce platforms, introduced contactless payment modes, and adopted more advanced technologies [27].

## 5. Changes in Retail Consumer Behavior

Retail business digital transformation has significantly altered consumer behavior. Purchase patterns have changed regarding how consumers anticipate making purchases [28,29]. For instance, e-commerce routes, such as Amazon and Alibaba, have provided consumers with significant choice options. As a result, convenience has become a key determinant for consumer purchasing [30]. In addition, these platforms facilitate comparative shopping, whereby consumers can identify the best offers, and alternative goods of equivalence, offered by different sellers [16].

AI-driven personalization has further shaped purchasing trends. Retailers regularly analyze consumer data to predict customer preferences and so influence decision-making through targeted advertising [31]. AI-enabled personalization is thought to increase the likelihood of impulse purchases significantly [32].

Digital transformation has set new standards of convenience and speed; for example, fast delivery options are now one of the top consumer expectations and services such as Amazon Prime offer same-day, or next-day, delivery as the norm [33,34]. The adoption of

digital wallets, and contactless payments, have also facilitated transactions, thereby making the shopping experience faster and more convenient, and increasing consumer confidence by reducing the level of physical contact required at a time when the population are more aware of avoiding infections and illness [35].

Consumers have come to expect a personalized shopping experience and retailers such as Netflix and Amazon established the benchmark with their recommendation algorithms which depend on viewing and purchase history [36]. Fashion houses predict trends, and offer customers bespoke product options, thereby creating the impression of exclusivity for customers [37]. According to Kumar et al. [38], personalization now goes far beyond product recommendations, and instead the entire shopping journey can be tailored including personalized marketing messages, and dynamic content on the website, that together make interactions memorable, relevant, and fun.

## 6. Generational Differences

Customers falling into Generation Z are thought to exhibit the highest adoption rates for digital technologies, as they are classed as being digital natives [39]. It is claimed that this group has been exposed to the internet, smartphones, and social media from a very young age, making them highly adaptable to new technologies. Some 95% of Generation Z are thought to own smartphones and so they tend to be early adopters of emerging technologies [40]. This age group of customers is very comfortable with online shopping platforms, mobile apps, and responding to social media-driven purchasing behaviors [41].

In contrast, it is claimed that Generation X is highly cautious and selective when adopting new technologies [42]. Whilst they have a familiarity with digital tools, their adoption is quite measured. Although Generation X are comfortable with e-commerce, and often use online banking, research indicates that they are less likely to engage with new advanced technologies [42].

The adoption rate of digital technologies by Baby Boomers is thought to be the lowest of the main generational groups, especially when it comes to shopping online [43]. According to Bennett-Kapusniak [43], most Baby Boomers still prefer in-store shopping due to the comfort and familiarity offered. They are also the most cautious towards trusting online platforms, especially concerning data security and privacy [44].

In terms of online purchasing decisions, 89% of Generation Z consumers shop online frequently using mobile or social media channels to make their buying decisions [45]. The frequency of online shopping for Generation X is more moderate as they balance their shopping behavior between both e-commerce and in-store purchases [46]. Conversely, Baby Boomers shop online less often; however, the behaviors that they demonstrate are on the rise (albeit more slowly compared to other generational groups) since the COVID-19 pandemic [47].

Considering digital literacy, once again, those in Generation Z have the highest levels having grown up in a world surrounded by digital technologies [48]. Generation X are digitally literate in a modest way, being comfortable with mainstream sites of social media, email, and e-commerce [49]. Finally, Baby Boomers show the lowest digital literacy with many preferring more traditional modes of communication and shopping experiences [50]. Furthermore, O'Keeffe [51] observes that many Baby Boomers have such a greater learning curve when dealing with digital tools that they might benefit from hands-on support to help them to overcome the barriers that they face when using such platforms.

## 7. Consumer Acceptance of Digital Transformation

Consumer adoption of digital technologies can be influenced by various psychological, behavioral, and situational factors [52], and the Technology Acceptance Model (TAM)

describes how users accepting, or rejecting, the use of a new technology can be categorized [53]. The model itself has two dimensions, these being, (1) perceived ease of use and (2) perceived usefulness. Perceived ease of use refers to how effortless a technology appears to be to operate, whilst perceived usefulness relates to its potential to improve productivity or convenience when used [54]. For example, services such as Amazon and Netflix are popular as their interfaces are intuitive, and also because they transparently provide value in streamlining purchases and entertainment [55]. In addition, user-friendliness has emerged as being a key determinant for consumers continued use of a particular platform [56].

Increasing trust reduces the risks associated with online transactions, and consumers are more willing to use online shopping sites, and online payment modes, as a result [57]. Sophisticated security for mobile pay technologies, such as Apple Pay and Google Pay, have facilitated faster adoption rates [58,59]. Conversely, studies show that a lack of trust in data management, or vagueness in a privacy statement, can discourage potential adopters [60,61].

Acceptance is greatly enhanced through effective marketing strategies that emphasize the convenience and value of digital technologies. For instance, both Uber and DoorDash use advertising to underscore how much time and effort people can save by using their services opposed to those of their competition [62]. Loyalty programs and discounts are also effective in creating a value position as this increases consumers' willingness to adopt, and continue using, these technologies [63]. AI-driven personalization has further intensified these dynamics as consumers increasingly expect digital environments to be customized to their needs and preferences [64].

Social influence, comprising of referrals by friends and family, has been shown to influence acceptance of digital technologies [65]. Furthermore, young consumers often adopt technologies based on social proof, i.e., when they find out that others in their peer group use, and benefit from, a technology then they are more likely to adopt it themselves, causing a cascade effect [66].

Innovations are enhancing consumer engagement by offering immersive experiences to customers. For example, AI-powered chatbots can be used to streamline interactions, and apps are now being employed to enable the visualization of how products may look in your home (e.g., for furnishings) or on your face (e.g., for cosmetics) [67]. Cost-benefit analysis also is a significant factor in technology adoption since a business needs to know that the predicted return on investment will justify the initial expenditure [68].

Introduced by Brehm [69], reactance theory suggests that when individuals feel their freedom to make choices is being curtailed, they experience a psychological reactance motivational state directed at regaining their lost freedom. This resistance can then appear as a form of rejection of the technology, negative attitudes toward the enforcing organization, and/or a strong bias toward alternative solutions [70]. For instance, some retail chains have forced customers to use mobile applications to find discounts, or to shop, thereby frustrating non-tech-savvy users and those concerned about data privacy [71]. Such requirements can be perceived as being coercive, especially when individuals have fewer alternative choices. Research indicates that consumers feel that these restrictions prioritize the convenience of the organization over their personal freedom of choice, which in turn is a further intensifier of reactance [72].

## 8. Future Direction

We know that despite the rapid proliferation of digital platforms, some barriers persist [73]. Many users worry increasingly that their personal information will be misused or improperly protected. Consumers are also frightened of having their financial information, or health records, gathered by some platforms due to the risk of identity theft or misuse [74].

Furthermore, many digital platforms prioritize data collection and monetization over user security which can undermine consumer trust [75,76].

According to research, individuals who feel less confident in how to use, or comprehend, digital tools are more resistant to adoption, but over time this issue is likely to resolve itself naturally [77,78]. In the meantime, tackling technophobia needs a multi-pronged educational approach alongside the simplification of designs [79].

High levels of digital literacy are important to enable the appropriate use of new technologies, but due to the fast pace of technological change, a skills gap is occurring that needs to be addressed [80,81]. The influence of mass adoption through government-funded training and learning programs could at least partially address this issue [82]. To further support this move, interfaces need to become less technological and more intuitive in nature [83,84]. Furthermore, businesses need to prioritize strong infrastructure, and responsive customer support, so that technical glitches are minimized and resolved quickly should they occur [85,86].

Given that one major trigger of psychological reactance in the adoption of digital technology is the lack of perceived alternatives [87], during this transition phase, non-technological alternatives are required to avoid excluding a proportion of the population [88]. An example of this would be the provision of paper menus in restaurants alongside the technological QR-code option.

New technological options need to build upon existing solutions to avoid steep learning curves for consumers [89]. For digital transformation to be effective, mitigation is required for a complexity of barriers, and both trust and confidence need to be considered and supported [90]. This particularly applies to finding ways of reaching the older generations who are most resistant to adopting new technology, but who may actually have the most to benefit if they do [78].

As the progression of digital transformation evolves [91], there will be increased pressure for businesses to 'go digital' to maintain their existing market presence [92]. This is predicted to impact businesses of all sizes [93], and throughout their value chains [94]. Business models will therefore need to adapt [95], including the need for dynamic pricing models [96].

Whilst retail is one of the early adopters of digital transformation, other sectors are now following [97], and of particular interest are the current developments in the education sector [98–101] and healthcare sector [102–104], which are evolving quickly to take advantage of potential increases in productivity alongside the scope for significant efficiency savings.

## 9. Limitations

This study has concentrated on the retail sector in the UK. Retail sectors in other countries may be more, or less, developed in comparison as the push for digital transformation varies based upon technological, economic, and cultural factors.

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