

**Report for the Botswana
Telecommunications Authority**

**Executive Summary of market study
of the telecommunications and ICT
sector in Botswana**

From 1996 to the future

10 February 2009

13088-455



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1 Introduction

In October 2008, the BTA commissioned this market study to aid in the assessment and understanding of the development of the telecommunications and ICT market in Botswana from the major liberalisation advances in 1996 to present day. The study was further mandated to assess competition levels and regulatory intervention to date, and then propose any regulatory changes it was felt would further enhance the market in the future.

In the study report we created a framework, and used this to comprehensively analyse the development of each market over time. We assessed competition in each market, as well as reviewing the regulatory evolution from 1996 to present day. Finally, we built on this detail to identify ways the market could be further enhanced going forward.

This document is the executive summary to the report, presented for consultative purposes. As such, it contains summaries of data and conclusions rather than all analytical processes and frameworks (the full report is over 300 pages long while this summary is less than 5% of that). Please refer to BTA (and the full report) for further information.

2 Market Study Executive Summary

The BTA commissioned Analysys Mason, in partnership with Project3, to conduct a detailed study of the telecommunications/ICT market in Botswana. The main objectives of the study were to critically examine the evolution of the market since liberalisation in 1996, review the current market situation, and make recommendations for future regulatory intervention to promote development of the market. This executive summary summarises the findings and conclusions from the study carried out between October 2008 and December 2008.

2.1 Data gathering

Early in the project, we identified that data gathering was going to be a major challenge. The public telephony operators (PTOs) have been submitting some limited data to BTA since 1996; however this is largely paper-based, limited in scope and inconsistent in terms of the period covered. The value added network service (VANS) licensees have not submitted any data to BTA; indeed it is unclear which were actively trading and offering Internet access services.

We therefore held several meetings with each of the PTOs, and a single meeting with each VANS licensee that we identified as actively offering Internet access services. We collated all data previously submitted to BTA, and requested missing data from the operators. During our meetings we asked many qualitative questions on the operations of each operator and sought their opinions on the market. The public-sector element of the market is important in Botswana, so we visited two government-sponsored Internet centres ('Kitsong centres') and met a senior civil servant in the MCST. In addition to this primary data, we gathered a large amount of documentary information, such as licences, government acts, historical reports, third-party datasets and many other sources.

2.2 Approach to analysis

Before commencing our analysis, we defined certain frameworks to ensure consistency; these were the digital opportunity index (DOI), competitive market definition approach, and significant market power (SMP) approach/definition. We then sub-divided the market into high-level segments for analysis, selecting mobile, fixed and Internet as the most appropriate. As computer penetration is highly relevant, we analysed this as a fourth element. Given the extremely wide scope of the study, this preliminary segmentation was necessary to permit us to undertake analysis at a suitable level of detail. Within the mobile, fixed and Internet segments, we gathered all data available and then analysed each aspect of the market, such as subscribers, pricing and distribution. The next step was to divide each high-level segment into tightly defined markets, which were sufficiently robust to allow us to carry out a competition and SMP analysis. We then identified market hindrances and produced a five-year forecast of subscriber numbers and penetration.

This done, we reviewed the entire telecoms/ICT industry in terms of the DOI today and tracked the overall market evolution from 1996 to the present day, drawing on the separate market analyses already carried out. We paid particular attention to the effect of regulatory changes on the market, which we then developed to produce recommendations for future regulatory intervention that we believe would enhance the market.

2.3 Key market findings

2.3.1 Mobile

We found the mobile market to be functioning well, with strong penetration and coverage levels in comparison to benchmarks. The majority of metrics were indicative of a healthy, effective and attractive consumer offering. We specifically examined the competitive nature of the market and found that there was effective competition. No operator had SMP, even before establishment of the third operator (which is likely to increase the competitiveness of the market). The two charts below show mobile penetration against benchmarks and the cost of a standardised basket of mobile services in USD against benchmarks.

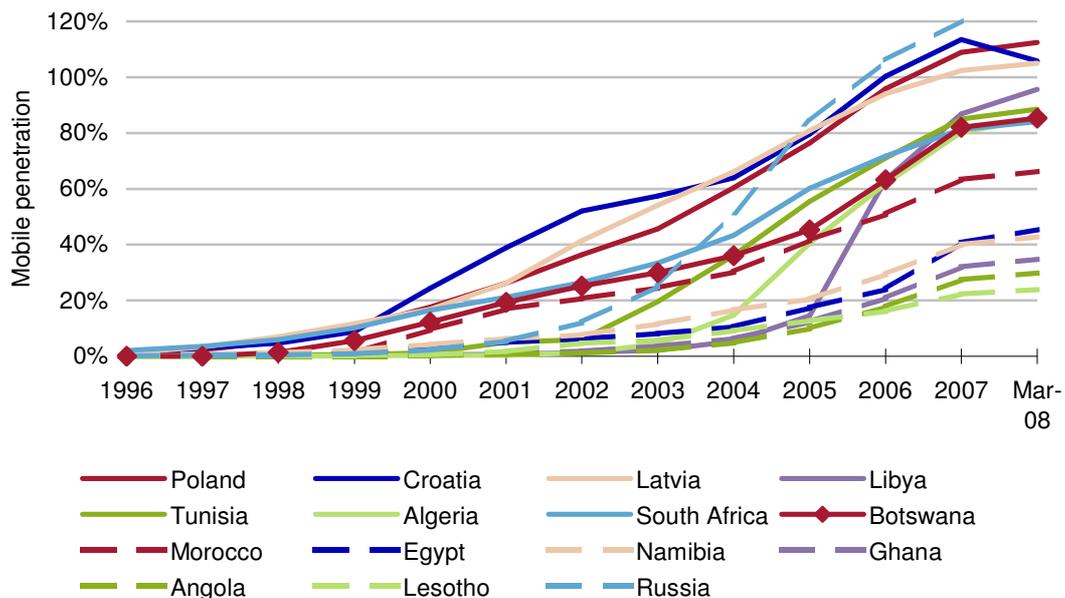


Figure 1: Mobile penetration in Botswana and benchmark countries [Source: Mascom Wireless, Orange Botswana, BTA, WCIS, Euromonitor, Analysys estimates]

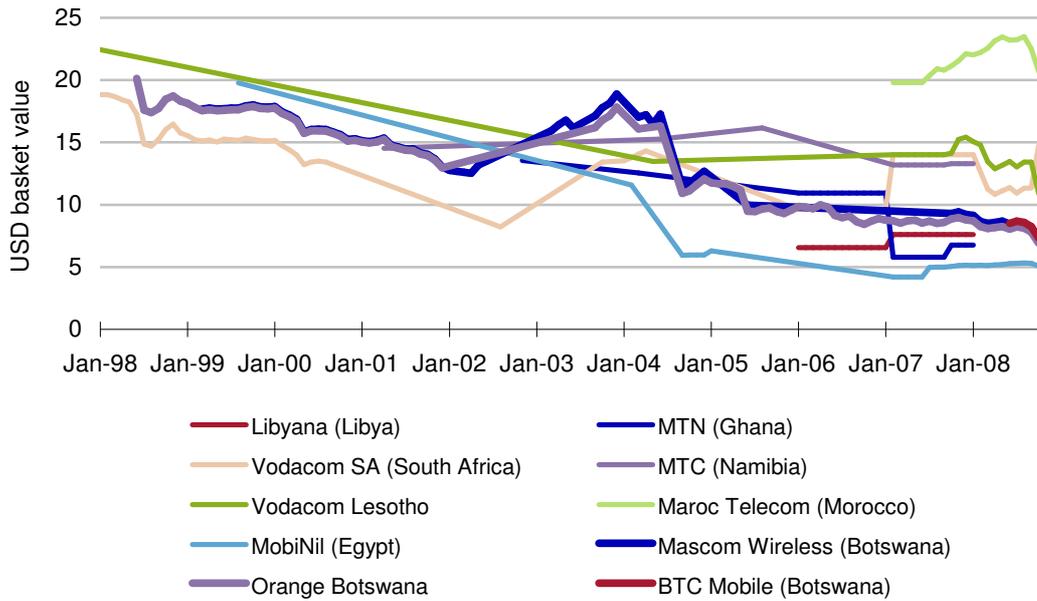


Figure 2: Historical evolution of the OECD low-end user residential basket value (in real 1998 BWP) for the three mobile operators in Botswana [Source: Mascom Wireless, Orange Botswana, BTC Mobile and Tarifica]

In terms of the potential evolution of mobile penetration in Botswana, we believe it will continue to rise as the percentage of people with a mobile phone increases to 61% by 2014. The high proportion of prepaid subscribers in the market, with a relatively large number of ‘dual SIMs’, means that this will equate to 107% SIM penetration by 2014, with just over 2 million active SIMs in the market.

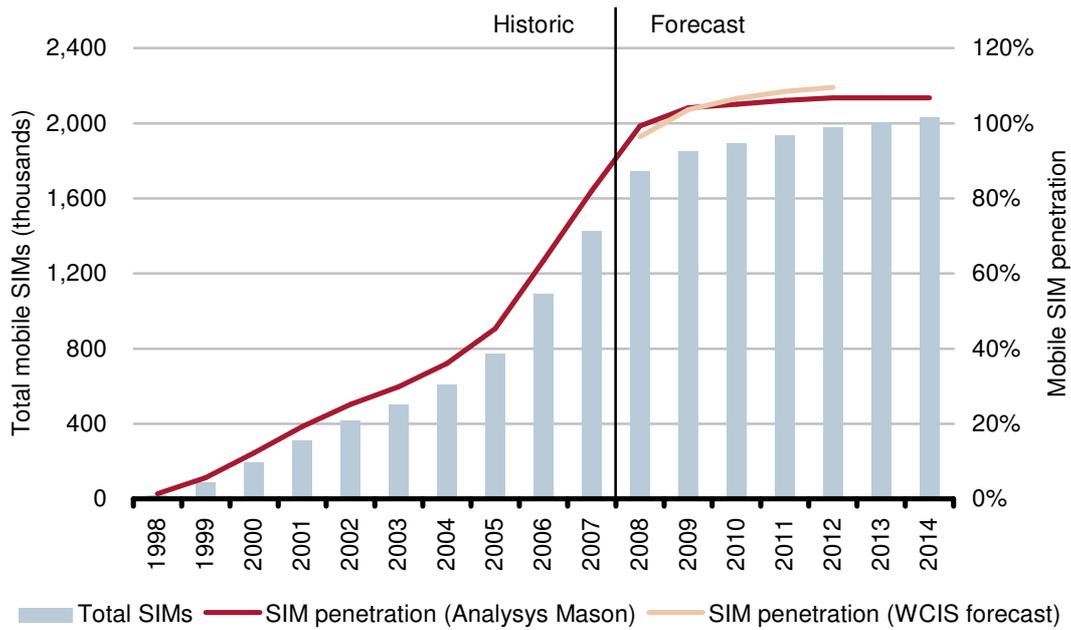


Figure 3: Actual and forecasted number of SIMs and SIM penetration [Source: BTA, Mascom Wireless, Orange Botswana, Analysys Mason forecasts and WCIS]

2.3.2 Fixed

We found the incumbent, BTC, to have SMP in the fixed local/national voice, leased-line and international voice markets. However, we found that the local/national voice market was performing appropriately. Fixed-line penetration was similar to that in benchmark countries, as were tariffs. Although tariffs have increased in recent years, this was the result of a tariff rebalancing exercise designed to reduce international call charges to competitive rates while increasing all other charges to compensate and enable BTC to maintain their profitability. The two charts below show household penetration and the cost of a standardised set of services against benchmarks.

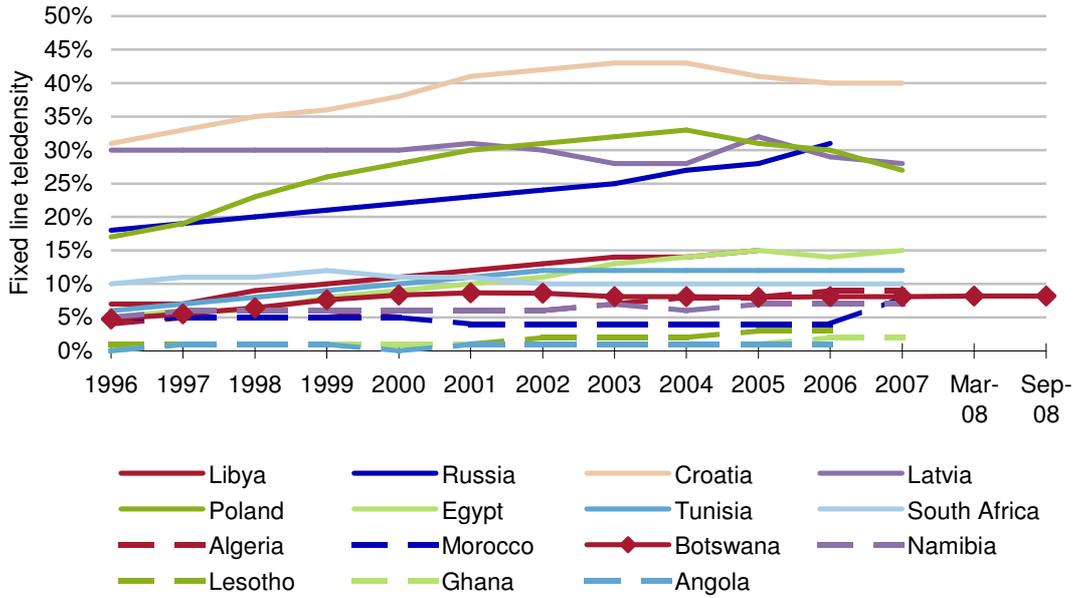


Figure 4: Fixed line penetration in Botswana and benchmark countries from 1996 to 2007 as at end of year [Source: BTC Annual reports, BTA, Euromonitor, ITU, Analysys Mason]

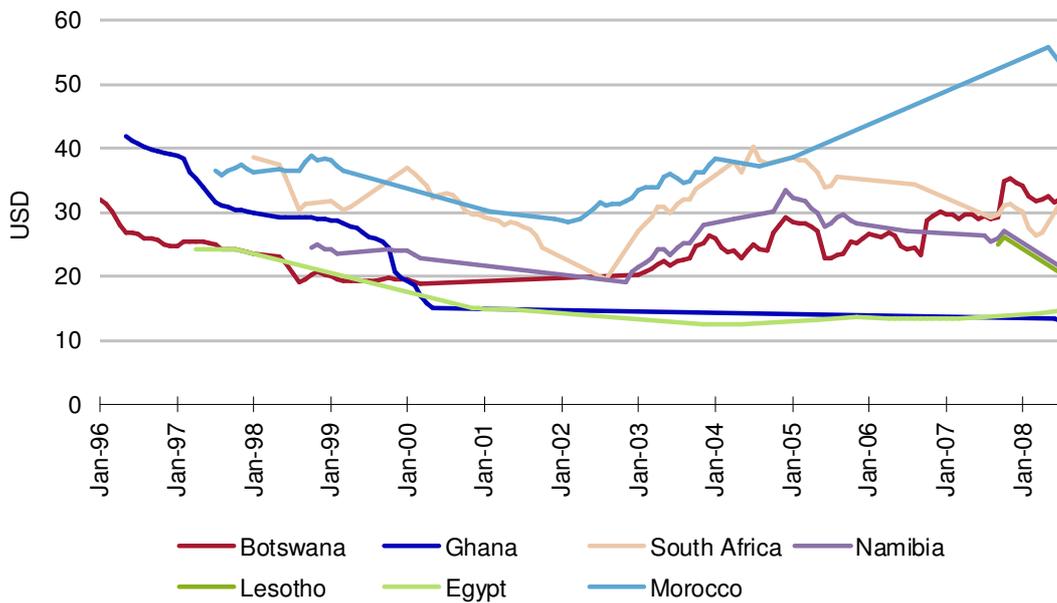


Figure 5: Residential low-end user OECD basket value (including VAT), including monthly line rental, in USD from 1996 to 2008 for Botswana and benchmark countries [Source: BTC, Tarifica, Analysys Mason]

Examining the potential evolution of fixed lines in Botswana, we forecast that the number of fixed lines will start to stagnate, reaching just over 152 000 by 2014 as mobile voice and wireless data remain the access technologies of choice, in line with experience in developed countries (that is, a stagnating or declining number of fixed lines).

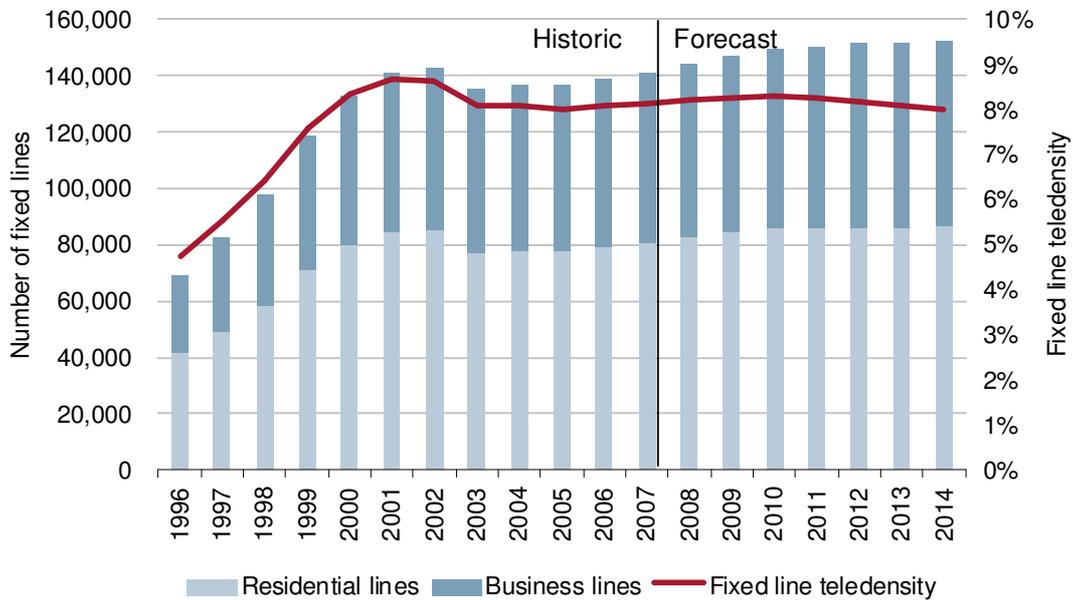


Figure 6: Historical and forecast number of residential fixed lines and household penetration in Botswana from 1996–2014 [Source: Analysys Mason forecasts]

A particular area of concern was the provision of wholesale leased lines by BTC. We found prices to be expensive, and in particular it appeared that wholesale and retail prices were identical. This significantly reduces the potential for competitors to compete effectively in other markets, such as the provision of data services. The lack of a differential between wholesale and retail prices is potentially indicative of an abuse of SMP, which suggests that regulatory intervention would be appropriate.

2.3.3 Internet

We found Internet and broadband penetration to be lower than might be expected given the country's wealth and the development of the mobile market. We identified a number of contributing factors, including: low fixed-line penetration, uncompetitive wholesale pricing by BTC, and a lack of local Botswana Internet content despite a large number of VANS licensees.

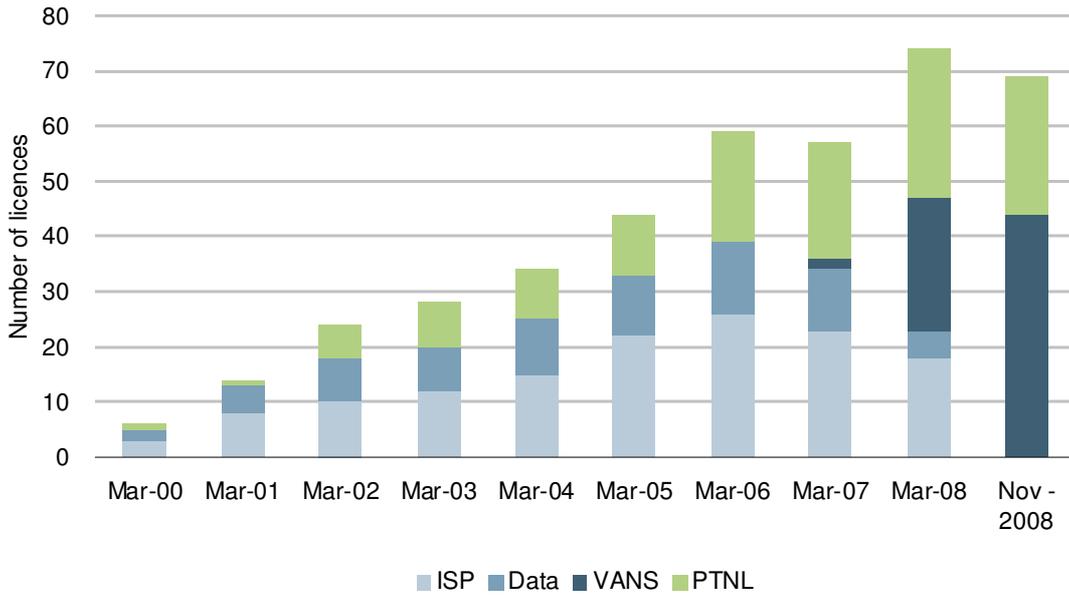


Figure 7: Number of licence holders from 2000 to November 2008 [Source: BTA]

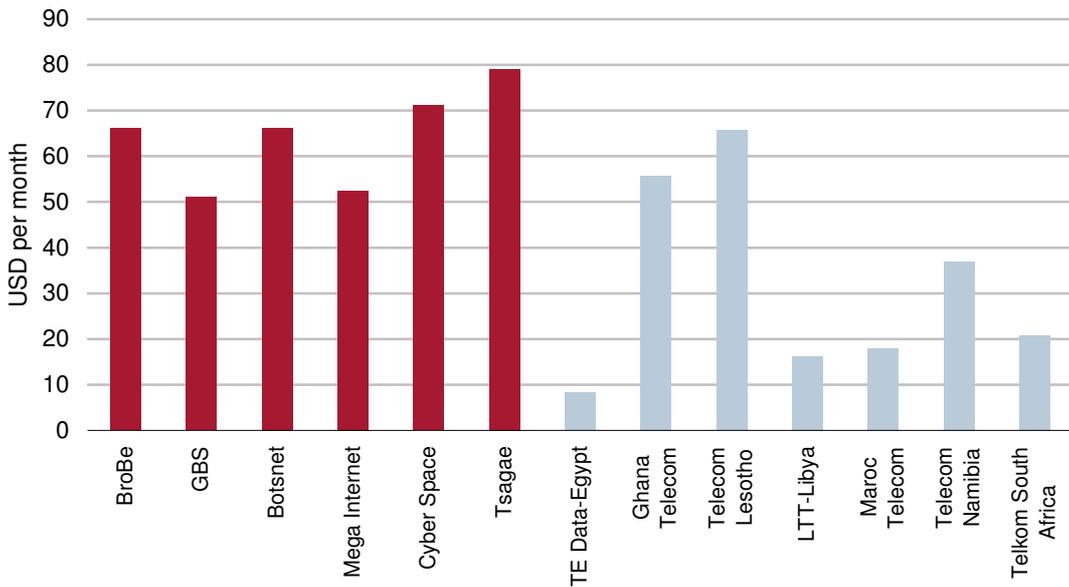


Figure 8: Current basket value of cheapest ADSL broadband packages (of at least speeds of 256kbit/s) for Internet service providers in Botswana and benchmark countries (basket values are in USD and include VAT) [Source: Primary data, service provider websites]

We defined the two key markets (Internet access and international data provision), which, coupled with the leased-line market, make up the overall Internet market. We found BTC to have SMP in all three of these markets.

Following this analysis, we outlined a forecast for ADSL in Botswana where our base case forecasts 106 620 ADSL lines by 2014. We have also described a low and a high case scenario where ADSL penetration is consistently 10% lower or higher than our base case. The estimates for these low and high case scenarios are 95 958 and 117 281 ADSL lines respectively by 2014. Our regulatory recommendations are intended to help the ADSL market grow at the fastest rate deemed possible.

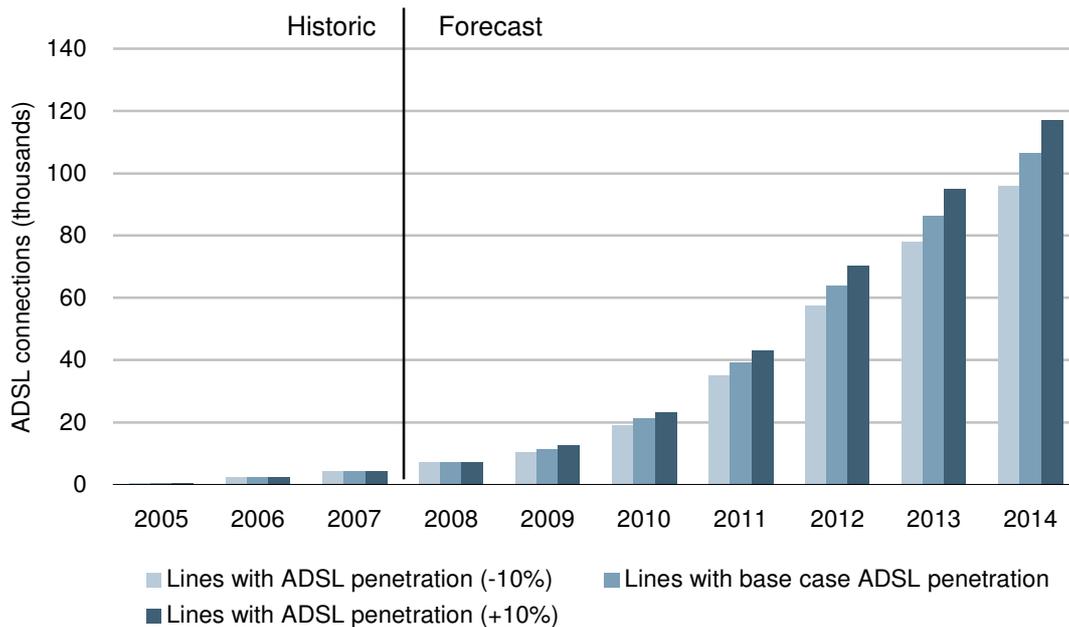


Figure 9: Historical and forecasted ADSL connections in Botswana (base case ADSL penetration and 10% higher and lower ADSL penetration cases) [Source: BTC, Globalcomms, Euromonitor, Analysys Mason estimates]

2.3.4 Computers

We found computer ownership to be broadly in line with comparable benchmarked countries. However, computer access and ownership are still low both in absolute terms and relative to developed countries. The lack of available data suggests that it may be appropriate to conduct large-scale primary market research or a census; this is because the key metric in relation to computers is the percentage of households with a computer, a value that can only be determined through extensive primary research.

We found a number of government initiatives aimed at increasing computer access in Botswana. One example is the village ‘Kitsong centres’, and another is the e-schools programme. The latter is increasing computer literacy among school children to almost 100% (once the programme is completed). It is likely that this e-schools programme will result in a boom in computer usage once the school-going population enters adulthood.

However, along with the closely related issue of Internet access, overall we have found the level of computer access to be a key stumbling block in Botswana’s aim to become a ‘digital country’ – and has rightly been identified by the government as such.

2.4 Market evolution

We have tracked the evolution and liberalisation of the telecoms/ICT market in Botswana from 1996 to the present day. We identified some significant successes, such as the mobile market. Mobile penetration is high relative to benchmark countries, and the two enabling factors, coverage/availability and price are both good in relation to benchmark countries. However, we have also identified some less successful areas, such as the Internet market. Internet penetration in Botswana is low in comparison to African countries, and extremely low in comparison to developed countries. Price and coverage/availability are both poor in relation to benchmark countries.

We calculated the DOI for Botswana today, and found that the opportunity, infrastructure and utilisation indices had increased by 2%, 94% and 78% respectively since the DOI was last calculated by the ITU in 2005/6, representing significant advances. When combined to form the overall DOI, this represented an overall DOI increase of 19%. In 2005/6 Botswana had a DOI that placed it in 8th position in Africa and 100th position worldwide. We believe Botswana is likely to have moved up the ranking in the present day.

Our review of the whole market confirmed the specific market concerns that we identified earlier, and need to be addressed to ensure an optimal future for Botswana’s telecoms/ICT market. The most important concern was the wholesale pricing of ADSL access, international data and leased lines by BTC, which may be excessively high and holding back growth in Internet penetration. The second concern was possible cross-subsidisation by BTC between mobile, Internet and fixed markets, which may potentially represent an abuse of market power by BTC in an attempt to dominate different markets.

2.5 Recommendations

2.5.5 Possible additional PTOs

We found that the latest operator (BTC Mobile) is too new to enable us to conduct appropriate analysis, and believe that a period of 18 months should be left after launch before making conclusive judgements on the potential for further PTOs. Nevertheless, we analysed the current

potential for further PTOs in Botswana, and found no strong evidence that further operators would enhance the market; indeed we identified several reasons why further operators could damage the market. Therefore, when the review is carried out in a year's time (18 months after BTC Mobile's launch), we believe that an open mind should be kept by the BTA; there should be no assumption that further operators would inevitably be of benefit to the market in Botswana.

2.5.6 Possible price regulation

We found a number of indications that the wholesale ADSL Internet access, leased-line and international data markets were priced unfairly, with prices out of line with costs. This problem is only likely to worsen as BTC brings Botsnet (its retail Internet arm) even closer to its centralised operations and makes further progress towards privatisation. We therefore recommend that BTC be regulated with regard to these prices, to align them with costs. In order to allow this, a detailed study of costs in this market should be carried out. In Annex A we present (for reference) the general ITU guidelines for use as criteria in price regulation situations.

2.5.7 Other regulatory areas

All regulation is of little effect unless it is properly enforced. We recommend that BTA adopt a strict and robust approach to the enforcement of regulation. This would ensure that the current framework is applied correctly. To facilitate competition in the international voice market, BTA could consider requiring equal access conditions. This would put BTC in the same position as other operators, and reduce the market power in this market that arises through selection 'by default'. To encourage facilities-based competition, infrastructure sharing should be encouraged by BTA, to reduce the cost of roll-out.

Annex A: ITU general regulatory objectives for use as criteria in price regulation considerations

The ITU has identified possible regulatory objectives that can be useful to consider alongside price regulation.

- **Prevent the exercise of market power:** An important goal of regulation is to ensure that prices are fair and reasonable, where competitive forces are insufficient. Any regulatory price control mechanism should encourage prices that reflect what one would observe in a competitive environment,
 - **Achieve economic efficiency:** The regulatory mechanism chosen should improve economic efficiency. There are several measures of economic efficiency:
 - **Technical efficiency** (or “productive efficiency”) requires that goods and resources produced in the telecommunications industry should be produced at the lowest possible cost. This ensures that society’s scarce resources are used efficiently and are not wasted,
 - **Allocative efficiency** requires that the prices one observes in a market are based upon and equal to the underlying costs that society incurs to produce those services (generally the long run incremental cost of producing the service). This will ensure that customers whose valuation of the service exceeds the cost of producing the service will purchase the service. Customers who place a lower valuation on the service will forgo it. This ensures that the “optimal” amount of the service is consumed, given cost and demand conditions. In the ICT sector prices must include some mark-up to recover shared and common costs. Mark-ups should be set so as to minimize the impact on allocative efficiency, and
- **Dynamic efficiency** requires that firms should have the proper incentives to invest in new technologies and deploy new services,
- **Promote competition:** Many regulators operate under a legal framework where the goal is to permit and promote competition in telecommunications markets. Where the legal framework permits competition, it is important that regulation (at a minimum) does no harm to competition,
- **Minimize regulatory cost:** All else being equal, regulators should choose a regulatory mechanism that is less costly to implement over one that is costlier to implement,
- **Ensure high service quality:** In addition to ensuring that the prices of telecommunications services are fair, regulators are also concerned that consumers should receive a high quality service. In ranking alternative regulatory options, regulators should give preference to mechanisms that result in higher quality service, all else being equal,

- **Ensure telephone prices are competitive with other jurisdictions:** This is a relevant objective in countries, such as Singapore, that use telecommunications infrastructure as a tool for competitive advantage. In these countries, telecommunications infrastructure plays an important role in attracting foreign investment. It is therefore important that telecommunications prices are competitive with other possible destinations for foreign investment,
- **Generate compensatory earnings:** Any regulatory mechanism should provide the regulated company with the opportunity to earn a reasonable profit and to achieve compensatory earnings. If not, the firm may be forced to reduce investment and quality of service may decline.

