COUNTRY DIAGNOSTIC

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Building an Inclusive Digital Payments Ecosystem: The Way Forward

GHANA

BETTER THAN CASH ALLIANCE

Authors: Roland Amoah, Rajesh Bansal,
Aneth Kasebele and Ariadne Plaitakis, BFA
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GHANA
Country
Diagnostic

This Diagnostic Report shows Ghana has taken important steps toward digitizing its economy, and has several of the building blocks of an inclusive digital ecosystem already in place. Importantly, the Ghanaian government is leading by example in digitizing many of its own payments and continuously improving the regulatory environment. Large businesses are also taking positive steps. Even so, Ghana remains at the initial stages of its digitization journey, with cash still prevalent in many parts of the economy. A number of key barriers must be overcome if the country is to drive forward its digitization agenda.

This Report assesses Ghana's progress to date, and sets out specific policy recommendations that can accelerate Ghana's journey toward a more digital economy. The report draws on a fast-growing body of knowledge about success factors in similar markets. It also examines three areas of specific focus – government fees and fines, public utility payments, and the fast-moving consumer goods sector – where digitization can have particularly powerful impacts.

Realizing the potential gains offered by digitization will help expand financial inclusion, boost government revenues, and drive new economic opportunities for Ghanaian individuals and businesses. In doing so, greater digital payments can significantly strengthen Ghana's economy and society, now and for generations to come.

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1. EXECUTIVE SUMMARY

Ghana has begun its journey toward an economy that is less dependent on cash, with the government playing a key role in driving progress. Several important elements for a shift to digital payments are already in place, including good connectivity, growing financial infrastructure, and a continuously improving regulatory environment. Crucially, there is also a widespread recognition of the need to continue building an inclusive and responsible digital payments ecosystem. Doing so will drive financial inclusion, particularly for women, improve transparency of payments, and open up new markets for goods and services, which in turn supports economic growth.

The purpose of this report is to diagnose both the progress of digital payments and the challenges that lie ahead. In doing so, the intention of the Better Than Cash Alliance is to offer a guide – including specific recommendations – to help Ghanaian policymakers and private sector decision-makers accelerate their progress toward digitization. Specifically, to accelerate Ghana's progress in building an inclusive digital payments ecosystem, this report recommends:

- Rolling out a biometric National ID as planned and making explicit efforts to enable payments and other financial use cases
- Improving payment interoperability
- Digitizing government procurement payments to and from citizens or businesses
- Leveraging electronic fund transfer infrastructure for business-to-business payments
- Incentivizing digital payments at the point of sale

These measures can help bring Ghana to a tipping point on its digital payments journey, as individuals, businesses, and government increasingly realize the power of digital payments to deliver major savings and efficiencies, strengthen businesses, and materially improve lives.

KEY FINDINGS

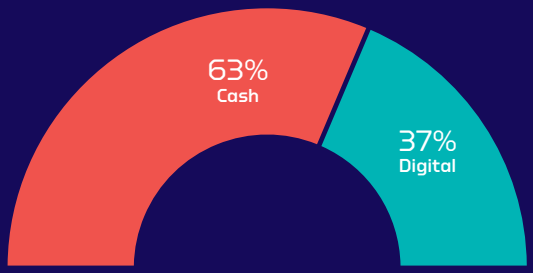
Ghana is making progress in digitizing payments, with 37% of the value of all payments now made digitally. The shift to digital payments is supported by good internet connectivity, levels of financial inclusion in Ghana above the regional average, expansive mobile money agent networks, solid payments infrastructure, and continuously improving regulation spearheaded by the Bank of Ghana ("BoG").

The Ghanaian government is leading efforts to digitize payments. The Ghanaian government is leading by example, both in setting policy direction through ministerial statements and in digitizing its own payments, including conditional cash transfer programs such as Livelihood Empowerment Against Poverty ("LEAP"). The 86% of the value of government payments which is now digital shows the government's leadership. In addition, the government's implementation of a Treasury Single Account[1] ("TSA") will help the government improve efficiency and maximize savings from its digitization efforts.

However, the vast majority of payments by volume are still being made in cash. This report estimates that, even with this progress, 98.72% of the number of payments are still currently being made in cash, as individuals continue to purchase essential goods, including food, in the informal economy which relies on cash. The strong preference for cash in Ghana is also a result of the high costs of digital payments that are often passed on to users (i.e., charging customers a fee to use credit cards), and a lack of trust in, or familiarity with, digital payments.[2]

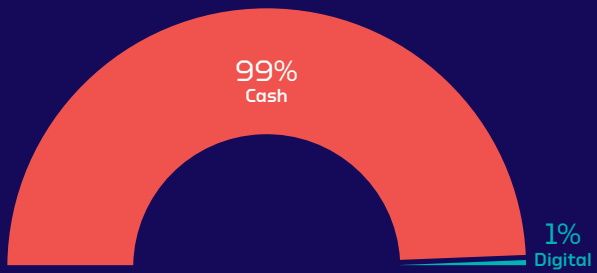
Ghana is making progress in digitizing payments, **with 37% of the value of all payments now made digitally.**

ESTIMATED ANNUAL PAYMENTS BY VALUE 2016



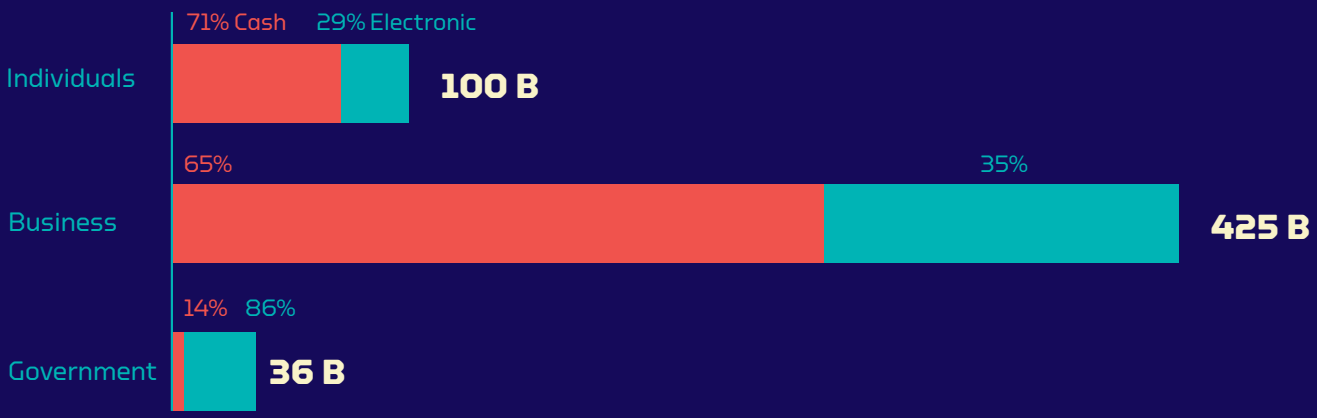
37% of GHS 561 billion payments are processed through electronic channels.

ESTIMATED ANNUAL PAYMENTS BY VOLUME 2016

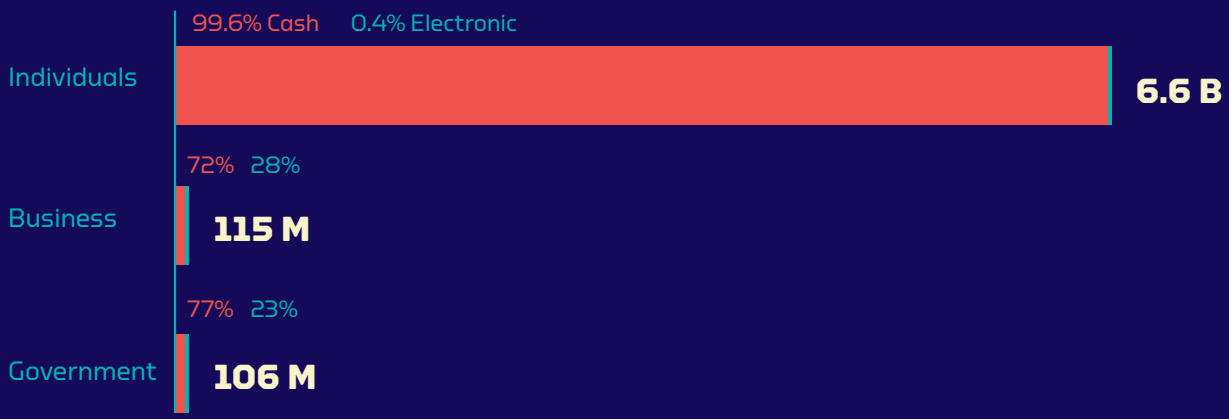


99% of 6.8 billion transactions conducted in Ghana are in cash.

ESTIMATED ANNUAL VALUE OF TRANSACTIONS (GHS billions), 2016



ESTIMATED ANNUAL VOLUME OF TRANSACTIONS 2016



Government Payments

- **Digitization efforts are expected to create savings of over GHS 250 million (approx. USD 58 million) in 2017 and improved transparency.** Digital changes already implemented have delivered significant cost savings and improved transparency, such as the removal of close to 50,000 "ghost" names on the government payroll and pensions registry through the required registration of all civil servants on the Social Security and National Insurance Trust ("SSNIT") biometric database, a specific database managed by SSNIT that is antecedent to the National ID initiative.

- **Almost 100% of all government-to-person ("G2P") and government-to-government ("G2G") payments are digital.** Ghana has achieved the first level of digitization of payments within these payment types. The challenge ahead is to continue building out the digital payments ecosystem so that these funds can be used for other digital transactions, rather than being cashed-out by recipients.

- **However, approximately 90% of G2B and other government payments by volume are still made via check or cash.** Although the government has made great strides with G2P and G2G, these only account for a small percentage of overall total number of government payments. By far the largest number of payments are the G2B payments, 90% of which are still made via check or cash. Eighty-six percent of all government payments by volume are procurement payments, almost all of which are made by check. The high prevalence of checks in procurement is primarily due to the lack of a centralized system for payment of suppliers by government agencies.

- **A biometric payment card is in its initial stages but needs further adoption and greater choice for consumers and businesses.** A key initiative in the government's digitization agenda is the roll-out of the biometric e-zwich card,[3] which is intended to become a universal payment instrument in Ghana. While progress has been made in terms of payments made by government using the e-zwich card, it has not yet been adopted widely by individuals or the private sector, primarily due to lack of interoperability and limited merchant acceptance. At this stage most e-zwich transfers are being immediately cashed out by recipients, meaning that government payments are not being retained in the electronic payments ecosystem. This indicates a need to continue building out Ghana's digital payments ecosystem through greater choice and competition, in collaboration with the private sector.

- **The government is implementing measures to streamline payments.** The government is keen to implement a TSA to streamline government payments, and has already transferred accounts of nine Ministries, Departments, and Agencies ("MDAs") (out of 24) from commercial banks to the BoG as of August 2017.

Payments by Individuals

- **Payments by individuals account for the largest volume of payments in the Ghanaian economy,** with person-to-business ("P2B") transactions (mostly retail transactions) representing 94% by volume of all payments in the ecosystem.
- **Ninety-nine percent of all transactions by individuals are estimated to be cash-based.** This is typical in emerging-market economies, mainly due to cash purchases by individuals of consumption goods and a large informal economy.
- **The current extensive use of cash in Ghana among individuals also results from:** (i) the **high cost** of digital payments that is often passed on to users (i.e., charging customers a fee to use credit cards or mobile money); (ii) **trust issues** with using digital payments; (iii) the **low penetration of debit and credit cards and low availability of POS devices** at merchant points.
- **Over a quarter (29%) of the value of all transactions by individuals is estimated to be digital, driven largely by the rapid expansion of mobile money.** While digital payments by individuals measured by volume are low in Ghana, measured in terms of value they are much higher, primarily due to digital remittances, both international and domestic.

72% of all business payment transactions are non-digital, due mainly to the prevalence of check and cash payments.

"The QR code helps me save money, sell more, and manage the cash flow better as I no longer need to offer credit to my customers. No more chasing. They can pay me instantly."

"I would like to be able to pay for water and electricity, and for the renewal of my business license, with the QR code. It's so much more convenient, quicker, than cash."

OLIVIA DEI-ALORSE, JUICE SELLER

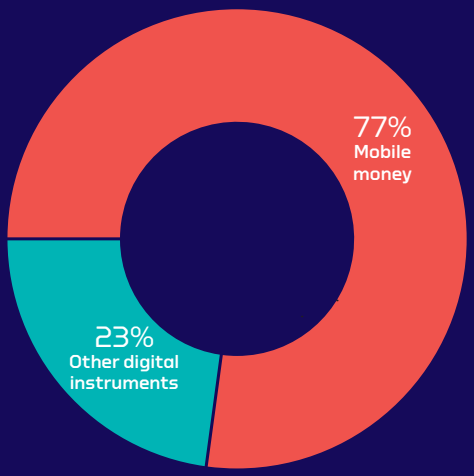
Payments by Businesses

- **Most businesses in Ghana still use checks and cash.** Although large businesses are moving to electronic payments for high-value transactions, most businesses still largely use checks and cash. More than two-thirds (72%) of all business payment transactions are non-digital, due mainly to the prevalence of check and cash payments in business-to-business ("B2B") payments and a lack of competitively priced alternatives. In terms of payments already being made digitally, large businesses primarily use Electronic Funds Transfer ("EFT") for salaries and pension contributions.
- **Although small businesses predominantly use cash payments for B2B transactions, medium and large businesses favor payment by check for legal reasons.** Checks act as a cash flow management tool and are perceived to provide better legal recourse than EFT payments, as it is a criminal offense in Ghana to issue a check that is dishonored upon presentation.

Digital Payments by Payment Instrument

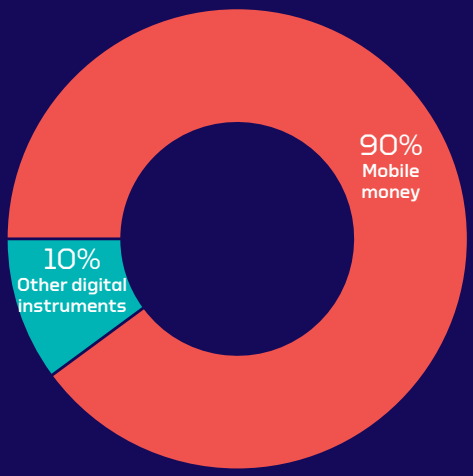
- **Transactions initiated by mobile money account for 90% of all transactions initiated by digital payment instruments in Ghana in 2016,** and over 77% of the value of all transactions initiated by digital instruments in that period. This growth in mobile money is thanks largely to significant effort and investment by several mobile network operators following the regulatory changes that came into effect in 2015 enabling electronic money to be issued by both regulated financial institutions and licensed non-bank entities.
- **Over two-thirds of the volume and value of mobile money transactions are not payments of the standard definition,** but rather customer service and internal transactions such as cash-in, cash-out, account inquiries, bank-to-wallet, and wallet-to-bank transactions.

VALUE OF DIGITAL PAYMENT INSTRUMENTS 2016



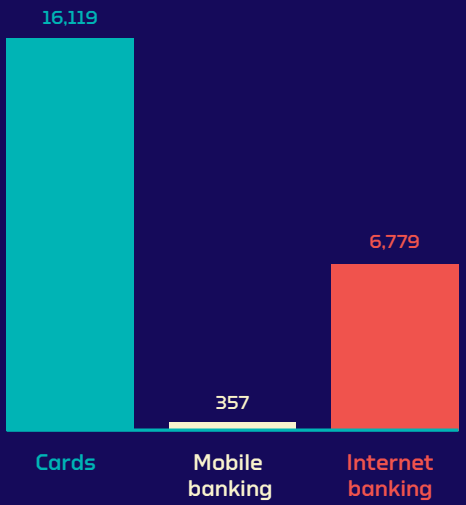
Mobile money accounts for 90% of all transactions by digital payment instrument in Ghana in 2016.

VOLUME OF DIGITAL PAYMENT INSTRUMENTS 2016

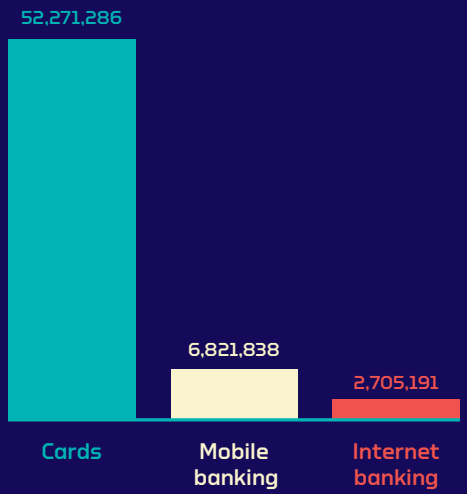


Over two-thirds of Ghanaian transactions by digital payment instruments by value and volume in 2016 are mobile money.

VALUE OF DIGITAL PAYMENT INSTRUMENTS (GHS MILLION), EXCLUDING MOBILE MONEY 2016



VOLUME OF DIGITAL PAYMENT INSTRUMENTS, EXCLUDING MOBILE MONEY 2016



When mobile money-initiated transactions are excluded, cards are the most prevalent form of digital payments instruments, although internet banking is increasing in terms of the volume of payments.

"Cards" includes debit, credit, prepaid, and e-zwich cards, of which debit cards are the most prevalent.

PRIORITY AREAS FOR DIGITIZATION

This report has identified three priority areas where cash remains prevalent, and has assessed that shifting to digital payments can have a strong positive impact on the payments ecosystem:

"Handling cash is not convenient. Mobile and e-card payments are much faster and more secure for both the customers and us."

TELLER AT DRIVER AND VEHICLE LICENSING AUTHORITY OFFICE

1

Payment of fees & fines to government. The various fees and fines paid by individuals and businesses to Ghanaian government entities is a key area that can benefit substantially from digitization, given 97% of fees and fines paid by individuals are made in cash, and 99% of business payments are made using "non-digital means" – for example, checks.

In terms of transaction volumes, digitizing "one off" fees does not appear significant at first glance, as it accounts for only 0.03% of all payments and 1.6% of all government payments. However, in reality, doing so has the potential to streamline person-to-government ("P2G") interactions for millions of Ghanaians, increase government revenue in the process, and help formalize the country's growing small business sector. It also forms part of the government's e-services strategy, with payments able to be made on the Ghana E-Payment Portal ("GEPP").

2

Payments for public utilities, e.g., water and electricity. Another key focus area is payments received by public utility companies for the distribution of water and electricity to individuals, businesses, and government institutions. Again, cash is the main payment method for public utilities with only a small number of high-value electronic funds transfers by businesses. Eighty percent of the population is using these essential services, so if large-scale digitization of these payments can be achieved, this will help build familiarity with, and take-up of, digital payments more broadly.

The main challenge is a lack of smart distribution infrastructure, such as smart meters that allow for remote reporting of usage and credit top-up. In terms of electricity supply, around 20% of end-users currently have smart meters, providing an opportunity for a quick win by digitizing end-to-end delivery and payment, although challenges remain due to the variety of different smart meters and platforms in use. The remaining 80% of users who do not have smart meters for electricity, and the 100% of users who do not have smart meters for water present a longer-term opportunity for highly effective and efficient digitization by providing a single form of smart, prepaid meter.

3 **Payments in the retail space and in the Fast Moving Consumer Goods ("FMCG") value chain.** With FMCG companies in Ghana manufacturing a range of household consumer goods (sold either through a direct or an indirect distribution model via wholesalers and small retailers), there are a number of opportunities to digitize the payments process.

On an individual level, 99.9% of payments for consumption goods by volume are in cash, and these make up 94% of all payments by volume. This indicates there is much work to do in this area, but also presents a major opportunity to realize the many advantages of digitization which are now well established from experiences in other developing markets. On the one hand, this includes the consumer facing retail payments space with merchants, which is emerging as a significant priority for digitization across emerging markets. On the other, it includes the B2B wholesale space and distribution chain with wholesalers and small retailers. For FMCG companies operating in Ghana, checks are the main payment instrument for receiving distributor payments – accounting for 96% by volume and 95% by value. Similarly, it is the primary method for making vendor or employee payments, about 59% by volume and 46% by value respectively.

"Mobile money makes business easy."

DINAH FIERTY, SMALL MERCHANT

This report finds that digitizing only a fraction of these transactions would have a significant impact on the overall ecosystem, especially to drive adoption among small merchants and consumers. It would also open potentially transformative new pathways for access to capital for Micro, Small, and Medium Enterprises, the vast majority of which tend to be excluded from the traditional banking sector. Digitizing payments in and around the retail space generates transaction data on all participants in the value chain that can be used for credit assessments and the creation of new working capital products, both for consumers and small retailers.

99.9% of payments for consumption goods by volume are in cash, and these make up 93% of all payments by volume. This indicates there is much work to do in this area, but also presents a major opportunity.

This area of prioritization has particular relevance and impact for women, as a large number of businesses in the informal sector, such as market stall owners, are run by women, and often constitute the final link of the FMCG value chain. They often use daily cash collectors (known as Susu collectors) for saving and to avoid storing large amounts of cash and leaving their workplace during business hours. Digital payment methods offer these women an alternative to the Susu system for securing their funds, offer real-time processing, and expand their economic opportunities. Transaction histories created by digital payments can also help women access formal loans to expand their business. Further, the ability to accept digital payments increases revenue, as customers are no longer limited to paying in cash or on credit.

While companies can offer a variety of incentives to push the digital payments effort, its uptake will require a concerted effort on an industry-wide level, engaging small retailers, manufacturers, and distributors as well as government and financial services providers. Collaboration across the industry will help accelerate the shift to digital payments and subsequently allow usage and benefits to extend to the merchant and retailer level.

"The government, banks, and telcos need to educate people on how to use digital payments, so they feel safe."

DERRICK OWUSU AFRAM, PHARMACIST

RECOMMENDATIONS OF THIS REPORT

USE CASE-SPECIFIC ACCELERATORS

Payment of fees & fines to government

This report recommends that the government:

- Clearly state its intention to move to using digital payments exclusively for government fees and fines
- Improve the technical capacity of MDAs to migrate to digital payments, possibly by seeking external technical assistance from the private sector and/or donors
- Leverages GEPP as the central payment infrastructure for all government agencies in order to address the fragmentation of payment portals while promoting greater choice and competition
- Negotiate with financial service providers to lower costs or even offer discounts for digital payments through the GEPP to incentivize citizens to pay electronically

The government may also need to:

- Re-engineer some of the internal processes that may impede offering online services and digital payment options for services
- Ensure all MDA services are brought onto the common GEPP gateway
- Increase public and government awareness about the digital payment options (anecdotal evidence suggests that many people were unaware that they could apply and pay digitally for some services)

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Payments for public utilities, e.g., water and electricity

To accelerate the shift to digital payments for both water and electricity, this report recommends:

- Providing financial and technical support to public utility companies to update their internal accounting processes, including their accounting, reconciliation, and software platforms. This will enable faster and more accurate reconciliation of digital payments.
- Providing technical support to help public utilities create effective partnerships with FSPs (including banks, mobile money providers, and fintech companies) and drive acceptance of cards, mobile banking, and mobile money payments both for prepaid and postpaid utilities and, particularly, for existing smart meters. In the long term, financing and support for the purchase and installation of homogeneous smart meters for both sectors would be a powerful accelerator.

Payments in the retail space and in the Fast Moving Consumer Goods ("FMCG") value chain

To accelerate the shift throughout the entire value chain, this report recommends:

- Further in-depth research to understand how payments flow throughout the value chain in the retail space, especially focusing on small retailer and wholesaler behavior, incentives, and challenges.
- Concerted industry coordination and action from manufacturers to distributors and FSPs, with some element of government support and engagement from all players in the value chain. For example, working in collaboration with FSPs and their main distributors, FMCG companies could run campaigns where the direct incentives offered to encourage distributors to pay electronically (which have, so far, not been effective) are passed on to retailers and consumers. The government could support this initiative by offering a small tax incentive to FMCG companies, merchants, and even consumers. Any initiative that offers direct incentives should be informed by a business case for all stakeholders – small merchants, FMCG companies, FSPs, and government – to ensure its sustainability in the short to medium term.

GENERAL ACCELERATORS

Roll out a biometric centralized National ID system and make explicit efforts to enable payments and other financial use cases

Currently, there are nine separate identity databases across various public-sector entities. This report supports current plans for a revamped biometric National ID conforming to international standards. Prioritizing this roll-out will accelerate digital payments by enabling FSPs to:

- Adopt a unified approach to identification and authentication of transactions, and
- Leverage the digital ID to develop innovative Know Your Customer ("KYC") procedures, such as remote or e-KYC for non-face-to-face account activation by mobile network operators ("MNOs").

Through innovative KYC measures, individuals who do not currently have the required identification to access the formal banking system are able to overcome this hurdle. Similarly, remote account activation makes it easier for rural and vulnerable populations to enjoy a higher level of financial inclusion. Benefits such as these are particularly important for women who constitute the majority of the financially excluded, and who most frequently do not have access to identification that is needed to access the drivers of financial inclusion.

Beyond account opening and KYC, a digitally enabled ID system can also unlock other payments and financial service use cases. For instance, if coupled with real time push payments (which are already available in Ghana through GhIPSS Instant Payment) and a digital payments addressing

system, it can enable real time funds transfer using ID numbers, phone numbers, email addresses, or other identifiers instead of account details – enhancing security, convenience, and consumer choice.

Improve interoperability for all payment instruments

Interoperability offers strong potential to accelerate a shift to electronic payments, as it increases the options available for payments to remain in the digital ecosystem rather than being cashed-out and is an important mechanism for greater inclusion, as noted in the BTCA's Responsible Digital Payments Guidelines.[4] Currently there is a lack of interoperability between bank and mobile money payments in Ghana. To address this issue, Ghana Interbank Payment and Settlement Systems Ltd ("GhIPSS") has a mandate to develop a new interoperable switch by November 2017. The report strongly supports this initiative and recommends maximizing its potential for expanding financial inclusion by developing it as a neutral switch with no preferences for type of payment mechanism.

By improving interoperability, the payment ecosystem will become more competitive, offering better coverage, cheaper pricing, and more innovative products, all of which will support further financial inclusion among the bottom of the pyramid and rural populations.

Drive digitization of G2B payments through e-procurement and e-invoicing

As the Ghanaian government prepares for its e-procurement launch, the report recommends including a mandate to use electronic payments for all e-procurements. This may require process re-engineering within the Government Financial Management systems, as well as developing a payments module within the e-procurement system. Including such a mandate could spur G2B digital payments and increase private-sector trust in digital payments. These benefits could be further supported by introducing a centralized payment system for suppliers based on the TSA, coupled with a mandate to pay all government suppliers through this system and e-invoicing.

Incentivize the use of EFT/Real-Time Gross Settlement ("RTGS") in B2B payments, thereby leveraging existing infrastructure

This can be implemented by having:

- The BoG offer a price for RTGS and/or EFT payments that is cheaper than checks to incentivize businesses to use the RTGS/EFT channels;
- The government provide short-term income tax incentives for businesses to adopt digital B2B payments; and
- FSPs develop quicker, user-friendly, and more secure internet banking and mobile money platforms.

Once Ghana's current payment infrastructure is sufficiently developed, the government can then consider short-term legislation penalizing all non-digital transactions over a certain value.

Introduce government and private incentives to support digitization of merchant payments

A combination of short-term private-sector incentives fuelled by collaborative industry efforts and public tax incentives for digital merchant payments has the power to drive adoption, both by consumers and larger players higher up the FMCG value chain.

This report recommends specifically:

- Government tax incentives targeted at payment service providers, FMCG companies, or others that support the roll-out of electronic merchant payments, as well as retailers and individuals that actively adopt electronic payments;
- A publicly financed awareness campaign targeting consumers on the usage of digital payments; and
- Investment by industry to fund tangible incentives such as specific trade discounts and training of merchants, as well as supporting small retailers' access to financial services and digital payments.

As women make up a large proportion of those selling FMCG goods, digitization in this area will also directly improve their businesses and personal security as well as offer further economic opportunities.

Conclusion

Ghana has made significant progress in building the foundation of an inclusive digital payments ecosystem, and is starting to see uptake of digital payments in some areas. This process has benefitted from concerted government leadership and identification of the barriers that need to be overcome. Ghana now has an opportunity to take further actions that can drive digitization of payments and deliver significant benefits across a range of stakeholders. Seizing this opportunity can have a major impact on the living standards and economic opportunities of individuals – particularly women. It can also help strengthen businesses and the overall economy, while also improving the transparency and security of payments across the board.

MACROECONOMIC CONTEXT

Ghana is a lower-middle income country with a population of 28.21 million as of 2016.[5] Ghana's nominal Gross Domestic Product ("GDP") in 2016 was 167.31 billion GHS (USD 39 billion) and per capita income was GHS 5,930 (USD 1,373).[6] The poverty rate was 24.2% as of 2013, defined as living on $1.83 per day.[7] Further, nearly 45% of the population live in rural areas,[8] and 11.9% of persons 15 and older were estimated to be unemployed in 2015.[9]

GDP growth and national spending

Ghana's real GDP grew by 6.6% year-on-year in the first quarter of 2017, compared to a growth of 4.4% for Q1 2016. The Ghanaian Government ("the Government") estimates that real GDP will expand by 6.3% in 2017, with non-oil GDP growing at 4.6% over the same period. Real GDP is projected to grow by 9.1% and 6.9% in 2018 and 2019, respectively.[10] The very positive growth outlook for Ghana is supported by positive expectations by the Bank of Ghana ("BoG") for business sentiment, which it expects will help encourage private-sector investment. A rebound in commodity prices would further stabilize the exchange rate and create employment.[11] Ghana's economic distribution in the first quarter of 2017 was mostly reliant on services (59.0%), followed by industry (26.7%) and agriculture (14.3%).

Ghana continues to have a relatively high fiscal deficit,[12] increasing levels of public debt and relatively high inflation (11.9% as of July 2017).[13] To combat this, the Government is in talks with the International Monetary Fund ("IMF") regarding an extension of its previous financial assistance package which is due to expire in April 2018. This may help in the fiscal adjustment process, but the Government is expecting a sizeable jump in tax revenues brought on by increased compliance and a reduction in tax exemptions. Fiscal slippages and low commodity prices were listed as one of the major causes of previous economic uncertainty.[14]

Ghana faces other substantial risks to its economic outlook. Uncertainties in the global commodities market could negatively affect foreign direct investment ("FDI") into Ghana. Additionally, Ghana is likely to face continued high domestic and external financing costs as its debt continues to expand and global interest rates rise (domestic debt/GDP ratio is 31.4 %[15] and external debt/GDP ratio is 40.8% for the year 2016,[16] compared to 26% domestic debt/GDP ratio and 26.4% external debt/GDP ratio for Kenya at year-end of 2015).[17] The servicing of external debt cost approximately USD 1 billion in 2016, as compared to USD 713 million in 2015. Delays in the resolution of debt from state-owned energy companies, and the high cost of electricity combined present further economic challenges going forward.[19]

Government policies

Ghana is expected to remain politically stable, following recent elections won by President Nana Akufo-Addo and his New Patriotic Party in 2016. A key policy focus of the Government is pushing ahead with industrialization, which is expected to open opportunities for the private sector. This focus is restricted, however, by tight fiscal policy that may restrain more ambitious goals such as the opening of hundreds of factories. These economic constraints may be balanced out by further natural resource extraction in oil and gas.[20] Special initiatives such as the National Identification Scheme and the National Digital Address System will be implemented as part of measures to broaden the tax base[21] (see Section 3 for further details), helping to improve revenues and thus easing fiscal pressures.

Mobile connectivity status in Ghana

Ghana has a competitive telecommunication ("telecom") sector, with six main mobile telecom operators – MTN, Tigo, Vodafone, Airtel, Glo, and Expresso. As of the end of Q2 2017, MTN had the largest market share for voice at 48.9%, followed by Vodafone (24.5%), Airtel (13.4%), Tigo (11.5%), and Glo (less than 2%).[22] However, Tigo and Airtel have announced plans to merge their operations in Ghana and are currently going through the required regulatory processes.[23]

Mobile phone penetration stands at 125% as of June 2017,[24] up from 99% in 2012 (but a slight drop from 135% in 2016[25] – see Figure 2.1), showing that individuals often possess more than one SIM card at a time. Mobile smartphone penetration is higher in Ghana than in several neighboring countries (see Figure 2.2), reaching 23.4% in 2016.[26] Similarly, the country has a high level of geographic mobile coverage, with MTN covering 79% of districts in Ghana.[27] Mobile data penetration rates have also increased from 0% in 2012 to 69.8% in 2016,[28] with data indicating that mobile phone access has also driven internet usage (see Figure 2.3).

FIGURE 2.1

Mobile phone penetration

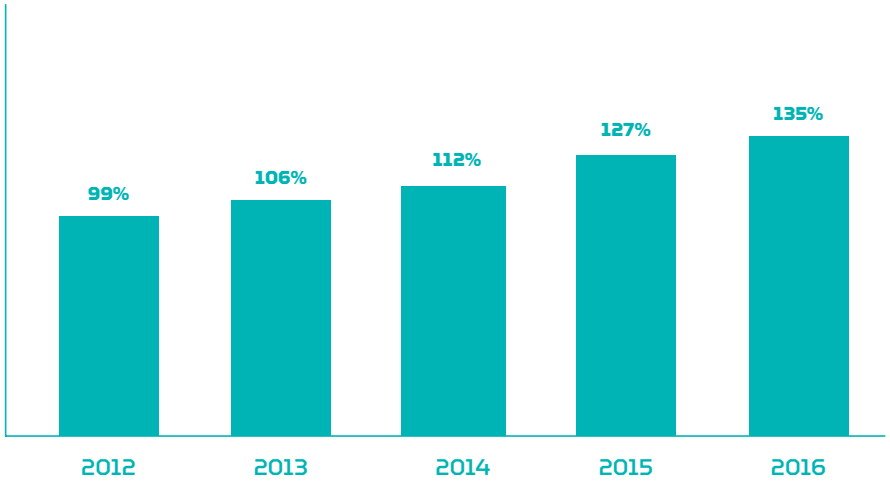


FIGURE 2.2

Smartphone ownership by adult population in select African countries, 2015[29]

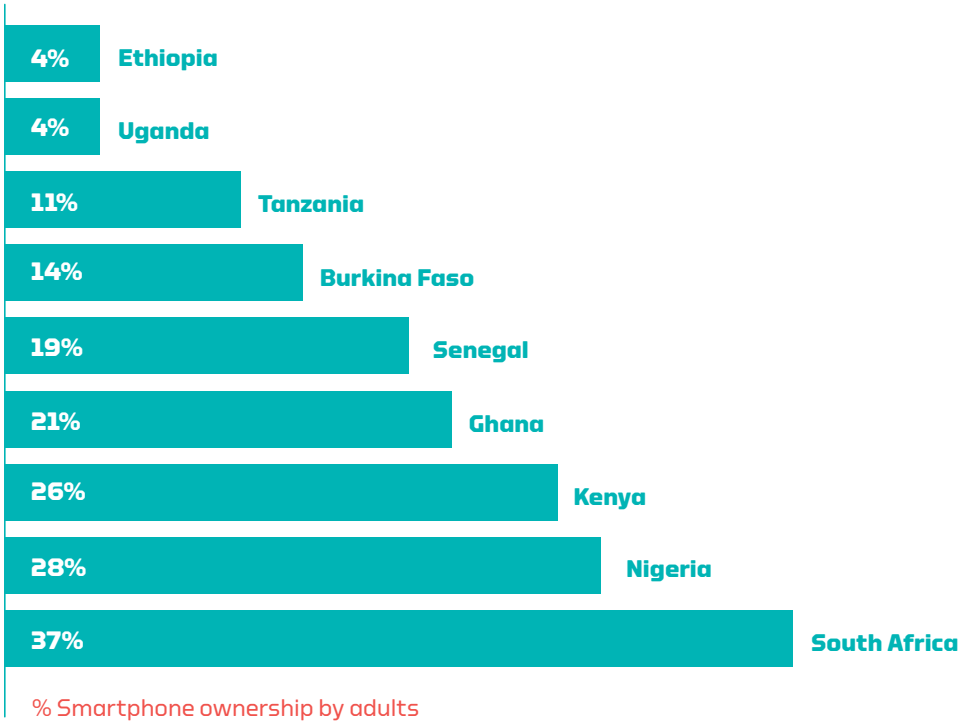
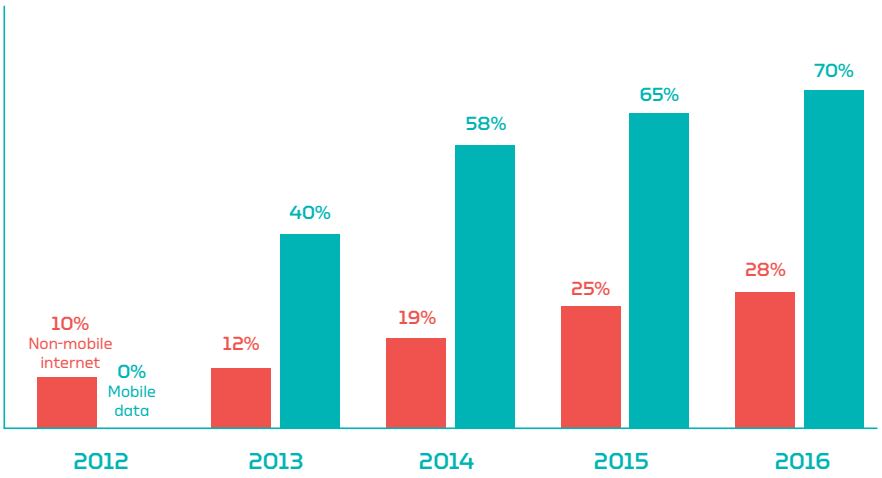


FIGURE 2.3

Mobile data and non-mobile internet penetration



FINANCIAL SECTOR LANDSCAPE

Ghana's financial services landscape is comprised of deposit-taking institutions including deposit money banks ("DMB"), rural and community banks and non-bank financial institutions ("NBFIs") such as savings and loans companies, microfinance institutions ("MFIs"), and licensed Susu enterprises (as defined below).

As of June 2017,[30] there were 37 DMBs operating in Ghana, with a concentration of branches and Automated Teller Machines ("ATMs") in Accra, Tema, Kumasi, Takoradi, and Tamale, alongside 141 licensed rural and community banks.[31]

In 2016 the DMBs operated with 1,341 branches, 1,928 ATMs, and 6,501 point-of-sale ("POS") devices, employing 19,977 people, and having seen a 14% increase in bank branches since 2015.[32]

However, there is still significant room for growth, with 4.8 bank branches per 100,000 people – compared to 6.8 bank branches per 100,000 people in Nigeria in 2012.[33] Additionally, agent banking, which can expand a bank's physical presence by providing certain banking services at retail shops and outlets, among other establishments, is not yet well-developed in Ghana. To date, only Fidelity Bank has an active network of over 1,000 agents with whom customers can perform deposit and withdrawal transactions.[34]

In addition, as of January 2017 there were 564 MFIs[35] and 37 savings and loans companies.[36] These NBFIs operate mainly in peri-urban (the landscape interference between cities and rural areas) and rural communities. In recent years, some NBFIs have obtained a universal banking license and transitioned to full-scale banking operations, including First Capital Plus (now Capital Bank), Union Savings and Loans (now OmniBank), City Investment Company (now Premium Bank), Beige Capital (now Beige Bank), and Ghana Home Loans (which is yet to rebrand).

Complementing the role of traditional NBFIs in deepening access to financial services are licensed Susu enterprises. In the Susu model, an individual agrees to make daily contributions (savings) to a Susu collector, who is employed by a Susu enterprise, for a period of 31 days. The Susu enterprise then retains one day's contribution as a commission for the daily door-step collection of savings contributions. Based on data from the Ghana Cooperative Susu Collectors Association ("GCSCA") as of September 2016, the association had 505 licensed members, about 264,000 customers, and a total savings portfolio of GHS 20.2 million (USD 5.1 million).[37]

Insurance, brokerage, investment management, and pensions

According to data from the Ghana Insurers Association, as of December 2016 there were 23 life and 26 non-life insurance companies.[38] In a report published in May 2016,[39] insurance asset ownership was about 5% in the financial sector and insurance penetration as a percentage of GDP hovered around 1.85%, as of March 2016. By comparison, insurance penetration is about 3% in Kenya, 0.4% in Nigeria, and 14% in South Africa.[40] A January 2016 research report by consultancy EY[41] projects that Ghana's insurance market will grow by 8.5% annually between 2014 and 2018, expanding from USD 400 million to USD 600 million.

The micro-insurance sector is generally known for loyalty-based, "freemium" products. Micro-insurance companies such as BIMA, MicroEnsure, and aYo, a joint venture between MTN Group and MMI Holdings, have formed strategic partnerships with mobile money providers ("MM providers") and banks to offer customers one-month insurance policies that cover life, hospitalization, maternity, and disability, among other policies. These micro-insurance companies typically also cross-sell paid-for policies that extend insurance coverage to families and offer higher payout benefits. Subscribers with paid-for micro-insurance products have the option to pay for their premiums using airtime or mobile money, which further drives the adoption of digital payments in Ghana.

As of January 2017, the National Pensions Regulatory Authority had granted approval to 78 companies[42] to operate as Pension Fund Managers. Pension products have been developed mainly for workers in the formal sector in an economy that is largely informal. It is estimated that about 70% of Ghana's workforce is informal and does not have access to any pension scheme.[43] As a result, the People's Pension Trust has partnered with Vodafone and Dusk Capital to develop a mobile-enabled pension product that is targeted at informal workers.[44] This innovative pension product allows workers in the informal sector to make voluntary pension contributions through Vodafone Cash.

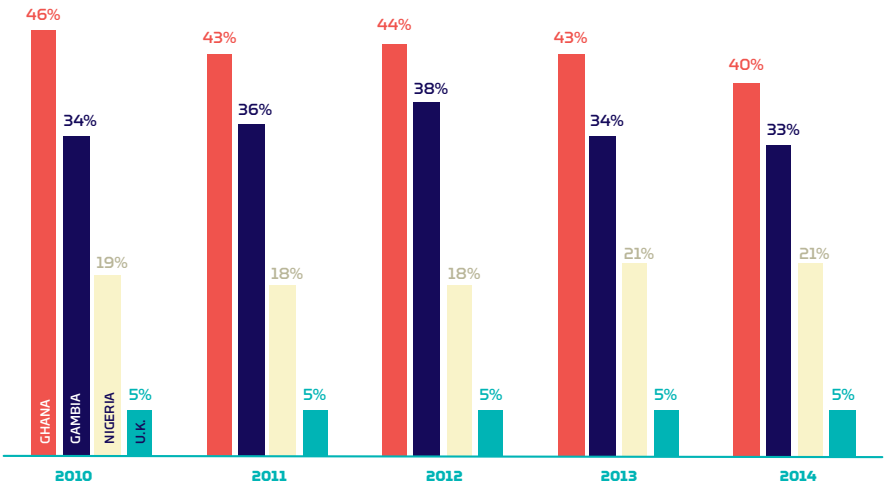
PAYMENT LANDSCAPE

The BoG is entrusted with the responsibility of establishing, operating, and promoting payments systems under the Payments Systems Act of 2003. It has since taken a number of steps to strengthen the payment systems infrastructure in the country and increase users' convenience and trust. Initiatives include:

1) Establishing infrastructure for large-value payments called Ghana Interbank Settlement ("GIS") System;
2) Establishing the Ghana Interbank Payment and Settlement Systems Ltd. ("GhIPSS") as a wholly-owned subsidiary;
3) Strengthening the legal framework for mobile money, consumer protection, and depositor protection, among others;
4) Prototyping RegTech solutions to address users' complaints.

The ratio of currency outside banks to the total money issued by the central bank (M1) is one headline indicator of how cash-intensive an economy is. Ghana continues to be a high cash-intensive economy with a ratio of currency outside banks to money supply (M1) that is still high at 39.96 in 2014 (although it is down from 45.72 in 2010) compared to 20.77 for Nigeria and 4.52 for United Kingdom[45] (see Figure 2.4).

FIGURE 2.4
Ratio of currency outside banks to money supply (M1)

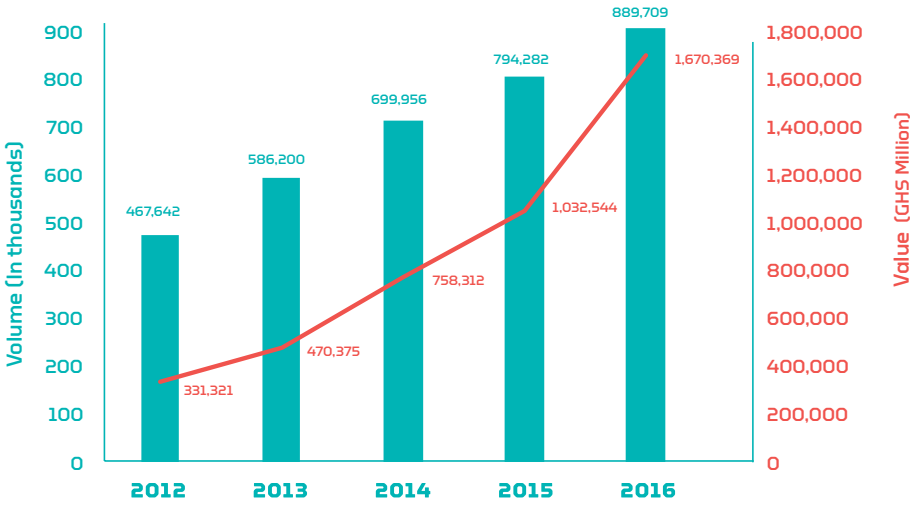


To help ensure financial stability and reduce settlement risk in the payments system, the BoG established the GIS system, which is Ghana's Real Time Gross Settlement ("RTGS") system, a platform for high-value payments for banks and their customers. In 2016, the total volume of GIS transactions increased by 12.0% to 889,709 – up from 794,282 the previous year.[46]

Total value of transactions also increased, rising from GHS 1,032.544 billion (USD 239.014 billion) in 2015 to GHS 1,670.369 billion (USD 386.660 billion) in 2016, an increase of 61.8%.[47] The average value per transaction stood at GHS 1.9 million (USD 439,814) in 2016, compared with GHS 1.3 million (USD 300,000) in 2015, a 46% increase[48] (see Figure 2.5).

Currently participation in the GIS is limited to licensed commercial banks and a few special entities such as the ARB Apex Bank, the Social Security and National Insurance Trust ("SSNIT") – the national pension funds manager – and the Central Securities Depository, as well as the BoG.

FIGURE 2.5
Ghana interbank settlement (RTGS)



Payment systems actors

A variety of financial institutions are active in the payments space in Ghana, including DMBs, rural and community banks, and NBFIs. Over the years, DMBs have offered different types of electronic payment platforms for their bank account holding customers, including internet banking (via a bank's online website) and mobile banking (via bank's mobile app or USSD). At the end of 2016, there were 962,487 internet banking users, who collectively performed 2.7 million transactions amounting to about GHS 6.8 billion (USD 1.5 million). By comparison there were 2.17 million mobile banking users performing 6.8 million transactions totaling about GHS 357 million (USD 83 million). [49] Internet banking transactions are primarily driven by business payments, while the bulk of mobile banking transactions are mostly individual payments.

TABLE 2.1
Volume and value of different payment instruments, 2016

	Debit cards	Credit cards	Mobile banking	Internet banking	Prepaid cards	Mobile money	E-zwich	Check
Volume	46,456,021	138,037	6,821,838	2,705,191	312,143	550,218,427	5,365,085	7,309,406
Value (GHS million)	13,583	70	357	6,779	103	78,509	2,363	152,390
Value (USD million)	3,144	16	83	1,569	24	18,173	547	35,276

Transactions initiated by mobile money accounted for 90% of all transactions initiated by digital payment instruments in Ghana in 2016, and over 77% of the value of all transactions initiated by digital instruments in that period. In 2016 other electronic payments (e.g., debit cards, credit cards, and e-zwich) equally witnessed increases in both volume and value of transactions (see Table 2.1). A number of banks are running marketing campaigns to drive adoption and uptake of these digital payment products.

Banks tend to invest more time and resources in promoting products from leading global payments companies, such as Visa and MasterCard, than the GhIPSS e-zwich biometric card[50] – largely because these products, which are more widely accepted for merchant and online payments and marketing campaigns, are often partially funded by the companies themselves.

However, despite the surge in electronic payments, the Ghanaian economy continues to be predominantly cash-based and the main non-digital payment instrument is still checks. The main payment delivery channels are bank branches, ATMs, POS terminals, and remote delivery channels such as internet and mobile. Bank branches are the main payment distribution channels for checks and credit transfers, while ATM networks and POS terminals are mostly used for payment card transactions. However, some banks such as Ecobank, Fidelity, and Zenith Bank have configured their ATMs to accept card-less transactions, enabling withdrawals from certain mobile money wallets without the use of a card. The deployment of ATMs and POS terminals increased by 111% to 1,928 and by 34% to 6,501, respectively, from 2015 to 2016.[51]

Inter-bank payments infrastructure

GhIPSS owns and operates e-payments schemes and infrastructure within the country for retail payments. GhIPSS was incorporated in May 2007 with a mandate to implement and manage interoperable payment system infrastructures for banks and NBFIs in Ghana. GhIPSS currently manages the following interbank systems:

1) **Cheque Codeline Clearing with Cheque Truncation**[52] is a check clearing system including a check imaging system that provides standard and express clearing functions. The total volume and value of interbank checks cleared during the year 2016 went up by 2.3% to 7.3 million and 16.2% to GHS 152,390.4 million (USD 35,275 million), respectively[53] (see Table 2.1).

2) **Automated Clearing House (ACH)** enables processing and settlement of bulk debit and credit transfers between banks. The system is primarily used for salaries, pensions, welfare benefits, commissions, supplier payments, dividends and refunds, interest payments, government payments, and business-to-business ("B2B") payments. In 2016, the total volume of transactions cleared through the direct credit system was 6.1

million, while the value was GHS 19,245.7 million (USD 4,445 million)[54] (see Figure 2.6). Payment of SSNIT pensions by the BoG on behalf of the Government continued to be the major contributor to the growth in direct credit transactions.

3) **gh-link** is the inter-bank switch for domestic ATMs and POS transactions. A total of 36 member institutions were connected to the gh-link ATM as of the end of 2016, comprised of 26 banks and 10 NBFIs. It also provides a payment gateway for e-commerce payments. Gh-Link platform has also developed GhiPSS Instant Pay as a platform that allows instant account-to-account bank transfers on a 24/7/365 basis. There were 2.1 million transactions on the gh-Link platform in 2016.[55] GhiPSS has been mandated by the Government to achieve interoperability between mobile network operators ("MNOs") and the banks through the gh-link infrastructure.

4) **E-zwich** is an interoperable biometric smart card payment system that offers a suite of electronic payment and banking services accessible from a POS terminal or ATM. These services include payments at merchants' POS, withdrawal of cash, deposit onto the card, and transfer of funds. The e-zwich system also facilitates the distribution of payments such as loans, salaries, wages, and pensions. There has been a significant increase in transactions through the e-zwich system in the last few years. The number of e-zwich cardholders has increased to 1.88 million in 2016[56] (up from 1.36 million cards in 2015) with 48.5% of these cards having some loaded value.[57] The number of transactions has more than doubled from 2.25 million in 2015 to 5.36 million in 2016. Similarly, the value of transactions has increased by 156% from GHS 922 million (USD 213 million) to GHS 2.4 billion (USD 555 million)[58] (see Figure 2.7).

   The significant increase in e-zwich transactions is from the use of the system for payments to beneficiaries of the Livelihood Empowerment Against Poverty ("LEAP"), a social welfare conditional cash transfer program, and to personnel of the National Service Scheme[59], a national civil service, in addition to other government payments. However, the adoption of e-zwich beyond government payments has been a constant challenge as some of the market participants see e-zwich as a competing product (with other international cards) rather than a platform. Further, deployment of hybrid POS terminals with capabilities to read regular cards (Visa/MasterCard) and provide the biometric authentication required for e-zwich has been slow. GhIPSS is driving other use cases for the e-zwich card, such as introducing an international remittance platform in 2016 to enable individuals and businesses to send remittances from Europe, UK, and North America directly onto their e-zwich card. It is important to highlight the need to continue building out Ghana's digital payments ecosystem through greater choice and competition, in collaboration with the private sector.

FIGURE 2.6
Debit & Credit ("ACH")

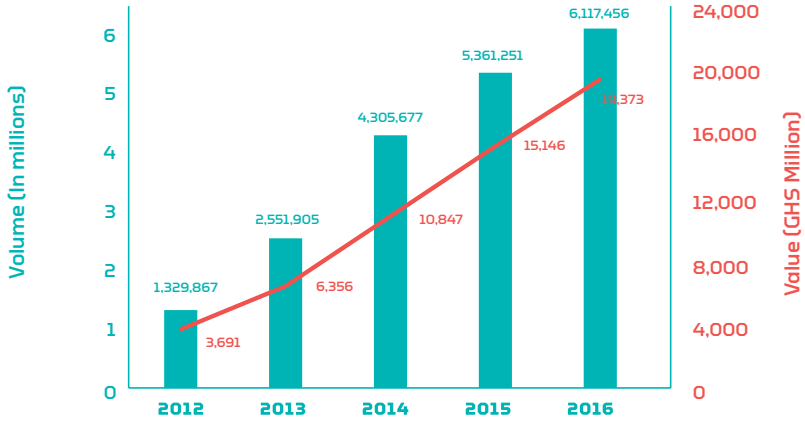
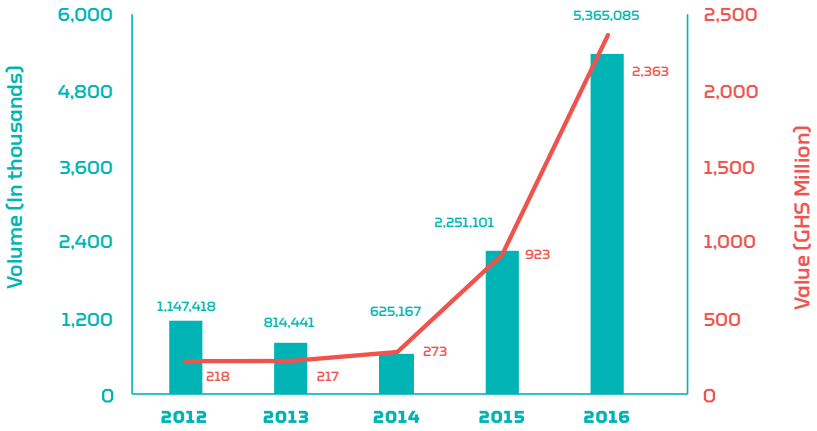


FIGURE 2.7
E-zwich



Mobile money in Ghana

The mobile money space has four providers – MTN Mobile Money, Tigo Cash, Airtel Money, and Vodafone Cash – with MTN, which first introduced mobile money to Ghana in July 2009,[60] being the market leader (80% market share in mobile money as of June 2016). [61] All of the key industry metrics have seen a significant growth since 2014, largely due to significant effort and investment made by the MNOs following the introduction of new legislation in 2015 as set out in Section 2. The number of registered mobile money customers at the end of 2016 was 19.73 million, up from 7.1 million in 2014 and 13.12 million in 2015.[62] The active subscriber base (i.e., the number of subscribers who transacted at least once in the 90 days prior to reporting) has grown from 2.5 million in 2014 to 8.3 million in 2016, and the number of active mobile money agents (i.e., the number of agents who transacted at least once in the 30 days prior to reporting) has increased from 20,722 in 2014 to 107,415 in 2016.[63] During 2016, the mobile money industry facilitated 550 million transactions worth GHS 78.5 billion (USD 18.2 billion), a five-fold increase from 113 million (USD 26 million) in 2014, and GHS 1.25 billion (USD 289 million) was held in float in partner banks[64] (see Figures 2.8-2.10). It should be noted, however, that on average over

two-thirds of the volume and value of mobile money transactions are not payments in the classic definition, but rather customer service and internal transactions such as cash-in, cash-out, account inquiries, bank-to-wallet, and wallet-to-bank transactions.[65]

To provide some context, in 2016 in Kenya there were 31.9 million[66] active mobile money subscribers and 161,583[67] active mobile money agents. Further, in the same year 1.58 billion[68] transactions were undertaken, worth approximately USD 47 billion.[69]

FIGURE 2.8
Mobile money subscribers

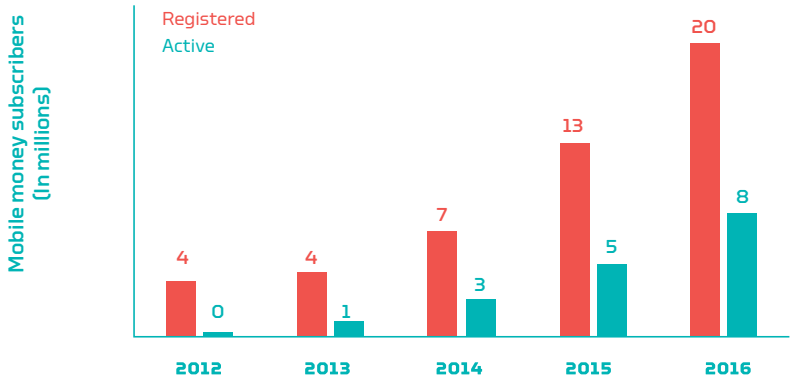


FIGURE 2.9
Mobile money agents

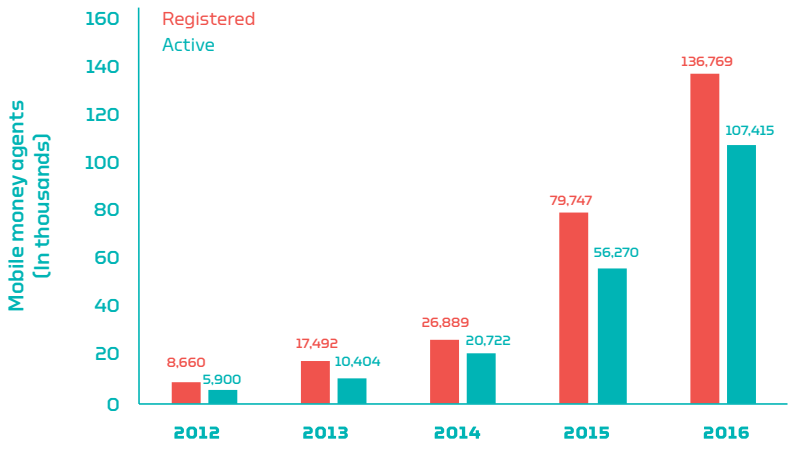
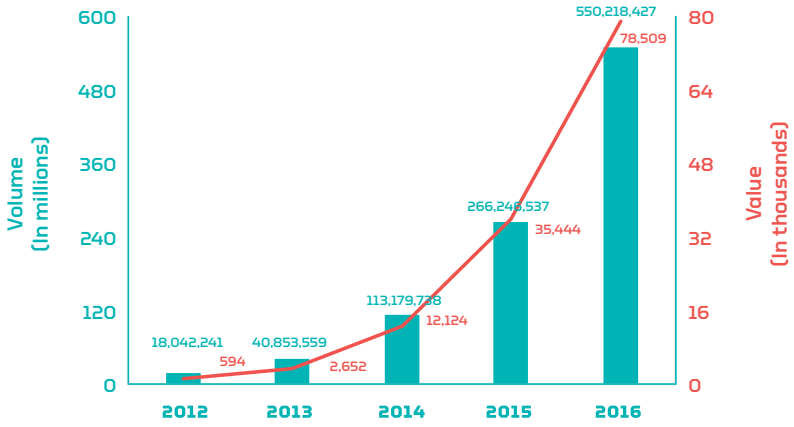


FIGURE 2.10
Mobile money transactions



In the absence of an interoperable platform that has the capability to handle checks as well as all forms of digital payments, mobile money providers and payment aggregators have integrated with multiple banks, merchants, and billers. Through these bilateral integrations, digital payment providers are able to offer a broad range of innovative payment solutions that include card-to-wallet, card-to-account, account-to-account, account-to-wallet, wallet-to-wallet, and wallet-to-account payments.

Challenges affecting Ghanaian payment systems

Growing competition in the financial technology ("fintech") space is driving innovation and increasing the number of use cases for digital payments. For example, in September 2016, Ecobank Capital Advisors Ltd., a subsidiary of Ecobank, launched Ecobank TBill4All in collaboration with MTN Mobile Money. Ecobank TBill4All is a self-service digital product that allows Ghanaians to invest in 91-day and 182-day Treasury bills using MTN's mobile money platform.

Payment aggregators, such as Interpay, Slydepay, and expressPay, and some mobile money providers also offer a platform for customers to conveniently pay school fees to many educational institutions in Ghana with their mobile phone. For example, in 2014 the Ghana Education Service partnered with MTN to launch "Back to School," a mobile payment product that allows for the payment of school, college, and university fees. As of 2016, over 100 schools were using the "Back to School" service, and 5% of MTN mobile money customers used "Back to School" to make school fee payments.[70]

Despite a significant growth in various digital payment methods such as cards, e-zwich, and mobile money in the last two to three years, there are several challenges that continue to impact the growth of digital payments in Ghana. For example, despite the strong policy push by GhIPSS and the Government, the adoption of the e-zwich card has been modest outside of government-to-person ("G2P") payments such as salaries and social transfer programs. This is mainly due to the fact that merchant acceptance of e-zwich is low (with less than 1,000 active POS terminals currently) and there is not yet any interoperability with other cards or payment schemes. Further, although GhIPSS is now rolling out hybrid POS devices, some banks find these to be relatively expensive, due in part to the associated high custom duties/taxes. Banks are also less incentivized to invest in these hybrid devices, as the transaction charges they earn from a domestic e-zwich transaction (0.50 to 1 GHS) are much lower than those from an international scheme such as Visa/MasterCard. It is evident that both the payments industry and the general population are not currently coalescing around e-zwich, but rather preferring other digital payment options such as mobile money.

A second issue is systemic interoperability of the various payment providers. The growing number of payment aggregators such as

expressPay, eTranzact, Zeepay, and IT Consortium have further improved Ghana's payment infrastructure and, to a certain extent, facilitated interoperability. These fintech companies have invested in developing platform infrastructure that supports card, mobile, and web (internet banking) payments and offers interoperable person-to-person ("P2P") transfers and electronic payments for government services, utility payments, and merchant payments. Some payment aggregators have also deployed technologies like Near Field Communication ("NFC") to make electronic payments more convenient. However, at a systemic level, interoperability between the banks and the MM providers is yet to be achieved. Recently, GhIPSS announced that bank and MNO interoperability will be achieved by November 2017 through the development of an interoperable switch.

The BoG is seeking to divest approximately 70% of its 100% ownership in GhIPSS to Ghanaian commercial banks while still retaining oversight. These proposed changes to GhIPSS' shareholding have been questioned by some industry players. Some MM providers are concerned that this could hinder their ability to connect to the new switch, both from a commercial and/or technical standpoint, as the commercial banks may try to prioritize their interests. Moreover, some industry players also consider GhIPSS to be more of a competitor (e.g., for merchant acquisition regarding e-zwich) than a neutral payment and settlement platform provider. The proposed change in ownership of GhIPSS and the concerns of MM providers may have significant repercussions on the feasibility of a truly interoperable payments platform.

FRONTIER ISSUES: FINTECH INNOVATION

The financial services and payment landscape in Ghana is already facing competitive pressure from fintech firms such as aggregators expressPay and Zeepay. Although they are not financial institutions, these firms offer competitive services in the payment sector including bill payment, airtime top-up, merchant payments, and P2P transfers. The BoG has seen the potential these companies offer in terms of increasing innovative product offerings, lowering consumer pricing, and augmenting access for poor populations, and has thus included provisions for regulation of fintech providers in the draft Payment Services and Systems Bill ("PSSB"). Although the PSSB has yet to be implemented, the BoG has started the conversation with these entities, having requested that they pre-submit their applications for PSSB authorization, and providing no-objection letters for specific individual products. As per a recent interview with Dr. Settor Amediku, Head of Payment Systems at the BoG, the BoG sees fintech as having "an important role in accelerating financial inclusion,"[71] as well as furthering women's economic participation in the economy and growth of the economy in general. This approach toward innovation also reflects the Government's general stance toward the adoption of digital payments.

Focus on Fintech

With increasing smartphone penetration and a regulatory regime that is embracing innovation, the proliferation of Ghanaian fintech companies focused on payments is unsurprising and welcome. One of the more innovative operators is expressPay, a payments aggregator which won a USD 100,000 grant[72] from the Bill & Melinda Gates Foundation at the "Grand Challenges Explorations" initiative in December 2015, as well as a more recent Finance and Fintech award[73] at the "Premium Bank Ghana StartUp Awards" in July 2017. Although expressPay started with bill payment and airtime top-up in 2012, its new Bank Direct service, which allows transfers between banks, or from a mobile money wallet to a bank account, is noteworthy especially in a payment system where there is currently no such interoperability.

eTranzact is Ghana's first payment aggregator, launched in 2006 by a Nigerian company that was founded in 2003. Offering mobile banking and mobile commerce solutions for a variety of Ghanaian financial institutions, eTranzact was the first aggregator to be admitted onto the gh-link payment switch in 2012.[74] Thus, cards powered by eTranzact can be used on all e-zwich POS devices and ATMs with the gh-link logo. In October 2014, the Ghana E-Payment Portal ("GEPP") commenced accepting eTranzact powered cards issued by partner banks such as Bank of Africa and GCB.[75] More recently, in February 2017, eTranzact Ghana introduced a new card that allows mobile money users to transfer and withdraw money from any gh-link ATM.[76] Although they have been pioneers in the ecosystem, partnerships feature strongly in their strategy, as COO George Babafemi highlighted in a recent interview: "Success lies more on engagement with multiple stakeholders."[77]

Mobile financial services firm Zeepay, on the other hand, focus not only on innovative products for banked Ghanaians, but equally on bringing the unbanked into the financial stream. Founded in 2011, Zeepay's key services currently include MM retail payments, digital receipt of international remittances, P2P transfers between banks and mobile money wallets, as well as supporting other third party related payment transactions. Zeepay was awarded StartUp of the Year at the Premium Bank Ghana StartUp Awards in July 2017,[78] and also received over USD 200,000 in angel funding in 2015.[79] In June 2017, the company announced a collaboration with Ghana Investment Fund for Electronic Communications, the National Board for Small Scale Industries, and the United Nations Capital Development Fund to launch a Digital for Inclusion ("D4I") program, whose goal is to improve Ghana's digital economy through interconnection and which is focused on smallholder cocoa

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communities and the Zongo communities.[80] This initiative follows on the heels of an MM ecosystem program in smallholder farm communities in the Ashanti Green Belt which commenced in 2016.[81] With the D4I project in particular, Zeepay is "very interested in the entire value chain; from piloting kiosks targeting cocoa farmers to creating 'retail kiosks' in rural areas with shelving for consumer products."[82]

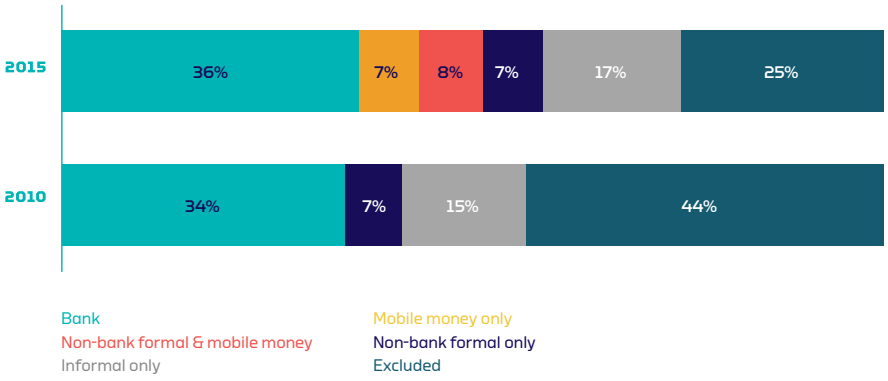
As Andrew Takyi-Appiah, Zeepay's CEO, said in a recent interview, "Fintechs are critical to the government goal to reduce cash in circulation."[83] Although Accra already boasts an impressive line-up of fintechs as detailed above, all initiatives that support the development of these fintech companies will equally support Ghana's journey toward an economy less dependent on cash.

3. EVOLUTION OF POLICY TOWARD SUPPORTING DIGITAL PAYMENT

TRANSITION TO AN ECONOMY WITH LOWER DEPENDENCE ON CASH

According to a 2015 CGAP report,[84] 58% of the population in Ghana is "financially included," with over a third (36%) having access to financial services through a bank and 22% through non-bank formal financial institutions (of which 7% access services solely through mobile money, although over 40% overall–banked and non-banked–are active mobile money users).[85] Access through non-bank formal institutions has significantly increased from 2010, when only 7% were in this category and there was no mobile money to speak of (see Figure 3.1).

FIGURE 3.1
Percentage of financially included individuals[86]



Although significant investments from major ecosystem stakeholders, such as MTN and Airtel, account for some of this increase,[87] the influence of the Government's policy and regulatory agenda during those years should not be overlooked.

In 2012, the BoG committed "to review the regulatory framework of branchless banking to create an enabling environment and promote innovation towards the achievement of 70% financial inclusiveness in Ghana by the year 2017" as part of Ghana's acceptance of the Maya Declaration.[88] Commissioned in 2013, the National Payment Strategy (the "NPS") was delivered to the BoG in March 2014. The NPS provides a strategic payments roadmap until 2019, focusing on the twin goals of an economy less dependent on cash and greater financial inclusion. Several of the proposed measures have been implemented or are in the process of being realized, such as the recent establishment of the Payments Council[89] (see Section 3.2 for further details). Ghana also became a full member of the Better Than Cash Alliance ("BTCA") in December 2014, and its Government has since shown an active support for digital payments in recent policy pronouncements, including in its 2017 budget pronouncement,[90] as well as in Ghana's Vice President's call in May 2017 to "push the electronic payments agenda higher" at GhIPSS' 10th anniversary celebration.[91] The support from senior levels of Government has been strengthened by the commissioning of this report.

Concurrently, with its push toward an economy less dependent on cash, the Ministry of Finance, with the support of the World Bank ("WB"), is working on a Financial Inclusion Strategic Plan ("FISP") to be released in 2018.[92] In this key document Ghana is setting its new targets, with the most recent draft of the FISP setting a target of 75% financial inclusion of all adults by 2023. To achieve this, the FISP will set five priority areas for the Government:

1. Financial stability;
2. Access, quality, and usage of financial services;
3. Financial infrastructure;
4. Financial consumer protection;
5. Financial literacy and capacity.

The Government has already taken many initiatives that the FISP will seek to build on, although several have yet to be fully concretized, as set out below.

Interoperability

The lack of interoperability, especially between MM providers, and between MM providers and banks, was already identified in 2008 as a driving force behind the Branchless Banking Guidelines' ("BB Guidelines") "many-to-many" model. Although the regulatory framework has since evolved, payments interoperability has remained on the top of the Government's agenda. The Government has delegated responsibility for the project to GhIPSS, which is committed to developing an interoperable switch with all four MNOs and the e-zwich platform by November 2017.[93]

G2P

The Government has led by example on the subject of digitization of G2P payments, with e-zwich becoming the digital payment instrument of choice. In 2013, student loans were switched to sole disbursement through e-zwich. Then, national service salaries and LEAP social subsidies[94] moved to e-zwich in 2015 and 2016, respectively. Although the payment of civil servant salaries is by EFT, the Government has been trying to push the payment of at least 10% of civil servant salaries by e-zwich as well, in line with its policy to grow e-zwich and to remove duplicates and ghosts through e-zwich's biometric function. So far, however, this has been met by strong resistance by some unions. Thus, the Government has evolved its tactics and, to address leakage, the Controller and Accountant General ("CAG") has required registration of all civil servants on the SSNIT biometric database (a specific database managed by SSNIT that is separate from the National ID initiative) by the end of March 2017. In conjunction with a similar campaign for pensioners that took place in October 2016, the Government removed close to 50,000 "ghost" names on the payroll and pensions registry, which is expected to create savings of over GHS 250 million (USD 58 million) in 2017. Also, since June 2017,[95] CAG has been piloting the bulk payment of some civil servant salaries.

With almost 100% digitization of all G2P payments[96] and 100% digitization of government-to-government ("G2G") payments, Ghana has achieved the first level of digitization of payments within these use cases by ensuring that the first payment the Government makes to these recipients is digital. It is thus benefiting from digitization's ability to reduce leakage (as set out above). However, most e-zwich transfers are immediately cashed out because the biometric card is not accepted at retail stores or for household bills – and to a lesser degree, there is a similar cashing out of money that has been deposited via EFT into bank accounts – so there are still issues to be addressed in regard to how such funds can be retained in the electronic payments ecosystem.

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G2B

Most government-to-business ("G2B") payments are in cash (90% in volume in 2016). The Government has taken several initiatives to push digital G2B payments. In 2014, the National Health Insurance Authority started piloting the electronic payment of insurance claims to 47 health care providers.[97] The Ministry of Gender, Children and Social Protection launched the electronic payment of caterers under the School Feeding Program in 2015, with payments to the northern regions using e-zwich and to the remaining regions using MTN Mobile Money.[98] As a significant first step in the digitization of public procurement, the Ministry of Communications, in collaboration with the Public Procurement Authority, is implementing an electronic system for government-wide procurement in Ghana in 2017.[99] Further, the Government has launched a Treasury Single Account ("TSA") as per the Public Financial Management Account Act.[100] As of early August 2017, the Government has transferred accounts of nine Ministries, Departments and Agencies ("MDAs") (out of 24) valued at more than GHS 89 million (USD 20.6 million) from commercial banks to the BoG.[101] The TSA will help the Government improve efficiency and maximize savings from its digitization efforts.

P2G

Regarding person-to-government ("P2G") payments, the Government has been equally proactive in setting up the GEPP, which provides critical backend infrastructure to enable online payments for government services. Launched in 2014 with WB funding, GEPP began accepting payment of taxes online in 2017, commencing with large taxpayers. This has the potential to improve tax revenue. So far, however, the GEPP has been rolled out in only 12 MDAs and very few services are offered, such as the marriage registration fee payment under Accra Metropolitan Assembly ("AMA") services. Those services that are offered generally require only one-off payments and do not result in end-to-end digital delivery. Coupled with the fact that a transaction fee is charged to customers for usage of the portal, it is not surprising that there is low uptake of these services to date, as further considered in Section 5 of this report. In addition, the Government has partnered with the private sector on specific use cases to push digital P2G payments.

National ID

The Government relaunched the national ID and national digital property schemes to facilitate the efficient delivery of public and private services and help formalize the economy. Both schemes are expected to be implemented by the end of 2017. Even though 98% of Ghanaians have some sort of ID,[102] Ghana currently has nine separate databases across various government and public entities and no unique property addressing scheme in place. The introduction of a biometric national ID and an address scheme based on GPS coordinates will help extend financial inclusion to

those currently lacking any form of ID or address. In the future, this will also enable remote activation of mobile money accounts through electronic Know Your Customer ("e-KYC") procedures, thereby further spreading financial inclusion to remote areas. These schemes would, however, require developing an authentication ecosystem with the right incentives for industry players, as well as robust implementation of existing data protection legislation.

REGULATION: EMBRACING INNOVATION

Ghana has a history of proactively reforming legislation in the financial service sector, starting with the establishment of its own independent central bank – the BoG – immediately after independence in 1957. Modern payment regulation was first introduced through the Bank of Ghana Act, 2002, which made the BoG responsible for payment and settlement systems in the country, and the Payment Systems Act, 2003, which empowered the BoG to play a pivotal role in establishing, operating, and promoting payments systems.

Seeing the potential of using new channels such as mobile phones and agent networks as a tool to extend financial inclusion, Ghana became one of the first African countries to embrace this opportunity by issuing the BB Guidelines in August 2008, some six years before Kenya's National Payment Systems Regulations were enacted. The guidelines were forward-thinking in certain respects, as they were flexible on who could be an agent (including MNOs and merchants) and what services could be provided by such agents. However, they also limited branchless banking services to a bank-led "many-to-many" model that prevented exclusive partnerships. This model aimed to increase interoperability between mobile money services as well as augment consumer access, while helping ensure support for the biometric smart card payment system branded as e-zwich, and a common electronic platform for bank transactions, gh-link.

However, this policy vision influenced stakeholder interests, as there were no clear incentives for either banks or non-banks to invest or take perceived risks. As a result, the subsequent lack of uptake prompted the BoG to reconsider its approach and issue the Guidelines for E-Money Issuers in Ghana (the "E-Money Guidelines") and the Agent Guidelines in 2015. These E-Money Guidelines foresee that electronic money will be issued by both regulated financial institutions and duly licensed non-bank entities (such as subsidiaries of MNOs and other third parties) engaged solely in the business of e-money and incidental activities, defined as Dedicated Electronic Money Issuers ("DEMIs"). While they came into force since 2015, the E-Money Guidelines have not yet been fully implemented. Therefore, although direct licensing of DEMIs is possible in theory, given the lack of implementation, e-money issuers have not yet been licensed and are still being regulated informally.

Concurrently, through the Agent Guidelines, a framework is now established that promotes agents as a channel for financial service delivery and ensures the necessary safeguards and controls to mitigate risks and protect consumers. Most recently, the BoG issued the Consumer Recourse Mechanism Guidelines for Financial Providers, 2017. In parallel, Parliament passed the Banks and Specialised Deposit Taking Institutions Act, 2016, which seeks to address the supervisory and regulatory gaps in current regulations regarding regulated financial institutions, and the Ghana Deposit Protection Act 2016, which introduces deposit insurance.

Although there are still gaps in the overall regulatory and supervisory framework of payments,[103] and the implementation of parts of the recent guidelines and Acts is still pending,[104] it is clear that the BoG and the Government have been proactive in the creation of an enabling and forward-thinking framework for digital payments. Ghana now provides pass-through deposit insurance for e-money accounts and requires the payment of interest on e-money accounts (subject to certain restrictions). Further, the BoG's enforcement powers have been strengthened, and the BoG is currently drafting specific consumer protection regulations for digital financial services. Lastly, the BoG has implemented many of the recommendations of its 2014 National Payment Strategy, including creating a Payments Council and passing the E-Money and Agent Guidelines. Other recommendations, such as the cost of cash index and the imposition of maximum monetary thresholds for non-digital payments, are still in progress.[105]

The BoG is in the process of supporting the PSSB, which will amalgamate the various guidelines and ensure a more consistent regulation of both payment service providers ("PSPs") and payment system operators. Further, it sees the PSSB as a vehicle to embrace fintechs, which will be licensed as PSPs under this new legislation. On this basis, the BoG has already started engaging these entities to pre-submit their applications even though the PSSB is not yet in force.

There are, however, some observations concerning the PSSB and the licensing of DEMIs that may need to be addressed. There is some ambiguity in the latest draft of the PSSB regarding the scope of the legislation, including which entities are subject to the Act and which provisions apply to particular payment-related activities. If not properly addressed prior to enactment, this lack of clarity may dissuade certain entities from entering the market.

In addition, although the E-Money Guidelines have been in effect since July 2015, e-money issuers are still being regulated informally as stated above. The BoG is issuing no-objection letters for each individual product and requiring bank sponsorship for each application until the PSSB is passed. Some fintech providers consider this a barrier to scaling up. Although the fees for individual product authorizations are relatively low (GHS 3,000–approximately USD 700), such providers often require authorizations for several products at a time and the processing time is long (9-10 months). In contrast, the fee for a DEMI license under the E-Money Guidelines is only GHS 6,000 (approximately USD 1,400), and once an entity is licensed, it will not need to apply for any product-specific no-objection letters.

Overall, the regulatory framework is progressively enabling the shift from cash to digital payments, and this is largely due to the BoG's forward-thinking approach. That said, issues concerning the regulation of DEMIs, coupled with the lack of an effective competition law to ensure a fair playing field for these new entrants, may reduce the effective number of new ecosystem competitors, and this is an issue that the upcoming PSSB should address.

TABLE 3.1
Payment system milestones

Year	Event
1957	Establishment of BoG
1980s	First ATM installed by Trust Bank
2002	Bank of Ghana Act, creates responsibility for payment systems
2007	GhIPSS established; first Visa card introduced by Ecobank
2008	Branchless Banking Guidelines issued; E-zwich platform and smartcard launched
2009	Mobile Money first launched by MTN
2012	Acceptance of Maya Declaration
2013	Student loans disbursed by e-zwich
2014	National Payments Strategy issued; GEPP launched by National Information Technology Agency; Ghana becomes a member of Better Than Cash Alliance
2015	E-money and Agent Guidelines issued; national service salaries disbursed by e-zwich
2016	Ghana Deposit Protection Act 2016 and Banks and Specialised Deposit Taking Institutions Act 2016 passed; LEAP subsidies disbursed by e-zwich
2017	Consumer Recourse Mechanism Guidelines for Financial Providers issued; online payment of tax on GEPP

4. CURRENT STATE OF TRANSITION TO DIGITAL

PREVALENCE OF CASH PAYMENTS

Despite good progress in some areas, the Ghanaian economy is still heavily reliant on cash. Of the 6.8 billion annual transactions conducted in 2016 (see Table 4.1), 98.72% were in cash. The prevalence of cash in payments is not surprising given the large informal sector in Ghana, the low acceptance of payment cards in small and medium businesses, and the fact that low-value, high-frequency payments account for a large percentage of payment volumes. Similar figures for overall cash in the economy by volume were reported in the BTCA diagnostics conducted in Malawi (over 99% of payments in 2014[106]), Nigeria (98.4% of payments in 2013[107]), and Uganda (95% of payments in 2015).[108]

This headline number of 98.72% stems from the prevalence of cash in payments by individuals, as cash accounts for 99.6% of the overall payments by individuals, and individual payments make up 97% of all payments in Ghana by volume. Similar trends were found in the diagnostics of Malawi[109], Nigeria[110], and Uganda[111], as seen in Figure 4.2.

This, however, is only half of the story. Overall, 37% of the annual value of GHS 561 billion (USD 130 billion)[112] is paid through electronic channels, suggesting that Ghana is making some progress toward a lower dependence on cash in terms of payment value, but not volume. The transition from cash to electronic in terms of value is mainly led by business payments; although they are only 28% digital by volume, business payments make up 76% of all payments by value (see Table 4.2).

Any discussion of payments, however, should take into consideration the important informal sector in Ghana, as both businesses and individuals have several incentives to remain outside of formal systems that collect taxes and financial transaction fees. The low prevalence of electronic payments in business and individual transactions is in large part driven by continued informality in the Ghanaian economy. This is often the case in emerging markets, and although it can be considered a significant roadblock to digitization, it should be noted that other countries in a similar position have been able to take steps to minimize the impact of the informal sector on digitization. India has launched a Goods and Services Tax (GST) effective of July 1, 2017, which is a unified Value Added Tax ("VAT") for the country. This will push informal establishments to register for taxation, thus aiming to reduce informality and improve tax compliance.[113] In respect to developed economies, South Korea has reduced the share of coin and note transactions from 40% to 25% between 2002 and 2006 by applying a lower sales tax rate to card payments, thus inducing informal businesses to adopt digital payments.[114]

TABLE 4.1

Payments by payer in Ghana, 2016

Payer	Total # of annual payments (million)	% volume electronic	Total value of annual payments (GHS billion)	Total value of annual payments (USD billion)	% value electronic	Total cash payments (GHS billion)
Goverment	106	23%	36	8	86%	5
Business	115	28%	425	98	35%	276
Individuals	6,606	0.4%	100	23	29%	71
Total	6,827	1%	561	130	37%	352

PAYMENT DATA BY PAYER AND PAYEE

Individuals

Individuals account for the largest volume of payments in the Ghanaian economy (see Table 4.2).[115] P2B transactions, especially the purchase of consumer goods, represent 94% of all payments by volume, followed by P2G payments such as utilities, taxes, social security contributions, and fees and fines, representing 2% of all payments by volume.

Nearly all personal transactions are in cash, and these payments make up nearly 97% of all payments by volume. In addition to the existence of the informal economy, based on qualitative interviews with industry stakeholders, several factors contribute to this preference for cash: (i) the high cost of digital payments that is often passed on to users; (ii) trust issues with using digital payments; and (iii) the perceived convenience of cash. These factors are similar across all emerging markets.

From a value perspective, individual payments also represent a large pool of cash as 71% of all individual transactions in value terms – the equivalent of GHS 71 billion (USD 16 billion) annually (See Table 4.1) – are made in cash to the Government, businesses, and other individuals. The remaining 29% electronic payments by value is driven mainly by remittances that are processed through bank transfers and Money Transfer Operators ("MTOs") for international remittances and by mobile money services for domestic remittances. Speed and trust factors are critical to this preference for digital payments versus informal remittances.

TABLE 4.2

Percentage of electronic payments and of total transactions volume and value

	Volume electronic	Value electronic	% of total transactions volume	% of total transactions value
GOVERNMENT	23%	86%	2%	6%
G2P	6,827	1%	561	130
G2B	10%	60%	1%	2.5%
G2G	100%	100%	0.1%	1.7%
BUSINESSES	28%	35%	2%	76%
B2P	46%	48%	1%	6%
B2G	43%	47%	0.2%	16%
B2B	4%	30%	1%	54%
INDIVIDUALS	0.4%	29%	97%	18%
P2G	9%	27%	2%	1%
P2B	0.2%	4%	94%	10%
P2P	16%	66%	1%	7%

Businesses

The report estimates that 28% of the transactions made by businesses are electronic by volume. This figure is relatively low because a majority of B2B transactions are processed through checks. Although large businesses are moving to electronic payments for high-value transactions, 96% of B2B transactions are in cash/checks, with small businesses using predominately cash. Based on qualitative data, medium and large businesses prefer to make payments by checks as they act as a cash flow management tool (it takes 2-3 days for a check to clear) and due to the lack of competitively priced alternatives. Also, check is often preferred to EFT because a check is perceived to have more legal recourse if it bounces,[116] compared to chasing after unpaid debt if the transfer is unsuccessful.

From a value perspective, Ghanaian businesses make about GHS 276 billion (USD 64 billion) in annual payments to the Government, businesses, and individuals in cash or checks (See Table 4.1), equivalent to 49% of the value of all payments throughout the Ghanaian economy. The 35% of value of business payments that are digital are mainly salaries, pension contributions, and digital taxes.

Government

The Government is taking the lead in the shift to digital payments, with 86% of the total annual GHS 36 billion (USD 8 billion) of government payments being made through electronic means (See Table 4.1). Table 4.2 shows that for both volume and value of payments, G2G and G2P are the payment types where most progress toward lower dependence on cash is being made in percentage terms at close to 100% digital (only allowances to civil servants are still paid in cash, but they are valued at only 2% of the current civil servant salaries). This high digitization of payments is due to the use of digitized payment systems for inter-governmental transfers and the use of e-zwich for certain salaries and cash transfer programs such as LEAP. However, these use cases make up a relatively small amount of government payments overall (e.g., G2G makes up only 5.5% of all government payments by volume). Rather, 85% of all government payments are procurement payments, and these are almost all paid by check (with only 10% digital by volume). This high prevalence of checks is due to the fact that each MDA pays its own suppliers in the way it sees fit, rather than using a centralized system.

The Government's push to digitize all of its payments is laudable, as it acts as a role model for the broader digital payments ecosystem and serves to build familiarity with digital payments to drive further uptake in other parts of the ecosystem. Further, recipients can leverage the digital payment instruments used to receive government payments for other payment use cases. But in real terms, this digitization has a limited effect on the overall payment ecosystem, as these payments represent only 2% of all payments in the ecosystem by volume (and 6% by value). Thus, even if the Government successfully reforms G2B, this will only have muted effect on payments overall, as it currently accounts for only 1% of all payments by volume (and 2% by value).

TABLE 4.3
Value of monthly payments by payer and payee (GHS million)

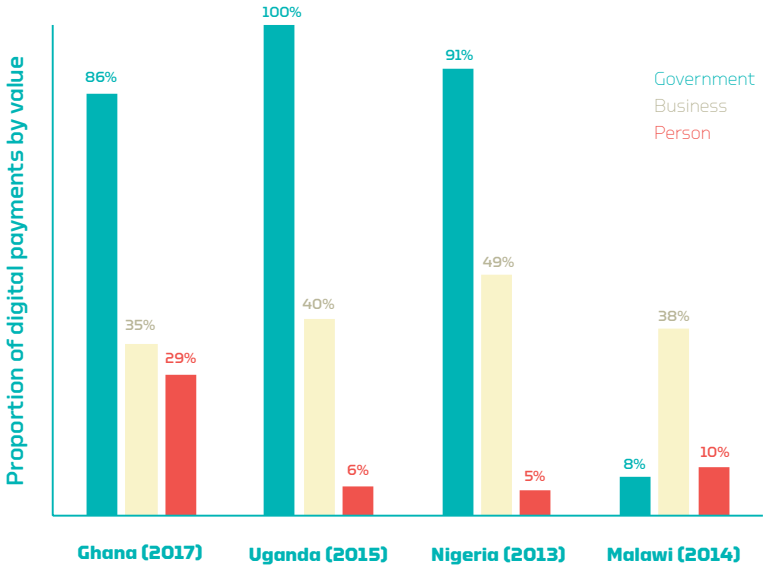
		PAYEE		
		Government	Business	Individuals
PAYER	Government	776	1,029	1,183
	Business	7,362	25,319	2,767
	Individuals	668	4,561	3,081

Comparing values and volumes for all payers and payees in Table 4.2 above,[117] we see that a higher percentage in value than in volume of payments is paid electronically.[118]

Comparing the Ghana findings with other African countries where diagnostics have been undertaken (Figure 4.1 and Figure 4.2 below), the levels of individual cash payments by volume are relatively similar. However, compared to Nigeria and Uganda, Ghana has a lower value of digital payments by government and businesses. This may be because Nigeria and Uganda have already implemented an Integrated Financial Management Information System which allows the Office of the Accountant General to manage revenue into and payments from a TSA.[119,120] Given Ghana only recently launched a TSA, this therefore is not reflected in the above findings.

FIGURE 4.1

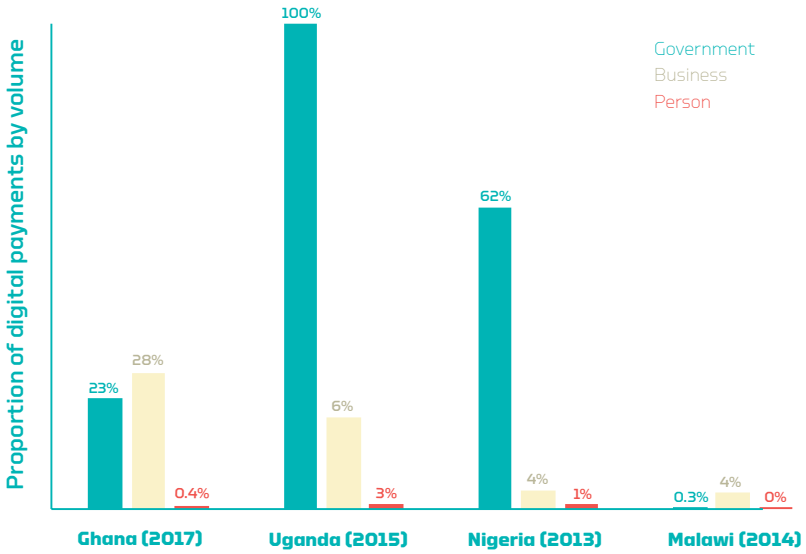
Percentage of payments by value made digitally by BTCA diagnostic countries in Africa



Uganda and Nigeria are not BTCA members.

FIGURE 4.2

Percentage of payments by volume made digitally by BTCA diagnostic countries in Africa



Women and Digital Payments

Visit a bustling street market in Accra, and it will soon be clear that a majority of the market stalls are run by women. Similarly, street hawkers are largely women.

Clearly a large number of businesses in the informal sector are run by women. They often use Susu collectors not only to save, but to avoid storing large amounts of cash and leaving their workplace during business hours.

As highlighted in interviews conducted for this report, digital payment methods like mobile money offer these women an alternative to the Susu system for securing their funds and expanding their economic opportunities. Transaction histories created by digital payments can potentially help women access formal loans to expand their businesses. Further, the ability to accept digital payments increases their revenue, as customers are no longer limited to paying in cash or on credit. Olivia Dei-Alorse, a natural fruit juice seller based on Ecobank's premises and one of the first users of its Masterpass QR solution, noted: "Using the QR code product helps me save money and sell more product, and helps my cash flow as I no longer must offer credit to customers."[121]

Women employed in the formal sector also recognize the benefits of digital payments. A Fast Moving Consumer Goods ("FMCG") distributor interviewed, who receives 65% of her revenues in cash, prefers not to count cash and is concerned about the risk of keeping money on-site. Currently, her bank picks up her cash daily at 4 p.m. by bullion van, which minimizes her cash holding risk. She is open to digital payments and accepts 5% of her payments via mobile money, but says that issues with payment notifications prevent her from accepting more digital payments. If these issues are resolved, she said that given the security and real-time processing that digital channels offer, she would be strongly inclined to favor mobile money.

Digital receipting could also change the face of the Susu business, where today approximately 55% of registered Susu collectors are women.[122] By providing transparency to the Susu customer and enterprise, and minimizing fraud, digital receipting will incentivize more women to become Susu collectors. According to the General Manager of the GCSCA,

"With digitization, confidence in [the] Susu system will increase, and more women can enter business, generating formal employment for women." [123]

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5. TRAJECTORY OF THE SHIFT: THREE AREAS OF FOCUS

BTCA country diagnostics seek to assess the trajectory of the shift to digital payments through the lens of particular payment use cases or areas of focus. This section explains the current state and momentum of the shift to digital payments regarding three use cases – two of which relate to government payments:

1. Government Fees and Fines;
2. Public Utilities; and
3. FMCG and Retail Value Chain.

The Ministry of Finance prioritized these three areas where cash is still highly prevalent and the shift to digital payments may have a lasting impact on the payments ecosystem.

FIGURE 5.1
Use cases and payment types in Ghana

ENTITY MAKING THE PAYMENT	RECIPIENT: Government	RECIPIENT: Business	RECIPIENT: Person
Government	**G2G** Central government disbursements to local level, Social Security contributions Public utilities	**G2B** Supplier payments by national and local governments, Corporate tax refunds	**G2P** Salaries and allowances by national and local government, Pensions by national and local government, Social welfare payments
Business	**B2G** Taxes Fees and fines to national and local revenue authorities Public utilities Social security contributions	**B2B** Private utility payments Supplier payments Distributor payments	**B2P** Salaries Pensions Input purchases
Person	**P2G** Taxes Fees and fines to national and local revenue authorities Public utilities Social security contributions	**P2B** Private utility payments Expenditures for goods and services Loan payments	**P2P** Domestic and international remittances, Other non-consumption expenditures (gifts, contributions, informal remittances)

A. Fees and Fines to Government
B. Public Utilities
C. FMCG and Retail Value Chain

TRAJECTORY ASSESSMENT MODEL

This report adopts a revised trajectory assessment model of the transition to digital payments of specific use cases, in comparison to previous diagnostics (See Box F.1 in the Annex for more details). The model's methodology is set out in Annex E. In summary, the model ranks the prospective trajectory of each use case on a scale of 1-4, detailed below (see Figure 5.2). The assessments made by this diagnostic study using this model are set out thereafter.

FIGURE 5.2
Use case trajectory ratings

Rating	The use case's readiness for a shift to digital payments
4	Fully Ready. Most or all of the required factors are in place to support a shift to digital payments.
3	Nearly Ready. Many of the required factors are in place to support a shift to digital payments. A few important factors are not yet in place.
2	Progressing. Some of the required factors are in place to support a shift to digital payments. Several important factors are not yet in place.
1	Not Ready. Few of the required factors are in place to support a shift to digital payments.
N/A	Not applicable / no evidence is available to score this factor.

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USE CASE A:
GOVERNMENT FEES AND FINES

Trajectory assessment: 2.13

Progressing. Some of the required factors are in place to support a shift to digital payments, however several important factors are not yet in place.

- Most fee and fine payments by individuals are made in cash and most payments by businesses are made by check.
- The GEPP platform provides the necessary infrastructure, if the challenges set out below are successfully addressed.
- This application has potential to improve revenues for the Government, assist in the formalization of small businesses, and benefit citizens in terms of reduction in both their transaction and opportunity costs.

This application deals exclusively with the various fees and fines that are paid by Ghanaian residents. This includes payments by individuals and businesses for government services, such as the issuance of driving licenses, vehicle registrations, and passports. It also includes fees and fines[124] paid by individuals and businesses to the various government agencies such as the local authorities (e.g., Accra Metropolitan Authority) and the Ghana Ports and Harbours Authority ("GPHA"). Unlike payments for utilities (electricity, water, etc.), these payments are generally one-off payments or annual payments that may have their own challenges in terms of scale-up for digital payments.

The Ministry of Finance is keen to push digital payments in the country, and the buy-in for this digital payment push comes from the most senior levels of the political establishment. However, most payments received by government agencies are still made largely by cash or check. Payments data show that there are approximately 1.7 million payments annually in this category, of which only 2% of the payments by volume and 32% by value are paid through digital means. Businesses account for approximately 900,000 payments annually, of which 1% by volume and 36% by value are paid through digital means. Businesses pay by cash/check for various fees and fines often due to government agencies' inability to accept digital payments. Individuals, who face similar challenges related to the lack of digital payment options, account for approximately 800,000 payments annually for this use case, of which 3% by volume and 16% by value are paid digitally. Refer to Table 5.1 for a summary.

TABLE 5.1
Payments for fees and fines

	% electronic (volume)	% electronic (value)
All fees and fines	2%	32%
Business	1%	36%
Individuals	3%	16%

One of the main government P2G projects is the launch in 2014 of GEPP,[125] an e-services portal that offers select government services including digital payment options through a common interface. The current payment options allowed on the GEPP are (i) debit and credit cards, (ii) mobile money, (iii) eTranzact cards issued by partner banks, (iv) cash and check payment through Payall at Payall payment points (within 30 days of requesting the service online), and (v) bank transfer (local and foreign).

There are several different payment and delivery options available via the GEPP, including an online application with in-person payment, online payment with in-person delivery, and end-to-end digital payment and delivery. Although the Driver and Vehicles Licensing Authority ("DVLA") allows citizens to complete an online application form for some of its services, payments for the services are still made in cash at DVLA offices, so there is no end-to end digital payment and delivery of services. AMA, on the other hand, started accepting mobile money for a few select services, such as marriage registration fees, but individuals must still go in person to the AMA to obtain the relevant registration. Other MDAs, such as the Ghana Police, offer most of their services online along with digital payment options.

Certain MDAs that are not on GEPP are working on separate platforms to accept digital payment. GPHA already implemented online payment facilities for marine and port charges that helped to reduce delays in clearance at the Tema Port. However, payments made by the local clearing agents are largely cash-based, and efforts have been made by GPHA to install POS machines to enable card-based payments. The port authorities have enabled the use of the e-zwich card for payment of tolls at GPHA, but adoption has been low as it requires the presence of the card holder (due to biometrics).

NITA and GEPP

To give impetus to a digital interface with citizens, in 2013 the Government launched "e-Transform Ghana" with funding from the WB. The program aims to leverage the latest Information and Communication Technologies ("ICTs") for improving the efficiency and coverage of government service delivery. Apart from supporting legal and regulatory changes, the project aims to improve institutional capacity to support electronic government services. The Government established a separate National Information Technology Agency ("NITA") under the Ministry of Communications Act 771 in 2008 that is responsible for promoting ICT in Ghana. With the support of e-Transform Ghana, NITA launched GEPP in 2014.[126] GEPP is an e-services portal that currently offers services for 12 MDAs, with plans to offer all government services through a common interface, including options for digital payments. Following is the current list of MDAs for which digital payments are available:

1. AMA
2. Births and Deaths Registry
3. Food & Drugs Authority
4. Ghana Police/Criminal Investigation Department
5. Minerals Commission
6. Ministry of Foreign Affairs and Regional Integration/Passport office
7. National Communication Authority
8. National Identification Authority
9. Ghana Tourism Authority
10. NITA
11. DVLA

A sample of services offered on GEPP includes payment of fees for marriage registration, transfer, and change of ownership of commercial vehicles, and services related to visitors permit and visas.

Key Findings

1. GEPP roll-out is still in the early stages and uptake has been limited.

Several MDAs (12 as of date) at a pilot stage with GEPP for offering online services for the last two years. Although having a central portal for various Government services is a welcome step, as it has the potential to ease the integration issues for various payments providers and the MDAs, progress has been slow to date. Reasons for this include:

a. The transaction fee charged to customers for usage of the portal;

b. Only a few government services used on a regular basis by people/businesses (e.g., driving license, vehicle registration, local taxes) are offered online on the GEPP;

c. Even for the services where payment is online, delivery of the services is mostly offline, still requiring the individual to travel to the MDA. Although such online prepayment may reduce waiting time, this does not seem to offer a significant enough incentive to people/businesses to register for online payment; and

d. The low frequency of payments processed– as the majority of services currently offered on the platform require only one-off payments (i.e., births & deaths register, passport renewal, business registration, and police ID).

2. There are internal constraints within MDAs for rapid adoption of digital payment methods.

Where digital means of payments have been promoted, key constraints for rapid adoption include:

a. A lack of internal capacity of various MDAs to integrate with GEPP;

b. Fragmented back-end databases of MDAs, which makes integration with GEPP difficult;

c. A lack of champions in the MDAs; and

d. An inadequate IT hardware infrastructure (e.g., server capacity, PCs, and networking).

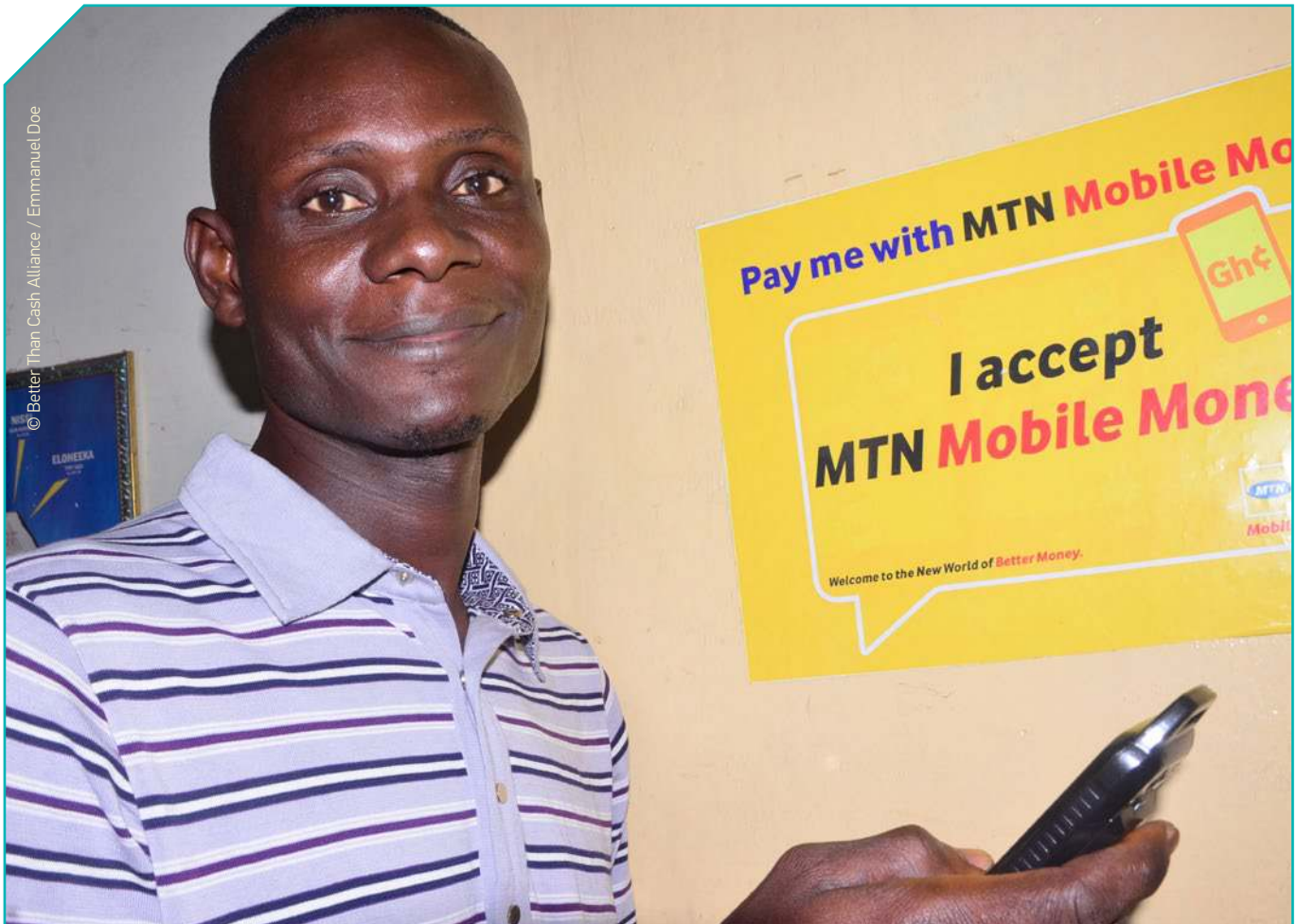
These constraints have been augmented by the fact that there is no specific government policy mandating digital payments from a particular date or over a specific amount, as is the case in Nigeria pursuant to its "Cashless Nigeria" policy.[127]

3. Not all MDAs wish to use digital payments, and for those that do, some want to use a platform other than GEPP.

While some government agencies expressed concern in terms of revenue leakage and are thus keen to adopt digital payment methods, other MDAs had no issue with cash being the predominant method of payment for their services. Of those MDAs interested in digital payments, some, such as the GPHA, appeared uninterested in the GEPP, preferring to create their own infrastructure due to jurisdictional and trust issues. This was clearly the case for the public utility companies, especially Ghana Water Company which prefers to create its own platform. Taking this approach will result in fragmented platforms.

Recommendations

This application may not be critical in terms of the number of transactions (it makes up only 0.03% of all payments by volume and 1.6% of all government payments) and is centered around one-off payments. However, it also has immense potential to ease the friction of P2G interactions for millions of Ghanaians, mainly by reducing transaction time and costs. This is especially the case for services that can be delivered digitally. For example, AMA offers a Marriage Certificate request on the GEPP portal at a cost of GHS 20 (USD 4.60) which could potentially save an individual at least two trips (minimum) to the AMA office, a few hours of waiting, and the additional travel cost.



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This use case is also of high importance to the Government, as it is part of its vision of offering e-services to the citizens, and is often showcased by the Government as an example of their leading the digital payment efforts in the country. It also has the potential to improve revenue collection for the Government as it can circumvent fake receipt books that lead to revenue leakage. Digital payments also could reduce rent-seeking behavior in the economy as there is no face-to-face interaction required.

Ghana could be a leader in the region in terms of offering online public services. It has already done the difficult work of building a central e-services and e-payments portal and on-boarding most of the payment providers. The remaining work involves the Government continuing to lay down a clear policy direction in terms of making digital payments mandatory for fees and fines in phases.

This report thus recommends first that the Government clearly state its intention to move to digital payments exclusively for government fees and fines. Second, we suggest that the Government improve the technical capacity of MDAs to migrate to digital payments, possibly by soliciting external technical assistance from the private sector and/or donors. Third, to address the fragmentation of payment portals, the Government should leverage the GEPP as the central payment infrastructure for all government agencies, while promoting greater choice and competition. Fourth, the Government should negotiate with financial service providers ("FSPs") to lower costs or even offer discounts for digital payments through the GEPP to incentivize citizens to pay electronically. The Government may also need to (i) re-engineer some of the internal processes that may impede the offering of online services and digital payment options for services, (ii) ensure all MDA services are brought onto the common GEPP gateway, and (iii) increase public and Government awareness about the digital payment options (anecdotal evidence suggests that many people were unaware that they could apply and pay digitally for some services). If these challenges are addressed, it would be a quick win, as most of the infrastructure is already developed.

USE CASE B:
PUBLIC UTILITIES

Trajectory assessment: 2.21

Progressing. Some of the required factors are in place to support a shift to digital payments, however several important factors are not yet in place.

- Cash is the main payment instrument, with little high-value EFT usage by businesses.
- The potential impact of this use case is significant, as 80% of the population is dependent on these services and payments are regular and habitual.

This use case considers solely potable water and on-grid electricity, and focuses on the payments received by the public utility companies for the distribution of water and electricity to individuals, businesses, and government institutions. This use case falls into the category of government payments, as the main public utility companies are government-owned monopolies in their specific geographic regions. Although it encompasses, in theory, P2G, B2G and G2G payments (as depicted in the payment grid in Figure 5.1), as all G2G payments are accounting set-offs, these have not been considered in the analysis below.

Overall, public utility payments account for 1.4% of all payments by volume and 11.7% by value, both of which are the highest among the three selected use cases. Cash is extremely prevalent, as 99.84% of public utility payments are made in cash by volume and 62% by value. Businesses are the only significant users of digital payment instruments–0.16% of all public utility payments by volume and 38% by value are EFT payments by businesses (see Table 5.2). To put this into context, business payments account for only 3% of all public utility payments by volume but almost 96% of these payments by value. Aside from high-value EFT (which constitutes approximately 5% of all business public utility payments by volume and almost 40% by value), 95% of all business payments are lower-value payments by check. Individuals, on the other hand, make almost all their payments in cash at often inconveniently located utility cash collection points, with some insignificant amounts of mobile money under certain mobile money pilot projects. All payments – both by businesses and individuals – are frequent in nature, paid monthly or quarterly.

TABLE 5.2
Payments for utilities

Payer	Volume electronic	Value electronic	% electronic payments of total utility payments for that payer (volume)	% electronic payments of total utility payments for that payer (value)	% of total utility payments (volume)	% of total utility payments (value)
Business	0.16%	38%	5%	40%	3%	96%
Individuals	0%	0%	0%	0%	97%	4%

To better understand how payments are made and how payments interact with distribution, it is necessary to distinguish between water and electricity.

Four-fifths (80%) of the Ghanaian population has access to electricity,[128] with distribution provided by two separate state monopolies: the Electricity Company of Ghana ("ECG") for Southern Ghana and urban areas (overall 70% market share),[129] and the Northern Electricity Distribution Company for the rural Northern part of Ghana. Additionally, there is one privately-owned distribution company, the Enclave Power Company, which is mainly responsible for the industries in the Free Zone Enclave[130] in Tema. From a billing infrastructure perspective, half of all distributed electricity is postpaid (customers receive an invoice based on a manual meter reading), while the other half is prepaid (customers must upload credit on a token). A fifth (20%) of the prepaid customers are currently served by smart meters (allowing for remote reporting and credit top-up). In urban areas, where 80% is prepaid, there is a concerted push toward prepaid as it is easier to collect revenue, while rural customers are postpaid only.

All users/households are required to purchase electricity directly from the distributor. Postpaid residential customers can pay at ECG pay points or banks and, in rural areas, at bonded cashiers, while prepaid residential customers can top up at ECG pay points or from third-party vendors, in both cases with cash or checks. Commercial customers may pay using the same methods of payment as residential customers and can also pay by EFT or direct debit[131] for postpaid only.[132] For postpaid, only cash or check payments at ECG pay points are provided an immediate receipt; with all other payments, a receipt is only provided when money is credited to ECG.

Although MM providers often advertise that they offer payment facilities for utility bills, until recently, this has not been possible for electricity due to a lack of payment integration between the MNOs and the ECG. On 22 August 2017, Cellulant launched "Mula," a digital payments platform for ECG prepaid services, which will allow payments by mobile money in the near future.[133] Off-grid "Pay As You Go" ("PAYG") solutions, such as PEG, are also 100% mobile money-based.

Similarly, approximately 80%[134] of the population has access to improved water supplies, and distribution is provided by one state company – the Ghana Water Company ("GWC"), which services urban areas – and one state agency – the Community Water and Sanitation Agency, which covers rural areas. From a billing infrastructure perspective, water is entirely postpaid, and for GWC, 74%[135] of customers are metered, with the water company staff physically reading the meters once a month and providing invoices based on consumption. Approximately 20% of their current customers do not pay their bills, and often customers don't pay monthly but rather whenever it is convenient for them. There are currently no penalties for late or lack of payment except termination of service. GWC has been trying to roll out a prepaid water pilot in Tema over the past few years to

stop water losses and increase payment collection (last declaration of intention dates to July 2016),[136] but it has faced resistance from civil society groups, who argue that water is a human right whose supply cannot be refused due to lack of payment.

Not all households pay the distributor directly for water, as water provision in rural areas is often assured by the municipality or through communal water systems that are managed by local governments. Customers that do pay directly, 90% of whom are residential, can pay by cash or check at GWC pay points or third-party vendors, or by cash and card at banks (GWC is currently rolling out a POS with card capability in banks). For commercial customers, in addition to the payment options listed above, approximately 10 companies pay by EFT and there is a direct debit payment pilot currently ongoing through five banks. Regarding mobile money, a previous Airtel pilot failed due to delayed reconciliation and delayed posting with third-party collection points, among other issues. In theory, MTN Mobile Money customers can make water payments,[137] but usage is insignificant.

In April 2017, GWC launched an e-billing system to transition from paper bill delivery to electronic billing via Short Messaging Service ("SMS") and email. A new pilot with all mobile money providers and a GWC mobile application are in development and was due to be rolled out by 1 August. [138]

Key Findings

1. Issues with reconciliation of non-cash transactions have resulted in customer preference for cash payment.

Both the ECG and GWC have had issues with the reconciliation of mobile money and bank payments for postpaid accounts with their central accounting platforms, resulting in delayed and even non-crediting of these payments to client accounts. This has led to reduction of payments at banks for ECG and failed mobile money pilots for both companies. These issues are due mainly to weak internal processes and fragmented infrastructure in both companies.

As only the utility pay points currently provide immediate receipts upon payment (clients having paid via either mobile money or the bank do not receive such a receipt of payment until their account is credited), customers have a strong preference to pay for utility bills in cash at the utility pay points. From qualitative interviews with FMCG companies, if a receipt were provided immediately when a client pays with digital payment means, many clients would prefer to pay digitally given the other benefits associated with digital payments, such as security and lower costs. These receipt issues are mainly due to the fact that the public utilities have not allowed third parties such as MNOs or banks to issue receipts immediately, requiring the receipt of funds in the public utility's bank account before any account crediting of the customer. In addition, there seem to be delays in this crediting and it is not clear which party is responsible for these delays.

2. There is a lack of suitable "smart" infrastructure for full end-to-end digital payment & distribution.

Postpaid utilities disintermediate payment and service delivery (i.e., disconnect payment of a service from its distribution to the customer). Although it is easier to offer digital payments in a postpaid context, as the digital payment is unrelated to the utility distribution, such payment provides only an incremental benefit to the parties, as the there is no end-to-end digital distribution. Both public utilities wish to move to prepaid to eliminate payment delinquencies, as this would enable service delivery to be made dependent on payment. However, to benefit fully from the efficiencies of digital payment in prepaid, the delivery of the service equally needs to be digitized. Introducing digital payment but still requiring the customer to upload the token at a utility pay point greatly decreases any benefit for the utility company or the customer.

The solution for end-to-end digital payment and distribution is the smart prepaid meter, which allows for remote meter reading and crediting via digital payment means such as mobile money. Currently there are no smart water meters, and only 20% of postpaid electricity meters are smart (of which there seem to be many different meters that require different communication protocols). The roll-out of smart meters is a significant capital investment for a public utility whose services are often billed out at a below-cost rate.

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3. There are clear benefits from payment and distribution digitization for customers and providers.

Water and electricity are essential services; digital delivery and payment in all cases will provide benefits to customers in their daily lives. The digitization of payment and service delivery also reduces customers' wait and travel times and gives them more control over supply, as they can choose to ration supply for days/times that are most appropriate. Prepaid payment schedules are relatively flexible, allowing households to pace the use of electricity and/or water according to their cash flows and ability to pay.

Further, smart meters allow the Government to provide in-kind water subsidies, which guarantee lower income households a certain number of cubic meters of free water per month, with only the additional water being charged. This allows the public utility to be run more efficiently while safeguarding people's right to water.

The digitization of payment and distribution would also lead to large cost savings for both public utilities. It would allow for a significant reduction in the number of utility pay points, and thus lead to a significant decrease in wage costs, rent, and other ongoing costs. Further, it would reduce the theft of both cash and the utility service being provided, increase revenue collection, and improve data accuracy.

4. Ghana Water Company seems to have internalized the benefits of digital and is interested in pursuing a digital payment agenda.

GWC is actively promoting digital payments by rolling out receipt machines that accept card payments at banks, piloting electronic billing as well as direct debit for commercial customers, developing internal API integration, and working with MNOs to develop a successful mobile money solution. Clearly, the move to digital payments is internally driven, and there are several partners (e.g., MM providers, banks, fintechs) willing to support the move.

This is exactly the type of championing required for such a push, although there will need to be political will as well to support the roll-out of prepaid smart meters, given the sensitivity toward water as a human right and the concerns around denying such a service due to lack of payment.

Recommendations

Currently, cash is almost ubiquitous in this use case, accounting for 99.84% of all payments. Yet the potential impact of digital services is enormous–80% of the population is dependent on at least one, if not both, of these services, and these are payments that are regular and habitual. Shifting even a fraction of the population to digital payments for utility payments would have a significant impact. Studies have shown that in the case off-grid electricity, access to such energy via digital payment provides a tangible incentive for users to register for and actively use many other digital payment services, such as a mobile wallet. This is particularly the case for customers that had not previously seen the value or relevance of mobile money to their lives.[139]

Looking at the two utilities more closely, water offers some easily realizable gains with respect to the current postpaid system, where issues such as fragmented databases and manual reconciliation can be easily tackled if there are sufficient will and resources. As recently demonstrated in Kenya, digitizing payments can reduce the time required to pay a water bill by 82%,[140] resulting in savings of millions of dollars for the utility as well as generation of significant new revenue. However, such a solution, although it forms a good building block going forward, will only digitize part of the transaction.

Electricity may provide a quick win from the perspective of end-to-end digital delivery and payment, given there are many more tariff payers and the existence of some smart prepaid metering. Further, there are plans for private-sector participation in the management of ECG under the MIDA Power Compact II.[141] It is likely that the private company that will manage ECG will be more aggressive in addressing revenue leakages and thus will probably invest more in smart meters and relevant billing infrastructure. This would mean that an even faster shift to digital may be on the horizon.

Ultimately, however, water may be more promising in the long term from the perspective of end-to-end digital delivery and payment. As it is currently entirely postpaid, there is a clean slate for the introduction of a single type of smart prepaid meter, which can be rolled out quickly assuming sufficient capital investment and political will to overcome activist resistance. Electricity, on the other hand, will have to deal with a complicated legacy of an array of different smart meters to ensure universal roll-out. Given that the GWC is proactive toward digital payments and that valuable lessons can be learned from successful "pay as you drink" models elsewhere in Africa (such as government in-kind subsidies to ensure baseline water distribution),[142] there are many elements that could favor the success of this use case.

To accelerate the shift to digital payments for both water and electricity, we recommend first the provision of financial and technical support to the public utility companies to update their internal accounting processes, including their accounting/reconciliation software/platforms, to facilitate quicker and more accurate reconciliation of digital payments. Second, technical support could be provided by government and donors to assist public utilities in crafting effective partnerships with FSPs – including banks, MM providers, and fintechs/aggregators – to roll out the acceptance of cards, mobile banking, and mobile money payments both for prepaid and postpaid utilities and, particularly, for existing smart meters. In the long term, financing and support for the purchase and installation of homogeneous smart meters for both sectors would be the ultimate accelerator.

The Impact Learnings from the Off-Grid Sector on "Pay As You Go"


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Ghana has been fertile terrain for Pay as You Go (PAYG) electricity and water pilots, albeit off-grid.

Headquartered in Accra, PEG is an off-grid solar company that has been providing solar home systems based on PAYG financing to off-grid households in Ghana since 2011. PEG provides households with a solar home system comprised of a battery, an 8W solar panel, two lamps, a torch, a radio, and a phone charger on credit, which is repaid through 12 monthly payments via mobile money. Ownership of the asset transfers to the household once the credit is repaid, allowing households thereafter to access electricity through solar power without any further costs. PEG had 16,000 customers in 2016 and currently covers 22,000 households in Ghana.

In addition to increasing access to electricity, PAYG solar appears to support the uptake of digital payments. A recent study[143] published by CGAP found that PAYG can drive the usage of mobile money: Tigo Cash wallet holders who were PEG customers generated 122% more revenue per active user for Tigo Cash than did non-PEG Tigo Cash wallet holders. On average, Tigo Cash PEG users made more use of all mobile money services (they checked their balances more frequently, cashed in and out more frequently, and made over three times as many P2P transfers per user).

"Pay As You Drink" powered by mobile payments is similarly making inroads in Ghana through the work of the NGO, Safe Water Network, with the support of CGAP. Safe Water Network supplies water to communities who lack access to on-grid water through household connections fed from nearby small water enterprises. As part of a new project[144] funded through a partnership with CGAP, Safe Water Network is piloting 100 smart meters in the towns of Tetrem and Beyin and three surrounding communities. The smart meters will allow for mobile money pre-payment for a set volume of water determined by the consumer. The pilot will measure the extent to which mobile money can improve operational efficiency in meter reading and revenue collection from household connections, with findings to be published by the end of 2017.

Both pilots offer insights into the benefits derived from a move to prepaid utility provision that can be integrated into the business plans and strategies of the public utilities and MM providers, as well as consumer benefits in terms of off-grid access at an affordable cost.

USE CASE C:

FAST MOVING CONSUMER GOODS VALUE CHAIN: THE LINK TO SMALL RETAILERS' DIGITIZATION

Trajectory assessment: 2.4

Progressing. Some of the required factors are in place to support a shift to digital payments yet several important factors are not yet in place.

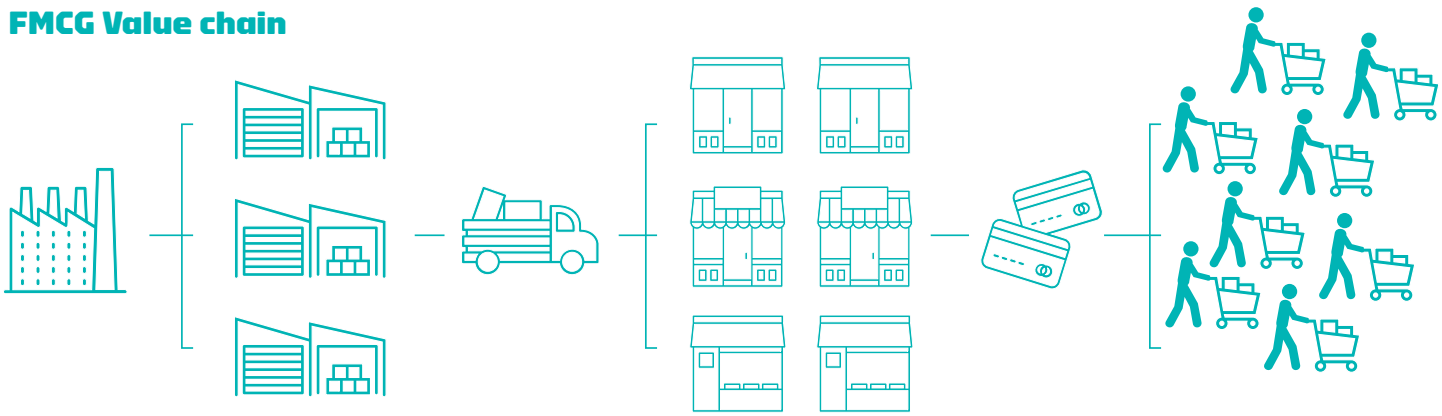
- As purchases of consumer goods by individuals are mostly completed in cash, the FMCG value chain is highly reliant on cash at the small merchant level.
- If even a fraction of payments for consumption goods between individuals and small merchants were shifted to digital through the digitization of FMCG sales, the potential impact on the payment ecosystem is tremendous.
- Although FMCG manufacturers can offer a variety of incentives to push digital, the shift must be an industry-wide effort with government support.

This application examines payments across the FMCG value chain, with a focus on how FMCG companies make and receive payments.[145] FMCG companies manufacture a range of frequently purchased consumer goods, sold either through a direct or an indirect distribution model. A direct distribution model is where FMCG companies sell products directly to retailers without involving an intermediary, while an indirect distribution model is where FMCG companies sell products to retailers through a network of intermediaries–distributors and wholesalers.

Most of the FMCG companies in Ghana are subsidiaries of global multinationals such as Unilever, Coca Cola, Nestle, Diageo, and AB InBev. These companies sell a variety of brands in various product categories such as beverages (alcoholic, soft drinks, and water), health and beauty, toiletries, food, and confectionery. The product portfolios of most FMCG companies consist of a mixture of locally manufactured and imported brands.

FIGURE 5.3

FMCG Value chain



To better understand how payments are made and the various dynamics at play, it is helpful to distinguish between the various levels of the FMCG value chain.

FMCG Companies

Modes of payment – Checks are the predominant mode of payment at the FMCG company level. About 99% of the volume and value of distributor payments to FMCG companies are made by checks and about 50% of the volume and 40% of the value of payments made by FMCG companies themselves are also by checks, with bank transfers mostly used for non-check payments. The value of payments made through bank transfers is relatively high because many FMCG companies import both raw materials and finished products, with foreign payments initiated electronically through the Society for Worldwide Interbank Financial Telecommunication ("SWIFT"), a global provider of secure financial messaging services.

Receiving payments – Distributors lodge pre-signed blank checks with the FMCG company for stock orders. Once orders are placed and supplied, the FMCG company's finance staff fills out the face value of the pre-signed check based on the value of the invoiced order and then deposits the check at the bank in line with the credit days that the FMCG has attributed to each distributor.

Making payments – Although FMCG companies issue checks frequently to their suppliers, many of them have successfully integrated their vendor management module of their Enterprise Resource Planning ("ERP") system with their bank's electronic banking platform and are, therefore, able to make electronic payments to vendors when invoices are approved.

Distributors

Modes of payment – Distributors receive about 95% of payments from wholesalers/retailers by non-digital means – about 65% in cash (mostly from retailers) and about 30% in checks (mostly from wholesalers), with mobile money making up the remaining 5% of payments.

Receiving payments – Distributors' sales teams sell largely on a cash-and-carry basis (about 90% of sales) and serve wholesalers about once a week and retailers about three times a week; checks are accepted from trusted customers only. Generally, wholesale and retail customers know the value of the stock they intend to purchase from the distributor sales team and have the exact amount of cash available. The potential risk of holding substantial amounts of cash is mitigated by banks that provide daily, on-site cash pick-up. Mobile money, card (prepaid, debit, and credit) and e-zwich adoption and usage remain low.

Making payments – Most distributors are effectively sole proprietorships, where the owner is the sole person who authorizes payments. Few distributors use internet banking to make payments because they consider

the platform to be relatively expensive. Distributors also have a strong preference for check payments to FMCG companies because the check clearing days ease the pressure on their working capital. Payments for vehicle expenses, utilities, insurance, and salaries are mostly paid in cash or check, and physical receipts are issued for recordkeeping purposes. In some cases, the payee influences the mode of payment.

Retailers

Modes of payment – The typical retail outlets are small and informal businesses; the owner is not likely to accept checks, e-zwich, or card payments and may not have an active mobile money wallet.

Receiving payments – Mostly in cash from customers; personal checks are not widely accepted and mobile money usage for merchant payments is low. Part of the cash that retailers receive from their consumers is used to pay distributors for stock. Distributors then have this cash picked up by the banks and deposited in their bank accounts, which ensures that accounts are funded when checks lodged with FMCG companies are presented for payment.

Making payments – Small retailers have limited access to bank accounts and financial services, so they typically make cash payments to suppliers and other service providers. Retailers do not like to stop trading activity to deposit or withdraw cash from an FSP channel that may not be conveniently located.

Key Findings

1. FMCG companies actively use digital payment products/channels and some offer incentives to distributors to facilitate a shift across the value chain.

Some FMCG companies have invested in proprietary mobile-based software that staff and distributors use to electronically capture stock orders and track sales activity at the distributor level, which is often integrated with the FMCG company's ERP system such as SAP and EPICOR. This tool is not only important for sales planning, supply chain management, and production planning but also presents a potential opportunity for FMCG companies to integrate a payment functionality.

Certain FMCG companies such as Accra Brewery offer distributors digital discounts, while others negotiate competitive interest rates on working capital facilities through bank partners, thereby nudging distributors to bank with the same bank as the FMCG company. Once the FMCG company and distributor are customers of the same bank, EFT transactions are quicker and cheaper. FMCG companies may also offer discounts to distributors to encourage early payment of stock through EFT.

2. FMCG companies and financial institutions are piloting innovative electronic payment solutions across the value chain.

Ecobank is piloting a relatively inexpensive merchant payment solution, Masterpass QR, with one key Unilever distributor and its network of about 200 retailers. The Ecobank QR allows merchants to accept payments from any mobile device without a physical POS terminal, while allowing Ecobank customers to pay for goods and services using Ecobank Masterpass QR. Ecobank customers can pay merchants by scanning a Quick Response ("QR") code displayed at checkout on their smartphones, or by entering a merchant identifier into their feature phones. The Masterpass QR code is significantly cheaper to deploy than POS devices and allows for payment with Ecobank's mobile banking app. In addition, retailers no longer need to charge a POS device and worry about connectivity issues that sometimes result in failed payments.

Three key distributors are participating in a pilot with MTN Mobile Money. MTN has offered significant discounts on mobile money transaction charges for this pilot. Currently, a total of 90 retailers are making mobile money payments in the context of this pilot.

Some FMCG companies are also proactively negotiating with partner banks for competitive pricing for distributor financing facilities. This is aimed at incentivizing distributors to open accounts with the FMCG company's partner bank, where payments are processed in near-real time.

3. Although FMCG companies are keen to shift from checks to electronic payments from distributors, they have less influence on the remainder of the value chain.

Payments in the value chain are predominantly check-based at the FMCG company level and mostly cash-based at the distributor and retailer levels. FMCG companies are keen to shift from checks to electronic payments because of benefits such as a faster processing time and the lower cost of digital payments.

Most of the incentives offered by FMCG companies for driving a shift to electronic payments in the value chain are largely limited to how distributors pay for stock and aim to minimize the risk of distributors' cash being stolen. Theft of a distributor's sales proceeds is likely to disrupt the FMCG company's sales, as the distributor's ability to buy stock would be negatively impacted.

FMCG companies that use an indirect distribution model do not have a contractual relationship beyond the distributors, and thus they cannot impose any contractual terms with respect to payment mechanisms nor directly incentivize behavior of players further down the chain. However, they can work in partnership, and through their contractual agreement with distributors, to support digital payments.

4. Distributors have a strong preference for checks to manage cash-flow and perceive electronic as more expensive.

Despite the direct incentives offered by FMCG companies to encourage distributors to shift to electronic payment and pay early, distributors continue to pay FMCG companies with checks due to the cash-management benefit they perceive checks offer.

In addition, the distributors who have access to electronic payment platforms find them to be expensive, particularly as the general perception is that transacting in cash is free, or less costly. This is reinforced by cash management services offered by commercial banks, where bullion vans pick up cash daily from distributors and some big retailers, and often the banks offer this service free of charge (although they recoup these costs through other fees). Such services reduce the risk of holding significant amounts of cash onsite and potentially diminish the need to shift to digital in certain respects.

5. Retailers operate in a cash-heavy economy, which pushes cash up the value chain. In order for retailers to embrace digital payments, customers, distributors, and wholesalers must also be moving toward digital payments.

Transactions at the retailer level are predominantly cash-based for several reasons. First, approximately 42%[146] of Ghanaians do not have access to formal financial services, and they have no option other than to pay in cash. Further, many individuals that have access to bank and non-bank products prefer to transact in cash because, among other reasons, they perceive it to be convenient, and electronic payment products to be costlier. This means that retailers will continue to transact in cash until digital payment options become more convenient and are perceived as less expensive by them and their consumers. Changing consumer behavior will require a concerted, collective ecosystem effort with some element of government support and engagement with suppliers of small retailers and manufacturers.

Second, most distributors do not offer any incentives to be paid digitally and often demand that retailers pay them in cash, making the process of converting physical cash received from consumers to e-value not worthwhile for retailers. Third, small retailers are mostly informal businesses, and the proprietors, many which are women, usually lack bank accounts or mobile money wallets, making cash the only acceptable form of payment. Fourth, some retailers prefer to make and receive payments in cash due to tax issues and preference to remain informal. Lastly, some retailers lack an understanding of the opportunity costs of their reliance on cash, such as loss of sales due to lack of liquidity and limited access to financial services such as credit for working capital and insurance.

Recommendations

The potential uptake of digital payments in FMCG value chain depends upon which part of the value chain is prioritized for the shift. At the top end of the chain, payments received and made by FMCG companies and distributors make up only 0.1% of all payments by volume. Thus, the potential impact on the payment ecosystem is limited. However, at the other end of the chain are mainly individual payments to small retailers for consumer goods; this report estimates the total monthly volume and value of individual payments for consumption to be 530 million and USD 977 million respectively. Of these payments, 99.9% of the volume and 96% of the value are cash payments, and these constitute 94% of all payments by volume and 9% by value, indicating the tremendous potential impact of any shift to digital payments.

This report finds that digitizing only a fraction of these transactions would have a significant impact on the overall ecosystem. It would also open potentially transformative new pathways for access to capital for small and medium businesses, the vast majority of which tend to be excluded from the traditional banking sector. Digitizing payments in and around the retail space generates transaction data on all participants in the value chain that can be used for credit assessments and the creation of new working capital products.

This area of prioritization has particular relevance and impact for women, as a large number of businesses in the informal sector, such as market stall owners, are run by women, and often constitute the final link of the FMCG value chain. They often use Susu collectors to avoid storing large amounts of cash and leaving their workplace during business hours. Digital payment methods provide these women an alternative to the Susu system for securing their funds, offer real-time processing, and expand their economic opportunities. Transaction histories created by digital payments can also help women access formal loans to expand their business. Further, the ability to accept digital payments increases revenue, as customers are no longer limited to paying in cash or on credit.

Looking at the specific benefits of the use case for the sector's main players, FMCG companies will receive electronic payments faster than by check, thereby improving their cash flow positions. Distributors and retailers, on the other hand, will minimize their risk of theft of significant amounts of cash. In addition, making and receiving electronic payments will improve recordkeeping for all involved and assist owners in better understanding the profitability of their businesses. Financial services providers can also use the digital footprint created by electronic payments to develop relevant transaction, payment, and loan products, particularly for unbanked small retail businesses. Lastly, digital payments can facilitate the formalization of small informal businesses and in large proportion women-operated businesses, which has the potential to improve government tax collection and opportunities for women-owned small businesses.

It is important to note that several factors required for the shift of the entire value chain are already in place. Ghana benefits from a dynamic private sector, where many FMCG companies already understand the benefits and have some desire to foster digital payments. There also already exist many innovative products from FSPs that can support the technical aspects. On the other hand, the shift will require a change in consumer and business behavior, a stronger and wider understanding of the cost of cash, and further levers throughout the value chain, from FMCG companies to distributors, wholesalers, and finally small retailers.

To accelerate the shift throughout the entire value chain, this report recommends first further in-depth research to understand how payments flow throughout the value chain, especially focusing on the small retailer and wholesaler behavior, incentives, and challenges.

Second, this report recommends a concerted, collective industry effort with some element of government support and engagement from all players of the value chain, from manufacturers to distributors, wholesalers, and FSPs. For example, working in collaboration with FSPs and their main distributors, FMCG companies could run campaigns where the direct incentives offered to encourage distributors to pay electronically (which have, so far, not been effective) are passed on to retailers and consumers. The Government could support this initiative by offering a small tax incentive to merchants and even consumers. Any initiative that offers direct incentives should be informed by a business case for all stakeholders– small merchants, wholesalers, distributors, FMCG companies, FSPs, consumers, and Government–to ensure its sustainability in the short- to medium-term.

FMCG industry dynamics

"... distributors treat us like banks. They get stock on credit and receive mostly cash payments from retailers, yet they pay us in checks so that they can play around with the clearing days."
– a Head of Finance at one FMCG company

All FMCG companies engaged for this report use an indirect distribution model, where products are sold to distributors that are responsible for sales to wholesalers and retailers in specific territories; it is our understanding that this is representative of the broader FMCG industry in Ghana. On average, FMCG companies have a network of more than 30 distributors and over 40,000 retailers nationwide. Strategic outlets such as large supermarkets, hotels, and restaurants tend to be serviced directly by the FMCG company's own sales team because of the profile of shoppers, the large sales volume, the branding opportunities through merchandising, and the potential to collaborate on sales activations and promotions.

In a bid to drive sales, FMCG companies often give distributors a credit limit and extend interest-free credit of between 10 to 15 days. As part of the terms of trade, some FMCG companies pay commissions to distributors specifically to ease the interest expense burden on overdrafts and term loans that distributors utilize to manage their business.

Retail outlets are where most consumer purchases happen, and competition for a share of the consumer's wallet is fierce. FMCG company trade marketing teams and distributor sales teams need to build a trusting relationship with retailers to ensure that the retail outlets have adequate stock levels, good product positioning, and appropriate branding. Thus, the FMCG sales or trade marketing teams play a key role in managing distributors and retailers. Trade development involves building strong relationships across the value chain and providing training on business management, financial planning, and sharing other useful information. Developing a strong relationship with distributors and retailers is important in pushing new products into the market and influencing decisions around piloting new payment mechanisms.

FMCG companies with parent companies that are listed on some international stock exchanges, particularly US-based exchanges, have shifted from receiving pure cash payments in compliance with US Securities and Exchange Commission anti-money laundering ("AML") laws. By accepting checks and electronic payments, these FMCG companies are essentially passing on the burden of compliance with AML laws to the banks.

6. ROADMAP FOR ACCELERATING THE SHIFT TO DIGITAL PAYMENTS

FIVE ACCELERATORS

This section provides recommendations for a high-level roadmap for Ghana for the next 10 years with regard to payment digitization. Previous sections of this report have (i) highlighted areas where cash is prevalent in the payment grid, (ii) identified barriers and issues affecting the shift to digital payments, and (iii) focused on three specific use cases. The report now returns to Ghana's entire payment ecosystem and looking at how the entire ecosystem can be best incentivized for a shift. On this basis, the report presents below a roadmap focused on five specific accelerators. We particularly set out key recommendations and prioritized actions going forward, and the dependencies of each of the various stakeholders for each action item.

As this roadmap is focused on the next decade, the accelerators and recommendations identified are those that can best be realized in this time span and which will provide the greatest impact therein. The report does not concentrate on activities that are already making incremental progress, such as Ghana's enabling regulatory framework or its expanding payment infrastructure. Rather, the focus is on opportunities that show promise but will require some assistance from the public and/or private sectors to ignite, and which ultimately may have significant impact in the shift to digital payments.

BTCA's recommended digital payment accelerators

The BTCA report "Accelerators to an Inclusive Digital Payments Ecosystem" (the "BTCA Accelerator Report"), published in September 2016, reviewed 25 countries, including Ghana, and distilled 10 tangible steps or "accelerators" that both the public and private sector can take to push the digitization of payments (see Annex I).

In this section, we have identified five possible areas of action that can be taken in Ghana based upon these accelerators.

Accelerator #1: Roll out a biometric National ID system as planned and make explicit efforts to enable payments and other financial use cases

A unique digital ID is a critical pillar of digital transformation in a country. A centralized identification system that both public- and private-sector players can access to verify identities can drive digital payments and financial inclusion. India is an example of large-scale deployment of a biometric-based ID system in a developing country. The Indian government has issued the biometrics-based ID (Aadhaar) to 1.18 billion of India's 1.3 billion people. The e-KYC services of the ID system enable previously unbanked customers to obtain bank accounts or mobile money accounts. The Government of India has plans to deploy 2 million biometric-enabled terminals to enable digital payments by leveraging the National ID infrastructure during 2016-17.[147]

Although 98% of Ghanaians report having at least one form of ID, market participants across Ghana struggle with the wide variety of forms of identification and identity databases in existence. There are currently nine separate databases in use across the various government and public entities, which makes it difficult for any entity to uniquely identify individuals. Further, these ID systems do not allow any online verification services, thus exposing the financial service providers to Know Your Customer ("KYC") risks.

Although Ghana initiated a biometric-based unique ID system in 2006, the National Identification Authority has had, until now, limited success. While the 2006 initiative had successfully captured data for 3 million Ghanaians, this data is yet to be processed. Further, the proposed Ghana Card that was intended to be issued under that project did not conform to international standards issued by entities such as the International Standards Organisation and International Civil Aviation Organisation. A revamped National ID follows international standards and capture all 10 fingerprints.[148] This revamped National ID system is being supported by the World Bank, and the public registration phase is expected to commence in November 2017.[149]

A rollout of a digital ID system in Ghana would thus act as an accelerator for digital payments as it would not only allow financial services providers a unified approach to KYC and authentication of transactions, but could also enable other digital payment innovations to leverage the digital ID, such as remote or e-KYC for non-face-to-face account activation by MNOs. Through innovative KYC measures, individuals who do not currently have the required identification to access the formal banking system are able to overcome this hurdle. Similarly, remote account activation makes it easier for rural and vulnerable populations to enjoy a higher level of financial inclusion. Benefits such as these are particularly important for women who constitute the majority of the financially excluded, and who most frequently do not have access to identification that is needed to access the drivers of financial inclusion.

Beyond account opening and KYC, a digitally enabled ID system can also unlock other payments and financial service use cases. For instance, if coupled with real time push payments (which are already available through GhIPSS Instant Payment) and a digital payment addressing system, it can enable real time funds transfer using ID numbers, phone numbers, email addresses, or other identifiers instead of account details–enhancing security, convenience, and consumer choice. Integration with credit reference bureaus can at a stroke resolve the issues that often arise with uniquely identifying borrowers and which undermine the quality of the data considerably, holding back lending. And it can enable the portability of data and documents for customers if coupled with appropriate regulation alongside systems like digital lockers for birth and employment records, financial histories, etc.

However, to leverage such benefits, the Government should consider making explicit efforts to enable payments and other financial use cases based on this digital ID system by setting forth a vision and a plan in its financial inclusion strategy.

Accelerator #2: Improving payment interoperability

At an industry level, P2P mobile money transfers and transfers between bank accounts and mobile money wallets are currently not interoperable. Ghana's national switch, which is managed by GhIPSS, handles the electronic clearing of checks and the processing and settlement of bulk debit and credit transfers between banks. The national switch currently does not have the capability to handle other types of payments such as bank-to-mobile wallet, mobile wallet-to-bank, and wallet-to-wallet transactions. This means that a mobile money subscriber cannot send money directly to a mobile wallet provided by a different network; such payments are received in the form of a token or voucher code, and the beneficiaries have to go through a cumbersome process of first cashing out at a fee and then either cashing into a mobile wallet or depositing into a bank account. Payments from mobile wallets to some bank accounts are possible, but this depends on whether the MM provider and the bank in question are integrated.

Interoperability has a strong potential to accelerate a shift to electronic payments because it enhances the convenience of making and receiving electronic payments and increases their efficiency. Equally it increases the options available for payments to remain in the digital ecosystem rather than being cashed-out and is an important mechanism for greater inclusion, as noted in the BTCA's Responsible Digital Payments Guidelines.[150]

Some third-party payment aggregators are developing innovative solutions that enable "semi-interoperable" payments. In September 2016, expressPay partnered with Visa to launch a semi-interoperable solution called Direct Bank,[151] which facilitates the transfer of money across MM providers in addition to transfers between some bank accounts and mobile money wallets. ExpressPay's Direct Bank service does not offer industry-wide interoperability, as only 11 out of 37 banks are presently integrated into the platform.[152]

In March 2017, the Government of Ghana tasked GhIPSS with developing a new interoperable scheme and connections for the current switch that will support bank and mobile money payments by November 2017.[153] We believe this is a positive development in Ghana's quest to build an economy less dependent on cash.

Tanzania is a good example of a country that is seeing growth in interoperable mobile money payments after mobile money operators collaborated to achieve interoperability – Airtel and Tigo have reported significant growth in interoperable P2P transfers.[154]

Although GhIPSS is well-positioned to deliver on this mandate, plans by the BoG to divest about 70% of its 100% shareholding in GhIPSS to commercial banks through the Ghana Association of Bankers may discourage some stakeholders from connecting. It is important that all stakeholders have confidence in the neutrality of the owners and managers of the national switch to avoid some of the challenges RSwitch faced in Rwanda. The ownership structure of Rwanda's national electronic payments switch operator, RSwitch, has been mentioned during stakeholder discussions as one of the reasons why it did not fully achieve the desired impact. Millicom International SA, owners of Tigo Rwanda, acquired an 88% stake in RSwitch in June 2014. MTN Rwanda, the market leader, decided not to connect to RSwitch because it was majority-owned by a competitor's parent company. Ghana's push for interoperability could face similar challenges if key MM providers decide not to connect to GhIPSS' new switch for strategic and commercial reasons.

Given the value of interoperability as an accelerator for the shift to digital payment, Ghana has an important opportunity to draw on valuable lessons from Tanzania, Rwanda, and other markets that have launched an interoperable switch across payment platforms. This report thus recommends maximizing interoperability's potential for expanding financial inclusion by developing it as a neutral switch with no preferences for the type of payment mechanism and minimal pricing to render small value payments possible.

By improving interoperability, the payment ecosystem will become more competitive, offering better coverage, cheaper pricing, and more innovative products, all of which will support further financial inclusion among the bottom of the pyramid and rural populations.

Accelerator #3: Digitizing government procurement and G2B payments

Payment grid data show that only 10% of Government procurement payments by volume are made digitally. Procurement payments constitute 85% of G2B payments and are mostly made by checks. As noted previously, this high prevalence of checks is due to the fact that each MDA pays its own suppliers in the way it sees fit, rather than using a centralized system.

The Government has announced in the 2017 budget that e-procurement will be launched this year through regulations following the passage of the Public Procurement (Amendment) Act, 2016 (Act 914). This would kick-start e-procurement in Ghana and has the potential to save millions of dollars in terms of more favorable prices for the Government, reduction in printing costs for tender documents, etc. For example, Portugal has saved EUR 185 million (approximately USD 220 million)[155] between 2009 and 2011 by using e-procurement.[156]

The report recommends that this is the opportune time for the Government to also mandate electronic payments for all e-procurements. This may require process re-engineering within the Government Financial Management systems and integration/development of a payments module in the e-procurement system. However, this could not only spur G2B digital payments but could also improve trust in digital payments among businesses.

Further, the Government could introduce a centralized payment system based on the TSA and mandate the payment of all Government suppliers through this system. A 2010 IMF paper on Treasury Single Account: Concept, Design and Implementation Issues lays down the design of a TSA that Ghana could implement in order to leverage the TSA implementation for routing G2B payments digitally.[157]

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Accelerator #4: Leveraging EFT/RTGS for B2B payments

Our analysis of Ghana's payment ecosystem noted that business-to-business payments are 98% in cash by volume and 87% by value, with the vast majority of high-value payments being made by check (as evidenced by the data on check clearing).

Given that B2B payments make up 72% of all business payments and business payments contribute to 76% of all payments by value, a shift from checks to digital payment would have a large impact on high-value payments. The ability to leverage existing payment networks or platforms for B2B, such as EFT, is one potential accelerator that could be applied.

Adoption of digital payment methods such as EFT/RTGS could be an accelerator for B2B payments if a cheaper price than checks is offered for RTGS and/or EFT payments by the BoG to incentivize businesses to take advantage of rapid payments (and the accompanying efficiencies). Secondly, the Government should consider providing short-term income tax incentives for businesses to adopt digital B2B payments. For example, the Government of India has recently introduced tax incentives for small traders for digital payments. Further, private-sector FSPs could focus on developing EFT in internet banking and mobile money by proposing quicker, user-friendly, convenient, and more secure platforms. For example, since 2007, internet banking customers in South Africa have had the option to expedite payments to real-time by selecting the RTC payment stream instead of the standard EFT credit.[158] Dr. Settor Amediku, Head of Payment Systems at the BoG, voiced support for incentives that push the market in a recent interview.[159]

Beyond the push toward EFT– a "carrot"– public authorities could concurrently legislate on a short-term basis that all corporate transactions over a certain value that are not digital be penalized–a "stick." For example, the Central Bank of Nigeria imposed penalties in 2012, in the context of its "Cashless Nigeria" policy, on all businesses and persons who deposited or withdrew more than N500,000 (approx. USD 1,600)[160] or N3,000,000 (approx. USD 9,500), respectively, from their bank accounts.[161] This was in addition to a policy that limited all checks to N150,000 (USD 475), requiring digital payment for any larger amounts, as well as other initiatives such as restrictions on cash pick-up services for merchants and investment in the deployment of POS terminals.[162] The BTCA Accelerator Report found that as a result of these policies, the volume of digital payments increased 14% on average year-over-year between 2012 and 2015.[163]

Ghana already has legislation limiting bank teller withdrawals to no more than GHS 5,000[164] (USD 1,157) at one time, but this limit seems to be circumvented by repeated withdrawals under GHS 5,000. It is of note that a regulation requiring electronic payments for all payments above a certain threshold was one of the key recommendations of the National Payment

Strategy.[165] Although the BoG supports this recommendation, the need for infrastructure to support this type of legislation is currently a roadblock.

Although leveraging existing payments infrastructure such as EFT to push more B2B transactions will allow for synergies that can facilitate and magnify efforts toward digital, it is important to note that any policy should correspond to the reality of Ghana's current payment infrastructure. Given the limitations of current infrastructure, incentives that provide a carrot may provide the best levers at this point in time.

Accelerator #5: Incentivizing digital payments at the point of sale

To date, there only have been a few efforts to offer tangible incentives that make the cost of adopting electronic payment for small businesses and other merchants cheaper than transacting in cash, whether from the Government or the private sector itself. Retailers who feel strongly about the cost of electronic payment platforms are usually already informed about the less visible benefits of digital payments, such as minimizing the risk of theft, better convenience, or the opportunity to start accessing further services such as insurance or credit, but generally do not find these other benefits sufficiently enticing.

Some FSPs tend to run short-term campaigns (3 months) that offer direct incentives to individuals to drive adoption and usage of specific electronic products and channels. These product campaigns, which often target customers that already have access to electronic payment products, offer raffle prizes or discounts on purchases for a limited period. For example, Airtel[166] and Vodafone[167] partnered with Roverman Productions to offer 10% discounts on theatre tickets purchased using mobile money. MTN, in partnership with Silverbird Cinemas, has offered one free movie ticket when customers paid for one movie ticket using MTN Mobile Money.[168]

Short-term campaigns tend to generate short-term results that are usually insufficient to change habits or patterns of behavior formed over many years. Accelerating the active usage of electronic payment products by merchants and individuals will require broader industry collaboration, a sustained effort and significant investment by industry to fund tangible incentives such as specific trade discounts, campaigns to create awareness, and the deployment of resources to educate and support merchants that are new to electronic platforms.

AB InBev's subsidiary in Peru, Backus, grew sales by collaborating with companies, governments, and civil society to support small retailers' access to financial services and digital payments. Among other interventions, the company provided retailers with skills training and worked with banks and microfinance companies to increase small retailers' access to finance through mobile phones.[169] FMCG companies in Ghana could consider offering similar support to their network of retailers.

Government can also offer tax incentives (i) to FMCG companies that successfully shift merchant payments to electronic through trade discounts, (ii) to FSPs that support the roll-out of electronic merchant payments, and/or (iii) to retailers and individuals that actively adopt electronic payments. Governments in Uruguay, India, and South Korea have taken bold actions to accelerate the shift of merchant payments. Uruguay amended its VAT law and offered a temporarily lower VAT rate for purchases up to USD 400 paid with a credit card.[170] As a result, the POS network tripled between 2011 and 2015, while debit card transactions grew seven-fold.[171] In India, merchants with an annual turnover of up to INR 20 million (about USD 316,000) will pay a lower deemed profit tax rate of 6% for amounts received through banks and digital channels versus 8% for amounts received in cash.[172] In South Korea, in addition to implementing tax audits for companies not accepting cards, the Government gives consumers income tax rebates for reporting their annual expenditure using credit cards.[173]

In order to further support the roll-out of e-zwich by merchants (and thus increase customer usage), the Government could provide a custom duty reduction on and/or subsidy for hybrid POSs.

In regard to consumers themselves, given the current low level of trust in digital payments and the fact that such services are not yet broadly perceived to be convenient, it would be also beneficial for the Government to run an awareness campaign targeting consumers on the usage and benefits of digital payments.

Given the current context in Ghana, a combination of private-sector incentives fueled by collaborative industry efforts and tax incentives for digital merchant payments may be the right combination to drive adoption, both by consumers and by large players higher up the FMCG value chain. Further, as women make up a large proportion of those selling FMCG goods, digitization in this area will also directly improve their businesses and personal security as well as offer further economic opportunities.

SCENARIOS MAPPED ON A HIGH-LEVEL ROADMAP

The percentage of electronic payments for Ghana is currently 1% by volume and 28% by value. We have plotted in Figures 6.1 and 6.2 what potential effect, in terms of increase in volume and value, the implementation of all or some of the accelerators could have on the trajectory of Ghana's shift to digital payments.

FIGURE 6.1
Trajectory scenarios for transaction volume

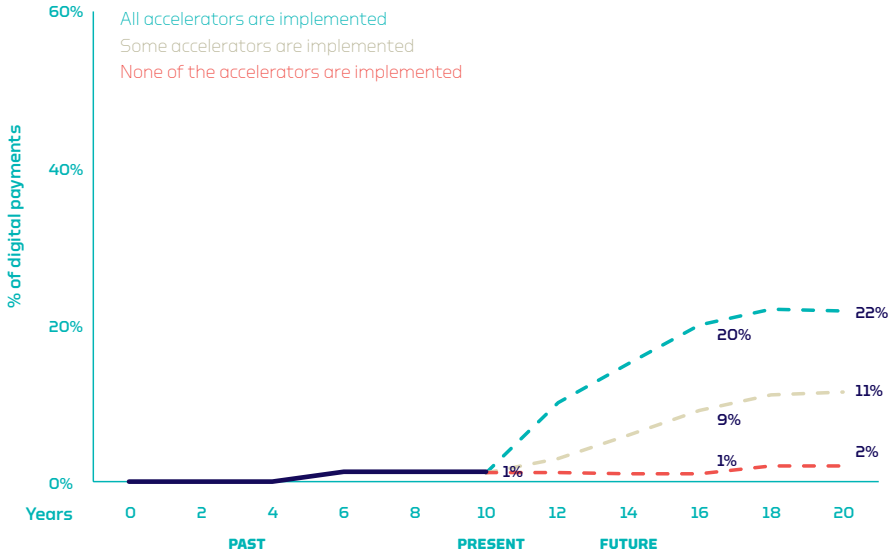
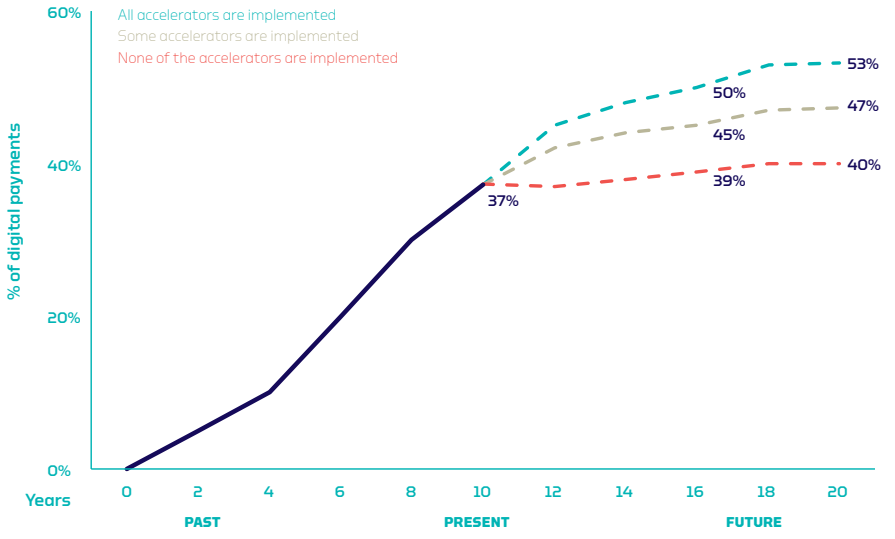


FIGURE 6.2
Trajectory scenarios for transaction value



In both Figures 6.1 and 6.2, the X-axis represents time, with the present reflecting the situation as of time of publication of this report, a five to 10-year horizon for the past, and a five to 10-year horizon for the future. In Figure 6.1, the Y axis represents percentage of volume of electronic payments, while in Figure 6.2, the Y axis represents percentage of value of electronic payments.

We explored the potential effects of the accelerators in three scenarios at a high level in Figures 6.1 and 6.2. Scenario 1 is based on full implementation of the five recommended accelerators identified in this report. It depicts Ghana reaching 22% digital payments by volume and 53% by value within five to 10 years. Scenario 2 assumes that some of accelerators have been implemented, resulting in 11% by volume and 42% by value. Scenario 3 is the worst-case scenario, where none of the accelerators are implemented, or even if some are, a currently unforeseeable event occurs that disturbs the shift, such as a regulatory regime change. In such a scenario, the trajectory may still increase but at a much slower rate, reaching 3% by volume and 30% by value in five to ten years.

ADDITIONAL RESEARCH STUDIES

We identify below additional areas for future research with respect to the shift to digital payments in Ghana.

TABLE 6.1
Further research areas

Research	Audience	Description
Consumer insights study	Government, Business	A study to understand how consumers pay, including whether cost, literacy, and ease of use are an issue.
Deep dive on wholesalers and small retailers	Government, Business	Research on how payments flow throughout the FMCG value chain, especially focusing on the small retailer and wholesaler behavior, incentives, and challenges with distributors.
Cost of cash report	Government, Business	A formal cost of cash analysis for Ghana. This was one of the NPS recommendations, and it is our understanding that BoG is currently working on such a study.

ANNEXES

ANNEXES

ANNEX A.

List of Acronyms

ACH	Automated Clearing House
AMA	Accra Metropolitan Assembly
AML	Anti-Money Laundering
ATM	Automated Teller Machine
B2B	Business to Business
B2G	Business to Government
B2P	Business to Person
BOG	Bank of Ghana
BTCA	Better Than Cash Alliance
CAG	Controller and Accountant General
CAGD	Controller Auditor General Department
CGAP	The Consultative Group to Assist the Poor
D4I	Digital for Inclusion
DEMI	Dedicated Electronic Money Issuer
DMB	Deposit Money Bank
DVLA	Driver and Vehicle Licensing Authority
ECG	The Electricity Company of Ghana Limited
EFT	Electronic Fund Transfer
E-KYC	Electronic Know Your Customer
ERP	Enterprise Resource Planning
FDI	Foreign Direct Investment
FISP	Financial Inclusion Strategic Plan
FMCG	Fast Moving Consumer Goods
FSP	Financial Service Providers
G2B	Government to Business
G2G	Government to Government
G2P	Government to Person
GDP	Gross Domestic Product

GCSCA	Ghana Cooperative Susu Collectors Association
GEPP	Ghana E-Payment Portal
GHIPSS	Ghana Interbank Payment and Settlement Systems
GIS	Ghana Interbank Settlement System
GPHA	Ghana Ports and Harbours Authority
GRA	Ghana Revenue Authority
GSS	Ghana Statistical Services
GWC	Ghana Water Company
ICT	Information and Communications Technology
IMF	International Monetary Fund
KYC	Know Your Customer
LEAP	Livelihood Empowerment Against Poverty
MDA	Ministries, Departments and Agencies
MFI	Microfinance Institutions
MM	Mobile Money
MNO	Mobile Network Operator
MTO	Money Transfer Operator
NBFI	Non-Bank Financial Institutions
NCA	National Communication Authority
NFC	Near Field Communication
NITA	National Information Technology Agency
OTC	Over the Counter
P2B	Person to Business
P2G	Person to Government
P2P	Person to Person
POS	Point of Sale
PPP	Public Private Partnerships
PSP	Payment Service Provider

ANNEX A.

List of Acronyms

PSSB	Payment Services and Systems Bill
QR	Quick Response
RGD	The Registrar General Department
RTGS	Real-Time Gross Settlement System
SMS	Short Messaging Service
SSNIT	Social Security and National Insurance Trust
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TEN	Tweneboa, Enyenra, Ntomme
USD	United States Dollars
VAT	Value Added Tax
WB	World Bank

ANNEX B.

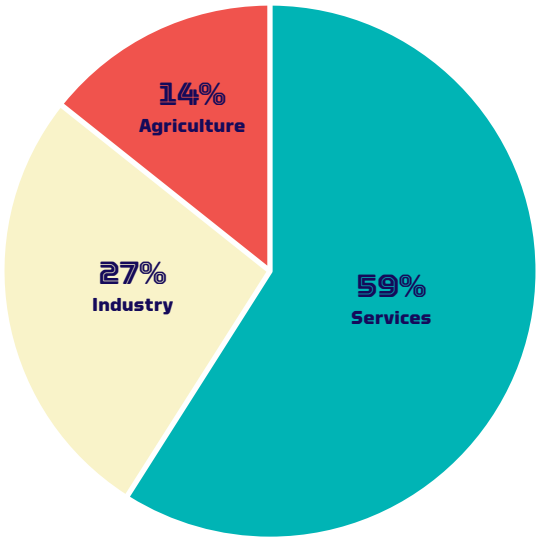
Additional country indicators

Sectoral distribution of GDP

Ghana's economic distribution in the first quarter of 2017 was mostly reliant on services (59.0%), followed by industry (26.7%) and agriculture (14.3%)[174].

FIGURE B.1

Ghana sectorial distribution



Economic growth is expected in 2017, spurred by improvements in both oil and non-oil sectors. Government estimates project the economy to expand by 6.3 percent in 2017, with non-oil GDP growing at 4.6 percent.[175]

Balance of trade

Despite weak commodity prices, Ghana's external balance of trade improved in 2016, reflecting a fall in imports and a growth of exports. This provided Ghana with a surplus of USD 247 million, the first surplus since 2011, compared to a deficit of USD 129 million in 2015.[176]

Gross foreign assets grew to an estimated USD 61.6 billion in 2016 due to an improved current account, supporting the stability of the international exchange rate. The current account deficit narrowed to 6.4% of GDP in 2016, from 7.6% of GDP in 2015. This led to growth in gross foreign reserves to an estimated 4.9 billion in 2016, equivalent to 2.8 months of imports at the end of 2016. This growth was driven by an increase in gold export receipts and a decline in non-oil imports.[177] The merchandise export earnings totaled USD 11.06 billion in 2016, indicating a rise of 7.2% from USD 10.3 billion recorded for the same period in 2015. The increase in export receipts was mainly attributed to higher earnings from gold, timber, and aluminum alloy exports. The provisional estimates of value of merchandise imports for the year amounted to USD 12.8 billion, indicating a 4.6% fall in level recorded in the same period of 2015.[178]

ANNEX B.

Additional country indicators

Oil production is set to increase as repairs on the Jubilee fields are completed and the Tweneboa, Enyenra, Ntomme ("TEN") field extraction continues to grow to meet full capacity.[179] Reports suggest that oil production did see an increase in early 2017. However, globally low oil prices may challenge the country's ability to use the increased production to reduce a fiscal deficit.[180]

Ghana's reliance on oil exacerbated an economic crisis in 2014 brought on by low oil prices and high government spending, leading to the country receiving a loan from the IMF in 2015. Ghana is also in a conflict with Cote d'Ivoire over maritime oil fields in the Atlantic Ocean, with a final judgment expected from the International Tribunal of the Law of the Sea by September of 2017.[181]

GDP growth and national spending

GDP growth of 3.6% in 2016 was lower than a revised projection of 4.6%. Non-oil real GDP grew at an estimated 4.6%, same as the target. Inflation also fell slightly to 15.4% in December, against a target of 10.1%. Non-oil provisional Q1 Real GDP for 2017 grew by 3.9% year-on-year compared to 6.3% for Q1 2016.[182] Ghana's debt was at 73% of GDP at the end of 2016, from 72% in 2015.[183]

The Government further has set growth targets for the medium term (2017-2019) as follows: (i) real GDP growth to average 7.4 %; (ii) real non-oil GDP growth to average 5.6%; (iii) inflation to be within the target band of 8 +/- 2% in the 2018-2019 period; (iv) the overall deficit to reduce to 3% by the end of 2019; and (v) Gross Foreign Assets to cover not less than 3.5 months of imports of goods and services in the medium term.

ANNEX C.

Payment grid

GOVERNMENT PAYMENTS

	Number of Monthly Transactions	Percentage of Electronic Transactions	Number of Electronic Transactions	Total Value of Money (GHS)	Total Monthly Value (USD)	Percentage of Electronic Payment	Total Value of Electronic Payment (GHS)	Total Value of Electronic Payment (USD)
G2P TOTAL	771,276	100%	771,276	1,182,767,799	273,788,842	100%	1,182,767,799	273,788,842
Wages and salaries	496,320	100%	496,320	1,009,166,667	233,603,395	100%	1,009,166,667	233,603,395
Pension	168,456	100%	168,456	167,351,132	38,738,688	100%	167,351,132	38,738,688
Social welfare programs (e.g., LEAP)	106,500	100%	106,500	6,250,000	1,446,759	100%	6,250,000	1,446,759
G2B TOTAL	7,561,417	10%	756,556	1,028,666,667	238,117,284	60%	614,240,833	142,185,378
Procurement of goods and services	7,558,656	10%	755,866	908,250,000	210,243,056	61%	554,032,500	128,248,264
Corporate tax refunds	2,761	25%	690	120,416,667	27,874,228	50%	60,208,333	13,937,114
G2G TOTAL	496,119	100%	496,119	776,394,022	179,720,839	100%	776,394,022	179,720,839
Transfers to local government (metropolitan, municipals and districts assemblies)	72	100%	72	717,250,000	166,030,093	100%	717,250,000	166,030,093
Social security contributions	496,047	100%	496,047	59,144,022	13,690,746	100%	59,144,022	13,690,746
GOVERNMENT TOTAL	8,828,812	23%	2,023,950	2,987,828,488	691,626,965	86%	2,573,402,654	595,695,059

ANNEX C.

Payment grid

BUSINESS PAYMENTS

	Number of Monthly Transactions	Percentage of Electronic Transactions	Number of Electronic Transactions	Total Monthly Value (GHS)	Total Monthly Value (USD)	Percentage of Electronic Payment	Total Value of Electronic Payment (GHS)	Total Value of Electronic Payment (USD)
B2G TOTAL	1,308,057	43%	558,921	7,361,553,381	1,704,063,283	47%	3,462,590,983	801,525,690
Fines and fees to Govt.	77,538	1%	676	262,561,740	60,778,181	36%	93,821,132	21,717,855
Taxes	176,720	10%	17,672	1,760,821,517	407,597,573	68%	1,188,554,524	275,128,362
Utilities	249,879	5%	12,494	5,242,318,124	1,213,499,566	40%	2,096,927,250	485,399,826
Social security contributions	803,920	66%	528,079	95,852,000	22,187,963	87%	83,288,077	19,279,648
B2B TOTAL	4,060,995	4%	182,493	25,319,469,753	5,860,988,369	30%	7,687,449,579	1,779,502,217
Formal large businesses	1,570,248	9%	139,594	20,396,476,336	4,721,406,559	33%	6,800,965,849	1, 574,297,650
Formal medium businesses	149,422	9%	13,284	1,650,493,039	382,058,574	33%	224,913,887	127,392,951
Formal small businesses	305,485	3%	9,257	960,655,442	222,373,945	11%	104,961,687	24,296,687
Formal micro businesses	85,489	1%	855	693,616,542	160,559,385	10%	69,361,654	16,055,938
Informal businesses	1,950,350	1%	19,504	1,618,228,394	374,589,906	10%	161,822,839	37,458,991
B2P TOTAL	4,203,320	46%	1,953,306	2,767,080,396	640,527,870	48%	1,314,534,314	304,290,350
Employees' salaries	2,954,550	66%	1,940,786	1,345,149,398	311,377,176	87%	1,168,832,233	270,563,017
Pensions	33	100%	33	3,898,868	902,516	100%	3,898,868	902,516
Input purchases (from micro and informal businesses)	1,248,737	1%	12,487	1,418,032,130	328,248,178	10%	141,803,213	32,824,818
BUSINESS TOTAL	9,572,372	28%	2,694,720	35,448,103,531	8,205,579,521	35%	12,464,574,875	2,885,318,258

PEOPLE PAYMENTS

	Number of Monthly Transactions	Percentage of Electronic Transactions	Number of Electronic Transactions	Total Monthly Value (GHS)	Total Monthly Value (USD)	Percentage of Electronic Payment	Total Value of Electronic Payment (GHS)	Total Value of Electronic Payment (USD)
P2G TOTAL	10,685,254	9%	993,896	667,844,063	154,593,533	27%	178,322,799	41,278,426
Fines and fees to Govt.	68,504	3%	1,913	53,256,778	12,327,958	16%	8,337,600	1,930,000
Taxes	2,775,027	35%	964,983	383,261,817	88,718,013	44%	168,635,199	39,035,926
Social security contributions	150,000	18%	27,000	7,500,000	1,736,111	18%	1,350,000	312,500
Bill pay: water & electricity	7,691,723	0%	–	223,825,469	51,811,451	0%	–	–
P2B TOTAL	534,110,135	0.2%	557,706	4,561,141,972	1,055,819,901	4%	172,315,292	41,549,592
Payments for consumption	530,129,553	0%	557,706	4,219,309,802	976,692,084	4%	172,315,292	39,887,799
Bill pay: Housing and private utilities (gas)	3,980,583	0%	–	341,832,171	79,127,817	0%	–	–
Loan payments (formal)	2,682,618	11%	299,540	64,293,238	14,882,694	11%	7,178,947	1,661,793
P2P TOTAL	5,733,472	16%	890,005	3,080,832,510	713,155,674	66%	2,023,265,475	468,348,490
Domestic Remittances	463,821	56%	257,420	293,069,700	67,840,208	56%	162,653,683	37,651,316
International Remittances (incoming)	583,099	68%	398,256	2,719,152,688	629,433,493	68%	1,857,181,286	429,903,075
Loan payments (informal)	4,686,553	5%	234,328	68,610,122	15,881,973	5%	3,430,506	794,099
PEOPLE TOTAL	550,528,862	0.4%	2,441,607	8,309,818,546	1,923,569,108	29%	2,373,903,567	549,514,715
GRAND TOTAL	568,930,046	1%	7,160,277	46,745,750,564	10,820,775,593	37%	17,411,881,096	4,030,528,031

ANNEX D.

Glossary of terms

TERM	DEFINITION
ACH/AUTOMATED CLEARING HOUSE	A payment clearing network that provides clearing and settlement services for demand deposit account (DDA) transactions. Many countries today have at least one ACH in operation to service their domestic payment industry. An ACH handles either (or both) Credit Push or Debit Pull (also called Direct Debit) payments. Most banks in the country will typically belong to the ACH, either directly or through intermediary banks. The ACH Switch moves transactions from one bank to another, and either provides, or interfaces with, a Net Settlement system. Payment orders are exchanged primarily via magnetic media or telecommunications networks, and handled by a data processing center.
BANK ACCOUNT	The arrangement between a depositor and a bank, where the depositor has entrusted the bank to safeguard its funds, and the bank provides access to those funds through various channels.
BILL PAYMENT	A payment made by a person to a biller or a billing organization in exchange for services provided.
BIOMETRICS	An authentication technology that employs digital values derived from the human body, which a service provider captures for checking from users via sensors. A wide variety of biometric technologies exist, including input derived from the user's fingerprint, palm, face, iris, retina, ears, gait, heartbeat, and others.
BRANCHLESS BANKING	The delivery of financial services outside conventional bank branches, often using agents and relying on information and communications technologies to transmit transaction details – typically card-reading POS terminals or mobile phones.[184]
BUSINESS-TO-BUSINESS	Services provided by a business entity to another business entity.
CASH IN	The process by which a customer credits his account with cash. This is usually via an agent who takes the cash and credits the customer's account with the same amount of e-money.
CASH OUT	The process by which a customer deducts cash from his account. This is usually via an agent who gives the customer cash in exchange for a transfer of e-money from the customer's account.
CENTRAL BANK	A government agency responsible for supervising and operating banking activities for the national government. Central Bank activities generally include maintaining reserve accounts required of depository institutions, regulating money supply, transferring funds, and acting as fiscal agent for the government.
CHECK	A paper payment instrument that allows a payer to pay a payee with monies drawn against the payer's bank account.
CLEARING	The process in a payment system whereby the paying bank or PSP posts individual transactions to their customer accounts. Clearing may be done in Batch or Real-Time. Often referred to in conjunction with Settlement.
CLEARING HOUSE	An organization formed to handle payments in an open loop bank transfer system. A clearing house may handle transaction switching, or facilitate clearing and interbank settlement. The term is most typically used for check or ACH systems.
CREDIT CARD	A payment card, where the cardholder account with the issuer features a line of credit against which payments can be initiated.
DEBIT CARD	A payment card where transactions create a debit to the cardholder's bank account.
FINANCIAL INCLUSION	The concept of enabling access to financial services for disadvantaged populations, which otherwise may be excluded from partaking of these services.
FINANCIAL INSTITUTION	A bank or other institution authorized under applicable law to provide bank account services, and possibly other types of financial services, to individuals or organizations.
GOVERNMENT-TO-PERSON	Services provided by a government agency to an individual (sometimes also referred to as G2C (government to consumer).
GROSS SETTLEMENT SYSTEM	A transfer system in which the settlement of funds or securities transfer instructions occurs individually (on an instruction-by-instruction basis) as opposed to creating a net settlement file at periodic intervals.
INTERNATIONAL REMITTANCE	A cross-border payment from one consumer to another.
INTERNET BANKING	Access to banking services over the internet from any connected device.
INTEROPERABILITY	The ability of an end-user dealing with one bank or PSP to exchange a transaction with an end-user who is dealing with a different bank or PSP. Interoperability may be achieved either through participants all using the same system, or through inter-system networking agreements.
KNOW-YOUR-CUSTOMER	The process of identifying and authenticating a customer, for purposes of risk management and regulatory compliance.

TERM	DEFINITION
MERCHANT	Generally used in the payments industry to describe receivers of funds, where payments are made for goods and services. Such recipients are a broad group, and include stores, service providers (often referred to as billers), not-for-profit enterprises, and governments.
MERCHANT PAYMENT	A payment made from a mobile wallet via a mobile money platform to a retail or online merchant in exchange for goods or services. It can help mobile money providers facilitate customer adoption and increase financial inclusion, especially in rural areas.
MOBILE BANKING	When customers access a bank account via a mobile phone; sometimes, they can initiate transactions.
MOBILE FINANCIAL SERVICES	Financial services, including payments, loans, savings, insurance, and others, provided to customers via the mobile channel.
MOBILE MONEY	Monetary value that is: • available to a user to conduct transactions through a mobile device; • accepted as a means of payment by parties other than the issuer; • issued on receipt of funds in an amount equal to the available monetary value; • electronically recorded; • mirrored by the value stored in an account(s) usually open in one (or more) bank(s); and • redeemable for cash.[185]
MOBILE MONEY ACCOUNT	An e-money account that is primarily accessed using a mobile phone and that is held with the e-money issuer. In some jurisdictions, e-money accounts may resemble conventional bank accounts, but are treated differently under the regulatory framework because they are used for different purposes (for example, as a surrogate for cash or a stored value that is used to facilitate transactional services). An active Mobile Money Account is a Mobile Money Account that has been used to conduct at least one transaction during a certain period of time (usually 90 days or 30 days).
MOBILE NETWORK OPERATOR	A telecommunications company that operates a market-facing mobile voice and data network, which customers access using mobile devices.
MOBILE PAYMENT	A payment transaction initiated or received on a mobile device.
MOBILE POINT OF SALE	A smart device or dedicated wireless device that performs the functions of a POS terminal.
MOBILE WALLET	A mobile wallet is a type of payment service through which businesses and individuals can receive and send money via mobile devices.
MFS AGENT	A person or business that is contracted to facilitate transactions for users. The most important of these are Cash-In and Cash-Out (i.e., loading value into the mobile money system, and then converting it back out again); in many instances, agents register new customers too. Agents usually earn commissions for performing these services. They also provide front-line customer service – such as teaching new users how to initiate transactions on their phone. Typically, agents will conduct other kinds of business in addition to mobile money. The types of individuals or businesses that can serve as agents will sometimes be limited by regulation, but small-scale traders, microfinance institutions, chain stores, and bank branches act as agents in some markets. Some industry participants prefer the terms "merchant" or "retailer" to describe this person or business to avoid certain legal connotations of the term "agent" as it is used in other industries.
MONEY TRANSFER OPERATOR	An organization that remotely transfers cash value between geographically separated payers and payees using agents, where the agents manage the physical cash, accepting it from payers and disbursing it to payees.
PAYEE	The person or organization receiving payment in a transaction. Synonyms include "Merchant" (in card-based payment systems) and Receiver (in Remittances). In all payment systems, other than currency (including digital currency), the payer holds an account with a PSP or FI, which is credited when a payment is received.
PAYMENT INSTRUMENT	Any instrument enabling the holder/user to transfer funds.
PAYMENT SERVICE PROVIDER	The entity that does not participate directly in a payment system but specializes in managing payment transactions for the public.
PAYMENT SWITCH	B2B facility, often operating as a consortium, which routes and switches payment authorization and clearing messages among a group of participating PSPs or banks.
PERSONAL IDENTIFICATION NUMBER	A numeric password, usually 4-6 digits in length, which is used to authenticate a user to a system.
POINT-OF-SALE TERMINAL	An electronic device used by merchants to capture payment transaction data from a payer device, and transmit and receive related authorization and clearing data to and from payment networks. Commonly used methods for POS terminals to communicate with Payer devices include reading of the magnetic stripe, EMV chip, NFC chip, QR code, or Barcode on a payment card or mobile device. Communications with the payment network take place across a fixed-line or wireless network.

ANNEX D.

Glossary of terms

TERM	DEFINITION
PUSH TRANSACTION	A type of payment transaction initiated by the paying person or entity's bank or PSP, who sends a message to the payee's bank or PSP.
REAL-TIME GROSS SETTLEMENT SYSTEM	Funds transfer systems where the transfer of money takes place from one bank to another on a "real time" and on a "gross" basis. The "Real Time" aspect is that Settlement of the payment transactions is not subject to any waiting period. RTGS systems are typically used to clear high-value, bank-to-bank transactions.
REAL-TIME PAYMENTS	A payment system in which the processing and clearing of transactions occurs in real time. Real-Time transactions are usually Push Transactions. Participant or interbank settlement may occur at the same time (as in an RTGS system) or later, on a net basis. Real-Time Payment systems are typically used to clear lower value retail transactions.
REMITTANCES	Transfer of funds between individuals.
SETTLEMENT	The exchange of monetary value to settle a payment transaction between FIs. Settlement may be on a gross basis, where only the face value of the transaction is settled and exception items (such as fees or reversals) are deferred to a later time– or on a net basis, where associated fees and exception items are settled all at once.
SWITCH	A processing entity in a payments system that routes a transaction from one participant to another. A system may operate its own Switch, or this function may be done by one or more third parties.

ANNEX E.

Measurement, data quality and index

E.1. Measurement and data quality

The measurement approaches use all available data to compile the payments grid as accurately as possible as described in detail in Annex H. This process involves finding and analyzing a broad range of different data sources of different time intervals and quality. In many cases, extrapolation or interpolation is necessary to make up the gaps in data availability. For this reason, and to be explicit about the basis from which data is drawn, the data relating to each payer group in the grid is assessed for data quality and availability using the scale provided in Table E.1 below.

TABLE E.1

Data quality and availability

RATING	DATA QUALITY	DATA AVAILABILITY
5	Complete, recent, and from credible sources.	Available from one or several up-to-date websites or online publications.
4	Recent and from credible sources. 1-2 components of estimate based on expert opinion or assumptions.	Available from disparate websites or from a combination of scholarly and popular publications.
3	Incomplete, recent, and based on expert opinion or available data. Few assumptions required.	Available in-person through simple records requests or interviews with public-facing officials.
2	Incomplete and/or outdated, and informed by local sources, ad hoc research, and international heuristics. Some assumptions required.	Available from proprietary sources through non-disclosure agreements.
1	Incomplete and/or outdated, and informed by local sources, ad hoc research, and international heuristics. Multiple assumptions required.	Additional measurement activities required to capture meaningful data.

ANNEX E.

Measurement, data quality and index

E.2. Data quality index

Quantitatively mapping the payments landscape is a necessary first step to a targeted effort to convert cash to digital payments. However, with large segments of transactions taking place in cash, aggregate estimates–especially data on payment volumes–are not available and need to be constructed from multiple sources. Figure E.1 below provides an at-a-glance indication of the quality and availability of the data relating to each payer in the grid, based on the scoring below, and hence the country team's confidence in the overall calculations.

Unlike other previous diagnostics where the quality and availability of data relating to government payments has been better than for business or individuals, for Ghana all payment grid calculations have relied on extrapolation based on assumptions from a variety of estimates. Both government and business entities were willing to participate in the research and provided qualitative data to support our assumptions. However, only a few of them were ready to share quantitative data on payments.

Government payments received scores of 3 for data quality and 2.5 for data availability out of 5. While data from select government institutions was reliable and available to the research team, other key government data points were gathered using information from public news articles and required multiple assumptions. Business and consumer payments received scores of 1.5 for quality and availability because the diagnostic team had to estimate the volumes and values using pre-existing surveys, studies and international heuristics, such as the World Bank Global Payments System Survey.

FIGURE E.1

Quality and availability of data by payer

ANNEX F.

Use case trajectory scorecard & use case methodology

	PUBLIC UTILITIES	FEES & FINES TO GOVERNMENT	FMCG
COUNTRY ENVIRONMENT	**2.71**	**2.71**	**2.71**
Legal environment to support the shift	3	3	3
The telecommunications infrastructure and coverage to support connectivity for digital payments	3	3	3
Variety of FSPs offering payment services on a competitive basis	3	3	3
Settlement and clearing infrastructure supports the defined use case	3	3	3
Availability of data on digital payments	2	2	2
Oversight environment for payments	3	3	3
Regulatory protection for digital payments users	2	2	2
GOVERNMENT AS A PAYER/PAYEE (FOR USE CASES INVOLVING GOVERNMENT PAYMENTS)	**2.40**	**2.40**	**N/A**
National lead agency responsible for the shift to digital payments	4	4	–
Resources of the national lead agency for coordination of the shift across departments/agencies	2	2	–
Law or binding regulation requiring transition to digital payments for some or all of government payments	1	1	–
Awareness of the costs and benefits of shifting to digital payments within the national lead agency	3	3	–
Digitized government payments	2	2	–
FINANCIAL SERVICE PROVIDERS (FSPS)	**2.25**	**1.75**	**2.25**
FSPs' business case in providing digital payments for this use case	3	2	3
FSPs' CapEx investments to provide digital payments for this use case	2	2	2
FSPs' OpEx investments (including marketing) to provide digital payments for this use case	2	1	2
FSPs' understanding of user experience and need for this use case	2	2	2
USE CASE DRIVER(S)	**1.75**	**1.75**	**2.50**
Understanding the costs and benefits of shifting to digital payments for the use case	2	2	3
Champion to drive the shift for the use case	2	2	2
Infrastructure and IT and human resources to drive the shift for the use case	2	2	3
Additional incentives for the use of digital payments in the use case	1	1	2
USERS	**2.40**	**2.40**	**2.00**
Users' trust digital payments	2	2	2
Ubiquity of cash in and cash out points	2	2	2
Financial literacy	2	2	2
Financial inclusion	3	3	3
Transaction and opportunity costs for the use case	3	3	1
TOTAL PRIOR TO WEIGHTING	**2.30**	**2.20**	**2.37**
OVERALL (INCLUDING WEIGHTING)	**2.21**	**2.13**	**2.39**

ANNEX F.

Use case trajectory scorecard & use case methodology

BOX F.1

The Evolution of the Use Case Methodology

It should be noted that this diagnostic is moving away from the classic understanding of use cases as considered in previous diagnostics, which were focused on the flow of transactions between different numbers of actors. The current conception of use cases focuses on a central use case driver to better reflect the state of the payment ecosystem today and its priorities.

Specifically, in the process of conducting the research and analysis of the chosen use cases, it became clear that for each, there is one key driver (e.g.,the FMCG industry or the public utility companies) that will play a significant role in any potential shift to digital payments. In previous diagnostics, on the other hand, the FSPs were considered the central actors for the use case. With this new type of focus, this diagnostic is moving away from an abstract description of payment flows (e.g., many-to-few), which characterized the use case definitions in previous diagnostics, to one with much more concrete implications and, thus, more tangible use case categories. To reflect this shift, the “use case scoring methodology" has been updated. As a summary, key changes include (i) a dedicated section for the use case driver; (ii) a separate section dedicated solely to government payments, distinct from the Government’s role as a regulator; (iii) new weighting that considers the importance of the use case driver; and (iv) a new scoring method and scale that is consistent with the data quality index. A full copy of the updated scorecard is above.

ANNEX G.

List of sources for data points

GOVERNMENT PAYMENTS

PAYER	PAYMENT GRID	TYPE OF PAYMENT	SOURCES
G	G2P	Salaries and Allowances	a. The Budget Statement and Economic Policy of the Government of Ghana for the 2017 Financial Year (Presented to Parliament on 2nd March 2017) b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015
		Pension	a. Social Security National Insurance Trust (SSNIT) website for payments volumes (Active contributors in December 2016), https://www.ssnit.org.gh/about-us/, accessed on 13 June 2017 b. National Pensions Regulatory Authority Annual Report 2015 c. SSNIT 2014 annual report d. Ghana Business Finance news article, https://ghanabusinessnfinance.com.gh/2017/04/11/i-will-improve-contributors-benefits-new-ssnit-boss/, accessed on 13 June 2017 e. The Budget Statement and Economic Policy of the Government of Ghana for the 2017 Financial Year (Presented to Parliament on 2nd March 2017)
		Social cash transfer (LEAP)	a. The Budget Statement and Economic Policy of the Government of Ghana for the 2017 Financial Year (Presented to Parliament on 2nd March 2017) b. Mr. Thomas Boateng Quaison, Head of Monitoring and Evaluation, LEAP Programme, interviewed by Aneth Kasebele, 22 May 2016
	G2B	Procurement of goods and services	a. The Budget Statement and Economic Policy of the Government of Ghana for the 2017 Financial Year (Presented to Parliament on 2nd March 2017) b. The World Bank, General Guidelines for the development of government payments programs, World Bank Payment Systems Policy and Research, July 2012 c. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015
		Corporate tax refunds	a. The Budget Statement and Economic Policy of the Government of Ghana for the 2017 Financial Year (Presented to Parliament on 2nd March 2017) b. The World Bank, General Guidelines for the development of government payments programs, World Bank Payment Systems Policy and Research, July 2012
	G2G	Transfers to local government	a. The Budget Statement and Economic Policy of the Government of Ghana for the 2017 Financial Year (Presented to Parliament on 2nd March 2017) b. Metropolitan, Municipal and District Assemblies in Ghana, http://www.ghanadistricts.gov.gh/UserImg/3_22_7_30_9_breakdown_mmdas_LI.pdf, accessed on 20 June 2017
		Social security contribution	a. National Pensions Regulatory Authority Annual Report 2015 b. SSNIT 2014 annual report c. Ghana Business Finance news article, https://ghanabusinessnfinance.com.gh/2017/04/11/i-will-improve-contributors-benefits-new-ssnit-boss/, accessed on 13 June 2017

ANNEX G.

List of sources for data points

BUSINESS PAYMENTS

PAYER	PAYMENT GRID	TYPE OF PAYMENT	SOURCES
B	B2G	Fines and Fees	a. Interview with Driver and Vehicles Licensing Authority (DVLA), 18 May 2017 b. Interview with Registrar General Department ("RGD"), 18 May 2017 c. Interview with Ghana Ports and Harbour Authority (GPHA), 16 May 2017
		Taxes	a. The Budget Statement and Economic Policy of the Government of Ghana for the 2017 Financial Year (Presented to Parliament on 2nd March 2017) b. The World Bank, Doing Business Report 2016 - Measuring Regulatory Quality and Efficiency
		Utilities	a. Interview with Electricity Company of Ghana, 15 May 2017 b. Interview with Ghana Water Company, 16 May 2017 c. Interview with Ghana Ports and Harbour Authority (GPHA), 16 May 2017 d. The World Bank, General Guidelines for the development of government payments programs, World Bank Payment Systems Policy and Research, July 2012
		Social Security Contributions	a. National Pensions Regulatory Authority Annual Report 2015 b. SSNIT 2014 annual report c. Ghana Business Finance news article, https://ghanabusinessnfinance.com.gh/2017/04/11/i-will-improve-contributors-benefits-new-ssnit-boss/, accessed on 13 June 2017
	B2B	Formal Large Businesses	a. Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015 b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015 c. Interview with Coca-Cola Bottling Company, 18 May 2017 d. PZ Cussons 2015 Annual Report e. Fan Milk Limited 2016 Annual Report f. Cocoa Processing Company (CPC) 2016 first quarter report g. Interview with FrieslandCampina Ghana, 14 June 2017 h. Interview with Unilever Ghana Limited, 16 June 2017
		Formal Medium Businesses	a. Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015 b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015 c. Starwin Products Limited 2015 Annual Report
		Formal Small Businesses	a. Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015 b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015 c. Samba Food Limited 2016 Annual Report d. Sam Woode Limited 2015 Annual Report e. Interview with Jumia, 17 May 2017
		Formal Micro businesses	a. Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015 b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015
		Informal businesses	a. Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015 b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015
	B2P	Employees' salaries	a. Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015 b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015
		Pensions	a. National Pensions Regulatory Authority Annual Report 2015 b. SSNIT 2014 annual report
		Input purchase (from micro and informal businesses)	a. Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015 b. Ghana Statistical Services, Integrated Business Establishment Survey (IBES) Summary Report, September 2015

INDIVIDUAL PAYMENTS

PAYER	PAYMENT GRID	TYPE OF PAYMENT	SOURCES
P	P2G	Fines and fees	a. Interview with Driver and Vehicles Licensing Authority (DVLA), 18 May 2017 b. Interview with Registrar General Department (RGD), 18 May 2017 c. Interview with Ghana Ports and Harbour Authority (GPHA), 16 May 2017
		Taxes	a. Ghana Living Standards Survey Round 6 (GLSS 6) - Labour Force Report 2014 b. Ghana Revenue Authority tax rates, http://www.gra.gov.gh/index.php/tax-information/income-tax, accessed on 20 June 2017 c. The World Bank, General Guidelines for the development of government payments programs, World Bank Payment Systems Policy and Research, July 2012
		Social security contributions	a. National Pensions Regulatory Authority Annual Report 2015 b. People's Pension Trust (PPT) c. Metropolitan Pensions Trust Ghana Ltd
		Bill pay: Government owned utilities (water, electricity)	a. Ghana Living Standards Survey Round 6 (GLSS 6) - Labour Force Report 2014 b. International Organisation for Migration, Baseline Assessment of Household Remittances in Ghana, March 2017
	P2B	Payments for consumption, i.e., retail goods, consumer durables, etc.	a. Ghana Living Standards Survey Round 6 (GLSS 6) - Labour Force Report 2014 b. International Organisation for Migration, Baseline Assessment of Household Remittances in Ghana, March 2017 c. Bank of Ghana Transaction Volume and Value Reported by Banks
		Bill pay: Housing and private utilities (gas)	a. Ghana Living Standards Survey Round 6 (GLSS 6) - Labour Force Report 2014 b. International Organisation for Migration, Baseline Assessment of Household Remittances in Ghana, March 2017
		Loan payments (formal)	a. Global Findex 2014 b. Dzadze P. et al., Factors determining access to formal credit in Ghana: A case study of smallholder farmers in the Abura-Asebu Kwamankese district of central region of Ghana, Sept. 2012 c. Samuel Sekyi, Rural household's credit access and loan amount in Wa, Municipality, Ghana, 2017 d. Francis Ayensu et al., High-interest rate in Ghana: An empirical study of Societe Generale Ghana [SG-GH], 2016
	P2P	Domestic Remittances	a. Collins Yeboah, Internal Migration, Remittances and Welfare Impacts: A Case Study in Dormaa Municipality, Ghana, 2016 b. International Organisation for Migration, Baseline Assessment of Household Remittances in Ghana, March 2017
		International Remittances (incoming)	a. Collins Yeboah, Internal Migration, Remittances and Welfare Impacts: A Case Study in Dormaa Municipality, Ghana, 2016 b. International Organisation for Migration, Baseline Assessment of Household Remittances in Ghana, March 2017
		Loan payments (informal)	a. Global Findex 2014 b. Dzadze P. et al., Factors determining access to formal credit in Ghana: A case study of smallholder farmers in the Abura-Asebu Kwamankese district of central region of Ghana, Sept. 2012 c. Samuel Sekyi, Rural household's credit access and loan amount in Wa, Municipality, Ghana, 2017 d. Francis Ayensu et al., High-interest rate in Ghana: An empirical study of Societe Generale Ghana [SG-GH], 2016

ANNEX H.

Calculations

GOVERNMENT PAYMENT CALCULATIONS

PAYMENT GRID	TYPE OF PAYMENT	SOURCES
G2P	Salaries and allowances	Total Value: Divided the reported 2016 expenditure into wages and salaries from the 2017 budget by 12, given salaries are paid monthly. Number of Transactions: Assuming the salary and wages expenditure include payments to employees of Ministries Departments and Agencies (MDAs), parastatal government, quasi-government and statutory government entities, we have used the estimated number of employees from such entities from an Ghana Statistical Services, Integrated Business Establishment Survey (IBES) 2014 to calculate the number of payments made per month (we extrapolated the 2014 number to 2016 by assuming the growth to be in line with the average annual population growth rate of 2%). Electronic Proportions: Qualitative interviews with Ghana Statistical Services, Accra Metropolitan Assembly, Ghana Revenue Authorities, etc., suggested that all civil servants are paid directly into their bank account. We assumed 100% of salaries and wages payments are made electronically.
	Pension	Number of Transactions: Estimated the number of pensioners and survivor benefits beneficiaries from SSNIT website for December 2016 and National Pensions Regulatory Authority Annual Report 2015 (assuming the reported eight cases paid in 2015 were pending from the previous year and the twelve pending cases from 2015 were paid in 2016), respectively. Note that we have assumed survivors' benefits are paid once in lump sum. Transaction Value: Estimated amount of pension paid out in 2016 to be the difference between the reported expenditure on total employees' compensation and wage & salaries in the 2017 budget. We calculated the distribution of pension by claim type (old age/invalidity pension, lump sum, survivor) based on data in SSNIT 2014 annual report and assumed similar distribution in 2016 and estimated the total value paid to old age/invalid beneficiaries and survivor benefits that are paid out by government through SSNIT. Electronic: Assumed 100% of benefits are paid electronically based on the fact that the submission of bank account information on the benefits claim application is mandatory.
	Social cash transfer (LEAP)	Number of Transactions: Interview with LEAP M&E officer indicated the program has 213,000 beneficiaries who are paid once every two months. We divided the number of recipients by 6 to estimate the monthly transactions volume. Transaction Value: Assuming LEAP is the only social welfare program, we used the social benefits expenditure item from the 2017 budget to estimate the value of LEAP payments. Electronic Proportions: Interview with LEAP program officer indicated that all beneficiaries are paid electronically to their e-zwich card. Therefore, we assumed transactions are 100% electronic by both volume and value.

GOVERNMENT PAYMENT CALCULATIONS

PAYMENT GRID	TYPE OF PAYMENT	SOURCES
G2B	Procurement of goods and services	Transaction Value: Used the reported government expenditure amount on goods and services in 2016 and divided by 12 to get monthly value. The goods and services included are low-value payments such as consumable goods (stationaries), capital equipment (computers, equipment, etc.), services (cleaning, maintenance, professional services), transport expenses (gasoline, travel expenses) and large-value capital expenditure contracts (valued at GHS 7,678 million in 2016). Number of Transactions: Estimated monthly transaction volume by multiplying the average number of monthly transactions from DVLA and GPHA data with the number of state-owned entities in Ghana. The number of state-owned entities (excludes public-private partnerships (PPPs) that are included in private owned entities) was derived from the IBES 2014, with assumption that the same number of entities existed in 2016. Electronic Proportions: Used estimates from the World Bank Global Payments System Survey whereby 61% of procurement payments by value are paid electronically. Given checks are still prevalent in the Government payment system, we can assume most of the low-value but high-volume payments are made in checks, and that about 10% of these payments by volume are electronic.
	Corporate tax refunds	Transaction Value: Estimated the value of corporate refunds from the 2017 government budget. Number of Transactions: Assumed that about 50% of taxpaying corporate entities receive a tax refund annually. Electronic Proportions: Used estimates from the World Bank Global Payments System Survey whereby 50% of corporate tax refunds by value are paid electronically. This is reasonable for Ghana given the prevalence of check payments. Similarly, we can assume half of this proportion is for electronic payments by volume given the likelihood of check payments for low-value payments.
G2G	Transfers to local government	Number of Transactions: To estimate the monthly volume we have assumed that transfers to MMDAs are done on quarterly basis (4 transfers per year) to all 216 MMDAs in Ghana. Transaction Value: To estimate the monthly value we divided the amount spent on grants to other government units from the 2017 budget by 12. Electronic Proportions: Assumed these transfers are done electronically both by volume and value based on the fact that the Ministry of Finance has operationalized the Ghana Integrated Financial Management Information System ("GIFMIS").
	Social security contributions	Number of Transactions: Estimated several monthly volumes of transfers based on estimates of contributors from Controller and Accountant General's Department & Government Subvented Organisations such as Ghana Statistical Services. We assumed the distribution (private vs. CAGD and government subvented organizations) of active contributors in SSNIT 2014 annual report to remain the same in 2016. Transaction Value: We used the total amount contributed in 2016 and divided it by the estimated number of contributors to get an estimate of the annual average contribution per member. We have multiplied the covered members from CAGD & government subvented organizations to get an estimate of total annual contribution. Electronic Proportions: We have assumed these contributions are transferred electronically from the Treasury to SSNIT.

ANNEX H.

Calculations

BUSINESS PAYMENT CALCULATIONS

PAYMENT GRID	TYPE OF PAYMENT	SOURCES
B2G	Fines and fees	Transaction Volumes and Values: To estimate the volumes and values of fees and fines paid to the government, we have relied on data provided by the Driver and Vehicles Licensing Authority, the Registrar General Department, and Ghana Ports and Harbour Authority, which represents country-wide payments. We also extrapolated fines and fees paid to Accra Metropolitan Authority to the rest of the country. The values and volumes may be underestimated because the figures do not include fees for government services from entities such as Food & Drugs Authority, Ghana Police Criminal Investigation, Ghana Tourism Authority, Minerals Commission, National Communications Authority, National Identification Authority, and Passport Office.
	Taxes	Number of Transactions: From 2016 World Bank Doing Business Report, businesses make an average of 32 tax payments to the central government (excluding property taxes that are paid at local government level) per year in Ghana. This number was multiplied by tax-paying registered businesses (which is about 10% of private businesses) to get the annual volume of business tax transactions. Transaction Value: The annual amount of business tax paid was estimated to be the difference between the tax revenue collected in 2016 and the estimated value of tax paid by individuals (see the specific section below for how this was calculated). Electronic Proportions: Given large taxpayers (assuming only large and medium sized businesses belong to this category) form about 10% of all business taxpayers and pay taxes through EFTs (as confirmed by Vodacom, the fifth largest taxpayer in Ghana), we can assume that 10% of tax payments by volume are done electronically. Also, large taxpayers contribute at least 65-70% of all tax payments (as per interview with eGovernment), implying that 68% (average between 65% and 70%) of tax payment by value is done electronically.
	Utilities	Number of Transactions: We used GPHA utility payment data (42 per month) as a proxy and assumed large businesses make half of these payments per month. This approach was extrapolated to medium and small businesses and multiplied the number of transactions by the number of entities under each type of business size. Note that B2B payments for micro and informal businesses include utility payments. Transaction Value: We relied on companies' annual reports for estimates of annual expenditure on utilities for a sample of large, medium and small entities. Electronic Proportions: Majority of businesses use checks to pay for utilities. Given that 30% of payments by value to ECG are electronic (as per interview with ECG), we can assume about 5% of payments by volume from large and medium sized businesses are electronic and that the 30% electronic payments by value to ECG are from large and medium businesses. The assumption of 30% by value might be appropriate based on the fact that large and medium sized businesses such as Unilever, which might be paying large amount of money for utilities, have reported to pay through EFTs.
	Social security contributions	Number of Transactions: We have followed the same approach used in estimating contributions from government social security contributions above. We have estimated the monthly volumes of transfers based on estimates of contributors from private sector. We have relied on the total amount contributed in 2016 and divided it by the number of contributors to get an estimate of the annual average contribution per member.

BUSINESS PAYMENT CALCULATIONS

PAYMENT GRID	TYPE OF PAYMENT	SOURCES
B2B	Formal Large Businesses	Number of Transactions: Using three large FMCG companies in Ghana as a proxy, we have estimated the volume of payments for intermediate consumption goods (value of the goods and services that are consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital), by multiplying the average number of transactions that these FMCG companies make per month (836) as production expenses. Transaction Value: To estimate the value of intermediate consumption goods, we have relied on cost of production estimates reported on annual reports of a sample of large public businesses in Ghana (PZ Cussons (extrapolated to 2016 using the average, 4% GDP growth rate), Fan Milk Limited, Cocoa Processing Company). These have included the cost of raw materials, rental charges, distribution charges, etc., that we have assumed are paid to other businesses. Electronic Proportions: To estimate the volume and value of electronic payments we have also relied on data from the three large FMCG companies and assumed other large businesses are likely to conduct transactions similarly. On average, these companies make 74 of the 836 monthly payments through bank transfers and the rest in checks. Similarly, they make GHS 33 of GHS 100 million through bank transfers and the remaining 67 million of GHS 100 million through checks.
	Formal medium businesses	Number of Transactions: We have used the 5.30 estimated number of input transaction made by informal businesses (calculated based on Eben Tawajah Anuwa-Amrah, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015, findings) and extrapolated it for medium businesses. Since medium sized businesses are more complex and on average deal with more suppliers than informal businesses do, we estimated medium sized businesses would make at least five times as many payments. Transaction Value: We have multiplied the total number of monthly transactions by the estimated number of formal medium sized businesses in Ghana. Electronic Proportions: For simplicity, we can assume that medium sized businesses transact similarly as large businesses above and therefore assume similar proportions of electronic payments by both volume and value.
	Formal small businesses	Number of Transactions: For volumes, we have used the 5.30 estimated number of input transaction made by informal businesses and extrapolated it for small formal businesses. We have assumed small formal businesses will make at least twice as many inputs transactions as made by informal businesses on a monthly basis. We have multiplied the resulting number by the estimated number of formal small businesses in Ghana. Transaction Value: To estimate the value of intermediate consumption goods, we have relied on cost of production estimates reported on annual reports of a sample of small public businesses, Samba Food Limited and Sam Woode Limited. Electronic Proportions: Assuming the use of mobile money for payments is about 1/5 by volume and 2/5 by value of those of Jumia (categorized as a small business based on number of employees, 30 but is more digitally focused than the average small business in Ghana), Jumia makes 15% and 27% of its inventory transactions electronically, both by volume and value, respectively.
	Formal micro businesses	Number and Value of Transactions: We have assumed the transaction patterns/behavior of formal micro businesses is similar to that of informal businesses. We have used a similar approach to estimates the volume and values. Therefore, as per the survey, informal businesses make about 5.30 inputs transactions per month. We have multiplied this number by the total estimated number of formal micro businesses in Ghana. Transaction Value: To estimate the value, we have again relied on the survey whereby informal businesses weekly purchases have been valued at USD 235. Assuming there are fifty-two weeks in a year we have calculated the estimated monthly value [USD 235*(52/12)] by multiplying by the total number of formal micro businesses. Electronic Proportions: Most informal businesses pay for production inputs, i.e., raw materials and utilities in cash and cash equivalents (credit and commissions). We have assumed a small proportion, 1% by volume and 10% by value, are using mobile money to make payments.
	Informal businesses	Number of Transactions: As per the survey, informal businesses make about 5.30 inputs transactions per month. We have multiplied this number by the total estimated number of informal businesses in Ghana. Transaction Value: To estimate the value, we have again relied on the survey whereby informal businesses weekly purchases have been valued at USD 235. Assuming there are fifty-two weeks in a year we have calculated the estimated monthly value [USD 235*(52/12)] by multiplying by the total number of informal businesses. Electronic Proportions: Most informal businesses pay for production inputs, i.e., raw materials and utilities in cash and cash equivalents (credit and commissions). We have assumed a small proportion, 1% by volume and 10% by value, are using mobile money to make payments.

ANNEX H.

Calculations

BUSINESS PAYMENT CALCULATIONS

PAYMENT GRID	TYPE OF PAYMENT	SOURCES
B2P	Employees' salaries	Number of Transactions: We have estimated the volume of employees based on the total number of individuals employed in the private sector (both formal and informal, non-household jobs) as estimated in the IBES survey. Transaction Value: We have estimated the monthly values by multiplying the average monthly wages for employees in formal and informal sectors by their respective number of employees. Electronic Proportion: To estimate the electronic proportion of salary payments, for simplicity we have assumed that employees in formal sector are paid directly to a bank account or mobile money account. By dividing the number and value of salary payments in the formal sector by the total value and volume of salary payments, the proportion of electronic salary payments is 66% and 87% by volume and value, respectively.
	Pensions	Number of Transactions: Estimated the volume and value based on the number of lump sum pension recipients. Transaction Value: Reported on SSNIT annual reports. Electronic Proportions: Assumed that all beneficiaries are paid directly into their bank accounts, and hence the proportion of electronic payments by volume and value is 100%.
	Input purchase (from micro and informal businesses)	Number of Transactions: We have used a similar approach as micro and informal businesses B2B payments above. The survey on informal sector businesses (Eben Tawaiah Anuwa-Amarh, Understanding the Urban Informal Economy in Ghana: A Survey Report, 2015) indicates that about 38% of informal businesses purchase inputs directly from individuals. We have assumed the same proportion for micro-sized formal businesses and estimated the monthly transactions volume. Transaction Value: Assumed the same value of transactions as for those from businesses as explained above. Electronic Proportions: We have also assumed similar proportion of payments through mobile money, by both volume and value.

INDIVIDUAL PAYMENT CALCULATIONS

PAYMENT GRID	TYPE OF PAYMENT	SOURCES
P2G	Fines and fees	Transactions Volumes and Values: To estimate the volumes and values of fees and fines paid to the Government we have relied on data provided by the Driver and Vehicles Licensing Authority, the Registrar General Department, Ghana Ports and Harbour Authority, which represents country-wide payments. We also extrapolated fines and fees paid to Accra Metropolitan Authority to the rest of the country. The values and volumes may be underestimated because the figures do not include fees for government services from entities such as Births & Death Registry, Ghana Police Criminal Investigation, Ghana Tourism Authority, National Identification Authority and Passport Office Electronic Proportions: The calculated electronic proportions are 3% and 16% by volume and value, respectively.
	Taxes	Number of Transactions: The monthly volume of taxes paid by individuals was based on the assumption that about a quarter (26.1%) of employed people (both formal and informal, public and private) in the GLSS6 survey pay taxes. We used that basis to calculate the number of people paying income taxes in Ghana. Transactions Value: To calculate the total amount paid monthly, we multiplied the number of payments by the average monthly income and tax rate for formal private and public employees. The average tax rates for different income brackets are listed on the Ghana Revenue Authority ("GRA") website. Note that we assumed informally employed individuals are those categorized as self-employed individuals (smaller taxpayers). According to an interview with Deputy Commissioner for Smaller Taxpayers at GRA, these taxpayers pay a fixed range (GHS 5 to 45) of income tax on a quarterly basis. Electronic Proportions: To estimate the electronic payments by volume we relied on GRA data where 1.2 million payments are made electronically. Given the prevalence of check payments from both the private and public sector, we relied on data from World Bank Global Payments System Survey where payments of taxes by individuals are only 44% electronically by value.
	Social security contributions	Number of Transactions: The National Pensions Regulatory Authority Annual Report 2015 provides the number of members for this scheme that we have used as an estimate for monthly volume of contributions. Transactions Value: We have used the available minimum monthly contribution amount as the average amount paid by a member. We have multiplied this value by the total number of members to estimate the monthly value. Electronic Proportions: People's Pension Trust (PPT) suggests that a majority of their members pay their contributions in cash either at an agent or bank branch. PPT is one of the providers with 81,000 members that launched a mobile money payment option this year. Assuming a third of the members have started paying their contribution through mobile phone, this results in an estimate of about 18% of payments by volume and value being processed electronically.
	Bill pay: Government owned utilities (water, electricity)	Number of Transactions: We used a similar approach as for consumptions goods below except that we have estimated the volume of payments based on the estimates of proportion of households paying for different electricity, gas and housing as provided in the IOM study. For water, we have relied on volume and value data provided by GWC. Transactions Value: We have calculated the average price for water and for simplicity we have assumed about the same monthly price for all utilities. Electronic Proportions: We have assumed all individuals' utility payments are paid by cash based on the expert opinions/interviews with Ghana Water Company (GWC) and Electricity Company of Ghana (ECG).

ANNEX H.

Calculations

INDIVIDUAL PAYMENT CALCULATIONS

PAYMENT GRID	TYPE OF PAYMENT	SOURCES
P2B	Payments for consumption, i.e., retail goods, consumer durables etc.	Number of Transactions: To estimate the volume of transactions for household consumption goods we relied on estimated number of adult population (15+) from Ghana Statistical Services and our proprietary Financial Diaries data for an estimate on the average number of household transactions per month. Multiplying these two numbers gave us an estimate of volume of transactions for consumption goods. Transactions Value: To estimate the value of transactions we have used the average monthly per capita expenditure from GLSS6 and multiplied it by the number of adult population. Electronic Proportions: Assumed all transactions at a Point of Sale (POS) are made by individuals for retail products. We used the average monthly volume and value of POS transactions from the Bank of Ghana to estimate the proportions of electronic payments by both volume and value.
	Bill pay: Housing and private utilities (gas)	Number of Transactions: Estimated the volume of payments based on the estimates of proportion of households paying for different utilities as provided in the IOM study. Transactions Value: We have calculated the average price for utilities and for simplicity we have assumed about the same monthly price for all utilities. Electronic Proportions: We have assumed all individuals' utilities payments are paid by cash based on the expert opinions/interviews with Ghana Water Company (GWC) and Electricity Company of Ghana (ECG).
	Loan payments (formal)	Formal is defined as a loan from a financial institution, a private lender or employer. Number of Transactions: We have estimated the volume of borrowers based on Global Findex estimates and the number of adult population from Ghana Statistical Services ("GSS"). Transactions Value: We have used estimated loan amounts and repayment plans to calculate the value of monthly repayments. Electronic Proportions: We have assumed the proportion of electronic loan repayments are from individuals working in the formal sector and repay their loans through direct deductions from their salary accounts at banks. The formal sector employees with formal loan makes up 11% of all formal loans by volume and value. Therefore, we estimated the proportion of electronic repayments to be 11% both by volume and value.
P2P	Domestic Remittances	Number and Transaction Values: The cited studies provided estimates of population receiving domestic remittances, average amounts, frequency, and channels used for receiving. We have relied on these estimates to calculate the volume and value of monthly domestic remittances. Electronic Proportions: Given the proportion of electronic payments was provided for transaction volumes, for simplicity we have assumed the same proportion for transaction values.
	International Remittances (incoming)	Number and Transaction Values: The cited studies provided estimates of population receiving international remittances, average amounts, frequency, and channels used for receiving. We have relied on these estimates to calculate the volume and value of monthly domestic remittances. Electronic Proportions: Given the proportion of electronic payments was provided for transaction volumes, for simplicity we have assumed the same proportion for transaction values.
	Loan payments (informal)	Informal is defined as a loan from friends, family, or a shopkeeper. Number of Transactions: We have estimated the volume of borrowers based on Global Findex estimates and the number of adult population from GSS. Transactions Value: We have used estimated loan amounts and repayment plans to calculate the value of monthly repayments. Electronic Proportions: Given over 40% of the adult population actively use their mobile money account, we have assumed at least a quarter of the loan repayments by volume and value are done electronically through mobile money.

ANNEX I.

BTCA's recommended digital payment accelerators

1. Develop a Unique Identification Program in a centralized database that both public and private sector players can access to verify identities to drive digital payments and financial inclusion.
2. Establish regulation that promotes innovation and responsible practices by understanding the gaps and barriers of existing regulation and engaging all stakeholders.
3. Establish interoperability in a digital payments ecosystem to reduce barriers that confine digital transactions to a single payment platform.
4. Promote merchant acceptance infrastructure across Micro, Small, and Medium Enterprises to boost adoption among consumers and large players higher in the value chain.
5. Establish shared digital infrastructure to reduce barriers to entry and promote innovation.
6. Leverage existing networks, such as social media platforms to quickly extend digital payment services to far-reaching user bases, improve the business case, and reduce costs.
7. Identify and digitize use cases that individuals frequently use for transactions to increase comfort with digital payments and increase digital transaction volumes.
8. Digitize government and corporate payments to advance a digital payments ecosystem.
9. Digitize government receipts to advance digital payments ecosystems and build familiarity with digital payments among individual users and businesses, as well as raise revenues for government.
10. Implement policies that incentivize and improve the convenience of digital payments to drive quicker and more widespread access and adoption of digital payments.

ANNEX J.

List of organizations and persons interviewed

ORGANIZATION	NAME	DESIGNATION
Accra Brewery Ltd.	Graham Henry Lurie	Finance Director
Airtel	Edmund Barwuah	Head Corporate, Airtel Money
Accra Metropolitan Assembly	Ellis Commey	Deputy Director of Finance
Accra Metropolitan Assembly	Philip Quantson	Deputy Director of Budget and Rating
Bank of Ghana	Dr. Settor Amediku	Head, Payments Systems
Bank of Ghana	Clarissa Kudowor	Assistant Director, Payment Systems
Bank of Ghana	Francis Blankson	Financial Stability
Bank of Ghana	Ignatius Wilson	Financial Stability
Cargill Ghana	Pieter Reichert	Managing Director
Coca Cola Bottling Company	John Ackah	Senior Treasury Manager
Coca Cola Bottling Company	Martin Nzanga	Route to Market & Business Transformation Manager
Coca Cola Bottling Company	Rexford Oake	Shared Services Manager
Driver and Vehicle Licensing Authority	Ernest Antwi-Barimah	Manager, Finance
Driver and Vehicle Licensing Authority	Asare Nyarko	Manager, Finance
Driver and Vehicle Licensing Authority	Andrews Denteh	Deputy Director of Finance
Electricity Company of Ghana	James Asante	Principal Accountant
Electricity Company of Ghana	Esther Water Quaye	General Manager - Treasury
Electricity Company of Ghana	Gloria- Ann Saakwa-Mante	Ag. Manager - Tariffs
Electricity Company of Ghana	Amy Gavor	Revenue Management - Manager
Electricity Company of Ghana	Nana Agyeman	Principal Customer Service Officer
Electricity Company of Ghana	Rita Sasraku	Customer Service Department
Electricity Company of Ghana	Fred Bediako	Billing - Manager
Electricity Company of Ghana	Mr Oti Boateng	IT
Electricity Company of Ghana	Isaac Larbi	Principal Revenue Officer
Electricity Company of Ghana	Godwin Kyeremanteng	Principal Officer - Financial Accounting
Ecobank Ghana	Owureku Asare	Regional Head, Consumer Distribution for Ecobank Ghana & Anglophone West Africa
eTranzact	George Babafemi	COO
eTranzact	Bismark Odoom	Sales & Marketing Manager

ORGANIZATION	NAME	DESIGNATION
expressPay	Curtis Vanderpuije	CEO
FrieslandCampina Ghana	Samuel Chemenu	Finance Manager
Ghana Bankers Association	Daniel Mensah	CEO
Ghana Chamber of Telecommunications	Derek Barnabas Laryea	Research and Communications Manager
Ghana Cocoa Board	Michael Owusu-Manu	Senior Research Manager
Ghana Cooperative Susu Collectors Association	Obed Yaw Asamany	General Manager
Ghana Employers Association	Kingsley Amoah	Director of Industrial Relations
Ghana Interbank Payments and Settlement Systems	Clara B. Arthur	General Manager, Projects & Business Development
Ghana Interbank Payments and Settlement Systems	Kwadwo Ntim	General Manager, Technology & Operations
Ghana Ports and Harbours Authority	Chris Amedor	General Manager - Finance
Ghana Ports and Harbours Authority	Tebon Zumah	Financial Manager - Tema
Ghana Revenue Authority	Paul Kwakyi	eGov Project Lead
Ghana Revenue Authority	Vivian Adusei	Deputy Commissioner - Small Taxpayers
Ghana Revenue Authority	Alex Asamoah-Bonti	Deputy Commissioner - Medium Taxpayers
Guinness Ghana Brewery Limited	Stephen Nirenstein	Finance Director
Guinness Ghana Brewery Limited	Gabriel Opoku-Asare	Corporate Relations Director
Ghana Water Company	Cynthia Ackah	Commercial Manager
Ghana Water Company	Serena Kwakye-Mintah	ICT Manager
Ghana Water Company	Edmund Clottey	Treasury Officer
Ghana Water Company	James Abbey	Chief Manager – Finance
Ghana Water Company	Henry Quacopoome	Finance Manager
Ghana Water Company	John Sackey	Finance Manager
Jumia	Ore Odusanya	CEO
Jumia	Frank Acquaye	CFO
LEAP Programme, Ministry of Gender, Children and Social Protection	Thomas Quaison	Head of Monitoring and Evaluation

ANNEX J.

List of organizations and persons interviewed

ORGANIZATION	NAME	DESIGNATION
Ministry of Finance and Economic Planning	Godwin Anku	Head, Development Finance Unit
Ministry of Finance and Economic Planning	Benjamin Torsah-Klu	Principal Economics Officer
Ministry of Finance and Economic Planning	Magdalene Apenteng	Director*
Ministry of Finance and Economic Planning	Sampson Akligoh	Director, FSD
MTN	Eli Hini	General Manager, Mobile Financial Services
National Statistical Service	Robert Kwami	Director of Finance
Nestle West and Central Africa	Fatih Ermis	Head of Agric Services
National Identification Authority	Prof Ken Attafuah	Executive Director
National Identification Authority	Josef Iroko	Head, Administration, Legal & Compliance
National Identification Authority	Charles Boakye	Chief Technical Advisor
National Identification Authority	Ezekiel Obuobisa	Chief Accountant
National Information Technology Agency	Veronique Boateng	Director of ePortal
OLAM	Kenneth Ntoso	Cocoa Sustainability Head
PBC	Nana Agyenim Boateng	Deputy Managing Director
Planiter Company Limited	Pamela Aba Turkson	Managing Director
Registrar General's Department	Vivian Ampere	Senior Accountant
Registrar General's Department	Yvonne Serwaa Sarpong	Internal Audit
Registrar General's Department	Teddy Eduyaw	Assistant Programmer
Registrar General's Department	Mr Tetteh	Director of Finance
Registrar General's Department	Mr Nunoo	Chief Accountant
Unilever Nigeria & Ghana	Adesola Sotande-Peters	CFO
Unilever Nigeria & Ghana	Kenneth Onwudinjo	Lead Finance Business Partner supporting Customer Development, Brand Building and Brand Development
Unilever Ghana	Mary Ogembo	Lead Finance Business Partner Supporting Customer Development, Brand Building and Brand Development
Vodafone	Carl Ashie	MFS Manager
Zeepay	Andrew Takyi-Antwi	CEO
Zeepay	Nana Yaw	COO

ANNEX K.

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ANNEX L.

Endnotes

1. A Treasury Single Account ("TSA") will ensure the centralization of all government payments in one bank account.
2. Similar trends for individual payments were found in the BTCA and MM4P diagnostics of Malawi, Nigeria, and Uganda.

   It should be noted, however, that in terms of value, the numbers are significantly different – only 63% of all transactions by value were cash in 2016 in Ghana, which shows the inroads that digital has made in high-value transactions.

   In comparison to other African diagnostic countries, the number of 98.72% is not an anomaly. Similar figures for overall cash in the economy by volume were reported in the BTCA diagnostics conducted in Malawi (over 99% of payments in 2014), Nigeria (98.4% of payments in 2013), and Uganda (95% of payments in 2015). In Kenya, cash still makes up about 95% of the transactions in the economy, as supported by the 2016 Financial Access HouseHold Survey.
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116. It is a criminal offence to issue a check that cannot be honoured. As per the relevant law (section 313A of the Criminal Offences Act, 1960, Act 29), the punishment for issuing a dishonoured check upon presentation is a fine or imprisonment. Also, the Bank of Ghana allows banks to charge 10% for a bouncing check, although this charge is not always applied.

117. For some variables such as proportion of remittance payments that are electronic, we assumed equal proportions for both volumes and values, so actual differences may be greater than what is estimated on this study.

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ANNEX L.

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