



BANK OF GHANA

Payment Systems Oversight Annual Report, 2018

**Payment Systems Department
Bank of Ghana**

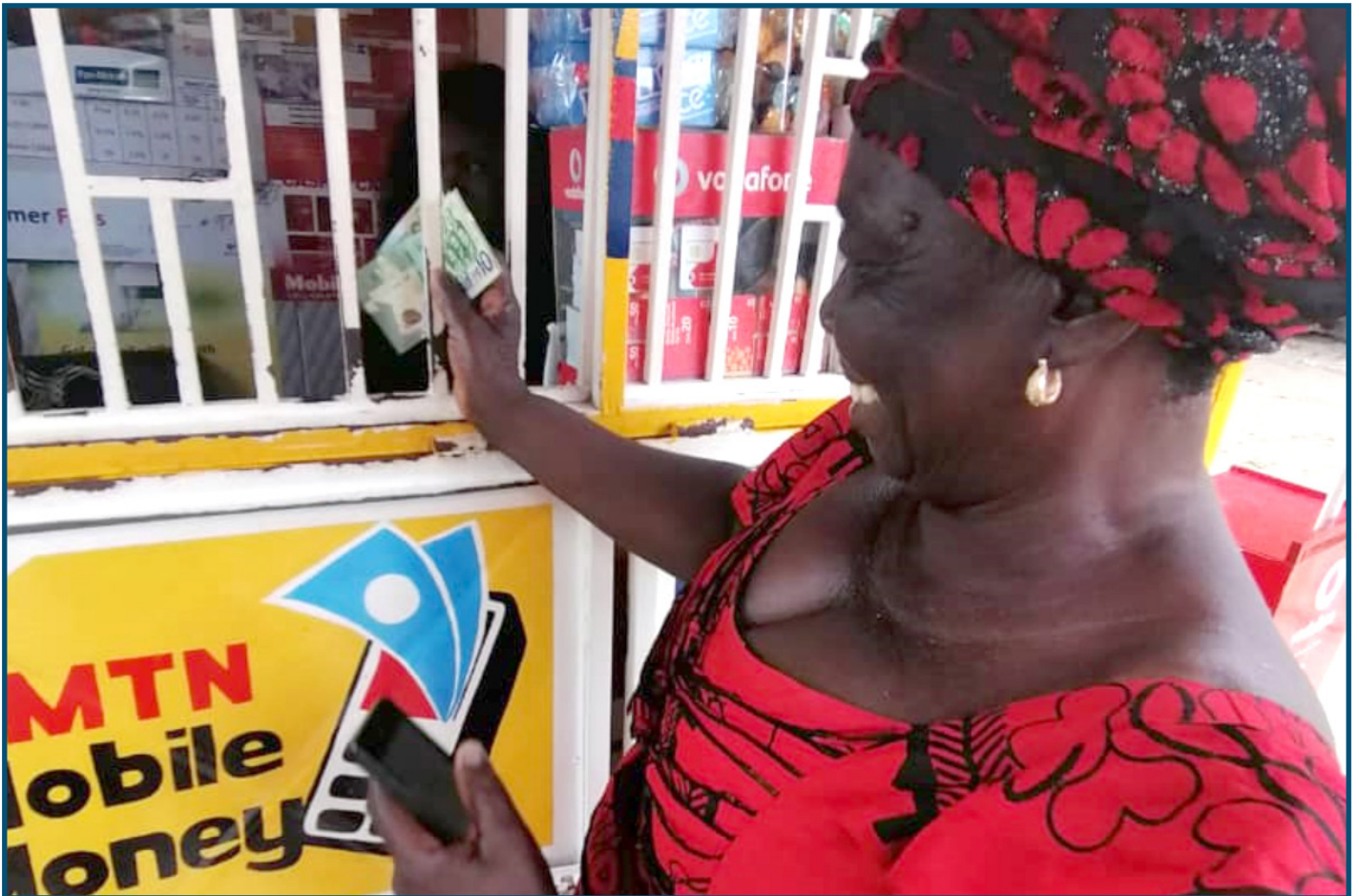


BANK OF GHANA

PAYMENT SYSTEMS OVERSIGHT

ANNUAL REPORT, 2018

Payment Systems Department
Bank of Ghana



Executive Summary

In 2018, the Bank of Ghana facilitated the passage of the Payment System and Services Bill, 2018, to guide the payments system landscape and also permit non-bank entities to operate in the payment ecosystem. A cyber security directive was also issued by the Bank to payment service providers. The directive provides a framework for payment service providers to implement cyber security measures to safeguard digital payments.

The rapid development in the payment ecosystem, such as Open Application Programming Interface (API) system, created opportunities for Financial Technology Firms (FinTechs) to improve their products' time to market, reduce development cost, enhance product flexibility and improve market competitiveness. FinTechs, during the year, also received significant global policy support through adoption of the IMF/World Bank Bali Agenda on FinTechs (October 2018).

Globally, financial institutions adapted their systems and processes to safeguard payment systems from emerging threats. Some of the financial institutions replaced their legacy systems, while others collaborated with FinTechs and mobile money operators to offer innovative products and services. Regulatory reforms to create enabling payment environment continued in many countries. Some countries initiated policies such as regulatory sandbox to nurture FinTechs, while others enacted new payment laws to engender competition and permit non-bank entities to play in the payment ecosystem. Regulatory Technology (RegTech) solutions were also implemented by some countries to enhance their supervisory frameworks.

Domestically, the retail payments interoperability project was completed and helped to enhance the overall efficiency of retail payments. Funds were transferred seamlessly from one mobile money platform to another. Similarly, funds were transferred from mobile money wallet to bank account and vice versa. In addition, the E-Zwich payment system was integrated with mobile money wallets, while a prototype agent registry was developed for the payment ecosystem and piloted in 2018.

Migration of the payment card industry from

magnetic stripe technology to Europay Mastercard Visa (EMV) chip and PIN technology was completed in the first quarter of 2018, with a liability shift cut-off date of April, 2018. Most banks' cards and systems during the year were EMV compliant, while the remaining banks were at various stages of the migration process.

Efforts at ensuring development of the FinTech industry culminated in the establishment of the Ghana Chamber of Technology as its umbrella body. The chamber provided a forum for FinTechs to share experiences and also served as a single point of interaction with the Bank.

The Bank approved 27 products and services for 16 financial institutions compared with 38 products and services approved for 21 institutions in 2017. The approved products were mainly in-bound remittances, agency banking, mobile banking services and mobile money pension service.

All the major non-cash payment streams in 2018 showed significant increases in both volume and value of transactions with the exception of Ghana Interbank Settlements (GIS) and Cheque Codeline Clearing (CCC) which recorded a decline in value and volume of transactions respectively. The number of E-Zwich card holders of 2,774,799 as at end December 2018 showed an increase of 17.4 per cent over the 2017 position. Gh-Link (the National Switch) transactions declined both in volumes and values during the year. GhIPSS Instant Pay (GIP), a service which permits payments to be sent across financial institutions electronically from a customer's bank account to a beneficiary bank account however increased in both volume and value. The number of mobile money accounts increased by 35.9 per cent to 32,554,346 at end December 2018. Total volume and value of mobile money transactions and total float balances (equivalent cash of the electronic money held by bank) increased during the year.

The number of credit cards issued in 2018 also increased by 57.2 per cent to 23,102 while debit cards declined by 20.1 per cent to 4,754,514. Prepaid cards registered a 151.8 per cent increase to 216,592 in 2018.

Risk assessment in the payment ecosystem was

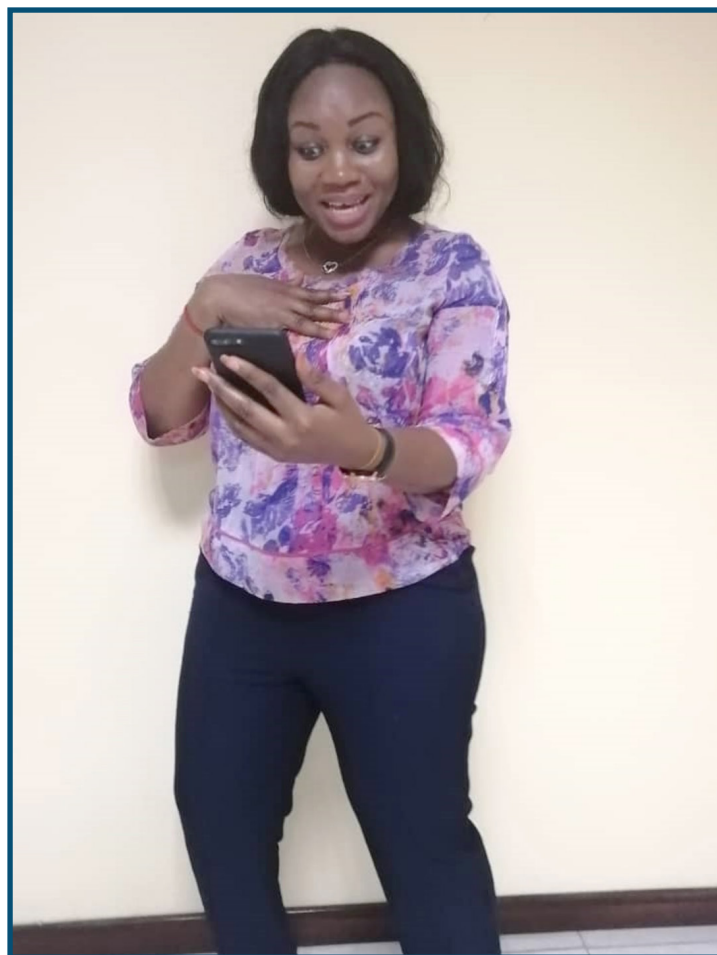
undertaken in line with the Principles for Financial Market Infrastructures (PFMI) of the Committee on Payments and Market Infrastructures, International Organisation of Securities Commissions (CPMI-

IOSCO). Credit, liquidity, operational, legal and settlement risks in the payment systems were assessed and found to be well contained.



Content

CHAPTER 1: GLOBAL DEVELOPMENTS IN THE PAYMENT ECOSYSTEM	1
1.1 Introduction	1
1.2 Legal and Regulatory Environment	1
1.3 Technology	1
1.4 Payment Products	1
CHAPTER 2: MODERNISATION OF THE GHANAIAN PAYMENT SYSTEM	2
2.1 Legal and Regulatory Reforms	2
2.2 Agent Registry	2
2.3 Retail Payments System	2
2.4 Retail Payment Interoperability	2
2.5 Migration to EMV technology	2
2.6 Financial Technology Companies	2
2.7 National Identification System	3
2.8 Approved Product and Services	3
CHAPTER 3: PAYMENT SYSTEM TRANSACTIONS	5
3.1 Ghana Interbank Settlement (GIS) System	5
3.2 Cheque Codeline Clearing (CCC)	5
3.3 Ghana Automated Clearing House	5
3.4 Gh-Link™ (National Switch)	5
3.5 GhIPSS Instant Pay	5
3.6 Mobile Money Services	5
3.7 Internet and Mobile Banking	6
3.8 Automated Teller Machines and Points of Sale Terminals	6
3.9 Electronic Payment Cards (Debit, Credit and Prepaid Cards)	6
3.10 Retail Payment Instruments	6
CHAPTER 4: PAYMENT SYSTEM OVERSIGHT	9
4.1 Risk Management	9
4.2 Application of Principles for Financial Market Infrastructures	9
4.3 Participation in Ghana Interbank Settlement Systems	9
4.4 Submission of Returns by System Operators	9
4.5 Collaboration with Key Stakeholders	10
4.6 ATM and POS Transaction Fees and Tariffs	10
4.7 Mobile Money Services Fees and Tariffs	10
CHAPTER 5: FINANCIAL INCLUSION	11
5.1 Financial Inclusion Strategy	11
5.2 Developments in Financial Inclusion	11
APPENDIX	12



1. Global Developments in the Payment Ecosystem

1.1 Introduction

Global digital payments and deployment of alternative payment solutions increased during the year, on account of shifts in consumer preferences, technological innovations, increasing global interconnectedness, and changes to the regulatory environment.

During the review year, banks faced increasing competition as activities of non-bank payment service providers intensified. Fintechs, in particular, gained prominence during the year as they capitalised on the use of Open Application Programming Interfaces (APIs). Relying on Open APIs, Fintechs reduced development costs and improved the time-to-market and flexibility of payment products. Banks responded to these competitive pressures from non-bank players by enhancing digital payments through investments in technology.

Regulatory reforms to provide enabling environment for digital payments continued in many countries. In some jurisdictions, policies were adopted to nurture innovations through the implementation of regulatory sandboxes. In addition, cyber security directives were issued by some countries including Ghana, to promote innovation without risking financial stability.

1.2 Legal and Regulatory Environment

Laws, regulations and guidelines were introduced in various central banks to provide a legal basis for the evolving payment systems environment. In addition, the regulatory reforms were initiated to promote innovation, competition, transparency, consumer protection, and cyber security risk management. Examples of regulatory reforms around the globe include the:

- European Payment Services Directive 2 - to engender competition, strengthen payment systems security, promote efficiency and consumer protection;
- Singapore E-payments User Protection Guidelines - to protect electronic transactions; and
- Mauritius National Payment Systems Act 2018- to provide a framework for regulation, oversight and supervision of payment systems.

1.3 Technology

Financial Institutions adapted their systems and processes to compete in the evolving payments ecosystem. Legacy infrastructures that did not integrate with APIs were replaced with API compatible systems to improve service delivery. Open API engendered collaboration between banks and financial technology companies, and led to faster rollout of products and services, improved access to financial services, reduced cost of service provision and enhanced customer experience.

Emerging payment solutions were largely based on mobile technology with significant adoption in emerging markets. China led growth in mobile payments with e-wallets such as Alipay and Wechat Pay. Mobile payments is expected to grow on the back of open APIs, high penetration of mobile phones in emerging markets, increasing reduction in the prices of smart phones and an integrated payments environment. Blockchain, the technology driving bitcoin, also received positive attention from mainstream financial sector players, including regulators, on account of its potential for relatively cheaper and efficient funds transfer with an immutable audit trail. Prototype blockchains were developed by regulatory institutions and financial institutions to test for certain use cases.

The growing importance of technology in supervision and regulation resulted in the implementation of various RegTech solutions by regulators. It is anticipated that advances in artificial intelligence and machine learning would enhance the capabilities of technology for effective supervision.

1.4 Payment Products

Digital payment transactions continued to increase during the review year. Mobilephone-based payments and card transactions increased significantly over the period, with China, India and Sub-Saharan Africa registering significant growth. Not all innovations in the digital payment space were driven by banks. The emergence of Open APIs, for example, made it easier for customers to use third-party payment providers in payment applications.

QR codes were also promoted, in 2018, as an affordable alternative to Point of Sale (POS) devices. This was to encourage merchant acceptance of electronic payments, particularly among small and medium size enterprises.

2. Modernisation of the Ghanaian Payment System

The increasing digitisation of global payments required that Ghana aligned its payment system with global developments to facilitate secure deployment and adoption of digital payments. Major developments in the payments ecosystem for the period under review are highlighted in this section.

2.1 Legal and Regulatory Reforms

The Bank promoted the Payment Systems and Services Bill to enhance safe and secure digital payments. The Bill was submitted to Parliament for consideration and, at end-December 2018, was at the second consideration stage.

Digital payment, during the review year, was also supported with the drafting of the Guideline for Electronic Payment Channels. The Guideline aims at assisting payment service providers in the deployment and management of electronic payment channels in a manner that engenders customer trust in digital payments.

2.2 Agent Registry

A prototype agent registry platform was developed to improve monitoring of agent activities, facilitate identification of agents' access points, and provide evidence-based data for policy interventions. Piloting of the platform commenced in the latter part of the year and is expected to go-live in 2019. The platform is also expected to be integrated with a Short Message Service (SMS) alert feature and to generate unique QR codes for all agents in the registry.

2.3 Retail Payments System

The retail sub sector oversight activities were geared towards engendering consumer trust and confidence in electronic payments. Consumer protection and recourse mechanisms, information technology, security and data protection, service interruptions and business continuity plans were examined by the Bank in conjunction with other stakeholders. The Bank also issued a cyber-security regulation for the financial industry to enhance service provider systems and capabilities against cyber risk. Overall, the retail payment space was assessed to be sound.

2.4 Retail Payment Interoperability

The retail payments interoperability project, which was successfully launched in May 2018, is

made up of the mobile money sub-sector and the interbank retail payment sub-sector. Under the mobile money sub-sector, funds are transferred seamlessly from across mobile money wallets on different platforms. The integration of the mobile money sub-sector with the interbank retail payment sub-sector ensures transfer of funds across mobile money wallets and bank accounts. Similarly, transfer of funds from mobile money wallets to E-Zwich biometric payment cards is now feasible.

The total volume and value of transactions recorded on the interoperability system increased from 96,907 and GH¢8.31 million in May 2018 to 2,266,631 and GH¢212.89 million as at December 2018 respectively.

2.5 Migration to EMV technology

Migration of the payment card industry from magnetic stripe technology to Europay Mastercard Visa (EMV) chip and PIN technology was completed in the first quarter of 2018 with a liability shift for non-compliant transactions in April 2018. A large number of bank cards and systems are currently EMV compliant. The remaining banks, in 2018, were at various stages of the migration process. Complete EMV migration is expected to be achieved in 2019.

2.6 Financial Technology Companies

FinTechs played a significant role in the payment ecosystem in the areas of product development, delivery channels, data analytics, data management, technology support, and systems development. Collaboration between FinTechs and financial institutions intensified during the year and resulted in introduction of digital savings, investment, credit, insurance, and pension products. Completion of the interoperability project facilitated rollout of innovative mobile merchant point of payment solutions and placed further demands on FinTech services.

Efforts to ensure orderly development of the FinTech industry resulted in the establishment of the Ghana Chamber of Technology as an umbrella body for FinTechs. The Chamber provides a forum for FinTechs to share experiences and also serve as a single point of contact with the central bank.

2.7 National Identification System

Prospects for digital payments adoption was enhanced with the implementation of the National Identification System. Issuance of biometric national identification cards to the public progressed steadily in 2018 and is expected to mitigate risks of identity fraud. This will enhance the safety and security of payment systems. The registration process is expected to be completed in 2020.

2.8 Approved Product and Services

In 2018, the Bank approved 27 products and services for 16 financial institutions (see Table 1) compared with a total of 16 and 38 products and services approved in 2016 and 2017 respectively. The approved products were in-bound remittance, agency banking, mobile money, card issuance, mobile banking, and mobile money pension services. The breakdown of the products and services approved by the Bank from 2016 to 2018 are as shown in Table 1.

Remittances

During the year, 13 remittance products were approved for eight banks to partner 10 Money Transfer Organisations (MTOs) to lodge inward remittances into bank accounts, mobile money wallets or cash pick-up over the counter. United Bank for Africa (Ghana) Limited (UBA), Barclays Bank (Ghana) Limited (BBG), Access Bank (Ghana) Limited (ABL), and Zenith Bank (Ghana) Limited (ZBG) were granted approval to lodge inward remittances into bank accounts, mobile money wallets or both.

Agency Banking

Cal Bank (Ghana) Limited, Ecobank (Ghana) Limited, First National Bank (Ghana), and Beige Bank Limited obtained the Bank's approval to engage registered Oil Marketing Companies (OMCs), pharmaceutical shops, general merchants, Fast Moving Consumer Goods (FMCG) distributors and retailers as agents, to extend banking services to the general public. The agents provided basic banking services such as cash deposits and withdrawals, account opening, airtime purchases, and bill payments.

Mobile Money Services

The Bank approved four mobile money products for three banks in 2018 (See Table 2). FBN Bank Limited and Stanbic Bank (Ghana) Limited were granted approval to provide mobile money services as agents of MTN mobile money, AirtelTigo money, and Vodafone cash.

The Bank granted approval to FBN Bank to serve as a float holding bank for MTN mobile money, AirtelTigo money, and Vodafone cash.

Republic Bank (Ghana) Limited was also authorised to hold float accounts for Vodafone Cash and to carry out the following services:

- Banking services to Vodafone Cash by maintaining a pool account;
- Act as a super-agent in collection of all payments from Vodafone Cash operating agents nationwide; and
- Collect any other stipulated payments on behalf of Vodafone Cash.

Card Issuance

The Bank granted approval to Guaranty Trust Bank (Ghana) Limited, OmniBank and United Bank for Africa (UBA) to issue Visa and MasterCard prepaid, debit and credit cards to their customers. UBA obtained the Bank's approval to upgrade its card services through issuance of MasterCard Platinum debit cards to its high net-worth customers. Table 3 provides the breakdown of the Bank's approval to banks to offer cards services.

Mobile Banking Services

Bank of Ghana authorised FBN Bank and GCB Bank to roll out mobile banking solutions to provide convenience for their customers.

FBN Bank's application "FBN Mobile" and USSD Short Code *894# were approved by the Bank to allow the bank's customers to perform basic banking services. The solution was introduced to enable customers have timely access to their accounts, perform transactions from anywhere around the world, monitor accounts online in near real-time and provide enhanced security for all online transactions through the use of Personal Identification Number (PIN).

The Bank, during the review year, also approved an e-collection solution for GCB Bank. The solution is a pre-installed application on a hand held device. The devices are used by Remote Tellers of the bank to enhance efficiency in deposit mobilization, while providing convenience to customers by giving real time access to account balances.

Mobile Money Pension Product: My Own Pension

Fidelity Bank (Ghana) Limited was granted approval to roll out "My Own Pension (MOP)". This is a retirement pension plan which provides secure retirement income to individuals particularly those in the informal sector. The scheme is administered in line with guidelines on pensions issued by the National Pensions Regulatory Authority (NPR). The product offers MTN Mobile Money subscribers and non-subscribers the opportunity to transfer premium payments into the pension scheme using their mobile money wallets.

Table 1: Total Number of Approved Products and Services

Product/Year	2016	2017	2018	Total
Remittance	1	6	13	20
Agency Banking	2	5	4	11
Mobile Money Services	0	5	4	9
Card Issuance	4	3	3	10
Mobile Banking Services	8	11	2	21
Mobile Money Pension	0	0	1	1
POS	0	3	0	3
Acquiring Services	1	0	0	1
Agregation Services	0	1	0	1
E-Commerce	0	3	0	3
Various Products	0	1	0	1
Total	16	38	27	81

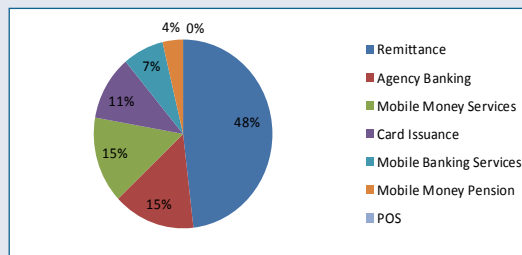


Table 2: Mobile Money Services

Product/Year	2017	2018	Total
Mobile Money Services - Agent	2	2	4
FBN Bank	0	1	1
Stanbic bank	0	1	1
UMB	2	0	2
Mobile Money Services - Float	1	1	2
ARB Apex	1	0	1
FBN Bank	0	1	1
Mobile Money Services - Float & Agent	2	1	3
ARB Apex	1	0	1
OmniBank	1	0	1
Republic Bank	0	1	1
Total	5	4	9

Table 3: Cards Issuance

Product/Year	2016	2017	2018	Total
Cards				
Barclays Bank	1	0	0	1
Ecobank Ghana	0	1	0	1
GT Bank	0	0	1	1
OmniBank	0	0	1	1
Stanbic Bank	0	1	0	1
Standard Chartered Bank	0	1	0	1
UBA	1	0	1	2
Zenith Bank	2	0	0	2
Total	4	3	3	10



3. Payment System Transactions

During the review year, the Bank exercised oversight of the major financial market infrastructures (FMIs) comprising Ghana's Real Time Gross Settlement (RTGS) system; Cheque Codeline Clearing (CCC) system; Ghana Automated Clearing House (GACH) system; National Biometric Smartcard Payment System - E-Zwich; National Switching and Processing System - gh-link™; GhIPSS Instant Pay (GIP), Ghana's Paper Payment Instrument Accreditation Scheme; and the Mobile Money sub-sector.

Table 4 refers annual aggregate volumes and values of payment system transactions.

3.1 Ghana Interbank Settlement (GIS) System

The total volume of Ghana Inter-bank Settlement (GIS) transactions recorded an annual growth of 30.8 per cent to 1.22 million in 2018. Total value of transactions, however, went down by 5.8 per cent to GH¢1,963.47 billion, resulting in a decline in the average value per transactions of 27.9 per cent to GH¢1.61 million (*See Table 5*).

3.2 Cheque Codeline Clearing (CCC)

The total volume of interbank cheques cleared in 2018 declined by 1.1 per cent to 7.26 million in 2018. The value of transactions, however, went up by 13.3 per cent to GH¢203.5 billion. The marginal decline in growth in the volume of interbank cheques could partly be attributed to increased adoption of other digital payment options, such as mobile money and GhIPSS Instant Pay (*See Chart 1*).

3.3 Ghana Automated Clearing House

(a) Direct Credit

The total volume of transactions cleared through the direct credit system in 2018 was 6.65 million, an increase of 9.6 per cent. Total value of direct credit transfers increased to GH¢30.23 billion from GH¢24.33 billion in 2017. Express Automated Clearing House (ACH) direct credit recorded a growth of 44.6 per cent and 67.0 per cent in both volume and value of transfers over the 2017 positions of 482,482 and GH¢4.52 billion, respectively (*See Table 6*).

(b) Direct Debit

Total volume of direct debit transactions decreased

to 861,169 in 2018, from 940,649 in 2017. However, the value of transactions increased by 10.2 per cent to GH¢139.15 million. Average value per transaction increased to GH¢161.58 in 2018, from GH¢134.25 in 2017 (*See Chart 2*).

E-Zwich Transactions

The number of E-Zwich card holders increased to 2.77 million in December 2018, from 2.36 million in December 2017. The total volume of E-Zwich transactions declined by 7.3 per cent to 7.76 million, while total value of transactions increased by 64.7 per cent to GH¢5.65 billion in 2018. The decline in volume of transactions was partly attributed to a drop in purchases, cash deposits, and cash withdrawals on the E-Zwich platform by 91.1, 67.4 and 19.4 per cent, respectively (*See Table 7*).

3.4 Gh-Link™ (National Switch)

The total volume of transactions on the gh-link™ platform was 1.83 million in 2018 compared to 2.34 million in 2017. Also, the total value of transactions was GH¢543.74 million in 2018 compared to

GH¢603.43 million in 2017. ATM transactions continued to dominate on the gh-link™ platform and constituted more than 99.0 per cent of the transactions in 2018 (*See Chart 3*).

3.5 GhIPSS Instant Pay

In 2018, the total volume of GhIPSS Instant Pay (GIP) transactions increased to 143,879 from 41,795 in 2017. Also, the total value of transactions increased to GH¢534.04 million from GH¢83.2 million (*See Chart 4*).

3.6 Mobile Money Services

The total registered mobile money accounts was 32.55 million at end-December 2018 compared to 23.95 million at end-December 2017. Out of the total registered mobile money accounts, the number of active accounts increased by 17.4 per cent to 13.06 million in 2018. Also, the number of registered mobile money agents increased to 396,599 in 2018, from 194,688 in 2017.

Total value of mobile money transactions increased to GH¢223.21 billion in 2018 from GH¢155.84 billion in 2017, while the total float balance grew by 13.5 per cent to GH¢2.63 billion (*See Table 8*).

3.7 Internet and Mobile Banking

Number of registered internet banking customers declined by 12.9 per cent from 936,965 in 2017 to 815,904 in 2018. Similarly, the value of Internet Banking transactions decreased to GH¢6.27 billion in 2018 from GH¢9.74 billion in 2017.

Over the period, however, the number of registered mobile banking customers increased to 3,891,269 in 2018 from 2,110,984 in 2017. Similarly, the value of transactions increased to GH¢5.66 billion in 2018 from GH¢1.50 billion in 2017 (See Table 9).

3.8 Automated Teller Machines and Points of Sale Terminals

The cumulative number of Automated Teller Machines (ATMs) deployed by banks increased to 2,139 at end-December 2018 from 2,044 in 2017. The number of Point of Sale (POS) terminals went up by 12.19 per cent from 7,356 at end-December 2017 to 8,253 in December 2018 (See Table 10 and 11).

3.9 Electronic Payment Cards (Debit, Credit and Prepaid Cards)

The total number of debit cards issued by banks at end December 2018 decreased to 4,754,514 from 5,953,484 in 2017. The reduction in the number of debit cards was on account of GCB Bank phasing out all its Magnetic Stripe Cards issued to their customers and migrating to the EMV cards standard.

Of the total issued debit cards, 66.1 per cent were International scheme cards while the remaining were bank proprietary cards. During the review year, the number of international scheme cards increased by 7.9 per cent, while the number of bank proprietary cards declined by 47.0 per cent.

The number of credit cards issued in 2018 increased by 57.2 per cent from 14,698 cards in December 2017 to 23,102, while the number of institutions issuing credit cards increased from five to seven in 2018.

Prepaid cards issued in 2018 increased to 216,592 from 86,017 in 2017. The increase in the number of prepaid cards was on account of new banks authorised by the Bank of Ghana to provide prepaid card services (See Table 12).

3.10 Retail Payment Instruments

Retail payment instruments facilitate transfer of funds and are broadly grouped into cash (banknotes and coins) and cashless instruments (paper-based or electronic). Electronic payment instruments are issued by Payment Service Providers (PSPs) such as banks, SDIs, and electronic money issuers. These instruments are classified into electronic transfer-based instruments, electronic money-based instruments and payment card-based instruments.

Chart 1: Cheque Codeline Clearing (CCC)

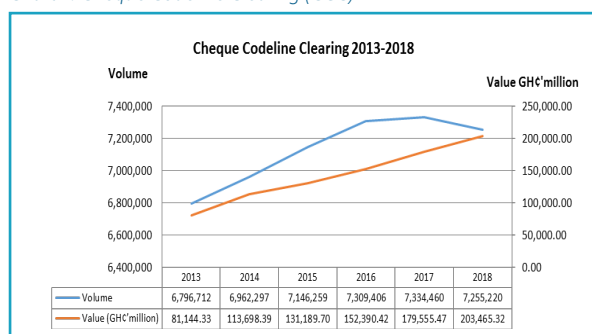


Chart 2: GACH Direct Debit Transactions

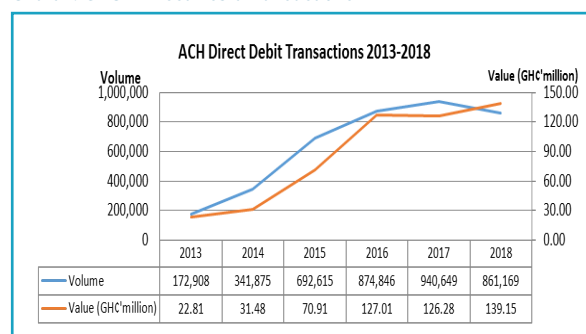


Chart 3: Gh-Link™ Transactions

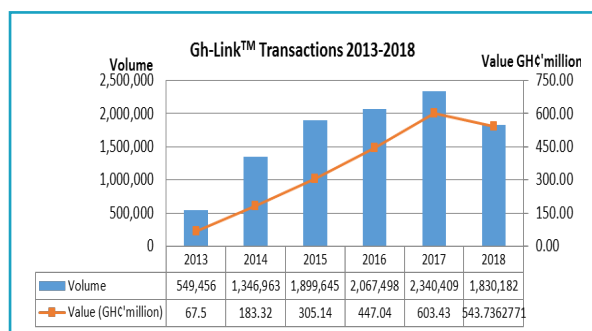
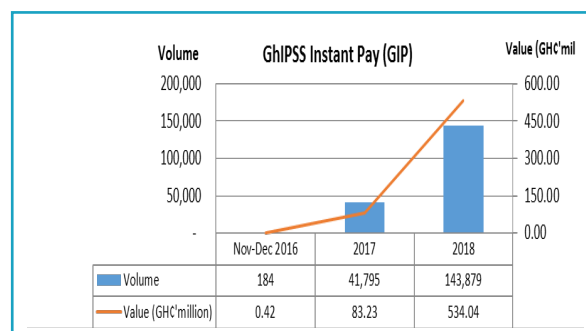


Chart 4: GIP Transactions



PAYMENT SYSTEMS OVERSIGHT ANNUAL REPORT 2018

Table 4: Total Transactions of Non-cash Payment Systems

Payment System	2017		2018		Change 2018		%Change 2018	
	Volume	Value (GH¢ m)	Volume	Value (GH¢ m)	Volume	Value (GH¢ m)	Volume	Value
GIS	934,234	2,083,846.27	1,221,650	1,963,465.27	287,416	-120,381	30.76	-5.78
CCC	7,334,460	179,555.47	7,255,220	203,465.32	-79,240	23,910	-1.08	13.32
GACH Direct Credit	6,061,093	24,327.26	6,645,126	30,226.94	584,033	5,900	9.64	24.25
GACH Direct Debit	940,649	126.28	861,169	139.15	-79,480	13	-8.45	10.19
E-Zwich	8,367,017	3,431.49	7,759,354	5,651.14	-607,663	2,220	-7.26	64.68
gh-link	2,340,409	603.43	1,830,182	543.74	-510,227	-60	-21.8	-9.94
GhIPSS Instant Pay (GIP)	41,795	83.23	143,879	534.04	102,084	451	244.25	541.64
Mobile Money	981,564,563	155,844.84	1,454,470,801	223,207.23	472,906,238	67,362	48.18	43.22

Table 5: Ghana Interbank Settlement (GIS) Transactions - (RTGS)

Indicators	2014	2015	2016	2017	2018	Annual Growth (%)
Volume	699,956	794,282	889,709	934,234	1,221,650	30.76
Value (GH¢ million)	758,312.16	1,032,544.00	1,670,369.46	2,083,846.27	1,963,465.27	-5.78
Average value per transaction GH¢	1,083,371.18	1,299,971.55	1,877,433.48	2,230,539.96	1,607,224.06	-27.94

Table 6: GACH Direct Credit Transactions

Indicators	2015	2016	2017	2018	2018 Change	2018 Growth (%)
Volume	4,668,636	5,242,610	6,061,093	6,645,126	584,033	9.64
Value (GH¢ million)	15,075.07	19,245.65	24,327.26	30,226.94	5,899.68	24.25
Average value per transaction GH¢	3,229.01	3,671.01	4,013.68	4,548.74	535.06	13.33
Express ACH Direct Credit Volume	250,222	279,959	482,482	697,642	215,160	44.59
Express ACH Direct Credit Value (GH¢million)	2,057.59	2,693.81	4,523.00	7,553.15	3,030.16	66.99

Table 7: E-Zwich Transactions

Indicators	2014	2015	2016	2017	2018	Annual Growth (%)
Total Number of Cards Issued	1,084,121	1,369,369	1,878,044	2,364,456	2,774,799	17.35
Cards with Value (% of total)	38.72	44.8	48.5	50.71	53.24	4.99
Value on Cards (GH¢million)	8.76	29.02	53.57	74.43	123.19	65.52
Average Value Per card (GH¢)	20.9	47.3	58.79	62.07	83.38	34.33
Volume of Transactions	625,167	2,251,101	5,365,085	8,367,017	7,759,354	-7.26
Value of Transactions (GH¢million)	272.7	922.9	2,362.96	3,431.49	5,651.14	64.68

Table 8: Mobile Money Services

Indicators	2015	2016	2017	2018	2018 Change	2018 Growth (%)
Total number of mobile voice subscription (Cumulative) ¹	35,008,387	38,305,078	37,445,048	40,934,875	3,489,827	9.32
Registered mobile money accounts (Cumulative)	13,120,367	19,735,098	23,947,437	32,554,346	8,606,909	35.94
Active mobile money accounts ²	4,868,569	8,313,283	11,119,376	13,056,978	1,937,602	17.43
Registered Agents (Cumulative)	79,747	136,769	194,688	396,599	201,911	103.71
Active Agents ³	56,270	107,415	151,745	180,664	28,919	19.06
Total volume of transactions	266,246,537	550,218,427	981,564,563	1,454,470,801	472,906,238	48.18
Total value of transactions (GH¢million)	35,444.38	78,508.90	155,844.84	223,207.23	67,362.39	43.22
Balance on Float (GH¢million)	547.96	1,257.40	2,321.07	2,633.93	312.86	13.48

¹ Source: National Communications Authority (NCA)

² The number of accounts which transacted at least once in the 90 days prior to reporting

³ The number of agents who transacted at least once in the 30 days prior to reporting

Table 9: Internet and Mobile Banking

		2015	2016	2017	2018	Growth (%)
Internet Banking	Number of registered customers	840,532	962,487	936,965	815,904	-12.92
	Volume of transactions	999,439	2,705,191	2,437,785	3,205,878	31.51
	Value of transactions (GH¢)	2,286,702,322	6,779,205,499	9,739,336,941	6,267,223,830	-35.65
	Average volume of transactions per day	5,461	7,391	6,679	8,783	31.51
Mobile Banking	Number of registered customers	1,449,374	2,175,644	2,110,984	3,891,269	84.33
	Volume of transactions	5,440,387	6,821,838	7,036,285	14,805,878	110.42
	Value of transactions (GH¢)	178,588,021	357,383,111	1,501,372,536	5,658,399,344	276.88
	Average volume of transactions per day	29,729	18,639	19,277	40,564	110.43

Table 10: Automated Teller Machines and Points of Sale

	2015	2016	2017	2018	(absolute) Change 2018	Growth (%)
Automated Teller Machines (ATMs)	912	1,928	2,044	2,139	95	4.65
Point of Sales (POS) terminals	4,841	6,501	7,356	8,253	897	12.19

Table 11: Regional Distribution of ATMs and POS Terminals at end-December, 2018

REGIONAL DISTRIBUTION	ATM		POS	
	2017	2018	2017	2018
Greater Accra Region	1,194	1,234	5,234	5,969
Ashanti Region	273	291	655	693
Western Region	152	169	334	346
Central Region	99	101	277	279
Brong Ahafo Region	84	90	203	213
Eastern Region	75	77	243	284
Northern Region	75	73	131	149
Volta Region	52	54	122	146
Upper East Region	24	30	81	94
Upper West Region	16	20	76	80
Total number deployed (Cumulative)	2,044	2,139	7,356	8,253

Table 12: Electronic Payment Cards

Type	2015	2016	2017	2018	Growth (%)
Debit Cards:	4,304,097	5,446,030	5,953,484	4,754,514	(20.14)
Banks' own proprietary cards	2,209,768	3,222,647	3,041,228	1,612,291	(46.99)
International Scheme Cards	2,094,329	2,223,383	2,912,256	3,142,223	7.90
Visa			2,390,070	2,715,910	13.63
MasterCard			522,186	426,313	(18.36)
Credit Cards:	5,438	9,217	14,698	23,102	57.18
Banks' own proprietary cards	-	-	-	-	-
International Scheme Cards	5,438	9,217	14,698	23,102	57.18
Visa			13,709	22,020	60.62
MasterCard			989	1,082	9.40
Prepaid Cards:	44,250	58,907	86,017	216,592	151.80
Banks' own proprietary cards	-	-	-	-	-
International Scheme Cards	44,250	58,907	86,017	216,592	151.80
Visa			76,668	197,685	157.85
MasterCard			9,349	18,907	102.24

4. Payment System Oversight

4.1 Risk Management

The Bank of Ghana, during the year, adopted a risk-based approach to its oversight responsibilities on account of rapid changes in the payment ecosystem from the evolution of digital technologies. Payment systems of systemic importance were subjected to assessment in line with the Principles for Financial Market Infrastructures (PFMI) of the Committee on Payments and Market Infrastructure and International Organization of Securities Commissions (CPMI-IOSCO). In the risk-based approach, the following risk categories were identified and assessed:

Liquidity Risk: Liquidity risk was reduced from settlements of interbank obligations in central bank money and on gross basis in the Ghana Interbank Settlement (GIS). The interbank market for loanable funds and the option for repo transactions provided ready access to liquidity. The central bank as a settlement agent also provided implicit liquidity guarantee and incentivised the interbank market to supply loanable funds to deficit banks.

Credit risk: Market participants adequately provided for liquidity needs either from own funds or through borrowings on the interbank market for timely settlement of obligations. Collateralised intra-day liquidity support from the central bank was the last resort of funding for interbank payment obligations.

Operational risk: Compliance with security standards including ISO: 27001 and PCI DSS, and implementation of fraud management system assisted in containing operational risk.

Legal Risk: The Bank of Ghana Act 2002(Act 612), Payment System Act 2003(Act 662) and Guidelines for Electronic Money Issuers (2015) provided sound regulatory basis for the payment system. These regulatory frameworks, however, did not provide adequate scope and coverage for emerging digital payment landscape and have necessitated the passage of the Payment Systems and Services Bill by Parliament and also the introduction of Guidelines for Electronic Payment Channels in 2018.

Settlement Risk: Mandatory settlement of interbank payment obligations in central bank

money and through the GIS guaranteed settlement irrevocability and finality. Settlement risk was therefore mitigated under these arrangements.

Counter-parties risk: The payment system has no central counterparty. The Ghana Bankers Clearing House facilitates interbank payments in direct debit, credit and cheque clearing system by exchanging payment instructions, determining net settlement position of participants and transmitting settlement information to the settlement agent (Bank of Ghana) for payment.

4.2 Application of Principles for Financial Market Infrastructures

The Bank over the years has applied the CPMI-IOSCO Principles for Financial Market Infrastructures (FMIs) in assessing its systemically important payment systems; the Ghana Interbank Settlement (GIS) system and Ghana Interbank Payment and Settlement Systems (GhIPSS). In 2018, the Bank adopted the self-assessment project plan and commenced pre-implementation activities including sensitisation of systems operators.

4.3 Participation in Ghana Interbank Settlement Systems

Participation in the Ghana Interbank Settlement (GIS) Systems is mainly restricted to licensed clearing banks that are mandated to have settlement accounts with the Bank of Ghana to facilitate settlement of interbank payment obligations in central bank money. Systems that settled on the GIS were the CCC, ACH, E-Zwich, gh-link and securities transactions from the Central Security Depository (CSD).

The number of bank participants during the year was 34. Other participants were the ARB Apex Bank, which is the clearing bank for the rural and community banks and Social Security and National Insurance Trust (SSNIT).

4.4 Submission of Returns by System Operators

Deposit Money Banks and Electronic Money Issuers under the Bank's supervision were required to

submit monthly returns to the Payment Systems Department under section 3(1) of the Payment Systems Act 2003 (Act 662) and section 93 of Banks and Specialised Deposit-Taking Institution Act, 2016 (Act 930). These returns covered access, usage and provided information on transactions volumes and values, service fees and tariffs of the various payment distribution channels, branch and agent network. Electronic money issuers also submitted information on incident, fraud and defalcation, customer complaint, device interruption, suspicious transactions and concentration levels.

4.5 Collaboration with Key Stakeholders

The Bank collaborated with the Financial Intelligence Centre on AML/CFT issues, National Identification Authority on the national identification card project as well as the National Communications Authority on mobile money operations.

4.6 ATM and POS Transaction Fees and Tariffs

The transaction fees paid by customers, who use ATM and POS terminals, vary from bank to bank and may be a flat rate or expressed as a percentage of the value of the transaction. Transaction fees and Tariffs for ATM and POS terminals are provided in [Table 13](#).

4.7 Mobile Money Services Fees and Tariffs

Mobile money services fees and tariffs were either flat or expressed as a percentage of the value of the transaction. The fee structure is designed to make mobile money services accessible to the unbanked. Fees and tariffs for mobile money services are provided in [Table 14](#).

Table 13: ATM and POS Transaction Fees and Tariffs

	ATM			POS		
	Own	Other	Foreign	Own	Other	Foreign
VISA	free - GH¢1.00	avg GH¢5.00 or 1.6%	GH¢8.00 or up to 3%	free to 2%	1% to 3%	GH¢4.00 or up to 3%
MASTERCARD	free - GH¢1.00	GH¢4.00 or up to 2.02%	\$2.00 or up to 3%	free to GH¢1.00	GH¢2.50 or up to 3%	\$2.00 or up to 3.5%
GH-LINK	free - GH¢1.50 or 0.04%	GH¢1.70-GH¢4.00	NIL	free to GH¢1.50 or 0.04%	GH¢0.60 per transaction	NIL

Table 14: Mobile Money Services Fees and Tariffs

Comparison of Mobile Money Fees and Tariffs									
Mobile Money Operators	Transaction Amount	Deposit Cash	Send money from a registered customer to another registered customer (same network)	Send money from a registered customer to unregistered customer	Send money from an unregistered customer to an unregistered customer	Withdrawal by registered customer	Withdrawal by unregistered customer	ATM cash-out	Interoperability
MTN	1.00-50.00	Free	0.50	1.50	2.50	0.50	Free	0.5	0.75
	50.01-1000.00	Free	1.00%	3%	5%	1.00%	Free	1.00%	1.50%
	Above 1000.00	Free	10.00			10.00			15.00
Vodafone	1.00-50.00	Free	0.50	1.50	Nil	0.50	Nil	0.50	0.75
	50.01-75.00	Free	0.50	2.50	Nil	1.50	Nil	1.50	1.50%
	75.01-100.00	Free	0.50	2.50	Nil	1.50	Nil	1.50	1.50%
	100.01-250.00	Free	1.00	4.50	Nil	2.50	Nil	2.50	1.50%
	250.01-500.00	Free	2.00	6.00	Nil	4.00	Nil	4.00	1.50%
	500.01-1000.00	Free	3.00	Nil	Nil	6.00	Nil		1.50%
	1000.01-2000.00	Free	3.00	Nil	Nil	10.00	Nil		15.00
	2000.01-3000.00	Free	3.00	Nil	Nil	15.00	Nil		15.00
AirtelTigo	1.00-50.00	Free	0	0.75	0.5	0.5	Free	0.5	0.75
	50.01-1000.00	Free	0.50%	1.50%	1.00%	1.00%	Free	1.00%	1.50%
	Above 1000.00	Free	10.00	1.50%	10.00	10.00	Free	10.00	15.00

5. Financial Inclusion

The Bank pursued various initiatives in 2018 to engender financial inclusion. It hosted the 2018 Joint Learning Programme (JLP) of the Alliance for Financial Inclusion (AFI) on Financial Inclusion Data. The programme provided the platform for the Bank to share its experiences on the payment systems data portal and agent registry, with over 24 central banks.

5.1 Financial Inclusion Strategy

The National Financial Inclusion Development Strategy outlines the necessary actions required to increase the pace of adoption and take up of technological innovations such as mobile phones to suit the youthful population of Ghana. The Bank is currently formulating a payments systems strategy to fast track developments in the electronic payment space to help achieve the national development strategy's objective of increasing financial inclusion from the 2017 level of 58 per cent to 75 per cent in 2023.

5.2 Developments in Financial Inclusion

Development of innovative products and services in the payment ecosystem led to improved access to micro loans, insurance, savings, investments, and pensions. Financial institutions, FinTechs and mobile money operators collaborated to introduce products that have provided convenient means of payment for consumers and brought the unbanked into the financial system. FinTechs provided various support services to financial institutions and made payments transparent, convenient and efficient for consumers. Some of the services that were provided by FinTechs in collaboration with financial institutions in 2018 included digital savings, credit scoring, agency banking, electronic payments, integrated Know Your Customer (KYC) solution, investment, pension and insurance.

The key developments geared towards fostering financial inclusion were as follows:

- a. In 2018, Mobile Money Interoperability Project was implemented in two phases. Phase-I of the Project involved interconnection of the mobile money platforms and the Ghana National Switch (gh-link system), which made it possible for customers to send mobile money across networks and from mobile money wallet to bank account and vice versa. Phase-II involved interconnection of Mobile Money ecosystem and E-Zwich (Ghana's biometric smart card system) payment platform.
- b. MTN Mobile Money Limited in partnership with afb Ghana reached its one-millionth customer milestone in 2018 with a credit product named Qwikloan. The launch of the Qwikloan product provided opportunity for ordinary Ghanaians to conveniently access short term loans ranging from GH¢25 to GH¢1000 using MTN Mobile Money platform.
- c. The Agent Registry project, meant to serve as database for all financial service agent points, was upgraded to provide additional information for stakeholders.
- d. During the year, ADB bank in partnership with MoneyGram commenced termination of inward remittances from over 200 countries to beneficiary's bank accounts.

Appendix

Table 15: Comparative Payment System Statistics from 2016 to 2018

category	Indicators	2016	2017	2018	Annual Change 2018 (%)
Basic Statistical data	Total Population Estimate (million)	28.31	28.92	29.61	2.38
	Exchange Rate (GHS/USD\$)- End of Year	4.2002	4.4157	4.8200	(8.39)
	Nominal Gross Domestic Product (GDP) GH¢'million	215,077	256,671	300,596	17.11
Institutions offering payment services	Licensed Banks (DMBs)	33	34	23	(32.35)
	Bank Branches	1,341	1,491	1,557	4.43
	Rural and Community Banks	141	141	144	2.13
	NBFI	64	71	67	(5.63)
	Micro Finance Institution (MFI)	564	566	566	0
	Mobile Money Operators	4	3	3	0
	Active mobile money agents	107,415	151,745	180,664	19.06
Large Value Payments (RTGS):	Volume	889,709	934,234	1,221,650	30.76
	Value (GH¢'million)	1,670,369.46	2,083,846.27	1,963,465.27	(5.78)
	Average Value per Transaction (GH¢)	1,877,433.48	2,230,539.96	1,607,224.06	(27.94)
	Volume of transactions per day	3,587.54	3,767.07	4,926.01	30.76
Cheque Codeline Clearing (CCC)	Volume	7,309,406	7,334,460	7,255,220	(1.08)
	Value (GH¢'million)	152,390.42	179,555.47	203,465.32	13.32
	Average Value per Transaction (GH¢)	20,848.54	24,481.08	28,043.99	14.55
	Average Volume of transactions per day	29,473.41	29,574.44	29,254.92	(1.08)
ACH Direct Credit	Volume	5,242,610	6,061,093	6,645,126	9.64
	Value (GH¢'million)	19,245.65	24,327.26	30,226.94	24.25
	Average Value per Transaction (GH¢)	3,671.01	4,013.68	4,548.74	13.33
	Average Volume of transactions per day	21,139.56	24,439.89	26,794.86	9.64
ACH Direct Debit	Volume	874,846	940,649	861,169	(8.49)
	Value (GH¢'million)	127.01	126.28	139.15	10.19
	Average Value per Transaction (GH¢)	145.18	134.25	161.58	20.36

category	Indicators	2016	2017	2018	Annual Change 2018 (%)
	Average Volume of transactions per day	3,527.60	3,792.94	3,472.46	(8.45)
E-Zwich					
	Total Number of Cards Issued	1,878,044	2,364,456	2,774,799	17.35
	Volume of Transactions	5,365,085	8,367,017	7,759,354	(7.26)
	Value of Transactions (GH¢'million)	2,362.97	3,431.49	5,651.14	64.68
	Average Volume of transactions per day	14,658.70	22,923.33	21,258.50	(7.26)
Gh-Link™ (National Switch)					
	Volume	2,067,498	2,340,409	1,830,182	(21.80)
	Value (GH¢'million)	447.04	603.43	543.74	(9.89)
	Average Value per Transaction (GH¢)	216.22	257.83	297.10	15.23
	Average Volume of transactions per day	5,648.90	6,412.08	5,014.20	(21.80)
GhIPSS Instant Pay (GIP)					
	Volume	184	41,795	143,879	244.25
	Value (GH¢'million)	0.42	83.23	534.04	541.64
	Average Value per Transaction (GH¢)	2,282.61	1,991.39	3,711.76	86.39
Mobile Money					
	Total number of mobile voice subscription (Cumulative)	38,305,078	37,445,048	40,934,875	9.32
	Registered mobile money accounts (Cumulative)	19,735,098	23,947,437	32,554,346	35.94
	Active mobile money accounts	8,313,283	11,119,376	13,056,978	17.43
	Registered Agents (Cumulative)	136,769	194,688	396,599	103.71
	Active Agents	107,415	151,745	180,664	19.06
	Total volume of mobile money transactions	550,218,427	981,564,563	1,454,470,801	48.18
	Total value of mobile money transactions (GH¢' Million)	78,508.90	155,844.84	223,207.23	43.22
	Balance on Float (GH¢' Million)	1,257.40	2,321.07	2,633.93	13.48
	Average Volume of transactions per day	1,503,329.04	2,689,217.98	3,984,851.51	48.18

Table 16: Data on Payment Channels and Instruments

Item	Indicators	Year Ending 2016	Year Ending 2017	Year Ending 2018	Change 2018 (%)
ATMs					
	Number of ATMs (cumulative)	1,928	2,044	2,139	4.65
	Volume of transactions	51,554,833	57,317,491	57,763,558	0.78
	Value of transactions (GH¢)	13,135,609,757	18,542,950,793	21,796,487,291	17.55
POS Terminals					
	Number of Terminals (cumulative)	6,501	7,356	8,253	12.19
	Volume of transaction	6,692,472	7,198,029	10,218,088	41.96
	Value of transaction (GH¢)	2,067,783,504	4,158,052,064	8,261,737,489	98.69
Internet Banking					
	Number of Customers registered	962,487	936,965	815,904	(12.92)
	Volume of transactions	2,705,191	2,437,785	3,205,878	31.51
	Value of transactions (GH¢)	6,779,205,499	9,739,336,941	6,267,223,830	(35.65)
Mobile Banking					
	Number of Customers registered	2,175,644	2,110,984	3,891,269	84.33
	Volume of transactions	6,821,838	7,036,285	14,805,878	110.42
	Value of transactions (GH¢)	357,383,111	1,501,372,536	5,658,399,344	276.88
Debit Cards					
	Number of cards issued (cumulative):	5,446,030	5,953,484	4,754,514	(20.14)
	International Scheme Cards	2,223,383	2,912,256	3,142,223	7.90
	Banks' own proprietary cards	3,222,647	3,041,228	1,612,291	(46.99)
	Volume of transaction	46,456,021	60,382,177	60,118,182	(0.44)
	Value of transaction (GH¢)	13,582,667,448	17,785,179,796	21,804,830,666	22.60
Credit Cards					
	Number of cards issued (cumulative):	9,217	14,698	23,102	57.18
	International Scheme Cards	9,217	14,698	23,102	57.18
	Banks' own proprietary cards				
	Volume of transaction	138,037	185,101	324,841	75.49
	Value of transaction (GH¢)	70,085,071	99,989,316	171,702,441	71.72
Prepaid cards					
	Number of cards issued (cumulative)	58,907	86,017	216,592	151.80
	Volume of transactions	312,143	472,071	590,139	25.01
	Value of transactions (GH¢)	103,259,073	255,875,512	326,055,976	27.43

Designed and Printed by
Bank of Ghana Press
Accra