ONE

INTERNATIONAL MOBILE ROAMING: PROGRESS AND CHALLENGES IN AFRICAN MARKETS

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ABSTRACT: . The persistence of high prices for international mobile roaming services, in contrast to falling national mobile prices, has been a recognised item on the global regulatory agenda for half a decade. In Africa, there have been studies and discussions about regulatory options in regional economic groups and in the various networks of national regulators. As yet, there has been no transnational regulatory action. Yet the initiative of one large operator saw the introduction of transnational tariff schemes (ie without a surcharge for roaming), forcing competitors to collaborate in order to respond, if they wished to attract and to retain customers. This has both saved money for consumers and greatly reduced the need for regulatory interventions that might have proved counterproductive. In some countries this type of offer remains impossible, because international gateways are a monopoly, having yet to be opened to competition

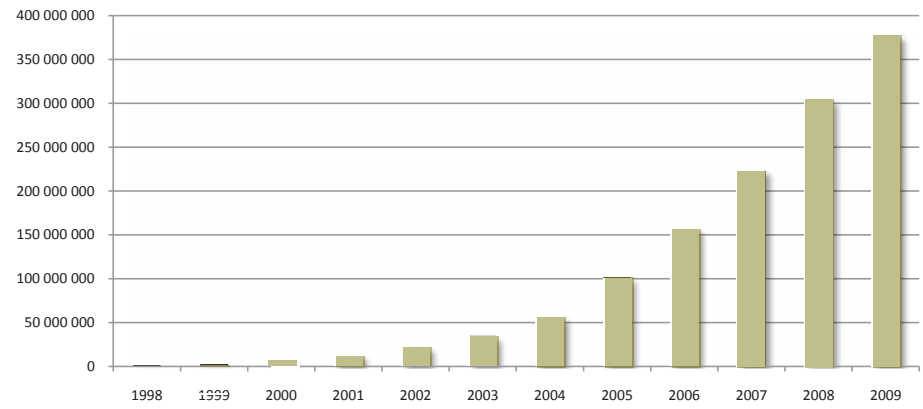
KEYWORDS

International mobile roaming, high IMR charges, African telecommunications sector, regulatory agenda

INTRODUCTION[1]

Recent years have seen remarkable growth in cellular wireless telecommunications in Africa, rising to over 350 million reported connections, equivalent to just over one-third of the population (see Figure 1). The predominant technology has been GSM, with only some 10% being connections using CDMA (CDG, 2010), plus a very few individuals with satellite telephones, supplied by Inmarsat and Thuraya. However, these numbers are significantly and systematically overstated, due to the ownership by many individuals of multiple SIM-cards – with the resulting need to take at least 20% off official mobile teledensity figures (Sutherland, 2009).

FIGURE 1: GROWTH OF MOBILE CONNECTIONS IN AFRICA

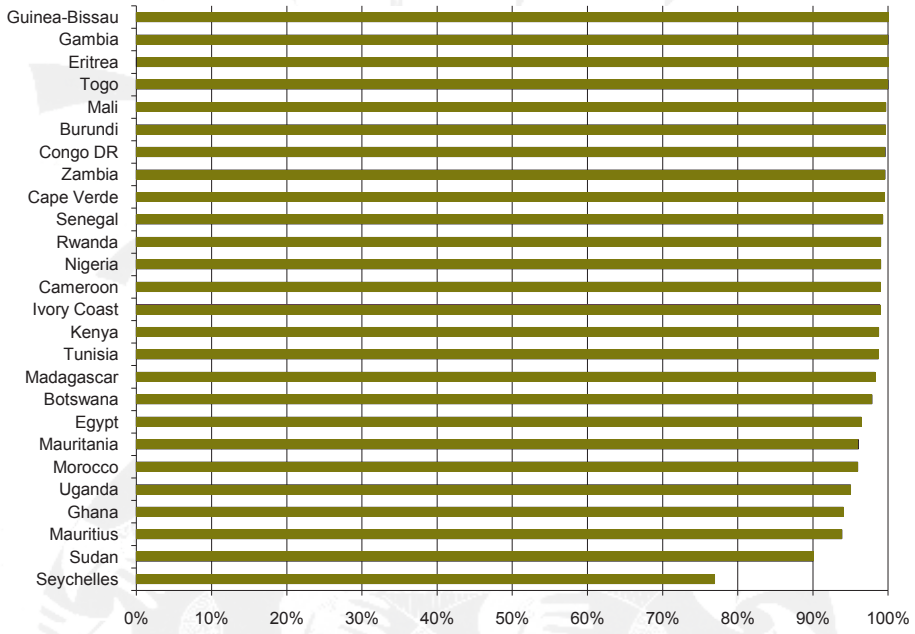


Source: UN, 2010

1 An earlier pre-print version of this article is available as LINK Public Policy Research Paper No. 10.

An overwhelming majority of these customers are pre-paid (see Figure 2). This reflects individuals' low levels of disposable income, their uncertainty about future availability of cash and their lack of experience in the use of credit. Moreover, the operators have access to credit histories for only a tiny minority of their prospective customers, making risk assessment entirely impractical. In contrast, top-ups for mobile phone services are widely available at locations close to customers and in small, affordable increments.

FIGURE 2: PREPAID CUSTOMERS IN SELECTED AFRICAN COUNTRIES IN 2008



Source: ITU, 2009

For Mobile Network Operators (MNOs) in Africa, International Mobile Roaming (IMR) is a very attractive service, both for inbound and outbound roamers. Inbound roaming traffic generated by tourists, business travellers, visiting journalists, government officials and the like can be highly lucrative – even in war zones – with foreigners making expensive IMR calls from airports, hotels and offices. The traffic is paid for by the home MNO in foreign currency and requires no marketing effort, with the only financial risk being fraud control for which procedures are well established (eg accelerated transfer of records) (GSMA, 2007). Outbound roaming appeals to a set of high-spending domestic customers, such as government ministers and business leaders, who wish to use their phones all over the world. To secure these influential customers and to avoid them switching to a domestic rival, operators enter into a very wide range of contracts for IMR, even in countries where the likelihood that the service will be used might seem small. For the predominantly poor customer base the option of paying very high rates for IMR simply does not exist. Instead, they find inexpensive alternatives, of which the most obvious is to purchase a local SIM-card and thus engage in "plastic roaming". This causes inconvenience for colleagues, family and friends, who are no longer able to call them on their usual number.

Africa now has a number of geographically extensive operator groups, recently modified by the acquisition of Atlantique by Etisalat and by the sale of most of the Zain networks to Bharti Airtel (see Table 1). Their geographical scale allows them the possibility to internalise at least a portion of their IMR traffic, except where they cannot obtain their own international gateway. In a few countries there remains a formal monopoly, requiring all international traffic to pass through the incumbent operator. These countries are: Angola, Burkina Faso, Cameroon, Eritrea, Ethiopia, Gambia and Zimbabwe (ITU, 2010).

TABLE 1: GEOGRAPHICAL FOOTPRINTS OF TRANSNATIONAL OPERATORS

	Airtel*	Zain	Lap Green	Millicom	MTN †	Orange	Orascom	Portugal Telekom	Vodafone ‡
Algeria							X◊		
Angola								X	
Benin					X				
Botswana					X	X			
Burkina Faso	X								
Cameroon					X	X	X		
Cape Verde Islands								X	
Central African Rep.						X			
Chad	X			X					
Congo (Brazzaville)	X				X				
Congo (DR)	X			X					X
Egypt						X	X		X
Equatorial Guinea						X			
Gabon	X								
Ghana	X			X					X
Guinea (Conakry)					X				
Guinea Bissau					X			X	
Ivory Coast			X		X	X			
Kenya	X					X			X
Lesotho									X
Liberia					X				
Madagascar	X					X			
Mali						X			
Malawi	X								
Mauritius				X		X			
Morocco		X							
Mozambique								X	
Namibia								X	
Niger	X		X			X			
Nigeria	X				X				

	Airtel*	Zain	Lap Green	Millicom	MTN †	Orange	Orascom	Portugal Telekom	Vodafone ‡
Rwanda			X		X				
São Tomé & Principe								X	
Senegal				X		X			
Seychelles	X								
Sierra Leone	X		X						
South Africa					X				X
Sudan		X	X		X				
Swaziland									
Tanzania	X			X					X
Togo			X						
Tunisia							X		
Uganda	X		X		X	X			
Zambia	X				X				
Zimbabwe									

* Rebranded from Zain.

† Trading as Tigo.

‡ Including Safaricom and Vodacom.

◊ Sold in November 2010 to Wataniya, while other interests are to be merged with Vimpelcom.

Source: Websites of Zain, Millicom, MTN Group, Orange, Orascom, Portugal Telecom, Vodafone, GSM World

Historians and political scientists have frequently commented on and complained about the arbitrary boundaries imposed on Africa by the colonial powers in the 19th century and retained at independence in the 20th century (Touval, 1999; Laremont, 2005). These borders often ignored languages and cultures, many of which were left straddling lines drawn on a map by someone in Berlin, London or Paris. One consequence of this is that people quite naturally cross borders, and wish to continue using a mobile phone service.

This paper examines the overall market for IMR services in Africa. It then considers the "One Network" tariff from the Zain Group and the responses from other operators. The various regulatory initiatives undertaken in the regional economic communities are considered. The introduction of roaming hubs is then examined. Finally, conclusions are drawn and issues identified for future research.

THE ISSUE OF IMR CHARGES

The persistence of high charges for IMR was noted as early as 1999, in contrast to a general decline of mobile charges, in complaints addressed to the European Commission (EC) (Sutherland, 2001). A number of competition law mechanisms were used in attempts to address this problem, with remarkably little success, and despite efforts to identify the problem, provided remarkably few useful insights. Then in 2007 transnational legislation was adopted

by the European Union (EU), imposing wholesale and retail price caps, together with transparency measures (EU, 2009). While politically effective, it was an economically crude instrument, one that further complicated analyses of the markets (Sutherland, 2010).

Rightly or wrongly, IMR has come to be seen as a policy and regulatory problem, rather than as a commercial challenge or opportunity. It became a feature of international policy and regulatory discussions, being raised at regional bodies for Asia-Pacific, the Americas, the Arab states and Africa. It was also taken up at the Organisation for Economic Cooperation and Development (OECD, 2009). It was discussed at the ITU-T in Study Group 3, first in 2002 and again in 2009-10 (ITU-T, 2010). The ITU-D held discussions at its 2006 Global Symposium for Regulators (GSR) and included a chapter on IMR in the 2008 edition of Trends in Telecommunications Reform (ITU, 2008). IMR was also included in the ICT Regulatory Toolkit (infoDev & ITU, 2010). The IMR problem had become part of orthodox regulatory agenda, something that ought to be considered.

However, there has been a poor level of understanding of the economics of roaming, not least because of the shortage of data, especially concerning the operations of wholesale markets. This has delayed and perhaps confounded the identification of a solution to the IMR problem in the form of an intervention in the market.

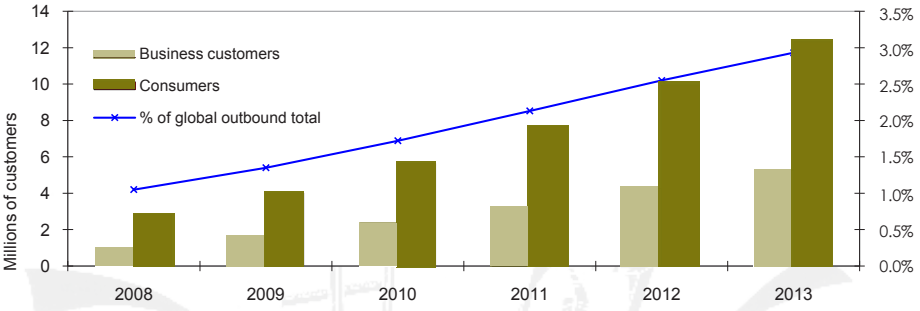
Individual governments and regulators have been caught in a form of Catch 22, being expected to act but being unable to do much that is likely to be other than counterproductive. Collective action requires a legal basis that, outside the EU, does not exist except, conceivably, in free trade agreements.

Thus while the problem of IMR has been recognised, there are only very limited analyses and no solutions. There is no robust and detailed model of roaming markets with which potential interventions can be tested, nor even satisfactory data to construct such a model. Governments and regulators are thus forced to conduct experiments in the real world with very limited certainty of outcomes, something that, understandably, gives rise to hesitancy. This is compounded by the need for collaborative action between groups of governments and regulators in which interests are often poorly aligned.

THE AFRICAN ROAMING MARKET

In 2008, the global market for roaming was estimated to be worth USD24.5 billion, with some 365 million outbound roamers. Of that total, African countries represented only one percent of roamers, though forecast to grow to around three percent by 2013 (see Figure 3). A substantial majority of the African roamers were consumers rather than business travellers, though both groups were forecast to grow.

FIGURE 3: FORECAST OF TOTAL OUTBOUND ROAMERS FROM AFRICAN MNOS



Source: Stainthorpe, 2008

Unfortunately, there are no equivalent estimates for inbound roamers, making it very difficult to assess the market dynamics or to understand the net cash flows. Only when inbound and outbound roamers are both accounted for can the effects of IMR be analysed. Countries in North Africa and some of the Small Island Developing States (SIDS) are likely to have heavy volumes of inbound traffic from tourists and from return visits of migrant workers.

Unusually, there are data for roaming traffic for the Cape Verde Islands. These show the expected preponderance of inbound over outbound traffic (see Table 2). The effects of the global financial crisis can be seen in the sharp drop in traffic in 2009.

TABLE 2: ROAMING TRAFFIC TO AND FROM CAPE VERDE ISLANDS (MINUTES)

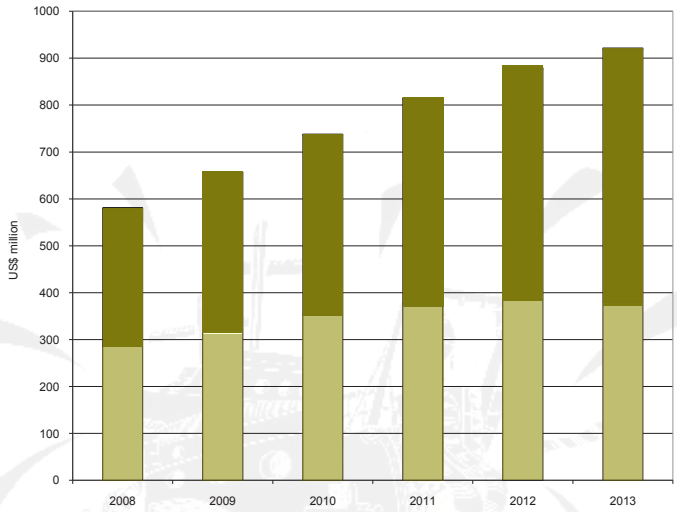
	2006	2007 H1	2007 H2	2008 H1	2008 H2	2009 H1	2009 H2
Inbound	2 460 218	1 228 046	1 263 128	1 345 419	1 345 176	1 619 123	760 166
Outbound	66 537	49 701	62 115	61 287	101 361	490 473	147 901
Net traffic	2 393 681	1 178 345	1 201 013	1 284 132	1 243 815	1 128 650	612 265

Source: ANAC, 2010

Taking the 2005 data on tourists visiting the Cape Verde Islands, some 198 000 visitors (of a total population of 500 000), represented about 13 minutes per visitor over an average stay of 4 to 5 nights. In 2008, outbound roaming represented only 0.1% of total mobile voice traffic, while inbound roaming was about 2.4%, though it was likely to be a higher portion of the international calls originating on mobile networks. Given the higher charges, the revenues would not be in proportion.

The revenues earned by African MNOs from outbound roaming are shown in Figure 4. There are minimal amounts from SMS and data roaming, with the vast majority of the money coming from voice traffic. The forecast growth comes mostly from roaming between countries in Africa.

FIGURE 4: TOTAL OUTBOUND ROAMING REVENUES OF AFRICAN MNOS



Source: Stainthorpe, 2008

Although there are no data on inbound roamers, it is possible to consider the prices they pay, for example, the IMR tariffs charged to visitors from the US. Table 3 shows the prices charged in the summer of 2006, Table 4 and Table 5 for the summers of 2009 and 2010. The same broad pattern applies to all, with a "flat rate" charge, the same per minute rate for incoming, local and international calls. If customers pay an additional monthly fee, usually on an annual basis, lower rates are available. For the most part, the prices are quite expensive, in some cases extremely so. In particular, calls forwarded to Kenya from the US, where the wholesale cost would be a few cents, are charged at USD3.99 or 4.99 per minute. The differences between the tables suggest there is little, if any, competition between the operators in the US and give the appearance that the operators are engaged in an upward price spiral, copying the higher prices of their domestic rivals. Although some of their customers engage in plastic roaming, it would appear not to exert any pressure on the home operators.

TABLE 3: ROAMING CHARGES FOR US-BASED CUSTOMERS IN AUGUST 2006

	Cingular Standard	Cingular World traveler	Sprint	T-Mobile	Verizon Global phone
South Africa	2.49	1.69	1.50	1.49	2.49
Mozambique	3.49	3.49	1.50	1.99	1.29
Malawi	4.99	4.99	-	1.99	1.29
Tanzania	3.99	3.99	1.50	4.99	1.29
Kenya	3.49	3.49	1.50	4.99	4.99

	Cingular Standard	Cingular World traveler	Sprint	T-Mobile	Verizon Global phone
Ethiopia	3.49	3.49	-	-	-
Sudan	3.49	3.49	-	-	-
Egypt	2.49	2.29	1.50	1.99	-

Source: Sutherland, 2006

TABLE 4: INTERNATIONAL ROAMING CHARGES FOR US-BASED CUSTOMERS IN AUGUST 2009

	AT&T Standard	AT&T World traveler	Sprint	T-Mobile*	Verizon Global phone+
South Africa	2.49	1.69	2.49	1.49	2.89/2.29
Mozambique	2.49	2.49	2.49	1.99	2.89/2.29
Malawi	3.49	3.49	3.49	1.99	2.89/2.29
Tanzania	4.99	4.99	4.99	4.99	4.99/3.99
Kenya	3.99	3.99	3.99	4.99	4.99/3.99
Ethiopia	3.49	3.49	3.49	2.99	2.89/2.29
Sudan	3.49	3.49	3.49	-	2.89/2.29
Egypt	2.49	2.29	2.49	1.99	2.89/2.29

* Roaming charges do not include local tolls or long distance charges.

+ The higher rate is the standard roaming plan and the lower rate is the value plan.

Source: Websites of AT&T T-Mobile, Verison

TABLE 5: INTERNATIONAL ROAMING CHARGES FOR US-BASED CUSTOMERS IN AUGUST 2010

	AT&T Standard	AT&T World traveler	Sprint	Sprint with plan	T-Mobile*	Verizon Global phone+
South Africa	2.49	1.69	2.49	1.69	2.49	2.89/1.69
Mozambique	2.49	2.49	2.49	2.29	2.49	2.89/2.29
Malawi	3.49	3.49	3.49	2.99	3.49	2.89/2.29
Tanzania	4.99	4.99	4.99	3.99	4.99	4.99/3.99
Kenya	3.99	3.99	3.99	-	4.99	4.99/3.99
Ethiopia	3.49	3.49	3.49	2.29	3.49	2.89/2.29
Sudan	3.49	3.49	3.49	2.29	-	2.89/2.29
Egypt	2.49	2.29	2.49	2.29	2.49	2.89/2.29

* Roaming charges do not include local tolls or long distance charges.

+ The higher rate is the standard roaming plan and the lower rate is the value plan.

Source: Websites of AT&T T-Mobile, Verison

The net effects of IMR in African countries are very difficult to assess in the absence of data on the inbound number of minutes and the associated revenues. Even the relatively expensive rates charged to visiting Americans cannot be fully evaluated without the wholesale rates paid by the US-based MNOs to their African IMR partners. Nonetheless, it seems likely that the bulk of the profits on IMR calls for visitors from developed countries are retained at home. Moreover, the regulators in developed countries ought to examine IMR tariffs in Africa for evidence of lack of competition on their own retail markets, and conceivably for evidence of collusion.

ONE NETWORK

Celtel was a leading African mobile operator with a substantial geographical presence, often in adjoining countries, built up at a time when the continent was considered much less inviting for MNOs. In March 2005, the Mobile Telecommunications Company (MTC) of Kuwait, announced it had a binding agreement to acquire 100% of the shares of Celtel International BV for USD3.36 billion. In September 2007, MTC adopted the use of the Zain brand (Zain, 2007).

At the end of 2006, MTC launched its new strategy "ACE":

- Accelerating the growth in Africa
- Consolidating the existing assets
- Expanding into adjacent markets.

This was to achieve 3x3x3: "It is the strategy that will make Zain a global player in three stages: regional, international and global, with each stage completed in three years, with an aim of reaching a customer base of 150 million. In essence, with this expansion plan, we aim to achieve in nine years what other companies have taken more than 27 years to achieve" (Zain, 2007).

However, the expansion did not last long and having overextended its reach, Zain sold its African operations, other than in Morocco and Sudan, to Bharti of India for USD10.7 billion in March 2010 (Mookerji, 2010). These networks were rebranded "Airtel" later the same year (Telecoms, 2010).

MSI, subsequently part of Celtel and later Zain, had operations on both sides of the River Congo, in The Democratic Republic of Congo (DRC) and in The Republic of Congo (M2 Presswire, 2002). Although Kinshasa and Brazzaville, the two capitals, are separated by only seven kilometres, telephone traffic between MSI's two MNOs was routed to the respective fixed incumbent operators, which only interconnected in Europe. The costs for this were considerable and had the effect of suppressing demand for calls between the two neighbours. MSI was eventually able to obtain the necessary licences and installed a microwave link across the River Congo in 2002, allowing it to cut its charges by 80% and thus greatly increase traffic volumes. This type of problem was replicated on different scales at many borders in Africa.

In East Africa changes made by the governments gradually liberalised international telecommunications, allowing Celtel and later Zain to own and to interconnect its gateways. In 2004 Kenya joined Tanzania and Uganda in this liberalisation, allowing Celtel to launch reduced rates for calls between the three countries (Zain, 2005). Then in 2006, Zain announced a One Network offer eliminating IMR surcharges for both post-paid and pre-paid customers in East Africa (see Table 6). With all the traffic retained on its own networks, roaming had been fully internalised and with no roaming onto the networks of rivals, there could be no out-payments. A more conventional approach to pre-paid roaming, with high charges and requiring an expensive technical platform, was considered highly unlikely to stop customers switching to rivals.

The One Network offer was gradually extended westward to the Atlantic Ocean, covering an area greater than the EU and becoming available to nearly half the population of the continent. The exception was Zambia, whose government refused Zain its own international gateway, officially for reasons of national security. MNOs there were required to pay the fixed incumbent operator for their international traffic, the government forcing them to support Zamtel in preparation for its privatisation. Instead of One Network, Zain offered its Zambian customers only very limited pre-paid roaming (eg to the UK). Finally, the government relented, allowing competition in international gateways and thus One Network could be offered there (Malakata, 2010).

TABLE 6: THE GROWTH OF THE ZAIN ONE NETWORK

2006	June 2007	November 2007	2009	2010
Kenya	Democratic Republic of Congo	Burkina Faso	Ghana	Zambia
Tanzania	Gabon	Chad	Sierra Leone	
Uganda	Republic of Congo	Malawi	Madagascar	
Gabon		Niger		
		Nigeria		
		Sudan		

Source: Zain press releases

The Zain One Network tariff introduced a special case, which rivals found difficult to copy. If, say, someone living in Uganda has a relative or friend working in Kenya, then if they both use SIM-cards from their countries of residence they must pay for international calls. However, if both use Zain Kenya SIM-cards then the person in Kenya can call the person in Uganda for the price of a domestic call, making a considerable saving (see Table 7). All that is required is a little "juggling" of SIM-cards, to ensure that calls are made on SIM-cards of the same nationality – presumably they would wish mostly to be on a local SIM-card for local family, friends and colleagues.

TABLE 7: PREPAID TARIFFS OF ZAIN KENYA IN 2009 (KENYA SHILLINGS) (ZAIN, 2009)

	To Zain Kenya	To Zain Uganda
Pamoja - peak	7	32
Pamoja - off-peak	3	23
Vuka - peak	8	32
Vuka - off-peak	8	23
Roaming in Uganda	15	15

ZR1 = KES9.75

Source: Zain Website

The One Network offer was extended to data and Internet access in May 2009 (Zain, 2009). Initially, this covered Kenya, Tanzania and Uganda and some countries in the Levant. The Zain One Office tariff allowed the use of GPRS across East Africa. The prices are shown in Table 8, converted into ZAR to simplify comparisons.

TABLE 8: ZAIN ONE OFFICE GPRS TARIFFS IN EAST AFRICA IN NOVEMBER 2009 (PER MINUTE)

	Kenya		Tanzania		Uganda	
	KES	ZAR	TZS	ZAR	UGX	ZAR
Zain Kenya – Prepaid			32.79	3.36	23.96	2.46
Zain Kenya – Postpaid			27.10	2.78	19.01	1.95
Zain Tanzania – Prepaid	365	2.17			417	2.48
Zain Tanzania – Postpaid	292	1.73			333	1.98
Zain Uganda – Prepaid	524	2.10	818	3.27		
Zain Uganda – Postpaid	403	1.61	656	2.62		

ZAR1 = KES9.75 = TZS168.35 = UGX250

Source: Websites of: Zain Kenya, Zain Tanzania, Zain Uganda

The One Network scheme eliminated all IMR charges for both post-paid and pre-paid customers – they simply paid the applicable national rates for outbound calls and received inbound calls free of charge, as if they were at home. Pre-paid customers were additionally able to purchase top-up cards locally to maintain their credit balance. Since customers were almost exclusively pre-paid they would never have paid traditional IMR charges, but would instead change their SIM-cards at the border. It therefore made commercial sense to abandon established IMR charging models in order to avoid customers switching to a rival operator. It also allowed customers access to all of their stored credit and ensured cross-border communications, keeping friends and families connected.

George Held, Zain's Marketing Director for One Network noted, "When we launched it in DRC, there was a surge in customers in Uganda, Kenya and Tanzania because of these cross-border activities, especially the lake area" (The New Vision, 2009).

Zain also offered conventional data roaming using GPRS, with both post-paid and pre-paid tariffs, to a range of destinations (Daily Trust, 2008). This has been presented as a premium service, intended to attract high-spending customers. An even more exotic form of IMR was available through Aeromobile, which provided a roaming service for Zain customers on flights operated by the Emirates airline (Leadership, 2008).

While it has been argued that One Network drove up traffic volumes for Zain there are only vague hints from the operator to support this view, which are undermined by the UN World Tourism Organisation reporting only a few tens of thousands of individuals crossing these borders each year (Gillwald & Mureithi, 2010). Rather, it appears that Zain obtained considerable publicity from the One Network plan, which it used to support the expensive process of rebranding, helping it to attract more domestic customers. It incurred some regulatory costs in negotiating the necessary permissions. One Network also had a significant effect on rivals, which felt it necessary to respond, even if not on the same scale. It needs to be recalled that Zain maintained its conventional roaming business for post-paid visitors, especially those from developed countries. The attractions of the One Network tariff to Zain were a complex mixture; discomfiting rivals, encouraging customers not to switch to rivals and driving up domestic market numbers.

RESPONSES TO ONE NETWORK

The other large MNO groups in Africa, notably MTN, Orange and Vodafone, have all felt themselves to be under sufficient pressure from Zain to respond to One Network. Clearly, Zain anticipated that this would require difficult and protracted negotiations between firms that normally saw each other as competitors.

MTN, a rival pan-African operator, launched a special "low" roaming tariff for its customers based in South Africa, who were charged ZAR5 per minute for both making and receiving calls across the rest of Africa (MyBroadband, 2008). Sending an SMS cost ZAR1.50, while receiving one was free[2]. At the end of 2010 the prices on its partner networks were ZAR5 for a local call, ZAR7 to call back to South Africa, ZAR4 to receive a call and ZAR2 to send an SMS (MTN, 2010).

In 2007, MTN Rwanda launched a seamless roaming service with partners in East Africa (see Table 9) (Highway News Agency, 2007). This allowed customers free roaming between the networks, receiving calls without charge, making calls at home rates and being able to use airtime vouchers purchased from local operators. However, the scheme was modified in 2009, so that customers paid the local rates rather than the home rates (MTN, 2009). While this avoided problems of net payments by the home operator to the roamed operator, where there were price differences, it diminished the transparency of the prices for the customer. MTN brands the service Home & Away, while its partners use the Kama Kawaida brand.

TABLE 9: JOINT ROAMING AGREEMENT IN EAST AFRICA

Country	Operator	URL
Burundi	U-Com‡	-
Kenya	Safaricom*	www.safaricom.co.ke
Rwanda	MTN	www.mtn.co.rw

2 These prices appear very similar to those required at that time by the EU Roaming Regulation.

Country	Operator	URL
Tanzania	Vodacom*	www.vodacom.co.tz
Uganda	MTN	www.mtn.co.ug
Uganda	Uganda Telecom	www.utl.co.ug

Source: The Monitor, 2008

MTN announced preferred roaming in 2008, initially covering South Africa, Botswana, Swaziland and Zambia (The Monitor, 2008). Then MTN said it would introduce a seamless roaming MTN One World for all its operations in Africa and the Middle East by mid-2009 (The New Vision, 2008). In addition to the South African offer described above, MTN One World offers local country rate roaming tariffs in West Africa, but with very different prices depending on both the operator and the country (see Table 10) (MTN, 2010).

TABLE 10: MTN ONE WORLD RATES FOR ROAMING NIGERIAN CUSTOMERS (NIGERIAN NAIRA)

	Ghana	Benin	Cameroon	Liberia	Guinea Bissau	Guinea Conakry	Ivory Coast	Congo
Receiving Calls	15	15	5	35	60	60	25	60
Sending SMS	20	36	74	16	14	21	19	13
Calls to:								
MTN Nigeria	21	51	124	25	41	22	37	31
Nigeria other networks	166	60	124	65	122	85	55	37
Africa, America, Asia Pacific, Europe & Middle East	166	60	124	65	122	85	55	37
Satellite	1 418	2 943	1 813	1 081	784	1 357	1 397	659
Small Islands	367	1,176	124	393	784	374	129	71
WECA MTN Benin	64	51	124	25	41	22	37	31
Other networks in Benin	166	77	124	65	122	85	55	37
WECA MTN Cameroon	51	51	64	25	41	22	37	31

	Ghana	Benin	Cameroon	Liberia	Guinea Bissau	Guinea Conakry	Ivory Coast	Congo
Other networks in Cameroon	166	60	74	65	122	85	55	37
WECA MTN Congo	204	60	124	25	41	22	37	31
Other networks in Congo	166	60	124	65	122	85	55	39
MTN Ivory Coast	36	60	124	25	41	22	37	31
WECA MTN Ghana	21	51	124	25	41	22	37	31
Other networks in Ghana	22	60	124	65	122	85	55	37
WECA MTN Guinea Bissau	79	60	124	25	41	22	37	31
Other networks in Guinea Bissau	166	60	124	65	65	85	55	37
WECA MTN Guinea Conakry	166	60	124	25	41	22	37	31
Other networks in Guinea Conakry	166	60	124	65	122	23	55	37
WECA MTN Liberia	32	60	124	25	41	22	37	31
Other networks in Liberia	166	60	124	33	122	85	55	37

Source: MTN Nigeria Website

In July 2007, Glo Mobile, a Nigerian mobile operator, obtained a GSM licence for the neighbouring Republic of Benin (Okojie, 2008). In May 2009, Glo introduced Two Nations, One Call Rate, with no roaming charges between the two countries, aimed primarily at local travellers with a view to locking them in (Ukodie, 2009). The only rival to have

licences in both countries was MTN, engaged in creating more complex roaming tariffs without surcharges.

In 2009, Orange offered a special rate when roaming from Uganda to Kenya. Incoming calls were free, while local calls and calls to Kenya are UGX420 per minute (KES15.63 or ZAR1.60). That compared with an on-net rate in Uganda of UGX270 and off-net rate of UGX310, while calls from Uganda to Kenya are UGX420.

Orange created a zone of West African countries in 2007, comprising Guinea, Guinea Bissau, Ivory Coast, Mali and Senegal, with reduced prices for roaming (see Table 11). The operators offer limited pre-paid roaming, but extensive post-paid roaming (Orange, 2010).

TABLE 11: PRICES IN THE ORANGE ZONE OF WEST AFRICA IN 2009 (XOF OR FCFA)

Home country	Countries	Local	Call home
Ivory Coast	Orange Zone	177	177
	Orange rest of Africa	500	1000
	Europe	500	2000
Mali	Senegal	150	150
	Guinea, Guinea Bissau, Ivory Coast & Niger	150	150
Senegal	Guinea, Guinea Bissau, Ivory Coast, Mali & Niger	150	150

XOF1000 = ZAR17.00

Source: Websites of Orange, Orange Mali, Orange Senegal

In comparison with Zain, the responses appear piecemeal but pragmatic, focusing on what can be delivered and what is significant. Ovum has noted that the volumes of traffic being generated and the revenues won and lost by such deals did not seem very significant (Obiodu, nd). Nonetheless, when faced with a non-roaming offer a significant group of customers who are nomadic or migrant or whose family and friends are nomadic or migrant see the benefits and move to or remain with operators offering beneficial tariffs.

REGULATORY INITIATIVES

Following the investigation launched by the European Commission in 1999, the persistently high charges for IMR came to be perceived as a "regulatory" issue, one that was more likely to be solved by an authority than by the market. A number of regional economic groupings joined the EC in seeking out a solution. Some terminological confusion may have been caused by the EU Roaming Regulation, which is a transnational statute, adopted under the European Community Treaty, its connection with regulators being instructions to them to collect data.

In 2005, the African Telecommunication Union (ATU) and the African Development Bank (AfDB) began a project for a single African SIM-card (East African Standard, 2005). Subsequently, the ATU indicated it would "Develop a regulatory framework for the implementation of cross-border networks and pan African services such as regional roaming" in the period 2008-09 (Africa, 2006). While still considered a work item, no progress has been made for some years.

The Economic Community for the West African States (ECOWAS) has taken various steps to harmonise policies and regulations in order to facilitate regional integration of ICT markets. It adopted a road map for regulatory harmonisation and regional mobile roaming (ITU, 2006). As of 31 July 2005 there were 268 roaming agreements made by 23 of the 42 West African Operators (Sanou, 2005). At that time, in three countries not a single operator had a roaming partner in the ECOWAS area. For post-paid customers, heavy security deposits were required, between USD340 and USD1 500, while even pre-paid customers faced one-time charges of between USD19 and USD47. There was one innovative marketing offer, with Telecel, present in six countries, called @SIM, in which the customer was given one SIM-card for the home network and others for the networks to be visited.

WATRA (the association of regulators) organised a feasibility study jointly with ECOWAS, on roaming and interconnection in the region (Ndukwe, 2003). This concluded that pre-paid roaming was a "honeypot" for operators, if they could provide an IMR service (Aihe, 2007). Conferences on roaming were held in 2007 and 2008. However, this work subsequently ground to a halt, with its focus shifted to cutting costs for international calls within West Africa.

The Southern Africa Development Community (SADC) addressed roaming charges through a Home and Away roaming initiative by ministers in 2007. In November 2008, the Communications Regulators' Association of Southern Africa (CRASA) discussed the SADC Home and Away Roaming initiative. It then created a Regional Alliance Task Team (RATT) with representatives from:

- SADC Secretariat
- CRASA
- GSM Association Africa
- Southern Africa Telecommunication Association (SATA)
- SADC Parliamentary Forum.

Its primary task was to investigate possible mechanisms to reduce the high charges for IMR within the region, with a view to a final decision to be taken by SADC Ministers. CRASA hired consultants to undertake an impact assessment of its roaming initiative, whose report was discussed at its meeting in early 2010 and published later that year (Analysys Mason, 2010). It noted the usual strange variations, and sometimes a lack of transparency, in prices, largely attributed to high wholesale prices, though complicated by problems with international gateways and exchange rate fluctuations[3]. Additionally, there were technical problems, including poor quality of service.

3 There may also have been concerns by some MNOs about the creditworthiness of other MNOs.

The regulatory approaches to IMR have been less than productive. Possible penalties or interventions have been seen by MNOs as highly unlikely to be imposed and thus failed to convince them to act. Moreover, the capacity for any one country to regulate is limited and many already have a transnational commercial offer from Airtel/Zain or from a rival. Indeed, it has been commercial actions and reactions that have driven down IMR prices and consequently it has become progressively more difficult to justify an intervention, requiring complex work on regulatory impact assessments. The real challenge would be to develop a regulatory intervention that would build on the One Network approach, for example by widening its scope, adding more MNOs or by encouraging MNOs to create a roaming exchange or spot market.

OPEN CONNECTIVITY

Established in 2005 by the GSM Association, the Open Connectivity (OC) programme was intended to facilitate easier and faster outbound roaming agreements for MNOs, helping new and smaller operators increase the scope of the IMR service they offered their clients. With more than 700 operators, the traditional bilateral approach was claimed to have reached its limits. Within the OC framework a number of hubs would provide access to multiple IMR partners via a single commercial agreement; ultimately these are expected to interconnect through peering arrangements (see Table 12).

TABLE 12: OPEN CONNECTIVITY COMPLIANT ROAMING HUBS IN LATE 2010

Company	Country	Website
Aicent	US	www.aicent.net
BICS	Belgium	www.bics.com
Comfone	Switzerland	www.comfone.com
Link2one	Luxembourg	www.l2one.com
Orange	France	www.orange.com/wholesalesolutions/pagesinv/valeurs2.jsp
Syniverse	US	www.syniverse.com
United Hubbing	UK	www.unitedhubbing.com
Vodafone	UK	www.vodafone.com

Source: GSMA Association, Open Connectivity Programme

For example, Rwandatel struck an IMR-hub deal with BICS, giving it access to 535 networks worldwide through Proximus, the mobile subsidiary of Belgacom (Rwandatel, 2009). Rwandatel customers were to be issued with SIM-cards with both Rwandatel and Proximus International Mobile Subscriber Identities (IMSIs). Where Rwandatel has no bilateral roaming agreement, then the SIM-card would automatically present the roaming customer as being from Proximus, becoming a virtual Belgian, to use its wider set of IMR agreements. The deal is not bilateral, so that Rwandatel does not immediately benefit from incoming roaming customers or lower prices – these must still be negotiated bilaterally.

While the hubbing arrangement appears to open the way to easier access to outbound roaming, there is no evidence that it reduces prices. Indeed, even where a hub has access to regulated wholesale roaming prices in the EU, there appears to be neither a legal obligation nor any obvious commercial incentive to pass on the lower price to non-EU operators. Competition between the hubs appears to focus on increased coverage for a few high-spending outbound roamers, rather than on reducing prices.

CONCLUSION

Visitors to Africa who elect to use the roaming service from their home mobile network operators can maintain their usual telephone number and remain connected. They have to pay heavily to do so and any local African wishing to call them has to pay the international rate to call their home network. If visitors give up their home number and roam instead with a SIM-card acquired locally, they can save considerably on the charges, but then have to advise colleagues, family and friends of a new and temporary number, plus they should periodically check their home voicemail. Likewise, Africans with post-paid subscriptions who leave the continent will pay very high roaming charges in order to remain in seamless contact, perhaps being asked to pay a substantial deposit for the privilege. Alternatively, they too can switch to local prepaid SIM-cards with the associated lower charges, but at increased inconvenience.

Prepaid roamers have a more limited choice – largely because of the costs they are not offered a service in more exotic locations. Each operator has typically set up one or two dozen bilateral deals with operators in major travel destinations, usually with neighbours, significant trading partners and, especially, the former colonial powers. The importance of these arrangements is difficult to assess, since there are very few data on the levels of use of pre-paid roaming.

The Open Connectivity initiative by the operators simplifies some wholesale arrangements for roaming. This means that customers should have access to a wider range of networks and to advanced roaming services, though it has done nothing to reduce prices.

While the European Commission was able, if ill-advised, to block the introduction of transnational tariffs without a roaming surcharge, Zain did this in Africa without hindrance (EC, 2002). Where rivals saw the need to respond in order to retain customers, they have done so, though generally on a smaller scale and on specific and commercially important routes.

The vast majority of individual Africans cannot afford expensive roaming rates, at several dollars per minute, whether post-paid or pre-paid, so that it is reasonable for mobile operators to abandon traditional IMR charges. A prerequisite is that each operator be allowed its own international gateway, with which it can make deals within a corporate group or with commercial partners. Moreover, it does not preclude charging high wholesale roaming rates to operators in developed countries, which easily pass these on to their customers, admittedly with a large and seemingly increasing mark-up by the foreign partner.

The failure to form a wholesale roaming market remains something of a mystery. With international voice telephony and Internet traffic there are intermediaries and aggregators to

facilitate smaller and niche market players. There appear to be significant structural obstacles and, possibly, anti-competitive practices that impede the formation of such a market for roaming services.

There is nothing to stop operators such as Orange and Vodafone giving African customers a secondary IMSI, for example from one of their European networks, to allow them access to the low regulated roaming rates. While this might increase their competitiveness on the retail market it seems to be considered unlikely to generate a sufficient number of new customers to overcome lost revenues.

While regional economic groupings and associations of regulators have taken an interest in high IMR charges, they have yet to achieve any significant results. They have not even coordinated the introduction of national measures that are known to work:

- Requiring the sending of an SMS with IMR prices on arrival abroad
- Capping retail prices for call forwarding
- Capping spending to avoid "bill shock".

There are concerns that interventions might further distort the poorly understood market dynamics. Further detailed study of the economics of IMR markets is required to ensure a level of understanding that is sufficient to evaluate policy options. Minimally, this requires the collection of considerable data from the operators.

Work at the African Telecommunication Union (ATU) and in West Africa ground to a halt because of the complexity of the problem, the poor alignment of interests and the opposition of the operators. The recent study for CRASA illustrated the complexity of the problem, including the lack of data.

The scope for further research is considerable. On one level the retail prices charged by non-African operators require further study to understand why they appear to be rising. On a very practical level, survey work with Africans crossing borders would help to explain attitudes towards costs and behaviour, in particular ownership of SIM-cards from foreign operators. Surveys of tourists and business travellers from developed countries would also provide insights into their communication needs and their willingness to pay very high prices. It would be helpful to map flows of visitors within Africa onto the various special tariffs and to identify any remaining obstacles to offers of roaming without surcharges. With the growing adoption of mobile broadband, analyses of the prices for, and the use of, data roaming are becoming increasingly important. The activities of the economic groupings and of their regulatory groups require further analysis, in order to better understand the roles they can usefully play in the governance of transnational telecommunications markets, their requirements for capacity building and any improvements that can be made to institutions and procedures.

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