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Impacts of the Tanzanian 2013 - 2017 Glide path Implementation Phase on Telecom Voice Call pricing

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Abstract— The effects of reduction in mobile termination rates (MTR) on voice call pricing trends and mobile telecom market competitiveness in the Tanzanian for the third phase of glide path were evaluates using Tanzanian quarterly telecommunication statistical reports for year 2013 to 2018. The results reviled general increasing trends for prepaid voice calls prices for all mobile network operators (MNOs) in Tanzania as compared to that of 2013. Comparing pricing trends among major MNOs, the results indicated convergence of on-net and off-net prices at the end of year 2018. Exploring the on-net/off-net price differentials between large and smaller MNOs, the results showed a resemblance of large MNOs On-net prices to small MNOs Off-net prices for prepaid voice calls. The converging trends of on-net and off-net prepaid voice call prices and the small on-net/off-net price differentials, indicated that the end-users in Tanzania will benefit when the MTRs is fully implemented to the cost of efficient operator at the end of year 2022 as per promise of the TCRA the regulator.

Index Terms— *mobile termination rates, On-net price, Off-net price, whole sale price, mobile retail price* , interconnections and voice call price.

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1 Introduction

The Tanzanian mobile telecom industry has evolved recently with service providers emerging in local markets due to telecom services liberalization and thus enabling the intercommunications. As there are more mobile telecom service providers in the market, it is expected that they increase market competitiveness and bring a gradual decline in mobile telecom retail prices [11]. Also, having more mobile network operators (MNOs), users expect to be able to interact with each others regardless of which mobile network they subscribe to. To facilitate that needs, MNOs enter into interconnection agreements, which not only cover technical aspects, but also stipulate access fees or mobile termination rates (MTRs) for compensating the terminating network for the cost of communications originated from another network [8].
Mobile termination rates (MTRs) or mobile network interconnection is the main issue in the development of competitive mobile marketplace services. In Tanzania, the Tanzania Communication Regulatory Authority (TCRA) is the regulator concerned about MTRs to ensure the affordability of telecommunication services for all users.

2 Mobile Call Termination Rates (MTRs) and Interconnections Services in Tanzania

The telecommunication networks sell mobile termination rates (MTR) as a wholesale services to each other, as a call which originate on one network can be answered either on the same network or on another network. As part of the cost of a call between customers of different network operators, termination rates are included in everyone's mobile phone bill and therefore eventually paid by the calling consumer.
The mobile interconnection compensation arrangements adopted in Tanzania follow the calling party's network pays (CPNP), whereby the calling party's network pays a mobile call termination rate (MTR) to the network that terminates the call [4]. Incoming calls are free of charge, which corresponds to a Calling Party Pays (CPP) retail arrangement.
Since 2004, TCRA as a regulator started the implementation of glide path policy for Mobile Termination Rates (MTRs) derived based on the cost of efficient operator. The glide path prescribes a plan for reduction of MTR over the four term periods, 2004 to 2007, 2008 to 2012, 2013 to 2017 and 2018 to 2022 [5] - [8].
Specifically for the period under study, as per TCRA glide path, the Mobile Terminating rates (MTRs) were reduced by 69 percent to Tsh 34.92 a minute as of March 2013 after 2007 to 2012 glide path, and were reduced to Tsh 26.96 in January 2017 following the completion of 2013 to 2017 glide path [13]. According to the glide path (Figure 1), further more reductions for voice call termination rates are set between 2018 and 2022 to be from 15.60/- of January 2018 to 2.00/- in January 2022 [8].

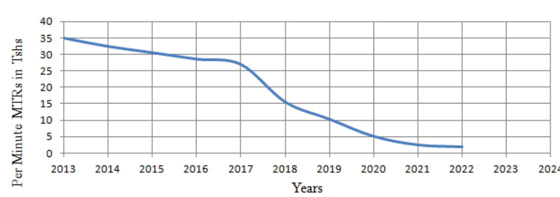

Figure 1: 2013 to 2022 Tanzania Termination rate Glide path.

As per Figure 1, Tanzania glide path plan shows a steady and slow declining mobile termination rates reaching Tsh 2.00 per minute in 2022. Since MTRs are an input cost for off-net prices, it is expected that when MTRs are at a level of the cost of an efficient operator there would be no need to charge more for off-net calls than for on-net calls. An off-net call includes the

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cost for call origination on own network and cost for call termination on another network. An on-net call originates and terminates on the same network. With the reduction of termination rates , mobile users expects that the reduction of interconnection rates will be filtered down to the cheaper telecommunication costs in Tanzania as well as higher subscription rates.

International evidence shows that, cost-based termination rates encourage competition and more affordable pricing [4]. Major mobile operators support high termination rates, with the argument that lowering termination rates will lead to increases in access and usage prices [4]. Evidence from some African countries where regulators have reduced termination rates towards the cost of an efficient operator, supports the fact that cost-based mobile termination rates increase competition between operators and lead to lower prices, more subscribers and more investment in networks and services [4]. Although Kenya's biggest mobile operator has reported retail prices drop as much as 68%, the case of South Africa indicates that lowering MTRs does not guarantee automatic reduction into retail prices specifically for CPNP markets that is contended by dominant mobile operators. This paper evaluates the impact of MTRs regulation on Tanzanian MNO performance, in terms of evolution of market shares. Also the paper assesses the impact of MTR regulation on consumer, in terms of tariffs evolution (On-net and Off-net pricing), and volume of voice call traffics.

3 CURRENT STATUS OF TANZANIAN MOBILE TELECOM INDUSTRY

Tanzania is the second largest telecom market in East Africa with seven active mobile phone operators [13]. According to TCRA December 2018 data, the three major MNOs: Vodacom, Tigo and Airtel, accounts for 86% of all subscriptions with market shares of 32%, 29% and 25%, for Vodacom, Tigo, and Airtel, respectively [13]. For the period under study, 2013 to 2018, the mobile subscriptions for voice calls Telecom increased from about 27.3 million of 2013 to about 43.5 million as of December 2018. The corresponding voice Telecom penetration rose from 61% of 2012 to 81% as of December 2018. The weighted average pre-paid Tariff for voice Telecom also increased for all types of voice calls with average time used per subscriber in voice call being 373 minutes, in which 312 minutes were On-net and 60 minutes were Off-net calls.

4 METHODOLOGY

Five major mobile operators in Tanzania were involved in the study, that is, Airtel, Tigo, Vodacom, TTCL and Zantel. Other operators were not involved due to small number of subscriptions and/or short time of their operation in Tanzania. To investigate the impacts of MTRs regulation on Tanzanian MNO performance, in terms of evolution of market shares, only operators who has been in operation since 2012 and who has substantial number of voice call subscriptions were involved. To assess the impact of MTR regulation on consumer, in terms of tariffs evolution (On-net and Off-net pricing), and voice call volume of traffics, two types of pre-paid voice Telecom call Tariffs: the On-net voice calls and off net voice calls (local) in Tanzania were considered in the study. Post paid tariffs, promotional tariffs like midnight calls and special events were not considered in the study due to inconsistence across the operators.

The Tanzanian quarterly telecommunications statistical data of 2013 to 2018 collected from TCRA web site were the data used for analysis in the study. The approach adopted in assessing the impact of MTRs included the evaluation of telecom market performance in terms of the growth of the Tanzanian telecoms market from 2013 to 2018; the evolution of operators' market shares from 2013 to 2017; the evolution of convergence of on-net and off-net retail voice tariffs and the evolution of retail voice call tariffs in Tanzania from 2013 to 2018. From the statistical results, trends for what the end user paid as the termination was being lowered were reviled from the study period..

5 RESULTS

Using TCRA quarterly telecommunication statistical data for the period under study, the number of subscription for mobile phone in Tanzania, the voice call minute traffic volume, On-net tariffs and Off-net tariffs results for the study period are presented in this section.

5.1 Mobile Subscriptions

According to the statistical results (Figure 2), number of subscription for mobile phone in Tanzania, as measured by the number of active SIMs, grew from about 27 million in 2013 to about 42 million in 2018.

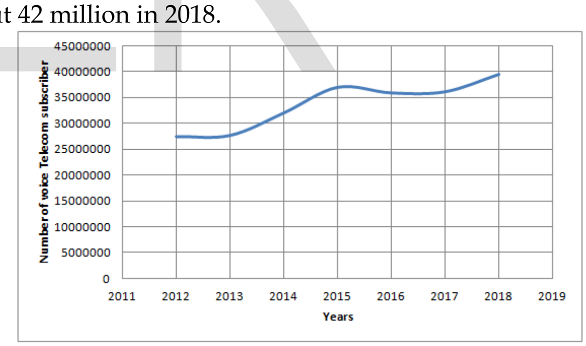

Figure 2: Mobile subscriptions trends 2012 - 2018

Figure 2, shows general increase in mobile subscriptions from 2013 to 2015, followed by a slight decline in mobile subscriptions between 2015 and 2016. The decrease in the number of subscribers between 2015 and 2016 was partially attributed to the cleansing activities that operators undertook on their customer base during this time, disconnecting many inactive SIM cards. The growth since 2012 is likely attributed to an increase in the number of active SIMs per user rather than an increase in the number of actual users because most Tanzanians own multiple SIM cards [13]. For the period between 2016 and 2018, there are general increase to subscriptions..

Considering the mobile subscriptions trend for specific MNOs, the larger MNOs (Vodacom, Tigo and Airtel) shows rapid growth to the number of subscribers between 2013 and 2018, while smaller MNOs (Zantel and TTCL) portray a declining or stationary growth between the considered years (Figure 3).

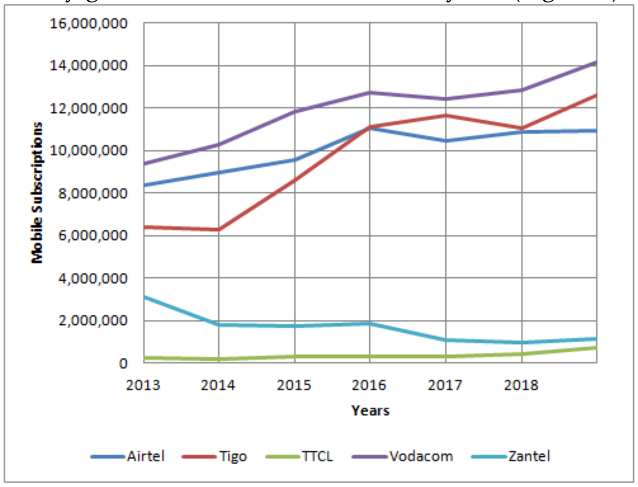

Figure 3: Subscription trends between 2013 and 2018 for major operators

As per Figure 3, Vodacom dominated the telecom market in Tanzania followed by exchanging roles of second and third between Airtel and Tigo. Between 2015 and 2016 both Airtel and Vodacom experienced a decrease in number of subscription while Tigo experienced slow increase in the number of subscribers. Between 2016 and 2018, Tigo shows a decrease in number of its subscribers but Vodacom and Airtel depicts an increasing number of subscribers. As for Zantel, the number of subscribers has been decreasing from 2012 to 2018, although it shows a stable trend between 2017 and 2018. TTCl shows slow growing trends for subscriptions between the considered periods.

As for operator's subscriptions shares, Figure 4 shows the shares trends for the considered time period.

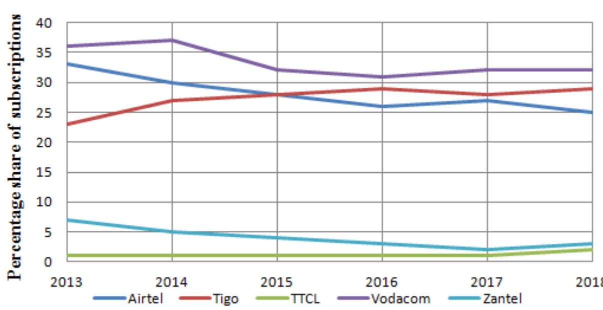

Figure 4: Operator subscriptions share between 2013 and 2018

From Figure 4, only Tigo and TTCL subscriptions shares are higher at the end of 2018 as compared to that of 2013. Although Vodacom subscriptions share remain higher among the operators, it is low when compared to that of 2013. Airtel shares shows a decreasing trend between 2013 to 2016, a slow increasing trend between 2016 and 2017, and decreasing trend between 2017 and 2018. Considering the small MNOs, the results show the declining trends for Zantel shares while TTCL shares were almost constant within the study period except for an increasing trend from 2017 to 2018.

5.2 ON-net and Off-net per minute voice call pricing

Generally the mobile prices in Tanzania have not decreased substantially as expected when MTRs reduction policy was being introduced in recent years (Figure 5). For the period under study, prices for On-net and Off-net have increased as compared to that of 2013. That is, the net impact of the reduced MTRs on mobile prices in Tanzania has been increased mobile pricing as demonstrated by the increased retail prices for both On-net and Off-net voice calls.

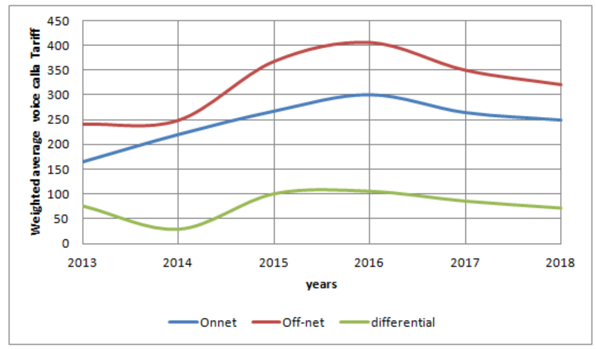

Figure 5: 2013 - 2018 Weighted Average Pre-paid Tariff for voice Telecom

From Figure 5, there are general increase in voice call pricing between 2013 and 2016, followed by decreasing trend between 2016 and 2018.
For more analysis of pricing trends, Figure 6 show the operator specific trends for On-net voice call per minute pricing for 2013- 2018.

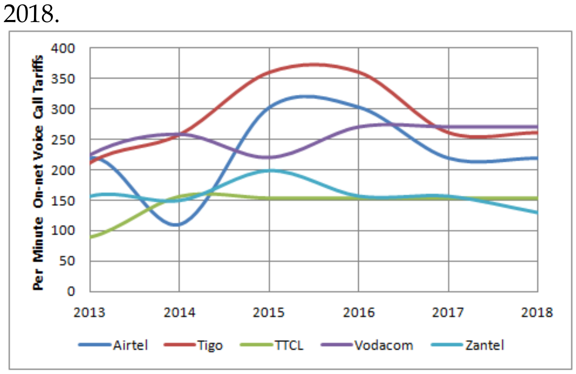

Figure 6: Operator 2013 – 2018 specific On-net Voice calls per minute Tariffs

According to Figure 6, there is no MNO that charges less for On-net voice calls in 2018 as compared to that of 2013. Also, there is a pricing merging trend at the end of 2018, especially between Tigo and Vodacom. When major three MNOs are compared, Airtel has been offering the cheapest On-net voice calls for the time period understudy. Interesting trend between Tigo and Vodacom voice calls Tariffs within the study time is that, when Tigo pricing goes up that of Vodacom normally goes down and vice versa. The case for Tigo and

Vodacom is clearly shown in the time period between 2014 and the third quarter of 2017.

For the voice calls made outside the networks (off-net calls), Figure 7 shows the trend for 2013 to 2018 time period.

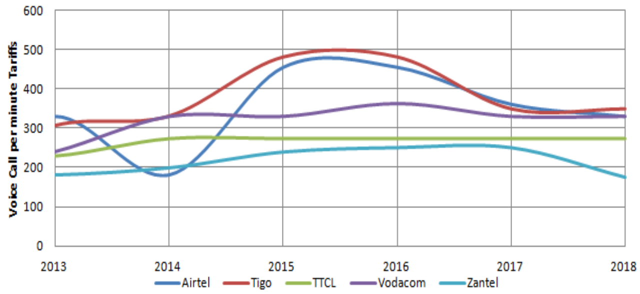

Figure 7: Operators Off-net voice call per minute Tariffs

As per Figure 7, operators had up and down going trends in the Off-net voice calls tariffs, though the Airtel and Tigo shows more tariffs variation within the period than others. More promising is that, at the end of 2018 the pricing for the major operators are almost merging the charging of Off-net voice call Tariffs. Also, from Figure 7, it is shown that the small operators (Zantel and TTCL) per minute prices for Off-net voice calls have remained down with TTCL providing the cheapest of all.

5.3 Mobile Market Competitivenes

Results of market competitivess in terms of comparisons of large MNOs On-net Tariffs to small MNOs Off-net Tariffs is shown in Figure 8.

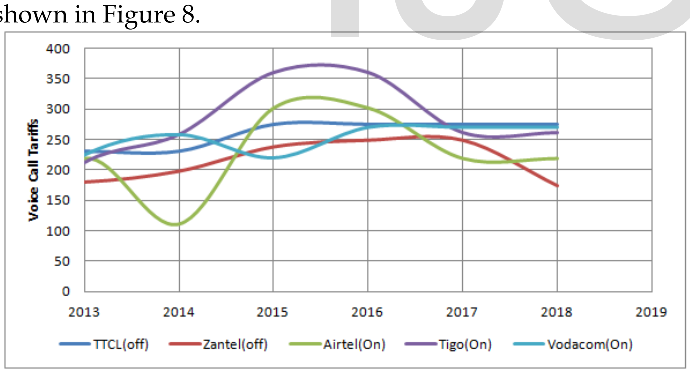

Figure 8: Large MNOs ON-net and Small MNOs Off-net voice call per minute Tariffs comparisons

According to Figure 8, at the end of 2018 TTCL as a small MNO was able to charge Off-net Tariffs that are comparable to Vodacom the major MNO. Also, Zantel as a small MNO was able to charge the Off-net Tariffs that are lower as compared to major MNOs On-net prices but also very close to Airtel On-net prices.

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6 Conclusions

Mobile subscriptions in Tanzania between 2013 and 2018 have been increasing as the MTR is being reduced. The market shares for MNOs as well as the voice call per minute traffic volume have also being increasing. For the voice call pricing for 2013 to 2018, major operators have been charging prices higher than that at the beginning of 2013.

For the justifications of lowering MTRs for lower voice call pricing, very little is shown only at the end of year 2018, but there are signs that more will be realized after the end of the last phase of glide path.

As for the trends in market competitions, the on-net/off-net price differential which is a barrier to competition has been reduced by the implementation of glide path policy in the study period. That is, there are clear trend for merging of larger MNOs on-net and smaller MNOs off-net calls prices for study period as the MTRs are being reduced.

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