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WHITEPAPER

Digital Payments Materialization & Beyond

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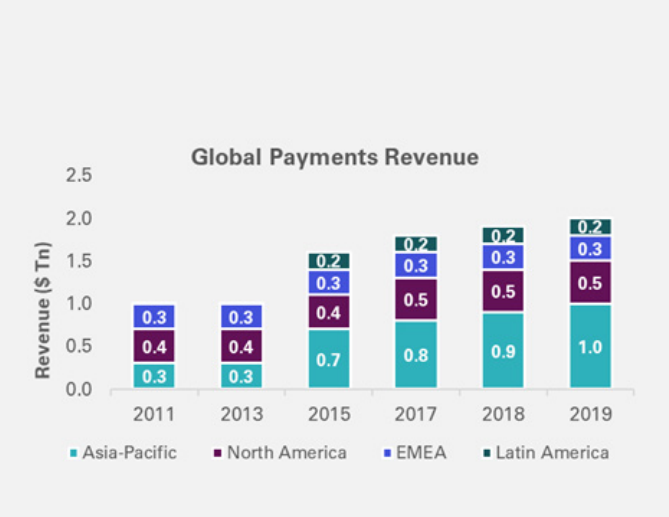
1. INTRODUCTION & OVERVIEW

The non-cash payments typically constitute digital payments. The global payment landscape is rapidly changing and offers newer innovative solutions to retail and wholesale customers. As customers adopt these payment solutions, there is an increase in payments volume and value worldwide. Over the last few years, the global payments revenue has been growing consistently at 6-8% across geographies.



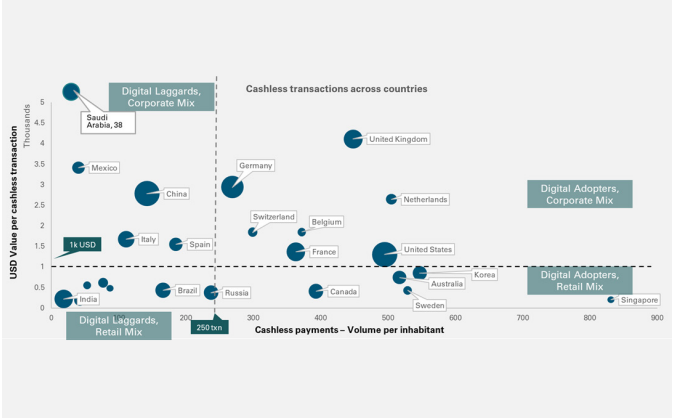
The COVID-19 pandemic is expected to have a downward impact on the global payment revenue by around 7-8% in 2020. However, the reduction in ATM cash withdrawals reduced by 40-50% on average globally. With reduced cash transactions and physical contact due to social distancing norms, the pandemic has been a black swan event in digital transaction adoption. The increase in digital transactions has been observed across developed and developing countries. This white paper explores the growing importance of digital payments, its dynamics, drivers, challenges, and the outlook for the future. .

2. MARKET DYNAMICS – DIGITAL PAYMENTS

Adopting digital payments is a complex function consisting of payment infrastructure availability, compliance with local and global regulatory and messaging standards, charges on payment systems and retail merchant acceptability of digital payments. Different economies across the globe typically have different levels of maturity in digital payments.

An essential dimension in understanding global digital payment dynamics is the number of transactions per inhabitant in a country. Digital adopted countries are usually defined as the ones which have a high number of cashless transactions per inhabitant (more than 250 transactions per year per inhabitant). In contrast, digital laggards are countries with less than 250 transactions per year per inhabitant.

Another dimension to understanding adoption is the segment mix, i.e., Corporate/Bulk volume vs Retail volume. Economies which have high per-transaction value (more than USD 1000), is said to have a high percentage of Corporate transactions. In contrast, economies with lower per-transaction value (less than USD 1000) have a higher percentage of retail transactions. It has been observed that a higher percentage of retail transactions is a reliable indicator of greater retail digital adoption.



Source: BIS, Cashless Payment Data & IBS Intelligence Research

The above representation demonstrates some key economies and their positions in digital adoption and Retail/ Corporate mix. All countries are moving towards the bottom right of the chart, i.e., towards digital adopters with a high retail mix.

Singapore, Sweden, Australia, Korea & Canada are such digital adopters with high retail volumes. Usually, most country policies and infrastructure gravitate towards this bucket. Most of these countries have local payment innovations brought by their regulators to enable digital commerce. For example, Sweden has Bankgirot and Swish,and Canada has the Payments Canada body that looks after digitisation and retail payment systems. Singapore has a similar body Electronic Payment Technical Committee (EPTC), which looks after payment systems and digitisation.

The key differentiator for digital adopted countries is either a government-appointed regulatory body or an industry body that creates standards for local digital transfers. Also, the growing penetration of Fintech players aids in the growth of digital transactions. The focus of such entities is usually on immediate, convenient, and consistent payments.

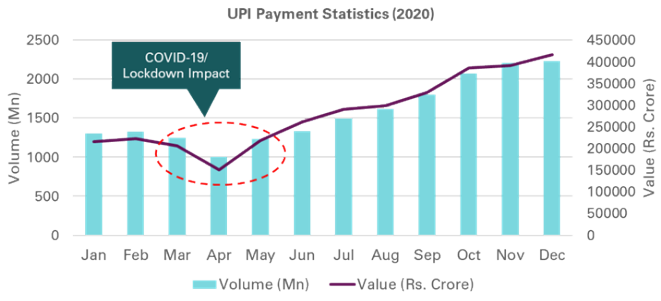
1. Focus is on Real Time Gross Settlement Systems**(RTGS)** – to be used by Treasurers, Banks, and Money Market participants.

2. After RTGS is well adopted, the governing bodies typically shift the focus to Retail payments, with immediate payments, low cost and multi-channel/API based payments as a common emerging theme. For example, the Immediate Payment Service (IMPS) & Unified Payment Interface (UPI) in India offers immediate real-time transfer across bank accounts.

In addition to the local trends, global and regional innovations are a massive driver for digitisation. Some such key enablers are Open Banking, Swift GPI, ISO 20022, PSD2, amongst many others.

While the COVID-19 impact is expected to reduce overall growth of non-cash volumes over the next 3-4 years, increased adoption of digital payment payments is expected to offset this decline. The adoption of digital payments in the future would vary significantly based on geography. Asia Pacific region, China and India would play a significant role in increased digital adoption. Ecommerce, in general, is expected to play a significant role in the revival digital payments post the pandemic.

The role of the local regulators would be an important factor in digital adoption. One such example is the Unified Payment Interface (UPI) in India. Except for March and April 2020, the adoption of digital payments through UPI has been increasing by volume and value.



3. KEY DRIVERS

3.1 CUSTOMER

Corporates and SMEs generally respond to what their customer needs, their financiers allow and what makes their distribution network run most efficiently. Thus, corporates typically use a mix of digital and physical payment methods while preferring digital due to its lower administrative costs and real-time accounting. Some industries such as logistics, retail and insurance are still heavily dependent on cheques and cash, but there has been a substantial shift towards digitisation.

Retailers and Fintech players generally simplify the digitisation process in retail payments, making it easier to operate and provide immediate transfer from anywhere and everywhere. It has been observed that adopting digital payments is relatively easier for retail customers. Key drivers enabling digitisation are listed below.

3.1.1 Smart Devices & Data penetration

Increased penetration of smartphones, tablets, wearables, and the availability of increasingly more economical internet (data) and the changing demographics, is one of the main reasons for higher digital adoption. Initially, this did not translate to retail digital payments adoption. However, as the smartphone providers moved towards greater device security and easy payment options, retail customers started warming up to mobile-based digital payments.

3.1.2 Digital Onboarding

The world is moving away from traditional branch banking and manually capturing detailed customer data towards onboarding. Banks and Fintech have been offering products for new and existing customers. This ensures seamless customer onboarding without having to visit the branches. Many countries across the world have forecasted a reduction in the number of branches soon. Seamless digital onboarding can be achieved through electronic KYC (Know Your Customer). Some regulators may waive this for niche offerings such as e-wallets up to an amount. eKYC is enabled through a combination of innovations such as a citizenship database, 2-factor authentication through government-registered mobile, liveliness check through video, digital signatures, and recently distributed ledger technology, amongst many others.

3.1.3 Seamless Customer Experience

A key enabler to Retail digital payment adoption has been seamless 2 or 3-click payment options along with enabling immediate payments for the transactions completed. It ensures that the customer is provided with a consistent and continuous experience.

3.1.4 Merchant Network Options

Ability to pay merchants using non-cash modes started in most economies with cards made popular by Visa, Mastercard & Amex. After POS machines, tap and pay, scan and pay (QR code payments) became a common feature of retail shopping in an economy, the jump to API based merchant payments was easy. It is a logical alternative of replacing cards with mobiles and POS machines with QR codes or mobile numbers.

Expleo Case Study #1

Objective : Help in the transformation the Core Banking and digital payment suite of the large payments bank in India

How Expleo Helped:

1. Assist in the implementation of digital payment suites across channels such as micro ATM, Mobile Banking, SMS Banking, Online Banking, Agent Banking, Doorstep banking, amongst others

2. Assist across different payment types such ABPS, AEPS, IMPS, NEFT, UPI, RTGS, Bill Desk, NACH, RuPay

The Bank leveraged postal services to deliver Rs. 2,000 Crore Cash through AePS in 75 Days during lockdown (Door step Banking)

3.2 TECHNOLOGY

The technology landscape in payments usually involves various linked systems, devices, banks, financial institutions and Fintechs offering the end customer products

3.2.1 Internet of Things (IoT)

IoT is used to describe devices other traditional devices which are being connected to the internet. These include wearables(smartwatches), home devices like Alexa and GoogleHome and many others. By 2025 there could be 20 billion devices connected to the internet and being used by banks, financial institutions, and Fintech to provide a wide variety of payment services. Today, users can use Alexa to order a pizza and pay the bill with only a voice command. Similarly, the recently launched FastTag to collect toll on India's highways through RFIDs linked to an account are examples of seamless payments through interconnected devices.

3.2.2 Distributed Ledger Technology (DLT)

Distributed ledger technology is a digital transaction recording system which has no common database and is stored in multiple places across the globe at the same time. Once a transaction is confirmed, it cannot be modified, and it becomes an immutable distributed ledger. DLT offers an opportunity to cater to complex business needs considering regulations, customer confidentiality by providing data synchronisation on need basis between the parties as required. Permission DLT are being implemented by banks and corporate organisations across trade finance, payments, asset management, etc. It has been observed that institution explore DLT as part of their innovation agendas. The key benefits of DLT include confidentiality, scalability, security and speed while ensuring there is no single point of failure.

Expleo Case Study #2

Objective : Assist in initiating the Implementation for PSD2 for the leading bank in the Europe region

How Expleo Helped:

1. Simulation of the end-to-end API flow from outside the bank network
2. Validation of OAuth & API services
3. End to end automation testing for payment initiation, balance inquiry, transaction history amongst others

3.3 REGULATORY

There is a greater regulatory focus worldwide to make digital payments for retail and corporate/bulk, seamless. The common concerns for regulators are to ensure quicker payments, greater transparency on costs, real-time payment statuses and improved customer experience. Open Banking, SWIFT GPI, ISO20022 messaging and PSD2, Immediate Payments are some of the recent initiatives that help achieve these goals.

3.3.1 Open Banking

IAn open bank concept emerges from the concept that the bank opens its systems to external/ third party players called service providers through application programming interfaces (APIs). They are generally categorised into Account Information Service Providers (AISP) or Payment Information and Service Providers (PISP). Open banking regulations vary across countries. PSD2 directive is a part of the Open Banking across the EU region. Similarly, in India, open banking has made its presence felt through the Unified Payment Interface (UPI) in India.

While the customers are the ultimate beneficiaries of Open Banking, it can be used as a revenue-generating model for banks. This is done typically through monetisation of the APIs exposed to the third-party players, which could provide value-added services to the bank's customers.

3.3.2 International Transfers

On average, the SWIFT network records around 37m financial messages daily. These volumes speak immensely on how the network plays a vital role in digital transfers internationally. More recently, Global Payments Innovation (GPI) is an important recent innovation that would genuinely complete international payment messaging. It would also resolve many decade-old issues in the SWIFT network.

The commonly observed challenges in international transfers are:

- Unavailability of payment status
- Tracking of the number and details of intermediaries
- Difficulty estimating the delivery date
- Difficulty estimating the final amount of payment
- Manual handling of exceptions & incidents

GPI enables better speed, provides deep transparency on transaction and correspondent banking and exchange-rate costs. Additionally, it maintains a Unique End-to-End Transaction Reference (UETR) which can be used to real-time status checks.

Another innovation in international payments is the MT/FIN messaging protocol undergoing an upgrade and will eventually be replaced by the superior MX/ISO20022 protocol. This is a landmark shift. It will bring an unprecedented level of flexibility in international payments, greater compliance, increased ease of AML checks, more straight-thru processing, status tracking across correspondent banks, increased speed, and lower costs. The greater flexibility provided in MX messages would potentially mean that enrichment data can be passed more easily. This will enable easier reconciliations which is a common pain area across the globe. Thus potentially providing the bank with an opportunity to revolutionize the payment processing and services offered to customers.

3.3.3 Immediate Payments (Local)

Many regulatory payments bodies and bank alliances have come forward with an Immediate Payment system ensuring real-time payment and clearing. For example, India's Unified Payment Interface (UPI) system allows various parties such as banks, e-wallets, and payment service providers to connect to the platform and build their mobile application services. It also doubles up as a payments gateway for websites. Equivalent systems are Swish in Sweden,and M-Pesa in Kenya.

The significant advantage of immediate payments is its quick time to market for newer customer experiences. For example, payments can be integrated with social media platforms and Fintechs that do not have a banking license but can quickly become an essential part of the transaction landscape like Whatsapp Pay, Google Pay, Amazon Pay, Paytm.

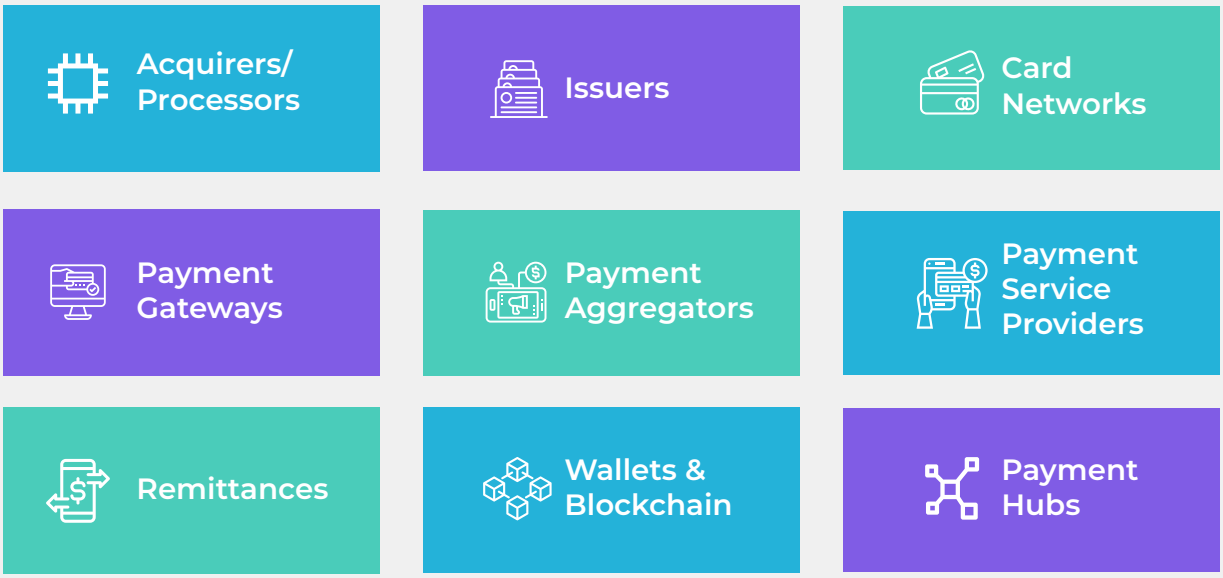
Immediate Payments generally drives a steep digital adoption within a short period. They typically achieve this through a few technological enablers such as API integration with regional banks, availability of an e-wallet offering, quick onboarding for retail customers and enablement of payments to peers. On the merchant side, they enable fast onboarding of merchants, a cheaper cashless payment mechanism than cards and a neater payment mechanism compared to cash. These also offer multiple retail payment features such as peer-to-peer or bill payment or merchant payments, mobile number, email, or QR code-based payments.

4. DIGITAL PAYMENTS | ECOSYSTEM

The continually evolving payments ecosystem is a complex network of different, often unconnected players. This payment ecosystem is continuously expanding from cash to cards to digital currency. The continuous increase of payment methods and the country wide legacy systems causes difficulties for global merchants. These merchants need to offer the right payment method. As the globalisation of commerce and consumer spending continues, the capabilities to "plug and play" into the payment's hub gets stronger. However, it is not easy to deliver. The need to provide payments globally is driving more interconnection among participants in the payments market.

For example, while accepting payments, Amazon has to comply and route the transaction to schemes such as VISA / Mastercard if the credit card issued under the scheme is used irrespective of the region. If it is Rupay or CUB card, they need to comply according to the respective countries' regional regulations. However, if the payments are using any other methods such as UPI in India, Faster Payments in the UK, SEPA in Europe, Amazon needs to comply with the network regulations. The messaging standards differ in each network (ISO8583 using card or XML format or native format of the regions).

A typical digital payment ecosystem consists of the 9 components depicted below. Each system/ area plays a pivotal role in enabling innovation in the digital payment space.



1. **Acquirers/ Processors :** Acquirers are banks/ financial institutions processing card payments on behalf of the issuers. Processors are the systems that are a part of the bank's technology landscape, enabling the transaction's processing.

2. **Issuers :** These are banks/ institutions issuing the card to the customer.

3. **Card Networks :** Card networks are used for processing card payments between the issuers and the acquirers.

4. **Payment Gateways :** Gateways are a technology used to process digital, online and card payments.

5. **Payment Aggregator :** These are typically a collection of multiple payment gateways under a single umbrella. Thus, customers are provided with a wide variety of payment options for digital transactions.

6. **Payment Service Providers :** These are typically Fintechs providing various payment capabilities to the customer.

7. **Remittances :** Remittances are cross border payments which are at times sent across special networks

8. **Wallets & Blockchain :** Over the last few years, blockchain service providers have been offering an alternate solution for instant cross border payments. Wallet solutions provide additional payment options for domestic payments.

9. **Payment Hubs :** Payment hubs form the most strategic component of the banks/ financial institution payment landscape. Payment hubs typically form the connecting layer between the Card and Core Banking systems of the bank and the external network options available to the customers. These solutions usually need to ensure adequate security, message formatting, transformations, AML, and fraud checks and adequately conducted before crediting or debiting the customer account.

Expleo Case Study #3

Objective : Transform the bank's payment infrastructure across domestic & international payment for a leading bank in the Middle East

How Expleo Helped:

1. Assist in the implementation of the payment hub by offering expertise in the testing services across different schemes (SWIFT, SARIE), message formats (SWIFT MT, SARIE MT, PACS, PAIN, camt)
2. The scope covered International & domestic transfers, direct debit management system, payroll processing, Corporate Liquidity

5. STRATEGIC CHALLENGES & HOW ARE FINANCIAL INSTITUTIONS OVERCOMING IT

In today's digital payment ecosystem, the customer has various alternatives for service providers, devices and payments. It thus becomes essential that Banks and financial institutions provide a seamless, real-time customer experience. However, multiple challenges are emerging. The payments industry continues to grow by continually innovating and upgrading itself to overcome all these challenges.

In the digital era, online payments landscape remains fragmented yet is dynamic. Local payment solutions challenge the big players like Visa, Mastercard, Amex.

The challenges include finding newer ways to stay on top of new technologies and ensuring superior customer experience. There are several challenges which need continuous monitoring and improvement. +A few of these challenges are discussed below.

KEY CHALLENGES

Challenge 1 : Fraud Prevention

In the digital world, it has been observed that fraud is one of the most common challenge faced. These include phishing, malware, trojans and scamsters acquiring passwords and pins fraudulently from the customer. Banks and financial institutions usually implement fraud systems. They are increasingly adopting artificial intelligence and machine learning to detect fraud in real-time without impacting the customer experience. In addition, ensuring appropriate quality assurance during the implementation of the system is critical to mitigating fraud successfully.

Challenge 2 : Lack of Customer Engagement & Loyalty

In the modern-day and age, retail customers typically seek an excellent experience. High-quality customer experience requires compatibility across a varied range of devices. Banks typically have to deal with various market-driven aspects like changes in customer behaviour, increasing global competition, emerging tech trends like mobile, IoT, AI, cloud and embracing of social media. They usually tend to change institutions a lot more quickly and easily than in the past. Banks and financial institutions need to provide the customer with innovative offerings, seamless customer experience and real-time payment processing to ensure that they stay loyal. This is also done using value-added benefits such as preferential interest on accounts, cashback amongst other offerings.

Challenge 3 : System Readiness & Availability

While customers are increasingly shifting towards digital banks and payments offered around the clock, it is usually observed that banks and financial institutions face stress on their bank systems. These are generally observed in a particular period of the month, such as salary processing time, credit card/ loan repayment and country festivals/ holidays. Banks and financial institutions typically need to budget for the additional load on the systems during these specific periods to ensure a seamless experience. Systems should also be capable of adapting to the changing regulations. For example, the Reserve Bank in India (RBI) recently permitted 24x7 usage of National Electronic Fund Transfer (NEFT) and RTGS transfer from 8am to 7pm on working days. The payment ecosystem should typically be designed to accommodate such changing rules.

Challenge 4 : Reducing the Cost of Payments

Banks and financial institutions are usually forced to minimise the cost of payments while trying to ensure customers are provided with a seamless experience. This is because customers typically expect minimum / no charges to be applied towards themselves for processing digital payments. Thus, banks and financial institutions are forced to balance the customer experience and cost incurred for each transaction.

Challenge 5 : Improving Data Security

Data security is of paramount importance for banks and financial institutions. Typically, systems are implemented to ensure active monitoring to prevent data security breaches. Also, government and local regulations such as GDPR, Open banking, cloud provider regulations play an essential role in defining the institution payment system architecture.

6. CONCLUSION & WAY FORWARD OUTLOOK

Cash was the king; digital is now divine!

There is expected to be steady growth in digital payments across geographies and countries aided by the COVID-19 pandemic. Technology would play a critical enabling role in evolving business models that would drive digital payments growth.

In conclusion, banks, financial institutions, and payment service providers need to ensure the challenges are proactively mitigated. This can be summarised as below:

Area	Mitigation
1 Fraud	• Leverage artificial intelligence & machine learning to identify frauds • Analyse and validate payment anomalies and outliers
2 Customer Engagement and Loyalty	• Provide a continuous and consistent experience to the customer • Ensure technology architecture is aligned to the principles of consistency & continuity
3 System Availability and Readiness	• Design through configurations to cater to evolving regulations • Design capacity for future growth of payment transactions
4 Cost of Payments	• Optimize the costs by potential adopting a cloud strategy • Process improvement using Robotic Process Automation(RPA) / Intelligent Process Automation
5 Data Security	• Proactive, real-time risk and security monitoring • Improved API security through use of API Managers & gateways for Open Banking

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