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A TECH MAHINDRA COMPANY

# VRITTI

**THE DIGITAL FINANCIAL SERVICES GUIDE**

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# Blurb

Dear readers,

Fintech industry is evolving rapidly and the COVID-19 pandemic has accelerated the pace of this growth. In this edition we take a closer look at various aspects of evolution of fintech industry, amidst the pandemic.

We start with how the COVID-19 crisis has stimulated mobile money providers to redesign their customer onboarding journey in the article "COVID-19 Crisis Encourages Digitization of Mobile Money Registration Process"

Next, in the article "COVID-19: Challenges and Opportunities for Telecom Operators" we delve into the innovations the telecom operators are bringing in electronic recharge space to enable their prepaid mobile customers remain connected with friends and family in these tough times.

Further, we read about an engineer's experience of building a scalable and flexible digital banking and payments platform to meet the rapid growth in the financial transactions and use cases in the article "Engineering the Next Gen Digital Banking and Payments Platform".

Lastly, we explore the fintech landscape in Qatar in the article "Turning Dreams into Reality: Qatar Progressing Towards Becoming a cashless society by 2030".

I hope you like reading these articles, as much as we loved creating them.

Happy Reading!

## Srinivas Nidugondi

EVP & Chief Operating Officer, Mobile Financial Solutions
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# **COVID-19** CRISIS ENCOURAGES DIGITIZATION OF MOBILE MONEY REGISTRATION PROCESS

**Mohit Bhargava**

The COVID-19 crisis has stimulated businesses to redesign their customer journeys and replace face to face interactions with digital interactions. The trend has been adopted by wide ranging businesses including mobile money. The first and one of the most important consumer interaction in mobile money business is consumer registration or on-boarding. Most mobile money service providers globally follow an agent based registration and Know Your Customers (KYC) process, where consumer visits an agent to fill the registration form and share the requisite documents for identity verification. But in an age of lockdowns, social distancing and people preferring to stay at home, agent based registration is quickly being substituted with digital self-registration and eKYC. This article discusses examples of mobile money providers who have digitized their consumer registration process.

# Digital self-registration in Egypt

In Egypt to register for mobile money services, consumers had to visit a mobile money retailer, fill-in and sign the subscription form and verify themselves by showing the National ID. Consumers receive an SMS with temporary PIN. Consumers then have to login to the mobile money service and set a new PIN to start using their mobile wallet. The registration process is manual and requires customers to visit a retailer. However, in the wake of COVID-19 pandemic, the Central Bank of Egypt (CBE) allowed mobile money providers to offer a digital self-registration service, enabling consumers to register for mobile money services from the safe environment of their home.

Taking cue from the central bank, mobile money services in Egypt – Orange Cash, Vodafone Cash and Etisalat Cash launched digital self-registration. Orange Cash was one of the first to launch digital self-registration in April 2020. The digital self-registration process is quick, convenient and hassle-free. Consumers have to access the Orange Cash service on mobile phone via #115# USSD menu or Orange Cash mobile application and simply enter their national ID and temporary PIN received via SMS. They further need to create a new PIN to start using Orange Cash services. Thus, consumers can subscribe to the Orange Cash service from their home without visiting an Orange retailer, preventing potential health and hygiene risks[1].

While the self-registration process is digital, it does not compromise on security. The consumers opting for self-registration get a temporary mobile wallet valid for 3 months and with a lower wallet balance limit of EGP 10,000 compared to the EGP 50,000 limit of permanent wallet registered via an Orange retailer. The consumers' National ID should be the one registered with their mobile number. The consumers can only register for three wallets on one National ID.

The consumers can upgrade temporary wallet to permanent wallet by visiting an Orange shop. Moreover, the consumers visiting an Orange shop, can book their turns in advance in the shop's waiting lines and monitor their turn through "My Orange" mobile application while being at home.

The consumers can request money from other users or cash-in at 10,000 ATMs or 100,000 Fawry outlets and 800 Orange shops across the country. Many daily wagers received government grants via Orange Cash service from the Ministry of Social Solidarity [2]. With money in their Orange Cash wallet, the consumers can transfer money to other users; recharge airtime and data for themselves and others; pay electricity, water, gas and mobile bills; and donate for noble causes, all from their home.

Introduction of digital self-registration resulted in unprecedented growth in mobile wallet users not only for Orange Cash, but for entire mobile wallet ecosystem in Egypt. As per National Telecom Regulatory Authority (NTRA) of Egypt, the number of mobile wallets in Egypt have increased drastically by 1.2 million in only two months, from 12.3 million mobile wallets in March 2020 (registered in last seven years) to 13.5 million mobile wallet in May 2020[3].

# Online KYC document submission in Iraq

AsiaHawala, one of the largest mobile money services in Iraq, moved a step further by enabling consumers to submit their KYC documents online. AsiaHawala offer two types of wallet – Lite Wallet and Standard Wallet. A consumer can obtain Lite Wallet through digital self-registration by accessing AsiaHawala USSD menu *212# or mobile application from their mobile phone and selecting preferred language. The threshold of Lite Wallet is IQD 100,000 for 60 days. After 60 days, consumers have to upgrade to Standard Wallet by visiting AsiaHawala agent and completing the KYC process. The standard wallet is active for unlimited period and comes with a maximum balance limit of IQD 20 million and monthly transaction limit of IQD 5 million.

Owing to pandemic, AsiaHawala has digitized the process of registering or upgrading from Lite Wallet to Standard Wallet. AsiaHawala has launched an online KYC page https://kyc.asiahawala.com/lang?language=English. The consumer can access the KYC page online through mobile phone, desktop, laptop or tablet and enter their personal details including name, gender, date of birth, preferred language, mobile number, full address, city/ governorate, civil/national ID number and residency card number. Consumers then have to upload their own photo and photo of front page and back page of civil/national ID and residency ID. Finally, they tick on a declaration and press 'Send eKYC' button to submit the information and documents. After successful verification of documents, customer can start using the AsiaHawala standard wallet service. The online registration form in available in English, Arabic and Kurdish. The online submission of personal details and documents enabled AsiaHawala consumers to complete the entire KYC process from home during lockdown.

# WhatsApp based registration in Ghana

In Ghana, with the advent of COVID-19, Bank of Ghana (country's central bank) on 18 March 2020 relaxed KYC norms and permitted the consumers to use their already existing mobile phone registration details to be on-boarded for a minimum KYC account [4].

In Ghana, the consumers can self-register and open minimum KYC mobile money account remotely using mobile money USSD code. However, in times of COVID-19, AirtelTigo Money introduced another simple and convenient way for the consumers to self-register using Whatsapp, targeting the younger demographics of the country. The consumers simply need to send 'Hi' to AirtelTigo Money WhatsApp number 0577000084 to begin the process. The AirtelTigo Money WhatsApp number responds with the list of documents to be submitted by the consumers. Consumers then have to share photo of their ID, date of birth, location and AirtelTigo Mobile Number to complete the registration process. The WhatsApp based registration is the quickest and easiest way to register for the mobile money account from home in Ghana and follow social distancing.

Overall, the COVID-19 crisis has demonstrated the successful digitization of mobile money registration process in many countries and is expected to become a permanent feature in a post COVID-19 era.

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[5] **AirtelTigo Facebook page:** https://www.facebook.com/notes/airteltigo-ghana/weve-made-it-simple-to-register-your-airteltigo-money-via-whatsapp/2648560095391169/?comment_id=2650871611826684

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# C VID 19

## CHALLENGES AND OPPORTUNITIES FOR

# TELECOM OPERATORS
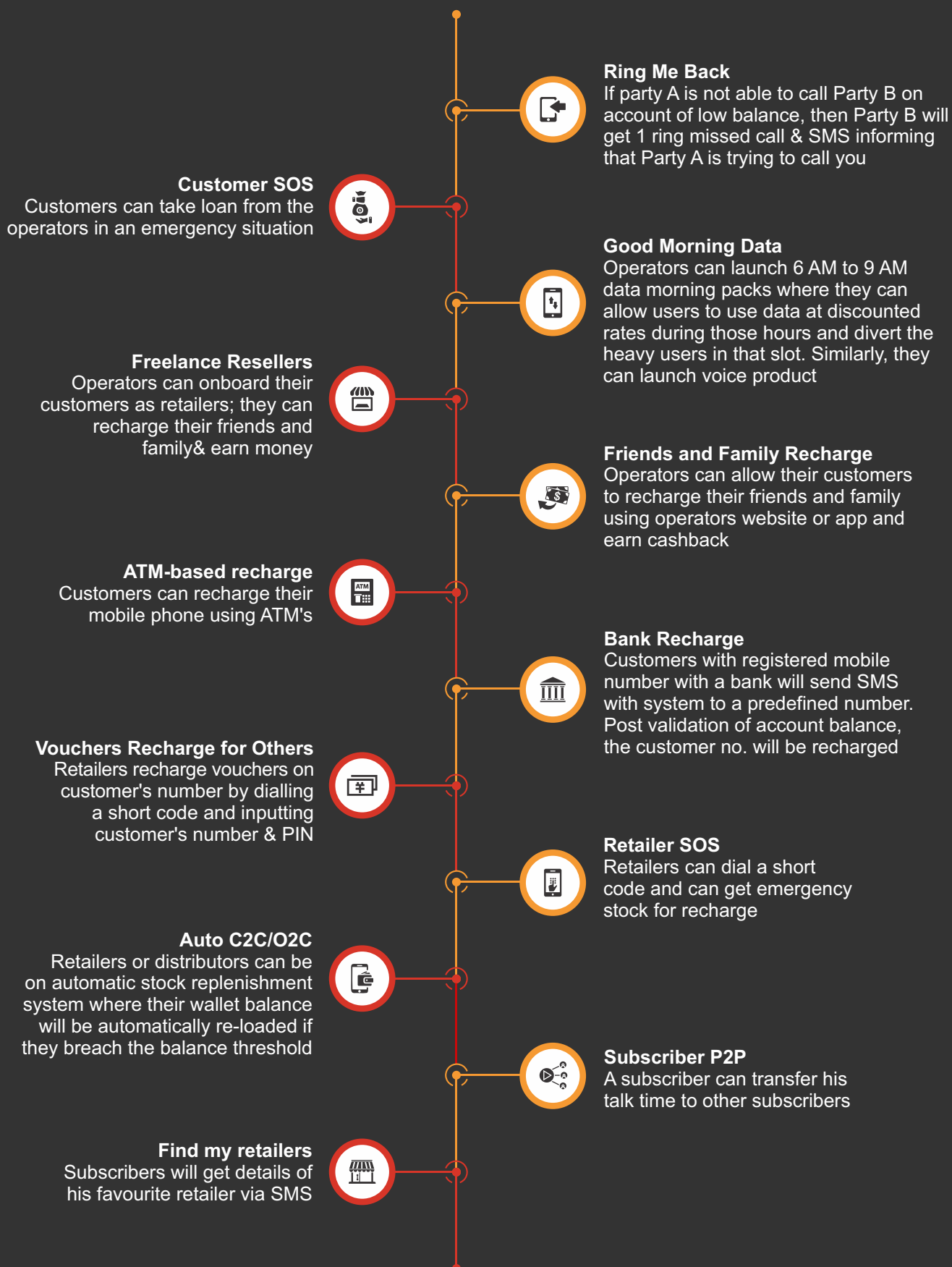
**CHIRANTAN SHARMA**

**SARANSH AGRAWAL**

Telecom operators have always played an essential role in society and the economy. They have always been important, but have never been more critical than they are today. In the current time of social distancing and lockdown, they are keeping the ball rolling, and are mission-critical in keeping the economy moving forward. On one hand, customers are able to stay connected and entertained with the help of mobile phone and internet connectivity. On the other, businesses can remain open with the help of remote collaboration tools and online connectivity, which are provided by telecom operators.

Having said that, telecom operators across the globe are facing their own set of challenges due to lockdown & social distancing:

→ Customers more than often have low balance as they are unable to reach the retailer's locations to get their accounts recharged

→ Retailers are facing stock-out situations constantly as they are not getting service from resellers

→ Distribution reach is also shrinking as touchpoints are not able to serve the customers amidst the lockdown situation

→ Operators with high dependence on voucher recharge are facing a unique challenge of Physical Vouchers' Obsolescence as retailers, despite having stock of paper vouchers, are not able to sell them as walk-ins have declined

→ With more and more customers getting online, watching videos on mobile phone and increase in calling because of social distancing, operators are facing a capacity crunch, and their networks are choked

To mitigate these challenges encountered due to COVID-19, many operators across the globe have deployed innovative solutions. These solutions help ensure that customers have enough balance, retailers are not stocked out, and there is enough capacity to take the load of calls and data traffic. The following page highlights some of these solutions in brief.

**Ring Me Back**
If party A is not able to call Party B on account of low balance, then Party B will get 1 ring missed call & SMS informing that Party A is trying to call you

**Customer SOS**
Customers can take loan from the operators in an emergency situation

**Good Morning Data**
Operators can launch 6 AM to 9 AM data morning packs where they can allow users to use data at discounted rates during those hours and divert the heavy users in that slot. Similarly, they can launch voice product

**Freelance Resellers**
Operators can onboard their customers as retailers; they can recharge their friends and family& earn money

**Friends and Family Recharge**
Operators can allow their customers to recharge their friends and family using operators website or app and earn cashback

**ATM-based recharge**
Customers can recharge their mobile phone using ATM's

**Bank Recharge**
Customers with registered mobile number with a bank will send SMS with system to a predefined number. Post validation of account balance, the customer no. will be recharged

**Vouchers Recharge for Others**
Retailers recharge vouchers on customer's number by dialling a short code and inputting customer's number & PIN

**Retailer SOS**
Retailers can dial a short code and can get emergency stock for recharge

**Auto C2C/O2C**
Retailers or distributors can be on automatic stock replenishment system where their wallet balance will be automatically re-loaded if they breach the balance threshold

**Subscriber P2P**
A subscriber can transfer his talk time to other subscribers

**Find my retailers**
Subscribers will get details of his favourite retailer via SMS

COVID-19 triggered factors like social distancing and lockdown are forcing consumers to change their behaviour, and operators should leverage this to increase adoption of their digital services like online recharge, self-help, etc. This is also an ideal situation to win customers' hearts by extending exclusive offers like billing discounts, extra validity, free services etc. Such moves will enhance customer loyalty and help them in the long run.

COVID-19 crisis has clearly proven that telecom services are critical for any country, crisis or no crisis. Operators should utilize this opportunity and urge policymakers to help them in acquiring more spectrum and providing tax sops to build a world-class telecom infrastructure for their country.

## Authors

**Chirantan** has over 11 years of experience across a gamut of industries including telecom, management consulting and insurance. He has extensive exposure to multiple functions such as product management, pricing, business planning and consulting. At Comviva, he is serving as Deputy General Manager in product management for the mobile financial solutions.

**Saransh** has over 6 years of experience across industries including Telecom-IT and defence. At Comviva, he is serving as Deputy Manager in product management for the mobile financial solutions.

# ENGINEERING THE NEXT GEN DIGITAL BANKING AND PAYMENTS PLATFORM

**VISHNU KUMAR**

Over a past few years, payment digitalization has grown exponentially. From utility payments, insurances, micro finance, loyalty and many more financial use cases, digital banking and payments platforms are now processing millions of transactions in a day. mobiquity® is one such leading digital banking and payments platform that powers digital financial services for over 80 banks, financial institutions and telecom operators catering to over 120 million consumers and processing 7 billion transactions annually.

To meet the scale of transactions and diversity of use cases, we have built mobiquity® as highly scalable, reliable and flexible digital banking and payments platform. In this article, I will share my experience of engineering mobiquity® - the next gen digital banking and payments platform

# Design Constraints

To support diverse lines of business in a uniform way, mobiquity® platform implements a more generic way of handling payments with below design constraints:



Maintain single code base for all our clients. Extensibility at core to meet changing needs and client specific customisation without changing core platform.

Any addition of new line of business does not impact core payment processing platform.

Consistent money movement
- Immutable
- Auditable
- Zero Sum Principle of accounting
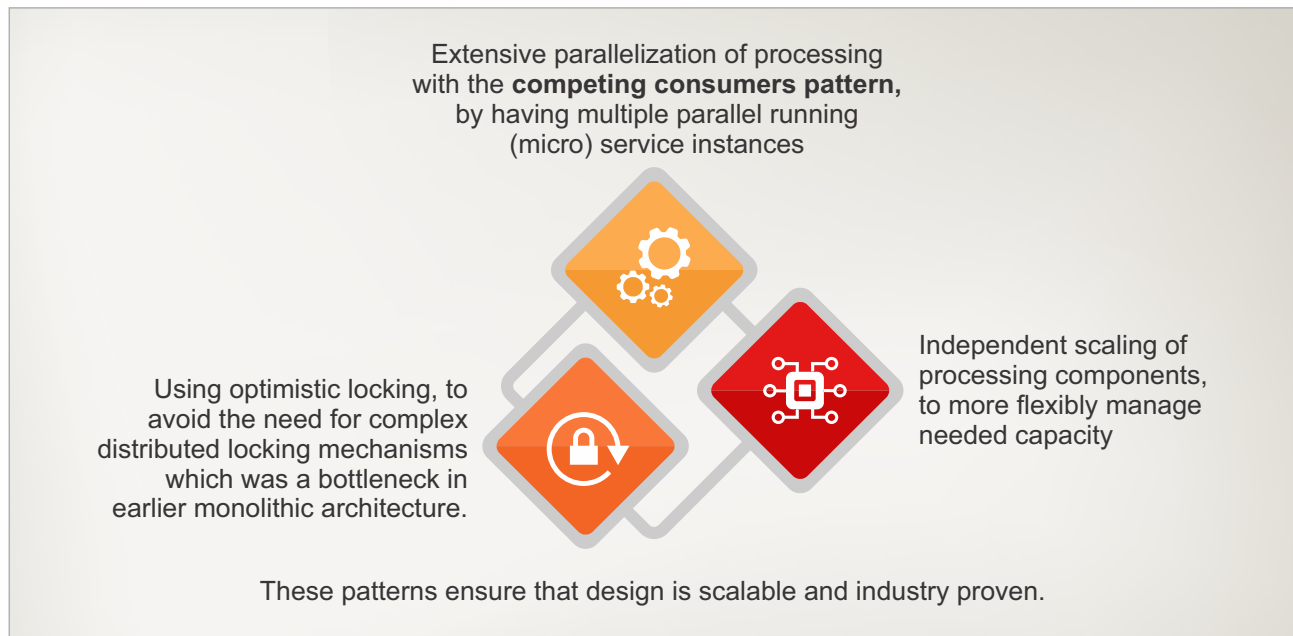
# Getting Architecture Right

Journey started with finding best architecture pattern to fit in design constraints and ended with an "event driven micro service" architecture mix of choreography and orchestration. Our engineering team re-wrote all our code into modular services build on top a messaging infrastructure. At high level, architecture looks like as below.
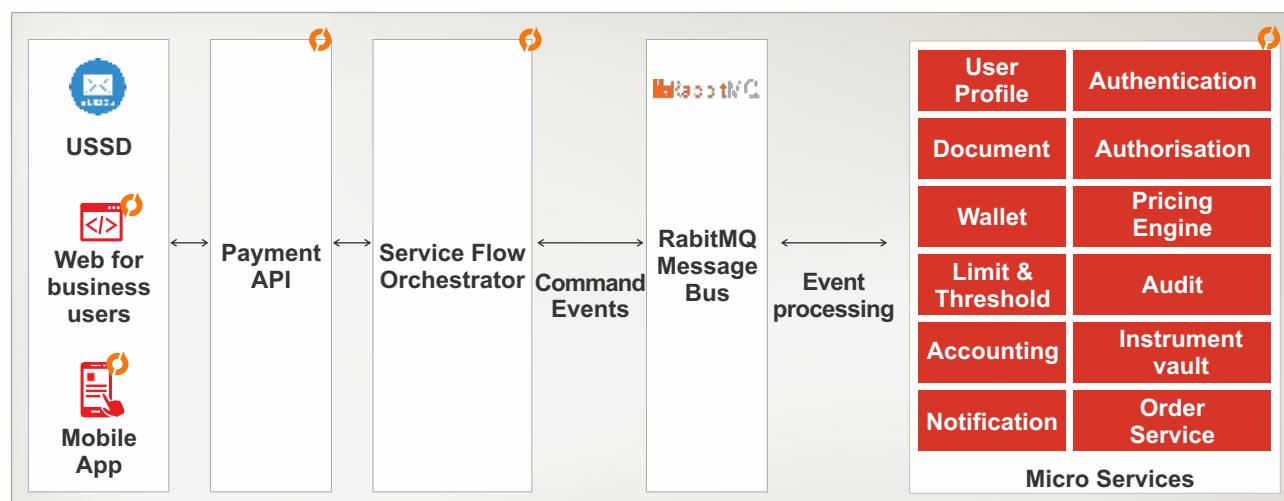
All these micro services are controlled by a service orchestrator built in house and flexible enough to Stitch any business flow using configurations. Each business flow 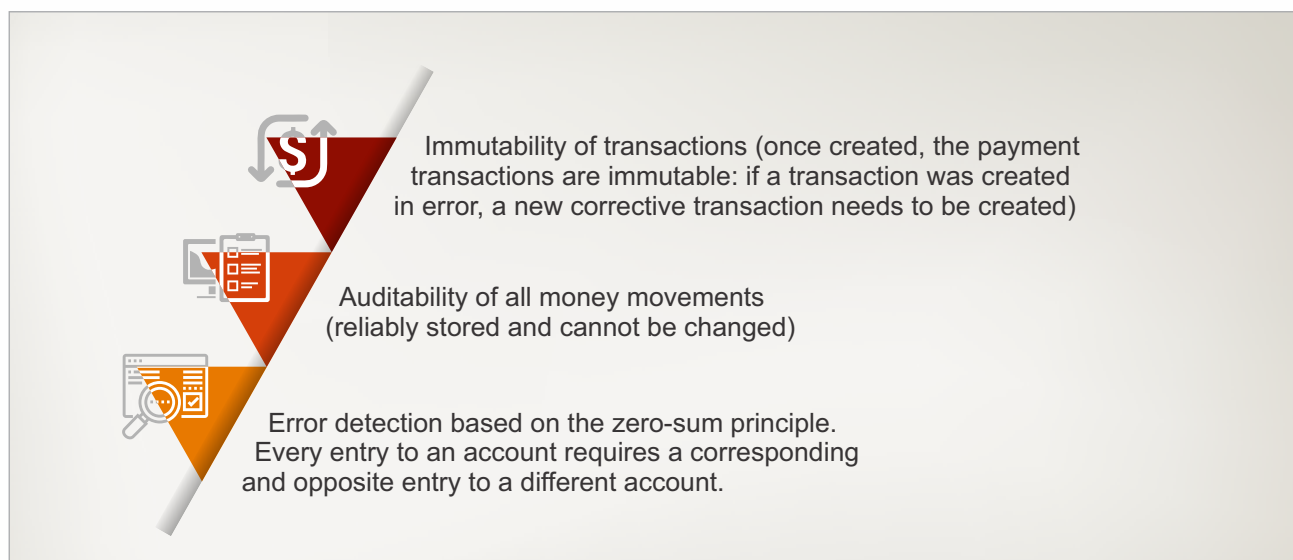consist of no of command events or messages which are served by different micro services asynchronously. System is built for high performance and scalability. Below are some mechanism we implemented to handle performance and scalability requirement.



Extensive parallelization of processing with the **competing consumers pattern,** by having multiple parallel running (micro) service instances

Independent scaling of processing components, to more flexibly manage needed capacity

Using optimistic locking, to avoid the need for complex distributed locking mechanisms which was a bottleneck in earlier monolithic architecture.

These patterns ensure that design is scalable and industry proven.

# Getting Payment Processing Right

mobiquity® core is payment processing which has to be reliable and fault tolerant. The conceptual model of the mobiquity® Payments processing is based on the ideas of the double-entry bookkeeping. The Payments Platform inherits three key principles from double-entry bookkeeping:



Immutability of transactions (once created, the payment transactions are immutable: if a transaction was created in error, a new corrective transaction needs to be created)

Auditability of all money movements (reliably stored and cannot be changed)

Error detection based on the zero-sum principle. Every entry to an account requires a corresponding and opposite entry to a different account.
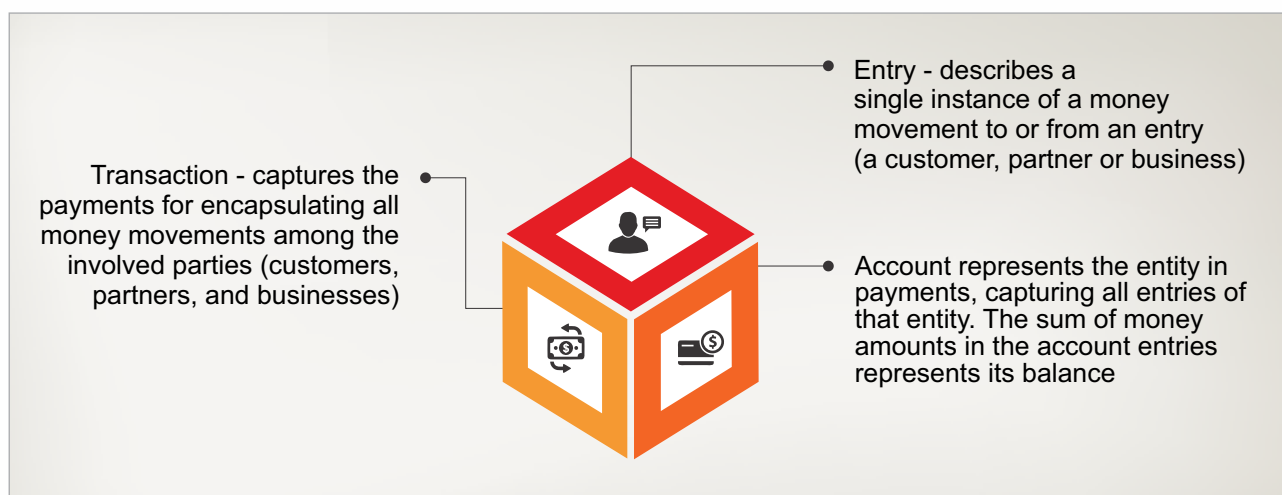
The processing of a payment transaction results in money movements to and from accounts. The zero-sum principle also originates from the **double-entry bookkeeping** and **zero- proof bookkeeping,** and in this context it means that sum of amounts (+ vs -) in each transaction has to be zero. For instance, a typical payment transaction will involve the collection of the money from a customer for a service (e.g., bill payment), paying (disbursement) of a partner (e.g., recharge operator), as well as obtaining a service charge for business. These three entr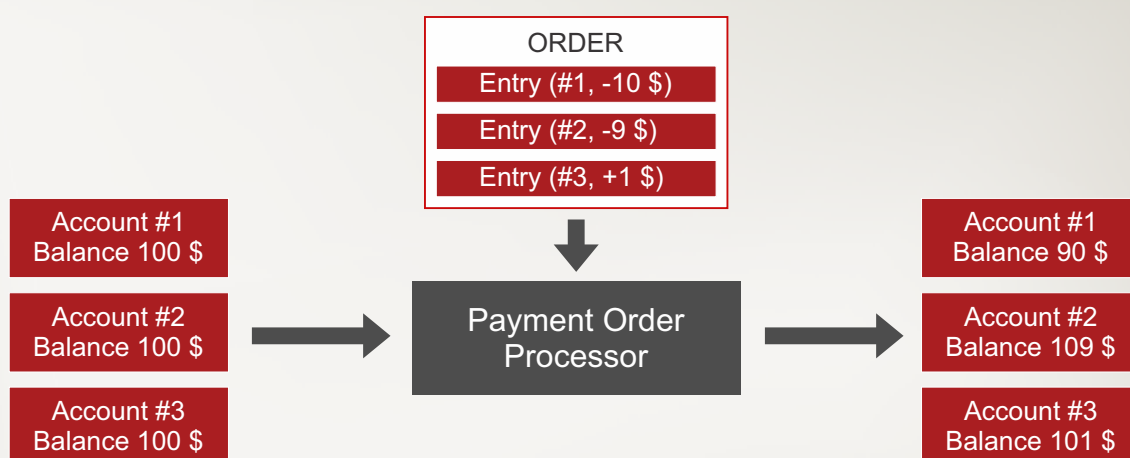ies will constitute a transaction, and the amount of money collected from the customer has to equal the amount of money obtained by partners and businesses.

The zero-sum principle is a simple error detection mechanism, especially useful it in a loosely coupled distributed systems at scale. Processing of the transaction will results in several transactions, each potentially involving integration with different payment service providers and banks. As delays, network, and other failures will unavoidably happen, zero-sum principle provides a solid method to detect if any errors happened.

These principal are achieved with below three main data objects used for payment processing.

Transaction - captures the payments for encapsulating all money movements among the involved parties (customers, partners, and businesses)

Entry - describes a single instance of a money movement to or from an entry (a customer, partner or business)

Account represents the entity in payments, capturing all entries of that entity. The sum of money amounts in the account entries represents its balance

**Data Model-orders, accounts,and entries**

ORDER
Entry (#1, -10 $)
Entry (#2, -9 $)
Entry (#3, +1 $)

Account #1
Balance 100 $

Account #2
Balance 100 $

Account #3
Balance 100 $

Payment Order Processor

Account #1
Balance 90 $

Account #2
Balance 109 $

Account #3
Balance 101 $

An order processor. The processor changes the state of account based on the entries in the order according to the zero-sum principle.

# Achievement

Today mobiquity® has "next generation event driven" architecture successfully deployed in production and processing over 20 million transaction a day giving same flexibility, scalability and reliability we demanded for. Our engineering teams are able to meet custom requirements without changing core product. Payment processing is more scalable due to optimistic locking and reliable due to zero sum principle in accounting.

**Author - Vishnu Kumar** Vishnu Kumar is Senior Solution Architect at Comviva. Vishnu has worked in IT industry for 15 years and has proven record in software development, enterprise integration, implementation and technical leadership. He is a technologist having deep interest in software architecture patterns and is proficient in identifying key bottlenecks in system architecture / engineering processes and bringing efficiency and cost reduction in technology. He has hands-on experience in refactoring and re-design of monolithic applications into micro service and modular architecture.

# TURNING DREAMS
## INTO REALITY QATAR
# PROGRESSING TOWARDS
## BECOMING A CASHLESS SOCIETY
# BY 2030

**ANKIT GOHIL**
**Business Development Manager**

Qatar, a GCC nation with $2^{nd}$ largest GDP and $2^{nd}$ smallest area, boasts of **75%+** smartphone penetration and **98%** mobile internet penetration. The cash has been and still remains the biggest means for transacting in the country. But things are now starting to change. Aligning with the government's 2030 national vision of a cashless society, Qatar Central bank and other commercial banks are on an endeavour to revamp the way payments are done, replacing cash with digital.

# The Rise of Digital Payments

According to a McKinsey report, digital consumer adoption in Qatar is high not only amongst GCC countries but also compared to various developed economies of the world. It is leading the region in risk-taking ability with regard to embracing new technology. With their risk-taking appetite coupled with favorable demographics and consumer inclination towards digital channels, commercial banks and fintechs are coming up with platforms to digitize payments. Though mobile payment service from Ooredoo has been available for quite some time now, the recent entrants including CB wallet from Commercial Bank [1], QPAY, SADAD and SkipCash are bringing host of new features and services for all ecosystem partners. Some amongst them are working on unique business propositions to drive revenue apart from the traditional merchant fee model. SkipCash, for example, is bringing together merchants, digital marketing players and loyalty service providers on its platform. With this collaboration it is aiming to acquire new customers quickly and build stickiness through loyalty. This stickiness will be a lucrative proposition for marketing and loyalty players to promote their brands. Since the market is just getting warmed up, these players will be facing stiff competition from new entrants working to disrupt the space and get their piece of the digital payments market. A notable player in this category is Ahli Bank which is in works to launch its digital wallet this year [2].

# Digital Payments leading to Innovation

The introduction of these new platforms is going to change the way customers access financial services in Qatar especially through their banks. The first significant change will be on the UI/UX designs. Fintechs are known for their customer-centric design which gives them a unique advantage when compared to traditional banks. However, with changing customer needs, even banks are now starting to adopt the new perspective of customer-centricity which is going to become a hygiene factor.

Secondly, with multiple players vying for the same pie, new entrants will aim to carve out their own niche by looking for still un-served or under served segments and build products/services for them. In Qatar we can broadly identify 2 retail customer segments. The first one constitutes the local Qatari and expats in white-collar jobs. This segment is digitally savvy and would be looking for unique experiences such as complete digital on-boarding, Personal Finance Manager amongst others. And the second segment comprises of the migrant blue-collared workers. This segment will be more interested in platforms that allow them to access financial services without having a bank account. Having the interface in their native language will be a definite plus, especially for a couple of top migrant languages.

And lastly, this change will bring in innovative technologies that provide convenience and security. Most Qatari banks have launched contactless NFC cards in the market in the last 3 to 4 years. However, now banks are taking it a step further by leveraging HCE and card tokenization technology. With them consumers can make payments on POS terminal by just tapping their NFC capable Android phones thus eliminating carrying of physical cards. HCE payments are faster, convenient and more secure compared to regular card-present transactions. Commercial Bank has been the first bank to introduce this feature to its customers. Owing to the absence of other international players in this space such as Apple Pay, Google Pay and Samsung Pay, it's a good opportunity for banks to offer unique experience using their own platforms and build better customer loyalty. I'm sure other banks would be following the suit.

# The quickly changing landscape of Qatar Fintech Industry

Qatar today has become a hotbed for fintech innovation. Per Vision 2030 to make Qatar a knowledge-based economy, the government is pumping billions to attract smart talent and provide a conducive environment for businesses to set up their shops in the Qatar Financial Centre. These companies are working on emerging fields such as blockchain, AI and building products for all sorts of segments such as SMEs, retail, etc. In the next 5 years these companies are set to revolutionize not only payments but the entire Qatari banking industry.

And with the FIFA world cup just a couple of years away, it would be interesting to watch some of these companies coming out with new products/offerings to make their mark during the mega sporting event.

Exciting times ahead for Qatar fintech industry!

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[2] **Ahlibank to launch digital wallet this year -** https://thepeninsulaqatar.com/article/27/02/2020/Ahlibank-to-launch-digital-wallet-this-year

# IN THE MEDIA

## Articles

**Adopting Digital Payments and Remote Banking in the Time of COVID-19**

– Srinivas Nidugondi's article in **Financial IT**

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**Fostering Green Financial Inclusion by Leveraging Mobile Money**

– Srinivas Nidugondi's and Mohit Bhargava's article in **Iris Tech News**

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## Webinar

**To Win in Digital Banks Need to Explore and Learn Faster**

– Webinar By Deepak Mylapalli (Comviva) and Peter Wannemacher (Forrester)

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# Analyst Mentions

**Gartner: Market Guide for Digital Banking Multichannel Solutions**

– Comviva mentioned in the report

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**The Gartner Digital Commerce Vendor Guide, 2020**

– Comviva mentioned in the report

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**Juniper Research: DIGITAL BANKING Banking-as-a-Service, Open Banking & Digital Transformation 2020-2024**

– Comviva mentioned in the report

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# Press Releases

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**Comviva introduces innovative Mobile Recharge App for Telecom Operators to increase their distribution network during COVID-19 Pandemic**

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Comviva is the global leader of mobile solutions catering to The Business of Tomorrows. The company is a subsidiary of Tech Mahindra and a part of the $21 billion Mahindra Group. Its extensive portfolio of solutions spans digital financial services, customer value management, messaging and broadband solution and digital lifestyle services. It enables service providers to enhance customer experience, rationalize costs and accelerate revenue growth. Comviva's solutions are deployed by over 130 mobile service providers and financial institutions in over 95 countries and enrich the lives of over two billion people to deliver a better future.

For more information, please visit  www.comviva.com

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