# Combating Black Money by Demonetization


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## Executive Summary

On the evening of November 8, 2016, I entered my home only to find everyone glued to the television. In a surprise broadcast, Indian Prime Minister Narendra Modi was addressing the nation, dropping what was to become the largest economic bombshell in decades. He announced that from midnight, only hours away, all 500 rupee and 1,000 rupee currency notes in circulation would no longer be legal tender (the equivalent of $7.34 and $14.68, respectively). Old denominations that could still be used were notes of 10, 20, 50 and 100 rupees, while coins of 1, 2, 5 and 10 rupees also remained valid. In a further measure, it was announced that a newly designed denomination note of 2,000 rupees and a new 500 rupees note to replace the old one were being introduced. Citizens were given 50 days until December 31, 2016 to deposit all the old currency into their bank accounts or exchange them at any bank or post offices. Banks were to be shut down the next day to gear up for the unprecedented move and ATM's were to be shut for 72 hours until all the cash was changed for dispensing. For 72 hours, until the midnight of November 11, limited exemptions were given to certain businesses. Speculation soon began on WhatsApp with jokes and ways to convert black to white overnight, but the message was very clear: This was a "Surgical Strike against Black Money."

These steps were taken as a measure to primarily curb corruption, black money and the financing of terrorism. Since we live in an age of digital transactions with credit cards, debit cards, Paytm or online transfers in India, the common question was, "Do we really hold that much cash?". It appeared that cash was and is the most common mode of payment for groceries, petrol, utility bills, salaries to house help, metro travel, gifts for birthdays/festivals and grand wedding gifts from family and friends.

As a case in point, my neighbors were caught completely unaware since their daughter's wedding was just around the corner and huge amounts of cash of the old currency were already withdrawn to give in wedding gift envelopes to the bride, groom and their relatives.

Call it the 'morning after' and November 9 was indeed a historical day for both the U.S. and India. While U.S. awaited the election results, India was fighting black money, albeit also reeling from a cash crunch. Questions were being asked whether this 'master stroke' will actually impact those entrenched in a parallel 'anti-national' economy comprising corruption, tax evasion, racketeering, human trafficking, terrorist activities and the like.

**The demonetization move could change the face of the Indian economy –**

This paper will address the short-term and long-term impacts and the series of actions that will be required to sustain the bold initiative taken to dismantle the country's scourge of black money and counterfeit currency funding terrorism, along with money laundering through real estate and the funding of political parties, and the transition thereafter of the country toward a digitized economy with more transparency. With digitization, data security and privacy will be the next prime concern. Stronger controls and enhanced data security regulations will be required with increased digital literacy on how to stay safe in this digital world, especially in controlling small-time payment processing vendors.

## Why demonetization?

Demonetization is the act of stripping a currency unit of its status as legal tender. Demonetization is necessary whenever there is a change of national currency. The old unit of currency must be retired and replaced with a new currency unit. There are multiple reasons why nations demonetize their local units of currency. Some reasons include: combating inflation, fighting corruption or discouraging a cash system.

This is not the first time that a country has walked the demonetization path. Several countries have tried demonetization to counter hoarding of black money and widespread circulation of counterfeit notes that eat into the economy. However, these times can be trying for both the government and the people. In 1873, silver was demonetized in favor of adopting gold as the legal tender of the U.S. Withdrawal of silver from the economy resulted in contraction of money supply subsequently leading to a five-year economic depression in the country. In 1878, silver was remonetized to remove pressure on silver miners and farmers. In 1984, Nigeria banned old notes to control inflation, but the economy collapsed. In 1982, Ghana ditched its 50 cedis note to tackle tax evasion. In 2002, the European Monetary Union adopted the euro. There was a frantic rush to exchange old European currencies to euros.  In 2010, North Korea removed two zeros from the face value of its old currency in order to clamp down on the black market. Australia was the first country to replace paper notes with polymer notes to stop counterfeiting. In 2015, the Zimbabwean government demonetized its dollar to combat the country's hyperinflation.

This is the third time demonetization has taken place in India. Earlier, 1,000 rupee and 10,000 rupee banknotes, which were in circulation, were demonetized in January 1946, primarily to curb unaccounted money. The higher denomination banknotes of 1,000, 5,000 and 10,000 rupees were reintroduced in the year 1954, and the same banknotes were again demonetized in January 1978.

As previously stated, the first objective behind the Indian government's current action was to combat tax evasion, counterfeiting and corruption. Eliminating large denominations makes it harder to hide large amounts of cash. India still has a parallel economy of cash-rich people evading taxes.

Prime Minister Modi noted that the move complemented the country's 'Swachh Bharat Abhiyan (clean India campaign). Accordingly, for decades, the country has felt that corruption, black money and terrorism were festering sores, holding it back in the race toward development. The size of the cash economy will shrink, as will black money generation avenues, because of the better cash-flow trail. The need for the government to keep the move a secret was to ensure tax evaders would not be alerted before the demonetization took place.[2]

> ***Unaccounted wealth is widely estimated at around a fifth of India's GDP or around $450 billion – Source CII***

According to the Reserve Bank of India (RBI) figures, as of March 2016, currency in circulation amounted to 16,415 billion rupees ($241 billion). Of these, 500 rupee notes accounted for 47.8 percent in value and 1,000 rupee notes another 38.6 percent. Together, they accounted for more than 86 percent of the value of the total notes in circulation. It was a whopping amount to be frozen in one scoop. While it is not possible to have a firm estimate of unaccounted wealth, it is widely estimated to be at around a fifth of India's GDP or around $450 billion (Source: Confederation of Indian Industry). While some of this may be stored in cash, some may be in assets such as real estate and jewelry. India's cash dependence is extremely high at 12 percent compared to 4 to 5 percent in other developing countries. A high level of cash usage tends to slow down the flow of money through the economy.[3]

The prevalence of cash has also made India prone to high inflation. Corruption and excessive cash use tends to erode the purchasing power of money. With this move, the Reserve Bank will now have more room to cut interest rates as inflation subsides.

## Phased Process of Declaring Demonetization Has Relevance

While I was analyzing a series of moves initiated by the government over the last two years, I connected the dots to conclude that the process of demonetization was indeed a carefully planned strategy. If executed well, this could help improve the country's risk ratings. The phased approach is detailed below starting with moves such as the Jan Dhan Yojana account, linking of Aadhaar cards, black money self-disclosure scheme and then demonetization.

**Jan Dhan Yojana:** The Prime Minister's Jan Dhan Yojana, launched in August 2014, was a national mission aimed at financial inclusion of all sections of society across the country. The primary purpose of the scheme was to extend various types of banking products and services to all (both rural and urban) households in India. While these were zero balance accounts, we have seen a trend of decreasing zero balance accounts in the last two years.

**Aadhaar Card (Unique Identification Authority of India):** This was the second building step. Though voter ID, driving license and PAN cards were mostly used for verification, these were not self-sufficient and were lacking the modern digital touch. Aadhaar was the final output with biometric and demographic details of citizens. In its database, it also has the retina scan, important physical distinguishing marks and other such details. Over 1billion citizens now have their own Aadhaar cards in India.

**Unified Payment Interface:** This was launched in April 2016, with a vision of migrating toward a less cash and more digital society. UPI is a payment system that allows money transfer between any two bank accounts by using a smartphone. UPI allows a customer to pay directly from a bank account to different merchants, both online and offline, without the inconvenience of typing credit card details, IFSC code, or net banking/wallet passwords.

**Aadhaar-Linked DigiLocker Service:** This was launched in August 2016, enabling Aadhaar-holders to scan and save their important documents like proof of identity, address proof, educational certificates and important property documents in paperless format within free storage space on the cloud, so that they could share it with government officials whenever required without any need to carry them.

**Income Disclosure Scheme:** The IDS window opened on June 1, 2016 and closed on September 30 of that year. This allowed a window of opportunity to submit details of undeclared wealth. In the largest ever black money disclosure, at least 652.5 billion rupees of undisclosed assets were declared in the one-time compliance window, yielding the government 293.62 billion rupees in taxes. A big blow was expected for the remaining black money holders who still were trying to get away with their untaxed and often ill-begotten wealth.

**Demonetization**: It was in the lead-up to the aforementioned that the Indian government in a sudden move on November 8, 2016, declared Indian notes of 500 and 1,000 rupees as untenable currency. The announcement wasmade late evening so that people could not withdraw or deposit in banks the same day. The next two days were closed for banks to be prepared with the new directive. While online transactions were feasible, cash transactions came to a standstill. The government, in wanting to ensure that people could not abuse the system by channeling black money to others' accounts, set a cash deposit limit of 250,000 rupees. Any mismatch with income declared by the accountholder would be treated as a case of tax evasion.

***Connecting the dots – Planned approach of opening Jan Dhan accounts, linking to Aadhaar number, Self Income disclosure scheme and Demonitization***

**Second Phase of Income Disclosure**: If anyone still has undisclosed money then this is the best way to deposit. Pradhan Mantri Garib Kalyan Deposit Scheme (PMGKDS) 2016, is a scheme notified by the government of India on December 16, 2016, which is applicable to every declarant under the Taxation and Investment Regime. The proceeds of the wealth were intended, by the government, to go toward the upliftment of India's poorer sections of society.

Obviously, a person with black money wanting to avail the scheme will not continue holding the money as cash because the demonetized notes are of no value unless deposited in a bank/post office. Consequently, the declarant will end up having to deposit the cash in a bank or post office and then avail the scheme for the deposit. The declarant will have to pay 30 percent in income tax, 33 percent surcharge tax, 10 percent penalty on income (as per the scheme rules) totaling to nearly 50 percent of the income to be declared under the scheme.

The person would also have to comply with the other rules of the scheme such as depositing 25 percent of the amount declared in the Pradhan Mantri Garib Kalyan Deposit Scheme 2016. This deposit would be without interest and blocked for four years.

Furthermore, the amount of undisclosed income declared under this scheme shall not be included in the total income of the declarant for any assessment year under the Income-Tax Act. This means that once a declaration is made under this scheme then this income cannot be called into question again subject to the other rules. This scheme is not available in cases where the income is from illegal activities.

**Connecting the Dots** – Analyzing the government's steps led me to conclude that there was a good linkage between them. Jan Dhan Yojana was to ensure that poor people were not affected by the demonetization move. They could just get to a bank and get their old notes exchanged or deposited. The Aadhaar ID was linked to ensure know your customer (KYC). Unified Payment Interface was to ensure that all of the transactions were linked and recorded to avoid someone trying to trick the system. Self-income disclosure ensured that people could come forward and disclose rather than coming under the Income Tax Department's scanner. Even after this, anyone who did not avail the self-disclosure scheme, instead of the money being dumped, was provided the opportunity to pay taxes and deposit 25 percent in a scheme that could be used by the government for the betterment of the poor (PMGKDS fund). All this appears to be well planned and executed.

### How the System was Abused Soon After the Announcement

Since there always was a parallel black money market, people used all kinds of illegal methods and loopholes to convert their black money to white. "How to convert black money to white" was the maximum trending topic on Google within two days of the announcement.[13]

**Real Estate:** Real estate is a sector where a major portion of black money is parked. People used real estate deals to convert black money to white. People did fake real estate deals, exchanged money and cancelled these deals due to non-payment of money.

**Agents Offered Small Notes With Big Cuts**: Currency agents who supply small denomination notes to traders and other retail businesses were in demand for exchanging old currency notes on a commission basis.

**The Jeweler's Route**: Many people went to their trusted jewelers with huge amounts of black money they needed to be converted. The modus operandi was that the jeweler would hand over a cheque for the same amount showing a purchase bill stating personal jewelry sold to him. Thus, black money was converted to white without needing to pay capital gains tax. Within hours of the demonetization announcement, jewelry showrooms were open until late at night and sold 10gm gold for 50,000 rupees at a premium of 20,000 rupees. As soon as the news of this racket leaked through the media, jewelers were under the scanner and the government swung into action. The Income Tax Department also found people buying gold in cash without their Tax ID's (PAN).

**Depositing Black Money in the Name of Family Members**: Influential people like company executives, chartered accountants, businessmen and politicians were luring the salaried class to deposit 200,000 rupees in their bank accounts for a 10 to 15 percent commission. They were being asked to deposit into their children's or wife's bank account, which would not be taxed and not questioned by tax authorities. This was also looked as a get rich quick scheme for the salaried class and people lower down the economic ladder, although it entailed a huge risk. There were many naïve Indians unaware that the Income Tax Department was tracking these transactions digitally. In February 2017, tax authorities began sending notices where income tax and the cash deposits did not match.

**Deposits into Jan Dhan Accounts**: The Prime Minister's Jan Dhan Yojana's primary purpose was to extend various types of banking products and services to all (both rural and urban) households in India. These were zero balance accounts with simple KYC norms. House helps and office peons were made to stand in long bank queues for a daily wage of 500 to 1,000 rupees to convert notes over the prescribed limit for daily exchange. They even left their daily work, stood hours in line and earned a decent commission. This was sustainable for only a week because the government took immediate action and asked banks to use indelible ink so that if persons exchanged old currency for new, they could not stand in the queue again the next day.

**Deposits into Post Office/Cooperative Bank Accounts in Excess of 50,000 Rupees Per Day**

These banks and post offices are still not online and they do not report thresholds greater than 50,000 rupee deposits to tax authorities. Once again, the media highlighted this practice and the government took steps to stop it.

**Temple Donations**: There were reports of people giving their black money as temple donations in special boxes for that purpose. Temple managements would show this money as anonymous donations, exchange it for new currency notes, keep a commission for this service and return most of it to the owner. The government had already clarified that temple money from donations did not come under the tax scanner.

## Short-Term Impacts

**Negative Effects of the Cash Crunch**:

- It affected activities on roads, water works, railways, etc., where payment to labor is usually made in cash.
- Remote villages where people did not have bank accounts and did not use smart phones were affected due to non-availability of cash. These villages are still deprived of internet connectivity at a level where digital transactions could be made.
- E-commerce players felt the heat in the near- to medium-term due to their reliance on cash on delivery sales.[4]
- Weddings were impacted since cash vanished from the market. Many weddings were postponed due to this reason.
- Tourism got impacted as foreigners on holiday in India were stranded since they could not exchange cash immediately.
- Property deals were cancelled and prices went down.
- India's GDP growth forecast for this fiscal was reduced to 6.9 percent from 7.4 percent. A U.S.-based ratings agency also lowered GDP growth forecast for 2017-18 and 2018-19 to 7.7 percent from 8 percent earlier.[11] In my opinion, this will be a benefit in the long run because this will increase the size of the formal economy and tax collections (FY2017), thus improving the country's fiscal situation.
- Moody's kept its rating for India as “Baa3” on November 16, 2016 due to the country’s debt levels and fragile banks. While there was a push from the government, the rating did not change. Winning a better credit rating on India's sovereign debt would be much-needed to endorse Prime Minister Narendra Modi's economic stewardship, helping to attract foreign investment and accelerate growth.[12]

**Positive Effects**:

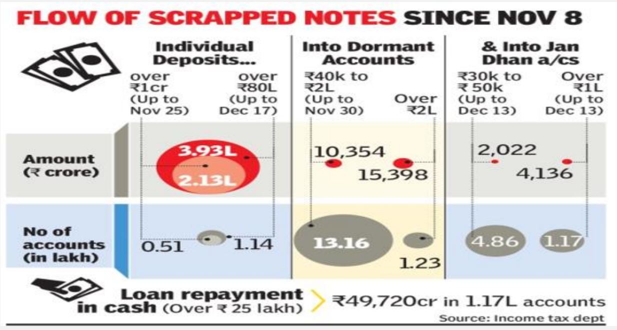
- Deposit and lending rates reduced further without the RBI having to cut its repo rate. A rise in the deposit base will allow banks to lower the blended cost of funds. The RBI can narrow down the cash flow to the market by focusing on and promoting more cashless transactions.
- Rising use of credit/debit cards, net banking and other online payment mechanisms would not only lower transaction costs, but some of these could help earn some fee income as well.
- Larger bank deposits, price corrections and better tax collection possibilities in the economy.[4]
- Overall digital payments grew at 40 to 70 percent between different payment products. Fintech companies such as Paytm, PayU India and Mobikwik witnessed a surge in transactions during this time. They also offered cash back to attract usage of e-wallets. There was a 250 percent surge in overall digital transactions.
- Anti-social elements and terrorists were neutralized. Guerilla groups like the Naxals and Maoists thrive on black money and get a huge amount of funding in cash from vested interests. The Naxal prone areas in India are the states of Chhattisgarh, Odisha, Andhra Pradesh and Telangana. Finding themselves stocked with demonetized currency, their

activities came to a standstill. There was no violence reported in Jammu and Kashmir (a volatile region close to the India-Pakistan Border) for five consecutive days just after the announcement.

Naxals were threatening villagers to get old notes exchanged. Police officials recovered almost 70 billion rupees ($1.02 billion). All the money was allegedly passed on by political parties, businessmen and local traders to the leaders of the local terrorist community. The leaders used this money to buy ammunition, bombs, firearms, medicines and food for the Naxals. This was also used to run illegal activities like prostitution, kidnapping and murders. According to the Ministry of Home Affairs, a single CPI - Maoist (local terrorist group) unit would collect around 1.5 billion rupees ($22 million) annually. Now, demonetization will cripple all these activities.

***Currency ban broke the backbone of the human Trafficking industry worth Rs. 20 trillion***

- The currency ban broke the backbone of the 20 trillion rupee trafficking industry. Trafficking is one of the India's biggest organized crime rackets. Girls are usually trafficked from Guwahati in Assam and Jharkhand in the East, and Chennai, Bengaluru and Hyderabad in the South. A 10 to 12-year-old girl fetches 500,000 rupees and a 13 to 15 year old costs 400,000 rupees. While the actual cost incurred is around 20,000 rupees, the remaining amount is pocketed by a trafficker in cash. Between November and December 2016, since there was no liquidity, this racket came to a halt. With demonetization, brothel owners were caught blind as they were unable to convert their cash since the new currency was not readily available. However, while the structure was fractured, new currency is now back in the system and the illegal trade is picking up. This is the reason I believe that cash withdrawal limits should not be relaxed. Even if they are relaxed, cash should not be virulently pumped into circulation.
- Data with the Income Tax Department shows that until December 2016, cash deposits of 80 Lakh rupees (8 million) or more added up to nearly 4,000 billion rupees ($60 billion),[9] which flowed into 114,000 bank accounts. Tax department officials suspect that a large chunk of this amount could have come from those who dodged taxes. An exercise is to verify the genuineness of the deposits and tally them with tax returns, with officials saying there was no way genuine taxpayers would keep a cash hoard at home. The Income Tax Department has already served around 5,000 notices to those who have deposited unusually large amounts of cash in banks. The government has been analyzing data on a weekly basis and acting against those who have unaccounted money.[9]

- (Conversion: 1 crore = 10 million) 


**Tax scrutiny for large cash deposits** – By the end of November 2016, 177,000 borrowers had repaid loans in excess of 2.5 million rupees using old notes—with the repayments adding up to nearly 500 billion rupees ($7.5 billion).[9] The list included companies and firms apart from individuals. The tax department has come across instances where bank accounts that were not compliant with KYC norms saw deposits of over 10 million rupees ($150,000).

The Income Tax Department has enhanced its whistle blower policy to reward people who provide credible inputs against declared defaulters. As per the new guidelines, any person who provides credible inputs against a declared defaulter would be rewarded with 10 percent of the tax realized. The maximum amount, which could be given to an informer, has been capped at 1.5 million rupees (Approximately $22,000).[10]

Those citizens who approved of the demonetization move were India's tax-paying salaried classes and the poor who welcomed the policy enthusiastically, viewing it as 'sweet revenge' against tax evaders who had stowed away their ill-gotten gains.

### Long-Term Impacts

If substantially implemented, the demonetization move and associated actions will send a strong signal about India's anti-corruption drive and it is very likely to improve the country's reformist stance. Bank deposits will increase and they will have more capacity to support the economy. According to economists, this move will lower inflation and improve tax to GDP ratio and raise public investments in Asia's third largest economy. It will boost growth as it will expand the gross domestic product. Sectors with large exposure to cash like real estate, gold jewelry, movie production, campaign finance, transport and food witnessed a downward price pressure. The fiscal position of the country and tax collection will improve. Economists also predict a 75 basis point cut in bank lending rates by September 2017. [5]

Cash forms a major component in most transactions in real estate such as land purchases, procuring government approvals and paying contractors and bills. Since a huge amount of cash in circulation has been brought under the purview of the banking system, the cost of borrowing will reduce. In February 2017, we have already started witnessing reduced home loan interest rates. Many developers, resellers and homebuyers used to insist on hard cash as a component of payment in real estate deals. Demonetization has given a blow to this practice. Housing markets will experience a lull in the coming months or year. Developers are grappling with low sales and rising inventory levels. They will compel them to cut down prices to drive sales. Henceforth, homebuyers can expect property prices to come down making it more affordable. The resale or secondary market has been impacted since it deals with a significant amount of cash. In the long run, this market will be impacted further with elimination of cash, making the deal via bank channels necessary. Homebuyers can look forward to better pricing in the secondary market, which was very difficult earlier. Excess inventory already put a lid on prices, making possession of ready properties a more viable option for buyers. This move will eliminate corruption and bring more transparency in the long run while it may add to difficulties in the short run. This will cut loan interest rates further and force further cuts in real estate prices.

In my opinion, the cashless move will also pave the way for increased digitization thus requiring increased data security and privacy.

### Digitization—Good or bad?

As the country moves toward a cashless environment after demonetization, the emphasis is on online or digital transactions. I believe a digital economy comes with its own pressure points and vulnerabilities.

The government has come up with discounts and freebies on digital transactions – Waiver of 15 percent service tax on digital transactions, 0.75 percent discount on digital purchase of fuel through credit/debit cards or e-wallets, 0.5 percent discount on rail tickets bought online, 5 percent discount on digital payments for railway catering, accommodation etc., 10 percent discount on national highway toll payments, 10 percent discount by government on premium paid online via portals and 8 percent on new LIC (life insurance) bought online.

> ***Being cashless means submitting to total financial surveillance. This also means increased risk of Data Security and Identity Theft***

The good part about being cashless is the ease of conducting financial transactions. People would not need to carry cash and instead spend with plastic money. Considering all transactions will be on record, it will help while filing returns and explain spending on any scrutiny. This simply means submitting to total financial surveillance. There are various apps and tools that could help budgeting. If stolen, a credit card or mobile wallet can be blocked immediately.

The biggest fear of digital transaction is the risk of identity theft. Since we are culturally not attuned to digital transactions, there is a risk of phishing traps and online fraud. With the rising incidence of online fraud, the risk of hacking will only grow. This simply means that there is a need for stronger regulations and enforcement by authorities. India still has places where the internet is not available. Internet penetration in India is approximately 35 percent and only 26 percent of all mobile phone users have smart phones. Let us assume that we get free Wi-Fi, we still reel under the pressure of power cuts with no backups in some places unless it is a big metro city in India. Without power, free Wi-Fi is of no use. In some places, the internet is very slow leading to transactions getting timed out. It is also a problem for the older generation as they cannot psychologically shift to digital transactions. Since we depend on phones for all transactions, losing the service can be a double whammy. I also envision a debt trap in the long run with overspending on credit cards, especially with the younger generation.

My solution to this challenge would be to strengthen data security regulations and increase digital awareness amongst citizens.

## Next Steps - Strengthen Data Security Regulations and Increase Digital Literacy

Globally we have been reading about data breaches. In January 2016, the data of 7 million users of the mobile version of the popular game Mine Craft was breached. In May 2016, *Time Inc.* admitted that mindspace (social networking site) was hacked. In July 2016, U.S. Presidential candidate Hillary Clinton's campaign network was hacked. In September 2016, *Yahoo* confirmed data stolen from at least 500 million user accounts, the largest cybersecurity breach ever. In October 2016, people in India woke up to the news of the largest data breach in the country. Data was stolen from 3.2 million debit cards between May 25 and July 10 from a network of bank ATMs managed by a Japanese payment services company. This resulted in one of India's biggest card replacement drives in banking history. Major Indian banks (SBI, HDFC Bank, ICICI, YES Bank and Axis Bank) were among the worst to be hit. Many users reported unauthorized use of their cards in locations in China. The biggest Indian bank, State Bank of India, announced blocking and replacing almost 600,000 debit cards. Finally, as per the Reserve Bank of India, all banks in India will need to switch to chip-based cards by December 2018 since chip cards offer a higher level of security compared to the old magnetic stripe cards where data could be lifted and cloned by fraudsters. If I consider the above set of events, they occur due to control weaknesses and India needs to gear up with enhanced security. Look at the enormous amount of citizen information collected by government like the Aadhaar card database, which is becoming the primary source of KYC. It houses citizen's biometric information (finger printing and iris scan). While the Aadhaar data centers may be safe from external intrusions, the breach can happen at a private enrollment center before it reaches the data center securely. As I understand it, cybersecurity and awareness needs to be enhanced in the country.

We are witnessing the increasing cost of breaches every day. According to the 2016 Cost of Data Breach Study, a Global Study by Ponemon Institute LLC, the average total cost of a data breach rose from $3.79 million in 2015 to $4 million in 2016. The study also reports that the cost incurred for each lost or stolen record containing sensitive and confidential information increased from a consolidated average of $154 to $158. In a report by Accenture titled "Building Confidence: Facing the Cybersecurity Conundrum,"[12] which surveyed 2,000 enterprise security practitioners representing companies with annual revenues of $1 billion or more in 15 countries, more than half of the respondents (51 percent) disclosed that it takes months to detect sophisticated breaches—and a third of all successful breaches are not detected at all by the security team.[6] Let us take the recent example of $81 million stolen from Bangladesh's central bank's New York Federal reserve account earlier this year via a malware attack on the SWIFT interbank transfer network. Hackers broke into the computers of Bangladesh's central bank in February and sent fake payment orders and the Fed was tricked into paying out $101 million. The word "Jupiter" formed part of the address of a Philippines bank where the hackers sought to send hundreds of millions of dollars. By chance, Jupiter was also the name of an oil tanker and a shipping company under U.S.' sanctions against Iran. That sanctions listing triggered concerns at the New York Fed and spurred it to scrutinize the fake payment orders more closely. Data theft can be damaging for individuals, corporations and the country.

The number of man-hours lost in rectifying the intrusion, the quality of service affected during the period when the attacks are on, the volume of business wiped out, the hardship to consumers and above all the sheer loss of trust on efficient modes of banking and the financial system is beyond tangible quantification. The rise of internet of things (IoT) compels us to add more dimensions of cybersecurity. While cybersecurity has thus far been the efficient functions of the pipe (i.e., the internet itself), cyber efficiency will need to focus on devices connected to the pipe. The security compromises and lapses in connected devices lead to cyber attacks. Current IoT policy should not be confined to an extreme situation of security breach but also factor ways to improve cyber efficiency. Some governance is required to measure against standards formulated by the standard setting organization.[7]

Analysts and security experts concur that security threats are rising in number, complexity, sophistication and impact—often rendering the existing counter-measures ineffective. We can conclude that as digital India gains more traction, and the consumer and industrial IoT trends become more mature, security is bound to pose more challenges.

## Regulations Need Amendments

The U.S. and Europe have very stringent data security laws. Information privacy or data protection laws prohibit the disclosure or misuse of information held on private individuals. The U.S. has three main cybersecurity regulations - 1996 Health Insurance Portability and Accountability Act (HIPAA), the 1999 Gramm-Leach-Bliley Act, and the 2002 Homeland Security Act, which included the Federal Information Security Management Act (FISMA). Although partial regulations exist, there is no all-encompassing law regulating the acquisition, storage, or use of personal data in the U.S. GLBA requires disclosure of security breaches by financial institutions. In India, we still lack a set of regulations that safeguard data security, disclosure of security breaches, information sharing and disclosures. The Constitution of India does not patently grant the fundamental right to privacy. However, the relevant laws in India dealing with data protection are the Information Technology Act, 2000 and the (Indian) Contract Act, 1872. In 2015, when there was a hacking of the website of the Indian Space Agency's commercial arm, Antrix Corporation and the government's Digital India program, a cyber-law expert stated that "a dedicated cybersecurity legislation as a key requirement for India. It is not sufficient to merely put cybersecurity as a part of the IT Act. We have to see cybersecurity not only from the sectoral perspective, but also from the national perspective."[14]

Compared to countries like the U.S. and U.K., India is yet to increase its market-share in cyber-risk insurance. Conversely, a few Indian insurance provider companies are emerging as a positive sign. Security experts say that compared to the cybersecurity threats and risks that Indian companies face, the cyber-insurance industry in the country is yet to adapt and grow. Experts again reveal that it is the lack of understanding of cybersecurity laws, policies and its implications among Indian insurance providers that the industry is yet to grow as in western countries. There are very few cyber-insurance companies in India and the business sector is yet to adapt and grow to meet the demands of companies. As India is traversing the path of the digital and cyber world and e-commerce is being implemented in all sectors, cyber-insurance companies are hoping for big business because of the cybersecurity threats and risks in this area.[8]

***Modi's vision of digital economy is a fine one but his government needs to work on enhancing data security and digital literacy***

Lack of awareness and small-constrained IT budgets are the main reasons for lack of sale of cybersecurity and data breach covers. A data breach could run into tens, hundreds, thousands or hundreds of thousands. The number of customer accounts compromised is not measurable, as is the possible damage that can be created. So insurance companies have to quote high, stiff premiums and banks are reluctant to take on this additional expense on their slim IT budgets. The banker's indemnity policy, while protecting all the assets of the bank including its ATMs, does not provide cover in case of a malware or a cyber attack on the ATM's switch. "Physical tampering" or damage of the ATM is covered. But computer-related damage/attack is not covered in a basic indemnity cover.

The insurance regulator in India, IRDAI, is setting up a comprehensive cybersecurity framework to thwart data fraud, in the wake of the recent data breach involving bank debit cards and automated teller machines in the country. The regulator will also put in place an appropriate mechanism to mitigate cyber risks.

## Digital Literacy

While on one hand we need regulations and enforcement agencies, on the other hand digital literacy needs to be raised. The government has to do a better job of educating people about how to stay safe in this digital world. Many of the small digital vendors in India like Paytm, Free charge or Mobikwik, do not really know how to safeguard themselves against data frauds. This will become an attractive condition for cybercriminals.

As per the country's nodal agency CERT-IN (Computer emergency response teams are expert groups that handle computer security incidents), micro ATM's and point-of-sale terminals are vulnerable to hackers. All this is due to the lack of strong unique passwords, secure Wi-Fi, encryption of important data, etc.

As I understand it, the most important of all is the awareness levels among the citizens on common ATM and online frauds. Awareness on the techniques used is necessary to stay alert. ATM fraud techniques include skimming, card trapping and shoulder surfing to get cash from ATM's. Skimming involves attaching a data-skimming device in the card reader slot to copy information from a magnetic strip while swiping. Hidden cameras are placed to get the PIN. Card trapping is a barb that retains the card when you insert it into the machine. This is retrieved by the fraudster later. Some people tend to write the PIN at the back of the card, which if left behind at an ATM, is an invite to be scammed.

Online/e-Shopping is very comfortable but it also invites vulnerabilities to data theft. Fraudsters use various methods to steal data/passwords:

- Pharming (reroute you to fake websites that look similar to the original website and then card details are stolen while conducting transactions
- Keystroke logging (when you unintentionally download a software, it allows the fraudster to trace your key strokes and steal passwords or net banking/card details
- Unsecured Wi-Fi networks like in coffee shops, restaurants, malls and airports (Since this Wi-Fi are not protected, it is easy for hackers to sniff out passwords and data)
- Malwares (malicious software that can damage computer systems at ATM's or bank servers and get confidential data)

So, how do we increase awareness levels amongst a 1.25 billion population through mass advertisements, education in schools, awareness drives focused on how to keep yourself safe from hackers? It is a mammoth task since basic education is itself a challenge for many across the country. Today's younger generation will need to become mascots in their homes and community to teach their grandparents and even parents on how to use basic technology and also secure themselves by not releasing any information including ATM or credit card PINs to strangers who call and ask for basic information (vishing). They should be told not to take help from strangers to withdraw money from ATM's or while using Paytm to make payments, secure mobiles with passwords instead of easy swipe. Others who are adapting themselves to the tech savvy world need to be educated on quick tips for better security (e.g., two factor authentication on all email accounts, access passwords on all devices, unique password reset security questions, enabling of remote location and wiping all data on devices before reselling them on online portals like Quikr and OLX, etc.).

## Additional Measures Needed to Ensure Long-Term Impacts Remain Effective

A one-time demonetization may not be good enough to take care of the larger problem of counterfeit currency and illegal activities. This needs to be sustained by additional measures.

- To ensure new cash does not find its way back into the system, it is important to make cash payments illegal for any purchases above 10,000 rupees. Everything, from cars, homes, home appliances and jewelry should be bought through cashless payments.
- Though the cash withdrawal limit has been increasing, this limit should continue to ensure new cash does not go back to the old system of functioning. People should have to resort to online (NEFT/RTGS) or cheque payments to workers and staff.
- Enactment of a transactions Bill to impede the practice of purchasing of property in other people's names.
- Moving all government offices and universities out of a cash regime. Fee payments should be accepted only through net banking or mobile wallets or bank cheques.
- Mandate temples and places of worship to accept donations only via mobile wallets, debit cards, credit cards, UPI and other digital methods
- Rapid rollout of cashless infrastructure to rural India. Besides POS terminals, the emphasis could be on more incentives for smartphone penetration and internet connectivity. There might even be special schemes for women—as their smartphone usage is low. Target 100 percent smartphone penetration by the end of 2017.
- Link all PAN cards (TAX IDs) to Aadhaar Cards (Unique ID) and link all bank accounts to PAN and Aadhaar. The linkage is yet to be established. This will enhance traceability.

- Online registration of all immovable property across India will lead to a central database. This will ensure online linkage on property purchase and sale and the numbers of properties linked to each individual.

## Conclusion

The demonetization drive was aimed to tackle the problem of counterfeit currency, corruption, illegal activities and thereby move toward a digital economy with an intent to have more transactions that are transparent. This would pave the way for a stronger economy in the long run. The next challenge, I foresee, is data security and identity theft. At a national level, data security and privacy regulations need to be strengthened or enhanced. At an individual level, more awareness will be required on safeguards against frauds and cyber crimes. To sustain the long-term impacts, additional measures will be required by the government to ensure new cash does not find a way back to previously improper usage.

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