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Frictionless shopping in retail

15 April 2019

Within retail over the past 20 years, the internet has not only afforded consumers significantly heightened connectivity between each other and retailers, but has also led to consumers having the ability to rapidly gather information on prices at other retailers, examine issues around product sourcing and sustainability, and crucially, buy retail goods without the need to visit a physical store. For retailers with an already existing physical network, this has presented numerous, well-documented challenges.

The time taken from the first point of contact between a retailer and a consumer, up to the point the consumer possesses the desired product, can (generally) be described as unwanted “friction” for the customer in the shopping journey. For any given shopping journey in both the offline and online channel, this can encompass a wide variety of issues: till-queue length, the inability to easily locate products, slow delivery times, unsuitable payment processes, etc. And with the “increasingly busy” lifestyle with which consumers often describe themselves as having, ridding as many hurdles in the shopping journey – or creating a “frictionless” experience – is becoming a vital point of differentiation for retailers worldwide.

A key reason for the online channel’s enduring success has been its inherent, natural avoidance of points of friction early on in the shopping journey. As well as circumnavigating the need for a consumer to deviate from their daily routine to visit a physical location, online retailers usually allow for shoppers to easily store payment information for quicker order placement in the future. To say that this process is resonating with shoppers is an understatement, and little other evidence is needed than the success of global e-commerce titan Amazon – whose success is founded on continuously forging ahead of competitors in breaking down barriers within the shopper journey.

But while bricks and mortar retailers are generally suffering at the hands of online specialists, there are certainly topics within frictionless shopping that they can excel at. Most notably, the ability to get rid of the waiting time for the delivery of products to the hands of the buyer; although same-day delivery services are impressive, a suitably motivated shopper will likely be able to find a comparable product in a much shorter amount of time at a store.

Frictionless shopping is therefore an unavoidable theme for retailers across all channels and countries. This report breaks down the seven fundamental topics within the theme, retail’s leaders and laggards in the sector, and provides an overview of relevant macroeconomic, technological and retail trends that retailers must be aware about to compete more thoroughly over the course of the next decade.

Inside

Report type

- **Single theme**
- Multi-theme
- Sector Scorecard

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Overview

Over the last decade, consumer expectations of retailer's ability to facilitate a quick, intuitive shopping journey have developed. The rapid growth of the online retail market has been largely driven by its ability to circumnavigate large swathes of the typical shopping experience, enabling shoppers to browse and purchase on-the-go or from the comfort of their own home.

For retailers, this seismic shift represents a wealth of opportunities as well as challenges – both in the offline and online spheres. The central challenge is to provide shoppers with enough possibilities across browsing and payment options to suit each individual's preferred method of shopping, while preserving a streamlined retail structure with considerations of security.

The table sets out the retailers who GlobalData has identified as leaders and laggards in each of the seven key topics within the framework of frictionless shopping.

Frictionless shopping leaders and laggards in the retail sector

	Market leaders	Laggards
Ease of access	Apple, Amazon, Carrefour, Kroger, K-Supermarket, Target	IKEA
Fulfilment	Amazon, ASOS, Ocado	ASDA, E. Leclerc, Marks & Spencer, Morrisons
Multichannel alignment	DFS, John Lewis, Tesco, Walmart	Sainsbury's
Payment options	Amazon, Alibaba, Carrefour, JD.com	Aldi, Lidl
Personalisation	Amazon, ASOS, Zara	H&M
Positive friction	IKEA, John Lewis, Kroger, Macy's	Amazon, Argos
Security	Apple, Best Buy, Sainsbury's, Walgreens	Costco, Macy's, Morrisons, Target, Wayfair

Source: GlobalData

Definition of frictionless shopping

Frictionless/contextual shopping/commerce is the method of using data, technology and devices to integrate buying opportunities as seamlessly as possible into the everyday activities of shoppers. The goal is to reduce the amount of time and hassle involved in the steps between desire for a product and receiving it.

For retailers, the broad benefit of investment in frictionless shopping is that consumers are more willing to make a purchase if there is minimal “friction” when progressing through the different stages of the buying journey. However, the concept of friction differs not only across the variety of individual shopper journeys, but is also a subjective ideal that varies from shopper to shopper. For example, some shoppers may find chatbots on websites to be a useful tool, while others may find them to be an off-putting and/or distracting annoyance.

In order to identify regular points of friction within the shopping process, we have identified four key shopper journeys: frequent offline purchases (such as grocery shopping at a convenience store), infrequent offline purchases (such as premium health & beauty products), frequent online purchases (such as purchasing clothing from an online pureplay), and infrequent online purchases (such as buying a large item of furniture for home delivery).

Due to the wide variety in shopper habits and retailer propositions, it may seem misguided to pigeon-hole shopper journeys into four paths. However, these paths offer the greatest view of points of friction, and retailers should (based on their individual offer) be able to discern which of the themes within frictionless shopping are relevant to them.

We introduce seven major themes that contribute to the concept of frictionless shopping. These are:

- **Ease of access**: How long the process from first contact with the retailer to payment takes in practicality.
- **Fulfilment**: How reliably and competitively the retailer delivers the product to the customer.
- **Multichannel alignment**: How readily can the retailer offer the same proposition across its channels, and how the retailer’s interaction with the customer is tracked through the journey.
- **Payment options**: How competently the retailer processes different payment options.
- **Personalization**: How effectively the retailer offers a tailored shopping journey to individual customers.
- **Positive friction**: How beneficially the retailer purposefully interferes with the shopper journey to develop a customer relationship.
- **Security**: How transparently and securely the retailer holds and uses customer data.

Figure 1 shows these themes and their relevance to each shopping path:

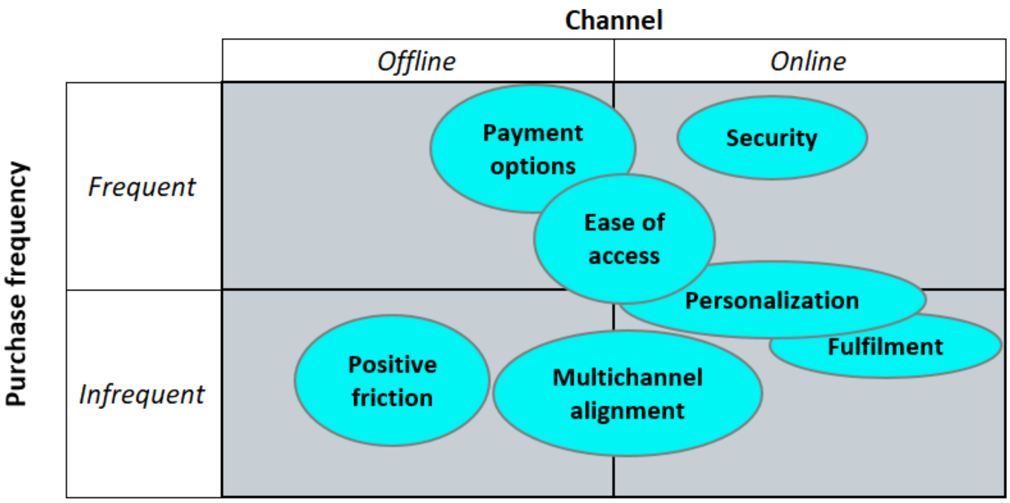
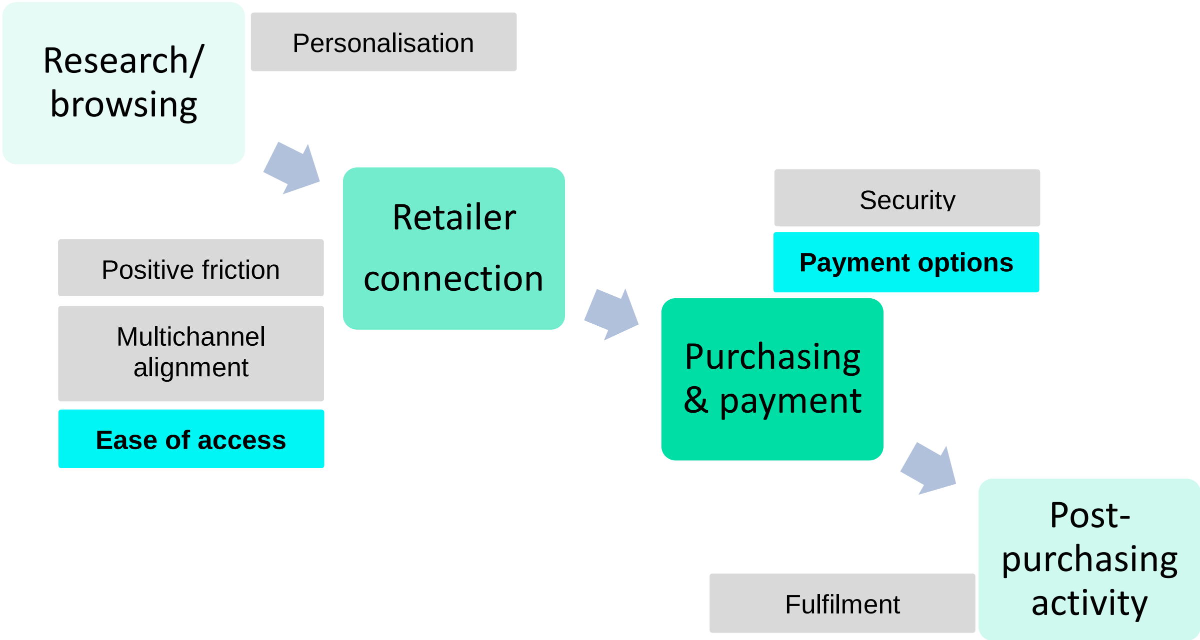


Figure 1

Frequent offline purchases

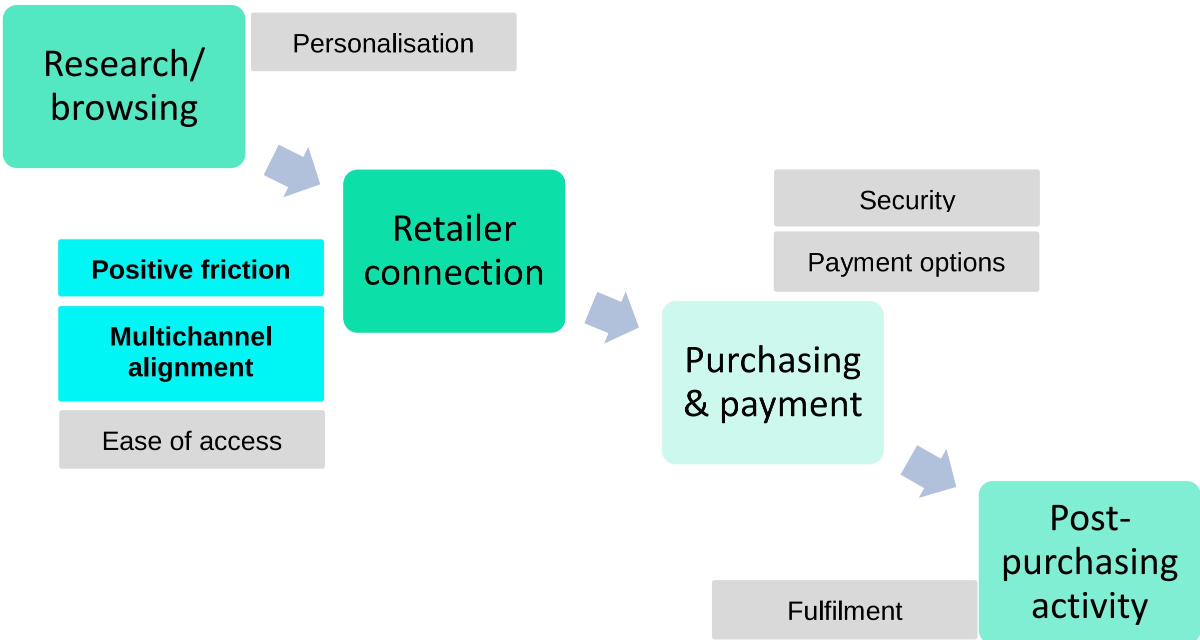
Examples: Value clothing retailers (Primark), small to mid-sized grocery shopping (convenience stores [Amazon Go], weekly shop at Tesco/Sainsbury's/Morrisons/ASDA), low price-point health & beauty items (deodorant, shower gel, make-up e.g. Poundland, Tesco, Boots).



The shopper journey for frequent offline purchases centrally differs from other shopper journeys in its deficiency of a research/browsing phase, as it is likely that a similar journey (in both type and location) will have been carried out by the shopper before. Speed is usually considered the most important factor, and thus ease of access and a variety of payment options are the most important themes of consideration.

Infrequent offline purchases

Examples: Premium footwear and clothing (Nike), emergency and smaller DIY products (e.g. power drills, B&Q, Homebase), certain electricals (e.g. coffee machine, John Lewis), smaller furniture and floorcoverings (e.g. carpets and rugs, Carpetright, Tapi), high price-point health & beauty products (e.g. perfume, Space NK) and homewares (e.g. lamps, IKEA).



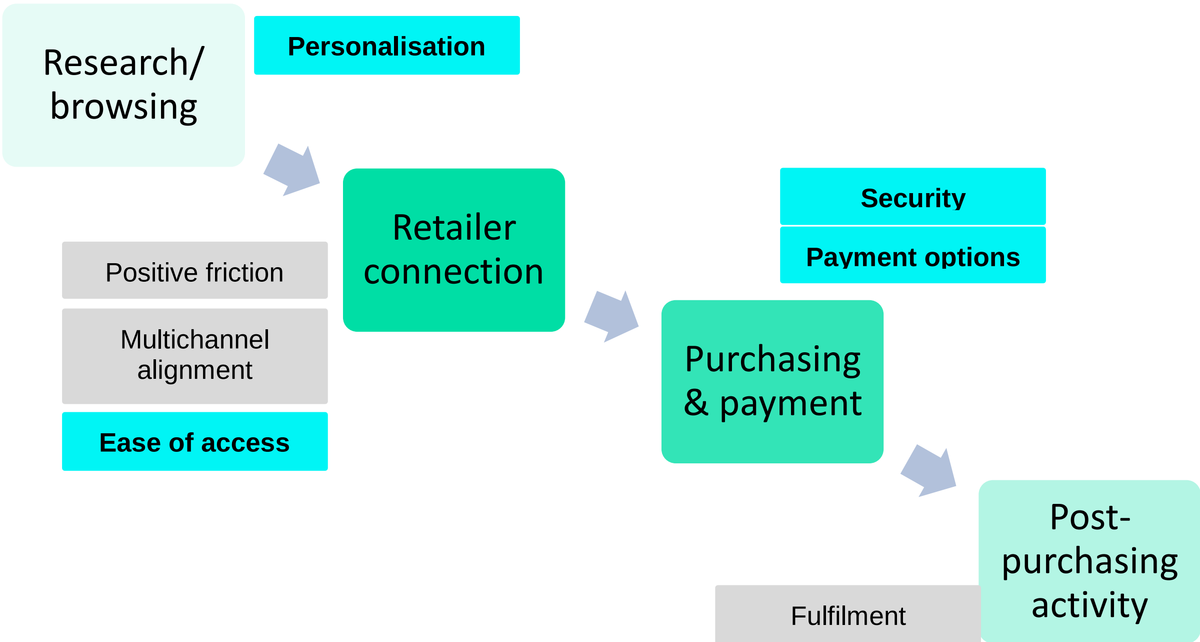
For most infrequent purchases, the border between the offline and online channel can become blurred. This switching is most prevalent in the early stages of the shopper journey, as shoppers often utilise a number of both online and offline sources for researching both the product and the retailer. For this reason, multichannel alignment is a particularly important factor for less frequent purchases.

However, once the decision on the offline retailer and the product has been made, the shopper then enters the segmentation of retailer approach. This is usually the first point in the journey that the retailer recognises the customer, unless the retailer is already well integrated across channels and has been aware of prior research on their website; for offline retailers, this is often when the customer enters the store.

The most valuable theme at this point for retailers is the one of positive friction, which encompasses the traits that retailers usually describe as “experiential” or “customer-centric”. At its core, this involves engaging the customer and ensuring that the journey is pleasant, and is “smooth” rather than “boring”. While this can take many forms (e.g. greeting a customer at the door) and is often sector specific, positive friction can be a useful tool for retailers to distinguish themselves from competitors.

Frequent online purchases

Examples: Food shopping (Ocado, ASDA), clothing shopping (M&S, boohoo.com, ASOS) and smaller homewares and electricals (Amazon)



The rise of online shopping has considerably altered the traditional shopper journey. No longer are shoppers comparing products across only handful of stores, when physical retailers were able to quickly reposition pricing to oppose local competitors. Instead, shoppers now have a wealth of retail information almost instantly available to them (particularly considering the burgeoning mobile market), with the ability to compare retailer prices at the click of a button. And although there are still many similarities in the shopper journeys, there are a number of differences that retailer must be aware of in order to not treat online customers identically to instore ones.

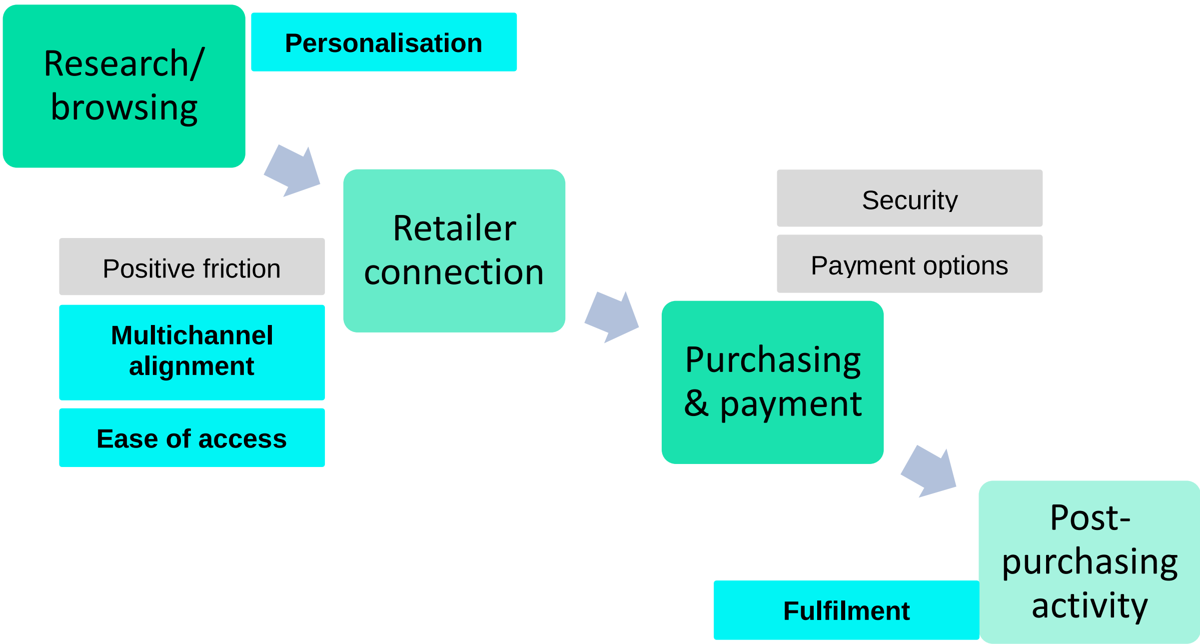
Two key elements make up the ideal frequent online shopper journey. The first one is the ability for retailers to retain customer information, in order to provide a personalised service and greater ease of access. This information can then be used in a multitude of ways, such as applying data analysis to suggest products that the customer would likely be interested in (consider Amazon’s “customers also looked at…” section), in conjunction with screening products that are unlikely to be of concern.

Secondly is the payment process. By retaining payment details, retailers can offer a significantly faster checkout, even to extent of “one click” buying, or can utilise inbuilt payment options (e.g. Apple Pay).

However, this efficiency comes with the drawback of laxer security. Automation of the payment process usually involves reducing the number of authorisation stages to improve speed, but their removal increases the opportunity for criminal activity. Retailers using their own payment system have to accept responsibility for both the data and any mishaps that follow if abused.

Infrequent online purchases

Examples: Large gardening and DIY products (lawnmowers, gazebos, B&Q, Wickes), electricals (TVs, Dixons Carphone), large furniture and homewares products (tables, chairs, benches, beds, M&S, John Lewis, DFS, Dreams)



Infrequent online purchases are the rarest type of retail purchase, but usually command a significant average transaction value; subsequently, the total time spent shopping for such purchases is much higher than frequent purchases, largely driven by longer browsing periods. Shoppers will often visit a variety of websites and examine numerous products before settling on a specific item to purchase.

From the consumer's perspective, these purchases also involve the highest level of switching between channels for browsing and purchasing. European furniture retailer DFS has stated that over 85% of potential customers research possible retailers online before even visiting a store, so having a unique online presence is crucial to engage with browsing potential shoppers. Its UK competitor ScS has also identified this as a clear trend. To greater capture the interest of shoppers, such retailers must focus on dynamic websites/apps, which can also accommodate personalised data techniques that allow for shoppers to leave and resume shopping journeys with ease.

Trustworthy fulfilment is also crucial. Given the high spend on such categories, retailers need to convey to consumers the level of care and post-purchase care offered (e.g. extended warranties, free removal of old products, reasonable delivery costs etc.) to quickly soothe any concerns.

Timeline

The definition of frictionless shopping is extremely broad and encapsulates any proposition which delivers a seamless and hassle free shopping experience for the customer. The evolution of frictionless shopping has been progressing since the introduction of high streets and mass market retail, therefore to construct a timeline of frictionless shopping would somewhat require a deep delve far back into history. Taking a pragmatic approach it would be appropriate to begin this timeline at around the Victorian era in which Britain was embarking on global imperial expansion; as such Britain experienced a great influx of international trade giving to the rise of a growing middle class in England contributing to a more approving attitude to mercantilism and consumption.

1800-1850s	In the early 19th century Britain shops would have looked very much different to the stores on our high streets today. Shops styles were far less consistent then, with a variety range of sizes and store styles, and individuality amid retailers would have been prevalent in the early Victorian era. High streets were made up of both shops as-well a great presence of market stalls. Later throughout the century, price labels became a rising phenomenon, prior to this shoppers had to ask prices of items which also left a lot more room for negotiation.
1860-1900s	Towards the 1860/70's the high street slowly developed towards the model we know today. Market stalls started to develop into shops with fixed markets, the introduction of the store associate, and the development of customer service. This change in the high street was down to urbanisation, as agricultural land became less available; less people grew vegetables and raised livestock, meaning there was less fresh produce to sell at market. Towards the end of the 19th century there was a surge in popularity of department stores offering a wide range of consumer goods under one roof, with the likes of Allders of Croydon opening in 1862 and Harrods opening in 1849.
1901-1920s	The Edwardian era brought many changes to British society; the reformed Liberal party came into power and introduced welfare reforms incorporating social legislation and introducing the modern welfare state. Workers were given greater benefits and there was a real effort to alleviate unemployment, furthermore the era saw the rising status of women in both the public and private spheres of life. Increased literacy for middle-class women presented them with more employment opportunities, the rise of birth control also helped working-class women avoid unemployment and poverty. The alleviated economic of the middle-class fuelled a growth in the demand of high level of customer service, etiquette and salesmanship, high streets had to adapt, shops began to offer better customer service, and shops became a lot more well organised and stylish. The first instances of home delivery were introduced in this era.
1950-1970s	Post-World War II period brought along great levels of economic expansion – the "golden age of capitalism". This era led to a significant rise in consumerism, which in turn saw an increase in the number of stores present in the high street, with increased profitability, productivity and quality. Stores began to revolutionise during this period, benefitting from economies of scale as well as technological developments in storage and logistics. Stores were able to bulk buy, and the popularity of large chain supermarkets began to grow, slowly outplacing the smaller high street stores. The popularity of large supermarkets was a major turning point for frictionless shopping, with shoppers now able to access a variety of different items under one roof.
1980-1990s	The 80s and 90s saw the rise of the home computer, during this period the "trinity of 1977" came to market with the Apple II, the TRS_80 Model I and the Commodore PET. These computers were accessible to mass market being both affordable and technically simple to use. This was major milestone for advancements of frictionless shopping; the introduction of the mass market computer would eventually revolutionise retail.
1990-2000 (cont.)	The 90s saw the revolution of the internet for commercial use, this was the beginning of a connected world, people were able to interact with each other from across the globe within a matter of minutes people would be able to email each other. Furthermore this era saw the rise of social networking, which would eventually play an extremely play a large part in the advancement

of frictionless shopping as we know it today. 1994 saw the beginning of online shopping, as the internet began to be established as a secure shopping channel, it became more and more of a popular shopping outlet and destination. The rapid expansion of the availability of the internet also saw the rise of online gaming; we see the seeds being sown for the developments one can anticipate in the present and over the next decade in digital gaming. As geopolitical borders began to breakdown and countries become more interconnected, freight/shipping companies became far more sophisticated, this provided solid infrastructure for e-commerce retail, as such, and companies were able to become more efficient in deliveries.

2001 Apple developed the media player/library ITunes in 2001. PayPal was established in 2001, the online payment system company is presently used in over 200 countries worldwide.

2003 In 2003, UK supermarket Tesco's introduced self-checkouts to their stores, currently there are over 12,000 installed over the country, self-checkout terminals have been a major revolution to frictionless shopping, reducing supermarket queues as well as reducing overall cost of labour in stores.

2004 Mark Zuckerberg launch Facebook, this is not the first social networking platform; it does although grow to become the largest social network in the world with over 2.3 billion users worldwide. Connecting billions of people together, Facebook has revolutionised digital marketing for retailers. Facebook is one of the four biggest tech giants in the world and has continued to invest in upcoming technology including virtual reality.

2007 Apple releases the first iPhone which has been a major contributor to frictionless shopping. The iPhone has been revolutionary to just about every sphere in life; it has accelerated the popularity of mobile ecommerce, advanced touch payment options through touch id and Apple's wallet app. The iPhone has been a crucial device in digital marketing enabling location based marketing.

2008 Satoshi Nakamoto registers domain name bitcoin.com. Bitcoin is a digital asset which functions as a payment system as well as a currency.

2010 Apple releases the first iPad, since then Apple has sold over 360million iPads. This was the introduction of tablets to the mass market. Customers often use tablets during the online shopping experience, from researching products to making a purchase. Many tablet compatible apps have also been developed to make the shopping easier more frictionless.

2012 A team of researchers developed a convolutional neural network. A convolutional neural network is a special type of multi-layer neural networks, designed to recognise visual patterns directly from pixel images with minimal processing. This was revolutionary to deep learning and will be a significant development for artificial intelligence. The implementation of deep learning will continue to revolutionise technology in retail, this is already in process, Amazon Go use deep technology to have till less stores which is one of the most prominent examples of modern day frictionless shopping.

2014 As of 2014, contactless payments was prominent throughout retail, as of December 2014 there were 58 million contactless-enabled cards in use and the UK had 147,000 contactless payment terminals.

2017- 2018 Waymo, a subsidiary of Alphabet Inc starts a trial of a self-driving taxi service; this trial was eventually rolled out to the general public of Phoenix, Arizona. Waymo plans to develop its autonomous vehicle model so that is can be used in transportation networks and urban last-mile solutions.

2019-2020	5G technology is the latest generation of cellular mobile communications. The technology has been rolled out to a number of countries around the world however the complete implementation is due to be completed in 2020. 5G has the potential to significantly improve the frictionless shopping experience, by offering faster speed internet connections shoppers are able to load retailer pages more quickly. Furthermore a faster more robust network will aid the practical application of new technologies including artificial intelligence and augmented reality. In 2019, although the 5G technology is available, the hardware to support has lagged behind, with no major mobile phone manufacturers offering 5G compatible mobile phones at present.

Trends

The main trends in the retail industry over the next 12 to 24 months are shown below. We classify these trends into three categories: technology trends, macroeconomic trends and retail trends.

Technology trends

The table below highlights the key technology trends impacting the retail industry.

Trend	What's happening?
Multichannel retail	Multichannel retail is a cross-channel strategy that retailers can implement in order to contribute to a frictionless shopping experience. Multichannel retail orchestrates cooperation between the various channels a retailer may operate in, from physical stores, to social commerce as well as online market places. The implementation of multichannel retail encapsulates the evolution of retail. As the consumer becomes more invested in the digital and technological advancements of increased mobile usage as well as tablet computers and other mobile devices, coupled with the convenience of online marketplaces and the practicalities of physical stores, the consumer has come to demand increased fluidity between the various options and expects that all channels retailers operate in, demonstrate consistent messages, offers, products and prices. Multichannel retail has been implemented for quite some time now however as retailers exhibit technological advancements innovation becomes more effective and creates an overall more dynamic consumer experience. Over the next decade retailers will continue to invest heavily in providing a fluid and efficient multichannel experience. Top trends include: the cooperation of information between various channels to create consistency; the development of tablet/mobile webpages to ensure a user friendly browsing experience; personalisation of marketing to ensure that offers received are of interest to the customer; fulfilment flexibility; and robust customer service.
Augmented Reality	Much commentary within the realms of technology and retail has centred on augmented reality; with many experts anticipating that vendors will aim to integrate augmented reality in to its retail model. Augmented reality is a relatively state-of-the-art concept which creates a mixed-reality experience for the user where live views of physical real-world environments are augmented with superimposed computer generated images over a user's view of the real-world. Many retailers are merely in the elementary phase of incorporating this sophisticated technology. Retailers can use augmented reality to allow customers to virtually 'try before they buy' without visiting a physical store location. Lacoste have been one of the first large brands to pioneer this technology through their LCST Lacoste AR mobile app which allows customers to virtually try on shoes. This has the potential to reduce pressures on their physical store locations as well as also allowing customer to bypass potential stock issues in physical locations. AR has helped with consumers conceptualising how a new sofa or a desk will fit or look in your living room or study, homeware retailers including Argos and Ikea have also adopted augmented reality, this has reduced the number of steps shoppers often encounter when purchasing a new piece of furniture further bolstering the frictionless shopping experience. In 2019 we expect retailers to continue to develop their applications to make them more life-like, whilst physical retailers may also incorporate AR into their stores in order increase customer engagement.

Trend	What's happening?
Artificial Intelligence (AI)	Artificial intelligence has been and will continue to be used in every step of retailers' operations, from sales, customer service management to their supply chains/operations. By using automation, retailers are able to promote frictionless shopping; this can be observed through the introduction of self-serve checkouts which have reduced supermarket queues and through automation which can create greater consistency, reduced costs and greater efficiency. AI has further been incorporated into store optimisation, for example, new technology which uses sensors and cameras to analyse customers profile has been implemented in stores to track customers shopping habits and to understand how physical retail space can be optimised, sensors can tell the retailer where shoppers congregate, which areas shoppers tend to linger in and which they divert away from. This information can be used by retailers to strategically coordinate their stores so that they can offer the greatest level of convenience for its customers. Over the next decade we can expect revolutionary technological developments in AI to further optimise retailer efficiency and ameliorate the customer experience. These developments include integrating machine functionality with machine creativity: this has been particularly effective within the fashion industry where AI has been used to bolster the creative process by identifying trends and conceptualising new designs. The Indian online fashion retailer Myantra has invested heavily into AI, which uses customer data in order to predetermine the most popular designs and styles, using this information the AI software creates new unique designs which are then incorporated into a new clothing range. Global retailers such as Amazon are introducing AI into homes; such retailers are accelerating the transformation of smart homes by introducing voice operated virtual assistants such as the hugely popular Alexa. Hardware/software like the Amazon Echo has encouraged frictionless shopping by allowing customers to order online through voice shopping. This reduces the time taken to order goods and allows busy consumers to multitask, for example customers can now order food whilst cooking dinner.
Personal shopping experience	Market research demonstrates that shoppers are no longer satisfied with a "one size fits all" shopping experience; customers have come to expect a more personalised experience. A personalised shopping experience does not exclusively relate to product range, it can be applied across the whole retail process from browsing instore to online purchases. Customers shop in very different ways and expect different elements to their shopping experience, for example some customers may prefer to shop through different online channels, retailers should therefore make all online easily accessible and user friendly, retailers can take this a step further by creating personalised pages for its different customers on digital channels. Amazon has addressed this customer desire and has implemented tailored home pages for customers; home pages now display products which fit the historical browsing/ordering habits of whoever is signed into that Amazon account. Personalised shopping is also important in physical stores, consumers have come to desire a VIP experience which offers them convenience and exclusivity, salesforce tells us that 39% of high street shoppers would be willing to share data around their personal preferences with a retailer to receive a faster and more convenient service once they are in the shop.
Proximity marketing (Google beacons)	Connecting customers to businesses is a key factor in furthering frictionless shopping; marketing and advertising which is both personal and geographic helps encapsulate this theory. Proximity marketing revolves around the concept of location-based marketing, which allows companies to distribute advertising and marketing content to individuals based on the location in which they are in. Waitrose have used this technology to deliver tailored price promotions to its customers' mobile devices depending on which particular food aisle they were near. Proximity marketing has been around since 2008 however due to a lack of sufficient technology the rewards have been relatively limited, companies such as Apple and Google have further invested and developed sufficient quality of location-based hardware which is integral to the effectiveness of proximity marketing. Through the use of beacons the accuracy and connectivity of proximity marketing has been significantly improved in recent years, technological development expectations over the next 5+ years is to overcome the challenges of scalability associated with the available location based hardware and to increase the number of locations in which the hardware exists.

Trend	What's happening?
Payment methods	Fintech has advanced significantly over the last decade and will continue to do so; the payment solutions which we know today will significantly develop over the coming years, as businesses aim to transform the way in which they utilise payment solutions from merely a transactional means, to a value-adding service. Businesses have used payment solutions to allow frictionless shopping; this can be observed through payment solutions such as Apple Pay. Global opportunities for payment methods are particularly prevalent in developing countries such as India and Brazil were "tech-savvy" generations whom are not predisposed to traditional payment methods are feeding the demand for innovative technologically advanced payment solutions. Consumer driven demand of prompt, secure, Multichannel orientated and multi-geographical capable payment solutions has meant that as well as traditional payment providers such as banks, more nimble small businesses will continue to pave the way for innovation. Convergence is the key, as globalisation trends of internationalism prevail and geopolitical barriers are eroded businesses and consumers look for standardisation and simplification of the payment process.
5G mobile networks	As 5G mobile networks are being rolled out internationally both businesses and consumers alike are curious as to how this technology may impact their business practices and retail experiences respectively. Similar to the technical difficulties that proximity marketing, AR, VR and AI have faced from a lack of compatible hardware, 5G faces the same limitations. There are no mainstream 5G compatible mobile devices as of March 2019, and many multinational corporations such as Apple are not predicted to release any 5G compatible devices till at least 2020. Nevertheless once the technology materialises it can aid the further advancement of frictionless shopping through significantly enhanced capabilities, which means that networks can cope with more high demand applications, as well as its lower latency enabling devices to process commands far more rapidly than 4G technology.

Source: GlobalData

Macroeconomic trends

The table below highlights the key macroeconomic trends impacting the retail industry.

Trend	What's happening?
US overview	2018 proved to be a prosperous year for the US economy; the labour market experienced an 18-year low in unemployment at 3.8%. Retail, in turn, has benefitted from this, with improved labour market driving healthier shopper disposable incomes, encouraging spending and resulting in strengthened retailer performances. The US Federal Reserve has been committed to research and development for technological advancements, by maintaining research and development tax credits, federal grants and employee related incentives. This commitment to innovation has further reinforced the US as a global powerhouse for technological advancements as-well as sustainability. With research leading global industry frontrunners such as Google, Amazon and Tesla all headquartered in the USA, the US will continue to be at the forefront of technological advancements. For example in 2018 Amazon invested $22.6 billion in research and development, Apple invested $11.6 billion and Microsoft $12.3 billion. With such significant investment by companies who incorporate technologies such as AR, AI and innovative delivery options, we expect to see significant developments in frictionless shopping in the US by 2030.
Eurozone overview	The Eurozone's economy continued to grow in the final quarter of 2018 however at a slower pace since 2017's robust recovery. In 2018 growth rose by 0.2% [clarify here what you mean by growth – or is this highlighted elsewhere] in the third and fourth quarter and by 1.9% for the total year, in contrast to 2.3% in 2017. Germany in particular felt the brunt of this economic slowdown, with its economy experiencing contractions for the first time since 2015. This was mainly as a result of increased regulatory constraints on the automotive industry, as well as weakened consumer confidence and a worsened balance of payments as its exports fell and imports rose. France ended 2018 on an economic low as it missed its final 2018 quarterly growth expectations due to reduced manufacturing confidence coupled with the lowest consumer confidence since 2014. The Spanish economy has demonstrated resilience to the global economic slowdown with GDP growth in 2018 at 2.5%. While growth slowed in the third quarter to 0.7%, this was still significantly higher than the rest of the Eurozone, though due to weak comparatives.
Asia overview	As China faces an economic slowdown due to US trade disruptions, it is looking to reinforce its domestic markets in order to bolster consumption. As the growing middle class in China becomes more affluent, consumers are shifting their spending habits away from traditional retail to more service focused industries such as travel and education, and are purchasing more from international retailers, impacting growth. Chinese retailers must continue to invest in frictionless shopping methods including AR, efficient payment methods, delivery infrastructure and multichannel retail in order for them to appeal to the 410 million Chinese tech-focused millennials; in particular the Chinese conglomerates are investing significantly into infrastructures in order to reinforce their retail strategies and drive domestic spending. Alibaba, for example, in early 2019 invested $693million in STO express, a Chinese courier firm to further grow its distribution network. For this investment to pay off it is important that Chinese consumers shift their demands away from international imports and towards Chinese domestic goods, should US trade barriers continue to persist this will be a likely outcome. By shifting towards domestic consumption, China can grow its current account surplus in its balance of payments; this will have a positive effect on Chinese domestic retailers who can continue to invest potential profits into Chinese technological infrastructure.

Trend	What's happening?
UK overview	Public expenditure continued to grow throughout 2018 with the average weekly household expenditure in the UK at £572.60, at its highest level since 2005. This is partly attributed to the warm weather over the summer, with household spending growing by a robust 0.5% in the third quarter, as well as a small increase in real wages of around 0.2%. The weakening of the GBP has led to inflationary pressures, due to imports becoming more expensive putting some pressure on spending, though British exports have become more competitive. While this provides an opportunity for the UK, uncertainty over Britain exit from the European Union making it challenging for businesses to fully take advantage of this. Furthermore, this uncertainty makes it challenging to forecast UK growth going forward as the type of transition the UK implements in leaving the EU, whether hard or soft, will be a particularly significant factor in determining the economic outlook of the UK economy. Economic results since the Brexit vote have not been disastrous; however the negative perception of economic health may have induced a multiplier effect on private consumption and investment, resulting in potentially lower than optimal growth had Brexit uncertainty been lower. Given that consumer spending, savings and investment is a major factor in determining overall national economic health, it is important that the government, the media and businesses manage uncertainty so that any negative real effects of Brexit are not further fuelled by speculation and negative economic sentiment. Businesses must prepare in advance for the worst possible scenario, which in the present time is a no trade agreement where the UK will have to trade under World Trade Organisation rules. The more prepared that businesses are, the less impact any trade disruptions, supply and price changes will have on the consumer, and the overall economy. The UK's monetary policy must be carefully managed in order to minimise the impact of Brexit on the economy. While high inflation may make it necessary to increase interest rates, if rises are introduced too quickly, this will impact consumer expenditure. Given current pressures on UK retailers, we anticipate that UK technological developments in AI, AR and frictionless shopping will lag behind more successful global economies. The technicalities surrounding the free flow of migrants from EU countries after Brexit may also have a damaging impact on UK retailers. If increased immigration laws lead to a fall in the supply of labour, wage increases will be likely, putting further pressure on retailers' bottom lines and reducing retailers' ability to invest in future technologies.

Source: GlobalData

Retail trends

The table below highlights the key retail trends impacting the industry.

Trend	What's happening?
Delivery options	The delivery options available to consumers have greatly increased over the last decade, with the rise of Amazon Prime and the popularity of next day delivery; many retailers have been forced to offer more innovative delivery options in order to remain competitive. UK based retailer JD sports offers a delivery saver scheme in which customers' can pay a one off yearly £9.99 fee in return for unlimited next day delivery. Click and collect options are also on the rise offering the opportunity for customers to collect their online orders at the closest available branch. Interestingly delivery options are extremely price elastic and for the majority of consumers price remains the key factor when opting for delivery options. These trends also differ to some extent internationally, with countries in the Far East typically less sensitive to pricing and are more prepared to pay a higher cost in order to receive their package in the most time-effective manner than their US counterparts whose decisions are more price elastic. As innovative brands such as Google pioneer driverless cars and drones, the future of delivery is set to encapsulate innovation and look very different to the current landscape. As retailers look to satisfy customer preferences of timeliness and cost-effectiveness it becomes clear that automated guided vehicles, drones and bikes are going to dominate the future of delivery options.
Store concepts	In markets with high online penetration, physical stores are struggling to prove their worth and retailers have experimented with various concepts to attract new customers into its stores as well as increasing its existing customers' engagement. In the UK, H&M have introduced a variety of new ideas into their stores; this includes self-service checkouts and food/drink establishments within the business. Next have also incorporated food/drink establishments into their some of their stores with their partnership with celebrity chef Gino D'Acampo, this has led to the opening of a pizza and prosecco bar in a number of their stores. Many stores have adopted Scandinavian minimalism into their retail model offering their customers simplicity and functionality. By removing the distractions, retailers' are emphasising quality over quantity. This trend can be observed over a number of sectors; many fashion retailers have adopted the typically Ikea or Apple like store designs incorporating ergonomic designs and a "clean living" image. This is not only a matter of interior design it is also in aid of frictionless shopping. When one enters an Apple shop it becomes clear that the brand is fixated on customer experience, allowing customers to freely try its products for as long as they desire thereby reducing the time required to request a demo from an instore employee. The Scandinavian simplicity which Apple has adopted ensures a spacious, well-lit store with glass windows, this creates mobility in the customer journey, and the large glass windows create an inviting theme, while the spacious store allows customers to navigate the store promptly. Next has embraced a similar retail style and we can expect the trend to continue over the coming years. Consumers' have come to expect a more functional retail space coupled with a personable experience, stores will continue to evolve in order to satisfy this growing demand.

Trend	What's happening?
Evolution of customer service	As customers have come to expect a more personal shopping experience and retail moves towards a more competitive landscape, it becomes imperative for retailers to invest in their workforce in order to develop their employees so that they can keep up with customer demands. The traditional retail sales associate roles have developed into consultant/product expert roles at companies such as Apple. Although technological advancements have paved the way for artificial intelligence and automated commercial models, in certain sectors human interaction still remains an integral element to the shopping experience, this is particularly the case with retailers who specialise in durable goods. Durable goods are those which are not consumed immediately and last over a longer period of time. Customers require expert consultants to advise them on the product range so that they can make informed decisions on their purchases. If customers have accessibility to product expertise this bolsters frictionless shopping as it instils confidence in them and reduces the amount of time consumers spend researching and deliberating on which product to invest in.

Source: GlobalData

Seven Frictionless Shopping Themes

As previously discussed, GlobalData has identified seven key topics within frictionless shopping in the retail sector. They are ease of access, fulfilment, multichannel alignment, payment options, personalisation, positive friction, and security.

In this section, we define and delve into each of the individual topics, discussing the issues that retailers are facing within each one, and how each contributes to the larger theme of frictionless shopping.

Frictionless shopping leaders and laggards in the retail sector

Theme	Market leaders		Laggards	
Ease of access	Apple	Kroger	IKEA	
	Amazon	K-Supermarket		
	Carrefour	Target		
Fulfilment	Amazon		ASDA	Morrisons
	ASOS		E. Leclerc	
	Ocado		Marks & Spencer	
Multichannel alignment	DFS	Walmart	Sainsbury's	
	John Lewis			
	Tesco			
Payment options	Amazon	JD.com	Aldi	
	Alibaba		Lidl	
	Carrefour			
Personalisation	Amazon		H&M	
	ASOS			
	Zara			
Positive friction	IKEA	Macy's	Amazon	
	John Lewis		Argos	
	Kroger			
Security	Apple	Walgreens	Costco	Target
	Best Buy		Macy's	Wayfair
	Sainsbury's		Morrisons	

Source: GlobalData

Ease of access

Ease of access is concerned with the length of time a customer takes from first contact with the retailer to payment; for instore, this starts when a potential buyer first enters the store, and for online, when the customer first accesses the website/application. Infrequent purchases often have significantly higher browsing times and multiple points of contact between the retailer and the shopper is accepted, and so ease of access is more concerned with more frequent, lower value purchases.

Ease of access can be broken down into the following steps:

1. How quickly a customer can identify the location of the desired product within the range offered;
2. How quickly a customer can then reach the retailer's point of sale (POS).

Ease of access has been a significant driver to the shift towards online retail. Rather than scouring a store for an item and then exploring the visible stock for the correct size (clothing, footwear) or the individual product with the best quality (food [particularly fruit and vegetables], homewares), online has granted shoppers the ability to use search bars to narrow down ranges within seconds, and allows further simplification via fixed search parameters (e.g. star rating, price, size, colour etc.)

To counter this advantage, many physical retailers have recently invested in instore technology that can assist shoppers in a similar manner.

One such mechanism is the use of beacons. First introduced by Apple in 2013, these are Bluetooth devices that converse with a smartphone/tablet and highlight promotions, discounts and store layout to guide a shopper towards departments/products of interest. For the shopper, faster identification of products (particularly in large locations such as multi-tier department stores) can prevent the feeling of being overwhelmed by the proposition, and thus reduce the likelihood of leaving a store. And for the retailer, beacons allow shopper journeys to be tracked to a greater degree of accuracy, and would lead to quicker identification of unvisited/underperforming areas of the store that require developing. Beacon technology may also have the potential to cultivate customer loyalty, through schemes that requires a customer's instore presence to activate incentive bonuses, e.g. open your app instore a set number of times this month to receive a discount.

A potential downside to streamlining the shopper journey is the reduction in impulse purchases; shoppers using smartphones as maps instore are more likely to ignore surrounding products that are not part of the pre-meditated journey.

Outside of more advanced technologies, stores can still do more to ensure a clearer layout for customers. This can range from simple housekeeping – such as visible signage overhead directing customers to different departments – to establishing a network of paths throughout the store to guide customers more intuitively. Although this is a fairly simple method to aid shoppers, retail is generally behind other sectors in this example; other sectors (e.g. public transportation services) have utilised this basic concept much more frequently.

Ease of access in the retail sector

An overview

	Market leaders		Laggards
Ease of access	Apple Amazon Carrefour	Kroger K-Supermarket Target	IKEA

Source: GlobalData

Fulfilment

Despite the many advantages that online retailers have, the rise of the online channel has created a rapidly growing issue – the "last mile." Previously, consumers carried the responsibility of transporting any purchased products from store to home but increasingly, this final stage is falling onto the shoulders of retailers. Subsequently this has opened a Pandora's Box that consists of logistical complications, new issues with third-party partners, and a range of required data analytics tools to make delivery as efficient as possible. But for consumers, with respect to a frictionless experience, fulfilment comes down to three core focuses: the cost of delivery, the speed of delivery, and the flexibility of both.

- FREE Delivery
- One-Day Delivery
- Priority Delivery
- Standard Delivery/Standard Pickup
- Express Delivery
- Same-Day (Evening Delivery)
- Nominated Day Delivery for Small Items
- Nominated Day Delivery for Large Items
- 4 Hour Delivery Window for Large Items
- Expedited Delivery
- Amazon Pickup Locations

Figure 2: Amazon's UK delivery options, highlighting the value of multiple cost vs time delivery options.

The cost versus speed of delivery has become a complicated new battleground for retailers. Successful retailers are those that have offered a fulfilment proposition that competes with Amazon, offering a wide combination of delivery locations and times, at varying prices to best suit the needs of individual shoppers. For example, UK department store retailer Next offers free next day click & collect to its stores, or next day home delivery for £3.99. Meanwhile, online clothing retailer ASOS offers standard (3-5 days) UK delivery for £3.00, or free for orders over £25, next day delivery for £5.95, or ASOS Instant (same day if ordered before noon) for £9.95. As demonstrated, the exact nature of delivery varies by retail sector and retailer, and there is no clearly defined structure for retailers to operate by. To compete in fulfilment, it is crucial for retailers to assess the delivery options of rivals – even down to a granular regional level. Online grocer Ocado is currently trialling a one-hour delivery option in London (Ocado Zoom), which is possible by reducing the number of SKUs available for delivery to 10,000.

An increasingly popular way for retailers to and cultivate shopper loyalty is the introduction of the delivery saver scheme, where shoppers pay a fixed monthly or annual subscription fee for unlimited priority orders. GlobalData's 2018 report on UK delivery saver schemes highlights how the success of Amazon Prime has led to similar concepts in ASOS Premier, Next Unlimited, JD X Unlimited, boohoo Premier, Ocado smart pass, Tesco delivery saver, etc. Across both food and non-food, this is a rapidly growing trend amid younger consumers, who generally shop more frequently for lower basket sizes. As with online delivery, retailers must maintain an awareness of the offer of competitors, and should look to be a first mover if there is limited activity from rivals.

Fulfilment in the retail sector

An overview

	Market leaders	Laggards	
Fulfilment	Amazon ASOS Ocado	ASDA E. Leclerc Marks & Spencer	Morrisons

Source: GlobalData

Multichannel alignment

Multichannel alignment is about giving shoppers a choice in how they complete their purchases. Shoppers are likely to use different appliances at various stages in the shopping journey and may switch between them for browsing and purchasing. It is therefore important for shopping baskets to match across desktop, mobile and tablet sites, and apps.

Some of the most familiar examples of multichannel alignment come at the purchasing stage. Retailers have long provided order points instore (whether this is via staff with iPads such as in clothing specialist Oasis, or static counters such as in M&S) for customers to purchase online if items are out of stock instore. The use of mobile scan & go apps for payments, as used by Walmart is another familiar way of reducing friction in the payment process through mobile technology.

Multichannel alignment can also take the form of a seamless click & collect service such as Zara automated collection point in its Milan store, which allows users to enter a PIN or QR code so that their order can be retrieved robotically in seconds.

The browsing experience can also be enhanced by smartphone technology which can be used by customers prior to visiting the store. In China, Carrefour has launched an app which allows shoppers to use an indoor map of the store to navigate them to items on a shopping list. This helps remove friction in the shopper journey by reducing the amount of time spent locating items in a large stores such as supermarkets. In the USA, Gap and its sister companies Banana Republic and Athleta allow shoppers to reserve items using their phones which can be set aside for them ready to try on instore. This removes the friction inherent in looking for an item instore, in the correct size.

One retailer leading the way in multichannel alignment is Sephora. The cosmetics store’s “Companion” app uses geofencing technology to alert customers to the location of nearby stores, and once instore, uses information about previous orders to give product recommendations to shoppers.

Sephora has also worked with Google to allow consumers to book appointments for makeovers using their Google Home Hub voice-activated virtual assistant. Once the makeover is complete instore, customers are sent a list of all the products used along with tutorial information, allowing them to complete the purchase at their convenience outside of the store.

Multichannel alignment in the retail sector

An overview

Source: GlobalData

Payment options

Offering frictionless payment is the process of removing any obstacles or stress to the consumer in order to complete a transaction. Benefits of reducing friction allows for better convenience and speed of completion for shoppers. For retailers it removes the possibility of a purchase being abandoned as there less time required for shoppers to consider halting the purchase or talking themselves out of an impulse purchase between selection and. New smart technology continues to disrupt payments allowing them to be made with little or no effort needed and in some cases invisible.

Amazon has traditionally set the bar of innovation as an early adopter of frictionless payment. In 1997 it first launched its one-click purchase option online, the first of its kind allowing customers to purchase with the click of only one button (providing they they have already stored payment and delivery information in their account). This significantly sped up the time it would take to place an order on online and removed the need for multiple steps. The 1-Click technology came to end of its patent in 2017; however Amazon had already moved on to build on its frictionless offer, with Amazon prime Subscribe & Save, allowing shoppers to set up automatic replacement purchases and the opening of the Amazon Go store with check out free shopping, allowing sensors to pick up customer data allowing them to walk out of the store without visiting a check out point.

Trust and security pose the biggest threats to retailers looking to embed frictionless payment systems as shoppers will need to feel they trust retailers to store their details safely. Therefore the tech giants such as Amazon and Apple are likely to be more successful than smaller offline retailers in getting shoppers to feel secure. For payments to work they still require preparation, such as filling in initial details and linking a card/app, therefore emphasis will need to be on getting consumers to commit to this and making this step as easy and painless as possible.

Payment options in the retail sector

An overview

	Market leaders		Laggards
Payment options	Amazon	JD.com	Aldi
	Alibaba		Lidl
	Carrefour		

Source: GlobalData

Personalisation

By tailoring services to their customers' needs, retailers can reduce friction in the shopping experience. Grocery is one of the sectors suffering from the highest levels of friction, yet it is also where consumers are looking for the highest levels of convenience. Online grocery retailers provide a well-established examples of providing a personalised experience, by giving shoppers the opportunity to rebuy items from regular and most-recent purchases, often using a "before you go" page for shoppers to review just before completing their purchase. Retailers such as Ocado and Sainsbury's also incentivise purchases by offering discounts which are tailored to shoppers.

Personalisation can be exploited to create a frictionless experience outside of grocery: in sportswear, Under Armour is trialling a technology which uses a chip embedded in shoes to reveal information about how the user runs. This not only helps the retailer with future product development, but helps the consumer with product selection in a complex and technical product area.

For shoppers who want interaction with store staff, three Miami locations of the shoe retailer Melissa shoes are using facial recognition software to alert shop assistants to the customer's previous purchases in order to improve customer service instore. Neiman Marcus, also in the USA, gives shoppers the option of a personalised experience by connecting shoppers with its sales assistants via an app. Building up a relationship with frequent high value shoppers allows staff to pick out personalised product recommendations, and replicates the highly personal experience of shopping at a high-end boutique.

Personalisation in the retail sector

An overview

	Market leaders	Laggards
Personalisation	Amazon	H&M
	ASOS	
	Zara	

Source: GlobalData

Positive friction

While friction in retail is mostly talked about in terms of removing negative aspects that stand in the way of a seamless shopping experience, the idea of positive friction also needs to be considered. Adding to and enhancing to the purchase journey with a positive moment of friction or ‘pause’ during a transaction can be beneficial. For example an intervention that provides helpful information, recommends complementary products or recalls previous preferences can enhance a customer experience through intervention.

Creating deliberate limitations to purchase, such as giving the customer an option to verify a transaction avoids having purchases to go through without consideration, offering responsible customer service to buyers who have trusted retailers with details. Other times an intended pause may be welcomed in an offline environment includes giving shoppers time to pack products away for example in a grocery store where smart scanners can drive fast payment.

When it comes to shopping for a big ticket item or wants driven and luxury purchases, consumers don’t necessarily want a completely frictionless transaction. In these cases it is beneficial for the process of buying to feel like more of experience. Positive friction can enhance this type of purchase, such as offering a complimentary drink instore or a pop-up message online providing the customer with additional information about the purchase or guarantee.

As well as using positive friction to enhance customer service, it can be used to surprise and delight shoppers leading to additional impulse purchase buys and added conversion. Discovering complimentary products, and items you did not think you needed is part of the enjoyment of shopping that drives positive human emotions. However it is getting the balance of positive friction that is essential to producing the right experience for consumers. Retailers need to ensure the process they have in place is right for their product, price range and customer base.

Positive friction in the retail sector

An overview

	Market leaders		Laggards
Positive friction	IKEA John Lewis Kroger	Macy's	Amazon Argos

Source: GlobalData

Security

Offline security

Despite instore theft being a long term issue for retailers, criminals have gained the upper hand in recent years as the number of shoplifting incidents reported has increased 11.2% over 2014-2018. The BRC estimated that the direct cost to retailers of consumer theft has generated a “shoplifting market” worth c.£70m in the UK during 2018.

The introduction of the self-service checkout has undisputedly been a source for such growth. The Department of Sociology at City, University of London have developed the “SWIPERS” (seemingly well-intentioned patrons engaging in routine shoplifting) framework, which categorises self-checkout shoplifters into the following four categories:

1. Accidental – after originally stealing a product by accident (failing to correctly scan the product, etc.), the customer revised down their risk assessment and were encouraged by the ease to commit more offences.

2. Switching – by replacing items with less expensive (per kilo) substitutes, shoppers can “fool” the scanner’s weight scales and pay less for a more expensive product. A particular example of this was the “carrot trick”, noticed in Australian supermarkets, where shoppers were putting through avocados and other expensive fruit and vegetables as loose carrots.

3. Compensating – More self-service checkouts usually means less staff (at least, those visible to the consumer) and higher profits for the company. Some shoppers then use this as a justification for petty theft, believing that such theft now no longer impacts human society as greatly as before.

4. Irritation/frustration – The concept that self-service machines can often not provide the checkout service as planned, and can leave customers waiting for staff to come and fix the problem. Such justifications include “the item wouldn’t scan”, “the barcode was damaged” and “I couldn’t find the correct fruit or vegetable”.

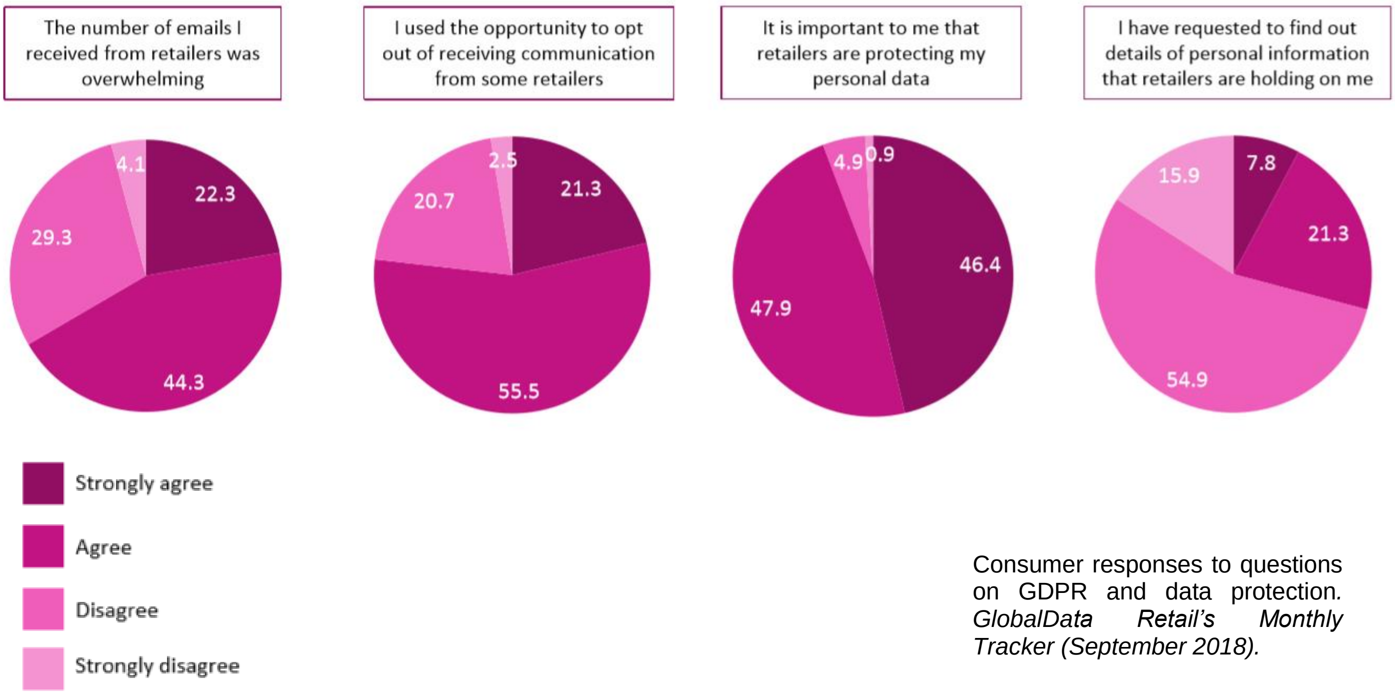
However, the obvious solution of more active responses to shoplifting can lead to even more troubling issues for retailers and their staff. The Association of Convenience Stores states that 83% of convenience workers have been subject to verbal abuse during 2018, and 48% have been victims of physical attacks – worryingly, the most common trigger for incidents was an attacker being challenged for shoplifting.

Online security

The security of personal data is a vital issue for consumers across all day-to-day activities, and online retail is a key sector of consideration; globally in 2017, the retail industry suffered more data breach incidents than any other sector, with North America and Asia Pacific the most vulnerable regions due to their higher online penetration. And as consumers continue to adapt to shopping online, hackers and the malware they use are becoming increasingly more sophisticated, putting pressure on retailers and online partners to invest more in developing secure platforms to protect consumers (and inevitably, their own revenue); the BRC states that UK retailers spent £162m on cybersecurity issues in 2018, 17% more than in 2017.

The benefits of collecting personal data are clear, allowing retailers greater insight into specific shopping habits and subsequently allows for more responsive changes in proposition. Furthermore, retailers with access to large quantities of personal data (e.g. Amazon) also have the ability to accurately model a customer’s shopping preferences across both channels and products, and can use statistical modelling to compare demographics and increase purchase rates through targeted advertising.

Retailers with a multichannel presence often rely on third-party services for fragments of its website/app management, such as services to manage the post-purchase product review process, chatbots, payment services, etc. While any financial liabilities of a breach at such service partners should be insured to come to no direct monetary cost to the retailer, the retailer is likely to suffer commercially from reputational damage should the breach effect their consumers as a result.



Consumer responses to questions on GDPR and data protection. *GlobalData Retail’s Monthly Tracker (September 2018).*

But balancing security and customer care is a difficult act. The GDPR laws that came into effect in May 2018 required businesses holding personal information to ensure they were sufficiently protecting data, and as a result many retailers had to request consent from consumers in the run up to the new requirements coming in.

Two thirds of UK consumers felt the email correspondence they received was overwhelming and so the majority opted out of receiving email communication from some retailers. But although this will have had a significant impact on the size of retailers' customer databases, it will have left retailers with their most engaged and responsive customers which they will be able to learn from and target more effectively.

To mitigate online security risks, retailers must fastidiously audit all deals with third-party service providers, as well as maintaining a dynamic list of all service providers and interactions between them, to act as an early warning system for potential areas where data may be misused (accidently or otherwise). And with respect to the personally identifiable information (PII) data that retailers collect to allow for innovations such as easy sign-in and one-click ordering, retailers must ensure that the data retained is as minimal as possible and correctly segmented to avoid hackers gaining full access to data in one breach. Cyber-security experts suggest retailers must also be particularly vigilant during periods of exceptional web traffic, (such as January sales and Black Friday) as the higher, more volatile traffic levels make it easier for attackers to mask their tracks.

Security in the retail sector

An overview

	Market leaders		Laggards	
Security	Apple	Walgreens	Costco	Target
	Best Buy		Macy's	Wayfair
	Sainsbury's		Morrisons	

Source: GlobalData

Companies section

The US players

Amazon

Online marketplace, Amazon is the world's largest e-commerce marketplace as well as the largest cloud computing platform. Amazon has invested significantly in creating a frictionless environment and also in its distribution and fulfilment networks. Fulfilment costs for Amazon have increased exponentially in recent years rising from $11.5bn in 2015 to $21.7bn in 2017; and while increases in costs are to be expected given its rapid growth, Amazon has been working to mitigate them by optimising its fulfilment network, through the development of its own delivery service. With significant investment in its supply chain strategy, customers can expect faster delivery times, a more efficient multichannel experience as well as cheaper fulfilment costs due to economies of scale.

Kroger

Kroger, the American retailing company has demonstrated high levels of innovation in striving to create a frictionless shopping model. With the rise in popularity of grocery home delivery, companies are looking for new ways to fulfil customer demands whilst mitigating the significant costs of inner-city delivery. Kroger has partnered with the American robotics company Nuro to introduce autonomous delivery to the food and grocery sector. The service is available from stores in Arizona and Houston, where autonomous driverless vehicles use sensors to navigate through traffic. The implementation of robotics in the delivery process can provide many potential solutions for grocery retailers, including reduced labour costs, less reliance on the availability of workforce, and reduced emissions, helping the business to project an environmentally friendly image. Kroger will continue to expand its autonomous delivery service and roll it out to more states. The American retailer has also seen its digital sales grow by +58% in 2018, partly driven by its increased delivery and pickup coverage. Investments were significant in 2018; with the opening of a new warehouse as well as the unification of its brands' websites, helping to drive fluidity between its multichannel operations.

Walmart

Multinational retailer Walmart is the largest company in the world with over $500bn sales in 2018 as well as the largest private employer in the world with 2.3 million employees. Walmart's e-commerce sales have climbed consistently despite strong competition from the likes of Amazon. In the final quarter of 2018 Walmart sales grew by +43% on the previous year. Walmart's acquisition activity such as its recent purchase of Aspectiva, an Israeli based start-up that uses AI to analyse user content such as reviews as well as the acquisition of Art.com an online home décor retailer, demonstrates Walmart's technological aspirations in growing its ecommerce presence. Walmart's head of ecommerce business, has expressed a motivation to own upwards of 40 digital brands in the future, further highlighting its ambitions.

The Asian players

Alibaba Group

Chinese conglomerate Alibaba, has been at the forefront of the frictionless shopping revolution and has reported a strong financial performance, announcing a 41% growth in revenue for its financial year ending December 2018. Furthermore Alibaba demonstrated greater consumer engagement with an increase of 35 million active customers visiting its Chinese retail marketplace. In 2016 Alibaba's executive chairman Jack Ma focused on developing his "New Retail" model which he describes as a future which amalgamates online and offline to reap the benefits of both. This effectively means the digitalisation of all forms of retail including traditional offline formats. Alibaba has already begun this, with its subsidiary, Hema where the shopping experience is centred on the use of mobile devices. Customers can use an app to scan products, get further product information and pay for their groceries. The "New Retail" model exemplified by Hema also incorporates a sophisticated logistics model in which every Hema store doubles up as a distribution centre. This has proven to be extremely successful and Hema claims that this has even made some Chinese nationals relocate closer to Hema stores in order to be within the 3km distribution radius it operates in. Alibaba has also created a customer analytics app available to all retailers, which can be used to track the popularity of items and also allows the automatic reordering of those popular items. This not only optimises the customer's frictionless shopping experience but also optimises the efficiencies of the business itself.

JD.com

JD.com is a Chinese e-commerce company headquartered in Beijing; it has over 314m active users, and accounts for approximately 30% of the Chinese business to customer online market. JD.com has been at the forefront of technological development in China and has demonstrated its firm commitment to this in developing revolutionary technology from AI, autonomous technology and robots. JD.com is in major competition with the Alibaba group, which in past years has also been reliant on domestic markets. JD.com CEO, Liu Qiangdong has international growth aspirations, highlighted through its $400m investment in UK luxury fashion retail platform, Farfetch. Furthermore in 2018 Google invested $550 million in JD.com and on March 5 2019 JD.com launched its US flagship store on Alphabet's online shopping site, Google Express, enabling it to reach a wider international market. In CEO Liu's quest for a complete automated business, JD.com has united with Fung Retailing to invest in an AI-powered retail research centre, suggesting that AI is not merely a gimmick for the online giant but it will play a significant role in the future of the retailer.

Seven & I Holdings

Seven and I is a retail group headquartered in Tokyo, Japan. It is the largest retailer in Japan and is the 15th largest in the world. In its financial year ending February 2018 report, Seven and I expressed an intention to invest further into its digital strategy with customer data the focal point for this. The retail group has 23 million customers in Japan and is focusing on collating its customer data more effectively and using it to determine opportunities to deliver personalised shopping experiences. Through the use of its Seven Mile Program, its group wide loyalty scheme, Seven and I aims to use the program to personalise marketing and product development.

The European players

Tesco

UK based international grocery retailer Tesco returned to growth in 2018, achieving sales of £57.5 billion, +2.8% on the previous year. Though up against weak comparatives, group profit before tax was much improved, growing by +795% to reach £1.3 billion. While 2017 was a challenging year for the retailer, providing much opportunity for growth, and its performance in 2018 was bolstered by the closure of several unprofitable divisions, Tesco has also focused more heavily on innovation and investment in the overall retail experience. The introduction of frictionless shopping methods such as scan as you shop has been very popular with its customer base and is used by 600,000 customers every week, reducing the overall time that customers spend at the checkout as well as better enabling them to track their spending. Tesco is further trialling more frictionless shopping options including its new 'shop and go' app in till-free stores, and if Tesco can refine this technology, and successfully implement it, and then it has the potential to be one of the front-runners in the revolution towards frictionless shopping.

Carrefour

French multinational retailer Carrefour reported a slight improvement in like-for-like sales in 2018, at 1.4%. However, operating profit declined by -3.4% as it struggled in its core French market impacted by the anti-government protests in the fourth quarter. Although Carrefour is in the relatively early stages of e-commerce development, it has firm ambitions to progress and has partnered with Google to create a new grocery shopping experience enabling consumers to shop online using the Google Assistant as well as through a new French Google shopping website. Partnering with such a major technology player, puts Carrefour in a good position to further improve its frictionless shopping developments and it must ensure it utilises opportunities to do this.

IKEA

Swedish global homewares and furniture retailer, IKEA, has continued to report steady growth, driven by both space expansion and the continued appeal of its value offer. . IKEA has continued to investment in its warehouses to support its online operations and smaller city-centre stores, with€2.8bn invested in 14 fulfilment centres. Such significant investment in online fulfilment and inner city stores demonstrates IKEA's determination to develop its multichannel capabilities. IKEA has also developed its augmented reality App further which encourages a frictionless model as it aids the consumer in making quicker and informed decisions, when making a purchase.

Aldi

Financial performances for Aldi's global markets have proven to be positive, with strong results further bolstered by impressive seasonal trading. Aldi's discounter model and no frills stores ensure that overheads are slim and that savings can be passed on to customers. This indirectly offers customers a frictionless shopping experience through enabling consumers to shop quickly and easily particularly apparent during the checkout process. Although there are fewer open tills than many of its competitors' stores, the amount of time spent in queues is minimised by shorter scanning times. Aldi ensures this by putting multiple barcodes on its products, thereby reducing the time checkout staff spend time looking for barcodes.

Disruptors

Disruptor companies are entities which drive innovation or create new technologies in emerging or existing markets, often developing sophisticated non-mainstream technologies. Said companies are valuable as they often create a new value network, the activities of disruptors are often of particular interest to larger companies as their technology often enables them to displace existing established market-leading establishments.

Calypso AI

Calypso is a start-up innovating to build trust into artificial intelligence systems. It is made up of a research team working to alleviate the vulnerabilities that artificial intelligence systems may face and has developed sophisticated software which can perform model tests on AI technology to provide insights into model performance and potential risks. Calypso uses an algorithmic robustness platform to explain and help detect areas of susceptibilities such as data biases whilst also ensuring that the tested AI technology is regulatory and operates within ethical boundaries. Companies like Calypso help to inject assurance into the economy, helping market participants proceed with confidence which in turn creates a robust and secure environment, in which innovation can flourish.

InMobi is a global innovator in marketing for multichannel businesses, offering customers the opportunity to discover new products through full spectrum market research e.g. product testing, brand tracking, shopper research and creative testing. InMobi also provides data management solutions, allowing the unification of all data from various digital channels on one platform. InMobi’s platform enables mobile businesses to track customers’ transactional data to uncover trends and correlations. By implementing effective marketing strategies, businesses can shift towards personalisation in marketing campaigns which in turn aids frictionless shopping processes.

Drawbridge

Drawbridge implements the use of machine learning - the scientific study of algorithms and statistical models to perform a task without explicit instructions. Machine learning is a subset of artificial intelligence and it is used by this California-based business in order to match devices across individuals’ multichannel devices to create effective advertisement campaigns. Drawbridge uses large scale AI and machine learning to implement effective content management, product recommendation, authentication and risk detection.

Mergers and acquisitions

Various retailers and technology companies have completed mergers and acquisitions over the past few years, many with the aim to improve the retailer's online proposition and in some cases the mobile proposition.

Examples of key M&A transactions associated with the mobile theme are listed in the table below.

Ikea – TaskRabbit

In 2017 IKEA acquired online and mobile marketplace TaskRabbit for an undisclosed amount. TaskRabbit connects freelance labourers such as flat-pack assemblers, mounters/installers, general handymen, cleaners and delivery drivers to customers who have a need for help in such tasks. Since IKEA acquired TaskRabbit, the company has continued to operate independently and has expanded, being rolled out in Canada, 45 cities in USA and Britain. This acquisition has and will continue to help IKEA compete with the likes of Amazon which offer home installation services. By ramping up its digital presence too, alongside improvements in its delivery service, IKEA can offer a complete end to end service, from convenient shopping, prompt delivery and installation which exemplifies the frictionless shopping process.

Walmart – Aspectiva

In 2019, American retail giant Walmart acquired AI start-up Aspectiva which uses Natural Language Processing and Machine Learning to provide shoppers with reviews and products attributes that are most talked about online. Aspectiva for the moment is continued to be ran as an independent business, though could provide a good opportunity for Walmart to roll it out across its online and offline stores. This would make the shopping experience far more frictionless, providing shoppers with access to prompt product overviews, and enabling them to make informed decisions on potential purchases.

Amazon – Dispatch

Amazon acquired robotics company Dispatch in February 2019 for an undisclosed sum. Dispatch specialises in artificial intelligence, autonomous vehicles, deliveries and robotics. The purchase will enable Amazon to continue to grow its control over the distribution of its own products and supply chains, something that has been a major focus for the retailer. With Amazon's implementation of autonomous driverless vehicles into its delivery network, the acquisition of Dispatch has the potential to help it achieve its goals much faster. Autonomous driverless vehicles will aid frictionless shopping, particularly in the "last mile" of delivery (final stage of a delivery to a residential home) which is the most expensive and complex stage of the delivery process, enabling cheaper delivery, faster delivery times and more environmentally friendly delivery.

Alibaba – Infinity Augmented Reality

Chinese conglomerate Alibaba acquired Israeli based Infinity Augmented Reality in March 2019. Infinity Augmented Reality is a mixed reality platform company which aims to bridge the gap between the physical and digital worlds. Infinity Augmented Reality claims that it can convert any device into a powerful content augmentation platform. The company caters for mobile device hardware and wearable manufacturers as well as AR app developers. Alibaba aims to bring AR technologies to its customers to offer them a seamless shopping experience.

Technology briefing

Definitions

Mobile Theme	Definition
Applications (apps)	A mobile application (app) is a computer program designed to run on a mobile device such as a phone, tablet or watch. This contrasts to desktop applications and web applications which run in mobile web browsers rather than directly on the mobile device.
Personalisation	Personalisation describes the differences that distinct users experience when utilising the same app or web application.
Augmented reality	Augmented reality (AR) technology superimposes a computer-generated image on a user's view of the real world to create a composite image.
Virtual reality	Virtual reality (VR) technology describes a three-dimensional, computer generated environment which can be explored and interacted with.
Beacons	Beacons (sometimes iBeacons) are Bluetooth-enabled devices located within stores that communicate with a shopper's mobile device. Uses range from distributing geo-specific advertisements and coupons, providing supplementary information about nearby products and collecting consumer store pathway data.
QR codes	Quick Response (QR) codes are two-dimensional barcodes that can be scanned through smartphones or other QR-dedicated devices. They can enhance advertising, marketing and customer service by providing product information directly to users through scanning with a device.

Appendix: Our “Thematic” research methodology

Traditional thematic research does a poor job of picking winners and losers

Thematic research is not just about picking the right themes. Because themes do not operate in isolation. The difficulty in picking winners and losers in any industry arises from the sheer number of technology cycles that are in full swing right now. Most companies are impacted by multiple themes, many of which conflict with one another.

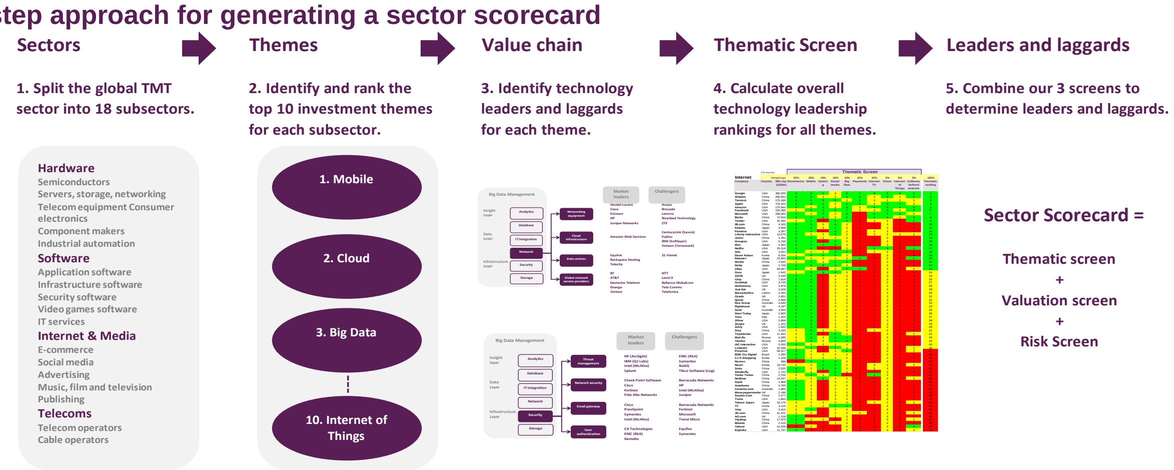
Introducing GlobalData’s thematic engine

GlobalData has developed a unique thematic methodology for ranking technology, media and telecom companies based on their relative strength in the big investment themes that are impacting their industry. Our “thematic engine” identifies which companies are best placed to succeed in a future filled with multiple disruptive threats. To do this, we track the performance of the top 600 technology, media and telecom stocks against the 50 most important themes driving their earnings, generating 30,000 thematic scores. The algorithms in GlobalData’s “thematic engine” help to clearly identify the longer-term winners and losers within the TMT sector.

This is how it works

First, we split the global TMT industry into 18 subsectors. Second, we identify and rank the top ten themes for each subsector (these can be technology themes, macroeconomic themes or regulatory themes). Third, we publish in-depth research on specific themes, identifying the winners and losers. The problem is that companies are exposed to multiple investment themes. So, our fourth step is to create a thematic screen for each sector to calculate overall technology leadership rankings after taking account of all themes impacting that sector. Finally, we combine this thematic screen with valuation screen and a risk screen to generate a sector scorecard used to help assess overall winners and losers.

Five-step approach for generating a sector scorecard



Source: GlobalData

Each sector scorecard has three screens:

- **The thematic screen** tells us who are the overall technology leaders in the ten themes that matter most.
- **The valuation screen** tells us which players are the most attractively priced, relative to their peers.
- **The risk screen** tells us who the riskiest players in each industry are, based on four categories – corporate governance risk, accounting risk, technology risk and political risk.

How our research reports fit into our overall research methodology

We produce three tiers of thematic reports to help our clients identify winners and losers in their industry:

- **Single Theme:** These reports offer in-depth research into a specific theme (e.g. artificial intelligence). They identify winners and losers based on technology leadership, market position and other factors.
- **Multi-Theme:** These reports cover all stocks and all themes within a sector, giving readers a strong sense of how everything fits together and how conflicting themes might interact with one another.
- **Sector Scorecard:** Each sector scorecard has a thematic screen, a risk screen and a valuation screen. Live scorecards for each of our 18 sectors are available on our client portal.

About GlobalData

4,000 of the world's largest companies make better and more timely decisions thanks to our unique data, expert analysis and innovative solutions delivered through a single platform.

GlobalData is one of the world's leading providers of company operational data and strategic analysis, providing detailed information on tens of thousands of companies globally. Our highly qualified team of Analysts, Researchers, and Solution Consultants use proprietary data sources and various tools and techniques to gather, analyze and represent the latest and the most reliable information essential for businesses to sustain a competitive edge. Data is continuously updated and revised by large teams of research experts, so that it always reflects the latest events and information. With a large dedicated research and analysis capability, GlobalData employs rigorous primary and secondary research techniques in developing unique data sets and research material for this series and its other reports. GlobalData offers comprehensive geographic coverage across world's most important sectors, focusing particularly on energy and healthcare.

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