While cash is a payment method that will be around for years to come, the trend towards digital payments is unavoidable as people increasingly use cards or mobile phones to make payments, or are shopping more online and less on the high street. As in many areas of life, digital is replacing analogue.

According to UK Finance, in 2020 cash use fell by 35% and accounted for just under a fifth (17%) of all payments in the UK. This is in comparison to debit cards (including contactless debit transactions) which accounted for 44% of all payments. The popularity of card use and ‘card only’ self-service machines, as well as the growth of online retail, points to a rise in digital payment popularity over the past decade. This trend has been exacerbated over the past year as many businesses have encouraged customers to pay with card, or have declined cash entirely. While this is partly influenced by misguided concerns about safety, in all likelihood it’s a measure by employers to reassure staff of their safety, combined with the introduction of perspex screens and signs reminding people to respect social distancing rules.

While the direction of travel is undeniable, there is still life in cash. Indeed, while research conducted at Enryo suggests a much lower number of cash payments than UK Finance for 2020, we calculate a higher concentration of use: 22% of people (11.6 million) use cash more than once a week, with 2.6 million using it everyday. The pandemic, as it has done in so many areas of life, has accelerated the shift from cash to digital, but it has not led to the demise of cash.

Understanding levels of cash use is a difficult task that requires consumer surveys, economic modelling and a bit of magic dust due to the fact that cash, by
its very nature, does not leave a trail. However, UK Finance, who have been running their payments survey for over a decade, calculate that since 2010 cash transactions have fallen from 56% to 17% in 2020.

What’s strange about cash is that while the volume of transactions has been falling, the amount in circulation has been rising. Part of this is understandable as there needs to be a greater supply of cash than demand to ensure there’s enough available at all times (i.e. to ensure ATMs and tills don’t run dry). In addition, there’s plenty of UK sterling all over the world in bureaux de change awaiting purchase, it’s an attractive option as a safe store of value for UK and non-UK residents and some if it, well, it’s just lost. There’s also its use in the shadow economy, however you want to define it, which must account for some cash use, although it’s exceptionally hard to prove.

The combined total of all of the above is what constitutes the ‘notes in circulation’ or ‘cash in circulation’ figure. It includes much more than the cash used as a transactional method of payment for day-to-day items.

It’s important to point this out as there has been a lot of attention around cash in circulation in wake of the pandemic as, according to the Bank of England, notes in circulation increased by £10bn in 2020-2021 to reach a grand total of £80bn.

Common sense suggests that this can’t be all that it seems; especially when one considers that the amount in circulation today is double the amount in 2008, while over the same time period not only have cash transactions have fallen, there has also been a 13% reduction in the total number of ATMs and the total number of bank and building society branches has fallen by over 28%, significantly reducing the amount of cash needed in the supply chain for people to access it. We also know from the Bank’s own data that card payments nosedived in 2020 due to a lack of economic activity, a direct response to the lockdown measures, and LINK’s data shows that ATM withdrawals fell by 30%. Throw in a pandemic that accelerated the move away from cash as method of payment and we begin to understand why the disparity between cash use and cash in circulation is known as the ‘cash conundrum’.

In an effort to explain this, the Bank of England said that the jump in cash in circulation over the past year is probably due to a combination of people hoarding cash and sole traders, such as window cleaners and gardeners, being unable to bank their cash due to branches being closed. The Chief Executive of De La Rue, the printer of the banknotes, told the Financial Times recently, ‘it seems counter-intuitive in Covid

One of the explanations for the increase in cash in circulation is that people have been hoarding cash due to uncertainty in times of crisis. However Enryo’s findings seem to contradict this.
[but] when there are worldwide crises, demand for cash goes up'.

I'm not too sure that this behaviour accounts for the 10% rise in total notes in circulation. Research commissioned by Enryo in June 2021 showed that only 17% of people said they were keeping more cash on them than normal during the pandemic. Going by the Bank's logic, this means that around 9 million UK adults withdrew an additional £1,070 each. Even if this theory was true, it does not account for the doubling of notes in circulation that we’ve seen since 2008.

So what’s going on?

It is our view that the approach to understanding the amount of cash in circulation is wrong, leading to a misleading and unhelpful view of how cash is used today. What we need is a more accurate number that represents the value of banknotes that could potentially be used as a transactional method of payment. This would provide a figure that’s much more useful when discussing cash use and one that’s more in tune with how other methods of payments are discussed.

Getting this right is important because the future of cash is fragile. Millions depend on cash as their predominant form of payment and many more use it regularly to spend, save and feel safe in an increasingly digital world. Recent research from Age UK shows that 2.4 million people aged 65 and over rely on cash in their daily lives. It’s unhelpful for those reporting on the future of cash, involved in providing cash infrastructure or campaigning for access to cash to have a misleading figure promoted by the central bank.

How is the figure so wrong?

Banknotes flow in and out of circulation. When a banknote is unfit for purpose, or it’s replaced by a new series, it’s taken out of circulation and destroyed by the central bank. The recent move to polymer provides a good example of this: the paper notes have been taken out of circulation and new polymer notes introduced. However, as the Bank of England promises ‘to pay the bearer on demand’ the sum of their banknote, it can always be redeemed for face value, despite it no longer holding legal tender status. This means that if you have an early 1900s white Bank of England £5 banknote you can take it to the Bank of England and exchange it for a new one of the same value but much smaller and made from polymer. (Sidenote: if you do have an old banknote, you’d be better selling it to a collector.)

The old paper fiver, as it has not been returned to the Bank, is included in the number for notes in circulation as it’s technically still in circulation. This is true of all old series banknotes that have not returned to the Bank. We have no idea how much they account for, but as they can no longer be used as a method of payment, they shouldn’t be included in a calculation used to understand the performance of cash.

It’s unlikely that old, and now oversized, banknotes account for the growth we are trying to understand. What can account for it however, is the paper 5, 10 and 20 banknotes that were replaced by polymer but remain in circulation, which the Bank estimates account for more than £24.5bn. As the 5 and 10 are no longer legal tender, they also shouldn’t be included, and the same will apply for paper 20s and 50s when they lose their legal status after September 2022.

Alarm bells should now be ringing.

If the £80bn includes banknotes that are no longer accepted, and notes held overseas, then they can’t really be included in the figure used to determine demand for cash. Further, if we look at

When old notes get phased out and cease to be considered legal tender, any unreturned (to the Bank) notes continue to contribute to calculation of cash in circulation.

Enryo believes that measuring only those banknotes which could be used as a method of payment will give us a better idea of how much cash is being used.
the Bank’s data we can see that whilst the underlying notes in circulation continues to grow, the rate it grows at has been steadily falling for several years from 148% in 2013 to 114% in 2020. This effectively acknowledges the growth in card payments and the decline in cash infrastructure (less ATMs and less branches). Also, the average value of banknotes in circulation has been falling for the past three years from 19 in 2018 to 17.62 in 2021.

Events are also at play. Looking at the value of banknotes in circulation over the past seven years, we can see a notable year-on-year increase in £50 notes of £1.4bn in 2016 followed by £2.4bn in 2017, possibly caused by the reduction in value of pound sterling following Brexit, fueling demand for £50 banknotes as a store of value from overseas buyers. In addition, there was a whopping rise in £20 notes to the tune of £7.6bn over the past year, which is likely caused by the introduction of the new polymer 20, which is the most popular banknote by far, and the inability of the paper 20s to comeback to cash centres due to the pandemic shutting down retail. Based on this, we should expect a further rise in total notes in circulation when the figures are next released, given that the polymer 50 is now in the public domain.

Continued from previous page

Following the weakening of the pound after Brexit, the £50 note has increased in circulation. This note hardly sees use in transactions.

If we look at the number of banknotes destroyed vs new notes entering the wholesale market (that being the first step to a note entering circulation) we see a very different picture. Over the past seven years the Bank of England has destroyed more £5 (£0.7bn) and £20 (£0.4bn) notes than it’s issued but the reverse is true for £10 (£1.4bn) and £50 (£7.5bn) notes.

Considering that the average person never sees a £50 note, never mind uses them for day-to-day spending, if we remove them from the equation then the UK has been destroying more banknotes than printing since 2013/2014. Using this methodology leads to the conclusion that the underlying net growth in transactional cash over the past seven years is around £0.2bn. On the surface this seems to be a much more appropriate number given the changes in banking and payment preferences during this time.

With the average value and growth rate falling, as well as the Bank’s admission that not all the notes included in their total figure are actually circulating, we need a new approach.

What’s clear from our investigation is that showcasing a cumulative total of banknotes only tells part of the story, one that is viewed through rose tinted glasses. There needs to be a new methodology to understand demand for cash and the amount of cash that is available for day-to-day transactions. While a number for ‘total cash’ can still exist, in order to be constructive and help the challenges facing the future of the cash infrastructure, the Bank of England should cease using their current number and look to develop a figure for ‘transactional cash’.

This couldn’t be more pressing. Everyday cash transactions fall as the ease and convenience presented by digital takes preference for day-to-day spending, causing the challenge of providing a cost effective cash infrastructure to become even more difficult to solve. With this ‘cash conundrum’ occurring with the US dollar and Euro (to name but a few) the Bank of England has the opportunity to create and export a new way of calculating cash in the UK.
Artificial intelligence has long established itself as a pivotal technology for the future, driving efficiency, cost-savings, and minimizing human intervention. However, truly 100% artificial intelligence automation, supporting complete self-learning algorithms and bare minimum human intervention, are hard to find in the cash supply chain.

Across the globe, financial institutions are digitalizing their solution portfolio and digital payments are becoming more and more important, putting even more pressure on the cost to handle cash.

The shift from cash being consumed at ATMs and branches to cash deposit and recycling machines deployed at retail chains is a growing trend; of course with each respective market having its own maturity curve.

Retail customers of banks are increasingly interested in this trend as this will stimulate the traction in the stores itself and with deposit or recycling machines in place cash will be circulated instore and respective Cash-In-Transit (CIT) cost can be reduced. All stakeholders in the cash supply chain, namely retail chains, financial institutions, consumers and CIT companies, have common goals when handling cash, such as increased cost efficiency, end-to-end visibility, and minimizing human intervention.

In this context, 3 major trends are seen in the cash supply chain to optimize the cost of cash where, irrespective of the trend, Artificial Intelligent technology will be the overarching mechanism to reduce the cost to handle the daily cash.

• The first being internal optimization with optimized cash planning and operations
• The second being gradually outsourcing the cash operations to third-party providers or joint venture structures, and
• Thirdly the set-up of shared service operations via a joint venture structure of multiple banks to reduce the cost of cash.

True Artificial Intelligence to drive cost reductions in cash up to 25% and to minimize human intervention during and post-COVID era
Each strategy comes with its own perks and risks with technology being pivotal to handle the day-to-day operation. From this perspective, artificial intelligence is rapidly increasing in importance not only because of its ability to make cash operations more accurate and efficient, but also because it can lower costs and reduce human intervention to an absolute bare minimum. Such features will become even more important in the post-COVID era as companies try to keep up with the accelerating pace of digital transformation. Its ability to constantly learn and adjust will make artificial intelligence invaluable for companies that seek to continuously adapt.

Artificial intelligence is also a very attractive buzz word and often used by marketing teams to attract new customers, however, true artificial intelligence that is analyzing historical cash transaction data with 100% self-learning algorithms making decisions on itself and cutting out the human decision factor and confirmation, is not that easy to find.

We see that many financial institutions and cash operators across the globe rely still on relatively simple tools for planning their complex daily cash management operations. While today we use modern apps for most areas in life, most inhouse cash tools are based on excel spreadsheets. While such tools are cheap to build, there is significant risk, such as:

- Manual input errors
- It is often labor-intensive
- Has low central control/visibility
- Can become obsolete
- But their true cost is in missing substantial savings

Studies have consistently shown that their results are far from optimal, and tangible savings between 15-25% of external costs (CIT costs, capital holding/interests and processing costs) can be realized on top with professional forecasting-based solutions. In addition, often a low productivity with cash agents is the consequence.

Both together means that every year, many financial institutions are spending millions and millions on CIT transportation and cash agent operations that could be avoided!

Consequences from simple cash ordering or not 100% AI tools include:

- High CIT invoices due to unnecessary cash replenishments and expensive emergency trips
- Cash stockouts leading to difficulties meeting cash point availability targets, unsatisfied ATM, branch, CDM or CRM customers

...Continued on next page...
• Cash overflows of recycling ATMs, leading to unnecessary frequent services
• Excessive cash stocks in branches or dead cash in ATMs
• Potential higher cash center processing costs and related avoidable cash-in-transit
• Often large cash teams are deployed using excel or a homegrown system which still requires significant manual interference and/or judgement from the cash operator

Artificial intelligence cash optimization software and its capabilities.

Continued from previous page
• Significant savings due to reduced Cash-in-Transit (CIT) costs and internal replenishment costs – in many cases effectively 15-25%.
• Reduced cash inventories, if the interest (opportunity) cost that you pay are significant. And reduced cash backflow resulting in lower counting and operational costs.
• Enabling the benefits of cash recycling, both optimizing recycling ATMs and in-branch recycling, which is impossible to achieve with low-technology methods such as spreadsheets.
• Improved cash agent productivity from fully automated cash planning, ordering and monitoring procedures.
• Increased ATM availabilities (overall ATM and/or cash denominations), resulting in higher customer satisfaction and reduced emergency cash transports.
• Fully automated and self-learning, no manual intervention needed

The artificial intelligence algorithms are treating cash point data of withdrawals and deposits separately from any cash recycling and branch device, so that independent flows can be optimally forecasted.

In addition to the optimization of individual cash points, numerous specialized algorithms can be utilized to optimize entire groups of cash points together such as for branches and remote geographical locations – however, always at the same detailed level of the individual denomination and considering all intra-day effects.

Artificial intelligence cash optimization software is an advanced, adaptive, self-learning statistical method that is based on the cash demand per denomination, drawing both from long-term as well as intraday data – i.e. based on data imports multiple times a day - for each cash point and denomination.

It uses observed seasonal activity patterns, monthly payday patterns, configured event-days (configured within regional or cash point group calendars).

If historical data is present, no manual input is required for event-activities, as this is fully automatically derived from the historic information.

The artificial intelligence algorithms are treating cash point data of withdrawals and deposits separately from any cash recycling and branch device, so that independent flows can be optimally forecasted.

The quantifiable benefits of deploying Artificial Intelligence software.
”There is no reason anyone would want a computer in their home”, claimed Ken Olsen, president, chairman and founder of Digital Equipment Corporation (DEC) back in 1977. He sure got that wrong. Conversely, the history of tech is littered with over-optimistic predictions of how our lives will be transformed. 3D TVs, anyone? And exactly what is happening with driverless cars?

The point is this: tech gurus, pundits and the industry more generally are very good at accurately forecasting what technology will be capable of, but they often struggle to predict the “x-factor” – and that x-factor is peoples’ attitudes. Consumer adoption. The users of the tech.

And so when someone digs up the now (in)famous Bill Gates quip that “The world needs banking but it does not need banks”, it is worth reminding ourselves of the simple fact that he was also wrong. Without banks, there would be no banking. More specifically, bank branches – the ultimate interface between banks and the fintechs and is very difficult to build up at scale.

And yet in the UK alone, research from RBR (see footnote) shows that the number of bank branches fell by more than 22% between 2016 and the end of 2020, and a further fall of 20% is forecast by the end of 2025. When the last branch in a rural community or neighbourhood closes its door for the last time, consumers are directed to the nearest ATM – but even this has a dark shadow as free to use ATMs have also fallen from almost 54,000 to under 42,000. It has become increasingly difficult for many people to access local banking services.

It’s clear that in the world of bank branches, something needs to change.

The Branch Strikes Back

There are numerous initiatives from banks around the world aimed at luring consumers back in the branch, often providing something that the latest app can’t offer: coffee shops, community hubs, and yes... yoga classes. Here’s three more considerations for the mix.

• Convenience – it’s what the fintechs do so well and is arguably core to their success. For banks, this may be more than right-sizing branch estates. It’s about putting the branch where people want or need to be as they go about their daily lives. With the increase in remote working, this also means reaching out to be nearer where people live. Wouldn’t it be great to be part of every community, just like convenience stores or post offices?

• People – no matter where you look, automation is at work. Some tasks can be fully automated, but many tasks – particularly around customer-facing services – are often best served in a hybrid manner, using technology that helps humans do a better job. People help to build trust and engagement and can provide practical solutions when the computer says “no”. The customer experience can be automated, using technology that complements humans to improve customer interactions.

• Technology – the springboard to new solutions and business models is the

Continued on next page
underlying technology. For retail and SMB banking, this means solutions that automate cash transactions (beyond the limitations of an ATM), as well as the infrastructure and connectivity. With the introduction of Open Banking standards, secure connections no longer need to be confined to the four walls of a bank branch. The physical location is no longer a barrier – and shared banking hubs just became a lot easier to implement.

These are not wild predictions about where technology will take us. These are things that are happening now. The UK based OneBanks is a new initiative aimed at helping communities. Their technology enables multiple banks to offer services from a single physical location at significantly lower cost than a traditional branch. Participating banks’ customers – both personal and small business - have free access to multiple transaction types all supported by a member of the OneBanks team who is recruited from the local community.

Now, which tech pundit predicted that ten years ago?

This article is first published on glory-global.com on 2 September 2021

Footnote:
RBR research findings are from Branch Transformation 2021 (RBR Branch Transformation Report published in March 2021 based on research completed at the end of 2020)
Our Security Committee has been meeting over the past year and the committee members have discussed a number of subjects ranging from:

- Increase in ATM attacks, physical and through malware
- Changes in Cash Management regulations
- Cyber Crime and its impact on cash operations
- Cash losses/attacks
- ATM Security at manufacture and on deployment
- Increased risk to the international transport of valuable cargo due to more transit stops/layovers

Attacks in the Asia Pacific region are few, but we have seen an increase in ATM physical attacks in the Philippines. The members main area of concern is ATM reconciliation and shrinkage. Especially where “Add Cash” is still employed rather than cassette swap. Another is the failure by banks/MSPs to remove the retract function. By keeping the retract function operational, part of the cash can be taken, thus allowing the balance to retract and the full amount credited to the users account. As we all know the amounts retracted are not counted when deposited in the purge bin.

This leads to another concern for the CMCs; most purge bins in our part of the world are not lockable, providing easy access to the cash deposited when the ATM vault is opened.

Now on to one of my pet subjects, ATM security. We are well aware of the kinds of attacks against ATMs, both physical and by malware, yet the ATMs are not manufactured to resist the attacks. Yes, you can include some security protection, but they come at an extra cost. Often the ATMs are purchased by the organizations purchasing department, who are only interested in negotiating the lowest price. Once the ATM has been purchased at the lowest cost, it is deployed with limited onboard security. To compound the security problem, many ATM estate owners, fail to secure the site with appropriate locks, alarms and CCTV coverage. Where the replenishment is outsourced, the CMC replaced the ATM safe mechanical lock with a onetime code lock, at their own expense. But the ATM top compartment and the router enclosure, where malware can be inserted, are left secured by locks where the key is easy to copy or pick. I could ramble on about all the other security risks, but hopefully the estate owners get the picture that they need to set the security standards to ensure they purchase ATMs that are secure and when deployed are protected by on-site security.

Another area of concern is cyber security. It is interesting that when there is an attack where cash is stolen, it is well publicized, but we hear little about cyber crime losses and the impact of cyber crime on society. Except when it causes a major infrastructure failure.

Our committee has decided to engage the ATM manufacturers and estate owners to discuss what improvements at the manufacturing stage can be made, and what security upgrades are needed where machines are deployed.

To get a better understanding of the cyber crime implications, our committee will engage with a cybercrime expert to understand what we as an industry needs to do to protect ourselves from attack and to ensure we have a business continuity plan in place in the event our systems are compromised.

Our committee is made up of representatives from Linfox Armaguard, Brink’s, Aegis, Marsh, Guardforce, Loomis, Prosegur and Spearpoint. The committee meets every two months and we will keep you updated through Currency Notes on our progress. We have set up a WhatsApp group for the committee members, but all members are welcome to join and should contact Tan Chee Meng to be included.
A NEW ACMA MEMBER

STANDER

As a new star in the cash management industry for 8 years, STANDER (short for "Stander Information Co., Ltd") upholds the business philosophy: "Do not seek to make much profit in each customer, instead, being more concerned about bringing more customers through our high-quality services, constantly updated products and good reputation". Currently, the largest and most professional cash management service providers in various countries, including Shanghai Security, Guardforce Hongkong and Macao, GFAI Thailand, AEGIS Brunei, 1Secure Philippines, and Diebold Nixdorf have become customers of STANDER and users of AIOperating, a comprehensive cash service management system from STANDER.

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To learn more, please view the full story on the ACMA website, here.

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