

**Mahindra**  
COMVIVA

# vritti

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# Blurbo

Dear readers,

Let me start with Zeno's paradox...

A wily old tortoise challenges Achilles to a race with the one condition: that Achilles gives the tortoise a head-start of 100 meters. Of course, the tortoise wins every single time; because in the time it takes Achilles to cover the first 100 meters, the tortoise has already moved to  $(100 + N)$  meters. Reader's expectation is like Zeno's tortoise, with the publisher playing catch up. And, that is why we bring you the latest and the freshest developments from the world of telecom and payments, whether it is block-chain technology or internet of things & payments.

In this summer edition of Vritti, we have a special. Yes! We've guest author, the CTO of EcoCash, Vinod Sharma in the house: He writes about his burning passion: Banking as a Service (BAAS) and Banking as a Platform (BAAP). The goodies keep coming: In "Block-chain in Action", we've created a strong case for block-chain technology disintermediating, well, just about everything in the future. To whet your appetite even further, we suggest you take a dekho at our mobile payments feature, "4 Entities that Make Mobile Payments a Success". "Mobile Money - Macro Economic Impact" takes up the gauntlet further and lays bare the mobile money's impact on economy. And finally, we've "Internet of Payments" talking about the brave new world of the internet of things and their relation with payments.

We hope you like reading the articles as much as we have loved writing them for you. Do send us your opinions and suggestions; we would certainly like to hear from you. You can share your feedback at [vritti@mahindracomviva.com](mailto:vritti@mahindracomviva.com).

Happy Reading!

**Srinivas Nidugondi**

SVP and Head of Mobile Financial Solutions  
at Mahindra Comviva

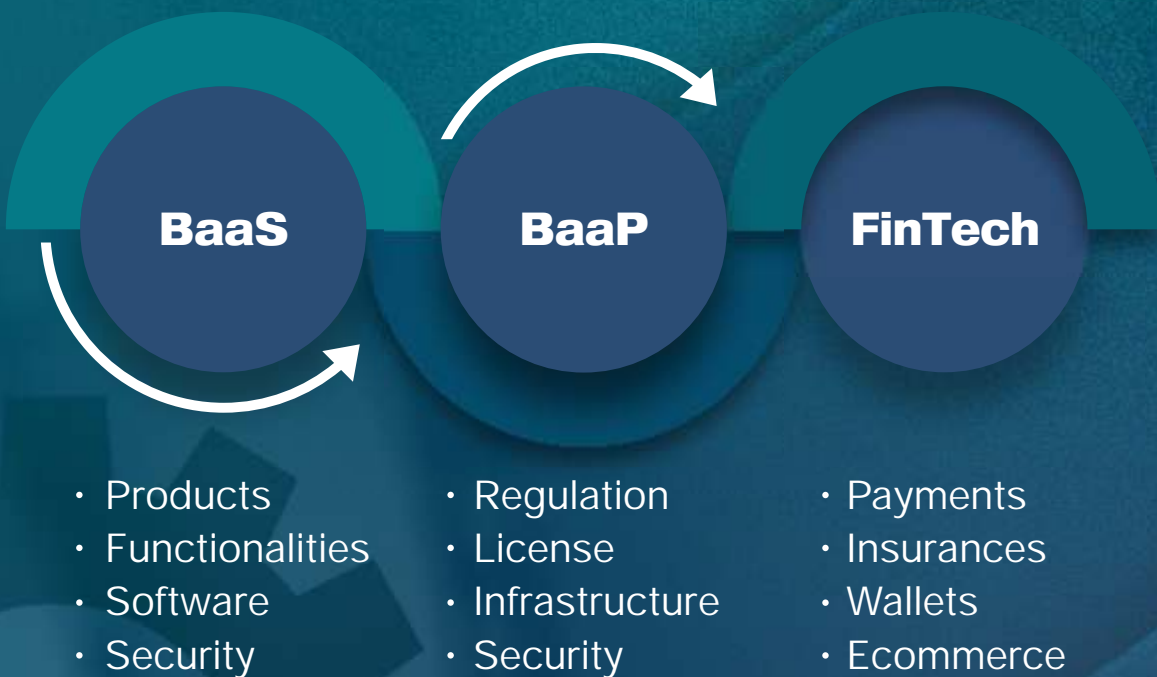


F I N T E C H

— By Vinod Sharma  
CTO, EcoCash

# THE Baap AND Baas BOOMER

**Banking as a Platform (BaaP) and Banking as a Service (BaaS) are new alternatives. Strategies around BaaP and BaaS require a different approach to architect business and services.**



**Abstract:** Fintech or Financial technology, is an industry combining and grouping companies that are making financial services including insurance services more efficient and advanced; with use of technology. Companies coming in FinTech domain are startups founded with the purpose of disrupting incumbent financial systems and corporations that rely less on software but more on Banking as a Platform (Baap) and Banking as a Service(BaaS). Indian market between 2014 to 2016 till date have seen hundreds of thousand companies claiming to be FinTech and if you check profile for people every 3rd person as on date is an expert and doing payments or variation of payment services.

The Fintegration (financial services integration) and delivery of fin-services are changing and coming out as service and platform which can house new channels, products, partnerships and opportunities. Banking as a

Platform (BaaP) and Banking as a Service (BaaS) are new alternatives. Strategies around BaaP and Baas require a different approach to architect business and services. More details about my posts, subjects and relevance please read the disclaimer.

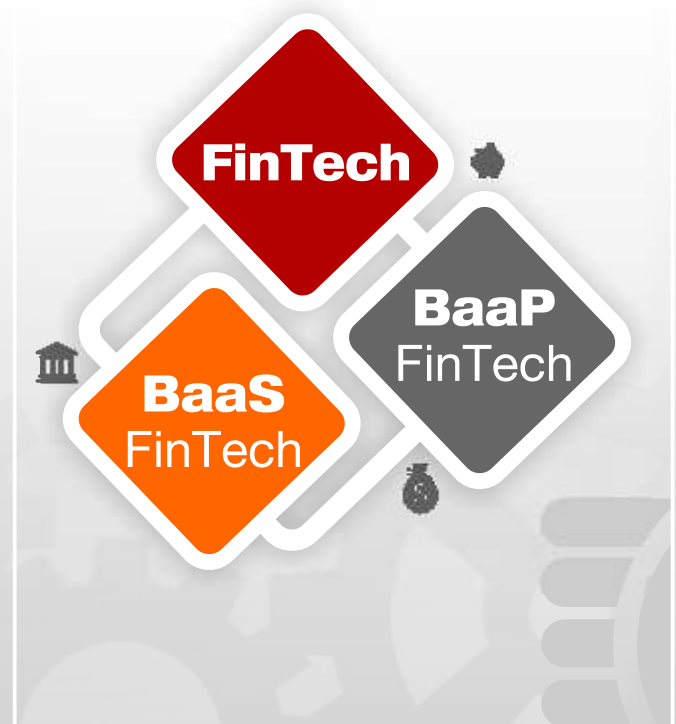
For FinTech, its an opportunity to pick services to push through BaaP and BaaS model and owning an entire business paradigm is neither feasible nor desirable anymore. Almost all players who entered into payments and insurance in arena of FinTech domain are actually coming out of this game park with zero or no knowledge. This is giving too much innovation to put idea on table but takes longer to make it reality. Technical companies entering financial domain and making it interesting by doing technical integration, or “fintegration”, of fintech services, the latter interfacing directly to bank customers for banking services including insurance.



**Introduction:** Most of the innovations in financial services including Insurance are coming through leaders who are very new to the industry or come from outside the industry. SaaS (Software as a Service), IaaS (Infrastructure as a Service) and PaaS (Platform as a Service) might give birth to industry specific services and platform in future such as BaaS and BaaP (Banking as a Platform). The correlation between income and access to formal financial services is still very strong; however, this landscape is now changing with incumbents and mobile/internet innovators now integrating with the main-stream banking system & support through central banks relaxed regulatory frameworks i.e self regulation upto an extend by FinTech service providers really pushing hard to change the world; entrepreneurs are leading a pack of disrupters, most of them raised in the shadow of companies like PayPal, who wants to change business relationship to money forever.

Banking as a Service (BaaS) – Days are not far when one can get independent license or permission to run banking services without a being titled or registered as Bank. BaaS providers will provide limited services to ensure customer service at optimum level, round the clock access, access from wherever you are in a very safe and secured environment. So in nutshell I am claiming divorce of bank and banking (What is needed Bank or Banking). Actually if my calculation and understanding is correct then in India payment banks phenomena is actually a BaaS with help of BaaP at backend. Hundreds of companies came up and wants to come up. Few got license but that does not discourage rest of the companies to pursue their dreams. Beauty of technology is it changes every day so finding means and ways to fulfill the dream to be FinTech Company is getting easy. Insurance sector is moving along the same lines and not so different when it comes to disruption. BaaP and BaaS comes long way to support financial services including insurance services. Micro Insurance by many MNO's across Africa is an great example for this.

**Main Story:** How does FinTech fits or absorbs BaaP and BaaS, who is who and what could be relationship between FinTech and BaaP & BaaS. Well in my eyes (I would like to be corrected) FinTech can sit on top and BaaS and BaaP becomes type of FinTech company so either a company can be BaaP FinTech company or BaaS FinTech company or depending upon funding and dreams a single company can be both. This domain was not opened and was not interesting space to be in for very long time. If I recall the view was that there was such strong monopolies there in terms of the existing banks & insurance companies and no one built a successful payments and insurance company with exception of 1 or 2 names that too limited to very few advanced and developed markets. Micro Payments and Micro Insurance market size almost as equal as the macro market in terms of value but yes volume is almost 2 to 3 folds higher.



I hope we can differentiate between services offered by Bank as primary partner and 3rd party dragging banking services on their risk and support out of banks. So my view and

argument is there is huge difference in Bank and Banking and Banking is needed, Banking not necessarily provided by banks Banking as a Service (BaaS) on Banking as a Platform (BaaP) can be provided by any one. So who is real hero is it Bank, Payment Service Provider as FinTech company or MNO .... I guess little more thought process is needed for deeper prospective. All Digital Payment initiatives in India are not caused by banks, this domain of market in India is disrupted by FinTech companies by putting banks on back seat as banks were unable to do so. I am happy to have any further elaborated discussion.

## BaaS FinTech

Banking (Services) and Insurance as FinTech is in existence since early 2000 and got stronger and stronger with rise of mobile money and mobile payment services. MNO were the first to pick up the opportunity and started giving banks hard time. Idea of BaaS got rocket speed in market where banking penetration was almost non existence and banks were not interested to penetrate the market due to many reasons.



It was taken for granted that Banking (beautiful and useful phenomena) and Bank (long long ago; a big building use to employ lots of people and consume too much space, money, power, and IT machines but use to works very

slow and for very limited time of day and weeks) are very tightly coupled and married forever. MNO and few other companies (Later known as Mobile Financial Service Providers) saw the difference and jumped in between banking and bank and successfully got them divorce or at least manage to find their relationship with banking. Unfortunately most bankers are still not convinced that these scenarios will play out. These bankers are hoping that their retirements hits before they have to make a decision. The board of directors of a lot of community banks feel that they are the pillar of the community and the relationship will continue to be the answer. Bankers must face facts and learn what is going on outside of their four walls. They may wake up to late.

BaaS came as friend for all such companies to break Banks attitude as they were long seen as a highly technical, highly complex with rocket science technology using industry, employing Finantists (Financial Scientists), highly regulated industry dominated by giant banks that were only doing one thing that was to resist disruption.

To topup the surprise package all those companies who became BaaS experts almost all of them came out of payments and banking domain with zero or no knowledge on subject. FinTech is now riding an entrepreneurial wave. Baas-FinTech demand for upstart services is strong, piqued by widespread frustration with big banks; supply is growing, fueled in part by financial types itching to do something other than toil inside those same mega corporations. Low interest rates have made capital, the raw material for many money-related startups, cheap and plentiful. Wallet and payments service providers went a step ahead and built products to enable one-touch solutions instead of a user having to go through multiple steps to complete a transaction. For an instance on your mobile; your payment app gives you to option to choose the payment method i.e pay via, credit card, debit card,

mobile wallet, bank account, cash coupon available for redemption or even your loyalty points. As a normal user it might be confusing at start but over the time it gets into lifestyle.

## BaaP FinTech

Banking as a Platform again is not a new term may be looking it from this angle might be new all platform providers for FinTech services came at same time when BaaS came to life as BaaS came from companies other than Banks. The banking services served by fintech leaders are very innovative, different and easy to use and make use of for benefitting the business. Fintech as the leader of today in global financial services knows that modern payment solutions need to be able to evolve and adapt, nimbly and securely, with the ever-changing trends in consumer behavior. By the way BaaP-Fintech built infrastructure to enable more merchants to accept payments. Hosting banking services or services giving banking services to end users becoming easy there was an article I wrote on same line earlier “Cloud based Mobile Financial Services & Payments”



Inline of BaaP roadmap there many companies thinking , planning and some are starting or started (Solaris Bank Germany) already, investing and betting on the underlying regulatory and financial technology infrastructure. German based FinTech startup company in partnership

with fully Digital licensed bank is going to offer Banking-as-a-Platform so startups can ride fintech gravy train. FinTech services include account, insurance policies and transaction services, compliance and trust solutions, working capital financing, and online loans. Those services not only require a technology solution, but in many instances, a banking or e-money license too so BaaP will take care of this requirement and allow the to carry business and ride on its license. Born out of the frustration experienced by fintech start-ups when faced with the requirement to piggybank an existing banking license and innovation in order to be able to offer various financial services, actually established what is explained as a modular-based banking toolkit, consisting of, and crucially, numerous modern-day banking APIs. This means that it's able to offer other fintech businesses numerous services that, in turn, they can provide to their own consumers.



## Small Analysis — for BaaP and BaaS

FinTech will actually support all small-scale FinTech companies to come together. With help of BaaS on BaaP; new innovative services to consumers will bring lots of values, new products availability in kind of pool where hosting will make easier to use any service by any consumer of any service provider. Adding flavor of Finclusion on top of BaaS will really help exiting services to reach to segment who are excluded. In IT domain we have three “aaS” services broadly categories as Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS) and all of them are quite useful for FinTech Domain but time is here to extract best out of all “aaS” services to bring BaaP and BaaS. Both BaaS & BaaP will be actually a driven version and specialized & designed for financial services including insurance for payments, Finclusion

(financial inclusion) and insurance. Defining any of IaaS, PaaS or SaaS or talking about either advantages or disadvantage is out of scope here as focus is on BaaP and BaaS.

FinTech is not an easy route or option as to me it is still a dream and to many others, BaaP already facing difficulties to come into life and protest from service providers as well as platform providers. Service provider argument is I am the biggest, I am the boss or I am the King, I own the customer; why should I share anything. Platform provider see a value in selling more platforms to many service providers, selling ideas of 1 service provider to other service providers and vice versa, develop one functionality once and sell it multiple times to many and makes huge money out of same. Missing out all small players who have excellent ideas and can make wonderful products which can be very more valuable and beneficial to end consumers. Resistance BaaP face and will always face, as traditional model is far easier. Banks and Insurers at large risk of losing their



dominant position in African market up to some extent it is lost already.

The reality and status of current availability of services from banks are far it's behind the capabilities of the modern infrastructures and new e-commerce innovations. The financial sector is already facing significant competitions in the electronic & online space. Today people still keep their money in the banks, because it's the institution created for money (since ages). Basically what money and economy mean for people as we know, trust study. But wallet from pocket is the item, which got targeted and linking of all funding source i.e bank account, mobile wallet, plastic cards etc got into way. In all of this BaaS and BaaP have very big role to play and somehow guarantee to win. Banks and Insurers as primary intermediaries for customer interaction and engagement. Days are not far when we will see a fully licensed digital bank designed to power an array of FinTech services running through BaaS on BaaP.

Conclusion: The financial services including insurance industry is facing a wave of digital

disruption that is starting to reshape the sector. Payment as a Service – (PYaaS) kind of services is really needed or badly needed by looking at current mess or flood (too many payment companies) seen in market. Banks has (banking platform) a platform, but it's probably fair to say it's more like the yesterday's platform or stone age. How long has it been staying the same?. Do we really need this new BaaP or BaaS; I think its very easy to answer or has the answer already "Yes". Digital banking or digitalisation of current banking services by few banks to call them self as digital bank is not enough. Bringing distribution channels to the digital kingdom, sustaining it and making it a process is needed, as project on such activity is also not enough. The reality and status of current availability of services from banks are far it's behind the capabilities of the modern infrastructures and new e-commerce innovations. The financial sector is already facing significant competitions in the electronic & online space.

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**About the author:** Vinod Sharma is a complete financial technologist – FinTech Expert. Having worked in the mobile payments in merchants & billers domain, traditional payments, e-commerce payments & international remittances, mobile financial services (MFS) & telecom industry across domains like Network, Prepaid charging & Billing, IT and Value added services for over 15 years, Vinod has provided his insights and product knowledge to various initiatives across four continents. Vinod is currently CTO at EcoCash Zimbabwe. In past he helped the founding and set-up of several start-up business units & department.

**Note: We thank Vinod Sharma for being Guest Author for Vritti.**

# INTERNET OF PAYMENTS





— By Manan Jain

## A PERSPECTIVE AND THE WAY FORWARD

Internet, in today's day and age, is no longer a thing of luxury but a bare necessity without which we can hardly live. Be it work or play, the internet is indispensable to us; and such is its importance that it would not be an exaggeration to say that it is included as the “basic need” of Maslow's Need Hierarchy theory. We are now moving towards a world where not just the humans are connected, but a whole new interconnect of humans and machines is emerging, which is nothing but the Internet of Things.

In the age of social media and big data, data or information is of huge value to businesses. Not only does it help to a better consumer experience by assisting customers to take informed decisions, but it also drives incredible value propositions for businesses of all shapes and size. It is this aspect of data, which has thrown up some very tantalizing opportunities, opening up new avenues for the Internet of Things. Though the industry is still at a nascent stage with use cases and business propositions still emerging and technologies and ecosystem in the process of being defined and built, but it is undeniable that the Internet of Things is here to stay and transform the lives of people.

It would be very interesting to extend this concept of Internet of things to payments.

We all know by now how payment systems have benefited from the internet. Be it today's banking system or the mobile commerce offerings, all have been built upon the network connectivity between various systems. However, the fundamental difference between the current -payments-over-the-internet and the internet of payments is in the human intervention. The internet of payments is no longer about humans

sitting at the end of machines. It is about devices talking to devices and humans, and in this context the entire perception towards payments has to change. The ecosystem would no longer be restricted to the conventional entities of payments landscape and the horizon has to widen in order to accommodate new entities whether they are technologies, devices, financial institutions, new businesses, or new payment services.

### 'Internet of Payment' in Action

# CONNECTED CARS

Ten years back, the most obvious answer to the next big thing in automobiles would have been “electric cars”, “driverless cars”, and maybe, “amphibious cars” and to a much lesser extent “flying cars”. However, somewhere in between, between the first successful iteration of the “electric car” to Google's trail blazing “driverless car”, Internet of Payments (IOP) happened and we are now at the cusp of a great disruption or disintermediation (or whatever jargon takes your fancy) in the payments scene with self-paying cars.

Imagine this - you are driving on an open highway, singing tunelessly, seemingly without a care in the world. Then, all of sudden, you find your car is running on empty; you panic because you are in the middle of nowhere with no plan B. Now, imagine a second scenario, with a much happier ending of course – you are still driving without a care in the world, but your

car has its nose and ears close to the ground, taking stock of the fuel available, listening to every wear and tear, every minute, every second. With SatNAV at your disposal, your intelligent car reckons it is time to fuel up, so it picks the gas station that is the closest, as well as the cheapest. Then as you approach the gas station, proximity sensors identifies you and then automatically processes your payment as you roll out of the petrol pump after your refill.

The number of non-computer chips pulsating in the world runs into millions. They can be stamped out fast and cheap, like candy drops, and for the same reason, they are finding a wide range of applications, for example car parking meters. Imagine paying parking fees on the go even as you are pulling out of the car parking lot – wouldn't that be very convenient.



# CONNECTED HOME APPLIANCES

In a world moving towards scarcity, it is our duty to utilize scarce resources as carefully and efficiently as possible. However, sometimes, our actions lead to profligacy without our knowing so. The simple act of replenishing supplies involves you driving to the nearest supermarket, picking goods off the shelves, putting them in the tray, walking to the checkout, standing in a queue, paying to the cashier, driving back to your house, stocking the fridge and using it a few days later. Every step outlined above could have been streamlined and made more efficient with automation. Let's face it – fossil fuels are not going to last forever, so why not start saving now. What if your fridge had sensors

that could order suppliers based on your previous history and food consumption? You will just get a message for confirming the purchase and making the payment using an app. Let us take this one step further. How about drones delivering supplies literally at your doorsteps? It is not something out of a sci-fi movie because Amazon has already taken the first baby steps of drone delivery in some countries. Self-ordering fridges are already here – so the future of payments is already here and happening. Maybe, in the next step we could have humanoids picking the delivery from the drone and stocking the supplies in the fridge.

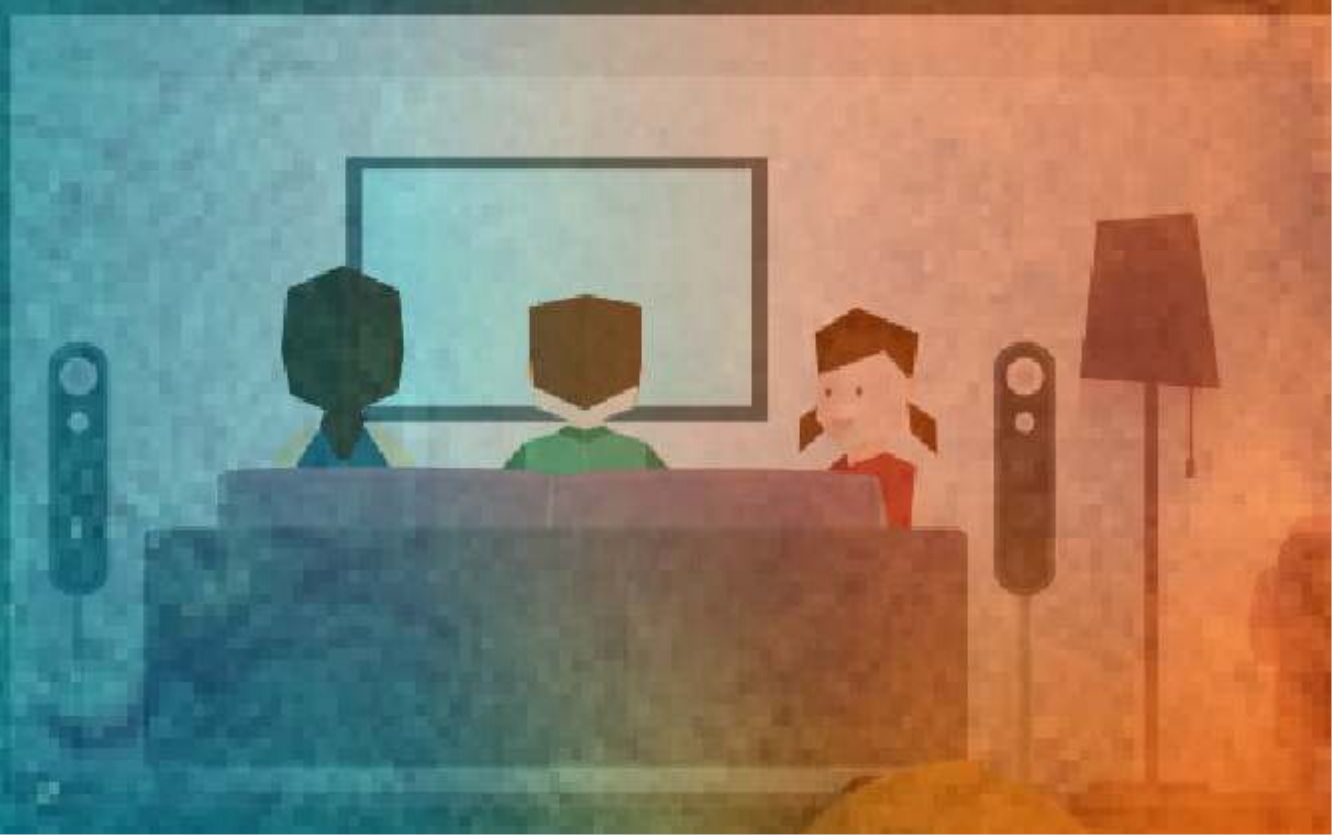
# CONNECTED PLANET

## SMARTER PLANET

All the promising technologies making their debut now are chiefly due to connections rather than computations. And these connections will only get stronger with silicon chips getting smaller and cheaper with every leap of technology. Soon there will be a tiny sliver of thought embedded in every mass

produced consumer good – every car, every shoe, every book, every grocery bag one buys or use. The narrative could be something right out of a sci-fi flick: cars talking to each other as on the autobahns; self-ordering fridges that talk to retail outlet; self-paying grocery bags at store checkout et al.

What if your fridge had sensors that could order suppliers based on your previous history and food consumption?



The context on which we expand the horizon of payments can be many, but it has its own set of issues and challenges which has to be addressed by the industry in order to make them mainstream.

**Firstly**, as said earlier, the ecosystem would have to be extended for devices. The roles of these entities and their relationships with the financial institutions have to be defined. For instance, in the current day, the consumer approaches the financial institution in case of a fraudulent transaction or a payment gone wrong. However, in a card payment scenario, the responsibility in most cases is with the acquirer, and the same needs to be looked upon and extended for Internet of Payments.

The second and the most important and biggest of concerns is that of the underlying security of the device. The rise in the number of connected devices will translate to increased point of vulnerabilities. Given the growing sophistication of attacks and rise of the dark internet with organized syndicates discovering new ways of committing fraud, the existing security mechanism is just no longer adequate. The existing Fraud and Risk Monitoring solutions have to adapt and evolve in order to cater to these channels for payments. It is for this very aspect and to minimize the business and financial risk, that it makes sense to segregate internet of payments from the business critical payment systems. Only after critical mass has reached, the concept has gained acceptance, mass adoption has taken place, the security measures have all been strengthened, that this

can be further integrated with mainstream payment systems and taken to the next level.

**Thirdly**, providing a seamless experience to consumers, ensuring their interests are safeguarded. The very idea of current day business propositions like Uber or of payment propositions like wearables or mobile wallets is to provide convenience to the consumers, and the same has to be reinforced by Internet of Payments. For instance, the toll automatically getting paid, when the car zooms past it or the parking ticket automatically getting paid when the car moves out of parking space are some of the usage cases that would create great user experience. A good customer experience has to be ensured as well. The last thing a consumer would want is to go through the lengthy and cumbersome process. It is in the wake of this, that the authentication and authorization processes be defined, adapting to the needs of the new ecosystem and at the same time not compromising on the security aspect.

It is to be noted that the tokenization technology has the potential to solve these issues as the tokenization infrastructure gives a sense of security, as the payment card is not sitting on the device, and the tried and tested system works safely and soundly.

Thus, the Internet of Payments is the next logical advancement for the internet industry and the financial institutions should grab the opportunity with both hands. However, the key would be to identify the use cases and build upon a great consumer experience in a secure manner. How soon will this happen, only time can tell.

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**About the author:** A payments professional with more than 6 years of diverse experience in product management and product development, Manan Jain has worked on various products and technologies in the mobile payments domain. He has completed his masters from IIM Shillong. Besides payments, he is keenly interested in Green Economics, having presented at Oxford University and authored various articles.



# BLOCKCHAIN IN ACTION

Of late, blockchain seems to have grabbed more than its share of the spotlight. The technology behind digital currencies like Bitcoin, its success story has broken the bubble and hype around the former as its owner revealed recently (though scepticism still persists). Venture capitalists have started to invest in start-ups related to blockchain. Add to the fact the investment in blockchain (more than 1 billion USD) has surpassed that of bitcoin.





— By Saket Agarwal

To start with the working of blockchain, it is very important to first know about blockchain in depth. Most of the failures happen due to incomplete information. Blockchain technology is complex, but the fundamental is simple. At its most elementary level, blockchain is a vast, global distributed ledger or database running on millions of devices and open to anyone, where not just information, but anything of value – money, titles, acts, music, art, scientific discoveries, intellectual property, results and votes – can be moved and stored securely and confidentially. On the blockchain, trust is reputation, earned not by commanding intermediaries like banks, governments and technology companies, but through mass association and genius code. Blockchain ensure integrity and trust between strangers. They give hard time to cheaters and forgers.

### Blockchain works at its best when the following circumstances are achieved

#### SECURITY

With private and public key cryptography part of blockchain's primary protocol, transactional security and confidentiality become virtually irrefutable. Trust zones can also be established, including open public ledgers and permission-based shared or private blockchains in which participation is limited to few selected entities.

#### DISINTERMEDIATION

With blockchain, peer-to-peer consent algorithms clearly record and validate transactions without a third party—in theory eliminating cost, delays, and general complication.



#### TRANSPARENCY

Ease of sharing and visibility are essential features of a blockchain; lack of one or the other is often the central driver of blockchain technology. They become of particular importance in transactions where more than one organization is making entries in the blockchain.

#### TRUST

The immutability of block chain makes it almost impossible for changes to be made once recognized, which often improves the confidence level in data integrity and reduces opportunities for forgery.

#### COLLABORATION

Blockchain can be programmed to activate specific transactions when other transactions are completed. This could help parties collaborate without increasing risk on transactions with multiple dependences, or those authored by different parties.



# INDUSTRIES WHERE BLOCKCHAIN TECHNOLOGIES CAN BE USED



## BANKING

Swiss bank UBS and UK based Barclays have already started investing in this technology. Banks essentially serve as secure storehouses and transfer hubs for value, and blockchain as a digitized, secure, and tamper-proof ledger can address the same function.



## PAYMENTS AND MONEY TRANSFER

Abra is a startup using blockchain technology for global bitcoin - and blockchain-based money transfers.



## CYBERSECURITY

According to Goldman Sachs, blockchain can reduce the cybersecurity risk by removing the intermediaries. Guardtime is an Estonian startup focused on a blockchain-based approach to industrial-grade cybersecurity.



## ACADEMIC RECORDS

Holbertson School (California based) is using blockchain technology to verify academic certificates. This will ensure that students claiming they passed courses at the Holbertson School aren't using accreditation they didn't earn. It will avoid manual check and reduce both time and resources.



## VOTING SYSTEM

Use of blockchain technology will avoid malpractices in election system. Votes will be secured and will be stored directly into ledger. It was recently experimented in Spain elections.



## CAR LEASING AND SALES

Visa and DocuSign unveiled a partnership last year which used blockchain to build a proof-of-concept for streamlining car leasing, and making it into a "click, sign, and drive" process. The prospective customer chooses the car they want to lease and the transaction is entered on the blockchain's public ledger; then, from the driver's seat, the customer signs a lease agreement and an insurance policy, and the blockchain is updated with that information as well.



## NETWORKING & IOT

IBM and Samsung are working together on the technology ADEPT (Autonomous Decentralized Peer-to-Peer Telemetry). It uses blockchain technology to form the backbone of the IoT devices and its network. This will help devices to communicate with one another autonomously to manage software updates, bugs, or energy management.



## SMART CONTRACTS

These are computer programs that use blockchain technology. This will change the process of formulation of legal contracts. Mortgages, registrar marriages, etc. can be performed.



## FORECASTING

Blockchain can shake up the entire research, analysis, consulting and forecasting industries. Augur is using this technology to perform online betting.



## MUSIC INDUSTRY

This will help users to pay only for the music they want. Artists or singers can be directly paid for the songs used. Ujo Music is using blockchain technology to modernize online music industry.



## RIDE SHARING

Israeli startup La'Zooz is developing on blockchain technology for cab services (opposite to Uber model)



## STOCK TRADING

TQ.com subsidiary of Overstock wants to start trading based on blockchain. As of now they are working with Nasdaq to start these services for private firms.





Blockchain is here to stay and shape our future. And this is quite clearly evident from the recent developments happening around blockchain technologies. Around 120 start-ups are working on blockchain applications. All the big banking firms, entertainment giants like Sony and Disney, and few other industries are investing heavily on blockchain because of its underlying promises. Sooner or later our world is going to change and we will be using applications based on blockchains even for maintaining our basic daily routine.





**About the author:** Saket Agarwal has about 3 years of work experience in the field of IT and Telecommunications. At Mahindra Comviva, he works in product management team in research and development role.



# MOBILE MONEY

MACRO ECONOMIC IMPACT





— By Kamaljeet Rastogi and Aayush Jain



## Impact on Economic Growth

Mobile money is the intersection between mobile telephony and digital currency. Studies show that mobile telephony leads to a rise in GDP. Similarly, digital currency, as a replacement for cash, is recognized to have the same effect.

A study shows that a 10% rise in mobile subscribers in emerging markets will lead to a 0.6% to 1.2% increase in GDP in those markets due to the productivity gains associated with communication as well as the creation of new jobs. The study further noted that the effect mobile telephony has on GDP is greater in emerging markets where connectivity is critically dependent on mobile telephony.\* A 2013 GSMA study on the African mobile money market also found that the mobile economy contributes 6% to the GDP of sub-Saharan Africa.\*\*

Moody's conducted a study in 2009 which cited that digital currency, as a replacement for cash, delivered an additional \$1.1 trillion to the global economy from 2003 to 2008, representing a 0.5% increase in GDP globally. This \$1.1 trillion increase represented 4.9 million new jobs and was influential in driving consumption. In China and Brazil, or in large emerging markets, the effect on GDP is even more substantial, with an over 1% increase in their GDP. The study cites that the reasons why GDP increased were due to efficiency that digital currency provided over cash including: an increase in convenience, reduction in the informal money or the “gray market”.

A 10% rise in mobile subscribers in emerging markets will lead to a 0.6% to 1.2% increase in GDP in those markets

## Impact on Money Circulation

There are several channels through which mobile money could potentially affect the money supply. Some will be more relevant in the future as they depend on further innovations in mobile money technology. One such example is the low-cost linkage of mobile money accounts with bank accounts, and payment of interest on the extension of credit through these bank accounts. If informal cash is routed into bank from the huge pool of informal savings and on-lent as a conventional bank deposit then it would expand money supply. Under most regulatory countries, commercial banks are required to act as custodians for the customers' electronic funds. Thus, MNOs cannot themselves intermediate the funds they have mobilized from their customers; they must transfer these funds to a commercial bank which is subject to the strictest prudential regulations applicable to deposit-taking institutions. The escrow/trust account deposits can be on-lent and hence there is credit creation. In effect, the mobile money saving in electronic accounts has moved informal cash into the banking system. A shift of informal cash into the banking sector has a zero first round effect on the money supply. But creation of credit from the escrow accounts does increase the money supply. All the above-mentioned funds come from deposits made domestically by users and agents. But extra liquidity will be added by the mobile money operating company for its fluid functioning. There may also be inflows for infrastructure investment. These inflows will increase the money supply. Also, if previously unrecorded foreign remittances flows are rechannelled through mobile money, the recorded money supply will increase as in some countries, parallel or illegal markets exists in a sizable amount.

## Impact on Financial Stability

Mobile money enables conditional cash transfers, prepaid savings account; providing credit and insurance options to people. These financial tools significantly boost the living standards of various people by enabling better quality healthcare, better accessibility to services, and better affordability of these services. Studies show, that within 2 years of launching m-Pesa in Kenya, the income levels of Kenyan households using that mobile money service have risen by 5-30%.





It is difficult for the poor to access even small amounts of credit from the banking sector. Credit requires collateral or other guarantees to bridge the gulf of asymmetric information between borrower and lender. The traditional route to improved formal sector loan extension is the creation of public and private credit bureau. These collect and collate credit, collateral and wage information of the borrowers to facilitate the extension of better quality loans, but are expensive to set up and run. Mostly they cover a narrow selection of firms and some wealthier individuals. Thus mobile money could prove to be a great platform to help the poor to easily get access to credit facilities.



## Impact on Monetary Policy

Prior to the introduction of mobile money in rural areas most transactions were carried out in cash. Due to the informal financial systems and low availability of financial institutions most of these transactions could not be recorded. As a result, a large amount of the money was left unaccounted for, leading to losses in taxes and revenues due to these “gray market” transactions. But with the advent of mobile money, all transactions are being recorded, and the amount of currency outside the banking sector is reducing significantly. For instance in Kenya due to the launch of m-Pesa the ratio of currency outside the banking system to the money in the banking system has reduced significantly from 0.62 in January, 2007 to 0.42 in July, 2015.

Also the velocity of the money i.e. how fast money passes from one holder to the next has reduced from 2.90 in 2007 to 2.28 in 2015, indicating that there is less inflation in the country and also there is an increase in the financial depth in the country.



## Impact on Government Revenue

The government benefits both directly and indirectly from the mobile money transactions. Government receives tax revenues from the mobile operators for various transactions. Mobile is one of the most heavily taxed sectors in Tanzania, with operators subject to 10 different taxes, along with regulatory fees and charges. Through these various taxes, operators paid around USD 540 million in taxes for the year 2013-2014, contributing over 11% of total tax revenues in Tanzania. Similarly, in Kenya, mobile operators have to pay a tax of 10% for the total mobile money transactions.

## Impact on Government Services

In countries beset by weak governance, corruption and insecurity, mobile money payments from governments (G2P), business (B2P) and donors potentially offer a secure and less costly way of delivering wages and social transfers. However, there exist only a few successful examples of these types of transfers to date.

More generally, mobile money payments provide a two way transfer mechanism between the government and the citizen. A few of the popular use case scenarios include: secure payment of wages and salaries to policemen and other officials; payments of taxes, licenses and fines to the national revenue authority; paying parking fees to municipality; and finally, paying for public transport with the help of mobile money.

## G2P Wage Payments in Afghanistan and Kenya

In Afghanistan wages are paid securely through mobile payments by some private companies, with great results so far. Also, when the government in Afghanistan started to pay their employees through mobile money, the first impression of the employees was that their salaries had increased by 30%. However, in reality, it was not the government's benevolence, but the systematic correction that followed after G2P mobile payments removed the role of the intermediaries. In Kenya, we are now seeing similar payments as initial pilots or fully-functioning systems. However, government-to-person (G2P) salary and social payments are still lagging behind in Kenya relative to Afghanistan.

## Reducing Leakages in Donor Payments

Delivery of social welfare or aid payments could occur with reduced "leakage" and fewer ghost recipients. In poor countries, only a small portion of the aid (in kind or cash) reaches the intended recipient, with the major chunk siphoned off by intermediaries handling the money. The use mobile money reduces the role of the intermediaries as there is less of handling cash. Furthermore, we are now seeing several donor initiatives for the provision of basic services using technology. For example, affordable solar energy-powered electricity systems can be purchased on a pay-as-you-use basis, where mobile payments are used to top-up the credit on the system. M-KOPA Solar, launched in October, 2014 in Kenya, has installed over 170,000 residential solar systems in Kenya, Uganda and Tanzania, and is connecting over 500 new homes daily.

\* <http://www.itu.int/en/osg/speeches/Pages/2010-04-06.aspx>

\*\* <http://www.ictafrica.info/FullNews.php?id=13271>

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**4 ENTITIES**  
that make  
Mobile  
Payments a  
**SUCCESS**



— By Goutham Krishnamurthy

**The future belongs to mobile payments. According to reports, 5.5 billion people will own a mobile phone by 2020, which is around 70% of the world's total population. Mobile phones have become indispensable to our everyday lives - we communicate, seek information, bank, and shop and do a lot of things which we used to do with a computer.**

**As a logical progression, the widespread use of mobile phones to pay for services and goods is only on expected lines. Since we have a phone with us all through the day so why not use an app to pay for things? The factors which will drive a consumer to make a shift and adopt mobile payments are many, be it seamless experience, convenience and faster checkout time, etc.**

**The mobile payments ecosystem would include Consumers, Merchants and Technology providers and Banks. Each of these entities has needs, challenges and concerns that have to be addressed.**

## What do Consumers Want?"

It is a big thing for consumers to move away from cash and plastic cards. Indeed, it would require a lot of word of mouth and first hand experiences to drive adoption of digital wallets and the move towards mobile payments. One of the prime concerns is security since the user has to provide card details at a POS or an ecommerce site. Consumers want to be sure of the intent and information being secure before they will use their phones to make payments.

When we talk about wallets - seamless and enhanced shopping experience, convenience and faster checkout times, loyalty and rewards, coupons and redemptions and integrated payments are a must for every consumer. It's one of those hotly debated topics in the payments industry - do offers excite customers and thus drive them? Reports suggest that only 20 percent of consumers don't like offers but around 45 percent of them continue to feel

more interested by offers and rewards. It's more to do with the right kind of contextual offers being presented to consumers at the right place and time based on purchase history and past data.

Easier and faster payment methods are what consumers look for, be it at a retail outlet or toll collection booth. On the dimension of trust, wallet solutions provided by banks and payment networks are more appealing to

consumers focused on financial control. On the other hand, credibility seems to be an issue with merchant based wallets for today's consumers. Consumers expect similar kind of experience at a merchant when shopping online and offline. Ecommerce has brought speed and convenience to shoppers and now consumers expect similar omni-channel experience at every channel.

## How About the Merchants?

Merchants have to partner with technology providers and bring varying technologies to enable payments. They have to treat 'payments' as an integral product of their business and work towards making it seamless for consumers. Everyone talks about Uber, where payment is effortless.

Costs involved in upgrading the infrastructure for mobile payments are a concern to merchants. However, with the regulatory bodies imposing liability shift (for card present transactions at merchant POS) on the party (issuer or merchant) failing to comply according to EMV specifications, merchants must upgrade or continue to pay a heavy price for fraudulent transactions.

Customer data control is another factor which merchants have to focus upon. User profiles, transactional information and location should be used to create contextual relevance and targeted marketing for consumers. Engagement with customers at varied intervals is necessary. Consumers are to be aware about the benefits of using a digital wallet even before making a purchase decision.

Merchants have to strive to provide customer centric shopping experiences, so as to maximise the revenues and reduce costs in mobile enabled environments.





# What is the Role of Technology Providers in Mobile Payments?

Interoperability is indispensable when it comes to mobile payments. Consumers want to transact on their mobile phones irrespective of the OS and platform. Evolving technologies and need for strategic partnerships of all participants such as banks, networks, processors and service providers makes it even more important for interoperable systems in payments. The role of the technology provider is to create the right kind of ecosystem where mobile payments can grow and flourish successfully. Their role is to provide an abstraction layer of the all the underlining complexities and business rules existing in a mobile base payments system. For example,

banks are using the expertise of technology providers for end to end support for their mobile payments platform based on HCE and tokenization. In this case, technology providers are providing banks with a payment abstraction layer of the underlining business rules and complexities and allowing the banks to focus on their core competency – i.e., banking.

Technology innovators and providers should work to reduce complexity in the payments. They have to figure out ways to keep the payment processes and integration of advancements as simple as possible. Reliable, scalable and plug-and-play kind of solutions are expected in the markets today.

# Banks: More Than Just Dumb-Pipes

Compared to telecom operators and IT companies, banks are probably better placed to provide mobile payments offerings to their customers. However, until now, very few banks had really woken up to the opportunity in the mobile payments space.

One of the reasons why banks have been slow in coming out with their own mobile payments offering is the technology investment required for building such platforms. With competitive pressures increasing on various fronts and decreasing margins, banks balked at the prospect of significant CAPEX investments, choosing to sit at the side-lines.

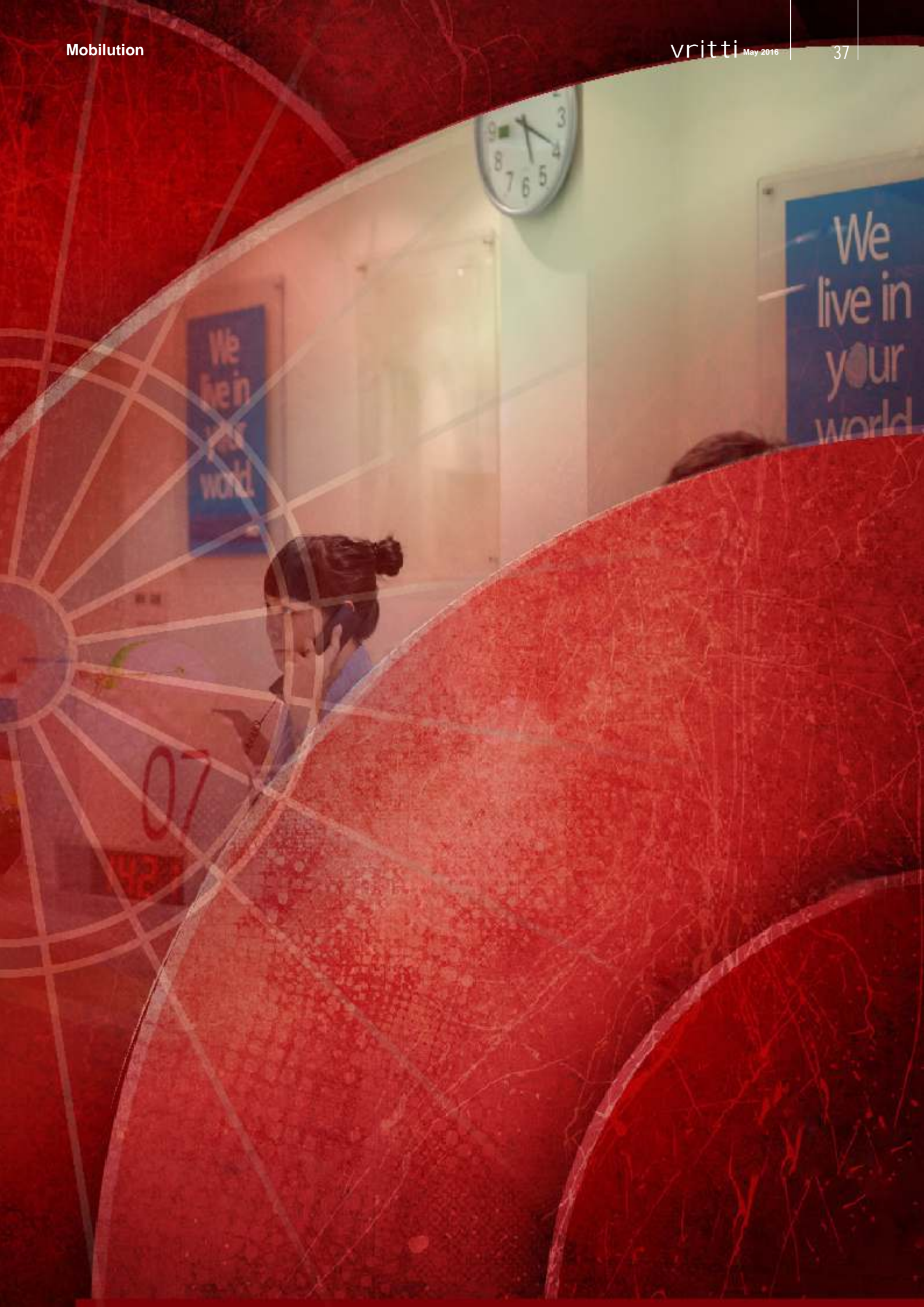
However, with operators and IT companies dominating the mobile payments scene, banks are fast realizing that they are in the danger of being reduced to mere dumb pipes with the intelligence and the ensuing benefit and opportunities spread to the wallet providers (OEMs, Operators, IT companies). Moreover, they are losing out on the rich trove of customer data, including the kind of transactions they make and the items they buy – data that could be used in personal financial applications that banks have aspired to make.

The good news for banks is the coming of age of new technologies like HCE with tokenization which provide banks with a payment abstraction layer which is simple and uncomplicated without compromising on security. For banks, mobile payments is not a standalone solution but will be a part of a much broader solution that will encompass mobile banking, online banking, harvesting data from payments for orchestrating personalized banking experience through contextual and transactional information.

Conclusion: Going forward, established providers and new entrants have to engage with a wider range of consumers with clear value propositions to maximise the value of mobile commerce and payments. Mobile payments deliver considerable revenue and cost improvements, increased customer LTV and reduced customer acquisition costs. Also, technology providers should consider new partnerships to achieve scalability and gain deeper understanding of consumer problems.

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**About the author:** **Goutham Krishnamurthy** is a Product Manager for mobility Wallet at Mahindra Comviva. He has taken up different roles in Product Management, Infrastructure management and Quality assurance over the last 7 years. His experience with consumer and enterprise products over the last few years were in the realm of value added services and project management solutions.





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