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SMART CONTRACTS AND CVIT

HUSEYIN MEMIS | STREAMCORP ARMOURED



Blockchain is a disrupting technology that has the capability to completely alter the design, activities, and product flows in logistics and supply chain networks. It provides assurance of openness, immutability, transparency, security, and neutrality for all supply chain agents and stakeholders. Blockchain technology makes it much more difficult to counterfeit products by providing indisputable and immutable proof of the provenance of the raw materials, products, and sale to the end consumer. This can potentially enhance the trust of the consumer in the product and financially benefit the manufacturer through the protection of their intellectual property rights.

Blockchain can be utilised to keep track of the life cycle of a product and record the transfer of ownership. Modern supply chains are very intricate and are constituted by many levels of decision-making, regulatory bodies,

intermediaries, and geographically separated goods and services providers. Moreover, the customers are also geographically spread out throughout the globe. Different territories have varying regulatory policies, and the culture and the society of a distinct region also have an impact on how the operations are planned, managed, and performed. The uncertainty arising from these factors generates a risk that is very difficult to evaluate, assess, and mitigate. These uncertainties and associated risks also raise inefficiencies and increase the opportunities for malicious entities to defraud the legitimate actors and stakeholders that are part of the supply chain.

Consequently, the stakeholders lose mutual trust and are unwilling to share the information without verification and validation. The ability to trace the origin of a product is increasingly becoming an Continued on next page



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important feature of a product not only for the regulatory bodies but also for the end consumer. In fact, traceability can provide a competitive edge to the producers and owners of high-value goods, such as pharmaceutical products, physical currency, gold, precious commodities and anything that holds value for counterfeit producers.

Blockchain can be readily customised by choosing new protocols and rules for block generation, incentivisation of nodes, consensus rules, cryptographic algorithms, and smart contracts. Multiple actors can participate in a blockchain without undue risk and with minimal trust. Depending upon the application, blockchain can either be public (permissioned) or private (non-permissioned). A private blockchain could be more suitable for a logistics management system as multiple parties know each other, and there is a certain level of trust present among the entities.

A smart contract could be crafted through an agreement and negotiations among the partners and stakeholders of the cash or valuable commodity eco-cycle, and this smart contract could be deployed on the blockchain to guarantee the terms of service required for smooth operations as per the agreed-upon level of the quality of service and product. A smart contract has the capability to automatically update the ledger if the code execution leads to a situation where all the terms of the contract are met by the participating actors.

Blockchain technology consists of a distributed ledger of records or a database of all events that are either executed or shared by participating entities. Blockchain exhibits four properties that distinguish it from its peers:

- Decentralization.
- Security.
- Auditability.
- Smart execution.

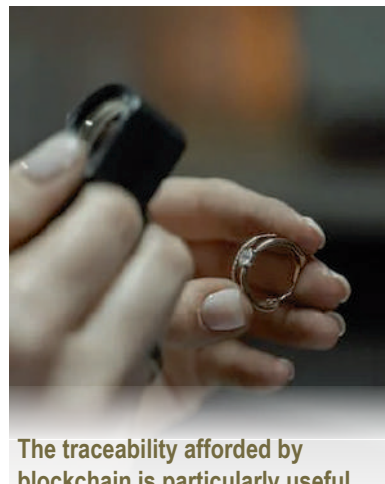
On a higher level, a blockchain operates

as follows.

- An agent that wishes to record an event, broadcasts a transaction to its peers on the network.
- After verification and audit of the received transaction by a majority of the peers on the network, the transaction is approved as per the agreed regulation followed by the actors on the blockchain.
- A record of the approved transaction is maintained by several peers to ensure the robustness of attacks and for improved reliability in the face of equipment or node failures.
- The transactions are typically grouped in the form of a block, which is tied to the previous block through a hash function of its contents, thus, creating a chain of dependence among the blocks and constituting linked records.
- An arbitrary contract could be deployed in the form of a set of instructions on each node of the network that executes autonomously once the prerequisite conditions are met.

Similarly, the timestamp information recorded in the blocks ensures the auditability of the transactions. Multiple copies of the transactions distributed over a geographical region create an environment

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The traceability afforded by blockchain is particularly useful for producers and owners of various high-value goods.

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**BLOCKCHAIN
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AUDITABILITY;
SMART EXECUTION.**
”



Blockchain could be used as a platform to deploy a smart contract, which enables automatic fulfilment of terms of service.

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of mutual agreement, trust, and security for the recorded information among the nodes in the network.

Decentralisation and trustworthiness of the shared information are very important characteristics of a blockchain. Moreover, it cannot be altered once consensus is formed. Blockchain simultaneously

provides transparency as well as confidentiality.

The Cash and Valuables in Transit (CVIT) industry is always looking for ways to improve efficiency, reduce costs, and increase transparency in service and transactions. Blockchain technology is a disruptive technology that possesses the desirable traits of a decentralised record; is mutually trusted by participating peers,

is immutable, scalable, secure, and robust; and does not require a centralised authority. Blockchain can help boost the efficiency of the supply-chain process by transforming the paper-based slow and error-prone processes into tamper-proof digital paperless processes. This reduces the burden on human intervention and possible errors, while still satisfying the regulatory requirements agreed upon and fulfilled through a smart contract.

KEEPING CASH RELEVANT IN AN INCREASINGLY DIGITISED WORLD

ACMA



The role of cash

It can be easy to think that in a globalised world everyone is enjoying the same experiences and replicating the same behaviour. Cash is a critical resource with no substitute that fully meets the needs of consumers and businesses. A payments landscape that offers a range of payment options, including cash, is a healthy payments landscape. This understanding is critical at a time when the dominant narrative is that a cashless future is imminent. The reality could not be further from the truth: across Asia, cash is popular and remains an active and essential part of the payments landscape, even in countries that have a low-level of everyday use, where it remains a functional payment method for large sections of society. While little can be gained from a cashless society, much can be lost.

Safety of cash

A well-functioning daily payment

method should be:

- INSTANT - payment should be settled quickly to enable a streamlined process allowing consumers to purchase and merchants to sell.
- SECURE - consumers and merchants should trust that the transaction will be successful and it's at low-risk of fraudsters.
- CONVENIENT - it should be easy to use and offer a hassle free experience.

These attributes are important as we make everyday payments and cash offers consumers and merchants all of the above: it is a safe and trustworthy payment option that injects confidence into a transaction. Theoretically, cash can be regarded as a risk-free payment instrument and safe asset, while any cash-free payment instrument that depends on market institutions involves operational market, and even moral, risk. As such, the option of keeping cash can

enhance people's sense of security in both a practical and altruistic way. No other payment method can match this and the ability of cash to provide such attributes should be recognised as an asset to a country's payment landscape, particularly in harsh economic times.

Cost of payments

A well-functioning daily payment method should be instant, secure and convenient. Retailers however, need a fourth component: it must be cost efficient. In the modern economy, there is no such thing as a 'free method of payment' and all payment methods incur a cost. In order for them to work efficiently this cost needs to be both competitive and transparent.

Digital payments have become complex and expensive payment options that unfairly burden costs on merchants.

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One of cash's crucial advantages is offering instant settlement. This enables small businesses to manage cash flow.

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Consumers are being affected too. While cash payments also incur fees to merchants, they do not involve interchange fees and limit the money leaving the local area. Cash is not only the cheapest payment option, it also offers instant settlement, allowing small businesses and self-employed (e.g. taxi drivers and hair dressers) to manage cash flow. In terms of environmental cost, the cash industry is working hard to reduce its carbon footprint, while digital payments are set to become increasingly energy intensive.

Cash and society

Cash plays an important role in supporting a cohesive, wellfunctioning and resilient society, a role that makes it vital for central banks and governments to ensure that it continues to be a feature in the payments landscape:

- Cash enables people's freedom of choice to be protected. Every citizen should have the right to pay for everyday goods with state issued money that doesn't capture their data or require a third party to facilitate. Unless this freedom is upheld there exists no alternative payment mechanism that is universal and exists outside of private enterprise.

- The main principle of developing inclusive finance is to ensure that all individuals and businesses have equal access to useful and affordable financial products and services that meet their needs. Some of the elderly, rural population, and low-income groups lack digital communications equipment and network access, not to mention digital finance knowledge and skills. For these people, and the many more who have a bank account but prefer cash, it's vital that they can access and use cash and be part of society. Payment choice is key to financial inclusion and cash plays a significant role in ensuring that a country's payment system is truly working for the majority of citizens.
- The increasing influence of digital networks to support essential elements of the global economy have raised alarms with policymakers. In the modern world, cash has taken on a new role as the 'contingency' payment system. In many countries, cash operates through a different payment infrastructure, which means it can continue to function if a card-based or digital system fails, and support society in the event of natural disasters and pandemics.

Keeping cash relevant

Every citizen should have the right to

use a payment method they are comfortable with to purchase everyday goods and services. The unchecked rise of digital payments is posing a threat to the security of the financial systems; of which cash remains an important part. A country should value the benefits of cash and it cannot be viewed as just another payment mechanism. No country is ready to go cashless and digital payments don't yet work for everyone. The consequences to society and individuals of not having a viable way of paying for goods are potentially severe. We suggest the following recommendations in order to keep cash relevant.

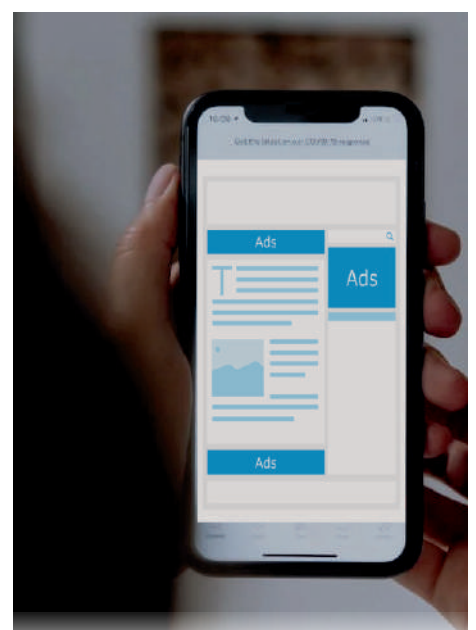
Recommendations

GOVERNMENT

1. Protect freedom of choice

It is the responsibility of the state to ensure the safety and well-being of citizens. This must apply to the ability to pay for goods and services with state-issued money. Unless this freedom is protected, the majority of a nation's payments will be processed outside of their territory at detriment to the local economy. In addition, the inability for digital payments to work for all citizens means that unless the ability to make

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Citizens should have the right to use money which does not capture their data — a precious commodity for advertisers.

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payments by cash is protected millions of citizens could be left behind and excluded from society.

2. Identify single-authority

Cash is not defined as a payment system in the same way as other payment instruments and different parts of the cash cycle, e.g. ATMs, branches, Cash Management Companies, can fall under different rules from different authorities. To ensure that the cash cycle remains efficient and effective, a single authority (e.g. the central bank) should be granted complete oversight of the cash cycle from note distribution to access.

3. Contingency planning

The increasing dependence on digital systems presents system-wide risks to a country's economy. Cash can play a significant role to ensure that a minimum level of payments can continue in the event of digital failure. If a card payment system fails, or a natural disaster strikes, cash can support payments in the interim and act as a tool to maintain public order. The central bank should work with the cash industry to explore this and make relevant plans to ensure cash can fulfil this role.

CENTRAL BANK

4. Data collection

In order to implement the best possible policy decisions, the most accurate data is required. This is vital for policy affecting cash as real-time on usage data is not available. The central bank can lead the way in commissioning and distributing research into a nation's cash use, providing a benchmark for other organisations and a foundation for action.

5. Independent review

A new way to approach cash, and ensure its longevity, should be underpinned by the principle of collaboration. The central bank should take the lead and create an interest group or forum that brings together the whole cash cycle, including the retail sector and

consumer groups, to explore how they can work closer together to improve efficiency. Commissioning an independent sector-wide review can provide a framework for the future of cash.

6. Improve distribution

There are several levers that the central bank can pull to provide a modern and efficient environment for the industry to work from. These should be introduced in collaboration with the industry and could include improving the quality of banknotes (so they can circulate longer); introduce recirculation frameworks, allowing decentralised off balance sheet to support longer circulation and promote innovation of new cash-recycling services. They should also work with the industry to improve access to cash.

CASH INDUSTRY

7. Improve access

A central element to keeping cash relevant is ensuring that the needs of the end-user are updated in-line with changing behaviour. While the ATM has provided access to cash successfully for decades, it's time for the industry to innovate and develop new ways to ensure access to cash. This can open the door to partnerships with new organisations, or fintechs, that can offer user-friendly and cost-effective solutions.

8. Improve supply

The central bank can create the environment to improve supply but the industry has to deliver. Introducing new products and services to support coin and note deposits, smartsafes and streamlining deliveries can make significant improvements to supply.

9. Collaborate

Industry collaboration is the most effective way to plan for a new future for cash. Utilising industry bodies, or creating new ones, to explore how collaboration can result in future proofing ATM and distribution networks will pay dividends if done early enough.



ATMs have been a popular and effective solution for cash access but new innovations are needed to serve evolving end-user needs.

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INDIA'S FIRST CASH USAGE REPORT HIGHLIGHTS CASH MEGATRENDS OF FY 2023

ANUSH RAGHAVAN | CMS INFO SYSTEMS



We are on the cusp of an interesting period in the Indian economy. The financial sector has emerged more resilient and robust after the debilitating pandemic. Both – bank branches and automated teller machines (ATMs), are playing a crucial role in banking coverage expansion in India with significant impact on financial inclusion. However, despite being the world's third-largest ATM market after China and US, India is significantly under-penetrated with only 22 ATMs per 100K population compared to a global average of 47 with US and

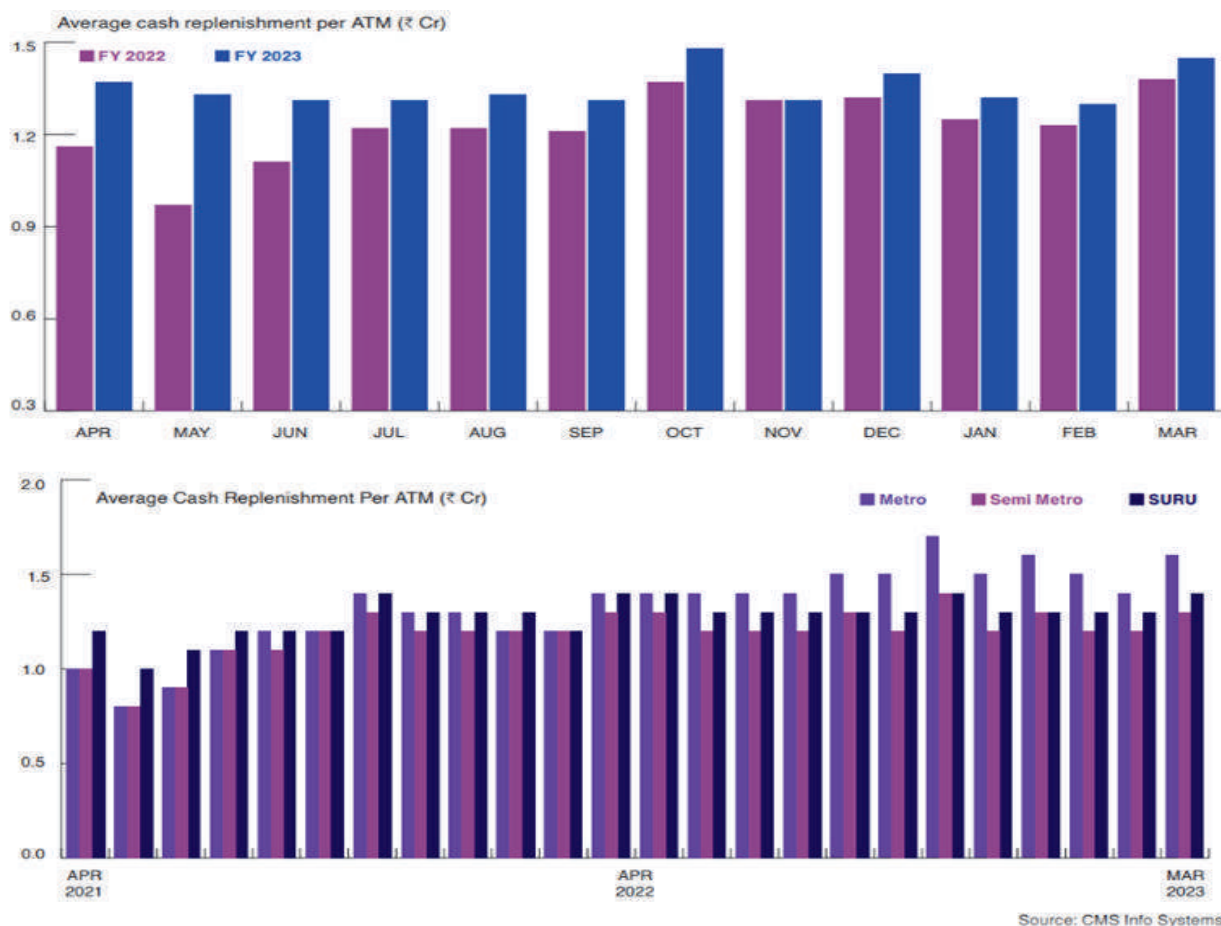
China being at 123 and 97 respectively.

Despite the under-penetration of ATMs, cash continues to be an essential part of the Indian economy, as a widely accepted form of payment that enables individuals to participate in economic transactions and serves as a medium of exchange for goods and services. In FY 2023, we have seen 10.08% annual growth in monthly average cash replenishments per ATM, reflecting strong dependability on cash transactions which are particularly important for promoting

equal economic opportunities because they can be used by anyone, regardless of their socioeconomic status. It continues to be a core part of the infrastructure, and essential to our lives.

At a demographic level, usage of cash by Indian consumers basis ATM withdrawals in semi-urban and rural (SURU) have been growing steadily while metropolitan cities have grown at a higher pace. During the second wave of COVID-19 in India (April-July 2021),

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Comparisons of average cash replenishment per ATM between 2022 and 2023 (top); and between demographic groups (bottom).

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15.47% higher ATM cash withdrawals were seen in SURU, indicating more usage and need for cash owing to challenges inherent to digital payment usage in lower tier markets. The lower average ATM cash withdrawals in metropolitan cities compared to SURU during the second wave can be related to the availability of alternate digital payment channels. However, given the lower penetration of financial and digital literacy in SURU locations, there is a relatively higher dependence on cash usage.

Demonstrating a strong co-existence of cash alongside digital payments within consumers, India also witnessed maximum cash usage and demand during the festive and wedding seasons. Data on average cash collected from our Retail Cash Management (RCM) points split within the six key industry sectors reveal a 50:50 performance. Sectors within transportation, organised retail and banking and financial services (BFSI) sectors saw an annual increase of 38.7%, 14.4% and 5.6% each during FY 2023. Notably, the transportation sector demonstrated 1.38X higher average cash collection per RCM point, indicating the reopening of the economy post the Covid-19 pandemic.

Our recently launched, CMS India Cash Vibrancy Report 2023, based on cash-usage analysis at global, national, state, and sector levels, highlights the relevance of cash usage among Indian consumers. The report showcases the megatrends in India through the period FY 2023 in comparison to FY 2022.

1. At \$421 billion in 2021, India saw the third-highest annual growth of 7.9% in CIC, while UK (+11.8%) and China (+10.2%) respectively saw the highest and second-highest annual growth over 2020

2. After touching 8.7% in 2016, India's CIC to GDP ratio has averaged close to 12.4% which is higher than the 10-year average of 11.8%
3. The pan-India ATM cash replenishments carried out by CMS Info Systems witnessed an annual growth of 16.6% in FY 2023
4. The ATM cash withdrawal of Rs 2.84 lakh crore in March 2023 is an absolute growth of 235% in a matter of 76 months after demonetisation
5. At state level, Maharashtra, Gujarat, Tamil Nadu, Karnataka, and Uttar Pradesh together accounted for 43.1% of the total ATM cash replenished by CMS Info Systems across the country in FY 2023. Incidentally, these are the Top 5 states with maximum gross state domestic product (GSDP) in FY 2022 according to MoSPI (Ministry of Statistics and Programme Implementation)
6. Wedding and festive season across October-November 2021 and May-June 2022 saw the monthly RCM collections rising in the discretionary sector

The report demonstrates the relevance and importance of cash in the Indian economy. It is critical to widen financial inclusion and provide a convenient and low-cost payment system which is accessible to everyone in society. Today, a significant portion of the population in India is unbanked, with no access to formal banking services. These individuals rely on cash usage every day as their primary means of conducting transactions. Under penetration of financial and digital literacy further leads to security concerns for digital payments despite the convenience offered. The correct balance of cash and digital will lead a booming economy like India to an upward trajectory.

For a detailed analysis, the report can be accessed [here](#).



India's transportation sector in particular saw a significant increase in cash collection as the country's economy recovered post-pandemic.

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Reference:

1. CMS Info Systems (2023). *India Cash Vibrancy Report 2023*. [online] Available at: <https://www.cms.com/reports/cash-vibrancy-report.php>.

MEMBERS' NEWSBOARD - LATEST STORIES FROM ACMA MEMBERS

WHAT IS CRIMETAG?

SECURE INNOVATION LTD

What is Crimetag Forensic Marker?

Crimetag® is a unique security marking solution that is almost invisible to the naked eye. The liquid forensic marker can also be sprayed as a fine mist. Crimetag® is used to protect people, deter thieves, and aid convictions.

Liquid Security Marking

As a liquid, Crimetag® can be added to existing security solutions, such as IBNS (intelligent banknote neutralisation system) ink stain technology. Enabling a clear evidential trail between stolen goods and suspected criminals.

CIT & Banking Security Marking

Crimetag® has a proven history in the



CIT (cash-in-transit) industry. Cash management and transportation have obvious high risks associated with it. Crimetag® is used inside thousands of our secure cash iboxes around the world. Inside the boxes, there are tanks full of ink that will stain the contents in the event of an attack. Adding the security marking liquid creates an additional deterrent and an indisputable evidence chain. Even if the attackers do not get away with the cash, there is a high chance that their clothes, hair, and skin will be covered in the ink. But more importantly, by including the forensic marker, the unique 'fingerprint' of the Crimetag® solution, it will link them back to the robbery. It can also be added to the



The presence of Crimetag, indicated by a small sticker, can act as a deterrent against burglary attempts.

ink used in our intelligent ATM cassettes, a2m, also designed to protect cash from theft.

To learn more, read the full article [here](#)



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Coins represent significant 'lost' value. Whether down the back of the sofa or discarded to landfill, estimates place the amount lost in the UK alone at up to £150m per year.

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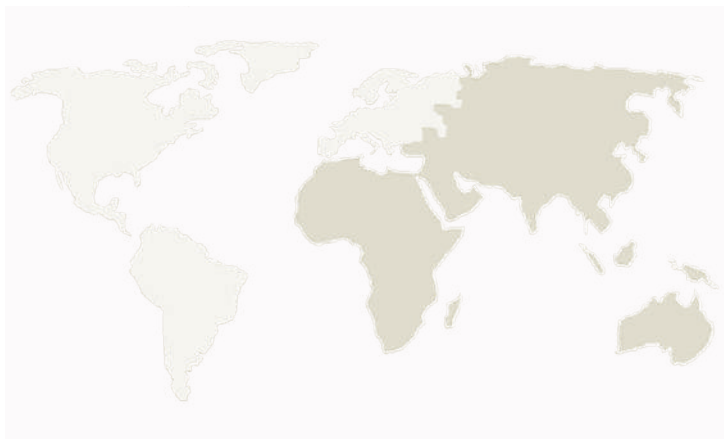
By making change convenient to store and use, a significant amount of money can be brought back into circulation - benefiting everyone in society.

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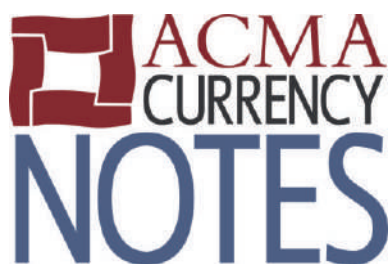
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ABOUT ACMA

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To provide a platform for Cash Management Companies (CMCs) in Asia, Africa and Australia & Oceania to raise their professional reputation and standing in the Cash Handling and Cash Management Industry, and to act as a representative with the appropriate authorities on issues of common interest.

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