VAULTEX

VAULTEX UK RESEARCH

# GLOBAL CASH SURVEY

**December** 2018

Thoughts on cash from leading experts at central banks across the world

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# Foreword

Cash. Pounds and pence, dollars and cents, yuan and jiao. Physical money has driven economies for thousands of years. And yet, following a period of relatively rapid payment transformation, the common narrative is that cash is on the way out. But is this really the case?

Earlier this year, we asked leading experts from central banks across the world for their thoughts on cash's place in the wider payments industry.

This report considers these opinions alongside research from a range of other sources.

Our survey, combined with these additional facts and figures, show that cash will continue to play a vital role in economies all around the world.

### Cash use around the world: more than one narrative

It goes without saying that there is huge a variance in how cash is used globally. While contactless and mobile technology is signicantly impacting the number of cash payments in markets such as Europe and North America, many other economies are still predominately reliant on cash payments – and expect to be well into the future. 76% of the central banks Vaultex surveyed expected cash to be an important payment method past 2038.

Even in countries such as the UK, where the decline in transactional cash volumes in recent years has arguably been steeper than most, cash is still used for 34% of all transactions[1]. And in the US cash is used in 31% of consumer transactions: a higher percentage than electronic, credit, debit or cheque payments[2].

### New payment methods: more choice but emerging risk

New digital payment channels have given the public an accompanying range of new options. They have also introduced new difficulties – including a reported rise in cybercrime along with the need to update transactional infrastructure and equipment such as payment terminals and checkouts.

This new technology has taken time to take hold with the public, particularly as tech giants, banks and card companies now offer a range of products that often compete with each other. The result is a far more fragmented payment system where consumers expect to have a wide choice in how they want to pay.

### Common cash challenges: shared solutions

In turn, this has meant that the cash industry has had to respond with new thinking to keep cash competitive. This has driven the development and rollout of new services, with a focus on technology, integration and data. These include self-service checkouts; automated cash recycling; end-to-end managed services; and data analysis and cash optimisation tools.

These new ideas and approaches need to be shared as part of global best practice. The range of responses to our survey show that challenges around cash use can be different from country to country – particularly when it comes to cash volumes. However, there are opportunities to make the end-to-end cash cycle more cost effective and efficient in markets where cash use is declining, as well as in heavy cash using countries. By doing so, cash can continue to offer excellent value to banks, businesses and paying public.

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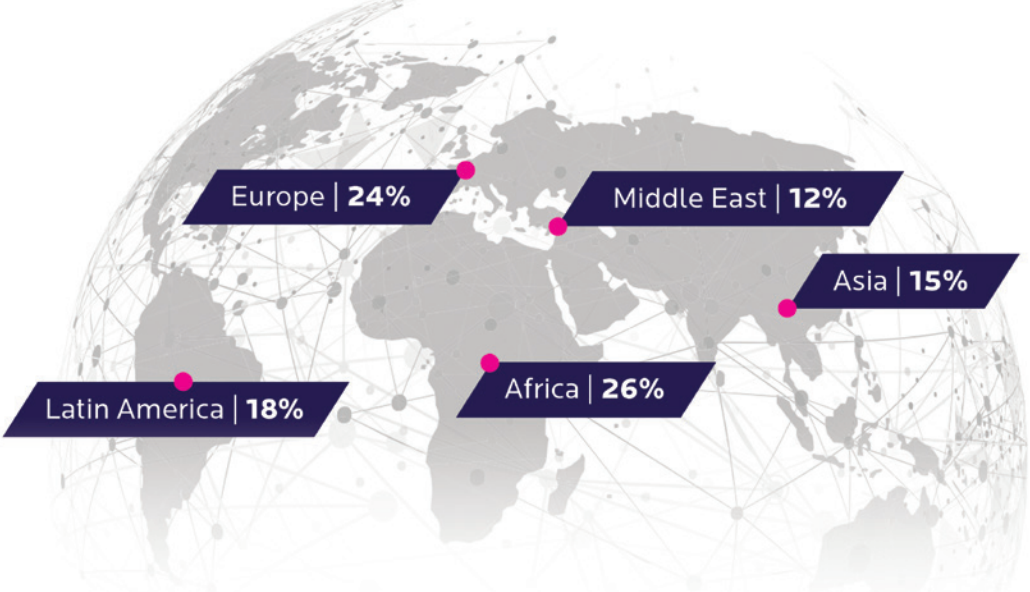
> It is increasingly important for cash industry companies, banks and retailers to optimise their processes and create new services to drive efficiency and savings across the end-to-end cash cycle.

# Report Overview

Vaultex sought the expertise of central banks around the world to gain a global perspective on cash. We asked for the banks' input on a number of topics including cash usage, cash management challenges, and their views non-cash payment methods.

We received 34 responses from different central banks around the world, split into the following geographic areas:




## CASH USE IN EUROPE

While some reports show that cash use is declining in Europe, it remains an integral payment method. A survey by the European Central Bank found that 79% of all point of sale payments across 19 European countries were made with cash in 2016[3]. The report notes that northern European countries, such as the Netherlands, Finland and Estonia, made less cash transactions than southern ones.

Our survey found that there was no clear cut answer in regards to any future demand for cash: of the European central banks that responded, 25% thought there would be an increase, 25% thought there wouldn't be, while 50% were unsure.

Any decline in European cash use can be primarily attributed to the increased adoption of contactless and mobile payment technology. A Capgemini report predicts global mobile payments will reach £95bn in 2018[4].

Even in countries where cash payments are down, the picture may not be as simple as it seems in regards to cash's long-term health. There are various other non-transactional measures that show that cash is still very much used and needed.

For example, whilst UK cash transactions are in decline, cash in circulation is increasing. As of 2017, the number of UK banks notes in circulation has increased year-on-year since 2004 – doubling from 1.8 billion notes to 3.6 billion notes (£70 billion in value)[5].

Although this growth slowed down in 2018, with only a small increase in UK banknote numbers compared to 2017 (with some reports arguing Brexit has played an important a role[6]), other European countries continue to see growing circulation volumes.

The European Central Bank (ECB) has also seen year-on-year euro banknote growth, with an average annual increase of 7.8% in volume and 6.1% in value over the last five years[7].

These increases will be driven by a number of factors including seigniorage, foreign exchange and the number of people who are unbanked (which can fluctuate with immigration). Many banknotes will also be stored for use as a contingency, coming out of circulation. More still be held overseas or in the shadow economy. The Bank of England estimates that over half of UK notes are used in such a way.

Aside from cash users, it's also in many businesses' interest to keep cash available and affordable. In the UK, cash is still the cheapest payment method for businesses despite a decline in use. Cash costs UK businesses around 1.46 pence per transaction, while a debit card is 5.55 pence per transaction - taking into account bank charges, transit costs, handling charges and write offs[8].

New EU legislation was intended to bring down the costs of other payment methods. Interchange Fee Regulation (IFR) was introduced in 2017 in order to combat card fees in Europe. But, according to the British Retail Consortium, UK scheme fees actually increased by 39% in 2017, costing UK retailers an extra £170m.

Regardless, it is perhaps obvious that the less cash is used, the more it will cost. It is therefore increasingly important for cash management companies, banks and retailers to optimise their processes and create new services to drive efficiency and savings across the end-to-end cash supply chain.

# CASH USE OUTSIDE OF EUROPE

Cash continues to be widely used globally. Between 2011 and 2016, cash in circulation rose by 40% in Africa, 45% in Asia and 62% in Latin America. According to banking research company RBR, the number of ATMs installed worldwide grew by 3% to 3.3 million in 2016[9]. And in Asia, 75% of online purchases were paid for by cash on delivery[10].

These figure are reflected in our survey results: 76% of all respondents believe cash is useful or very useful for their country's economic growth. 64% also expected to see an increased demand for cash over the next few years.

Although transactional US cash use is declining, it is still used in 31% of transactions, the most of any payment method. Like Europe, the US has seen continued increases in banknotes in circulation. That growth has been 5% year on year for the last 20 years, with banknotes doubling to 40 billion between 1996 and 2016[11]. As we have seen, cash is used for more than just payment. In a recent report, the Federal Reserve of San Francisco argues that "consumers may be demanding cash less as a means to pay, and more as a store of value[12]."

However, bigger cash volumes create new challenges. Most non-European central banks in our survey listed note quality, cash cycle efficiency and technology transition as their principle issues. As a more mature payment market with more payment options, Europe has arguably had to tackle some of these challenges earlier than elsewhere. For example, the Bank of England has adopted polymer notes to ensure the longevity and security of UK banknotes. Meanwhile, many European and US retailers have adopted cash automation technology at tills and checkouts for improved efficiency, visibility and control.


But these kinds of developments rarely exist in a vacuum: investment in cash and cash management is being driven by a need to keep costs down while ensuring its long-term health. Continued innovation is important; but so is the sharing of cross-industry best practice and learning. For example, while the UK is the biggest economy to adopt polymer, the Bank of England had plenty of experience and case studies to draw on: Australia made the switch in 1996, while countries including Nigeria, Canada, Chile, Mexico, Malaysia and Macedonia have also introduced plastic notes.

Similarly, the work going on in the UK to improve the cash supply chain - including optimising cash in transit runs and putting more emphasis on automated cash recycling in store and in branch - could also be applied elsewhere.

# A CONTINUED GLOBAL ROLE FOR CASH

While cash use is declining in some countries, that does not mean it's going away anytime soon. Many of cash's traits - reliability, anonymity, security, accessibility, universality - are difficult to replicate. Even in Sweden, which has some of the highest rates of non-cash payments in the world, there are concerns over the pace at which digital payments have been adopted - leading to the Swedish central bank to ask lawmakers to implement protective measures for cash[13].

The ability to use cash is often seen as a fundamental right. Washington DC has introduced the 'Cashless Retailers Prohibition Act of 2018', making it illegal for restaurants and retailers to refuse cash or charge different prices based on payment type[14] – recognising that some people lack access to banking facilities or rely on cash to make transactions.

The Visa outage of June 2018, where merchants in Europe were unable to process payments, combined with a number of recent incidents that have affected UK banks' software, show that non-cash payments can be susceptible to technical failures. Many consumers are also concerned about fraud. In general, cybercrime from service attacks, malicious code and data breaches are becoming smarter and more prominent; with global damages predicted to cost $6 trillion annually by 2021[15].

As long these serious issues persist, there will always be a role for cash as an important contingency – both from a day-to-day payment perspective and in the event of a major incident. Almost a quarter of people in the euro zone keep some cash at home as a precautionary reserve[16]. The Federal Reserve of San Francisco has suggested that "even those who prefer a different payment option, such as their debit or credit card, rely on cash if their first preference is not available."

Then there's the risk of something more serious occurring. As Garrick Hileman from the Cambridge Centre for Alternative Finance in the UK puts it: "Imagine there's a completely electronic payment system, no cash. Imagine there's a cyberattack and people can't transact. That would be catastrophic, there would be chaos in the street."

There are other reasons why people might prefer to use cash. Research shows that consumers may prefer to use cash for certain transactions due to social factors, such as who they are, where they are shopping and what they are buying[17]. Others may rely on cash because they don't have access to other payment methods, or because it helps them budget.

The reality is that banks will continue to support a healthy mix of different payment methods. However, it is important that the global cash industry continues support central banks by finding new ways to manage the cost of cash while continuing to provide an excellent service to businesses. There is no reason why innovation and invention can't be found in cash – as it can in any other payment method.

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# Cash Growth and Financial Inclusion

76% of respondents to our survey believe cash will be an integral payment method past 2038, with some even expecting to see more cash growth in the future - particularly in the Middle East, Africa and Asia. Despite the growth of digital payments services such as AliPay, WeChat Pay, FlickPay and M-Pesa, many countries are still seeing an increase in cash transactions. Many banks in the Asia-Pacific region have sought to improve accessibility to cash by increasing ATM availability to attract new customers[18].

However widespread access to cash does not mean people will automatically sign-up to basic financial services, such as bank accounts. For example Latin America is the biggest cash user by volume, with cash accounting for 85% of all transactions across the region[19]. In Mexico, cash is an integral part of the country's economy. Yet despite 97% of the population having access to banking facilities and other payment choices, only 39% have access to a bank account[20].

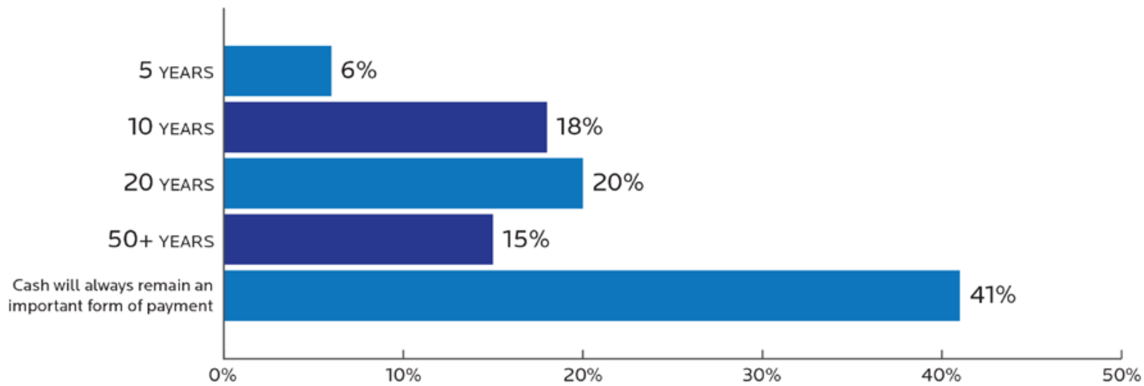
There may be some way to go to address these issues. 53% of respondents thought people in their countries were excluded from their financial system because of a lack of financial education, while 50% also thought both geographical distance from a provider and a lack of affordable services were issues. 47% of central banks in our survey said there was a lack of access to non-cash payment methods in their countries.

In Europe and North America, non-cash payment technology is generally readily available for use at retail. In addition to a mature non-cash payments infrastructure, the public also has good access to online banking and a range of financial apps.

However, it is easy to forget that these tools are not available to everyone. If cash is not readily accessible, this could lead to further financial exclusion. For example in the UK, cash use is expected to fall from 34% to 16% over the next decade. However cash is relied upon by 2.7 million people[21]. Globally, while two thirds of the adult population have access to banking and mobile accounts, 1.7bn people remained unbanked according to the World Bank. In the rush to embrace the new, many of these people could be left behind.

Whatever the payment method, commercial and central banks around the world will need to make sure that ability to make transactions is universal to everyone.

In your opinion, how long will cash remain an important method of payment in your country?



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# Cash Management Challenges

Top cash challenges for central banks:

1 | Banknote quality

2 | Improving cash cycle efficiency

3 | Third party processing

4 | Cash availability

5 | Supplier Management

Almost 56% of the respondents indicated banknote quality as their key cash managment challenge - particularly in Africa where central banks raised this as a primary concern. However maintaining note quality is an ongoing requirement for any currency. According to an ECB report, central banks in the euro area replaced 5.4bn 'unfit' euro banknotes (around 27% of banknotes in circulation ) in 2016 to mantain a 'stable quality'.

One way of improving quality is currency change. The UK introduced polymer notes in 2016 – the largest economy to do so to date. This decision was influenced by the increased life expectancy of polymer notes, which are predicted to last two and a half times longer than original paper cotton notes.

The change involved cross-industry collaboration to ensure a smooth handover. This included machine upgrades to handle the new notes; additional training for cash processors and cash handling staff; and careful forecasting to ensure suitable resource and cash availability during the transition.


Central banks' immediate cash management priorities:

Optimise the cash cycle | **53%**

Build a cash site | **38%**

Invest in automation | **38%**

Optimise an existing cash centre | **29%**

> *In countries that are facing cash use decline, innovative solutions are required to ensure cash offers value to businesses and consumers.*


Our survey also found cash cycle efficiency and third party processing were challenges for many central banks. In countries that are facing a decline in cash usage, innovative solutions are required to keep costs down and ensure cash offers value to businesses and consumers.

As a lack of access to cash in more remote or rural areas can have a negative impact on financial inclusion, more work can also be done to improve accessibility to cash. Likewise, following the widespread closure of commercial banks branches in some countries, there is an increasing need to provide an alternative provision of cash services, as well as new ways for businesses to deposit cash and withdraw change.

# HOW CAN CASH PROCESSING COSTS BE REDUCED?

Most effective methods of reducing cash processing costs:

1 | Technology adoption | **80%**

=2 | Resource planning | **35%**

=2 | Forecasting tool for cash demand/supply | **35%**

3 | Software Integration | **32%**

4 | Adequate staff training | **12%**

In order to reduce costs, banks, businesses and the wider cash industry need to invest in the right equipment and technology; update processes to improve efficiency; and consolidate and optimise cash services.

Almost 80% of our survey's respondents believe technology adoption is an important factor in reducing cash processing costs.

Introducing new technology comes with an upfront price tag but provides real benefits and savings in the long run. For example, from Vaultex's experience, automated checkout or self-service solutions at retail, when combined with the right processes, can provide a return on investment within 18 months.

In addition, retailers, businesses and financial institutions can implement a wide range of solutions to optimise their cash management. An emphasis on local cash recycling can reduce the amount of cash in transit, saving on processing and service costs. And the introduction of automated devices can streamline on-site cash handling - saving time, increasing visibility and reducing errors.

# DATA AND FORECASTING: FINDING THE OPTIMUM CASH BALANCE

While technology is important, it should go hand in hand with efficient processes. Access to up-to-date data and management information on cash is vital. When combined with accurate forecasting, this information can help ensure cash holdings are consistently at the right levels; keeping cost and risk down while maintaining availability.

Operational efficiency is extremely important for managing the cash levels of a national currency, as shortages can upset the natural flow of transactions. Long-term inefficiencies can also have an adverse effect of economic growth. 94% of the central banks we surveyed listed improving cash cycle efficiency as one of their top three challenges. Meanwhile, 19% of respondents - predominantly from Europe and Latin America - said that cash availability was their biggest challenge.

Well-designed forecasting solutions can help optimise cash holding values, reducing overheads whilst maintaining availability in vaults, banks branches and ATMs - taking into consideration operating costs, demand volatility, interest rates and risk. Trend analysis and regularly updated balance information can help improve the accuracy of cash orders. This information can also be used to review associated services such as Cash-In-Transit (CIT) activity, where factors such as seasonal changes to cash demand should be taken into account, or machine maintenance, which can be tweaked to avoid unnecessary second line call-outs. Continual adaptation is key: there is no 'one size fits all' model for managing cash.

# Use of Non-Cash Payment Methods

Our survey respondents were asked to rank what they believe will be the main type of consumer payment method by 2030. 70% indicated that cash would still be the main payment method.

1 | Cash

2 | Mobile phone payments

=3 | Debit Cards

=3 | Credit Cards

Even in markets where non-cash payments are becoming increasingly popular, cash continues to play an important role. While card payments narrowly overtook cash as the most frequently used UK payment method in the last quater of 2017, cash is still used in over a third of all purchases. Meanwhile, contactless payments currently account for 15% of all UK transactions. In Europe, a European Central Bank (ECB) study on payment methods at Point of Sale (POS) found that 79% of payments (54% by value) were made in cash.

65% of the central banks we surveyed - a majority from Africa and Asia - said that non-cash payment methods aren't widely available in their countries. But that doesn't mean change isn't happening. There are a growing number of fintech initiatives in Asia and Africa. Mobile payments and QR Code platforms are widely used, with M-Pesa, Alipay, WeChat and WhatsApp all examples of the growing digital innovations in global payments.

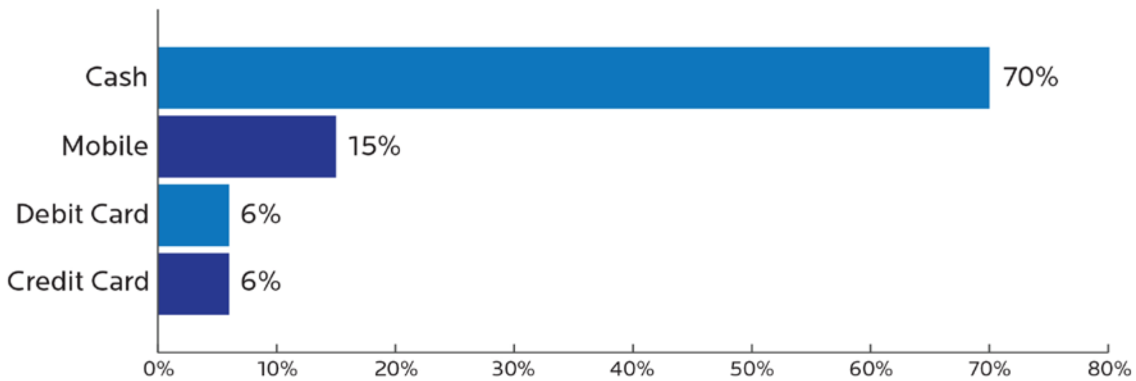
However, it's important to note that the general public can be slow to embrace change. It can take a number of years for new payment technologies to take a foothold in a new market, especially one where there are multiple competitors. So while Europe has been relatively quick to adopt POS terminals with near-field communication (NFC) technology that allows contactless and mobile payments, the use of contactless payments in many European countries is still low, according to the ECB.

It's also worth stating that not all payment technology progresses in parity: every market has its own quirks, challenges and preferences. For example, although the US's four biggest credit card companies have introduced EMV security chips to their cards, they have been reticent to widely introduce a four-digit chip-and-pin - a standard feature on European cards for a decade.

Meanwhile in Africa, the number of people with access to bank accounts and devices to process card transactions is extremely low. A number of tech entrepreneurs have worked to help rectify this, capitalising on the widespread access to mobiles within the continent. M-Pesa is one of the most popular platforms: allowing users to deposit, withdraw, transfer money and make payments on their mobile. Launched in Kenya in 2007, M-Pesa has since expanded out to Tanzania, Afghanistan, South Africa, India and, more recently, Romania and Albania - supporting our survey respondents' belief that mobile phone payments will grow in popularity.

Cash and other payment methods do not need to be in direct competition: they can happily co-exist - and even support each other. M-Pesa, whilst boosting financial inclusion by bringing transaction services to previously excluded portions of the population, is not aimed at replacing cash. In fact, it has contributed to improving access to cash while encouraging participation in financial services[23].

In your opinion, what will be the main payment method by 2030?



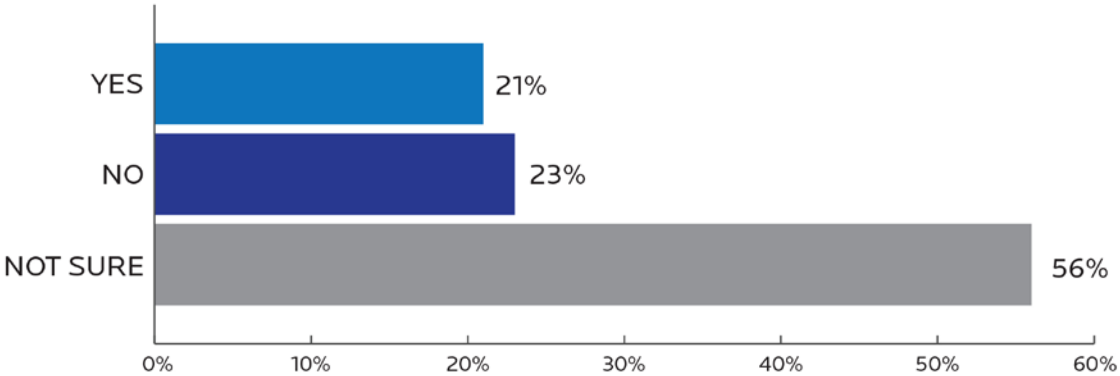

## A BRAVE NEW WORLD OF DIGITAL CURRENCIES

Cryptocurrencies have become a financial phenomenon in the past few years. The market was initially made up of a relatively closed community of tech experts and speculators. But cryptocurrencies are now a part of mainstream financial markets. Growth has cooled more recently, showing investors that cryptocurrencies are not exempt to the economic cycle (growth, expansion, peak and trough). Still, 2017 saw the total market cap increase from $20bn to well over $700bn before the year end[24].

Banks, investors, traders and even retailers have shown an increased interest in the potential of cryptocurrencies as they have developed into a legitimate (or semi-legitimate, depending on your perspective) form of payment. It proved to be divisive and uncertain issue amongst our respondents: 21% believe it will be common payment method of the future, 23% argue it won't and 56% are unsure.

Then there's a question around how cryptocurrencies should be regulated, if at all. Most respondents (59%) thought this should be the responsibility of a government or central bank. Other responses included international institutions (12%) and an independent regulator (9%).

Do you think cryptocurrency will become a common form of payment in the future?



# Conclusion

This survey set out to understand cash's place in a global context. It's clear that while digital and contactless growth has disrupted the payments industry in some countries, in others cash will remain the dominant way to pay for years to come.

Despite a growing acceptance of non-cash payments, people know and trust cash. Cyber security attacks and a growing number of data breaches and technology failures show that a 'cashless society' is not without significant risks.

Cash provides an absolute certainty of possession: something that could become increasingly important in a period of time where card companies, cryptocurrency start-ups, tech giants and banks all compete for a bigger share of a consumer's digital wallet. Cash offers a vital contingency that cannot currently be replicated by other payment methods.

At the same time, change is coming. Global competition and heavy investment has led to the rapid development of new payment technology. There are more ways for consumers to pay than ever before.

Although the pace of change will differ from one country to the next, the challenges - and opportunities - are often very similar. It is important to understand the measures banks and businesses are taking to keep cash competitive and inclusive.

While it may not generate the same headlines as contactless and mobile payments, investment in technology such as polymer notes, smart tills and automated cash recycling can improve the overall cash cycle.

But perhaps a more essential task for banks is to ensure financial inclusion on global scale, particularly among those locked out from the traditional banking system. While this may require better access to technology and financial education for some people, it may be something as simple as improved ATM availability for others.

Cash needs to evolve in response to the ever-changing payment habits of consumers. A decline in cash usage will make cash processing more costly, potentially damaging its availability. Innovative services and cash optimisation techniques need to be adopted to ensure it remains an available, accessible and - along with digital payments - integral part of global spending.


## External references


[1] UK Finance, UK Payments Market 2018
[2] Federal Reserve Bank of St. Louis (2018)
[3] ECB, The use of cash by households in the euro area (2017)
[4] Capgemini, Top 10 Trends in Payments (2018)
[5] Bank of England, banknote statistics (2018)
[6] https://www.economist.com/britain/2018/10/04/the-curious-case-of-britains-disappearing-banknotes
[7] ECB, Modelling euro banknote quality in circulation (2017)
[8] British Retail Consortium, Payments Survey (2016)
[9] RBR, Global ATM Market and Forecasts to 2022 (2017)
[10] G4S, World Cash Report (2018)
[11] The Federal Reserve Bank of St. Louis (2018)
[12] https://www.frbsf.org/cash/publications/fed-notes/2017/june/cash-holdings-new-view-on-cash/
[13] Reuters, Cash still king: Swedish central bank urges lawmakers to protect cash payments (2018)
https://www.reuters.com/article/sweden-cenbank-cash/cash-still-king-swedish-central-bank-urges-lawmakers-to-protect-cash-payments-idUSL8N1QG79Y.
[14] Marks, G. Why going cashless is discriminatory – and what's being done to stop it (2018)
https://www.theguardian.com/business/2018/jul/15/cashless-ban-washington-act-discrimination.
[15] Morgan, S. 2017 Cybercrime Report
https://cybersecurityventures.com/hackerpocalypse-cybercrime-report-2016/
[16] ECB, Modelling euro banknote quality in circulation (2017)
[17] Dr Anne Lewis, the social dimension of use of payment methods (2014)
http://asia.iccos.com/files/Anne_Lewis_Thesis_with_explanatory_notes.pdf
[18] RBR Global ATM Market and Forecasts to 2022 (2017)
[19] González Dellán, L. Reducing the cash economy in Latin America is key for its growth (2018)
www.neweurope.eu/article/reducing-cash-economy-latin-america-key-growth/
[20] González Dellán, L. Reducing the cash economy in Latin America is key for its growth (2018)
www.neweurope.eu/article/reducing-cash-economy-latin-america-key-growth/
[21] UK Finance, UK Payment Markets Summary 2018
www.ukfinance.org.uk/wp-content/uploads/2018/06/Summary-UK-Payment-Markets-2018.pdf.
[22] UK Finance, Cash & Payments in the UK Report (2018)
www.reports.ukfinance.org.uk/webviewer/#paymentsuk.
[23] ATM Industry Association, The Persistence of Cash in Financial Inclusion – Case Studies. Access to Cash: The First Step toward Financial Inclusion (2017)
[24] Vanig, The State of Cryptocurrency Market in 2018
www.medium.com/vanigplatform/the-state-of-cryptocurrency-market-in-2018-7ea693d85794.

## About Vaultex:

Formed in 2007 as a joint venture between Barclays Bank and HSBC, Vaultex provides integrated, data-driven and value-adding cash management services with simple, customer-focused metrics.

We work in close partnership with our customers, adhering to the rigorous standards set by the Bank of England and the Note Circulation Scheme (NCS). We operate ten cash centres across the UK.

Vaultex works with many of the UK's top retailers and commercial banks. We have developed a number of leading services including: Cash-In-Transit optimisation; an online cash management and data analytics tool; and end-to-end managed services.

Vaultex also offers consultancy services and has developed a strong presence among international, central and commercial banks. We've built our reputation through knowledge-sharing and offering services that solve real cash management problems.

We pride ourselves on being at the forefront of debate on some of the biggest issues affecting our clients, including cash management efficiencies, cash volumes and new technology.