The Federal Reserve Bank of Boston’s
2017 Cybersecurity Conference
CYBERSECURITY: The Nigerian Financial Services Industry
Nigeria at a glance: Geography

- 10x the size of California
- 2x the size of Nigeria
- 36 states
- Lagos: Commercial Capital
- Abuja: Federal Capital
Nigeria at a glance: Demographics

Population (millions, 2017 est)
- United States: 321
- Nigeria: 182

Median Age
- United States: 37.8
- Nigeria: 18.2

Life Expectancy
- United States: 79
- Nigeria: 53

Source: US Census Bureau
Nigeria at a glance: People & Culture

- Ethnic Groups: 250
- Indigenous Languages: Over 500
- Business Language: ENGLISH
Nigeria at a glance: Government

Type
Federal Republic

3 Tiers
Federal, State & LGA

3 Arms
Executive, Legislative & Judiciary
Nigeria at a Glance: Economy...

GDP: $486.80B

Agriculture: 21.1%
Industry: 19.4%
Services: 59.5%

USD/Naira Exchange Rate
$1 = N 306

Inflation Rate
2.5% (USD) 17.26% (Naira)

Unemployment Rate
4.9% (USD) 13.9% (Naira)
Nigeria Financial Services Landscape...

Regulators / Supervisors

Central Bank of Nigeria
Securities and Exchange Commission
National Insurance Commission
Nigerian Deposit Insurance Cooperation

Players

Banks 22
Bureaux -de- Change 2998
Microfinance Banks 984
Primary Mortgage Inst. 34
Development Finance Inst. 6
Changes that Defined the Nigerian Financial Services Landscape...

**SIZE**
- Bank Consolidation & Unbundling (Retail, Invest. & Merchant (89 to 22).

**SPEED**
- Payment cycle time reduced from 3 days to instant payment

**RTGS**
- DVP for high value transactions through SWIFT enabled RTGS

**VISION**
- Implementation of a robust long term payment system vision (PSV 2020)

**CHALLENGES**
- Financial Inclusion
- Aggregate Branch roll out, Mobile Banking, Agent Banking
- More convenient banking channels, Web, ATM, phones, POS etc.

**EMV**
- Change from Magnetic strip to chip and PIN, boosting investor confidence

The Federal Reserve Bank of Boston's 2017 Cybersecurity Conference
## Bank Categories and Capitalization

<table>
<thead>
<tr>
<th>Type</th>
<th>Category</th>
<th>Minimum Required Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deposit Money Banks</strong></td>
<td>Regional</td>
<td>10 billion</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>25 billion</td>
</tr>
<tr>
<td></td>
<td>International</td>
<td>50 billion</td>
</tr>
<tr>
<td><strong>Merchant Banks</strong></td>
<td>Regional</td>
<td>15 billion</td>
</tr>
<tr>
<td><strong>Non-Interest Banks</strong></td>
<td>Regional</td>
<td>5 billion</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>10 billion</td>
</tr>
<tr>
<td><strong>Microfinance Banks</strong></td>
<td>Unit</td>
<td>20 million</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>100 million</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>2 billion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Naira (₦)</th>
<th>$ Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>32.68M</td>
<td></td>
</tr>
<tr>
<td>81.7M</td>
<td></td>
</tr>
<tr>
<td>163.4M</td>
<td></td>
</tr>
<tr>
<td>49M</td>
<td></td>
</tr>
<tr>
<td>16.34M</td>
<td></td>
</tr>
<tr>
<td>32.68M</td>
<td></td>
</tr>
<tr>
<td>65,359.4</td>
<td></td>
</tr>
<tr>
<td>326,797.3</td>
<td></td>
</tr>
<tr>
<td>6.54M</td>
<td></td>
</tr>
</tbody>
</table>
Payment Channels Evolution: 2012 - 2016

Online Payments

Check Payments

The Federal Reserve Bank of Boston's
2017 Cybersecurity Conference
Payment Channels Evolution: 2012 - 2016
Payment Channels breakdown: 2016

Percentage distribution by value

- Online Payments: 85%
- CHEQUE: 8%
- ATM: 6%
- POS: 1%
Technology remains the key driver...

Nigeria
104m Internet Users
By 2020. More than Russia and Brazil

92% of transactions in 2016 were initiated from technology platforms
and related fraud and cybercrime incidents are rising...

67% of fraud incidents reported in 2016 were from technology channels.
Malware is a major concern

Source: Microsoft Corp
Sources of cybersecurity breach

- Advanced Persistent Threats (APTs)
- Insider & Internal Threats
- Mobile Banking Breaches
- Market Trading Breaches
- Denial of Service (DOS)
- Account Takeovers
- 3rd Party Payment Processor Breaches
- Supply Chain Infiltration
- Payment Cards Skimming
Impact of Cybercrime...

- Financial Losses (including costs of recovery)
- System Disruption (Downtime) and Denial of Service
- Reputational Damage
- Unauthorized Alteration/Modification of Financial Data
- Loss of Confidential Information
- Damage to Critical Systems
The key stakeholders...

- Presidency
- Legislature
- Judiciary
- Economic & Financial Crime Commission
- National Security Adviser (NSA)
- Department of State Security
- CBN
- CBN Executive Committee
- Cybersecurity Working Group
- Bankers Committee
- Nigeria Electronic Fraud Forum (NeFF)
- Nigerian Police
- CISO

The Federal Reserve Bank of Boston’s 2017 Cybersecurity Conference
Concerted effort to fight Cybercrime

Legislature
- Passed The Evidence Act into Law to facilitate admission of electronic evidence in Nigerian courts

NSA
- National Cybersecurity Policy and Strategy was published by Office of the National Security Adviser (NSA) in 2014

Police
- Critical National Infrastructure Cybersecurity strategy

CBN/Banks
- Nigerian Electronic Fraud Forum
Highlight of the Nigerian Cybersecurity Act...

Protection of Critical National Infrastructure

Unauthorized Modification of Computer Systems

Duties of Financial Institutions (Customer Verification, KYC)

Duties of Service Providers (Records retention/protection of Data)
Overview of our approach...

- **Tools and capabilities for ‘pervasive monitoring’**
- **AI and ML tools**
- **Heuristics and Forensics**
- **Highly skilled/certified Tech personnel.**

- **Technology**

- **People**
  - Awareness
  - Collaboration and Information Sharing
  - Board-level involvement

- **Process**
  - IT Risk Assessment and Pricing
  - More effective Supervision
Overview of ongoing initiatives...

- Bank wide Anti-Fraud Solution (BVN, CSOC, etc)
- Early Warning and Intelligence Sharing Capability
- Bankers Committee – Subcommittee on Payments System
The BVN Project…

52 Million Bank Accounts
28 Million Unique BVN Numbers

Total Accounts Linked with BVN is 40 Million
Total Accounts Not Linked with BVN is 12 Million

77%
CBN Initiatives to Combat Cybercrime

Virtual Currency...

**Rationale**
To develop capacity to monitor and supervise blockchain/cryptocurrencies activities in Nigeria; particularly in area of AML/CFT

**Outcome**
- The bank issues cautionary notice to stem abuse and fraud
- The implementation roadmap for Blockchain and cryptocurrency
Our Cybersecurity Journey…

- 2013: Became ISO 27001 Certified
- 2014: Launched Cyberwatch bulletin
- 2014: Developed 3-year strategic roadmap
- 2015: Established Industry electronic Fraud Forum
- 2015: Strengthen supervisory capability with core IT staff in Banking Supervision
- 2015: Initiated the process of building an Industry Risk Sharing Center
- 2016: Setup a Cyber Security Working Group
- 2016: Commence Implementation of Strategic Roadmap (CSOC, Threat Defense)
Outlook for 2017 ...

• Malware and insider abuse will remain leading concerns
• Ransomware and extortion are on the rise
• Increasing dependence on technology (e.g. internet of things, mobile banking,) is heightening our exposure
• Increasing vulnerabilities identified in technologies from well-known vendors
Conclusion

- A youthful and unemployed population can be lured into cybercrime easily, as barrier to entry is low.
- More disclosure needed to increase the incident response mechanism and knowledge sharing among industry players.
- Increase in business security spending on cyber defense capabilities to tackle rising and evolving cyber offense.
- Formal regulation of cybersecurity in the FSI to safeguard the trust in the financial system.
- Reputational damage is the highest risk factor.