



BANK OF GHANA

PAYMENT SYSTEMS OVERSIGHT

ANNUAL REPORT, 2016



BANK OF GHANA

PAYMENT SYSTEMS OVERSIGHT

ANNUAL REPORT, 2016

EXECUTIVE SUMMARY

The Payment ecosystem improved significantly in 2016 on account of various strategic alliances that were established among banks, telecommunication and financial technology firms. Digitization of the payments system landscape accelerated as a result of increased participation of financial technology firms which caused some concerns for improved cyber security, data protection, consumer protection and recourse mechanisms.

Growth in supply of digital payment products was driven mainly by mobile money on account of high mobile phone penetration. Payment cards issued also recorded high growth, driven mainly by debit cards. The number of credit card issuers and credit card holders also increased significantly. These developments were supported by deployment of point of sale devices, enabling regulatory environment and customers' desire for convenient and faster payments. The number of banks providing interbank instant retail payment service increased from nine (9) in 2015 to twenty two (22) by end-December 2016 in response to customer demand for faster retail payments.

The mobile phone played a key role in the digital financial services space by facilitating delivery of wallet-based savings, insurance, and investment products. Banks in partnership with mobile money operators and financial technology firms leveraged on data analytic tools to mine valuable information from mobile money customers' data to provide credit scoring for short term loans.

In line with the National Payment Systems Oversight Framework, the Bank in 2016 set up the Payments Systems Council (PSC) to drive developments in the payment systems. The Council serves as an advisory body to the Bank and supports the attainment of a sound and efficient payment, clearing and settlement system in Ghana. The Payment Systems and Services Bill 2017 was submitted to the Attorney General Department for onward submission to Cabinet and Parliament. The department hosted staff of Bank of Tanzania who came to learn about the use of mobile phone to purchase treasury bills and also provided training for staff of Bank of Sierra Leone, Gambia and Liberia under the International Monetary Fund Africa West 2 programme.

CONTENTS

Executive Summary	ii
Chapter 1:	1
Development in International Payment Systems	1
1.0 Global Payment Systems Developments	1
1.1 Legal and Regulatory Environment	1
1.2 Technology	1
1.3 Payment Products	2
1.4 Implications of Global Payment Systems Developments for Ghana's Payment Systems	2
Chapter 2:	4
2.0 Developments in the Ghanaian Payment Systems	4
2.1 Legal and Regulations Review	4
2.2 Establishment of Payment Systems Council	4
2.3 Development of Web Based Data Collection Portal	5
2.4 Payment of Interest on Mobile Money Float	5
2.5 Migration to EMV Technology	5
2.6 Bank Identification Number Project	5
2.7 Domestic Settlement of Visa Transactions	6
Chapter 3:	7
3.0 Product and Service Developments	7
3.1 Launch of Ecobank Capital Advisors TBILL4ALL	7
3.2 AFB Financial Services' "Quick Loans"	7
3.3 Pan-African Mobile Money Microcredit Goal	7
3.4 Tigo Mobile Money Direct Inward Transfer	7
3.5 Prudential Bank Mobile Money Transactions	7
3.6 Light Mobile Branch	8
3.7 Credit and Pre-Paid Cards	8
3.8 Zenith Bank (Ghana) Limited and Vivo Energy Issued "EzyPASS"	8
3.9 GhIPSS e-Zwich International Remittance Platform	8
3.10 United Bank for Africa's 'U' Advance Salary Card	8
3.11 Growth in Non-Cash Payment Streams	8

Chapter 4:	10
4.0 Developments in Payment Systems Statistics	10
4.1 Key Payment Systems Statistics 2015 - 2016	10
4.2 Ghana Interbank Settlement (GIS) System	14
4.3 Cheque Codeline Clearing (CCC)	15
4.4 Ghana Automated Clearing House (GACH)	16
4.4.1 Direct Credit	16
4.4.2 Direct Debit	17
4.4.3 E-Zwich Transactions	18
4.4.5 Gh-Link tm (National Switch)	19
4.5 Mobile Money Services	20
4.6 The Financial Sector	23
4.6.1 Banks and Other Financial Institutions	23
4.6.2 Internet and Mobile Banking	23
4.6.3 Automated Teller Machines (ATMs) and Points of Sales (POS)	24
4.6.4 Electronic Payment Cards (Debit, Credit and Prepaid Cards)	24
4.6.4.1 Debit Cards	24
4.6.4.2 Credit Cards	24
4.6.4.3 Prepaid Cards	25
4.6.5 Retail Payments Instruments	25
4.6.6 Use of Cash	25
4.6.7 Use of Non-cash Payment Instruments	25
Chapter 5:	27
5.0 Payment Delivery Channels	27
5.1 The Main Delivery Channels for the Ghanaian Payment Systems are Listed in Table 17	27
Chapter 6:	28
6.0 Payment Systems Risks and Oversight	28
6.1 Risk Assessment	28
6.2 Credit Risk	28

6.3	Liquidity Risk	28
6.4	Operational Risk	28
6.5	Legal Risk	28
6.6	Settlement Risk	29
6.7	Developments in Oversight	29
6.8	Monitoring Financial Risks in Central Counter-parties	29
6.9	Application of Principles for Financial Market Infrastructures	29
6.10	Participation in Settlement Systems	29
6.11	Submission of Returns by Systems Operators	30
6.12	Collaboration with Key Stakeholders	31
6.13	ATM and POS Interoperability	31
6.14	Settlement of Funds in the Ghana Interbank Payment Systems	31
6.15	Retail Payments System Oversight	32
Chapter 7:		33
7.0	Financial Inclusion in Ghana	33
7.1	Financial Inclusion Strategy	33
7.2	Status of Financial Inclusion in Ghana	33
7.3	Consumer Protection	35
7.4	Redress Mechanism in the Payment System	35
7.5	Fraud and Defalcation Reporting	36
7.6	Developments in Consumer Protection Measures	36
Chapter 8:		37
8.0	Fees and Tariffs Structure	37
8.1	Interchange Fees	37
8.2	Mobile Money Services Fees and Tariffs	37
Chapter 9:		39
Summary and Conclusion		39

TABLES

Table 1:	Total Transactions of Non-cash Payments Systems	9
Table 2:	Comparative Payment System Statistics for 2015 and 2016	10
Table 3:	Data on Payment Channels and Instruments	13
Table 4:	Ghana Interbank Settlement Transactions	14
Table 5:	Cheque Codeline Clearing (CCC)	15
Table 6:	GACH-Direct Credit	16
Table 7:	GACH Direct Debit	17
Table 8:	E-Zwich	18
Table 9:	GH-Link (TM) (National Switch)	19
Table 10:	GH-Link (TM)-Volume and Value	19
Table 11:	Mobile Money Statistics as at Dec 2016	21
Table 12:	Regulated Financial Institutions	23
Table 13:	Internet and Mobile Banking	24
Table 14:	Automated Teller Machines and Points of Sales	24
Table 15:	Electronic Payment Cards	25
Table 16:	Use of Non-cash Payment Instruments	26
Table 17:	Key Payment Delivery Channels	27
Table 18:	Submission of Returns	30
Table 19:	Access Points	34
Table 20:	Usage of Mobile Money	34
Table 21:	Inter-change Fees	37
Table 22:	Mobile Money Services Fees and Tariffs	38

CHARTS

Chart 1: Volume and Value of Transactions for Major Non-Cash Retail Payment Streams-2016	9
Chart 2: Ghana Interbank Settlement Transactions	15
Chart 3: Cheque Codeline Clearing (CCC)	16
Chart 4: GACH-Direct Credit	17
Chart 5: GACH-Direct Debit	18
Chart 6: E-Zwich	19
Chart 7: GH-Link (TM) (National Switch)	20
Chart 8: Mobile Money Float Balances 2012 - 2016	21
Chart 9: Number of Bank and Mobile Money Customers: 2013 - 2016	22
Chart 10: Currency in circulation as per centage of Gross Domestic Product: 2010 - 2016	22

LIST OF ABBREVIATIONS

Alliance for Financial Inclusion	AFI
Anti-Money Laundering and Countering Financing of Terrorism	AML/CFT
Automated Teller Machine	ATM
Cheque Codeline Clearing	CCC
Customer Due Diligence	CDD
Consultative Group to Assist the Poor	CGAP
Card Not Present	CNP
Committee on Payments and Market Infrastructure, International	
Organisation of Securities Commission	CPMI-IOSCO
Central Securities Depository	CSD
Deposit Money Banks	DMBs
Electronic Money Issuers	EMI
Europay, Mastercard and Visa	EMV
Financial Conduct Authority	FCA
Financial Market Infrastructure	FMI
Ghana Automated Clearing House	GACH
Ghana Interbank Payment and Settlement Systems	GHIPSS
Ghana Interbank Settlement	GIS
German Development Cooperation	GIZ
Intraday Liquidity Facility	ILF
Know Your Customer	KYC
Livelihood Empowerment Against Poverty	LEAP
Micro-Finance Institution	MFI
Mobile Money Operators	MMO
Memorandum of Understanding	MOU
Non-Bank Financial Institutions	NBFIs
National Communication Authority	NCA
Near Field Communication	NFC
Office of Technical Assistance	OTA
Payment Card Industry Data Security Standard	PCI-DSS
Principles of Financial Market Infrastructure	PMFI
Point of Sales	POS
Payment Systems Council	PSC
Quick Response	QR
Rural and Community Banks	RCBs
Retail Payment Systems	RPS
Real Time Gross Settlement	RTGS
Stored Value Facilities	SVF
Stored Value Facilities Ordinance	SVFO
Society for Worldwide Interbank Financial Telecommunication	SWIFT
Youth Employment Agency	YEA

CHAPTER 1

Development in International Payment Systems

1.0 Global Payment Systems Developments

The 2016 World Payments Report identified that global non-cash transaction volume increased by 11.2 per cent to 433.1 billion. Emerging Asia registered growth of 43.4 per cent, Central Europe Middle East and Africa (CEMEA) 16.4 per cent, Mature Asia Pacific (Mature APAC) 9.6 per cent, Europe 7.5 per cent and North America 5.4 per cent. Developing economies registered growth of 21.9 per cent in no-cash volume of transactions compared with 6.8 per cent for Mature economies on account of rising living standards, increased penetration of smart phones, moves of governments in developing markets to facilitate digital payments and entry of millions of the unbanked into the formal banking sector.

The adoption of digital payments schemes and instruments culminated in the reduction in the share of cash payment volume to total payment volume.

1.1 Legal and Regulatory Environment

New regulations were introduced during the year in a number of emerging markets mainly on account of innovation, risk reduction, standardization, competition and transparency. Global banks are also exposed to additional challenge of complying with variant local regulations across regions.

In April 2016 National Payments of India for instance introduced Unified Payments Interface (UPI) to allow users to effect payments across various payment instruments, bank accounts and other payment channels. The Hong Kong Monetary Authority also initiated a process to standardize and harmonize its rules for Stored Value Facilities (SVF) and Retail Payment

Systems (RPS) through the Stored Value Facilities Ordinance (SVFO).

1.2 Technology

Banks are seeking to adapt to the evolving regulatory environment by employing technology to foster compliance. Some financial technology firms are leveraging on technology to offer third party compliance solutions to banks and enterprises. These solutions help firms to automate compliance functions and reduce operational risks. For instance a new technological tool, RegTech, employs technology to target regulatory compliance such as Basel III, risk analytics, Know Your Customer utilities to store due diligence information. Financial Conduct Authority (FCA) has developed a regulatory sandbox, a safe environment where businesses especially startups are required to test innovative services and products in a real world scenarios without being subject to the normal regulatory requirements. Advances in technology has also provided other digital payment solutions namely Quick Response (QR) code, mobile point of sale, contactless, mobile payments, near field communication (NFC) and wearable payment devices.

Over the past few years, Bitcoin has gained significant importance throughout the world. Despite its prominence on account of transaction cost, faster funds transfer system, protection of user's identity and promotion of financial inclusion; it is, however, associated with crime such as money laundering and narcotics as well as price volatility, high degree of anonymity of users and poor consumer protection scheme. All these developments in Bitcoin trading and transactions have culminated in governments, regulators and financial system participants to be wary of its potential implications.

In most countries, the use of Bitcoin is permitted. However, only few countries notably France, Philippines, Japan, Canada and United States (States such as New York and California) have some level of regulations applicable to Bitcoin use or exchange operations.

Some countries including Nigeria, Kenya, Malaysia, South Africa and India, which seem to be skeptical about Bitcoin and its perceived use for criminal activities have issued public statement or circulars to warn the public against the risk of Bitcoin use. Meanwhile, other countries or institutions have also taken the option to study the entire Bitcoin concept before they initiate any regulation.

1.3 Payment Products

Card transactions continued to increase, with debit card being the most popular means for card payment on account of affordable technologies which enabled merchants to accept card payments. Some central banks also pursued policies to migrate from magnetic stripe card technology to a secured EMV chip and PIN technology. Contactless card payments also became popular for payment of transport fares and road tolls.

Mobile payments were also adopted in several countries to enhance financial inclusion. Registered mobile money account in Sub Saharan Africa was 277 million in 2016 compared with 200,000 in 2006.

1.4 Implications of Global Payment Systems Developments for the Ghana's Payment Systems

The continuous surge in global non cash transaction volume requires that Ghana continuous to facilitate non-cash payments such as mobile money, cards, Ghana Interbank Settlement Systems Instant Pay and point of sales devices.

The Payment Systems Act 2003 (Act 662) and the Guidelines for Electronic Issuers (2015) were reviewed and consolidated into a draft law called the Payment Systems and Services Bill 2017 to take account of innovation and engender risk reduction, competition as well as transparency. The objective of the review among others was to make the regulatory framework relevant to the emerging digital payments landscape and was necessitated by key events such as entry of financial technology firms into payments; cyber security threat, data privacy and security; consumer protection and recourse mechanisms; and need for cooperation between different regulatory bodies.

The Bank undertook a project to improve payment card security by migrating gh-Link payment cards from the less secure magnetic stripe technology to Europay, MasterCard and Visa (EMV) chip and PIN technology.

Banks issuing international scheme cards such as Visa and MasterCard were encouraged to be compliant with Payment Card Industry Data Security Standard (PCI-DSS). Mobile money operators were mandated to obtain ISO 27001 certification and ensure compliance at all times. Providers of digital payments products implemented end-to-end encryption to protect against data fraud. A two factor authentication including tokenization was implemented for online Card-Not-Present (CNP) transactions.

The number of banks providing interbank instant retail payment service increased from nine (9) in 2015 to twenty two (22) by end-December 2016 in response to customer demand for faster retail payments. The value

of instant retail payment transactions was GH¢838,924.20 as at December 2016. Banks which did not provide the service were at various stages of implementation.

The mobile phone played a key role in the digital financial services space by facilitating delivery of wallet-based savings, insurance, and investment products. Banks in partnership with mobile money operators and financial technology firms leveraged on data analytic tools to mine valuable information from mobile money customers' data to provide credit scoring for short term loans. This approach to determining suitability of customers for credit enabled lenders design loan products to meet the peculiar characteristics of the borrowers.

CHAPTER 2

2.0 Developments in the Ghanaian Payment Systems

The following key developments occurred in the Payment Systems landscape during the period under review:

2.1 Legal and Regulations Review

The Bank reviewed the Electronic Money Issuers Guidelines (2015), Agents Guidelines (2015) and the Payment Systems Act (2003) (Act 662) and combined them into a piece of legislation termed Payment Systems and Services Bill (2017). The purpose of the review of the existing legislations and guidelines on the payment systems was to take advantage of technological changes, innovations and also fill the gaps which were identified in the implementation of the Act and the guidelines.

The Bank also engaged with the National Communication Authority (NCA) to put in place a Memorandum of Understanding (MOU) with NCA which was signed on September 20, 2016. The MOU sets forth a statement of intent between the Bank of Ghana (BOG) and the NCA for both parties to collaborate in specialized areas in order to enforce and ensure compliance with the financial laws, regulations, directives and guidelines of the Bank with respect to mobile money operations. The NCA on its part also seeks to enforce adherence to laid down key performance indicators on quality of service. The cooperation between the two regulatory bodies as stated in the MOU focuses on the following:

- a. Share and exchange information that is necessary to facilitate complaint resolution, fraud investigation, supervision, regulation and monitoring of the Mobile Money Operators (MMOs);

- b. Technical expertise which may aid the Bank of Ghana's onsite examination of Mobile Money Operators;
- c. Consultation on certain laws and regulations which may have a bearing on the operations of MMOs;
- d. Provision of technical opinions and comments in the drafting and reviews of legal and regulatory instruments;
- e. Dissemination and sensitization of public information relating to Mobile Network Operators offering mobile money services and digital financial services;
- f. Implementation of government strategies or policies relating to enhancing access to financial through information and communication technology;
- g. Monitoring and enforcement of laws and regulations that relate to mobile financial services;
- h. Consumer awareness and education on the rights and obligations of consumers and MMOs;
- i. NCA shall notify BoG when suspending the licence or authorization or when initiating liquidation procedures against institution it supervise which owns mobile money business.

2.2 Establishment of Payment Systems Council

In line with the National Payment Systems Oversight Framework the Bank in 2016 set up the Payments Systems Council (PSC) to drive development in the payment systems. The Council is to serve as an advisory body to the Bank and support the attainment of a sound and efficient payment, clearing and settlement system in Ghana.

The advisory responsibilities of the Council included recommendation of policies for minimization of risks associated with financial and payment systems; promotion of competition, and efficiency in payment systems and facilitation of co-operation between all market participants and regulators in the payments ecosystem.

The composition of the eleven-member Council consisted of representatives from the Ministry of Finance, Ghana Revenue Authority, Controller and Accountant General's Department, Securities and Exchange Commission, Ghana Chamber of Telecommunications, Ghana Association of Bankers, National Insurance Commission, National Communications Authority, National Pensions Regulatory Authority and Ghana Interbank Payment and Settlement System (non-voting member). The chair of the Council is the Governor of the Bank of Ghana with the first Deputy Governor as the alternate. The Council focuses on four thematic areas comprising Standards, Automation and Technology, Operations, Pricing and Legal with a working group specializing in each thematic area.

2.3 Development of Web Based Data Collection Portal

The Bank in July 2016 launched a web-based data collection portal for collection of payment streams data from the banks and other service providers in line with section 3(1) of the Payment Systems Act 2003 (Act 662). The Portal facilitates seamless submission and analysis of Payment System data.

2.4 Payment of Interest on Mobile Money Float

The Bank in 2016 approved four (4) electronic-money issuers' modalities for the payment of

interest on float accounts to electronic money holders. Total interest paid to holders of electronic money wallets in 2016 was GH¢24.79 million. The successful distribution of interest in 2016 was the first time electronic money holders formally received interest on their wallets since the introduction of mobile money services in Ghana in 2009. The payment of the interest was in line with paragraph 10(5) of the Electronic Money Issuers Guidelines (2015).

2.5 Migration to EMV Technology

The Bank initiated a process to migrate all payment cards from magnetic stripe technology to EMV technology to enhance security in the electronic card payment system. This initiative was expected to scale up the use and security of cards. The project involves the establishment and publication of standards for issuing of proprietary chip cards in Ghana.

2.6 Bank Identification Number Project

In 2016, the Bank in collaboration with the Ghana Association of Bankers initiated the process to introduce biometric identification system. The biometric identification number system is being introduced to stem the increase in sophisticated bank fraud and identify theft in the financial system. The banking industry stands to benefit from the adoption of a biometric identification for all bank customers. The following are some of the envisaged benefits under the biometric identification scheme:

- Real time customer identity verification
- Opportunity to blacklist customers noted for miscreant behavior, such as those who are in the habit of issuing dud cheques
- Prevent identity theft and for that matter payment fraud

- Provide audit trail for over the counter transactions
- Reduce the time required to serve customers
- Enhance the security and integrity of the banking system
- Bolster confidence in the banking system
- A unique identification card that would be acceptable to all banks in the Ghanaian banking industry, thereby reducing the risk of handling and authenticating a wide array of identification cards
- An invaluable database for investigating breaches against AML/CFT and other banking crimes and minimize cyber fraud
- Unauthorized access of customer's accounts will be reduced

- It enhances the KYC procedures and thus engendering confidence in the banking industry
- It will support the country Anti-Money laundering drive

2.7 Domestic Settlement of Visa Transactions

The Ghana Interbank Payment and Settlement System (GhIPSS) settled all local visa transactions through the Bank of Ghana's Real Time Gross Settlement System. The settlement of local visa transactions in local currency is expected to reduce transaction cost and subsequently reduce charges on local Visa transactions.

CHAPTER 3

3.0 Product and Service Developments

This section provides update on products and services that were approved by the Bank of Ghana in 2016. Financial institutions in collaboration with payment service providers introduced innovative products and services to meet the needs of customers at affordable cost. The Bank approved these products and services with the overall objective of promoting financial inclusion and sustaining price stability. These products were designed to promote digital savings, lending and investment for the unbanked.

3.1 Launch of Ecobank Capital Advisors TBILL4ALL

Ecobank Capital Advisors (ECA) in collaboration with Ecobank Ghana Limited and MTN Ghana had approval in 2015 to sell Treasury Bills on MTN mobile money platform. It was aimed at mobilization of funds from the informal sector and engendering financial inclusion. Mobile money subscribers are now able to purchase Treasury Bills as low as GH¢1.00 using their mobile phones.

The award-winning product was launched in October 2016 and had since attracted international attention on account of being the first of its kind anywhere in the world. The product had been nominated for World Summit Award (Commerce and Business). It had also been a subject for discussion at international fora and got the attention of some countries in the Sub-region. For instance, the Bank of Tanzania organized study tours to Ghana to study the design and roll out of the product.

3.2 AFB Financial Services' "Quick Loans"

AFB financial services in partnership with Mobile Money Limited introduced 'Quick loans' with the view to providing micro-loans to customers using MTN Mobile Money platform. The product aims at supporting financial inclusion efforts in Ghana by delivering credit through MTN mobile money to the unbanked population. The credit size ranged from GH¢5.00 to GH¢60.00 with a repayment period of 7, 14, or 21 days depending on the track record of the borrower.

3.3 Pan-African Mobile Money Microcredit Goal

Pan-African Savings and Loans Company obtained the Bank's approval to link its customers' accounts with their mobile money wallets to offer micro-credit and savings products under the Electronic Money Issuers Guidelines (2015).

3.4 Tigo Mobile Money Direct Inward Transfer

The Bank granted permission to United Bank for Africa and Tigo cash to offer international inward remittance service. The approval allowed Tigo Cash subscribers to receive Western Union (WU) transfers directly into their mobile money wallets.

3.5 Prudential Bank Mobile Money Transactions

Prudential Bank in partnership with Nsano devised an application that linked customers' traditional bank account to mobile money

wallets which enabled the bank's customers to perform basic banking transactions such as balance enquiry, account to account funds transfer, account to wallet funds transfer, wallet to account funds transfer, bill payments and airtime purchases.

3.6 Light Mobile Branch

Societe General (Ghana) Limited received the Bank's approval to introduce a mobile branch and indelible ink Automated Teller Machines (ATMs). The mobile van enables banking services to be extended to the premises of some organizations especially during salary paying days. The van is equipped with ATMs which have indelible ink that spills on the currency notes in the event of robbery attack.

3.7 Credit and Pre-paid Cards

Zenith Bank (Ghana) Limited in partnership with MasterCard obtained approval to issue debit, credit and pre-paid cards to its customers. The products aimed at augmenting the bank's electronic card services and provided customers with an alternative payment channel.

3.8 Zenith Bank (Ghana) Limited and Vivo Energy Issued "EzyPASS"

Zenith Bank (Ghana) Limited and Vivo Energy issued "EzyPASS" a VISA co-branded prepaid card to its customers. These cards were personalized and non-personalized Visa prepaid cards that could be used on ATMs and also for the purchases of fuel at selected Shell stations and shops. The product was meant to promote convenience for customers, enhance a twenty-four (24) hour access to funds and promote customer confidentiality.

3.9 GhIPSS E-Zwich International Remittance Platform

GhIPSS in collaboration with Unitylink Money Transfer Company provided an e-zwich international remittance platform to enable individuals, businesses particularly Ghanaians in the diaspora send remittance from Europe, United Kingdom and North America directly onto e-Zwich cards. International Money Transfer to e-zwich cards provided security and enhanced audit trail as well as eliminated impersonation thereby preventing loss of funds.

3.10 United Bank for Africa's 'U' Advance Salary Card

United Bank for Africa introduced a product named 'U' Advance card to salary account holders of the bank. The card is a debit card designed to offer overdraft to salary workers who are in need of funds in the form of a revolving and secure credit. It is a MasterCard or Visa Debit card which is issued to customers with approved overdraft limit. Some of the benefits for the use of the card include easier access to revolving overdraft and credit. It works locally and internationally and has increased security with chip and PIN technology and 3D secure for internet based transactions.

3.11 Growth in Non-Cash Payment Streams

All the major payment streams (see Table 1) exhibited considerable growth in both volume and value transactions during 2016 compared to 2015. Cheques continued to be the main non-cash retail payment instrument in terms of values. Mobile money financial services accounted for significant volume of retail payment transactions.

Value of cheques cleared on Cheque Code line Clearing platform accounted for 60.21 per cent of total value of non-cash retail payments while volume of mobile money transactions represented approximately 96.35 per cent of total volume of non-cash retail payments (Table 1 and Chart 1). The growth in payments, clearing and settlement transactions was partly

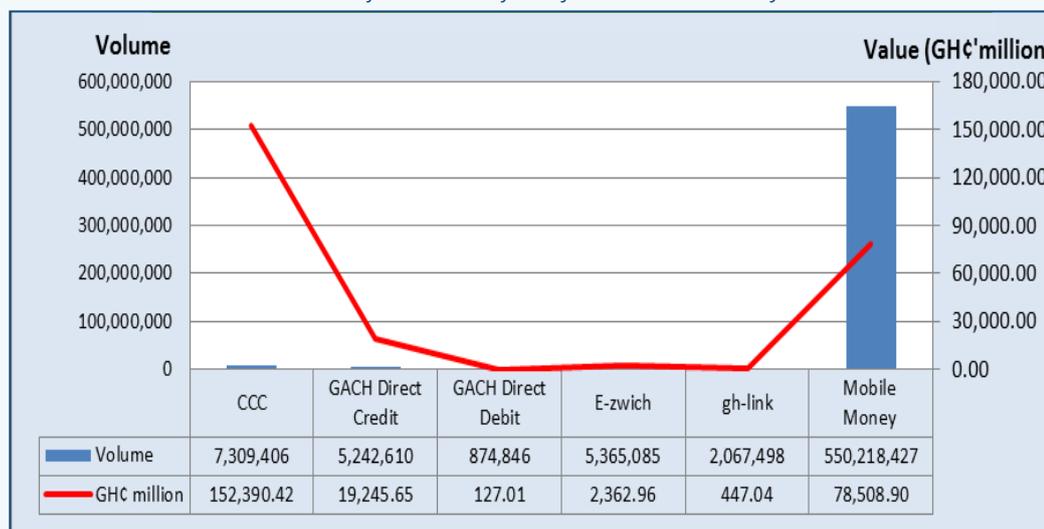
on account of the efficiency of the payment systems and increased public confidence.

Table 1 and chart 1 below shows the annual aggregate volumes and values of payment, clearing and settlement transactions process for 2015 and 2016.

Table 1: Total Transactions of Non-cash Payments Systems

Payment System	2015		2016		Change 2016		% Change 2016	
	Volume	GH¢ million	Volume	GH¢ million	Volume	GH¢ million	Volume	GH¢ million
GIS	794,282	1,032,544.00	889,709	1,670,369.46	95,427	637,825.46	12.01	61.77
CCC	7,146,259	131,189.70	7,309,406	152,390.42	163,147	21,200.72	2.28	16.16
GACH Direct Credit	4,668,636	15,075.07	5,242,610	19,245.65	573,974	4,170.58	12.29	27.67
GACH Direct Debit	692,615	70.91	874,846	127.01	182,231	56.10	26.31	79.11
E-zwich	2,251,101	922.9	5,365,085	2,362.96	3,113,984	1,440.06	138.33	156.04
gh-link	1,899,645	305.14	2,067,498	447.04	167,853	141.90	8.84	46.50
Mobile Money	266,246,537	35,444.38	550,218,427	78,508.90	283,971,890	43,064.52	106.66	121.50

Chart 1: Volume and Value of Transactions for Major Non-Cash Retail Payment Streams-2016



CHAPTER 4

4.0 Developments in Payment Systems Statistics

This chapter provides the highlights of the key financial statistics of the Payment Systems.

4.1 Key Payment Systems Statistics 2015 - 2016

The Payment Systems Department oversight functions covered major financial markets

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-zwichTM; National Switching and Processing System - gh-linkTM; Ghana's Paper Payment Instrument Accreditation Scheme; and the Mobile money sub sector. Table 2 below provides the key payment systems statistics.

Table 2: Comparative Payment System Statistics for 2015 and 2016

Category	Indicators	2015	2016	Annual Change 2016 (%)
Basic Statistical data	Total Population Estimate (Million)	27.67	28.31	2.31
	Exchange Rate (GHS/USD\$)- End of Year	3.7948	4.2002	10.68
	Nominal Gross Domestic Product (GDP) GH¢'Million (Including oil)	139,936	168,752	20.59
Institutions offering payment services	Licensed Banks (DMBs)	29	33	13.79
	Bank Branches	1,173	1,341	14.32
	Rural and Community Banks	139	141	1.44
	NBFI	62	64	3.23
	Micro Finance Institution (MFI)	546	564	3.30
	Mobile Money Operators	4	4	-
	Active mobile money agents	56,270	107,415	90.89
Large Value Payments (RTGS):	Volume	794,282	889,709	12.01
	Value (GH¢'million)	1,032,544.00	1,670,369.46	61.77
	Average Value per Transaction (GH¢)	1,299,971.55	1,877,433.48	44.42
	Volume of transactions per day	3,164.47	3,587.54	13.37

Table 2: Comparative Payment System Statistics for 2015 and 2016 cont'd

Category	Indicators	2015	2016	Annual Change 2016 (%)
Cheque Codeline Clearing (CCC)	Volume	7,146,259	7,309,406	2.28
	Value (GH¢million)	131,189.70	152,390.42	16.16
	Average Value per Transaction (GH¢)	18,357.81	20,848.54	13.57
	Average Volume of transactions per day	28,471.15	29,473.41	3.52
ACH Direct Credit	Volume	4,668,636	5,242,610	12.29
	Value (GH¢'million)	15,075.07	19,245.65	27.67
	Average Value per Transaction (GH¢)	3,229.01	3,671.01	13.69
	Average Volume of transactions per day	18,600.14	21,139.56	13.65
ACH Direct Debit	Volume	692,615	874,846	26.31
	Value (GH¢'million)	70.91	127.01	79.11
	Average Value per Transaction (GH¢)	102.38	145.18	41.81
	Average Volume of transactions per day	2,759.42	3,527.60	27.84
E-Zwich	Total Number of Cards Issued	1,369,369	1,878,044	37.15
	Volume of Transactions	2,251,101	5,365,085	138.33
	Value of Transactions (GH¢million)	922.9	2,362.97	156.04
	Average Volume of transactions per day	6,167.40	14,658.70	137.68

Table 2: Comparative Payment System Statistics for 2015 and 2016 cont'd

Category	Indicators	2015	2016	Annual Change 2016 (%)
Gh-Link (National Switch)	Volume	1,899,645	2,067,498	8.84
	Value (GH¢'million)	305.14	447.04	46.50
	Average Value per Transaction (GH¢)	160.63	216.22	34.61
	Average Volume of transactions per day	5,204.51	5,648.90	8.54
Mobile Money	Total number of mobile voice subscription (Cumulative)	35,008,387	38,305,078	9.42
	Registered mobile money customers (Cumulative)	13,120,367	19,735,098	50.42
	Active mobile money customers	4,868,569	8,313,283	70.75
	Registered Agents (Cumulative)	79,747	136,769	71.50
	Active Agents	56,270	107,415	90.89
	Total volume of mobile money transactions	266,246,537	550,218,427	106.66
	Total value of mobile money transactions (GH¢'Million)	35,444.38	78,508.90	121.50
	Balance on Float (GH¢'Million)	547.96	1,257.40	129.47
	Average Volume of transactions per day	729,442.57	1,503,329.04	106.09

Table 3: Data on Payment Channels and Instruments

Item	Indicators	Half Year Ending December 2015 (Jul-Dec)	Year Ending 2016 (Jan-Dec)
ATMs	Number of ATMs (cumulative)	912	1,928
	Volume of transactions	28,367,033	51,554,833
	Value of transactions (GH¢)	5,876,478,243	13,135,609,757
POS Terminals	Number of Terminals (cumulative)	4,841	6,501
	Volume of transaction	1,007,180	6,692,472
	Value of transaction (GH¢)	403,263,712	2,067,783,504
Internet Banking	Number of Customers registered	840,532	962,487
	Volume of transactions	999,439	2,705,191
	Value of transactions (GH¢)	2,286,702,322	6,779,205,499
Mobile Banking	Number of Customers registered	1,449,374	2,175,644
	Volume of transactions	5,440,387	6,821,838
	Value of transactions (GH¢)	178,588,021	357,383,111
Debit Cards	Number of cards issued (cumulative):	4,304,097	5,446,030
	International Scheme Cards	2,094,329	2,223,383
	Banks' own proprietary cards	2,209,768	3,222,647
	Volume of transaction	22,852,411	46,456,021
	Value of transaction (GH¢)	5,213,724,329	13,582,667,448

Table 3: Data on Payment Channels and Instruments cont'd

Item	Indicators	Half Year Ending December 2015 (Jul-Dec)	Year Ending 2016 (Jan-Dec)
Credit Cards	Number of cards issued (cumulative):	5,438	9,217
	International Scheme Cards	5,438	9,217
	Banks' own proprietary cards		
	Volume of transaction	57,801	138,037
	Value of transaction (GH¢)	33,728,201	70,085,071
Prepaid cards	Number of cards issued (cumulative)	44,250	58,907
	Volume of transactions	143,531	312,143
	Value of transactions (GH¢)	51,855,244	103,259,073

* Payment data reported by twenty-nine (29) commercial banks and ARB Apex bank. Data exclude Sovereign Bank Limited, Premium Bank Ltd, Omni Bank Ltd and Heritage Bank Ltd.

4.2 Ghana Interbank Settlement (GIS) System

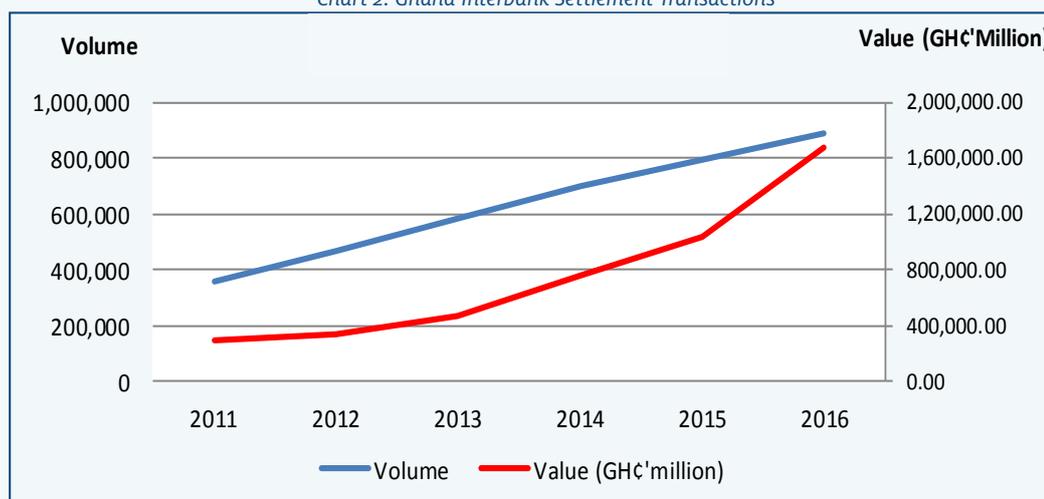
Ghana's Real Time Gross Settlement (RTGS) system, continued to provide platform for high-value payments for banks and their customers. The total volume of RTGS transactions of 889,709 in 2016 showed

an increase of 12.01 per cent over the 2015 position of 794,282. Total value of transactions also went up by GH¢637,825.5 million (61.77 per cent) to GH¢1,670,369.46 million in 2016 from GH¢1,032,544.00 million in 2015. The average value per transaction was GH¢1.88 million in 2016 compared with GH¢1.30 million in 2015 (See Table 4 and Chart 2).

Table 4: Ghana Interbank Settlement Transactions

Indicators	2012	2013	2014	2015	2016	Change 2016	Change 2016 (%)
Volume	467,642	586,200	699,956	794,282	889,709	95,427	12.01
Value (GH¢ million)	331,320.90	470,375.10	758,312.16	1,032,544.00	1,670,369.46	637,825.5	61.77
Average value per transaction (GH¢)	708,492.61	802,414.02	1,083,371.18	1,299,971.55	1,877,433.48	577,461.93	44.42

Chart 2: Ghana Interbank Settlement Transactions



4.3 Cheque Codeline Clearing

Cheque Codeline Clearing (CCC) is an electronic system for clearing cheques using the cheque image and codeline data. It increases the efficiency and timeliness of the clearing and settlement process for cheques leading to customers' timely access to cheque proceeds. The total volume and value of interbank

cheques cleared during the year under review went up by 2.28 per cent to 7,309,406 and 16.16 per cent to GH¢152,390.42 million respectively. The growth in the value of interbank cheques cleared transactions, consequently reflected in an increase in average value per cheque by 13.57 per cent to GH¢20,848.54 compared to GH¢18,357.81 in 2015 (See Table 5 and Chart 3).

Table 5: Cheque Codeline Clearing (CCC)

Indicators	2012	2013	2014	2015	2016	Change 2016	Change 2016 (%)
Volume	6,710,475	6,796,712	6,962,297	7,146,259	7,309,406	163,147	2.28
Value (GH¢ million)	69,222.07	81,144.33	113,698.39	131,189.70	152,390.42	21,200.72	16.16
Average value per transaction (GH¢)	10,315.52	11,938.76	16,330.59	18,357.81	20,848.54	2,490.73	13.57

Chart 3: Cheque Codeline Clearing (CCC)



4.4 Ghana Automated Clearing House (GACH)

4.4.1 Direct Credit

The GACH direct credit enables individuals and corporate bodies to make payments by electronic transfer directly into a bank account of the beneficiary. Direct credit may be used for payment of salaries, pensions, welfare benefits, commissions, supplier payments, dividend, refunds, interest payments and government payments.

In 2016, total volume of transactions cleared through the direct credit system was 5,242,610 and showed an increase of 12.29 per cent over the 2015 position of 4,668,636. Total value of direct credit transfers was GH¢19,245.65 million compared with GH¢15,075.07 million for 2015. Payment of SSNIT pensions by Bank of Ghana on behalf of Government continued to be the major contributor to the growth of the direct credit transactions. (See Table 6 and Chart 4).

Table 6: GACH-Direct Credit

Indicators	2012	2013	2014	2015	2016	Change 2016	Change 2016 (%)
Volume	1,325,533	2,378,997	3,963,802	4,668,636	5,242,610	573,974	12.29
Value (GH¢ million)	3,690.04	6,332.71	10,815.21	15,075.07	19,245.65	4,170.58	27.67
Average value per transaction (GH¢)	2,783.82	2,661.92	2,728.49	3,229.01	3,671.01	442.00	13.69

Chart 4: GACH-Direct Credit



4.4.2 Direct Debit

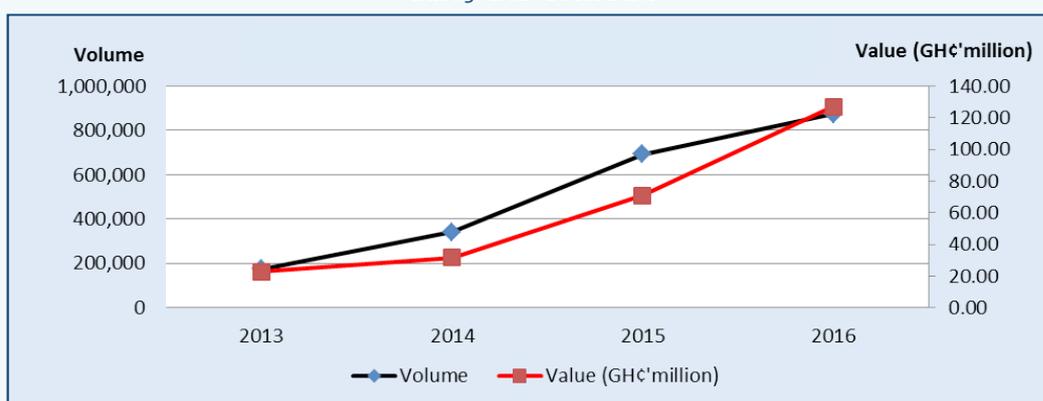
Total volume of direct debit transactions was 874,846 in 2016 and valued at GH¢ 127.01 million. The average value per transaction in 2016 was GH¢ 145.18 compared with GH¢102.38 in 2015. (See Table 7 and Chart 5). Despite the growth in transactions, returned unpaid direct debits formed 70.88 per cent

of the total volume of transactions in 2016 compared with 69.82 per cent in 2015. The main reasons cited for the returned direct debits were insufficient funds, invalid account, mandate, wrong presentation, stopped payment and customer account blocked. The Bank is working with GhIPSS to find a solution to these challenges.

Table 7: GACH Direct Debit

Indicators	2013	2014	2015	2016	Change 2016	Change 2016 (%)
Volume	172,908	341,875	692,615	874,846	182,231	26.31
Value (GH¢' million)	22.81	31.48	70.91	127.01	56.10	79.11
Average value per transaction (GH¢)	131.92	92.08	102.38	145.18	42.80	41.80

Chart 5: GACH-Direct Debit



4.4.3 E-Zwich Transactions

E-zwich is an interoperable biometric smart card payment system which offers a suite of electronic payment and banking services accessible from Point of Sales (POS) terminals or ATMs. These services include payments at merchants’ point of sale, withdrawal of cash, deposit onto card and transfer from cards. The e-zwich system also facilitates the distribution of payments such as loans, salaries, wages and pensions.

The number of e-zwich card holders of 1,878,044 in 2016 showed an increase of 37.15 per cent over 2015 position of 1,369,369. Total volume of e-zwich transactions increased

by 138.33 per cent; from 2,251,101 in 2015 to 5,365,085 in 2016. Similarly, total value of transactions in 2016 grew by 156.04 per cent or GH¢1,440.07 million to GH¢2,362.97 million. (See Table 8 and Charts 6). The significant increase in e-zwich transactions may be attributed to Government’s use of the system to pay caterers of national school feeding programme, beneficiaries of the Livelihood Empowerment Against Poverty (LEAP), Youth Employment Agency (YEA), Students Loans Trust Fund and personnel of the National Service Scheme as means of ensuring efficiency in payments and eliminate waste in its expenditure.

Table 8: E-Zwich

Indicators	2012	2013	2014	2015	2016	Change 2016	Change 2016 (%)
Total Number of Cards Issued	792,966	903,724	1,084,121	1,369,369	1,878,044	508,675	37.15
Cards with Value (% of total)	43.4	43	38.72	44.8	48.5	3.7	8.26
Value on Cards (GH¢'million)	8.12	8.14	8.76	29.02	53.57	24.55	84.6
Average Value Per card (GH¢)	23.6	21	20.9	47.3	58.79	11.49	24.29
Volume of Transactions	1,147,418	814,441	625,167	2,251,101	5,365,085	3,113,984	138.33
Value of Transactions (GH¢'million)	217.8	2.17.2	272.7	922.9	2,362.97	1,440.07	156.04

Chart 6: E- Zwich



4.4.5 Gh-Linktm (National Switch)

A total of thirty-six (36) member institutions were connected to the gh-linkTM, the national switch as at the end of 2016 compared with

thirty-three (33) institution in 2015. The distribution of the institutions is shown in Table 9:

Table 9: GH-Link (TM) (National Switch)

Type of Institutions	2015	2016
Banks	27	26
Non-Banks	1	2
Savings and Loans	5	8
Total	33	36

The total volume of gh-linkTM transactions recorded in 2016 was 2,067,498 with a value of GH¢447.04 million compared with 1,899,645 with a value of GH¢305.14 million in 2015. The

increase in the number of financial institutions and ATMs on the gh-link platforms accounted for the growth in gh-link transactions. (See Table 10 and Charts 7)

Table 10: GH-Link (TM) Volume and Value

Indicators	2012	2013	2014	2015	2016	Change 2016	Change 2016 (%)
Volume	10,295	549,456	1,346,963	1,899,645	2,067,498	167,853	8.84
Value (GH¢' million)	1.1	67.5	183.32	305.14	447.04	141.90	46.50
Average value per transaction (GH¢)	106.85	122.85	136.10	160.63	216.22	55.59	34.61

Chart 7: GH-Link (TM) (National Switch)



4.5 Mobile Money Services

The mobile money space continued to grow since the passage of the Electronic Money Issuers and Agents Guidelines in July 2015. Four (4) Mobile Network Operators comprising MTN, TIGO, AIRTEL and VODAFONE offered mobile money services as at end of December, 2016.

The number of registered mobile money customers as at end-December, 2016 was 19,735,098 showing a growth of 50.42 per cent over the 2015 position of 13,120,367. Similarly, the number of active mobile money

customers increased by 70.75 per cent from 4,868,569 in 2015 to 8,313,283 in 2016. The active registered agents of the four mobile money operators (MMOs) in 2016 stood at 107,415 and represented a growth of 90.89 per cent over the previous year's position of 56,270. Total value of mobile money transactions of GH¢78,508.90 million in 2016 reflected a 121.50 per cent growth over the 2015 position of GH¢35,444.38 million. The total float balance of GH¢1,257.40 million as at December 2016 showed a growth of 129.47 per cent over 2015 float balance of GH¢547.96 million. (See Table 11 and Charts 8)

Table 11: Mobile Money Statistics as at Dec 2016

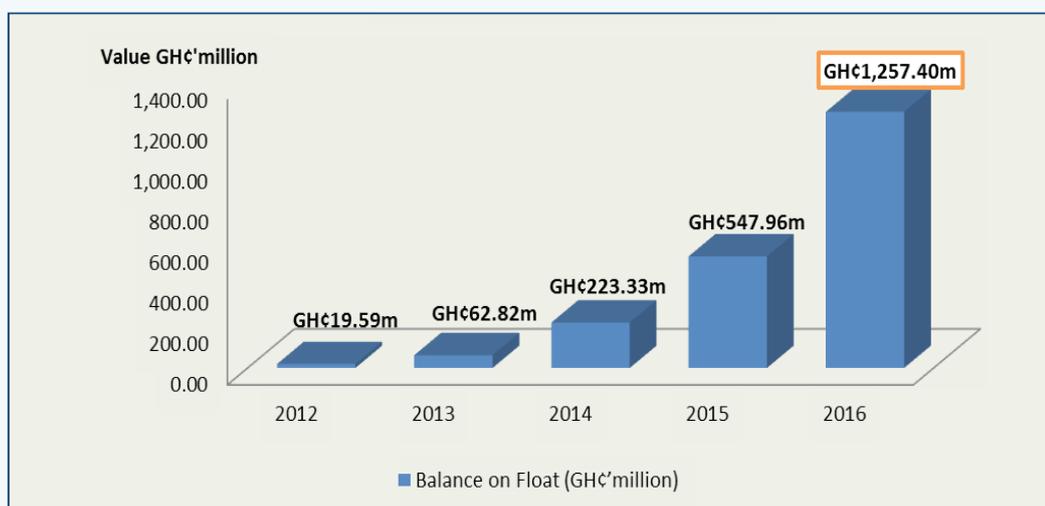
Indicators	2012	2013	2014	2015	2016	Change 2016 (%)
Total number of mobile voice subscription (Cumulative) ¹	25,618,427	28,026,482	30,360,771	35,008,387	37,369,666	6.74
Registered mobile money customers (Cumulative)	3,778,374	4,393,721	7,167,542	13,120,367	19,735,098	50.42
Active mobile money customers ²	345,434	991,780	2,526,588	4,868,569	8,313,283	70.75
Registered Agents (Cumulative)	8,660	17,492	26,889	79,747	136,769	71.50
Active Agents ³	5,900	10,404	20,722	56,270	107,415	90.89
Total volume of transactions	18,042,241	40,853,559	113,179,738	266,246,537	550,218,427	106.66
Total value of transactions (GH¢' million)	594.12	2,652.47	12,123.89	35,444.38	78,508.90	121.50
Balance on Float (GH¢' million)	19.59	62.82	223.33	547.96	1,257.40	129.47

¹ Source: National Communications Authority (NCA)

² The number of customers who transacted at least once in the 90 days prior to reporting

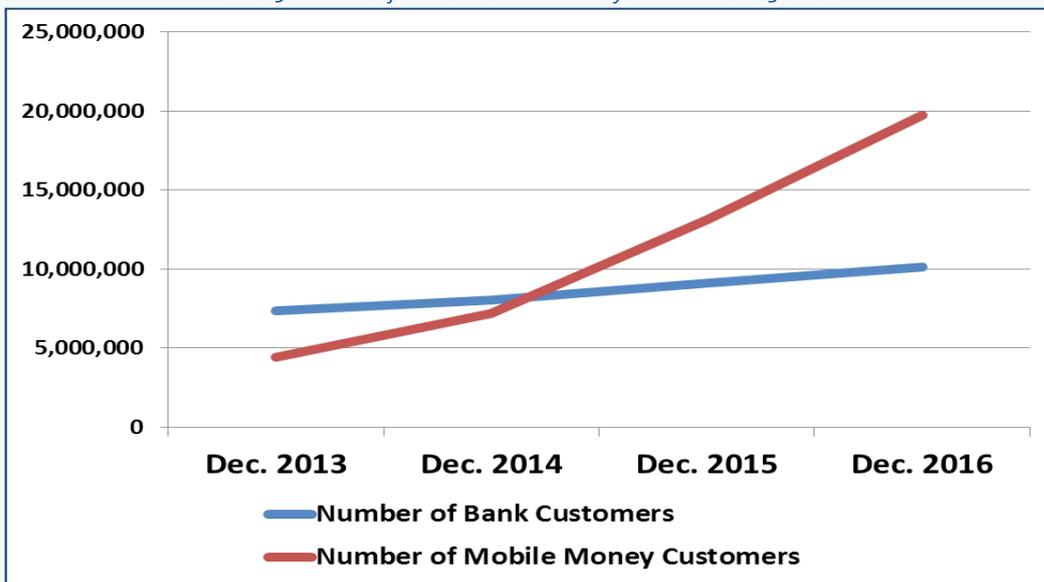
³ The number of agents who transacted at least once in the 30 days prior to reporting

Chart 8: Mobile Money Float Balances 2012 - 2016



The relationship between the number of banks account holders and number of mobile money account holders from 2013 to 2016 is shown in Chart 9.

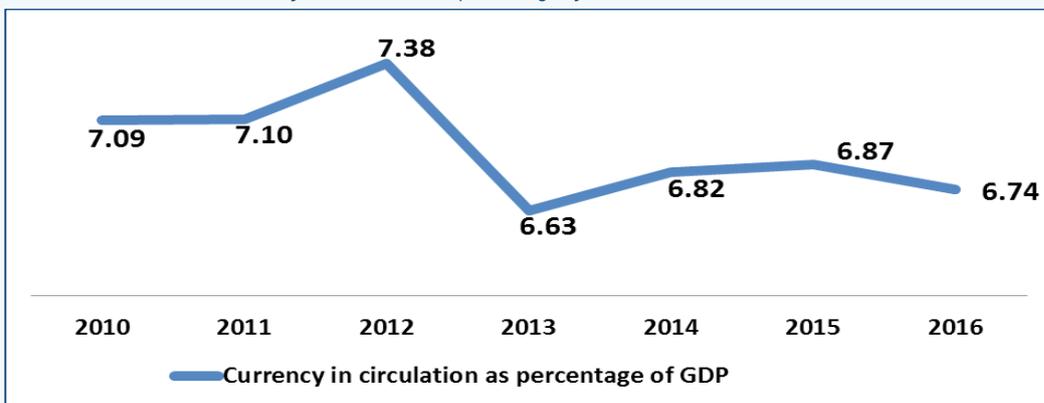
Chart 9: Number of Bank and Mobile Money Customers: 2013 - 2016



The number of mobile money customers exceeded the number bank accounts for the first time in 2015. The role of mobile money as a vehicle for deposit mobilization may partly be responsible for the gradual reduction in money in circulation as a ratio of Gross

Domestic Product a measure of financial depth. The evolution of the country's currency in circulation as a percentage of Gross Domestic Product for 2010 to 2016 is provided in chart 10 below.

Chart 10: Currency in circulation as percentage of Gross Domestic Product: 2010 - 2016



4.6 The Financial Sector

The financial sector especially the banking sector remained strong despite the previous year's energy sector challenges and fiscal slippages that imparted on its non-performing loans and solvency.

4.6.1 Banks and Other Financial Institutions

The distribution of banks and other financial service providers for 2014 to 2016 is shown in Table 12.

Table 12: Regulated Financial Institutions

Regulated Financial Institutions	2014	2015	2016	(%) Change 2016
Licensed Banks (DMBs)	28	29	33	13.79
Bank Branches	967	1,173	1,341	14.32
Rural and Community Banks (RCBs)	138	139	141	1.44
Rural and Community Banks Agencies*		887	895	0.90
NBFI	60	62	64	3.23
Micro Finance Institution (MFI)	503	546	564	3.3
Mobile Money Operators	4	4	4	-
Active mobile money agents	20,722	56,270	107,415	90.89

*Source: ARB Apex Bank Ltd (Provisional)

The other financial service providers comprised sixty-four (64) Non-Bank Financial Institutions (NBFIs) and five hundred and sixty four (564) Micro-Finance Institutions (MFI) as at end of December 2016 compared with sixty (60) NBFIs and five hundred and three (503) at end-December, 2015. The number of active mobile money agents rose from 56,270 agents in December, 2015 to 107,415 agents at end-December, 2016 (See Table 11).

The number of universal bank branches grew from 1,173 in December, 2015 to 1,341 as at end-December 2016; reflecting a growth of 14.32 per cent. Similarly, the number of agencies of RCBs went up from 887 at end-December 2015 to 895 at end-December, 2016.

4.6.2 Internet and Mobile Banking

Internet and mobile Banking services were

provided by financial institutions during the period under review as a means of improving access to financial services. The distribution of internet and mobile Banking services is shown in Table 13.

The number of registered customers of internet banking was 962,487 in 2016 compared with 840,532 in 2015. Similarly the number of registered Mobile Banking customers increased by 50.11 per cent from 449,374 in 2015 to 2,175,644 in 2016. Value of Internet Banking transactions of GH¢6.78 billion in 2016 showed an increase of 196.46 per cent over the 2015 position of GH¢2.29 billion. Mobile Banking value of transactions in 2016 was GH¢357.38 million compared with GH¢178.59million in 2015.

Table 13: Internet and Mobile Banking

		2015	2016	Change (%)
Internet Banking	Number of registered Customers	840,532	962,487	14.51
	Volume of transactions	999,439	2,705,191	170.67
	Value of transactions (GH¢)	2,286,702,322	6,779,205,499	196.46
	Average volume of transactions per day	5,461	7,391	35.34
Mobile Banking	Number of registered customers	1,449,374	2,175,644	50.11
	Volume of transactions	5,440,387	6,821,838	25.39
	Value of transactions (GH¢)	178,588,021	357,383,111	100.11
	Average volume of transactions per day	29,729	18,639	37.64

4.6.3 Automated Teller Machines (ATMs) and Points of Sales (POS)

Total number of ATMs deployed by banks increased from 912 in 2015 to 1,928 in 2016 representing a growth of 111.40 per cent.

Similarly, the number of POS terminals went up from 4,841 in December 2015 to 6,501 in December 2016, indicating an annual growth of 34.29 per cent (See Table 14).

Table 14: Automated Teller Machines and Points of Sales

	2015	2016	Growth (%)
Automated Teller Machines (ATMs)	912	1,928	111.4
Point of Sales (POS) terminals	4,841	6,501	34.29

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

4.6.4.1 Debit Cards

The cumulative number of debit cards issued by banks increased from 4,304,097 in December 2015 to 5,446,030 as at December 2016, representing a growth of 26.53 per

cent. The Debit cards comprised of 2,223,383 international scheme cards and 3,222,647 banks proprietary cards. (See Table 15)

4.6.4.2 Credit Cards

The cumulative number of credit cards issued as at December 2016 stood at 9,217 compared to 5,438 cards in December 2015, representing

an increase of 69.49 per cent. The Credit cards were international scheme cards issued by four (4) banks. (See Table 4)

4.6.4.3 Prepaid Cards

The total number of prepaid cards of 58,907 in 2016 showed an increase of 33.12 per cent from 44,250 in December 2015. (See Table 15).

Table 15: Electronic Payment Cards

Type	2015	2016
Debit Cards:	4,304,097	5,446,030
Banks own Proprietary Cards	2,209,768	3,222,647
International Scheme Cards	2,094,329	2,223,383
Credit Cards:	5,438	9,217
Banks own Proprietary Cards	-	-
International Scheme Cards	5,438	9,217
Prepaid Cards:	44,250	58,907
Banks own Proprietary Cards	-	-
International Scheme Cards	44,250	58,907

4.6.5 Retail Payments Instruments

The main retail payment instruments were Cash, Cheque, Direct Credit Transfer, Direct Debit Transfer and Payment cards - debit, credit, prepaid and E-zwich cards.

4.6.6 Use of cash

Developments in the payment system suggest that money acting as a medium of exchange would continue to be influenced by technology. Currency in circulation as a percentage of Gross Domestic Product a measure of financial deepening has been on the decline (see chart 10) on account of introduction of other alternative payment systems such as mobile money, cards and GHIPSS Instant Pay.

4.6.7 Use of non-cash payment instruments

Cheques continued to be the main non-cash retail payment instrument in terms of values and volume of transactions followed by Direct Credit and Direct Debit. Direct credit transfers increased by 27.67 per cent in value, while direct debit also increased by 79.11 per cent at end December, 2016.

Cheques continued to be the main non-cash retail payment instrument in terms of values and volume of transactions followed by Direct Credit and Direct Debit. Direct credit transfers increased by 27.67 per cent in value, while direct debit also increased by 79.11 per cent at end December, 2016.

Table 16: Use of Non-cash Payment Instruments

Category	Indicators	2015	2016	Annual Change 2016 (%)
Cheque Codeline Clearing (CCC)	Volume	7,146,259	7,309,406	2.28
	Value (GH¢'million)	131,189.70	152,390.42	16.16
	Average Value per Transaction (GH¢)	18,357.81	20,848.54	13.57
ACH Direct Credit	Volume	4,668,636	5,242,610	12.29
	Value (GH¢'million)	15,075.07	19,245.65	27.67
	Average Value per Transaction (GH¢)	3,229.01	3,671.01	13.69
ACH Direct Debit	Volume	692,615	874,846	26.31
	Value (GH¢'million)	70.91	127.01	79.11
	Average Value per Transaction (GH¢)	102.38	145.18	41.81

CHAPTER 5

5.0 Payment Delivery Channels

This section provides a summary of the main payment delivery channels.

5.1

The main delivery channels for the Ghanaian payment systems are listed in Table 17 below:

Table 17: Key Payment Delivery Channels

TYPE	MARKET INFRASTRUCTURE	FEATURES
Clearing systems	Cheque Codeline Clearing with Cheque Truncation (CCC)	Provides clearing and settlement of cheques.
	Automated Clearing House (ACH)	Enables direct debit and credit funds transfer from one bank to another.
	gh-link™	Provides clearing and settlement for all domestic cards
	e-zwich biometric smartcard system	Provides clearing and settlement of e-zwich card transactions.
Settlement systems	Ghana Interbank Settlement (GIS) system	It is the real time gross settlement (RTGS) for high value funds transfers. It is managed and operated by the Bank.
	Central Securities Depository	The central depository and settlement system that provides clearing and settlement for securities issued by the Bank, Government of Ghana and Cocoa Board and other corporate securities.
Critical service providers	Security Instrument Printers	Print payment instruments such as payment vouchers, cheques

The delivery channels were mainly used by the financial institutions to move funds from one economic agent to another. Ghana Interbank Payment and Settlements System manages

the gh-link™, e-zwich biometric smart card system and the Automated Clearing House. The bank conducted annual accreditation scheme for the Security Instruments Printers.

CHAPTER 6

6.0 Payment Systems Oversight

This chapter reviews oversight of the payment systems operations during the year.

6.1 Risk Assessment

A key objective of the Bank's payment system oversight is to prevent systemic risk in the national payment system and promote financial stability. The Bank followed the Committee on Payments and Market Infrastructure, International Organization of Securities Commission (CPMI-IOSCO) Principles of Financial Market Infrastructure (PFMI) in assessing the risks in the payment systems. Risk assessment was conducted largely based on the following categories:

6.2 Credit Risk

Assessed Credit risk for participants in the payment system was found to be tolerable. Participants in the interbank payment system provided adequate funding for anticipated obligations primarily from their own resources. Funds were borrowed from the interbank market to make up for liquidity shortfall. The hierarchy of funding of interbank payment obligations was own funds, interbank market, repo with the Bank of Ghana, and in extreme case, intraday liquidity on ad hoc basis.

6.3 Liquidity Risk

Liquidity risk was adequately addressed in the payment system through the use of central bank money as collateral for interbank payment obligations. All interbank payment systems were required to settle on the Real Time Gross Settlement System (RTGS), and participants were required to back their net obligations with cash held in their settlement accounts with the Bank of Ghana.

The Bank is seeking to further enhance liquidity risk management through implementation of an automated Intraday Liquidity Facility (ILF) management system. The project would integrate the Central Securities Depository (CSD), RTGS and Bank of Ghana Treasury Management system for real time provision of collateralized liquidity to promote settlement efficiency.

6.4 Operational Risk

Generally, operational performance of Financial Market Infrastructure (FMI) was satisfactory. RTGS, CCC, ACH, e-zwich and gh-Link systems were fully operational and available throughout the year. A few interruptions were however, noted in the mobile money service operation but these did not materially affect the integrity of the ecosystem. Most of the incidents were planned interruptions which took place in the night and customers were given prior information.

6.5 Legal Risk

The payment system has adequate legal and regulatory framework which is derived from the Bank of Ghana Act 2002 (Act 612) and the Payment Systems Act 2003 (Act 662). In addition, there are regulations, guidelines and policy statements to give effect to the primary legislation with regards to operations of the payment streams.

The emerging role of aggregators and financial technology firms is not addressed in the existing regulatory framework. Similarly change in technology and innovation also rendered sections of the existing legal framework inadequate. A draft Payment Systems and Services Bill has been prepared to address the identified gaps.

6.6 Settlement Risk

Settlement of interbank obligations was in central bank funds through the settlement account of participants with the Bank of Ghana. The RTGS is the core FMI infrastructure through which interbank obligations were settled, providing settlement immediacy, irrevocability and finality.

6.7 Developments in Oversight

Ghana Interbank Settlement (GIS) system and GhIPSS was classified as systemically important payment systems on account of its responsibility for key payment systems infrastructure such as CCC, ACH, e-zwich and gh-Link. Designating GhIPSS as systemically important infrastructure provided the opportunity to adopt risk-based approach in the Bank's oversight. Issues related to information technology security, and cyber security in particular were given much attention on account of increasing digitization of payments and recent spate of cyber-attacks on financial institutions in some countries. In addition, risks related to interdependencies arising from roles of aggregators, fintechs and third party service providers, as well as tiered relationships were also considered in the oversight activities.

6.8 Monitoring Financial Risks in Central Counter-parties

Ghana Bankers Clearing House (CH) is responsible for the clearing of cheques, credit and debit transfers. The CH, however, does not play the role of a central counterparty hence it is not exposed to any financial risk arising from non-performance of any of the CH participants.

Its role is to facilitate the exchange of value among participants, determine net settlement

position of participants, communicate to participants their settlement position and transmits the settlement reports to GIS for settlement to be effected in the settlement accounts of participants

6.9 Application of Principles for Financial Market Infrastructures

The Bank, in its Payment System Oversight Framework, made the commitment to employ IOSCO-CPFMI Principles of Financial Market Infrastructure (PFMI) in the oversight of payment system. GIS and GhIPSS were identified for assessment on account of being systemically important. The Bank performed assessment on these FMIs on account of inadequate knowledge and skills of operators to undertake a self-assessment. GhIPSS operated CCC, ACH, e-zwich, gh-Link and GIP; however it was assessed against the PFMI as a single entity. Nevertheless, the significant issues with each of the systems GhIPSS operated were considered in the assessment.

The 2016 report revealed improvement over that of 2015, particularly in the areas of governance, liquidity risk, risk management framework, operational risk and tiered arrangements. The Bank plans to build capacity of the GIS and GhIPSS to enable them commence self-assessment in 2017.

6.10 Participation in Settlement Systems

Settlement of interbank obligations is effected through the GIS system, which is owned and operated by the Bank of Ghana. Participation in the GIS is mainly restricted to licensed clearing banks. Banks are required to have settlement account with the Bank of Ghana to facilitate settlement of interbank payment

obligations in central bank money. All the banks that were members of the Ghana Bankers Clearing House were mandated to participate in the GIS, which continued to be the settlement system. Systems that settle on the GIS were the CCC, ACH, e-zwich, gh-Link and securities transactions from the Central Security Depository (CSD).

There were thirty three (33) banks ARB Apex Bank and Social Security and National Insurance Trust which participated in the settlement system.

6.11 Submission of Returns by Systems Operators

Deposit Money Banks (DMBs) and Electronic Money Issuers (EMIs) under the Bank’s supervision were required to submit monthly returns to the Payment Systems Department

under Section 3(1) of Act 662, Payment System Act 2003.

These returns covered access, usage and provide information on transactions volumes and values, service fees and tariffs of the various payment distribution channels, branch and agent network. Electronic money issuers were also required to submit information on incident, fraud and defalcation; customer complaint; service interruption; suspicious transactions and concentration levels. The following are the list of returns and their frequency of submission.

DMBs submitted PSB1 and PSB10 whereas EMIs submitted the PSB2, PSB3, PSB4, PSB5, PSB6, PSB7, PSB8, PSB9 and PSB11. The deadline for submission of the PSB1 Returns was the 15th day of the month after a reporting month.

Table 18: Submission of Returns

Return	Description	Frequency
PSB1	Deposit Money Bank (DMB) Returns	Monthly
PSB2	E-Money Transaction Return	Monthly
PSB3	E-Money Regional Distribution Return	Monthly
PSB4	Incident, Fraud and Defalcation Return	Monthly
PSB5	Customer Complaints Return	Monthly
PSB6	Service Interruption Return	Monthly
PSB7	Suspicious Transactions Return	As and when it occurs
PSB8	Hundred Largest e-money Holders Return	Monthly
PSB9	E-Money Issuers Fees/Tariffs and Charges Return	Monthly
PSB10	DMB Fees/Tariffs and Charges Return	Monthly
PSB11	E-value Reconciliation Return	Monthly

6.12 Collaboration with Key Stakeholders

The Bank continued to engage industry players within the payment systems space to discuss new ways of strengthening the industry and to address issues of concern and challenges. Workshops and meetings were held in collaboration with the banks, MMOs and other key stakeholders. Notable among the stakeholder engagements was a workshop held to discuss the draft Payments Systems and Services Bill currently with the Attorney General Department.

The Bank of Ghana also signed a Memorandum of Understanding (MOU) with the National Communications Authority (NCA), the primary regulator of mobile network operators in 2016. The MOU, which outlines areas of supervisory cooperation between the Bank and the NCA, was designed to enhance effective oversight of electronic money issuers to avoid regulatory arbitrage.

The Bank collaborated with the National Insurance Commission to promote financial inclusion through digital micro-insurance. Under this arrangement, the Bank has allowed the use of airtime expressed in monetary terms for the payment of micro- insurance premium.

The Bank continued to collaborate with Alliance for Financial Inclusion (AFI), Consultative Group to Assist the Poor (CGAP), IMF AFRITAC West 2, and the Office of Technical Assistance (OTA) of the US Treasury to promote a safe, sound and efficient electronic payments ecosystem supportive of financial inclusion and financial stability.

6.13 ATM and POS Interoperability

The National Switch, gh-link™, provided an interoperable platform for ATM and POS devices. This platform provided the clearing and settlement of ATM and POS transactions of all member financial institutions and also allowed cards to be accepted by member institutions who were acquirers. Although the gh-link™ provided interoperability for ATM and POS devices, only member institutions could participate. This necessitated the need for all banks and other financial institutions to be members of the platform to ensure interoperability of all ATM and POS devices.

The Bank of Ghana in collaboration with GhIPSS launched the Euro Mastercard Visa (EMV) project to move all gh-link™ cards from magnetic stripe to chip and PIN to ensure safety and security in the use of the gh-link™ cards.

6.14 Settlement of Funds in the Ghana Interbank Payment Systems

The Ghana Interbank Settlement (GIS) system is a real time gross settlement (RTGS) system. It is a large value domestic interbank funds transfer system which settles funds on gross basis and on real time. It is based on the credit push principle, which requires the payer to initiate funds transfer to the payee. The system operates every working day between 08:30 and 17:00 GMT.

The GIS uses the FIN-Y copy messaging system of SWIFT. Participants holding accounts on the GIS initiate funds transfer from their accounts on real time basis from their premises through

a computerized network. Initiated transaction leads to SWIFT message being relayed to the sender through the Bank of Ghana as a service administrator to the recipient. Two main funds transfer messages that are sent are MT202, for bank to bank transfer and MT103, for customer transfer.

Besides these transactions, net settlement positions of participants in the CCC, ACH, e-zwich, gh-Link and GIP are transmitted to the Bank of Ghana GIS office for entries to be effected into the accounts of the participants on the GIS system. Transactions that are settled on the GIS are irrevocable, unconditional and

final. Cut off for MT103 message is 4:30pm and MT202 message 5:00pm.

6.15 Retail Payments System Oversight

The Bank has oversight over retail infrastructure focused on IT security, efficiency, reliability, consumer protection recourse mechanism, data protection, responsible innovation, competition, system downtime, business and incidence of fraud. Off-site surveillance through analysis of routine data submission complements on-site examination.

CHAPTER 7

7.0 Financial inclusion in Ghana

The financial inclusion landscape in 2016 was made up of banks, specialized deposit-taking institutions (SDIs), mobile money operators, mobile money agents, electronic money issuers, non-deposit taking financial institutions, credit unions, and fintech companies.

Policy direction was provided by the Ministry of Finance, Bank of Ghana, National Insurance commission, National Pensions and regulatory Authority, Securities and Exchange Commission, National Communication Authority and Ghana Revenue Authority. The regulators created the enabling environment to promote financial inclusion and financial innovation.

7.1 Financial Inclusion Strategy

Ghana as a member of the Alliance for Financial Inclusion (AFI) committed itself to the Maya Declaration. The Maya Declaration consisted of a set of global measurable commitments to financial inclusion in 2012. These global commitments comprised:

- i. Revision of the Payment System Strategy launched in 2014 for the promotion of financial inclusion agenda in line with emerging global trends;
- ii. Review of the regulatory framework for branchless banking to create an enabling environment for promotion of financial innovation;

- iii. Implementation of interoperability among stakeholders in the mobile financial services value chain to stimulate an uptake of mobile financial services by the unbanked; and
- iv. Development of financial literacy program.

The Government in collaboration with key stakeholders including the World Bank began a process to develop a National Financial Inclusion Strategy. The overall objective of the National Financial Inclusion Strategy is to increase access to formal financial services for the adult population from 58 per cent to 75 per cent by 2023. The draft strategy hinged on five pillars namely financial stability, assets quality and usage of financial services, financial infrastructure, financial consumer protection and financial literacy.

7.2 Status of Financial Inclusion in Ghana

The recent study conducted on Ghana by the Consultative Group to Assist the Poor (CGAP) indicated that the state of financial inclusion was above its 70 per cent target of financial inclusiveness. The report explained that the rate of financial inclusiveness reached 75 per cent in 2015.

The table below provides the annual growth rate of financial access points in Ghana from 2014 to 2016.

Table 19: Access Points

Access (Number Of Points)	2014	2015	2016
Licensed Banks(DMBs)	28	29	33
Bank Branches	967	1,173	1341
Microfinance Institutions(MFI)	503	546	564
Rural And Community Banks-Head Office	138	139	141
Rural And Community Bank-Agencies*		887	895
Active Mobile Money Agents	20,722	56,270	107,415
ATMs	923	912	1,928
Non-Bank Financial Institution	60	62	64

*Source: ARB APEX BANK LTD (provisional)

Table 20: Usage of Mobile Money

Usage (Transactions)	2015	2016
Active mobile money customers	4,868,569	8,313,283
Total volume of mobile money transactions	266,246,537	550,218,427
Average Volume of mobile money transactions per day	729,442.57	1,503,329.04
Number of Customers registered With mobile money (Cumulative)	13,120,367	19,735,098
Total value of mobile money transactions (GH¢'million)	35,444.38	78,508.90
Total value of mobile money transactions (USD' Million)	9,341.23	18,691.71
Balance on mobile money Float (GH¢'million)	547.96	1,257.40
Balance on mobile money Float (USD' Million)	144.41	299.37

*Data excludes Sovereign Bank Limited, Premium Bank Ltd, Omni Bank Ltd and Heritage Bank Ltd.

Some of the financial inclusion policy initiatives undertaken during the year were as follows:

- i. i. the introduction of quarterly payment of interest on electronic money float held by banks;
- ii. Tiered Customer Due Diligence (CDD) (Minimum, Medium and Enhanced

where the minimum CDD was relaxed to cater for a prospective electronic money holder in the bottom of the pyramid to have an electronic money account and be linked to the formal financial system;

- iii. application of the basic principles of consumer protection to safeguard and protect all customers and especially the most vulnerable groups such as illiterate, women and the physically challenged; and
- iv. The Bank of Ghana in collaboration with Government agreed that GHIPSS integrate national retail electronic payment infrastructure to provide interoperability.

The main innovative micro products and services on the mobile money platform aimed at deepening financial inclusion through the extension of financial services to the low income earners were Micro investment - Tbill4All and Micro insurance. Government has also implemented various initiatives to provide equitable access to goods and services to improve the living standards of Ghanaians.

Livelihood Empowerment Against Poverty (LEAP) initiative where thousands of the poor were given monthly stipend to improve their living standards through mobile payments such as the e-zwich and mobile money was also enhanced.

7.3 Consumer Protection

Consumer protection measures were aimed at protecting consumers' interests in the use of financial services and products; educating consumers on financial services; sustaining public confidence, integrity and harmonising relationship in the financial sector.

The objectives of consumer protection were attained through receiving complaints, petitions and grievances from customers and the public

for investigation and resolution; receiving reports and conducting investigations into financial fraud and defalcation in the financial industry; introduction of two sets of Market Conduct Regulations to guide the delivery of credit services and complaint management by service providers and promotion of financial inclusion initiatives.

7.4 Redress Mechanism in the Payment System

A total of 1,529 complaints were received from the general public with respect to banking business. Out of this total, 1,362 cases were complaints made by customers of Non-Bank Financial Institutions (especially microfinance institutions), 27 from customers of Rural and Community Banks and the remaining 140 cases were reports from customers of universal banks and other financial institutions.

The complaints received from the public covered aspects of banking service delivery such as unauthorized withdrawals from customer accounts especially through internet banking, payment of international remittances to persons other than the intended beneficiaries and ATM related disputes. Complaints against financial institutions, particularly NBFIs and Microfinance companies which failed to pay customers' investments upon maturity accounted for more than 50 per cent of the complaints received in 2016.

The complaints were investigated and outcomes, decisions or rulings made and communicated to the aggrieved parties. The Bank continued to monitor the implementation of its decisions on complaint issue until final resolution is achieved.

7.5 Fraud and Defalcation Reporting

The Bank investigated and analyzed fraud and defalcation reports received from financial institutions. Total number of fraud incidents reported in 2016 was 1,001. These cases were received from universal banks, Non-Bank Financial Institutions (NBFIs) and Rural and Community Banks (RCBs).

The main fraud cases reported were suppression of customer accounts by staff of financial institutions, card fraud, forgery and alteration of documents, manipulation of accounts and negotiable instruments. Others included fraudulent collection of international remittances by persons not named as recipients, transactions involving cloned and stolen cheque and fraudulent transfers through hacked email accounts.

The total monetary value involved in all reported fraud cases (both successful and attempted) for the year 2016 amounted to approximately GH¢244.32 million.

7.6 Developments in Consumer Protection Measures

During 2016 the Bank in collaboration with the German Development Co-operation (GIZ) and CGAP, completed two Financial Consumer Protection Regulations. These were part of efforts aimed at developing a financial consumer protection framework. Disclosure and Product Transparency Regulations for Credit Products and Services provided rules to guide service providers in their delivery of credit services to customers. It is also required financial institutions to disclose specific information to borrowers.

Consumer Recourse Mechanisms Regulations for financial services providers provided guidelines for service providers on a more comprehensive complaint management procedure. With the assistance of GIZ and CGAP, the Bank completed the work plan for the development of the Financial Consumer Protection Regulations for Digital Financial Services.

CHAPTER 8

8.0 Fees and Tariffs Structure

This section discusses payment systems fees and tariffs submitted to the Bank by financial service providers in 2016.

8.1 Interchange Fees

Interchange fee is paid each time a consumer uses a credit, debit or prepaid card to buy in a shop or online. The merchant's bank (the "acquiring bank") pays "interchange fee"

to the consumer's bank that issued the card (the "issuing bank"). In a cash withdrawal transaction the interchange fee is paid from the issuer to acquirer, often called reverse interchange. The interchange fees vary from bank to bank. The transaction fee may be a flat rate or expressed as a percentage of the value of the transaction. There is usually no fee charged on transaction on a bank's own transaction channel. Table 21 contained the average interchange fees of banks as at end-December, 2016:

Table 21: Inter-change Fees

INTERCHANGE FEES						
	ATM			POS		
	OWN	OTHER	FOREIGN	OWN	OTHER	FOREIGN
VISA	free -GH¢1.00	avg GHS5.00 or 0.4%	GH¢8 to 3%	free to GH¢ 1.00	1% to 3%	GH¢4 to 2%
MASTER CARD	free - GH¢1.00	\$2.5 and/or 0.4%	\$2 to 3%	free to GH¢ 1.00	1% up to 3%	NIL
GH-LINK	free - GH¢1.00	GH¢1.7-GHS 4	NIL	free to GH¢ 1.00	GHS 0.60 per transaction	NIL

8.2 Mobile Money Services Fees and Tariffs

Mobile money services fees and tariffs varied among Electronic Money Issuers. Fees and tariffs were either at a flat rate or expressed as

a percentage of the value of the transaction.

Mobile money service fees and tariffs as at end-December, 2016 are provided in Table 22 below:

Table 22: Mobile Money Services Fees and Tariffs

Type of Transaction	VODAFONE			AIRTEL			TIGO			MTN		
	Range (GH¢)		Fees/charges (GH¢)	Range (GH¢)		Fees/charges (GH¢)	Range (GH¢)		Fees/charges (GH¢)	Range (GH¢)		Fees/charges (GH¢)
1 Send money from a registered customer to another registered customer (same network)	1	50	0.5	1	50	free	1	50	0.5	1	50	0.5
	50.01	75	0.75	51	100	free	50	100	1	51	1000	1%
	75.01	100	1	101	250	free	100	250	1.5	1000 and above	Ghs 10 Flat	
	100.01	250	1.5	251	500	free	250	500	2			
	250.01	500	2	501	1000	free	500	1000	2.5			
	500.01	1000	2.5	1000	3100	free	1000	2000	5			
	1000	2000	5									
2 Send money from a registered customer to unregistered customer	1	50	1.5	1	50	GH¢1.00	1	50	1.3	1	50	1.5
	50.01	75	2.5	51	100	2%	50	100	2.5	51 & Above		3%
	75.01	100	2.5	101	250	2%	100	250	4.3			
	100.01	250	4.5	251	500	2%	250	500	6			
	250.01	500	6	501	1000	2%	500	1000	8.5			
	500.01	1000	10				1000	2000	17			
	1000	2000	20									
3 Send money from an unregistered customer to an unregistered customer	Nil	Nil	Nil	1	50	2.5	1	50	2	1	50	2.5
	Nil	Nil	Nil	51	100	5.00%	50	100	4	51 & above		5%
	Nil	Nil	Nil	101	250	5.00%	100	250	8			
	Nil	Nil	Nil	251	500	5.00%	250	500	17			
	Nil	Nil	Nil	501	1000	5.00%	500	1000	32			
	Nil	Nil	Nil				1000	2000	50			
	Nil	Nil	Nil									
4 Withdrawal by registered customer	1	50	0.5	1	50	0.8	1	50	0.8	1	50	0.5
	50.01	75	1.5	51	100	1.25	50	100	1.5	51	1000	1%
	75.01	100	1.5	101	250	1%	100	250	2.8	1000 and above	Ghs 10 Flat	
	100.01	250	2.5	251	500	1%	250	500	4			
	250.01	500	4	501	1000	1%	500	1000	6			
	500.01	1000	6	1001	3100	1%	1000	2000	12			
	1000	2000	10									
5 Withdrawal by unregistered customer	Nil	Nil	Nil	1	50	free	1	50	Free	1	50	Free
	Nil	Nil	Nil	51	100	free	50	100	Free	51	1000	Free
	Nil	Nil	Nil	101	250	free	100	250	Free			
	Nil	Nil	Nil	251	500	free	250	500	Free			

CHAPTER 9

Summary and Conclusion

The Payment ecosystem improved significantly in 2016 on account of various strategic alliances that were established among banks, telecommunication and financial technology firms. Digitization of the payments system landscape accelerated as a result of increased participation of financial technology firms which caused some concerns for improved cyber security, data protection, consumer protection and recourse mechanisms.

Growth in supply of digital payment products was driven mainly by mobile money on account of high mobile phone penetration. Payment cards issued also recorded high growth, driven mainly by debit cards. The number of credit card issuers and credit card holders also increased significantly. These developments were supported by deployment of point of sale devices, enabling regulatory environment and customers' desire for convenient and faster payments. The number of banks providing interbank instant retail payment service increased from nine (9) in 2015 to twenty two (22) by end-December 2016 in response to customer demand for faster retail payments.

The mobile phone played a key role in the digital financial services space by facilitating

delivery of wallet-based savings, insurance, and investment products. Banks in partnership with mobile money operators and financial technology firms leveraged on data analytic tools to mine valuable information from mobile money customers' data to provide credit scoring for short term loans.

In line with the National Payment Systems Oversight Framework, the Bank in 2016 set up the Payments Systems Council (PSC) to drive developments in the payment systems. The Council serves as an advisory body to the Bank and supports the attainment of a sound and efficient payment, clearing and settlement system in Ghana. The Payment Systems and Services Bill 2017 was submitted to the Attorney General Department for onward submission to Cabinet and Parliament. The department hosted staff of Bank of Tanzania who came to learn about the use of mobile phone to purchase treasury bills and also provided training for staff of Bank of Sierra Leone, Gambia and Liberia under the International Monetary Fund Africa West 2 programme.

