INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND ANALYSIS

ISSN(print): 2643-9840, ISSN(online): 2643-9875

Volume 06 Issue 06 June 2023

DOI: 10.47191/ijmra/v6-i6-78, Impact Factor: 7.022

Page No. 2771-2781

Changes in Mobile Telephony in Congo-Brazzaville

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ABSTRACT: The development of telecommunications has made it possible to reveal market niches, once considered unprofitable. This is the case of mobile telephony, which is now experiencing undeniable success in the world and Congo-Brazzaville, in particular. There is also a shift from mobile telephony services (voice, sms and mobile Internet) to mobile financial services (mobile money). This change could shift the status of mobile operators to that of financial operators, thus becoming true competitors of traditional banks.

KEYWORDS: Mutation, mobile money, electronic payment, changes, financial inclusion.

INTRODUCTION:

Mobile telephony is becoming increasingly important, particularly in the context of developing economies where low-income households and micro-businesses do not have easy access to financial services. Sub-Saharan Africa's bancarisation rate is the lowest in the world, according to the European Investment Bank (EIB, 2016). Financial inclusion, through mobile payment, offers mobile operators the opportunity to become financial operators (Massanga P.T and Théodora M, 2020). In the next few years, these operators will become direct competitors to traditional banks, following their more than likely shift from cell phone services to mobile money.

According to the African Development Bank Group (GBAD, 2013), cell phone users outnumber bank account holders in India and Africa. This cell phone revolution in Africa (Bordry A.S and Bouverot A, 2015) will impact all sectors of the economy.

This article studies the mutations observed in Congolese mobile telephony. The aim is to analyze the issues at stake in the growth of mobile telephony in Congo-Brazzaville and, furthermore, to examine whether mobile operators can provide an alternative to the difficulties of banking restrictions for the poor, particularly those in the informal sector.

The issues addressed in this study are as follows: What changes are taking place in the mobile telephony sector? Hence the following subsidiary questions: What are the characteristics of the Congolese digital market? What is the weight and impact of mobile money in Congo's digital economy?

The research hypothesis is as follows: Mobile money, a by-product of the development of mobile telephony, has become the backbone of monetary transactions, including for low-income populations.

This theoretical and practical contribution is based on the exploitation of documentary data, reports and a survey. It is structured in two points. The first examines the factors behind the emergence of mobile money. The second analyzes changes in mobile telephony in Congo-Brazzaville.

1. The factors behind the emergence of mobile money

1.1. Liberalization of telecommunications networks

The digital revolution is closely linked to the electronic revolution in the IT and microelectronics sectors. Since the invention of the telephone, telecommunications networks have evolved within a paradigm dominated by electromechanics (Brousseau E & al, 1996). From the 1960s onwards, the digital paradigm emerged, the product of several technologies: capture, transmission, processing, presentation and storage (Goldfinger C, 1994). The transition from the electromechanical to the digital paradigm can be explained by improvements in network transmission quality. Analog transmission, which characterizes the electromechanical paradigm, has at least two limitations (Caccomo JL, 1996): extreme specialization and lack of precision. Extreme specialization has favored the uniqueness of network operation, for technical reasons in particular. Technically, voice communication is subject to a number of hazards that make it very difficult to receive. Hence the lack of precision. These limitations will be overcome with the arrival of digital technologies. These enable the signal to be regenerated in its pure form (rather than amplified as with analog

techniques). They enabled the multiplication of clearly defined interfaces, which in turn allowed the functional and then economic fragmentation of networks, and the introduction of competitive areas (Turpin E, 2000).

The liberalization of telecommunications can thus be analyzed in two stages: the transition from monopoly to competition, and the process of liberalization, concomitant with the disengagement of the government.

From monopoly to competition. "Born in very specific national contexts, the telephone in the West gradually spread within an increasingly homogeneous institutional framework, following T. Vail's slogan (one telephone, one system, universal service). Until the early 1980s, the local monopoly ended up being the only form of organization in the telephony market" (Dang Nguyen G and Phan D, 2000). In Central Africa, the telecommunications monopoly is a legacy of the colonial period. During this period, telecommunications services in French Equatorial Africa (AEF) were provided by the Office Equatorial des Postes et Télécommunications (OEPT). It wasn't until 1963 that OEPT broke up with the decolonization of the colonies (Cameroon, Congo, Gabon, Equatorial Guinea, Central African Republic and Chad). These colonies became independent countries and took advantage of their sovereignty to manage telecommunications services independently. For the Congo, a parastatal company called Office National des Postes et Télécommunications (ONPT) was created. This company remained the public operator with a monopoly until 1997, when telecommunications were liberalized. Until then, the telecommunications market in the Congo has been characterized by restricted supply, unsatisfied demand and the isolation of entire zones (Makosso B, 2005; Mbengou R, 2009). The restriction of supply is justified by an outdated infrastructure characterized by spatial discrimination (N'zebele J, 1988). Supply is concentrated around two poles, Pointe Noire and Brazzaville, while the rest of the country is almost inactive. This situation is also due to the repeated wars that took place in the Congo in the 1990s, which considerably damaged the infrastructure. This limited supply was unable to satisfy the ever-increasing demand for telephones (Makosso B, 2005; Koulakoumouna E, 2005). This observation applies not only to the Congo, but to all Central African countries (Kibong G, 2012). For this author, in addition to the disparities between urban and rural areas, there is also the low level of inter-African telephone traffic, reflecting the lack of integration between the continent's economies and the extraversion of these countries, which are closely linked to the North.

In the Congo, the liberalization process will see the introduction of an arsenal of laws to improve conditions in the telecommunications sector. The aim of these laws was to clarify roles. Whereas public operators used to confuse their regulatory and operational missions, being judge and jury, the new status of operators and the opening up of markets have led governments to distinguish between the functions of regulator and operator. This change of vision reflects, on the one hand, the idea that the administrative authority is no longer the sole decision-maker, but must delegate certain functions. On the other hand, there is also the intention to take into account the rights of citizens in the decision-making process. In the Congo, this delegation has taken place in several sectors: the Agence de régulation des marchés publics (ARMP) in the public procurement sector; the Agence de régulation de l'aval pétrolier (ARAP) in the oil sector; and the Agence de régulation des postes et télécommunications électroniques (ARPCE) in the telecommunications sector.

The latter agency, a public administrative establishment, was created by law n°11-2009 of November 25, 2009. ARPCE replaces the Direction Générale de l'Administration Centrale des Postes et Télécommunications (DGACPT) created in 1998, a body which played the dual role of agency and operator. This law clarifies the role of the new agency. It states that the agency has the power to impose sanctions on any postal and electronic communications operator. In other words, ARPCE's action is based firstly on its power to issue administrative instructions and regulations; secondly, on its power to impose sanctions; and thirdly, on its power to monitor postal and electronic communications networks and services. The agency also has the power to "arbitrate" in disputes between operators or between operators and users[1].

This clarification of roles follows on logically from older regulations. For example, Law n°14-97 of May 26, 1997 liberalized the Congolese telecommunications market and opened up the sector to competition. While this clarification of roles is a considerable step forward for the telecommunications sector, it should be noted that liberalization is not total, since the ONPT retains a monopoly on basic services, while opening up value-added services to competition (Makosso B, 2005). We also note that the agency is not totally free, contrary to what the texts say. Its organization shows that its room for maneuver is limited, either because its members are appointed by the executive, or composed of members of the executive (Eyombi AJ, 2012). This allows the government to legally exercise a supervisory power over this body. In practice, therefore, we have the impression that the Congo has complied with the injunctions of the international and European communities to create a sectoral agency, while at the same time exempting itself from substantive obligations: the non-granting of decision-making autonomy to the sectoral regulatory authority[2].

[1] https://www.tresor.economie.gouv.fr/Pays/CG/le-secteur-du-numerique

[2] AJ Eyombi, op.cit

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Despite this negative note, the new framework has enabled considerable progress to be made, as new private players have emerged on the Congolese telecoms scene. In addition, we also note that the establishment of ARPCE has, among other things, influenced the explosion in demand for cell phones (Swierczynska K.A, Koulakoumouna E, 2018).

1.2. Mobile money as a dematerialization product

This constant dematerialization of networks has led to the development of mobile telephony. It has also accelerated in the area of payment methods. In the latter case, tradition generally distinguishes four stages in the dematerialization of means of payment: Commodity money, metallic money, fiduciary money and now scriptural money, which includes electronic money[3]. Focusing solely on e-money, many authors already distinguish three generations of this currency (Lacoursiere M, 2007; Piffaretti N, 2000; Lane G, 1999). While Lane considers virtual money to belong to the third generation, the other two consider it to be of the second generation. For Piffaretti, the future of e-money is unwritten. As for Lacoursiere, it's the new contactless electronic payment methods-cell phones, subcutaneous chips-that can be assimilated to third-generation payments.

According to Coffre (1997), electronic money has a dual meaning. First, it is a digital currency, exchanged between a buyer and a seller. It is contained in a wallet, a unit of account recognized by both buyer and seller. This wallet may be a memory card, in which case it is referred to as an electronic wallet. It can also be a file located on a hard disk or floppy disk, known as a virtual wallet. By extension, electronic money then refers to the flow linked to the use of a card, or even the dematerialized flow (Coffre O, 1997). This definition highlights the incessant process of dematerialization of electronic money. The card is exchanged first, before the cash flow in the card is exchanged. This process began with electronic funds transfers, where the electronic network is used simply to access the customer's bank account in order to authorize a funds transfer (Lacoursiere M, 2007). It is now continuing with contactless payment methods.

Two criteria characterize this process of dematerialization of electronic money: the increasing detachment of these new means of payment from the banking institution, and the increase in their circulation area.

The first criterion does not fail to pose new problems compared with traditional money, particularly with regard to monetary stability and policy (Landau JP, 2018). The second criterion, circulation area, transcends national space. From electronic transfers to bankcards and, today, computer hard disks, smart cards, etc., the electronic circulation area for new means of payment is expanding, leading some to say that electronic money will be the first currency in history to be complete (Lane G, 1999).

In this configuration, a distinction is now made between centralized and decentralized e-currencies (Laurent A, Monvoisin V, 2015; Landau JP, 2018). The latter category, also known as virtual currency or crypto-currency (such as bitcoin), is part of the generation of means of payment linked primarily to the open Internet system. It is facilitated by the growing development of e-commerce (Piffaretti N, 2000). Crypto-currencies are private currencies with no legal tender status. They are created and circulated independently of any bank, and are detached from any bank account. According to Landau, three characteristics define crypto-currencies. They are virtual currencies that use cryptography and are decentralized (Landau JP, 2018). They are virtual currencies, i.e., digital representations of purely fiduciary value. They are not issued or guaranteed by a central bank, credit or monetary institution; They use cryptography, i.e., they are designed and adapted to transmit value over the Internet in a totally open and public environment and, in complete security.

In short, transactions are carried out outside the regulated financial system, without recourse to clearing mechanisms managed by banking institutions. This is why they are also referred to as private currencies.

Centralized electronic money is usually issued and managed by a central authority, which records it as a liability. There have also been major innovations in bankcards, from magnetic stripe cards to contactless payment by bankcard. Coffre's definition of e-money also highlights the notion of electronic payment instrument, i.e. the means by which the bearer (holder of e-money account units) accesses e-money for use. Such instruments include prepaid cards and cell phones. The latter is known as mobile money.

Mobile money refers to the use of the sum of money stored on the SIM card in a cell phone. This restrictive definition is also used by CEMAC[4] and UNCTAD (2013). Another, broader definition sees mobile money as money that uses mobile telecommunication networks, is stored on electronic memories and is not linked to a bank account (ARPCE, 2021b). In addition to storage, this definition contains two important elements. The first is the use of telecommunications media, which distinguishes mobile money from fiduciary or scriptural money. The second element is that mobile money is not linked to a conventional bank account. This distinguishes mobile money from mobile banking. Mobile banking is an online service offered by banks to their customers. Thanks to this service, customers can access their account and carry out certain banking operations (balance enquiries, bank transfers, etc.). These operations require the opening of a bank account, which is not the case for mobile money.

[3] https://www.toileses.org/premiere/2005_demat_monnaie_tm_breal.htm

[4] https://www.beac.int/wp-content/uploads/2021/10/Services-de-paiement-par-la-monnaie-%C3%A9lectronique-dans-la-CEMAC-EN-2020.pdf

2. Changes in mobile telephony in Congo Brazzaville

2.1. Operators and characteristics of the mobile telephony market in Congo

A distinction is made between those involved in regulating the telecommunications sector (ARPCE, BEAC and COBAC), those who issue e-money (commercial banks), e-money distributors (cell phone operators), e-money acceptors (merchants) and e-money bearers (users).

Regulation is an important and indispensable tool for the development of electronic transactions. We have already presented ARPCE. To distinguish it from the other two players, we would only add that, while ARPCE is an internal regulator of electronic transactions in Congo-Brazzaville, the Banque des Etats de l'Afrique Centrale (BEAC) and the Commission Bancaire de l'Afrique Centrale (COBAC) are regulators at CEMAC level. CEMAC community texts specify the roles assigned to BEAC and ARPCE in the regulation of electronic money using cell phone networks. In concrete terms, this means that a distinction must be made between the telecommunications network layer, which is regulated by ARPCE, and the layer linked to the financial flows that pass through the network equipment of cell phone operators. We can therefore say that the regulation of voice services, SMS and mobile Internet are essentially the responsibility of ARPCE, unlike mobile money, which requires the creation of electronic money convertible into cash, which is the responsibility of BEAC.

Since 2011, commercial banks have been able to issue electronic money in partnership with cell phone operators[5]. This regulation has led to a so-called cooperative business model that enables banks and telecom operators to carry out partnerships while retaining their initial roles in the mobile payment value chain (Chaix L and Torre D, 2015). Operator and bank partner to help mobile money users migrate to financial services through appropriate online assistance[6]. But since 2018, mobile operators have also been able to issue and manage electronic money. Issuing money is no longer reserved for banking institutions alone[7]. This second business model, known as substitution, is provided by the operator alone. It has the advantage of being quickly integrated into users' habits, with negligible adaptation costs[8].

Electronic money acceptors are merchants who extend the reach of the cell phone. These merchants are mainly cell phone booths (MBCs), which are being set up as very small businesses, enabling everyone, especially occasional phone users, to have access at any time and in any place without owning personal equipment (Koulakoumouna E, 2005). Although the CTM phenomenon is essentially urban (Loquay A.C, 2012), observation shows that it is developing and spreading more and more, even in the most remote areas. This enables cell phone operators to reach a critical mass of subscribers, unlike traditional banks, which are only located in major cities. This almost[9] nationwide coverage has also enabled the two operators to position mobile money as a reliable, fast and highly efficient local product (Massanga P.T, Theodora M, 2020).

The distributors of electronic money in Congo-Brazzaville are MTN and AIRTEL, who share the Congolese mobile telephony market. The report of the observatory of the mobile telephony[10] market in the 2nd quarter of 2021 (ARPCE, 2021a), gives characteristics of the Congolese mobile telephony market. These characteristics include the number of subscribers, total revenue, voice traffic, SMS traffic and total mobile telephony revenue.

[5] Regulation n°1/11/CEMAC/UMAC/CM relating to the exercise of the activity of issuing electronic money. https://www.sgg.cg/txts-droit-reg/CEMAC-Reglement-2011-01-activite-emission-monnaie-electronique.pdf

[6] L Chaix et D Torre, 2015, Op.cit.

[7] In accordance with articles 3 and 5 of Regulation n°04/18/CEMAC/UMAC/COBAC relating to payment services in the Economic and Monetary Community of Central Africa of December 21, 2018. http://www.sgcobac.org/jcms/mbm_7081/en/reglement-n04-18-cemac-umac-cobac-relatif-aux-services-de-paiement-dans-la-cemac

[8] L Chaix et D Torre, 2015, Op.cit.

[9] MTN and Airtel have decided to share their infrastructures in entire territories that are not served by a cell phone or Internet network. https://www.digitalbusiness.africa/larpce-salue-la-decision-dairtel-et-de-mtn-congo-de-partager-leurs-infrastructures-dans-les-zones-non-couvertes-par-leurs-reseaux-respectifs/

[10] https://www.arpce.cg/upload/publications/Observatoire%20des%20March%C3%A9s_2%C3%A8me%20Trimestre%202021.pdf

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Table: Cell phone subscribers and penetration rates

CELL PHONE SUBSCRIBERS AND PENETRATION RATES					
	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21
Total subscribers (000)	5012	5320	5618	5807	5896
prepaid subscribers	4977	5283	5580	5769	5868
postpaid subscibers	35	37	38	38	38
penetration rate on total population	96,00%	101,20%	106,10%	108,90%	109,80%
SUBSCRIBERS PER OPERATOR AND MARKET SHARE IN VOLUME					
Between Q2-20 and Q2-21, MTN and Airtel subcribers grew by 7.4% and 33.0% respectively.					
	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21
subsribers per operator	5012	5320	5618	5807	5896
MTN	3011	3203	3292	3262	3233
AIRTEL	2001	2117	2326	2546	2662
MTN and Airtel have respectively 54.8% and 45.2% of market shares in the second quarter of 2021.					

Source: Operators

In the second quarter of 2021, the Congolese market recorded over 5.89 million subscribers[11] [12], divided between the operators MTN and Airtel. Between Q2-20 and Q2-21, the number of subscribers increased by 17.6%. Compared with Q1-21, the number of subscribers in Q2-21 rose by 1.5%. The mobile telephony market is 99.4% prepaid, compared with 0.6% postpaid. The mobile telephony market penetration rate was 109.8% in Q2 2021, compared with 96.0% in Q2 2020.

Two points of interpretation stand out in this first table.

The first is the mobile telephony penetration rate, which exceeds 100%. This shows that, unlike fixed-line telephony, the Congolese people are very keen on cell phones. There has been a huge increase on the 2009 rate. Indeed, the Ministry of Planning, Statistics and Regional Integration (MPSIR) produced a report in 2009 on the impact of mobile telephony on household living conditions in the Congo. At the time, the penetration rate was 78.6%. An increase of over 30% in twelve years. The Congolese affirm that cell phone use contributes to improved performance at work. This improvement increases with the level of education, rising from 4.9% among those with no education to 62.3% among those with secondary education, and reaching 79.1% among those with higher education. On the other hand, more than half of the 3,850 households surveyed say that the telephone contributes moderately to improving their living conditions (MPSIR, 2009) and helps mobilize in politics, for example (Theodorat M, 2016).

The second element is the method of payment. The Congolese prefer prepaid subscriptions. To access the Internet or send an SMS, the user pays before use. The same applies to sending money by cell phone. Consumers credit their Sim card by paying the company a certain amount. Consumption can then be paid for at a contactless ATM using the cell phone. This billing method reduces the use of scriptural money (Tcheng H, Huet J-M and Romdhane M, 2010), limits theft, even if the Congolese population denounces the system as a scam[13], and the profits for operators are substantial, as can be seen in the dashboard.

[11] The data used by ARPCE to estimate the Congolese population are those produced by the Centre national de la statistique et des études économiques (CNSEE), whose latest census dates back to 2007. In 2007, the CNSEE estimated the Congolese population at 3,997,490, with an average annual growth rate of 2.8%. Using this growth rate, ARPCE has estimated the evolution of the Congolese population for the year 2021 and for the second quarter of 2021. Congo's population is estimated at 5.4 million.

[12] Congolese reality shows that an individual may own two or three Sim cards from different operators. As the number of subscribers is counted in relation to the number of SIMs, it is easy to understand why the number of subscribers may be equal to or greater than the population.

[13] https://www.adiac-congo.com/content/mobile-money-la-population-denonce-un-systeme-darnaque-123303

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DASHBOARD

	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21
subscribers(000)	5012	5320	5618	5807	5896
	Q2-20	**Q3-20**	**Q4-20**	**Q1-21**	**Q2-21**
Total revenue (million FCFA	30170	35133	34373	32499	32086
outgoing revenue(voice)	25667	30305	29884	28512	28260
Incoming revenue(voice)	2083	2170	1996	1638	1392
outgoing revenue(SMS)	2416	2653	2489	2347	2432
Incoming revenue(SMS)	4	4	3	2	2
	Q2-20	**Q3-20**	**Q4-20**	**Q1-21**	**Q2-21**
Total voice traffic(million)	951	1122	1098	1142	1160
Total outgoing traffic	925	1093	1070	1117	1138
Total Incoming traffic	26	29	29	25	21
	Q2-20	**Q3-20**	**Q4-20**	**Q1-21**	**Q2-21**
Total sms traffic (Millions)	1193	1238	1283	1230	1173
total outgoing sms traffic	1235	1280	1228	1171	1287
Total incoming sms traffic	2	3	3	2	2
	Q2-20	**Q3-20**	**Q4-20**	**Q1-21**	**Q2-21**
total weighted outgoing voice (FCFA)	27,8	27,7	27,9	25,5	24,8
total weighted outgoing SMS (FCFA)	2	2,1	2	2	1,9

Source: Opérateurs and ARPCE

Total mobile telephony market revenue rose by 6.4% in Q2-21, compared with Q2-20. Indeed, from 30.2 billion CFA francs in Q2-20, total market revenue reached 32.1 billion CFA francs in Q2-21. Combined outgoing (voice) and incoming (Voice) revenues represented 92.41% of total revenues in Q2-21. Outgoing revenue (Sms) represented 7.58% of total revenue, followed by incoming revenue (Sms), whose share was almost zero..

We are seeing an increase in outgoing traffic (voice and sms). In fact, in the second quarter of 2021, total outgoing traffic (the sum of on-net[14], off-net[15] and international outgoing traffic) reached over 1.14 billion minutes. On-net traffic accounts for 98.1% of this, compared with 1.3% for off-net traffic and 0.6% for outgoing international traffic. A retrospective look at the breakdown of total outgoing traffic shows that the majority of calls made by operators' subscribers are intra-net (on-net). Between Q2-20 and Q2-21, on-net traffic volume increased by 24.3%, while off-net and outgoing international volumes fell by 14.6% and 26.4% respectively.

As far as tariffs are concerned, operators offered services based on low tariffs. Between Q2-20 and Q2-21, the weighted outgoing rate fell from 28FCFA to 25FCFA per minute. Only the international rate increased by 12.9% compared with Q2-20. All in all, lower prices boosted traffic by 23.1%.

All in all, these factors show and explain why mobile telephony is exploding in the Congo

2.2. Significance and impact of mobile money in the Congolese digital economy

This first change is followed by a second change within telecoms services. This is the growth of mobile financial services (mobile money) in relation to traditional services such as voice, SMS and mobile Internet. To measure the growing importance of mobile money, we will follow its evolution in the CEMAC zone, and then present our own survey on the impact of mobile money on informal sector agents. First, a few graphs give us an idea of the overall trend.

[14] On-net: this term designates an intra-network relationship, i.e. within the same network. Calls, sms, traffic, revenue, etc. are generated by a subscriber of operator A in connection with another subscriber of operator A.

[15] Off-net: this term refers to an inter-network relationship between two operators. Calls, sms, traffic, revenue, etc. are generated by operator A in conjunction with operator B.

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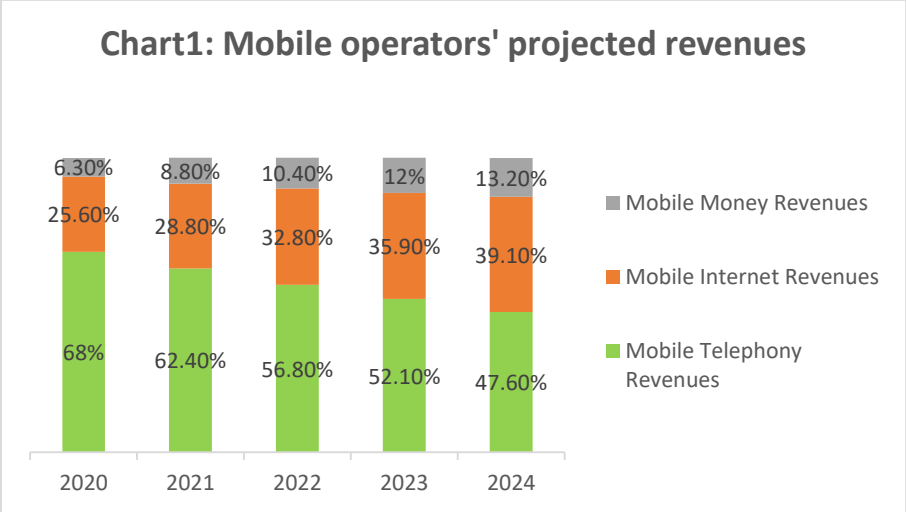
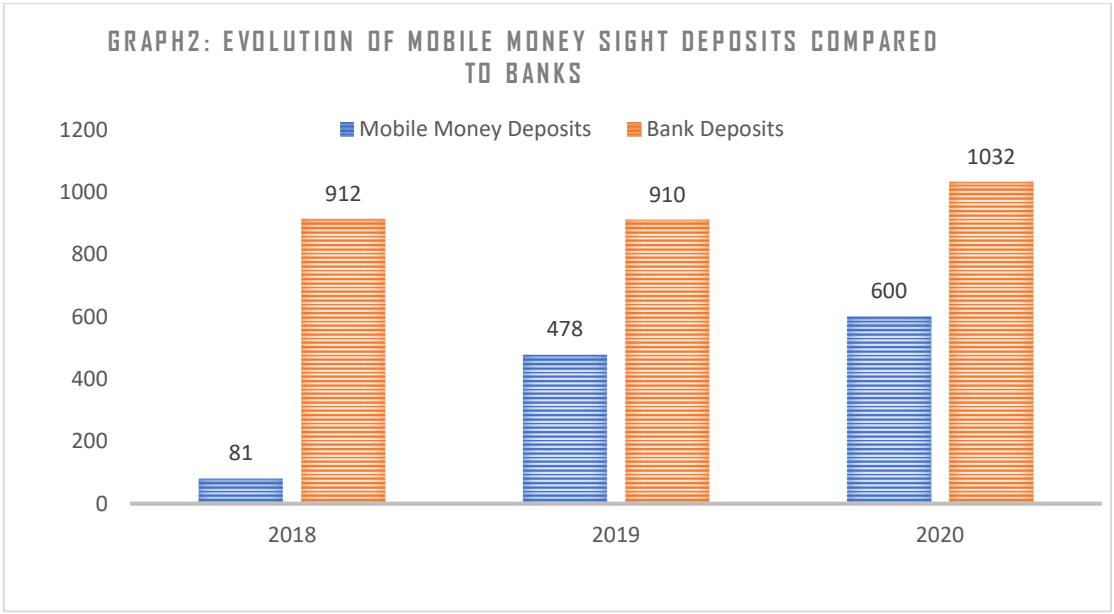


Source: ARPCE, 2021b

This graph shows current trends and projections for mobile operators' revenues (ARPCE, 2021b). It can be seen that mobile telephony revenues are declining in favor of mobile Internet and mobile money. A projection to 2024 shows that the market share of mobile telephony revenues would fall from 68% in 2020 to 47.6% in 2024, a loss of around 20.4 points. Mobile Internet revenues could fall from 25.6% to 39.1% over the same period. As for mobile money revenues, they could represent up to 13.2% of total revenues by 2024. This trend is confirmed by the following graph2.

Graph2: Evolution of mobile money sight deposits compared to banks



Source, ARPCE, 2021b

Between 2018 and 2020, sight deposits in the banking sector rose by 13.1%, from FCFA 912 billion to FCFA 1,032 billion. Over the same period, deposits on cell phone operators' networks rose by 640.7%, from FCFA 81 billion to FCFA 599 billion, or more than 58% of banking sector sight deposits.

Overall, then, in view of the above data, it can be said that mobile financial services are revolutionizing mobile telephony services. These graphs are of particular interest. Firstly, they show the ever-growing importance of mobile money to the detriment of other cell phone services, with the exception of mobile Internet. Secondly, for the time being, mobile money is developing more strongly in countries with low banking penetration rates. This means that technological innovation is revealing markets that were once considered unimportant. Thirdly, and perhaps most importantly, this second mutation will culminate in the Congolese telecoms universe. When cell phone operators take the plunge and offer these financial services directly, without going through the banks, they will become either competitors or an alternative to traditional banks. Today, these operators are playing the partnership

card. All the more so as, with their high market shares, they are likely to be in a dominant position in the banking sector in a few years' time.

Let's take a detailed look at how mobile money has evolved, first in the CEMAC zone, then in Congo.

CEMAC has been lagging behind East Africa[16] in mobile money development. In 2017, mobile money penetration was particularly high in Gabon (43% of the population aged over 15 had an account in 2017, compared with 6.7% in 2016). For the other countries, this penetration was more modest: 16% of the adult population in the DRC in 2017, 15% in Cameroon and Chad, and 6% in Congo. By way of comparison, penetration was 73% in Kenya at the same period.

This lag in mobile money development can be justified by the lag in cell phone penetration. While the telephone penetration rate was 70% on average for sub-Saharan Africa in 2017 according to the World Bank[17], it was only 25% in the Central African Republic and 43% in Chad and Congo. However, the main limitation is that mobile operators are prohibited from providing an international transfer service. Outgoing transfers remain the prerogative of banks and money transfer companies (Western Union, Money Gram, etc.). Last but not least, the 2011 regulations, which required mobile operators to build an offering in partnership with a banking institution, may have slowed the rollout of mobile money.

It was only when this same regulation allowed mobile operators to be considered as direct intermediaries without going through a bank that we saw a spectacular development of mobile money in almost all CEMAC countries, as attested by the CEMAC report of 2020[18]. The activity remains dominated by Cameroon, which, with 19.5 million accounts, holds 64.89% of the total number of payment accounts in CEMAC, followed by Congo (7.1 million) and Gabon (2.7 million). In terms of number of transactions, payment service providers in Cameroon carry out 73.13% of the community's transactions, followed by Gabon (16.69%) and Congo (9.25%). These three countries respectively accounted for 99.07% of the number and 98.84% of the value of transactions carried out in the CEMAC in 2020. Since then, the development of mobile money, encouraged by new regulations and greater interoperability, has enabled the emergence of new financial services, such as savings and credit. Indeed, in the CEMAC region, it is now possible to pay with a cell phone throughout the CEMAC zone, thanks to the GIMACPAY network, developed and supervised by the Groupement Interbancaire Monétique de l'Afrique Centrale (GIMAC).

In the Congo, this acceleration in mobile money and underlying services is borne out by our survey. The survey covers 100 merchants, randomly selected in three districts of Brazzaville: Kintélé, Moungali and Mampassi. The choice of these districts is linked to the proximity of the interviewer. The aim of this survey is to identify the needs and expectations of informal sector players in relation to the banking offer; to find out how many informal sector traders have a mobile money account; to find out how often informal sector players use mobile money; to understand the motivations driving informal sector players to use mobile money; find out whether mobile money is beneficial to their business; find out which age group and gender use mobile money the most; find out what merchants prefer (between traditional banking and mobile money); investigate possible substitutability between traditional banks and operators

Of the 100 retailers surveyed, 64 had a mobile money account, compared with 36. Among merchants subscribing to mobile money services, 18 have an AIRTEL money account, 25 have an MTN money account and 21 have both networks. 22 merchants use their mobile money account to carry out transactions (sending, receiving money), 31 to save funds and eleven (11) use it for other services. As for the impact that mobile money has on their business, 41 merchants replied that it has an impact on their business, compared with 23 merchants. The age category shows us that young people are the most interested in mobile money services, with 39 young people versus 24 seniors and 1 elderly person. In terms of gender, the number of subscribers shows that men are the most interested in mobile money, with 34 men versus 30 women. As for their preferred sector, 8 work in the civil service, 18 in the private sector and 38 in the informal sector.

The survey reveals that mobile money has become a must-have in Congo-Brazzaville. It plays such an important role in the socio-economic fabric that politicians intend to make the digital economy a major lever for diversifying the Congolese economy[19]. It also confirms MTN's dominant position in the Congolese telephony market. We also note the phenomenon of multiple network ownership. This is explained by the lack of interoperability between the two operators. Finally, the survey also shows that the main reasons for using mobile money are savings, money transactions and other services. This clearly shows that there is a huge need for financial services, a need not met by traditional banks.

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[16] https://www.tresor.economie.gouv.fr/Articles/f9adb035-2928-40a5-a462-dddfc0bb525c/files/622df093-5df8-4317-a26e-de9f0fcee08c#:~:text=Le%20nombre%20de%20transactions%20financi%C3%A8res,Cameroun%20et%2018%20%25%20au%20Gabon.

[17] https://www.aa.com.tr/fr/afrique/afrique-la-t%C3%A9l%C3%A9phonie-mobile-vecteur-de-d%C3%A9veloppement/2530801

[17] https://www.beac.int/wp-content/uploads/2021/10/Services-de-paiement-par-la-monnaie-%C3%A9lectronique-dans-la-CEMAC-EN-2020.pdf

[18] Ditto.

[19] https://www.tresor.economie.gouv.fr/Pays/CG/le-secteur-du-numerique

Changes in Mobile Telephony in Congo-Brazzaville

Mobile operators in the Brazzaville market are currently relying on the partnership system to offer financial services. Indeed, since 2013, two banks, BGFI and Ecobank, in collaboration with MTN and AIRTEL, have been providing this service to Congolese customers[20]. Recently, on February 25, 2020, a strategic partnership agreement was signed between MTN Congo and the Mutuelles Congolaises d'Epargne et de Crédit (MUCODEC). The partnership aims to enable users of both companies to carry out financial transactions, i.e., make deposits or withdrawals on MUCODEC or MTN Mobile money accounts[21]. This agreement enables economic agents

who are not part of the banking system to access banking services by withdrawing money from ATMs. This broadens the range of mobile financial services, and is a driving force behind the opening of new accounts and the increased use of mobile money by the informal sector. Mobile money is becoming an instrument of financial inclusion, even if this remains modest (Nkouka Safoulanitou L, 2020). The digitization of the Congolese economy and this preponderance of mobile money are beginning to have consequences for state revenues (ARPCE, 2021b). Indeed, since October 2019, the State has levied a 1% tax on withdrawals made from the sight deposits of mobile money users. Between January and December 2020, this tax generated FCFA 4.8 billion. An electronic stamp has also been introduced. It's a fee of 50 FCFA on each electronic transaction collected, for the time being, by a limited number of legal entities. Between July and January 2020, the electronic stamp generated just over 102 million FCFA. This fee has only been effective since July 2020. Finally, a digital hub has been set up. This is a 1% fee on financial transactions paid by banking establishments in the Congo. It has only been in force since November 2020. From November to December 2020, this fee generated nearly 136 million F CFA.

CONCLUSION

The aim of this article was to analyze changes in the Congolese mobile telephony sector. We have observed that mobile telephony in the Congo continues to grow, whether in terms of traffic, revenues or penetration rate. This growth is due to better regulation, but also to lower prices, facilitated by competition between operators. The development of mobile telephony has also seen a growing share of financial services offered by mobile money. These services are currently offered by traditional banks, in partnership with mobile operators. The transformation will reach its climax when the latter offer these same services without going through the traditional banks. This should lead to a new reconfiguration of the banking system, as the operators become formidable competitors to the same banks

APPENDIX: Impact of mobile money on the informal sector

I-subscriber breakdown per network

	MTN subcribers	AIRTEL subscribers	Subscribers with both networks	Subscribers with neither network	TOTAL
Merchant with a mobile Money account	25	18	21	____	64
Merchant with no mobile Money account	____	____	____	36	36
TOTAL	25	18	21	36	100

2- Impact of mobile money on the informal sector

Impact of mobile money on the informal sector	Transaction	Savings	Additional services	TOTAL
Transaction	22	31	11	64
Impact of mobile money on the informal sector	22	31	11	64

	YES	NO	TOTAL
Merchants	41	23	64

	Young	Senior	The elderly	TOTAL
Merchants	39	24	1	64

[20] https://www.agenceecofin.com/telecom/2508-90893-congo-brazzaville-le-mobile-money-a-deja-genere-54-3-millions-de-revenus-a-ses-operateurs

[21] https://www.agenceecofin.com/telecom/2508-90893-congo-brazzaville-le-mobile-money-a-deja-genere-54-3-millions-de-revenus-a-ses-operateurs

3- Impact of mobile money on their business

	YES	NO	TOTAL
Merchants	41	23	64

4- Breakdown by age group

	Young	Senior	The elderly	TOTAL
Merchants	39	24	1	64

5- Breakdown by gender

	Man	Woman	TOTAL
Merchants	34	30	64

6- Breakdown by usage frequency

	Daily	Weekly	Monthly	TOTAL
Merchants	27	21	16	64

7- Breakdown by sector

	Civil service	Private sector	Informal sector	TOTAL
Merchants	8	18	38	64

Source : author

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