CASHLESS FRAMEWORK REPORT

Smart Dubai
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</table>
What?
- What do we mean by cashless?
- How do we measure cashless?
- History of the cashless movement
- Measurement and payment experiences

Why?
- Why should we go cashless?
- The role of stakeholders in enabling cashless societies
- Key regulatory and legislative initiatives fostering the transition to digital payments

How?
- Integral cashless payment experiences and systems
- Cash and cashless cultural and societal practices
- Challenges
WHAT IS A CASHLESS MOVEMENT

A move towards, and implications of, a society where payments are made with means other than tangible cash - in other words legal tender (money) exists, is recorded, and is exchanged in forms other than tangible cash.

Source: Smart Dubai Analysis
CASHLESS PAYMENTS

- NFC Mobile Payments
- QR Code Scans
- ATM Transactions
- Direct Debit Authorization
- Cards at POS
- Digital Transfers
- M&E Payments
- E-Cheque

Source: Smart Dubai Analysis
TIMELINE

1960's
1st move away from cash with banks; banks convincing employers to use direct deposit.

1990's
Electronic banking became common, and exponential growth in use of checks.

2000's
Rise of non-bank digital payment platforms such as PayPal. In 2009, Venmo and Square were launched enabling mobile to mobile money transfer.

2010's
Cash became actively disfavored in many transactions, and often looked at with suspicion.

2011
Launch of iZettle for small merchants to accept credit cards.

2012
Launch of Swish, smartphone-to-phone payment system.

2016 / Present
Several leading digital wallets Spread of digital payments promoting regulations.

Source: Smart Dubai Analysis
High progress in the transition to cashless
Undertaken regulatory initiatives to facilitate the transition to cashless
Movement enabled through regulated, efficient and seamless technologies

High-end and technologically advanced payment service providers
Highly developed regulatory landscape
Proactive supply side push for digital payments
Ready demand side pull for digital payments

AROUND THE WORLD
What do countries that are ahead in ‘cashless’ have in common?

Sweden
UK
Singapore
Australia

Source: Nam, Ip sa pit atmosphere, que les sit aperum ut as ratu sedi dolum qu
CASH

• Older generation still holds more trust in cash
• High unfamiliarity with digital payments
• Cash is used both as a means of payment and a store of value
• Cash printed does not necessarily go back to the system
• Increased global economic activities (specially tourism and investment) are still often done in cash

Payment Diary Surveys
(% of people who used cash in their last transaction)

- Australia: 37%
- Sweden: 20%
- UK: 45%

CIC/GDP (%)

ATM withdrawals (Billion USD)

CIC = currency in circulation in a country is the value of currency or cash (banknotes and coins) that has ever been issued by the country's monetary authority. Subtracted the amount that has been removed.

Source: Bank of International Settlements

UAE Data from UAE Central Bank Reports
Although absolute value and volume of Cashless Payments increased over the past few years, Cashless Payments as a multiple of GDP varies due to significant fluctuations in GDP over the same period.

Reasons

- Increased number of cashless payment channels
- More number of transactions are done digitally but of lower value
- Younger generation and digital payment savviness
Category-wise penetration of eCommerce compared to overall volumes UAE vs. benchmark markets
March 2018 - February 2019

**EMERGING MARKETS**
- Dominant segments
  - Government Services/Education
  - Airlines

**MATURE MARKETS**
- Dominant segments
  - Professional Services
  - Government Services/Education

**UAE MARKET**
- Dominant segments
  - Government Services/Education
  - Airlines

Source: Visa transaction data, Visa e-commerce report
Benchmark emerging markets: Brazil, South Africa, Malaysia
Benchmark mature markets: USA, Canada, UK, Sweden, Australia, Singapore
Online payments continue to grow at a steady pace across markets and non-bank players are now dominating the payments space, carving out a niche for themselves.
BENEFITS
GOVERNMENT

$0.5 billion annually added for Dubai Government

• Increased government revenue generated from recapturing the grey economy
• Increased government revenue generated from additional business revenue
• Ease of monitoring
• Increased sense of trust in government
• Generation of more insightful data
• Government efficiency savings
• Criminal justice cost savings from reduced crime; and
• Toll road and transit agency cost savings

Source: visa-cashless-cities-report 2017
Calculations are done based on GDP and Population data of 2015
NET BENEFITS

BUSINESSES

$1.5 billion annually added for businesses

- Costs associated with processing incoming payments
- Labor savings associated with processing incoming and outgoing payments
- Time savings from consumer point-of-sale transactions
- Better cash flow management
- Ease of monitoring
- Generation of more insightful data
- Lowering Cost of KYC Process when opening a bank account
- Increased business revenues; and
- Float costs (time for money to actually be available in the bank accounts - negative indicator)

Source: visa-cashless-cities-report 2017
Calculations are done based on GDP and Population data of 2015
$0.2 billion annually added for individuals

- Time savings in banking, transit and retail transactions
- Float savings
- Savings from avoidance of late payment fees
- Savings from reduced crime
- Increased convenience
- Improved budgeting and expense tracking
- Better data to build credit profiles
$2.2 billion added to the city
3.1% increase in GDP

- $0.5 billion annually added for governments
- $1.5 billion annually added for businesses
- $0.2 billion annually added for individuals

Source: Visa cashless cities report 2017
Calculations are done based on GDP and Population data of 2015
As cities increase use of digital payments, the positive impacts go well beyond the direct net benefit to individuals, businesses and governments. Below are forecasts for four catalytic benefits between 2017 and 2032.

**Wage Growth**  
(% increase on top of baseline)

- Dubai: 0.73
- Hong Kong: 0.05
- Stockholm: 0.11
- Tokyo: 0.11
- London: 0.62
- Sydney: 0.01
- Singapore: 0.01

---

**Productivity Growth**  
(% increase on top of baseline)

- Dubai: 0.08
- Hong Kong: 0.01
- Stockholm: 0.33
- Tokyo: 0.12
- London: 0.6
- Sydney: 0.01
- Singapore: 0.7

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**Average Annual GDP Growth Rate increase**  
(bps)

- Dubai: 10.8
- Hong Kong: 4.7
- Stockholm: 57
- Tokyo: 31
- London: 65.4
- Sydney: 13.1
- Singapore: 1.7

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**Additional Jobs Created**  
(Additional jobs on top of baseline)

- Dubai: 28700
- Hong Kong: 18900
- Stockholm: 1700
- Tokyo: 66100
- London: 71400
- Sydney: 15300
- Singapore: 5400

Source: visa-cashless-cities-report 2017  
Calculations are done based on GDP and Population data of 2015  
*if 100% cashless is achieved*
GOVERNANCE

STAKEHOLDERS

REGULATORY INITIATIVES

FOCUS AREAS

Source: Smart Dubai Analysis
STAKEHOLDERS

Oversight Body

Legislative/ Regulatory Entities

Sector Associations/ Industry Bodies

Payment Service Providers

Issuers & Acquirers

Government Merchants

Private Sector Merchants

Customers

Source: Smart Dubai Analysis
### Oversight Body

- Foster collaboration
- Develop cashless strategy, policy and future foresight
- Identify initiatives to promote innovation
- Build security and trust
- Monitor and incorporate leading edge payment developments
- Oversee transition to cashless and measure results

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<th>SWEDEN</th>
<th>AUSTRALIA</th>
<th>UK</th>
<th>SINGAPORE</th>
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<tr>
<td>Swedish Retail</td>
<td>Australian Payments</td>
<td>European Payments</td>
<td>Singapore Payments</td>
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<tr>
<td>Payments Council</td>
<td>Council (forum for PSB to consult with industry)</td>
<td>Council</td>
<td>Council*</td>
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<td>European Payments</td>
<td>Council</td>
<td>National Payments</td>
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<tr>
<td>Council</td>
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<td>Strategy Council*</td>
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<td>Payments System</td>
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<td>Proposed</td>
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<td>Board (PSB)*</td>
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### UAE

**Central Bank of the UAE**, Payment Systems Oversight Unit

**Department of Finance in Dubai Government**, government payments department

*One of the two boards of Reserve Bank of Australia

Future of Finance (June 2019) by Bank of England

Source: Smart Dubai Analysis
### Legislative/Regulatory Entities

#### Legislative
- Enact and change laws
  - **Legislative**
    - Riksdag
  - **Regulatory**
    - Riksbank
    - Financial Supervisory Authority
    - Swedish Competition Authority
    - Swedish Consumer Agency

#### Regulatory
- Control the money supply in the economy
  - **Legislative**
    - Commonwealth Parliament
  - **Regulatory**
    - Reserve Bank of Australia
    - Australian Prudential Regulation Authority
    - Australian Competition & Consumer Commission

#### SWEDEN
- **Legislative**
  - The Parliament of the United Kingdom
- **Regulatory**
  - Bank of England
  - Prudential Regulation Authority (large firm level-independent subsidiary of BoE)
  - Financial Conduct Authority (entire finance sector)
  - Payment Systems Regulator (independent subsidiary of FCA)
  - Competition and Markets Authority (CMA)

#### AUSTRALIA
- **Legislative**
  - The Parliament of the Republic of Singapore
- **Regulatory**
  - Monetary Authority of Singapore
  - Competition and Consumer Commission of Singapore

#### UAE
- **Legislative**
  - Cabinet
  - Federal National Council
- **Regulatory**
  - Central Bank of the UAE
  - Ministry of Economy (supported by The Higher Committee on Consumer Protection & UAE Competition Committee)
  - Dubai Depts. of Economic Development
  - Department of Finance in Dubai Government (for government payments)

### Source
Smart Dubai Analysis

*Sweden and UK, being EU members, also have EU Commission (proposing legislation) and European Parliament and Council of the European Union jointly enacting EU laws.

Payment Systems Regulator (UK) is a subsidiary of the FCA but, as an independent economic regulator, has its own statutory objectives and management structure.
Sector Associations / Industry Bodies

- Represent the voice of the sector
- Support and promote policies and initiatives that balance both the interest of financial institutions, and the wider public benefit
- Provide industry code of conduct, research, policy expertise and input, thought leadership and advocacy
- Conduct activities to promote the sector

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<thead>
<tr>
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<th>AUSTRALIA</th>
<th>UK</th>
<th>SINGAPORE</th>
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</thead>
<tbody>
<tr>
<td>Swedish Bankers’ Association</td>
<td>The Australian Banking Association</td>
<td>UK Finance (formerly British Bankers Association)</td>
<td>The Association of Banks in Singapore</td>
</tr>
<tr>
<td>Swedish Consumers’ Association</td>
<td>Australian Payments Network</td>
<td>Payments Strategy Forum</td>
<td>Singapore Fintech Association</td>
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<tr>
<td>Swedish FinTech Association</td>
<td></td>
<td>Open Banking Implementation Entity (established by CMA)</td>
<td></td>
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</tbody>
</table>

Source: Smart Dubai Analysis
Payment Service Providers
• Provide services for electronic payments
• Establish relationships and connect to multiple acquiring banks, card and payment networks
• Provide value added services

Payment Service Providers*
* Includes payment gateways & networks

Source: Smart Dubai Analysis
Issuers
• issue payment instruments
• act as the middle-man for the customer and the payment network

Acquirers
• contract with the merchants
• maintain the merchant’s bank account
• pass the merchant’s transactions to issuers to receive payment

* Includes payment gateways & networks

Source: Smart Dubai Analysis
Government Merchants
- Provide services to other government entities, private sector and individuals

Customers
- Pay for goods and services provided by merchants (payors)

Private Sector Merchants
- Provide goods and services that require payment (payees)

Source: Smart Dubai Analysis
Key Regulatory and Industry Initiatives utilize a set of levers for change

- Blueprints
- Legislations
- Regulations
- Policies
- Standards
- Guidelines and Frameworks

Source: Smart Dubai Analysis
To achieve competitive and stable markets

To control and alleviate risks

To boost innovation and level the playing field

To protect consumers and to enhance their confidence

Source: Smart Dubai Analysis
Topics addressed in existing initiatives

- Duties of account holders and users
- Reporting of unauthorized access
- Liabilities of users and providers
- Handling erroneous transactions
- Clarity, transparency and completeness in information disclosure
- Dispute resolution and redress
- Consumer data rights and data protection
- Addressing wind-down of PSPs (e.g. P2P)
- Marketing restrictions and consumer awareness for risky payments (e.g. P2P services, cryptoassets, etc.)
- Financial inclusion (addressing discrimination against consumers)
- General stipulations of the consumer protection law

Source: Smart Dubai Analysis
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Initiative name</th>
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<tbody>
<tr>
<td><strong>Australia</strong></td>
<td></td>
</tr>
<tr>
<td>• AusPayNet</td>
<td>• CNP (Card Not Present) Fraud Mitigation Framework (AusPayNet)</td>
</tr>
<tr>
<td>• Parliament</td>
<td>• Consumer Data Right* Act (Parliament)</td>
</tr>
<tr>
<td>• Australian Payments Council (APC)</td>
<td>• Competition and Consumer (Consumer Data) Rules (2019) (ACCC)</td>
</tr>
<tr>
<td>• Australian Competition &amp; Consumer Commission (ACCC)</td>
<td>• Payment surcharges (ACCC)</td>
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<td></td>
<td>• Financial Crime Prevention &amp; Detection and Consumer Protection (TBD)</td>
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<td></td>
<td>• Guiding principles for financial inclusion (APC) - TBD</td>
</tr>
<tr>
<td></td>
<td>• Technology Impact Assessment (TIA) Guidelines (APC) - TBD</td>
</tr>
<tr>
<td><strong>Singapore</strong></td>
<td></td>
</tr>
<tr>
<td>• Singapore Payments Council</td>
<td>• E-Payments User Protection Guidelines</td>
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<tr>
<td>• MAS</td>
<td>• Consumer Protection (Fair Trading) Act</td>
</tr>
<tr>
<td>• Competition and Consumer Commission of Singapore</td>
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<tr>
<td><strong>European Union</strong></td>
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<tr>
<td>• European Parliament and European Commission</td>
<td>• PSD2 (consumer protection, complaints handling, prohibits surcharging, reduce consumers' liability, unconditional refund right for direct debits, etc.)*</td>
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<tr>
<td></td>
<td>• Consumer Rights Directive</td>
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<tr>
<td><strong>United Kingdom</strong></td>
<td></td>
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<tr>
<td>• FCA</td>
<td>• Loan-based ('peer-to-peer') and investment-based crowdfunding platforms (2019)</td>
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<tr>
<td>• Bank of England</td>
<td>• Customer Experience Guidelines &amp; Checklist (part of Open Banking initiative)</td>
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<tr>
<td></td>
<td>• Consumer Rights Directive</td>
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<tr>
<td><strong>Sweden</strong></td>
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<tr>
<td>• Swedish Retail Payments Council</td>
<td>• A scenario analysis of payments at points of sale and withdrawals from ATMs in the event of disruptions to the card systems</td>
</tr>
<tr>
<td>• Riskdag</td>
<td>• EU Directive nationalized</td>
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<tr>
<td>• Swedish Consumer Agency</td>
<td>• Swedish government expected to pass law requiring all banks to handle cash</td>
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<tr>
<td><strong>United Arab Emirates</strong></td>
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<tr>
<td>• FNC, Cabinet, Ministry of Economy</td>
<td>• Federal Law No. 24 of 2006 on Consumer Protection</td>
</tr>
<tr>
<td></td>
<td>• DED in each emirate deals with consumer rights</td>
</tr>
</tbody>
</table>

*Source: Smart Dubai Analysis*
Topics addressed in existing initiatives

- Real-time payments (entire payment process in real time)
- Adoption of new technologies in payment systems (e-wallets, QR codes, etc.)
- Open Banking (interoperability, account information and payment initiation services disrupting incumbent financial institutions)
- Innovative and disruptive Fintech services (AI/ML) - AI based personal finance and wealth management and planning, conversational commerce, invisible payments, fraud detection and prevention, etc.
- Central Bank Digital Currencies
- Digital Ledger Technology in payment (wholesale, retail)
- Cryptocurrencies
- Bank as a Service, Conversational Commerce
- From Open Banking to Open Finance

Source: Smart Dubai Analysis
### Stakeholder Initiative name

**Australia**
- Australian Payments Council
- PSPs
- RITS/ISO20022 (LVPS - RTGS)
- New Payments Platform (NPP) (RPS - RTGS)
- QR codes and Osko RT F2P payments over NPP
- Principles for data sharing
- Consumer Data Right Law (enables Open Banking for reading data)
- Interoperability Vision & Roadmap (TBD)

**Singapore**
- Singapore Payments Council
- Monetary Authority of Singapore (MAS)
- PSPs
- MEPS (LVPS – RTGS) and FAST (RPS & FPS – MN)
- PayNow (C2C & B2C payments), PayNow Corporate (B2B payments), SGQR (C2B payments), UPOS (Unified POS), APIX (API Exchange), Project Ubin (CBDC)

**European Union**
- European Central Bank
- European Parliament and European Commission
- PSPs
- TARGET – TIPS
- SEPA Schemes (credit transfer, direct debit, cards, cash, mobile, proxy lookup mechanism)
- PSD2 (account information initiation and payment initiation services)

**United Kingdom**
- FCA, Bank of England
- Open Banking Implementation Entity
- Competition and Markets Authority (CMA)
- PSPs
- CHAPS (LVPS – RTGS), FPS (RPS – MN)
- Open Banking (initiated by CMA)
- Guidance on cryptoassets (2019)
- A blueprint for a new RTGS service for the United Kingdom (BoE)

**Sweden**
- Riksbank
- PSPs
- RIX (LVPS - RTGS) and Bankgirot (ACH & Settlement services for retail payments, BIR - Payments in Real Time)
- Swish (C2B and C2C mobile payments – consortium of banks)
- Klarna (online payments)
- iZettle (Retail SME payments)
- E-Krona (CBDC)

**United Arab Emirates**
- Central Bank of the UAE
- PSPs
- UAEFTS (LVPS – RTGS)
- UAE Saudi digital currency project (Aber)
- Regulatory Framework for Stored Values and Electronic Payment Systems
- eWallet

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Source: Smart Dubai Analysis
https://apixplatform.com/marketplace/
https://www.mas.gov.sg/schemes-and-initiatives/Project-Ubin
The Reserve Bank information and Transfer System (RTIS) is Australia’s high-value settlement system based on RTGS

Note: LVPS denotes Large Value Payments System, RTGS denotes Real Time Gross Settlement, RPS denotes Retail Payment System, FPS denotes Fast Payment System, MN denotes Multi-netted, SEPA denotes Single Euro Payments Area, PSD denotes Payment Services Directive
Topics addressed in existing initiatives

- Payment services providers authorization (licensing) requirements (governance, ownership and management, business plan, internal control, risk management, capital, etc.)

- Payment systems oversight (designation of payment systems, imposition / cessation / revocation of access regime, shareholding conditions, auditing, inspection, authority notifications, reports submission, etc.)

- Open Banking

- Interchange fees, fees among financial institutions, PSPs, etc.

- Competition and regulatory authority payment markets reviews and recommendations

- General stipulations of the competition law

Source: Smart Dubai Analysis
### Stakeholder

<table>
<thead>
<tr>
<th>Australia</th>
<th>Initiative name</th>
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<tbody>
<tr>
<td></td>
<td>Payment Systems and Netting Act 1998</td>
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<td>Competition and Consumer Act 2010</td>
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<td>Productivity Commission Report on Competition in the Australian Financial System</td>
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<th>Singapore</th>
<th>Initiative name</th>
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<tr>
<td>Singapore Parliament</td>
<td>Payment Services Act (2019)</td>
</tr>
<tr>
<td>Monetary Authority of Singapore</td>
<td>Payment Systems Oversight Act</td>
</tr>
<tr>
<td>Competition and Consumer Commission of Singapore</td>
<td>Competition Act and Guidelines</td>
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<td></td>
<td>PayNow Corporate (B2B payments)</td>
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<td></td>
<td>SGQR (C2B payments)</td>
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<td></td>
<td>UPOS (Unified POS)</td>
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<td>APIX (API Exchange)</td>
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<td>Project Ubin (CBDC)</td>
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<tr>
<th>European Union</th>
<th>Initiative name</th>
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<tr>
<td>European Parliament and European Commission</td>
<td>PSD2 (translated to national laws)</td>
</tr>
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<td></td>
<td>EU Competition Commission (anti-trust laws)</td>
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<td>Interchange Fee Regulation</td>
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<tr>
<th>United Kingdom</th>
<th>Initiative name</th>
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<tr>
<td>FCA</td>
<td>Financial Services (Banking Reform) Act 2013</td>
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<td>CMA</td>
<td>Loan-based (‘peer-to-peer’) and investment-based crowdfunding platforms (2019)</td>
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<tr>
<td></td>
<td>The Payment Services Regulations (FCA)</td>
</tr>
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<td></td>
<td>Payment Card Interchange Fee Regulations (2015).</td>
</tr>
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<td></td>
<td>Open Banking initiated by CMA (via the report Retail Banking market investigation)</td>
</tr>
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<td></td>
<td>UK Payment Systems Regulator Market Review of Card-Acquiring Services</td>
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<tr>
<th>Sweden</th>
<th>Initiative name</th>
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<tr>
<td>Swedish Competition Authority (SCA)</td>
<td>Terms of Access to Payment Systems (SCA)</td>
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<tr>
<td>Riskdag</td>
<td>Swedish Banking and Financing Business Act (BFBA)</td>
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<tr>
<th>United Arab Emirates</th>
<th>Initiative name</th>
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<tbody>
<tr>
<td>Central Bank of the UAE</td>
<td>Regulatory Framework for Stored Values and Electronic Payment Systems</td>
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<tr>
<td>Ministry of Economy</td>
<td>Federal Law No. 14 of 2018 Regarding the Central Bank &amp; Organization of Financial Institutions and Activities</td>
</tr>
</tbody>
</table>
RESILIENCE

Topics addressed in existing initiatives

• Cybersecurity and resilience
• Electronic identification and trust services
• Distributed ledger regulations
• Financial crime detection and prevention
• Prevent illicit activity by cryptoassets
• AML / CFT regulations
• KYC regulations
• Fraud regulations
• Other financial stability and risk regulations

Source: Smart Dubai Analysis
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Initiative name</th>
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</thead>
<tbody>
<tr>
<td><strong>Australia</strong></td>
<td>• Resilience Policy Recommendations (TBD)</td>
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<td></td>
<td>• Principles and guidelines for secure innovation (TBD)</td>
</tr>
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<td></td>
<td>• Financial Crime Prevention &amp; Detection and Consumer Protection (TBD)</td>
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<tr>
<td><strong>Singapore</strong></td>
<td>• Payment and settlement systems (Finality and Netting) act</td>
</tr>
<tr>
<td></td>
<td>• Supervision of Financial Market Infrastructures in Singapore (MAS)</td>
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<td></td>
<td>• MAS’ Framework for Impact and Risk Assessment of Financial Institutions (MAS)</td>
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<tr>
<td></td>
<td>• New Rules to Strengthen Cyber Resilience of Financial Industry (MAS)</td>
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<td>• Guidelines on Risk Management Practices – Technology Risk Management (MAS)</td>
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<td></td>
<td>• Stored Value Facility Guidelines</td>
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<td>• Notice on Cyberhygiene</td>
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<tr>
<td><strong>European Union</strong></td>
<td>• GDPR</td>
</tr>
<tr>
<td></td>
<td>• PSD2 (stronger authentication, security incidents reporting, etc.)</td>
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<tr>
<td></td>
<td>• EC EU Cybersecurity Act</td>
</tr>
<tr>
<td></td>
<td>• Country specific resilience and cyber-security regulations</td>
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<tr>
<td><strong>United Kingdom</strong></td>
<td>• Data Protection Act (replaced by GDPR now)</td>
</tr>
<tr>
<td></td>
<td>• UK Minimum Cyber Security Standard</td>
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<tr>
<td></td>
<td>• UK National Cyber Security Strategy 2016-2021</td>
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<tr>
<td><strong>Sweden</strong></td>
<td>• GDPR (EU level)</td>
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<tr>
<td></td>
<td>• Swedish Act on Information Security Regarding Providers of Critical Infrastructure and Digital Services (Parliament)</td>
</tr>
<tr>
<td><strong>United Arab Emirates</strong></td>
<td>• Principles for Financial Market Infrastructure (PFMI) Assessment Methodology (2014)</td>
</tr>
<tr>
<td></td>
<td>• Risk Management Framework Regulation and Standards (2018) for banks</td>
</tr>
</tbody>
</table>
ATM TRANSACTIONS

DEFINITION
An automated teller machine (ATM) is an electronic telecommunications device that enables customers of financial institutions to perform financial transactions, such as cash withdrawals, deposits, transfer funds, or obtaining account information, at any time and without the need for direct interaction with bank staff.

HISTORY
ATMs were first operational in 1966 and developed from bankers’ needs in Japan, Sweden, the United Kingdom, and the United States. The first version of the ATMs was a Japanese device called the “Computer Loan Machine” supplied cash as a three-month loan at 5% p.a. after inserting a credit card.

Despite their cash dispensing facility, ATMs, in the short-term, are considered enablers of Cashless Societies due to the facility of performing several other digital transactions. However, in the long term, and with the increase of digital savviness and mobile digital transaction channels, it is expected that spread and availability of ATMs will decrease.

Digital Transactions
- Pay Utility Bills
- Bank Transfers
- Pay Insurance Premium
- Recharge Mobile
- Top-up Toll Gate Accounts

ATMS per 100,000 Adults (2017)

<table>
<thead>
<tr>
<th>Country</th>
<th>ATMs per 100,000 Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>162.0</td>
</tr>
<tr>
<td>Sweden</td>
<td>31.98</td>
</tr>
<tr>
<td>UK</td>
<td>128.13</td>
</tr>
<tr>
<td>Singapore</td>
<td>65.16</td>
</tr>
<tr>
<td>UAE</td>
<td>65.51</td>
</tr>
</tbody>
</table>

Source: Bank of International Settlements
UAE Data from UAE Central Bank Reports
E&M PAYMENTS

E-payments are defined as digital payments that are made over the internet for e-commerce activities. The largest segment of e-payments is the consumer-to-business (C2B) payments, which are used mainly for goods purchased in online stores.

Mobile payments or m-payments are defined as a form of payment where the mobile phone is used as a payment mode, not just as an alternative channel to send the payment instruction, and the payment information flow takes place in real-time.

The number of electronic payment transactions is expected to decrease due to the growing acceptance and adoption of mobile payments.

Source: World Payments Report
Direct Debit is the collection of an agreed amount from a bank/building society account by a service user, on request and/or authorization. Direct debits are typically used for recurring payments, such as credit card and utility bills, where the payment amounts vary from one payment to another.

The utilization of Direct Debit Authorization varies from one country to another, mostly based on financial habits, ease of setting up and canceling the authorization and the strength of the regulatory frameworks around it.

The UAE Direct Debit System was established in 2017, and has processed 13.4 million presented claims during 2018 valued at AED 57 billion. This was an increase of 45.4% in volume and 45.1% in value from the year 2017.

It is expected that Direct Debit will remain an integral part of cashless payment systems, specially with the expected development of technological and regulatory infrastructure enhancing the process.
A point of sale terminal (POS terminal) is an electronic device used to process card payments at retail locations. A POS terminal generally does the following:

- Reads the information off a customer's credit or debit card.

**HISTORY**
The first electronic cash registers goes back to 1973, developed by IBM.

Steady growth in POS terminals and cards issuance in the UAE to support both the demand and the supply sides. However, with the rise of other digital payment channels (e.g. NFC Payments and QR Codes), POS terminals may not exist at all, QR code or other future alternatives may become widely adopted.
**DEFINITION**
Wire transfer, bank transfer or credit transfer, is a method of electronic funds transfer from one person or entity to another. A wire transfer can be made from one bank account to another bank account or, recently, through Digital Wallets. Different wire transfer systems, in different countries, and operators provide a variety of options relative to the immediacy and finality of settlement and the cost, value, and volume of transactions.

**HISTORY**
The first widely used service for wire transfers was launched by Western Union in 1872 on its existing telegraph network.

Constant increase of credit transfer over the years, specially with a rise in demand and supply for real-time transfers.

### Values of Credit Transfer as ratio of GDP (Multiples) 2014 & 2017

<table>
<thead>
<tr>
<th>Country</th>
<th>2014</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>4.9</td>
<td>5.0</td>
</tr>
<tr>
<td>Singapore</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>3.7</td>
<td>3.8</td>
</tr>
<tr>
<td>UK</td>
<td>43.6</td>
<td></td>
</tr>
<tr>
<td>UAE</td>
<td>5.9</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Source: Bank of International Settlements
UAE Data from UAE Central Bank Reports
E-CHEQUES

DEFINITION
An electronic check or e check, is a form of payment made via the Internet, or another data network, designed to perform the same function as a conventional paper check.

HISTORY
There is early evidence of using cheques. In India, during the Maurya Empire (from 321 to 185 BC), a commercial instrument called the adesha was in use, which was an order on a banker desiring him to pay the money of the note to a third person.

Total Value of Presented Cheques
(AED Trillion)

Tradational cheque usage continues to drop globally due to rise of alternative acceptable guarantees, such as e-cheques and Direct Debit Authorities.

Values of Cheques as Ratio of GDP
(Multiple) 2015-2017

Source: Bank of International Settlements
UAE Data from UAE Central Bank Reports
History was deducted from Reserve Bank of India
**DEFINITION**
QR code payments are performed by scanning a QR code from a mobile app. Funds are either “pushed” from the consumer to the merchant or “pulled” by the merchant from the consumer.

**FACTS**
- Providers determine how to execute, clear and settle the payment without disrupting customer experience
- Initiate payment for card and non-card transactions
- Enable acceptance across variety of payment rails
- Push payments into the bank’s back office environment
- Standardize payment information for acceptance and processing

Scanning a QR code is considered to be very convenient and easy for customers. QR codes also eliminate the need for PoS terminals, which can be a cost burden for merchants.

Alipay is collaborating with Finland’s ePassi and Pivo, Norway-based Vipps, Spain’s MOMO, Portugal’s Pagaqui, and Austria’s Bluecode to adopt a unified QR code in a bid to bridge the region’s fragmented mobile payment landscape. All the six digital wallets have five million users combined and around 190,000 merchants in their payment networks in Europe.

Fifteen million small and micro-merchants in China use Alipay QR code payments.
DEFINITION
NFC payments are contactless payments that use near-field communication (NFC) technology to exchange data between readers and payment devices like Apple Pay and Android Pay eWallets or EMV chip cards.

Mobil was one of the most notable early adopters of a similar technology, and offered their "Speedpass" contactless payment system for participating Mobil gas stations as early as 1997.

FACTS
- Accepting NFC payments is easy and convenient
- Mobile payment technology is designed to be stable, safe, and secure
- Paying by smartphone is the new consumer normal
- Accepting mobile payments often deepens customer engagement
- The future is commerce-on-the-go, and the future is now
- Payments under an “honor-all-wallets” scenario
- NFC equipment is priced right for small merchants
Countries, including the UAE, have different architectures and breakdowns of Cashless Payments, with necessary functionalities in common.

**EXAMPLES**
- ATM Networks
- Cheque Clearing Systems
- Fast Payment Systems
- Fund Transfer Systems (LVPS-RTGS)

However, the biggest distinction propelling transition to cashless payments, is the existence of a Fast Payments System. The same does not yet exist in the UAE.

**DEFERRED NET**
A net settlement system where final settlements occur between participating banks at the end of a predefined settlement cycle when the net obligations between participants are calculated and presented to the settlement agent for settlement.

**PSP**
Payment Service Providers

<table>
<thead>
<tr>
<th>Country</th>
<th>Fast Payment System</th>
<th>Inter-PSP Settlement Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>NPP</td>
<td>Real-Time</td>
</tr>
<tr>
<td>Singapore</td>
<td>FAST</td>
<td>Deferred-Net</td>
</tr>
<tr>
<td>Sweden</td>
<td>Bit/Swish</td>
<td>Real-Time</td>
</tr>
<tr>
<td>UK</td>
<td>FPS</td>
<td>Deferred-Net</td>
</tr>
<tr>
<td>Mexico</td>
<td>SPEI</td>
<td>Real-Time</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Twint</td>
<td>Deferred-Net</td>
</tr>
<tr>
<td>UAE</td>
<td>Not Yet Available</td>
<td>Not Yet Available</td>
</tr>
</tbody>
</table>

Source: BIS Country Red Books
UAE analysis from discussion with central bank and synthesis from UAECB Reports
CASHLESS FRAMEWORK REPORT/CULTURE

CULTURE

Source: Smart Dubai Analysis
The younger the population is the more it tends to be technologically savvy and adaptable to change in payment systems.

Breakdown of UAE population
(Demographics)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14y</td>
<td>0.69 million</td>
<td>1.36 million</td>
</tr>
<tr>
<td>12-24y</td>
<td>0.81 million</td>
<td>1.21 million</td>
</tr>
<tr>
<td>25-54y</td>
<td>4.83 million</td>
<td>6.29 million</td>
</tr>
<tr>
<td>55-64y</td>
<td>0.45 million</td>
<td>0.54 million</td>
</tr>
<tr>
<td>65y+</td>
<td>0.11 million</td>
<td>0.14 million</td>
</tr>
</tbody>
</table>

% of Population Using Internet by Age & Country (Both sexes, Users of internet over 3 months period, 2017)

- Australia 30.3
- UK 40.5
- US 38.1
- Sweden 41.2

Source: CIA World Factbook 2018 est.
Source: UNECE Statistical Database.
Source: WAM, January 11, 2018
New categories of transactions are getting digitized, for example urban logistics services: cabs and taxis, food and grocery delivery, household.
The more people trust governments, the more likely they are to transition to digital payments.

Source: Govdata360.worldbank.org

Predictable Enforcement
(Scaled from range 0 (lowest Score) to 1 (highest score))
Global non-cash transactions per capita VS. corruption perception index, 2016

- Some countries score high in corruption perception index, yet they have low non-cash transaction per capita.
- More non-cash transactions lead to higher score in corruption perception index.
- Higher score on the corruption perception index leads to more non-cash transactions.
The increased use of digital payments could likely require many of the unbanked individuals in each city to open a bank account. For some individuals this may lead to banking fees that they otherwise avoid.
**HABITS & TRADITIONS**

**Panama**
**Caja de ahorros**
Participants deposit a set amount of money every month and receive the full sum at Christmas.

**Germany**
**Geld stinkt nicht**
 Meaning "cash doesn’t stink," it encourages the use of cash instead of cards for day to day living expenses.

**Muslim World**
**Zakat**
One of the five pillars of Islamic faith, Zakat sees the compulsory giving of at least 2.5% of one’s income to charity.

**Kenya**
**Harambee**
Swahili for “pull together,” this sees communities pool their resources to invest in projects for their mutual benefit.

**Muslim World**
**Dowry**
is a transfer of parental property, gifts, or money at the marriage of a daughter (bride).

**USA**
**Allowance**
Giving a small amount of cash to children weekly, to teach them about responsibility and how to make good financial choices.

**Greece**
**Harisma**
Wedding guests pin money to the clothes of the bride and groom to give them a fund for their future together.

**Jamaica**
**Susu**
Each member contributes a set amount on a monthly or weekly basis. At each susu, one member takes the money to invest in their needs, and it continues until everyone has received a lump sum.

**Muslim World**
**Eidya**
is a gift that is usually given to children by elder relatives and family friends as part of the celebration of the two Muslim holidays: Eid al-Fitr and Eid al-Adha. The most common type of eidya is cash money.

**India**
**Kuri Kalyanam**
To pay for big events such as wedding or house building, a family will host a party where guests donate a cash sum.

Source: Tem identur, que vollab ipicipi
The percentage of travel and tourism from the total economy for the selected countries is between 2.0%-5.0%.

Source: World Payment Report 2018
Countries with populations comprised of high percentages of these nationalities have very high outgoing remittance flow, and remittance is usually heavily cash-based.

### Countries with highest incoming remittance (US Billion Dollars)

<table>
<thead>
<tr>
<th>Country</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>72.20</td>
<td>62.7</td>
<td>69</td>
</tr>
<tr>
<td>China</td>
<td>61.0</td>
<td>61.0</td>
<td>64</td>
</tr>
<tr>
<td>Philippines</td>
<td>29.80</td>
<td>29.9</td>
<td>33</td>
</tr>
<tr>
<td>Mexico</td>
<td>25.70</td>
<td>28.5</td>
<td>31</td>
</tr>
<tr>
<td>Nigeria</td>
<td>20.89</td>
<td>19.0</td>
<td>22</td>
</tr>
<tr>
<td>Pakistan</td>
<td>20.10</td>
<td>19.8</td>
<td>20</td>
</tr>
<tr>
<td>Egypt</td>
<td>20.40</td>
<td>16.6</td>
<td>20</td>
</tr>
<tr>
<td>Vietnam</td>
<td>12.30</td>
<td>13.4</td>
<td>14</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>15.80</td>
<td>13.7</td>
<td>13</td>
</tr>
<tr>
<td>Nepal</td>
<td>5.8</td>
<td>6.4</td>
<td>6.68</td>
</tr>
</tbody>
</table>

### UAE Population by Nationality

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>2.62 million</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1.21 million</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>0.71 million</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.53 million</td>
</tr>
<tr>
<td>Iran</td>
<td>0.45 million</td>
</tr>
<tr>
<td>Egypt</td>
<td>0.40 million</td>
</tr>
<tr>
<td>Nepal</td>
<td>0.30 million</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>0.30 million</td>
</tr>
<tr>
<td>China</td>
<td>0.20 million</td>
</tr>
<tr>
<td>All Other Countries</td>
<td>1.71 million</td>
</tr>
<tr>
<td><strong>Total Expat Population</strong></td>
<td><strong>8.45 million</strong></td>
</tr>
</tbody>
</table>

Source: World Payment Report 2018
LETS GO CASHLESS!