THE UKCARDS ASSOCIATION

10 Years of Chip & PIN: 2006 to 2016

The switch to Chip & PIN, on February 14, 2006, was the culmination of the largest change in UK consumer behaviour since decimalisation in 1971.

This report explores the grounds for introducing Chip & PIN, the current card payments landscape and the future shape of payments.

The introduction of Chip & PIN

Before the introduction of chip technology, payment cards were based on magnetic stripes. These were swiped through a card reader, which printed a record of the transaction which consumers had to sign to authorise the purchase.

But magnetic stripe technology was open to attempts from fraudsters, who both counterfeited cards and used lost or stolen cards in shops. In 2004, counterfeit card fraud losses totalled £129.7 million, while fraud on lost and stolen cards totalled £114.4 million. Card non-receipt fraud – when a new card is stolen in transit to the customer – was £72.9 million.

The industry began to look for a different system which would bring a higher level of security for customers, who by 1998 were using debit cards more than personal cheques.

The logo used to publicise the changeover in 2006

A system of cards with chips, rather than magnetic stripes, and verification with a PIN was the obvious choice. It would give the necessary levels of security and provide consumers with a consistent global payment experience. As ATMs already used PINs for cash withdrawals, additionally it was also a system with which consumers were familiar.

Chip & PIN heralded a move away from what was, in essence, an 18th Century system of putting a signature on a piece of paper to validate a payment. The chip is a secure piece of technology which can store and process information.

Technology developed for Chip & PIN was forward-thinking in nature, to allow for future innovation in card payments which could use the same system. The introduction of Chip & PIN was phased in across the UK following a number of trials.

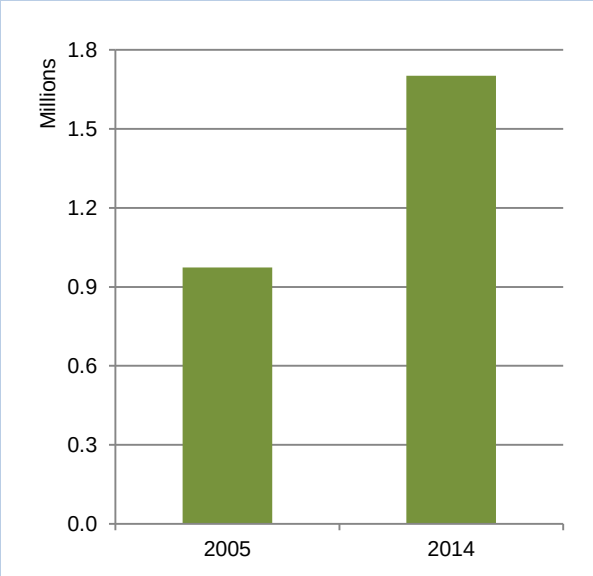
The national rollout of cards and point-of-sale terminals began in October 2003. Due to its scale and complexity, the rollout happened gradually across the country.

Some 860,000 shop terminals and 40,000 ATMs were upgraded to accept new cards, while 3 million retail staff were trained to use the new system. About 140 million credit, debit and charge cards were sent to 42 million customers in advance of the rollout.

Increasing card acceptance

The number of merchants accepting cards continuously increased during the last decade. The total number of terminals in the UK accepting cards increased to 1.7 million in 2014, up by 75% since 2005. The number of outlets accepting cards also increased, to reach 1.1 million, up by 43%. These figures do not include increased acceptance of cards on transit networks, in particular the roll out of contactless acceptance across the TfL transportation network.

Chart 1 Number of terminals accepting payment cards



While many people were already using Chip & PIN by 2006, February 14 marked the date when the option to bypass the PIN and sign instead was withdrawn. Shops began to report reduced queuing times because of the speed of Chip & PIN compared with signing for purchases. By August 2006, more than 99.8 per cent of all Chip & PIN card transactions were PIN-verified.

Some customers continued to sign, such as those with foreign-issued cards and customers with an impairment who could request cards with an alternative to PIN. All point-of-sale terminals automatically prompt as to whether a PIN or signature is required.

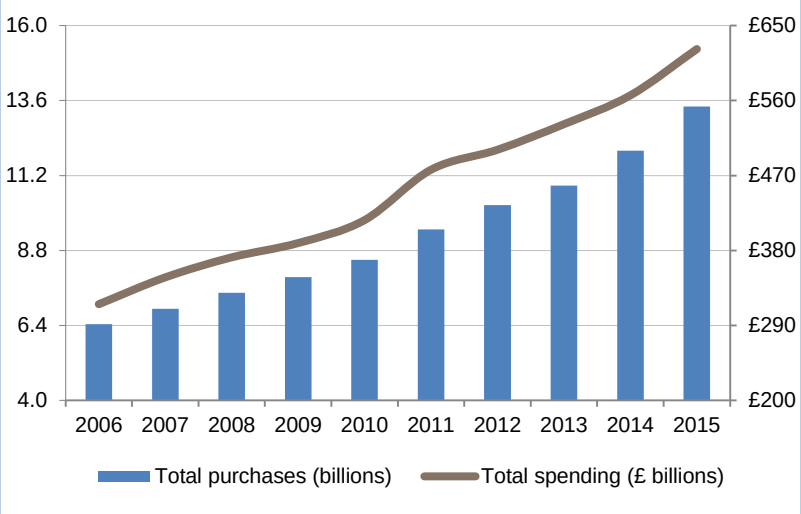
In 2004, card purchases totalled £270 billion, increasing to £291 billion in 2005 and £316 billion in 2006.

Rising card spending

The total number of card purchases in 2006 was 6.4 billion while in 2015 the number was 13.4 billion – up 7.0 billion or 108%.

The total card spending in 2006 was £316 billion compared to £622 billion in 2015 – up £306 billion or 97%.

Chart 2 Annual totals of card purchases and expenditure



By the end of 2006, the UK was considered a mature Chip & PIN marketplace. In 2006, fraud on lost and stolen UK-issued cards had fallen to £68.5 million and fraud on counterfeit cards was reduced to £98.6 million.

Past

- The largest change in consumer behaviour since decimalisation
- A move away from an 18th Century system of signing pieces of paper
- 860,000 shop terminals and 40,000 ATMs were upgraded
- 140 million new Chip & PIN cards sent to consumers

A survey in 2006 found that 77 per cent of consumers liked using Chip & PIN, 93 per cent found using Chip & PIN was easier than signing and 85 per cent found using Chip & PIN was faster than signing.

Consumers increased their use of cards, rather than cash, to pay for goods and services in shops. Meanwhile, online spending continued to grow and in 2005, was calculated to total £19.2 billion, 32 per cent more than 2004.[1]

Over the next decade, consumers became accustomed to paying with Chip & PIN and then, as they were introduced, began to use cards with contactless functionality to make small purchases.

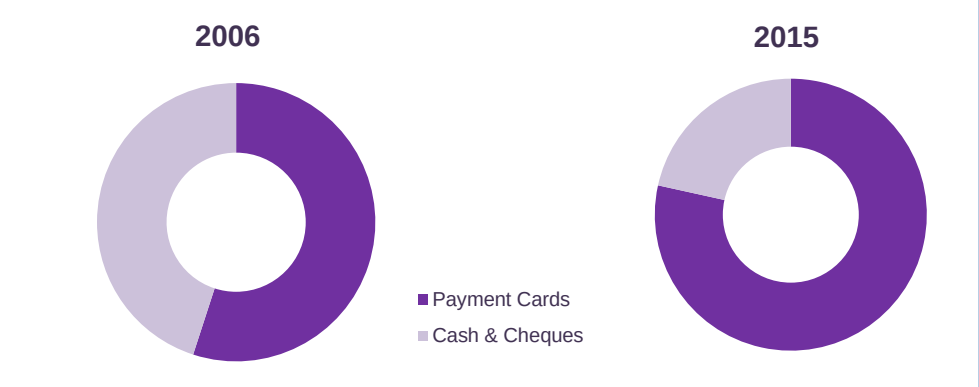
Present: the preferred way to pay

Ten years on from the introduction of Chip & PIN, using such payment cards has become routine behaviour for UK cardholders. Cards are the preferred way to pay for millions of consumers and account for 78.5 per cent of retail transactions.

Card payment share within national retail sales

At the end of 2006 the payment card share of total retail sales was 55.0%, rising to 78.5% by the end of 2015. This expansion was in the main driven by increased card acceptance and card holdings, as well as migration from cash & cheques to cards.

Chart 3 Proportion of retail sales made on payment cards and cash & cheques



While consumers using their cards has been a central part of the way we pay over the past decade, there has been an ongoing evolution in the way these cards have been used. The average transaction value has been in persistent decline since 2011 as consumers use their cards more often for lower-value purchases, while the number of outlets accepting cards has increased, bringing more opportunities to use cards.

Central to this has also been innovation within card payments to reflect the changing nature of retail. New hardware for processing payments, such as iZettle and similar systems, have given small businesses and sole traders the ability to process card payments in both fixed and mobile environments. While the Chip & PIN system also allows card payments to be taken in a range of unattended environments, such as for car parking and vending machines.

[1] Figures from IMRG as reported by the BBC http://news.bbc.co.uk/1/hi/business/4630472.stm

Chip & PIN technology means retailers are no longer reliant on a paper system. Cards are also used online, and the internet now accounts for more than fifth of all card spending, with £11.9 billion spent in this way in December 2015.

Retailers have reflected the rise in online spending by developing the way goods and services are delivered to customers: the rise of streaming has brought the likes of Netflix and Spotify; online shopping can be ordered on the go with a couple of clicks and dispatched to or collected from a chosen location; shops can adjust the way they use their space to provide terminals for ordering any item.

Present

- Cards now account for 78.5 per cent of retail transactions
- Investment in Chip & PIN technology means cards can be used in mobile and unattended environments
- Average transaction value has declined as consumers use their cards more for smaller payments
- Online shopping now accounts for a fifth of all card spending

Whether streaming, ordering groceries or buying a new pair of shoes, what underpins all these transactions is the card payments system and the innovation it fosters. Stores are now acting as front windows and collection points, but transactions are taking place on the internet.

Elsewhere, contactless payments have become the preferred way to pay for millions of customers. More than £1 billion was spent using contactless cards in November 2015 and they are used for one in 10 purchases.

Mobile phones have also developed to facilitate card payments, such as with Apple Pay. A number of companies have also launched wearables which are providing more ways for consumers to pay.

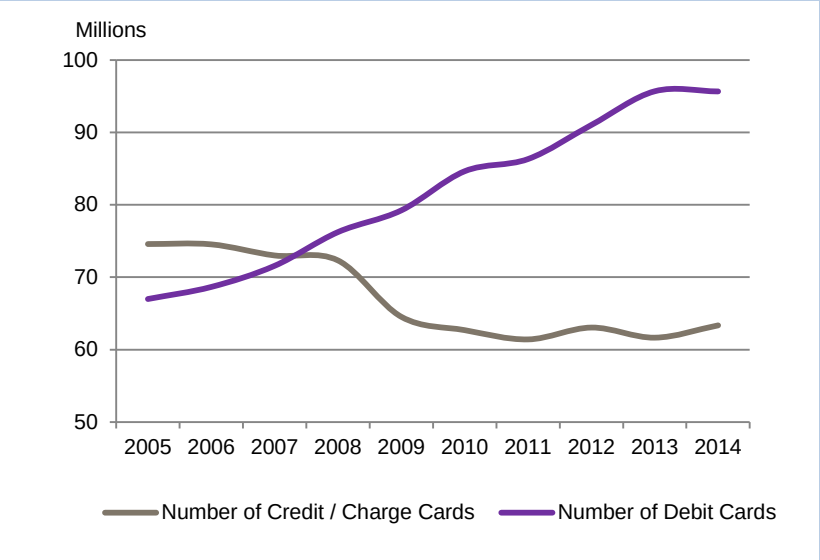
Crucially, all these proximity retail payment methods, such as contactless and mobile payments, work using the system on which Chip & PIN is built. For the customer, there is no difference in the payment process whether they are paying in a large high-street retailer or at a street food market.

Spending data underscores the extent to which card payments have become the norm. The total value of card payments reached £622 billion in 2015, double the value in 2006, highlighting the shift to cards for consumers.

Payment card holdings

Payment card holdings increased significantly over the last ten years, mainly driven by debit cards. The total number of cards in issue in 2005 was 141.6 million while in 2014 the number was 159.0 million – up 17 million. The number of debit cards increased by 28.7 million or 43%, while the number of credit and charge cards decreased by 11.2 million or 15% between 2005 and 2014.

Chart 3 Number of cards in issue



Types of fraud on UK-issued cards, which Chip & PIN was designed to tackle, have fallen since 2004, with counterfeit card fraud down 63 per cent to £47.8 million, lost and stolen card fraud down 48 per cent to £59.7 million and card non-receipt fraud down 86 per cent to £10.1 million in 2014.

The UK has a card payments system which is ahead of many other countries. The innovations which have facilitated online spending and which are changing the shop front of retail are legacies of Chip & PIN which will continue to be envied by other industries and which will continue to evolve in the future.

The future: the revolution will be tokenised

With London the fintech capital of the world and the UK one of the leading global markets for e-commerce, there can be little doubt card payments will continue to evolve.

What this will bring for consumers is ever more convenient ways to buy and pay for goods and services, both in-store and online.

Retailers and card payments are evolving in tandem to fit the changing way we shop and will continue to do so. For consumers, shopping is no longer on the high-street but on

your doorstep, and this has provided a shift whereby retailers must ensure they can provide goods in the ways their customers want them.

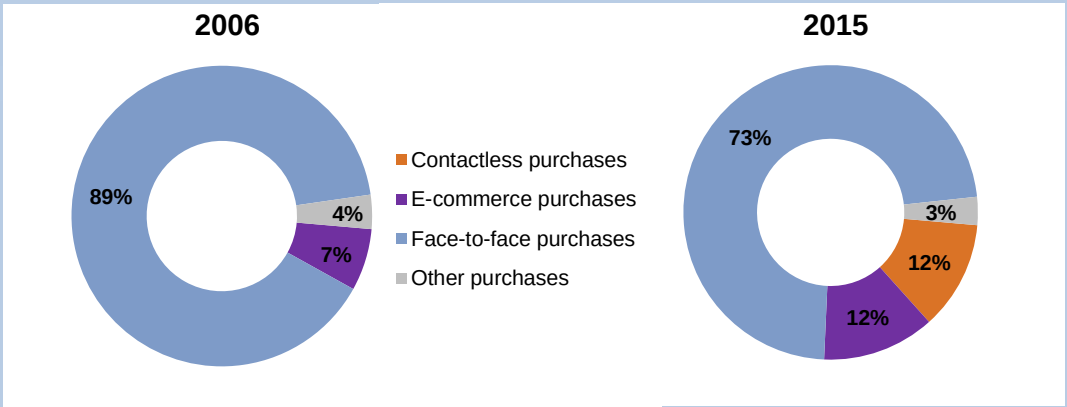
For 'traditional' retailers with bricks and mortar shops, this will bring changes to the payment set-up, with the focus on portable terminals so customers can use their cards to pay anywhere on the shop floor, rather than only at the till.

Chip & PIN is still the king

The UK has become a mature Chip & PIN nation when compared to the US. In one decade this technology has revolutionised the payment process, improved the shopping experience, cut time at the till, and reduced card fraud. Despite the all new payment technologies available such as contactless and mobile payments, Chip & PIN will be around for a long time yet.

Compared to the growing prominence of e-commerce and contactless technology, Chip & PIN is still the preferred way to pay.

Chart 5 Number of card purchases by payment method*



*Estimated based on annual industry averages

As well as stocking goods, some shops, such as John Lewis and Marks and Spencer, are already acting as collection points for online orders. Customers can order out-of-stock goods and collect them from any branch, making the shopping process more convenient. Some retailers already deliver within an hour; as new technologies are developed, drones could become one of the ways we get our shopping when we want, where we want.

While Chip & PIN transactions cannot be made on the internet, it is predominately our cards we use when paying online. Ten years on from the introduction of Chip & PIN, card payment protocols have been able to adapt to changing retailer needs – for example, with the growth of streaming – because of the way the underlying technology can adapt.

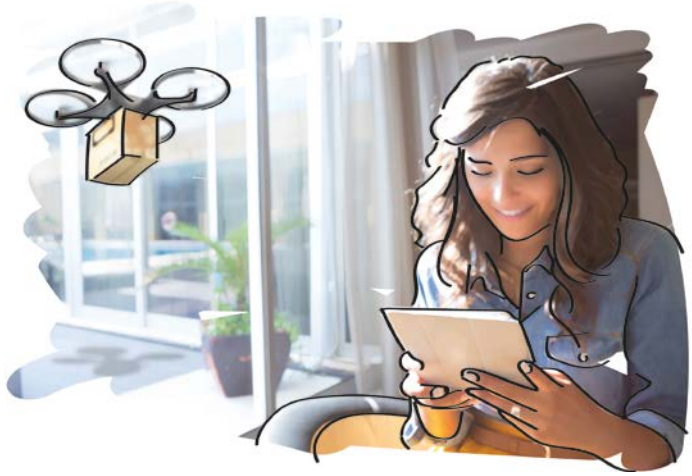
In the future we will see more payment buttons embedded on websites such as Facebook, enabling shoppers to make a transaction with a trusted retailer without having to enter their card details. One example of this is Amazon's 1-Click ordering, which uses default payment and delivery details.

As well as webpages, buy buttons for third-party retailers are likely to be increasingly placed within apps, such as Instagram, to facilitate this type of online retail. Card details would be tokenised, or disguised, and would sit on a phone or tablet and the user would authorise the payment with a passcode or other verification method.

Not only will mobile phones be used as a means of paying, they will also be used instore to scan items and then pay for them.

In this context, card spending is increasing and forecasts suggest annual spending could reach £901 billion in 2024. The card payments industry will continue to provide a full range of card-like payment options which customers find easy to use and which fit retailer needs, online, in-store and in unattended locations.

Future



- The evolution of card payments will bring more convenient ways to buy and pay for goods and services, online and in store
- Payment buttons online will allow purchases without entering card details each time
- Smartphones could be used in-store to scan and pay for items
- The sharing economy will continue to grow

Card payments also pay a role within the sharing economy, in which the internet is enabling small businesses, individuals and entrepreneurs to challenge established operators, such as with online facilitated business like Airbnb or Uber, which take payments through cards.

These payments are able to evolve because of the way Chip & PIN was introduced, with forward thinking technology which would facilitate innovation.

However changes in commerce take place and whatever shape shopping takes over the next decade, we will have to be able to pay. Consumers will continue to demand a payments system which is secure, consistent and works globally and in this way, cards will power our spending habits even as they change.