Impact Study of the Arrival of a New Mobile Phone Operator in Haiti

Jean-Michel HUET, Isabelle VIENNOIS, Pierre LABARTHE, Anas EL BARKANI
BearingPoint Paris Office

Abstract: Do telecoms really contribute to the economic development of developing countries ? After funding a new mobile phone operator in Haiti, the Agence Française de Développement and Proparco have been willing to assess the impact of the arrival of this new operator on the Haitian economy. This case study was conducted by BearingPoint and analysed both micro and macro economical indicators. The conclusions show that the arrival of the new mobile phone operator lead to an explosion of the penetration rate of mobile phone in Haiti thanks to increased competition, with significant positive impacts on employment and GDP in the first 3 years following the arrival. The updating of the study shows that the arrival of another new mobile phone operator also triggered a second boost of the mobile phone market. In a context of a long-time damaged economy, this dynamic market appears to bring a breath of fresh air to the country both through direct and undirect effects.

Key words: telecom, development, donors, Haiti, employment, social impact, uses, investment, bank, mpaiement, emerging.

Do telecoms really contribute to the economic development of developing countries? The question is not new. Even though 10 years ago, economists were thinking that only developed countries could benefit from mature telecommunications, the phenomenal success of mobiles has changed the deal. Many studies showed that the mobile phone had a positive role on the economic growth, such as the Grameen Foundation which helps the "Village Phone" Development, concept of shared mobiles, creating a new source of income for hundreds of thousands of women in Bangladesh or in Africa. Meanwhile, other studies from the UN have raised the alert on the negative side-effects of the telecom expenses on the food budget in African countries.

The AFD and Proparco decided to fund a brand new study in 2009, conducted by BearingPoint and the FAFO Institute to bring a complete vision

on the reality of the impact of the arrival of a new mobile phone operator (Digicel) in Haiti, one of the poorest countries in the World [1]. The period of analysis between 2005 and 2011 has seen the mobile phone penetration rate growing from 5% to 55% in the country. This growth is concomitant with the arrival of two new mobile phone operators on the Haitian market: Digicel in 2005 and Natcom in 2011. This is also the period when the GDP started to grow again with a growth rate reaching 2.3% in 2006 then 3.2% in 2007, while the country had been posting an average of -1% of GDP growth per year since the 60's.

■ Impact of Digicel development on the telecom market in Haiti

As in most developing countries, generally poorly equipped in terms of fixed telephony network, telephony development in Haiti is mainly driven by mobile phone growth. This evolution is confirmed by the Haitian regulator, Conatel [2], which was expecting stability in the fixed/mobile user ratio (one fixed user for 10 mobile users). Until 1995, Teleco had an historical monopoly on the fixed telephony market and was owned at 97% by the Bank of Republic of Haiti (central Haitian bank). In 2010, Viettel (a major Vietnamese operator) acquired 60% of Teleco and created Natcom, the new Haitian operator with a license in both fixed and mobile telephony. The state kept 40% of the shares of the new operator.

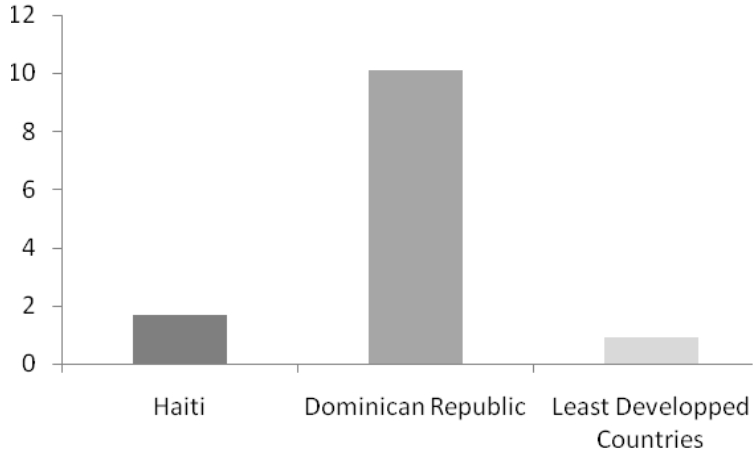
At the beginning of 2005, two mobile phone operators intervened on the Haitian market:

- COMCEL (a Voila brand) was then owned by the Western Wireless International group (WWI). COMCEL got, in 1998, the first mobile phone license and deployed an AMPS/TDMA network with 200,000 subscribers (more than 70% of market shares).
- Haitel, a subsidiary of MCI WorldCom counted 80,000 subscribers to a TDMA service.

[1] This article is a 2012 updated synthesis of the international study directed by BearingPoint, AFD/Proparco and Fafo. A first text was published in English in Tcheng, Henri, Huet, Jean-Michel, Viennois, Isabelle, Labarthe, Pierre, *Impact study of the arrival of a new mobile phone operator in Haiti*, May 2010, 62 pages.

[2] Conatel, Outcome 2008 and perspectives – January 2009.

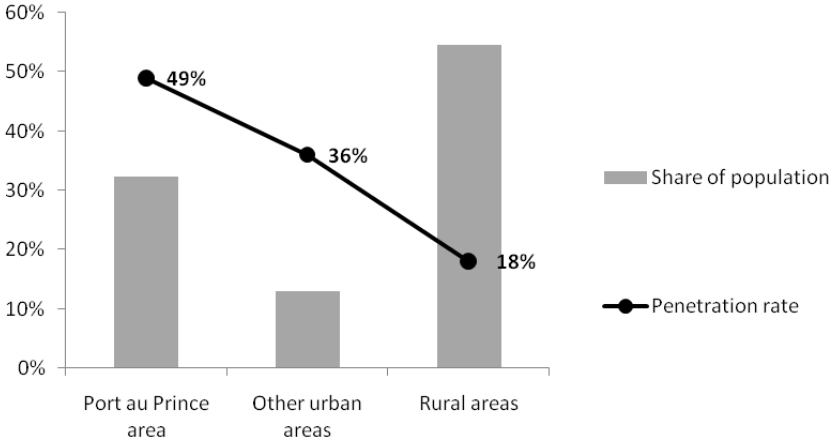
Figure 1 - Landline penetration rate in Haiti in 2005 (% of the population)



In June 2005, Digicel group, a mobile phone operator in Caribbean, got the first GSM license in Haiti and created Digicel Haiti in May 2006. In December 2006, and only after 8 months of activity on the island, Digicel group reached its first million of clients, 2 million by the end of 2008, and 3.5 million by the end of 2011 [3]. With the acquisition of its competitor Comcel in March 2012, Digicel is now the unquestionable dominant of the Haitian mobile market with more than 4.5 million subscribers and 85% of the market share. Moreover, this position will probably be strengthened with the decreasing competition from Haitel, weakened by its unsustainable debts and nationalized by the State in April 2012. The only real competitor is now Natcom, which proved to be as aggressive as Digicel to gain users and which relies on its optical fiber investments to differentiate from Digicel. The January 2010 earthquake that devastated Haiti affected unevenly fixed and mobile networks. Indeed, mobile infrastructures were relatively spared in comparison to fixed-line infrastructures. The gap between fixed and mobile rose in 2010: the number of fixed-lines decreased inevitably to 75 000 while the number of mobile subscribers continued its growth from 3.3 million in 2009 to 3.5 million by the end of 2010 (after a fall of 360 000 subscribers between January and March). It took less than 6 months to recover a number of mobile phone users equivalent to the number before the earthquake.

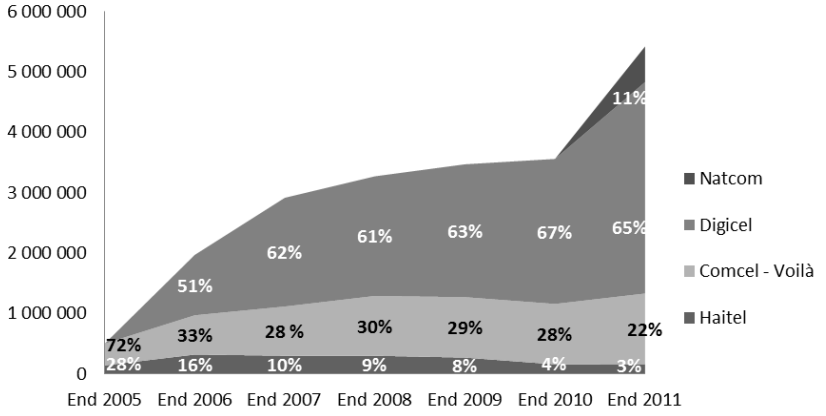
[3] The communicated figures about the numbers of users are supposed to be net figures, which means without inactive users. However, it is impossible to verify if these figures are precise. Moreover, no indications are available to know if these figures exclude "multi-SIM" users, the utilization of several phone numbers by the same and unique person.

Figure 2 - Mobile phone penetration rate according to geographical situations



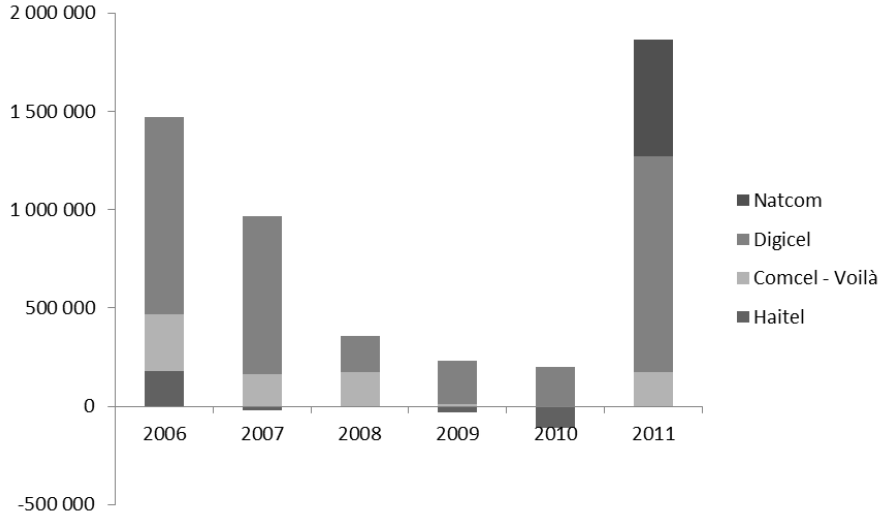
Source: Fafo, BearingPoint, 2009

Figure 3 - Number of mobile phone users and market shares



The entry of Digicel on the market coincides with the first explosion of mobile phone penetration in Haiti. The number of new clients per operator (figure 3) shows that Digicel carried the market explosion in 2006 and 2007 as nearly 2 out of 3 new clients in 2006 and 4 out of 5 in 2007 subscribed to Digicel's offer. New client decrease coincides with upper limit of the penetration rate. The market has known a second boom in 2011 with the entry of Viettel (Natcom) in June. The number of subscribers increased by more than 50% in only one year, from nearly 3.5 million by the end of 2010 to more than 5.4 million by the end of 2011.

Figure 4 - Breakdown of new users per operator



Digicel impacts on the telephony market growth during the 2006-2008 period find their sources in three series of factors: price competition, innovations, coverage level

Digicel started a price battle by attacking:

- Terminal prices (subventions granted to Digicel permit to reduce terminal prices of 50%).
- Communication prices (the average price per minute decreased from 5 Gourde to 4.7 for weekly prices (a 6% drop) and to 3.25 for week-end prices (a 35% drop). While these prices did not significantly change for Digicel since 2009, they are being strongly challenged by Natcom offers with a price of 3.5 Gourde on weekdays and 2.8 Gourde during weekends and evenings. Natcom aggressive offers explain how Natcom succeeded in gaining 200 000 users in its first month of operations, at the same pace as Digicel when it conquered the market in 2006.
- Pricing model (billing by the second and end of billing by the minute or billing of only the outgoing calls).

In 2009, on device and communication costs, competitors (Comcel-Voilà and Haitel) were proposing the same prices and even sometimes lower than those of Digicel. This is the sign showing that Digicel stimulated price competition. For example, in May 2006, the less expensive mobile phone proposed by Digicel cost 16 USD and the one proposed by Comcel-Voilà,

the other GSM operator, 8 USD. The minute price for diurnal communication was strictly the same for both operators. Digicel maintained a competitive pressure on the market by introducing offer innovations. Beside the billing aspect, three innovation fields can be quoted in the Digicel case.

SMS offer: developing the database offer for user-friendly services

SMS services can represent up to 5% of the voice turnover of a mobile operator (in favorable market conditions, which means conditions allowing inter-operability of SMS offers: possibility to exchange SMS from one operator to another). Moreover, SMS is a very profitable service for operators as the marginal cost is very low. If SMS was already proposed by Comcel-Voilà, Digicel contributes to its democratization (through advantageous billing plans, SMS promotion) in a population with a very low alphabetization rate.

Free voicemail: contributing to the development of voice use

Free access to voicemail is not a universal model. It exists in France but not in the UK or in Switzerland. A 2008 BearingPoint study on several economic models of voicemail across around 20 countries shows that a 15% penetration of voicemail engenders a 1% rise of voice turnover. Getting used to leaving messages and listening to them is developing the mobile use and encourages to recall the correspondent. Free voicemail is therefore a key service, which contributes to developing voice telephony use. Incomes generated in a led way by free voicemail are considered in the telecom sector as the second incomes sources (except direct voice), just after SMS service.

Electronic reload offer of pre-paid phone: reach the poorest population

This offer matches perfectly well with the problematic of countries with a low banking services penetration rate and a high pre-paid mobile phone penetration rate. There is a consensus to say that these offers contribute to a rise of mobile phone use thanks to the easiness of buying them (both for the customer and the storekeeper by the way). Electronic reload of pre-paid phones is not directly generating direct additional revenues but represents for the operator savings on scratch cards (price of the cards, fraud risks). These savings give the opportunity to propose very micro reloads with really low prices, which is not possible with traditional scratch cards. Then, operators can reach a poorer population, only ready to pay for minimum reloads.

This offer is the first step to the development of added value offers like m-payment (the technical model is different but use is similar for the consumer) and innovations can be expected in this field. Electronic pre-paid reload is completed by the possibility, offered by Digicel, to reload an account remotely, especially via Internet. Digicel is directly targeting members of the Diaspora abroad by encouraging them to pay mobile phone credits to their family or friends in Haiti.

Regarding coverage Digicel has quickly set up a network covering 95% of the population, with aerials powered by diesel generators, thus freeing from the electrical network weaknesses.

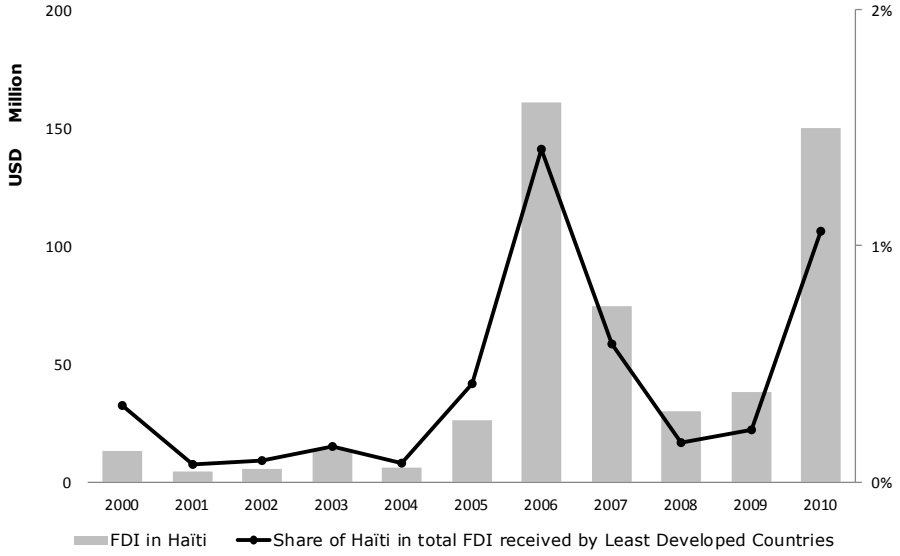
Market evolution is linked to the Digicel strategy to start an important price competition, current strategy for a new market operator. The side effect of the Digicel strategy is the value destruction engendered by the price competition. This side effect is observable in the fall of the ARPU, whereas it is this competition that allowed the mobile phone penetration rise, particularly in developing countries, as new users are generally recruited in the poorest populations.

The arrival of Viettel is now echoing the arrival of Digicel with again increased investments and competition. It will be interesting to observe the evolution of the mobile phone market now that the two main competitors seem decided to get into a fierce competition.

■ Digicel development impact on economic growth and employment in Haiti

Digicel invested USD 260 million in Haiti between 2005 and 2009. This is the biggest investment ever made by a foreign firm in Haiti. The launch of the brand in May 2006 is estimated to USD 130 million. The USD 260 million invested by Digicel represent 0.89% of the total FDI received by all LDC in 2005, 2006 and 2007. FDI impact on the economic development in developing countries was economically studied several times with divergent results according to observed cases. The final consensus described by the CNUCED is estimated that FDI have only a positive impact on the country development if the foreign company makes the choice to transfer its competencies to local employees instead of limiting the cooperation to a sub-contracting activity. CNUCED insists particularly on the necessity to encourage transnational firms to invest in country infrastructures.

Figure 5 - Breakdown of Foreign Direct Investment in Haïti

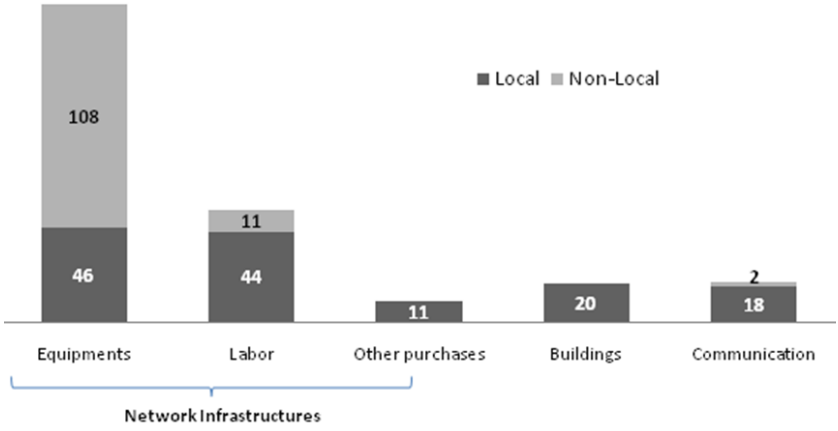


Given available data, it is hard to say if the 2010 peak of FDI is due to the USD 100 millions invested by Viettel in 2010 and 2011 or to the reconstruction of Haiti after the earthquake. But both Digicel and Viettel investments are highly significant for the Haitian economy. By investing in the mobile aerials network and less significantly in estate (for example: the headquarter construction in Port-au-Prince cost EUR 15 million), Digicel directly contributed to infrastructures construction and therefore to the development of the country. 53% of Digicel capitals were invested in the local economy (USD 139 million).

The USD 260 million invested by Digicel were divided as follow:
- 85% in the network infrastructure (equipment and installation),
- 7.5% in estate,
- 7.5% in marketing and communication.

53% is the capital part directly injected in Haitian economy (USD 139 million):
- USD 46 million in the aerial network construction (consulting local companies to the installation),
- USD 19.5 million in estate,
- USD 17 million in advertising in local media and USD 1 million for the production of communicational supports for the launch.

Figure 6 - Details of Digicel Investments in Haïti (USD million) between 2005 and 2007 considering the local or non-local status of the beneficiaries



The contribution of Natcom, a new mobile phone operator also deserves to be highlighted with 100 million USD [4] invested in the optical fiber network. It is currently the only operator offering ADSL services to the Haitian population. Natcom is the first investor in Haiti since the earthquake.

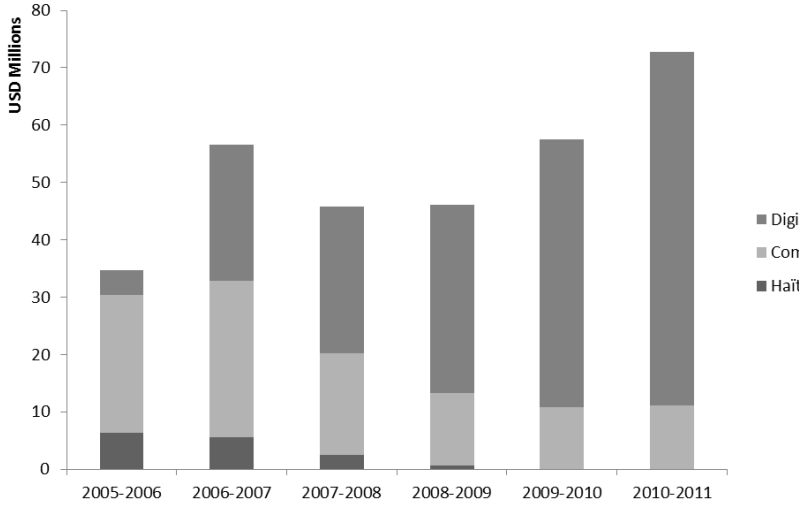
In 2007, less than 2 years after its launch, Digicel Haiti became the first tax contributor in Haiti with nearly USD 24 million. Nowadays, it still keeps this position, as in 2011 the taxes paid by Digicel were more than USD 60 million. The three mobile phone operators were then representing between 25% and 30% of tax revenues in the country.

The global contribution of the sector is thus rising strongly on the period although the Digicel contribution is partially compensated by the decreasing part of its competitors.

With direct and indirect employment, Digicel activity created around 63,000 jobs (including 60,000 street sellers) between 2005 and 2008. Impacts on employment are evaluating through the creation of direct (Digicel employees) and indirect jobs (jobs link to the Digicel activity). Digicel activity created 63,358 jobs globally, which represents nearly 3.5% of the active population in the service sector. Given that there is no data on employment rate in Haiti, it was not possible to evaluate the impact of these job creations on the global employment level in Haiti.

[4] Source : Natcom, 2012.

Figure 7 - Tax paid by Haitian mobile phone operators (USD)



Compared to the average in the country, the conditions offered by Digicel to its direct employees (1.5% of the total) are rather favorable. Digicel is ranked among firms offering advanced social advantages:

- 20 paid time-off days per year (in 2003, only 23% of the Haitian active population had annual leave);
- Digicel takes charge of maternity leave (only 19.6% in 2003);
- Digicel offers a health care coverage (only 9% in 2003).

In terms of men/women repartition, men are over represented compared to national average (64% at Digicel versus 43.5% in the whole Haitian population). Digicel contribution in terms of employment must be compared to the important part of part-time jobs and to an unequal repartition of margin along the value chain. Actually, it can be possible that a lot of people counted as Digicel employees are holding more than one job or are working for Digicel competitors. Inside Digicel, nearly 830 jobs of the network branch direction and call centers are part-time jobs, which correspond to approx. 415 full-time jobs. In the distribution network branch, the part of seller activity, and particularly street sellers, directly linked to Digicel activity is not known but it is likely that Digicel product sale is not their unique source of revenues. Digicel impact on this sector can be analyzed through the added value created beside its distribution network and suppliers.

Digicel activity creates a USD 32 million inside its distribution network. Turnover of Digicel was around USD 250 million for the fiscal year 2007/2008. By knowing the cost structure of mobile phone operators in

Africa, we can value the Digicel added value at 60% of its turnover, i.e. USD 150 million. The added value reorganization at each level of distribution allows us to estimate at nearly USD 32 million the added value realized by the whole distribution network of Digicel, i.e. nearly 7% of the commerce sector growth. The major part of the added value created by Digicel in the distribution is due to street sellers (USD 17 million, i.e. 54% of added value). Compared to economic models observed in other LDCs, the economic model of Digicel distribution is characterized by less added value for wholesalers and distributors. Street seller revenue (here assimilated to added value) linked to the sale of Digicel products is estimated at USD 28 per month.

Table 1 - Jobs induced by Digicel in Haiti

		2006	*2007*	*2008*
Direct jobs	Managing and administrative team	1	4	5
	*Network direction**	*106*	*127*	*136*
	Vendors employed by Digicel	48	64	64
	Marketing and communication	12	15	16
	*Call-center operator for Haïti**	*332*	*529*	*617*
	*Call-center operator for foreign markets**	*22*	*83*	*75*
	Others :	76	87	85
	Total direct jobs	**597**	**909**	**998**
Undirect jobs	Wholesaler (Telecom Solutions)	20	18	15
	Semi-wholesalers (ALO Co., VP Ent., …)	60	60	50
	Shops	700	750	600
	*Street vendors**	*40 000*	*50000*	*60 000*
	Contruction workers	600	300	800
	Antenna guardians	450	700	750
	Network maintenance	100	100	100
	Support workers (cleaning staff...)	20	20	20
	Auditors/Consultants	25	25	25
	Total indirect jobs	**41975**	**51973**	**62360**
	Total of jobs linked to Digicel activity	**42572**	**52882**	**63358**

*part time jobs

Digicel activity engenders an added value of USD 50 million including USD 35 million for local producers. Thanks to benchmarks on telecom operator cost structure in Africa and part of added value by supplier type, we can estimate the added value created by Digicel expenditures (see table 2).

Figure 8 - Breakdown of Digicel led added value in retailing

Table 2 - Estimated Digicel led added value for suppliers

Types of external costs	*Estimated share of costs on Digicel turnover*	*Estimated turnover for suppliers*	*Standard % of added value per supplier*	*Added value*
Interconnexions	12%	30 000 000	53%	15 900 000
Commercial expenses (including handsets subsidies)	10%	25 000 000	27%	6 750 000
Network equipment	5%	12 500 000	71%	8 875 000
Support services (facilities management…)	12%	30 000 000	62%	18 600 000
Total	39%	97 500 000	n.a.	50 125 000

The global added value created for the suppliers in 2006 and 2007 is estimated at USD 50 million. Network equipment suppliers and terminals suppliers are considered as foreign suppliers whose added value does not enter the Haitian GDP growth. The Haitian part of the added value could therefore be assimilated at least to the part of facility management suppliers and to the one of operators perceiving interconnection fees, i.e. a local added value around USD 35 million for 2006 and 2007.

■ Digicel development impact on economic growth and employment in Haiti

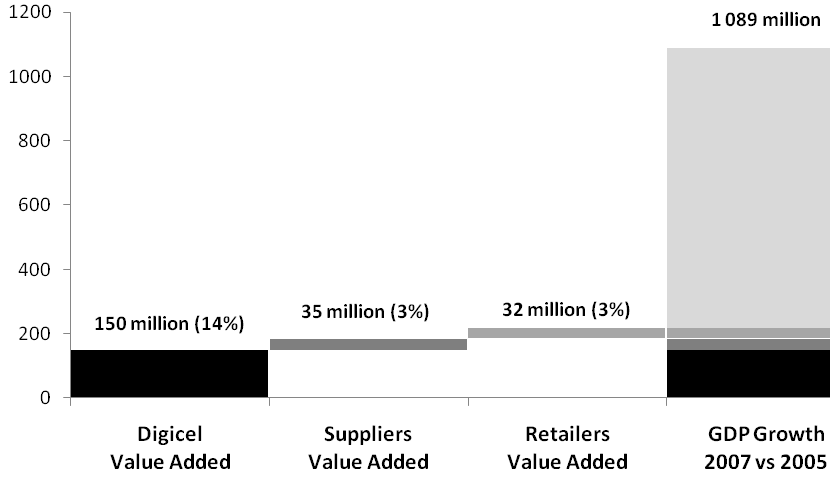
Two methods are possible to have an estimation of direct impact of the added value of Digicel, and of its suppliers and distributors on the 2007 GDP versus 2005 GDP.

Bottom-up approach

Since its entry on the Haitian market, Digicel has contributed to 20% Haitian GDP growth. Impact on GDP growth is mostly related to the Digicel value added which represents 14% of the GDP growth in 2006 and 2007.

Digicel activity with its suppliers and its distribution network had a 6% impact on the GDP growth, equally shared between supplier value added and distributor value added (wholesaler, retailer and street sellers). Digicel activity would therefore have directly and indirectly created 20% of the Haitian growth, i.e. 1.12 point of the GDP in 2006 and 2007 for a 5.6 global growth compared to 2005.

Figure 9 - Contribution of the Digicel led added values to the GDP (USD million)

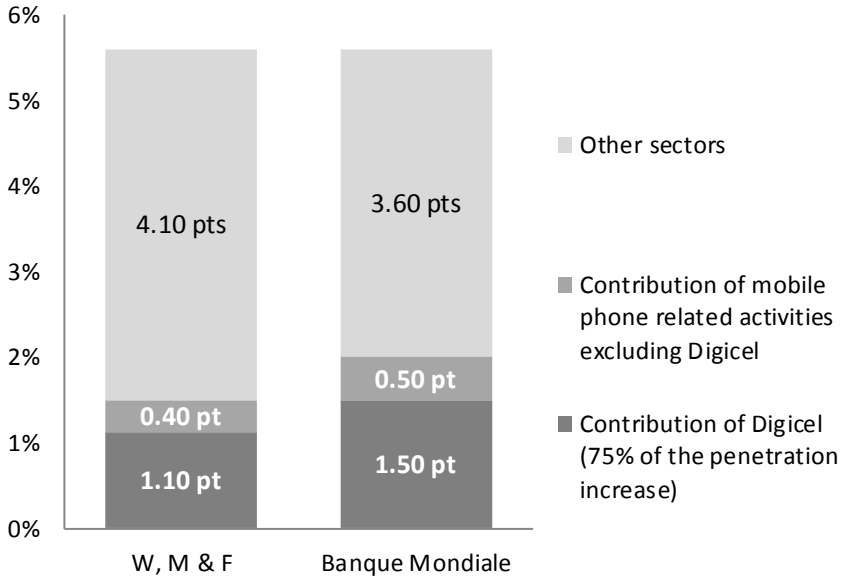


Top-down approach

Using the conclusions of both reference studies, Digicel would have contributed in theory 20% to 27% of the Haitian GDP growth between 2005 and 2007. Mobile penetration won 15 points in 2006 and 10 points in 2007. Two studies estimate correlation between mobile phone penetration and GDP growth: WAVERMAN, MESCHI & FUSS (2005) concluded that a 10 point rise of the mobile penetration in a developing country contributes to a long term rise of 0.6 point of the GDP. The World Bank [5] established that a 10 point increase of the mobile phone penetration in a developing country brings an extra-growth of 0.81pt of GDP per year on a long term basis.

[5] Information and Communications for Development, 2009, Extending Reach and Increasing Impact.

Figure 10 - Theoretical findings applied to the GDP growth of Haiti



Source: WAVERMAN, MESCHI & FUSS (2005), World Bank, BearingPoint analysis

The GDP grew by 2.3% in 2006 and 3.2% in 2007, which corresponds to a growth of 5.6% between 2005 and 2007. The application of the conclusions of the Waverman, Meschi & Fuss study allow to deduce that an increase of mobile phone penetration contributes to 0.9 growth point in 2006 (40% of the growth in 2006) and 0.6 point in 2007 (20% of the growth in 2007). The application of the World Bank's conclusions engenders an estimated impact at 1.2 GDP point in 2006 and 0.8 in 2007. Globally, on the cumulated period 2006-2007, the contribution of the mobile phone penetration to the GDP growth would represent between 1.5 and 2 growth points, i.e. between a quarter and a third of the Haitian growth.

Given that Digicel got around 75% of new subscribers [6], Digicel would have contributed 1.1 GDP growth point between 2005 and 2007 according to the conclusions of the Waverman, Meschi & Fuss and up to 1.5 point according to the World Bank. These represent between 20% and 27% of the 5.6 growth point on the given period. Conclusion applications of these studies allow to determinate an order of magnitude very close to the empirical result of the analysis: 20% according to the added value analysis.

[6] Digicel new subscribers for 2006 and 2007: around 1.8 million / New mobile phone subscribers in Haiti for 2006 and 2007: 2.4 million.

However, this approach does not give a precise measure of the impact of the mobile phone on the Haitian growth due to the following reasons:

- The Waverman, Meschi & Fuss study gives an annual impact on a long term, but in our case, study conclusions are applied on a short term period of 2 years (2007 vs. 2005) corresponding to the entry of Digicel in 2006 and to the bull market in 2006 and 2007.
- Conclusions of Waverman, Meschi & Fuss are precising that the correlation is at its maximum when the penetration rate is high, near to the universal service. The application of their conclusions to the Haitian case (penetration rate around 30%) can only determine a high limit to the theoretical impact of the mobile phone expansion of the Haitian growth.
- The number of new subscribers in both estimations is an estimation itself.

Some studies are starting to show that the positive impact of the mobile phone on households' revenues is limited (for example CHOWDHURY, 2006; DONNER, 2004, 2005 in Rwanda; SOUTER *et al*., 2005) in South Africa and India). The Haitian case study confirms these findings. Even if mobile phone usage can reduce the vulnerability in case of emergency (which is frequent in Haiti due to climate instability) and facilitate money transfers from abroad, its direct impact on the rise of household revenues and the reduction of poverty cannot be proven:

- Few Haitians make money off their phone by lending it to others (such as for the Grameen phones in Bangladesh).
- Even if the entry of Digicel allowed the extension of mobile phone usage, its access is still linked to households' revenues (lack of revenues is the first reason why households do not own a mobile phone).

For some categories, expansion of mobile phone could even have negative impacts. More than 50% of the poorest households owning a mobile phone have to reduce other expenditures to use their phone. Even if this study could not quantify these reductions, it generally shows that they usually deal with goods of prime necessity (food and clothes).

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