

# Mobile Telecommunications in Mozambique: The Interconnection Gaffe

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*Abstract:* - The purpose of this study is to investigate the problems within the mobile phone industry in the Mozambican telecommunications market. A literature review was done to explore the major underlying symptoms of the problems. The main finding of this research project was that Mozambique mobile communications system is using a Calling Party Pays (CPP) system. This CCP system has been harming the fixed-line operator's profit margin severely because it is more expensive to make calls to mobile networks. As a result, the number of calls from fixed-line phones to mobile phones is higher than the number of calls from mobile phones to fixed-line phones. Several major recommendations follow. First, standardize the connection fee across all networks using a system where costs would be shared by both operators involved in a call. Second, allow Telecomunicações De Moçambique (TDM) to operate as a third mobile operator. Third, initiate new legislation that would allow closer monitoring of the mobile operator's data by the regulating telecommunications authority.

*Key-Words:* - Mobile Telecommunications, Interconnection, GSM, Mozambique

## 1. Introduction

There has been substantial growth of the mobile phone market in Africa over the past decade. This remarkable growth has been driven innovative developments in wireless technologies and by fierce competition among mobile phone carriers. This competition within the mobile phone market seems to have a minimum of regulations as opposed to the fixed-line telephone market which is comprised of just one single operator.

GSM technology has revolutionized the world like no other technology in history. The rate of growth of the telecommunications market in Africa is exponential and confirms the pattern set out by Kim and Yoon [1], that

*"... mobile telephony is poised to surpass fixed telephony as the service most available to potential callers around the globe... (p.2)."*

While the majority of the countries in the Southern Africa region still have only one fixed-line operator. In most of the region, when it comes to the wireless side, there is

competition between two or even three different mobile phone operators.

Mozambique's experience with GSM technology began in 1997 with "Mcel", a joint venture between Telecomunicações De Moçambique (74%), hereafter called "TDM", and Detecon (26%)., a subsidiary of Deutsche Telekom. While enjoying the protection of its sister company and fellow fixed operator TDM, Mcel saw a dramatic change in 2003 when it separated from the fixed operator division to become two separate entities. This opened up the way for competition within the telecommunications market in Mozambique.

Additionally, a second mobile phone operator, "Vodacom, Mozambique", was granted a GSM license in 2003, thus, ending Mcel monopolistic position as "the only service provider" in Mozambique. This opening up of the Mozambique mobile phone market subsequently triggered an environment of cut-throat competition.

It should be noted that being a subsidiary of a fixed-line network put Mcel in a stronger advantageous position

because it has access to better resources and it is much easier access these resources [2].

Paul Budde [3] noted that one of the main problems plaguing TDM ahead of privatization is the interconnection regime through which the company claims it is forced to subsidize not only its own mobile phone subsidiary Mcel but also the South African-owned competitor Vodacom.

This paper focuses on the problems being arisen by the interconnection structure in Mozambican telecommunications and offers suggestions for solving them.

## 2. Literature Review

Owing to various macroeconomic factors, Mozambique's mobile phone telecommunications business took started at the end of the 1990's, and it took almost 7 years for a second operator to be allowed to enter the market. During this period Mcel mobile phone market growth had completely stagnated. It was only offering basic voice, fax/data and SMS services.

The privatization and the entry of a new competitor resulted in the need for Mcel to change its business operating practices. Mcel was forced to revamp its system completely in order to compete with the new entrant.

These changes included upgrading its hardware to make sure that it had the newest technology available. The rules of competition in Mozambique stated that Mcel would have to be spun off from TDM so that Mcel would become a separate and independent entity, though Mcel is owned by TDM who in turn was owned by the Mozambican government.

Mcel had been enjoying the benefits of being the sole provider of mobile phone services. With Mcel being directly linked to the Mozambican monopolistic fixed-line operator TDM, Mcel was able to gain a very large slice of the mobile phone market share, irrespective of the quality of service that it provided. Alternatively, Vodacom Mozambique, sister company of the South African telecommunications giant, Vodacom, S.A., enjoyed the advantages of being highly recognized brand [2].

This study shows that it is possible to be very successful in the mobile phone telecommunications market, and to even outperform the competitor and become the market leader in the mobile phone telecommunications market,

as a late-comer. Vodacom operations span from South Africa to the Democratic Republic of Congo and from Tanzania to Lesotho. Their success in the African markets is a clear example that it is beneficial to create synergies in this market.

The previous structure of the Mozambique telecommunications mobile phone market had Mcel under a type of governmental protection; it was difficult for Vodacom Mozambique to outperform Mcel in the mobile phone market. However, it was still possible for Vodacom Mozambique to capture a large share of customers from Mcel. The entrance of Vodacom Mozambique into the Mozambican telecommunication mobile phone market, with its aggressively low connection fee pricing both on domestic and international calls, forced, both, Mcel mobile phone and TDM fixed-line operators to lower their prices.

By offering a number of other attractive and innovative service packages, Vodacom Mozambique has managed to increase its subscriber base rapidly [3].

The main tools used to compete in Mozambique telecommunications market has been low competitive pricing and discounts and aggressive marketing strategies. For example, both companies have engaged in negative advertising in which they publicly demonized each other. This marketing scheme focuses and spends heavily on the negative campaigning rather than on service quality to the customer.

The consulting firm KPMG produces a yearly listing of Mozambican companies in terms of revenue. It ranked Mcel as the 19th biggest company in 2002, 6th in 2003, and, 3<sup>rd</sup> in 2004 [4]. Although not independently confirmed, Mcel claims that it has the biggest market share of around 1.5 million subscribers. Mcel reported that it reached this figure in the first days of January 2007 Mcel [5]. However, Vodacom Mozambique claims that it is closing the gap quickly and boasts that it has a 650,000 customer base and rising. These figures could not be independently confirmed. With the exception of outsider [3], neither one of these mobile phone operators has not been willing to open up their databases to outside researchers. As a result, no empirical studies have been conducted or published.

The technology behind the two mobile phone operators is GSM 900/1800. Recently, Mcel has successfully applied for a 3G UMTS license. Their 3G network system is expected to be up and operating by July 2007.

The liberalization of the telecommunications mobile phone market in Mozambique has resulted in some

challenges to the local operators. For example, fixed-line operator TDM, has experienced a massive dent on its financial situation, caused by the interconnection subsidies, but also becomes a competitor on the Mozambican telecommunications’ market.

The table below depicts the exact numbers as of September 2005:

Table 1. Mobile subscriber numbers by operator as of September 2005

Operator	System	Launch	Subscribers	Annual growth
mCel	GSM 900/1800	09/1997	920,000	53.5%
Vodacom	GSM 900/1800	12/2003	336,000	104.9
Total			1,256,000	64.5%

Source: Paul Budde Communication Pty Ltd (2006). “Mozambique - Telecoms Market Overview & Statistics”

The above figures indeed pose a very big threat to the incumbent fixed operator who already invested on the major telecommunications infrastructures in the country. The trend is that there seem to be more customers entering the mobile marketing, the leading mobile operator boast that it activates 2,000 effective customers per day Mcel[5],

### 3. Interconnection Problems

Telecommunications operators, even competing ones, interconnect with one another, either voluntarily or by mandate, so as to provide end-to-end connectivity across networks [6]. Problems of interconnections have been widely reported, both in business and academe. Previous studies [7] reported problems encountered in Korea and proposed two approaches in order to address these problems.

Another case study [9] discussed major problems that were being experienced in United Kingdom. These problems ranged from different interconnection fees on various mobile operators and excessively high fees. In

many countries there is widespread concern at the level of mobile termination charges [9].

The so-called Calling Party Pays (CPP) principle is popular in the UK, Australia and New Zealand, is the method that applies in Mozambican telecommunications market. This principle states that each network operator has a ‘bottleneck monopoly’ on the termination of calls made to subscribers on its own network. This means the operator can name its own price and the receiving mobile phone network operator—and in turn the calling party—has to pay to make the call [9].

The Receiving Party Pays (RPP) principle is the alternative method to CPP system. This principle, which applies in North America and several Asian countries, avoids the bottleneck monopoly problem. After allowing for various economic and technical revenue (price) averages, the cost per call was significantly lower with the RPP method. The average minutes of usage per subscriber are significantly higher and the mobile penetration rate is not significantly different [9]. Park and Lee [7] also proposed this alternative to reduce the interconnection gaps and problems in the Korean market.

In Mozambique, the two competing mobile phone operators connect via the TDM fixed-line network. This is where all the problems start.

With every call placed to a mobile phone from a fixed-line phone, TDM fixed-line operator has to pay the mobile operator a connection fee of 16.5 US cents. However, calls placed from a mobile phone to TDM’s fixed-line phones costs the mobile phone operators only TDM 6.5 US cents for connection fees [3].

The majority of calls made in Mozambique are from fixed-line to mobile phone. This has created a huge financial burden on TDM. It is estimated that TDM pays the mobile-phone networks about US\$1.2 million a month [3].

The number of fixed line phones in Mozambique is approximately 100,000. The fixed-line teledensity in Mozambique is one of the lowest ratios of fixed-line phones to total population in the world. Teledensity stands for the number of existing telephone lines per 100 inhabitants.

This has created a dilemma where TDM fixed-line operator not only pays more money to the mobile phone operators for interconnection fees as shown above, but it will be difficult, in not impossible to correct this imbalance because the ration of mobile phones to fixed-lines going to continue to grow. Thus, the mobile

phone operators will continue to pay substantially lower interconnection fees to TDM fixed-line operator.

Fu [6] agrees that the use of the CPP billing method will further deepens the rate differential because the extra cost is borne entirely by the caller. In Mozambique, the caller bears the cost of placing the call. Connection fees for calls made within the same network are substantially lower. If calls are re-directed to the fixed operator, it becomes prohibitively expensive because the interconnection fee is high.

### Double Marginalization

Park and Lee [7] used an economic model to show what is called a double marginalization system in Korea ...

*“a special phenomenon occurring when there are successive monopolies at different stages of the value chain of production p.608”.*

Mozambican telecommunications TDM owns and operates the monopoly on the fixed-line infrastructure. The mobile phone operators switch calls through TDM fixed-line infrastructure. In a typical competitive free market communications industry, the prices would have been negotiated by each operator. However TDM fixed-line communications is government controlled and thus, the prices are fixed and non-negotiable.

Before entering the Mozambican mobile phone market, one of the conditions that mobile operator Vodacom, South Africa demanded substantially lower interconnection fees. These demands were met and both, Vodacom and Mcel Mobile Operators benefited from the price cuts, but TDM fixed-line telecommunications higher price connection fees were unaffected. Thus, the fixed-line operator remains less competitive because calls originating from a fixed line phone are more expensive. The incentive to make calls from the cheaper priced mobile phone systems remains high, but in fact, there are more calls originating from fixed to the mobile phone.

## 4. Solutions to the Interconnection Problems

Lapuerta and Tye [10] stated that interconnection charges are best set by the legal or regulatory authority based on the costs of providing network access, while Park and Lee [7] proposed two different strategies to counter-attack the double marginalization in their study related to the Korean telecommunications markets:

- 1- Effective competition in setting the termination charge

- 2- Changing the ‘Caller Pays Principle’ into a ‘Receiver Pays Principle’.

The second view is also defended by Park and Lee[7], who uses a large comparison study between the United Kingdom, the US, New Zealand and Australia. These four markets use different principles, and they concluded that the RPP is much better than the CPP.

Doyle and Smith [12] showed that RPP would remove the incentive to increase interconnection charges, thereby harnessing competition rather than regulating to achieve cost-related charges. Although [7] found empirical facts showed that in a RPP environment the costs are lower and even can be reduced to zero.

It is believed that if operators engage in the RPP principle systematically, it can have a direct negative effect on customers as these might switch off their mobile phones in order to avoid the costs of receiving a call. It is also reported that several countries have switched from RPP to CPP [13], as CPP increase traffic [14].

## 5. Conclusion

The exponential growth of mobile telecommunications in Mozambique is noted. The market structure and country policies determined a degree of charges that do not benefit the actual fixed line operator. To the contrary, the operator is virtually subsidizing the mobile operators and, thus making the mobile phone operators operations extremely profitable. The policies fall under “Calling Party Pays” (CPP) method, and are ambiguous because the number of calls from fixed-line phones to mobile phones is high in volume, but in contrast, the interconnection fees from fixed-line phones to mobile phones remains high.

Although several models have been proposed in order to tackle the problems of interconnection, it is recognized that in developing countries, data is difficult to trace and, sometimes is even not available at all, therefore simple models have been proposed [11]. The proposed solution to Mozambican market interconnection problem should be:

- 1- Standardize the interconnection fee across all networks, be it fixed-line to mobile phone or mobile phone to fixed-line or mobile phone to mobile phone.

2- Use a systematic costing in which the costs would be born by both operators, i.e., from a fixed-line to mobile phone or mobile phone to fixed-line or even mobile phone to mobile phone. This interconnection fee could be split 50/50 for each party, thus eliminating both RPP and CPP methods.

3- Permit TDM fixed-line communications to operate as a third mobile operator, allowing it to enjoy the benefits of the lower costs of interconnectivity fees, and at the same time increasing the number of mobile phone customers. Reversing the trend of losing customers to the mobile phone operators.

4- The regulating telecommunications authority should more closely monitor the data on interconnections fees in order to prevent collusion of the mobile phone operators to increase their profits.

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