

Communications Review

Telecoms in Africa: innovating and inspiring



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A survey of telecom markets in Africa

A new approach to improving
network performance

What's next for mobile payments?

How industry CEOs feel about the future

Perspectives from telecom
executives in Africa

Africa is the second largest continent in the world, with a population of more than one billion people. The social and economic impact that telecommunications have had on Africa over the past decade are astounding. And there's more to come.

Communications Review

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Africa: a continent offering a world of opportunity

With billions of dollars of international investment flowing in, and subscriber numbers rising across the continent, Africa's communications marketplace has now passed the tipping point from high potential to high growth. In addition to being one of the world's most dynamic telecom markets, Africa is also among the most innovative – a global testing lab and a leader in digital- and mobile-enabled applications in areas like payments, commerce, health and education.

by *Johan van-Huyssteen*

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Creating a solid foundation for growth

Degraded network performance has a significant business impact: it leads to reduced usage, increases care and assurance costs, lowers customer satisfaction and increases churn. Those effects come as operators around the world are busy investing in the deployment of next generation networks while hobbled by dwindling investments in their existing networks, cuts in network operating expenditures and declining average revenue per user. Operators that take stock of their networks and invest in improving their existing networks before the next generation network technology rollout not only gain valuable insights into their existing network but also perform better and rollout new technology networks faster.

by *Shailabh Atal, Mohamed Kande and Harish Nalinakshan*

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Enabling possibilities through mobile payments

Mobile payments are radically changing the shape of personal and business banking in Africa. With a number of success stories already established, mobile operators and banks are seeking to replicate these in other countries where the gap between banking and mobile penetration levels provides vast potential for further expansion. Africa's population of unbanked people is in urgent need of access to vital financial services, and operators are ideally placed to service this need – provided they recognise the challenges that lie ahead and take steps early on to address them.

by *Ahmed Chohan and Adrian Dunsby*

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Delivering results

Commitments to doing more business globally are accelerating in 2012 despite economic, regulatory and other uncertainties. PwC's *15th Annual Global CEO Survey* looks at how CEOs are adapting the way in which they go to market, reconfiguring processes and – at times – entire operating models. Here we present a summary of key findings among CEOs in the communications industry.

by *Pierre-Alain Sur*

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Wim Vanhelleputte MTN Côte d'Ivoire

MTN Côte d'Ivoire is the country's number one operator and is setting its sights on 3G mobile broadband services to fight off the increasing pressure from local and international operators. Here, Chief Executive Officer Wim Vanhelleputte shares his insights on the role of mobile banking in developed and developing countries; the symbiotic relationship of operators and regulators; and how transitioning to new operating models requires not just a smart approach, but also patience.

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Karel Pienaar MTN South Africa

When mobile penetration soars past 100%, operators need to focus more on developing innovative services and reevaluating their business models. MTN is no stranger to innovation – it pioneered prepaid mobile, is embracing LTE and investing in submarine cable. Here, MTN South Africa's Chief Executive Officer Karel Pienaar talks about exploring opportunities within the financial industry, the importance of telecoms in bridging the digital divide and the necessity of moving to shared-services models and partnering to deliver new services and stay competitive.

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L'Afrique : un continent très prometteur

Grâce à l'afflux de milliards de dollars d'investissement international et la hausse du nombre d'abonnés sur l'ensemble du continent, le marché des télécommunications africain a basculé d'un fort potentiel à une forte croissance. L'Afrique est l'un des marchés des télécommunications les plus dynamiques au monde, mais compte aussi parmi les territoires plus innovants – laboratoire d'essais mondial et leader des applications mobiles et numériques dans des domaines tels que les paiements, le commerce, la santé et l'éducation.

par *Johan van-Huyssteen*

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Établir des bases solides pour la croissance

La détérioration du réseau a un impact économique significatif : elle se traduit par une utilisation réduite, des coûts accrus d'entretien et d'assurance, un recul de la satisfaction client et un taux croissant de désabonnement. C'est ce que l'on observe dans un contexte où les opérateurs du monde entier investissent dans le déploiement des réseaux de nouvelle génération tout en subissant une diminution des investissements dans leurs réseaux existants, une compression des dépenses d'exploitation de réseau et une baisse du revenu moyen par abonné (ARPU). Les opérateurs qui évaluent leurs réseaux et investissent aujourd'hui dans l'amélioration avant le déploiement de la technologie de nouvelle génération bénéficient d'informations précieuses des réseaux existants, fonctionnent mieux et accélèrent ce déploiement.

par *Shailabh Atal, Mohamed Kande et Harish Nalinakshan*

Perspectives

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Wim Vanhelleputte MTN Côte d'Ivoire

MTN Côte d'Ivoire est le premier opérateur du pays et mise sur les services 3G (haut débit mobile) pour répondre à la pression croissante des opérateurs locaux et internationaux. Dans cet article, Wim Vanhelleputte, CEO de MTN Côte d'Ivoire, expose sa vision du rôle de la banque mobile dans les pays développés et en voie de développement ; les relations étroites entre les opérateurs et les régulateurs ; et comment le passage à de nouveaux modèles opérationnels n'exige pas seulement d'adopter une démarche intelligente mais également de faire preuve de patience.

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Nouvelles possibilités grâce aux paiements mobiles

Les paiements mobiles transfigurent les services bancaires aux particuliers et aux entreprises en Afrique. Forts de leurs succès, les banques et opérateurs mobiles tentent de reproduire ces modèles de réussite dans d'autres pays où l'opportunité d'exploiter le taux de pénétration des services mobiles pour relever celui des services bancaires offre de bonnes perspectives de développement. Il est urgent pour la population africaine non bancarisée de bénéficier des services financiers essentiels et les opérateurs sont les mieux placés pour leur fournir, à condition qu'ils appréhendent les défis et prennent rapidement des mesures pour les relever.

par *Ahmed Chohan et Adrian Dunsby*

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Obtenir des résultats

Les engagements en matière de croissance de l'activité mondiale se renforcent en 2012 en dépit des incertitudes économiques, réglementaires et autres. La 15e édition annuelle de l'étude mondiale de PwC sur les priorités des chefs d'entreprise (« 15th Annual Global CEO Survey ») de PwC examine comment les dirigeants adaptent leur stratégie commerciale, refondent leurs processus et parfois l'intégralité de leurs modèles opérationnels. Nous vous présentons une synthèse des principales conclusions de l'étude sur les chefs d'entreprise du secteur des télécommunications

par *Pierre-Alain Sur*

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Karel Pienaar MTN Afrique du Sud

Lorsque le taux de pénétration des services mobiles est supérieur à 100 %, les opérateurs doivent davantage se concentrer sur le développement de services innovants et la réévaluation de leurs modèles commerciaux. L'innovation est un domaine maîtrisé par MTN qui est l'un des pionniers de la téléphonie mobile prépayée, a adopté le LTE et investit dans le câble sous-marin. Karel Pienaar, CEO de MTN Afrique du Sud décrit les opportunités du secteur financier, le rôle des télécommunications dans la réduction de la fracture numérique, ainsi que la nécessité d'adopter des modèles de services partagés et de nouer des partenariats pour développer l'offre de services et rester compétitifs.

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África: el continente que ofrece un mundo de oportunidades

Con la entrada de miles de millones de dólares de inversión internacional y el aumento de abonados en todo el continente, el mercado de las telecomunicaciones en África ha rebasado el punto de inflexión y pasar de tener un alto potencial a registrar un crecimiento elevado. Además de ser uno de los mercados de telecomunicaciones más dinámicos del mundo, África se encuentra entre los mercados más innovadores: cuenta con un laboratorio de pruebas global y es líder en aplicaciones digitales y móviles, en áreas tales como pagos, comercio, salud y educación.

por Johan van-Huyssteen

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Crear cimientos sólidos para el crecimiento

Un rendimiento de red degradado repercute de manera significativa en el negocio: se traduce en una disminución del uso, aumenta los costes de mantenimiento y aseguramiento, reduce la satisfacción del cliente e incrementa la rotación de clientes. Este es el resultado de que operadores de todo el mundo estén ocupados invirtiendo en el despliegue de redes de nueva generación, lastrados por la disminución de la inversión en sus redes existentes, los recortes en los gastos de explotación de redes y el descenso en los ingresos medios por usuario. Los operadores que hacen balance del estado de sus redes e invierten en mejorarlas antes del lanzamiento tecnológico de aquellas de nueva generación no solo adquieren una percepción valiosa de su red actual, sino que además logran un rendimiento más elevado e introducen las nuevas redes tecnológicas con mayor rapidez.

por Shailabh Atal, Mohamed Kande y Harish Nalinakshan

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Cómo facilitar el pago con móvil

El pago con móvil está cambiando drásticamente el uso de banca personal y profesional en África. Los operadores móviles y los bancos están intentando replicar historias de éxito en países donde la brecha entre la banca y los niveles de penetración móvil ofrece un gran potencial de expansión. Las personas “no bancarizadas” en África necesitan tener acceso de forma urgente a servicios financieros y los operadores están en una posición ideal para dar este servicio – siempre y cuando aprecien los desafíos y sepan tomar medidas anticipadas para poder cumplir éstos.

por Ahmed Chohan y Adrian Dunsby

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Entregar resultados

En 2012, los compromisos para emprender más actividades de negocio en todo el mundo están en plena aceleración, a pesar de las incertidumbres económicas, normativas y de otra índole. La decimoquinta Encuesta Global Anual a CEOs de PwC examina cómo están adaptando los altos directivos la forma de entrar en el mercado, reconfigurando los procesos y – en ocasiones – los modelos de explotación en su totalidad. En este artículo se presentan un resumen de las conclusiones clave de los consejeros delegados pertenecientes al sector de las telecomunicaciones

por Pierre-Alain Sur

Perspectivas

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Wim Vanhelleputte MTN Côte d'Ivoire

MTN Côte d'Ivoire es el operador número uno del país, que tiene la mirada puesta en servicios de banda ancha móvil 3G para resistir a la creciente presión de operadores locales e internacionales. En este artículo, su consejero delegado, Wim Vanhelleputte, comparte su visión acerca del papel de la banca móvil en los países desarrollados y en desarrollo; la relación entre operadores y reguladores; y cómo una transición hacia nuevos modelos de explotación requiere además de una aproximación inteligente, paciencia.

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Karel Pienaar MTN South Africa

Cuando la penetración móvil se eleva por encima del 100%, los operadores deben centrarse más en desarrollar servicios innovadores y en reevaluar sus modelos de negocio. Innovar no es algo desconocido para MTN: fue pionera en la introducción de servicios móviles de prepago, está adoptando el proyecto LTE e invierte en cable submarino. En este artículo, el consejero delegado de MTN South Africa, Karel Pienaar, habla sobre cómo explorar oportunidades en el sector financiero y la importancia de las compañías de telecomunicaciones a la hora de superar la brecha digital. Además puntualiza la necesidad de moverse hacia modelos de servicios compartidos y hacia la consolidación de alianzas que permitan ofrecer servicios nuevos y seguir siendo competitivos.

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Afrika: Ein Kontinent bietet eine Welt voller Möglichkeiten

Milliarden von Dollar an internationalen Investitionen flossen in den afrikanischen Telekommunikationsmarkt. Die Anzahl der Kunden stieg stetig an. Nun wird der Kontinent seinem Ruf als "high potential" gerecht und glänzt mit hohen Wachstumsraten im Telekommunikationssektor. Afrika ist nicht nur einer der dynamischsten Telekommunikationsmärkte weltweit sondern auch einer der innovationsstärksten – ein globales Testlabor und Marktführer für digitale und mobile Applikationen in Bereichen wie Zahlungsverkehr, Handel, Gesundheit und Bildung.

von *Johan van-Huyssteen*

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Eine solide Basis für Wachstum entwickeln

Schwächelnde Netzwerkleistung hat einen signifikanten Einfluss auf das Geschäft: sie führt zu einer verminderten Nutzung, erhöht die Pflege- und Sicherheitskosten, senkt die Kundenzufriedenheit und deren Loyalität. Diese Effekte entstehen, da Betreiber weltweit mit Entwicklung Netzwerke nächster Generation beschäftigt sind, und gleichzeitig durch abnehmende Investitionen in bestehende Netzwerke, Kürzungen der Betriebsausgaben sowie einen sinkenden Durchschnittsumsatz pro Nutzer (ARPU) eingeschränkt sind. Betreibern, die vor der Einführung neuer Netzwerktechnologien eine Bestandsaufnahme ihrer Netzwerke machen und in die Verbesserung bestehender Netze investieren, bekommen nicht nur wertvolle Einblicke in ihre Netzinfrastruktur, sondern bringen auch eine bessere Leistung und können neue Netzwerktechnologie schneller implementieren.

von *Shailabh Atal, Mohamed Kande und Harish Nalinakshan*

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Wim Vanhelleputte MTN Côte d'Ivoire

MTN Côte d'Ivoire ist der führende Telekommunikationsbetreiber an der Elfenbeinküste und richtet nun seine Aufmerksamkeit auf mobile 3G-Breitband-Dienste, um dem zunehmenden Druck von lokalen und internationalen Anbietern standhalten zu können. CEO Wim Vanhelleputte teilt mit uns seine Erfahrung bezüglich der Rolle des Mobile-Bankings in Industrie- und Entwicklungsländern, gibt eine Einschätzung zu den Interdependenzen zwischen Telekommunikationsanbietern und Aufsichtsbehörden und legt nahe, dass eine Umstellung auf neue Betriebsmodelle nicht nur intelligente Ansätze sondern auch Geduld erfordert.

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Neue Möglichkeiten durch mobile Bezahlsysteme

Mobile Bezahlsysteme werden sowohl das private, als auch das geschäftliche Banking radikal verändern. Mobilfunkbetreiber und Banker bauen auf einigen bereits vorhandenen Erfolgsgeschichten auf und versuchen diese Geschäftsmodelle in weitere Länder zu exportieren, wo die Kluft zwischen Banken- und Mobilfunkpenetrationsraten ein hohes Entwicklungspotential eröffnet. Der Teil der afrikanischen Bevölkerung, welcher nach wie vor kein Bankkonto besitzt, ist dringend auf den Zugang zu modernen Finanzdienstleistungen angewiesen. Die Anbieter mobiler Bezahlsysteme können sich hier optimal positionieren – vorausgesetzt, sie erkennen die zukünftigen Herausforderungen und ergreifen frühzeitig Maßnahmen, um diese zu bewältigen.

von *Ahmed Chohan und Adrian Dunsby*

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Konkrete Ergebnisse liefern

Trotz ökonomischer, regulatorischer und anderen Unsicherheiten haben immer mehr Unternehmen vor, ihr Geschäft in 2012 internationaler aufzustellen. Der 15. PwC Annual Global CEO Survey beschäftigt sich mit der Frage, wie Unternehmenslenker die Art und Weise von Marktbearbeitung bestimmen, Prozesse neustrukturieren und gegebenenfalls ganze Geschäftsmodelle anpassen. Hier präsentieren wir Ihnen eine Zusammenfassung der wichtigsten Umfrageergebnisse unter CEOs in der Telekommunikationsbranche.

von *Pierre-Alain Sur*

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Karel Pienaar MTN South Africa

Wenn die Mobilfunkpenetration die 100-Prozent-Marke überschreitet, müssen sich Telekommunikationsanbieter stärker auf die Entwicklung innovativer Dienste und die Neubewertung ihrer Geschäftsmodelle konzentrieren. MTN ist kein unbekanntes Unternehmen in Sachen Innovation: Es war einer der ersten Anbieter mit mobilen Prepaid-Modellen, setzte früh auf LTE-Technologie und investiert nun in Unterseekabel. Der CEO von MTN South Africa Karel Pienaar spricht über das Ausloten von Chancen in der Finanzbranche, die Bedeutung der Telekommunikation bei der Überbrückung der digitalen Kluft sowie die Notwendigkeit, auf Shared-Services-Modelle und Partnerschaften umzustellen, um neue Dienstleistungen anbieten und wettbewerbsfähig bleiben zu können.

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非洲大陆 - 充满机遇的新世界

伴随着数十亿美元的投资以及用户数的上升，非洲通信行业的潜力不断被挖掘并持续高速增长。作为全球最具活力同时也最具创新性的电信市场之一，非洲正逐渐成为电子支付、电子商务、医疗和教育等领域的移动通信能够得到广泛应用的实验室和实践先驱。

作者：Johan van-Huyssteen

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磨刀不误砍柴工 - 如何为增长奠定基础

如今，全球的运营商们在忙着投资部署下一代网络的同时，也面临现有网络投资萎缩的窘境，伴随而来的是网络运营支出的削减和用户平均收入（ARPU）的降低，这些因素导致网络质量不再尽如人意，进而对行业带来了重要影响，包括：网络使用率下降、客户关怀及服务保障费用的增加、客户满意度的降低以及客户流失率升高。研究显示，那些对现有网络环境进行细致评估，并在推出下一代移动网络前同样重视投资于现有网络进行改造的运营商，不仅对现有网络的情况理解的更透彻、网络运营的更有效，同时他们推出下一代通信网络的速度也更迅捷。

作者：Shailabh Atal, Mohamed Kande 和 Harish Nalinakshan

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移动商务：抓住机遇跑马圈地

在非洲，移动支付正从根本上改变着银行对公和对私业务的状况。移动运营商和银行已经在一些国家取得了成功，现在，他们正试图把这样的成功复制到那些银行和移动电话普及率都存在巨大增长空间的国家。目前非洲许多没有银行账户的民众对一些重要金融服务都有着迫切的需求，运营商们正信心十足的希望为他们提供这些服务——但这其中依然隐藏着诸多挑战，运营商需预先做好充分准备以克服困难。

作者：Ahmed Chohan 和 Adrian Dunsby

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交付成果 - 通信行业全球CEO调查摘要

尽管存在着诸多经济、法规等层面的不确定性，加强全球化业务往来的呼声在2012年中显得更为迫切。普华永道第15届年度全球CEO调查的内容主要包括：CEO们如何优化市场进入方式？如何重新设计业务流程甚至颠覆整个经营模型？本文将展示对通信行业CEO们的主要调查成果。

作者：Pierre-Alain Sur

前沿观点

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Wim Vanhelleputte MTN Côte d'Ivoire

作为该国最大的运营商，MTN Côte d'Ivoire为了应对来自本地和国际运营商日益加强的竞争压力，正在把目光投向3G移动宽带服务。其首席执行官 Wim Vanhelleputte与普华永道分享了他对下述主题的洞见：移动银行业务在发达和发展中国家的功用；运营商和监管机构的共生关系；以及向新型运营模式转换不仅需要智慧的方法，更需要企业家的耐心。

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Karel Pienaar MTN South Africa

当移动业务渗透率超过100%时，运营商需要将精力更多的聚焦于如何开发创新服务和重新评估其商业模式上。MTN一向热衷于创新，借助其领先的预付费移动电话服务，MTN大力发展LTE并投资海底光缆。其首席执行官 Karel Pienaar与普华永道分享了他对下述主题的洞见：拓展通信服务在金融行业的商机、电信在跨越数字鸿沟中的作用、以及为提供更好的服务和保持强劲的竞争力而向共享合作模式转换的必要性。

Message from the editor



As global communications leader of PwC and as editor, I am delighted and honoured to welcome you to my first edition of *Communications Review*. Like my predecessor in this role, Colin Brereton, I am committed to ensuring that this publication reflects the concerns, aspirations and issues foremost in the minds of the leading decision makers in the global communications industry. I would like to take this opportunity to pay tribute to the outstanding track record Colin earned as global leader and to his great dedication to PwC's communications practice and to our clients' performance.

Today, one region of the world stands out as a vast opportunity for untapped growth: Africa. So the theme I chose for this edition – 'Africa: innovating and inspiring' – not only is timely but also reflects the future of the industry there. Africa is now at the inflection point where high potential starts to turn into high growth. A range of factors – including Africa's relative lack of installed infrastructure in services like communications and banking, its rising disposable incomes and the escalating economic vitality among its rural population – means the industry will grow dramatically as well as very differently than in other markets.

To provide a high-level view of the African growth story, we begin this edition with an article by Johan van-Huyssteen, 'Africa: a continent offering a world of opportunity'. As Johan points out, Africa's relative lack of legacy infrastructure has enabled it to bypass fixed-line services and move straight to the mass-adoption of mobile. As consumers rush to take up and use new mobile services, the result is one of the world's most dynamic communications markets. The market also is one of the most innovative, especially in fast-growing applications like mobile payments.

As Johan highlights, operators across Africa are responding to the opportunity by creating and rolling out value-added services that already are making a real difference to the lives and well-being of millions of people. Looking closely at ten of Africa's communications markets, all significant and at various stages of development, he shows us the positive effects on the ground. The message is clear: for the global communications industry, Africa has arrived – and the really exciting part of the journey is just beginning.

Our second article, 'Creating a solid foundation for growth', builds on the first by examining a challenge confronting operators in Africa and around the world: sustaining and improving network performance. Authors Shailabh Atal, Mohamed

Kande and Harish Nalinakshan look at the root causes, implications and operational and financial impacts of poor network performance. They analyse the successful steps operators are taking to improve their existing networks, paving the way to roll out next-generation technology more effectively and to grow faster in the future by increasing productivity.

The authors conclude that a well-executed network operations assessment and improvement programme can enhance a network's key performance indicators by more than 20%. And such a programme can deliver major savings in both capital expenditures and operating expenditures. As the authors put it, very few arrows in the operator's quiver are capable of hitting so many targets at the same time!

In our third article, we zero in on one of Africa's most exciting and highest-potential areas of opportunity and innovation: mobile payments. In the article, 'Enabling possibilities through mobile payments', Ahmed Chohan and Adrian Dunsby describe how rapid advances in mobile payments are transforming personal and business banking in Africa at a headlong pace. The authors draw on recent PwC research to show how Africa's unbanked customers – from rural farmers to mid-sized urban businesses – are using mobile devices to access financial services that previously were unavailable to them.

Operators pursuing the mobile payment opportunity face hurdles, like managing regulatory change, creating profitable business models, building agent coverage and preventing fraud. But, clearly, the prize for overcoming these challenges will be well worth the effort and the investment.

Our fourth article, 'Delivering results', analyses the findings of PwC's *15th Annual Global CEO Survey*. The article pinpoints how chief executive officers in the communications industry are actively reshaping their go-to-market approaches, business processes and even end-to-end operating models to boost their organisations' ability to do more business globally. The article makes absorbing reading for everyone running a communications business in an increasingly globalised world, wherever they may be based.

Finally, in our Perspectives section we once again meet some movers and decision makers behind the headlines in the global communications sector. Focusing – of course – on Africa, we interviewed two leaders at MTN, a pan-African operator at the forefront of growth and innovation in the region.

First, MTN Côte d'Ivoire Chief Executive Officer Wim Vanhelleputte talks with us about such topics as the role of mobile banking in economic development and the practicalities of transitioning to new operating models. Then MTN South Africa's Chief Executive Officer Karel Pienaar takes

us on a journey from MTN's origins in 1994, when wealthier South Africans had about 4m fixed lines, to today's ubiquitous network of 53m mobile connections linking people of all demographics.

Reading through the articles in this issue, I felt the sense of excitement, adventure and social value that characterise the fast-growing communications sector in Africa. As well as building networks and revenues, our industry is acting as an engine of social and economic development across the region. We are offering innovative services that touch, change and enhance the lives – and the personal and financial well-being – of millions of people every day. I am grateful to have stepped into the editor's role at such an energising time both for Africa and for *Communications Review*, and I look forward to receiving your suggestions and feedback. Please send any comments to me at pierre-alain.sur@us.pwc.com, or feel free to call me on [1] 501 772 8067.



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Africa: a continent offering a world of opportunity

With billions of dollars of international investment flowing in, and subscriber numbers rising across the continent, Africa's communications marketplace has now passed the tipping point from high potential to high growth. Unburdened by a legacy of installed telecom infrastructure, Africa has leapfrogged the fixed-line phase of development to go straight to mass-market mobile networks and services. Even as Africa's total mobile subscriptions soar past 500m, a huge, untapped market is still up for grabs by a wide range of local, regional and global players. In addition to being one of the world's most dynamic telecom markets, Africa is also among the most innovative – a global testing lab and a leader in digital- and mobile-enabled applications in areas like payments, commerce, health and education.

by Johan van-Huyssteen

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The past ten years have been a heady period of dramatic growth, rising investment and rapid technological progress in communications services across Africa. But for many reasons, it's clear that achievements to date are just the beginning – and that Africa's future potential dwarfs the growth seen so far.

The most powerful of these reasons is that in communications platforms and technologies, the story in Africa is mobile. Fixed-line penetration in most markets across Africa tends to be very low – sub-10% in the majority of countries, and even sub-1% in some markets – and relatively flat or declining. Fixed services are still heavily state-dominated, with fixed-line customers in many countries relying on partially or wholly government-owned monopolies for their services.

In stark contrast, mobile services across Africa tend to be highly competitive, with multiple providers – frequently including some players controlled by global majors – and penetration rates that are increasing strongly. In some countries, subscription penetration is well over 100% and still rising. Industry estimates suggest that the number of mobile subscribers in Africa has exploded from 16m in 2000, the year when mobile overtook fixed subscribers, to reach 246m in 2008 and more than 500m today.

Mobile growth supported by rising investment

One of clearest indicators of the rise of mobile in Africa is the shifting pattern of investment in communications infrastructure and services. According to estimates by BMI-TechKnowledge Group, total combined fixed and mobile cumulative capital expenditure made in Africa since 2000 is set to grow from US\$78.8bn in 2008 to US\$145.8bn by 2015. This money is being invested in a wide array of local, regional, pan-African and global infrastructure, services and operations. As Figure 1 illustrates, this rising tide of investment is undergoing an accelerating shift away from investment in fixed-line services and infrastructure, and towards mobile.

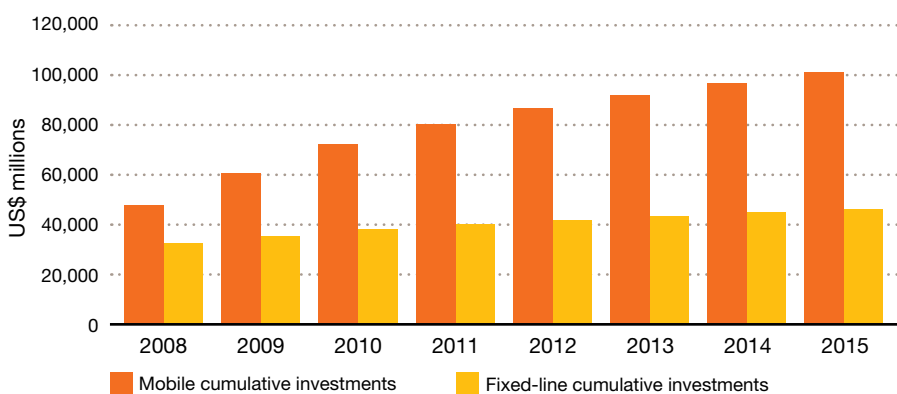
As a result, by 2015 the mobile sector will account for over two-thirds – an estimated 68.9%, or US\$100.1bn – of all cumulative investment in African telecommunications. This massive investment is both underpinned and sustained by the rapid take-up of mobile subscriptions, and it's reflected in the expanding ranks of mobile operators active in the region. According to *Africa & Middle East Telecom Week*, the number of mobile operators with live operations in Africa (excluding mobile virtual network operators) rose more than 10%, from 158 in the first quarter of 2008 to some 175 at the end of 2010.

About 60% of these operators are affiliated with such major international telecom groups as France Telecom, Vodafone, MTN, Bharti Airtel and Millicom. This strong involvement by global players is a function of the consolidation process of recent years. The world's biggest operators – facing market maturity, cutthroat competition and slower growth in their more established markets – have turned their attention to the opportunity in Africa. Recent major deals include Bharti Airtel's US\$10.7bn acquisition in 2010 of the African assets of Kuwait's Zain. At the time of writing, several of the other majors reportedly are looking to add to their portfolios with further acquisitions in the region.

The continued interest in Africa confirms that, despite the rapid growth to date, the biggest opportunities are still to come, as a result of the remaining massive potential for mobile subscriptions to grow. The real growth opportunity is even bigger than it appears at first sight, because of the high level of multi-SIM behaviour by African consumers. As with consumers in other lower-income, price-sensitive markets with healthy competition among providers, many subscribers in Africa look to optimise their costs by mixing and matching their use of various networks. And they are doing this by buying and using handsets that enable them to subscribe to multiple operators through multiple SIM cards.

According to a report in 2011 by the researchers GfK RT, one in ten of the mobile phones being sold in the Middle East and Africa are now dual SIMs. That figure rises to about 25% of handsets in Ghana and to more than 30% in Nigeria. As statistics from Informa Telecoms and Media confirm (see Figure 2), this high use of dual SIMs has opened up a significant gap between 'subscription penetration', estimated to be just over 60% in 2011, and 'subscriber penetration', at slightly above 43%. With Informa forecasting that almost half of Africa's population still won't be connected to mobile services in 2016, it's evident that the market's potential is largely untapped.

Figure 1: Fixed-line versus mobile, cumulative investments in African telecoms (US\$ millions)



Source: BMI-T Africa Infrastructure and Investment Analysis, 2010–2015.

The importance of local market factors

To turn this potential into revenues, operators first need to overcome a number of hurdles. In Africa, the level of disposable income is generally low compared to many other markets. The biggest challenge is how to make services available and sell them profitably to a population of users who generate relatively low revenues per user, and many of whom are geographically dispersed across massive rural areas.

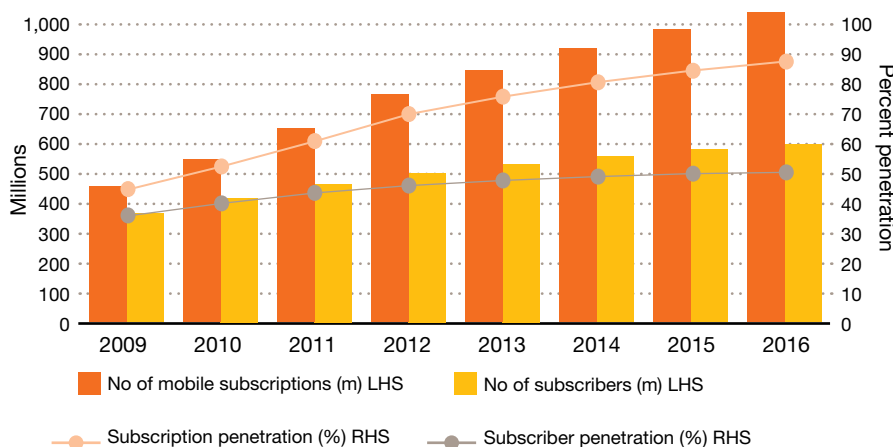
These factors mean that both operators entering and those currently doing business in Africa need to develop lean operating and business models that can be profitable at relatively low average revenue per user. Increasingly, these models include cooperating with competitors to share infrastructure costs and overheads. Sharing towers has become commonplace in the US, Europe, India and South America. Now that sharing is taking off in Africa as well, large swathes of mobile infrastructure are passing from operators to independent tower companies in Ghana, Nigeria, Tanzania, the Democratic Republic of Congo, Uganda and South Africa.

Operators also need to appreciate that, while Africa is commonly characterised as a single marketplace, its markets actually are highly diverse – certainly more so than in other regions like Europe. A look across the continent reveals some communications markets that can be classified as mature in global terms – though still expanding – like Nigeria, South Africa and the North African region. In contrast, other markets are at various stages of rising from a low base, with investment and take-up now hitting a growth curve.

Alongside their varying levels of maturity, what further distinguishes African markets is their regulatory structures. Regulation plays a vital role in the development of all communications markets, but especially ones changing and growing as rapidly as those in Africa (see *Understanding regulation*). Across the region, most of the national regulatory regimes and bodies were set up in the 1990s as part of a wave of liberalisations that crossed the continent. A few, like South Africa, are now in the second wave, having been fundamentally overhauled in recent years. Many others are under review to catch up with developments such as 3G and 4G.

As we noted earlier, there are distinct differences between fixed and mobile regulation in most African countries. Fixed services tend to be characterised by tight regulation and a low number of players, and even monopoly status for a state-controlled operator. Mobile markets are much more deregulated and competitive, with multiple companies and often a high degree of overseas ownership. Many governments have fostered this global influx through open and competitive spectrum auctions.

Figure 2: Mobile subscriptions in Africa, 2009-2016



Source: Informa Telecoms & Media.

Understanding regulation: a vital influence on market development and growth

In the 1990s and early 2000s, many African countries moved to liberalise their telecommunication markets. They aimed to increase competition and thereby introduce lower prices, more choice, greater investment and improved service quality. This widespread deregulation set the scene for the rapid expansion seen during the past decade, and the entry of international players seeking to capitalise on investment opportunities.

Both new and existing investors need to understand the regulatory frameworks in various African countries for two main reasons:

- For new entrants, regulation affects the potential returns on investment by influencing the cost of entering each market, the likelihood that more competitors will come in and the degree to which market participants compete on price or other factors. Regulation also impacts the level of infrastructure investment required to gain a foothold in the market, and the latitude available to incumbents in trying to limit competition from new entrants. For example, if regulators permit tower sharing it may reduce barriers to entry.
- Existing players within each market need a firm grasp of the regulatory details to understand which competitive strategies will and will not work, and to make compelling public interest arguments to the authorities in favour of regulatory changes. Understanding the local political and regulatory environment is especially helpful for investors in some emerging countries in Africa, where the procedures for obtaining licences may have a greater political element than in mature markets like Europe and North America.

While Africa's regulatory regimes vary widely, moves are under way to create more unified and consistent regulation across the various countries. For example, in November 2011 the Nigerian Communications Commission (NCC) – which regulates Africa's biggest communications market – threw its weight behind introducing unified regulation of the industry in the West African region. Supporting proposals by the West African Telecom Regulators Assembly, the NCC stressed that it sees more consistent regulation as imperative for fostering growth and cost-effective communication between countries across West Africa.

A further common theme in mobile regulation is the growing support for tower sharing. Regulators have encouraged the shift in tower management and ownership towards third-party tower companies because it makes existing operators more efficient and lowers the barriers to entry for new operators coming into the market. Governments, also, favour the sharing of infrastructure because it increases mobile connections and taxable industry revenues as well as removes the need for competing towers to be built close to each other.

Increasing bandwidths = new service opportunities

This environment gives a sound basis for growth in 3G services, which are expanding rapidly across Africa and are available or planned for rollout in most countries. With the relatively low penetration of fixed lines, especially in rural areas, satellite broadband operators are launching a rich mix of broadband platforms in Africa.

The rising availability of bandwidth brings implications that go much wider than the communications industry itself. On the economic front, studies suggest that an increase of 10% in mobile penetration equates to a rise of roughly 0.6% in the rate of economic growth. As broadband becomes more widely available in Africa, it's increasingly having a positive impact on people's lifestyles and well-being, including boosting financial inclusion and healthcare.

Mobile payments and commerce are among the biggest areas of service opportunity, reflecting the potential to use mobile and broadband to reach Africa's large unbanked population and enable them to participate in mainstream financial services. This role was underlined by the globally recognised success of the M-PESA branchless banking system, which is backed by Vodafone, and which has expanded from Kenya to several other countries.

African consumers' strong appetite for mobile payment and retailing services was highlighted in a recent study by the mobile ad network InMobi. It found that 59% of South African users have now purchased at least one digital product through their mobile device. The study found that more mobile Internet users in Africa prefer to shop for clothes, electronics and entertainment products, like tickets and music, from their mobile devices (46%) than from their desktop computers (10%) or even in a store (44%).

Mobile health is also growing fast, enabled by rising connectivity and fuelled by collaboration among operators, nongovernmental organisations, governments and health providers. As long ago as 2007, an SMS-based campaign called 'Smile for You' helped 40 South African children get operations to reverse cleft palates. A 2009 United Nations' survey found that Africa led the world in the number of mobile-health projects in the region, with 21. That number has since risen fast, with a flow of projects targeting issues including HIV/AIDS and drug counterfeiting. More generally, the social and economic potential of communications links in Africa was underlined recently in an interview given by a senior UN official (see *Delivering the benefit of information*).

A force for change

Across Africa, operators are harnessing headlong growth by giving customers reliable, accessible services at low cost. Recognising how rising telecom penetration is fuelling economic growth and social development, a diverse range of stakeholders – not just operators but also governments, nongovernmental organisations, banks, healthcare companies and more – are working together to build on the digital mobile revolution.

They are doing so by creating and rolling out new generations of value-added services that will make a real, lasting and positive difference to people's lives. As a result, the African telecommunications landscape is not just about getting more mobile subscriptions, but also about expanding opportunity and social inclusion for individuals across the continent. For that reason alone, Africa is one of the fastest-growing communications markets in the world as well as one of the most exciting.

Let's take a look at a sample of ten communications markets in Africa, each at its own particular stage of development and maturity. The countries selected represent the most significant communications markets in the regions, namely, Southern Africa, Africa Central and Francophone Africa. PwC acknowledges that some of the information used in the following country profiles is courtesy of Business Monitor International (BMI).

Delivering the benefit of information: to coffee growers, to educators

In December 2011, UN High Representative Cheick Sidi Diarra – who is a member of UNESCO’s Broadband Commission for Digital Development, and whose role includes helping to improve the well-being of the world’s least developed countries – described what the role of telecoms will be in those countries. In an interview with Telecoms.com, Mr. Diarra cited the example of a sugar cane or coffee grower in Africa.

“If you take the case of a coffee grower, the first stage would be for him to access information related to weather: how best to take advantage of weather conditions to grow better coffee,” he commented. “[Another] application for a coffee grower would be to look through the Internet to access the international and domestic markets to have an idea about the coffee prices. So there are a lot of applications sectors for different sectors of intervention.”

Mr. Diarra continued: “It’s true for all aspects of the economic development and it’s also true for different aspects of our social lives... health applications, education applications and sharing information in general. Sharing information is something that empowers people in their daily activities.”

Southern Africa:



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South Africa

The South African telecommunications sector boasts one of the continent's most advanced telecom markets in terms of technologies and services. The Electronic Communications Act (ECA) of 2005 replaced the earlier telecom legislation, the Telecommunications Act of 1996, ushering in an era of services-based competition as opposed to the previous vertical, technology-orientated regime.

The South African mobile market is nearing saturation, with mobile penetration approaching 110%. The number of subscribers or active SIM cards reached 52.2m at the end of 2010, representing a mobile penetration of 107.2%. Fixed-line connections continued to stagnate, at 4.3m during the same period. According to All Media Products Survey statistics, 76% of South Africans over the age of 15 personally owned, rented or had use of a cell phone in 2010. There were 4.1m fixed lines in the country at the end of 2010, a penetration rate of 8.59%.

The South African fixed communications market is served by two operators, Telkom South Africa and Neotel.

Telkom SA was created in 1997 with the partial privatisation of the entity when a 30% stake was sold to Thintana Communications, a consortium comprising Telkom Malaysia Berhad and South Western Bell Communications of the USA. The privatisation of the operator entered a new phase in 2003 when the government listed 20% of its 67% stake in the network on the Johannesburg Stock Exchange (JSE) and New York Stock Exchange (NYSE). The free float allocation was later increased to 47.3%. In 2008, Telkom sold its shareholding in mobile operator Vodacom to the UK-based Vodafone. Towards the end of 2009, Telkom announced that it would launch its own mobile network using the W-CDMA platform (which it achieved in 2011). Around the same time, the company announced that it would seek to delist from the NYSE because of the global economic conditions and deciding that the JSE was sufficient for its capital requirements.

Neotel entered the South African fixed communications market in 2005. The consortium that owned Neotel comprised Videsh Sancharm Nigam Limited (VSNL), renamed Tata Communications, the telecom arm of India's Tata Corporation, with 26%; the two parastatal entities, Transtel and Eskom Telecommunications, holding a combined 30%; the black economic empowerment entity Nexus Connexion, with 19%; and Communitel and Two Consortium, each holding 12.5%. In early 2009, the initial holdings by Eskom Holdings (15%) and Transtel (15%) were sold to Tata Communications, which raised its stake from 26% to 56% and made it the majority shareholder within Neotel.



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1 Zulu Warrior speaking on a cell phone, South Africa.

2 Commuters at bus station, Francistown, Botswana.

3 Truck in Namibia Desert, Namibia, Africa.

4 Men talking in Mukuni Village outside Livingstone, Zambia, Africa.

In June 2011 Tata Communications acquired a further 12.5% stake previously held by Two Telecom Consortium. The acquisition resulted in Tata Communications becoming a 61.5% shareholder in Neotel, with Neotel now a subsidiary of Tata Communications. The consortium received a licence to operate a national and international fixed-line network in 2005. The launch of the second national operator under the banner of Neotel took place in August 2006. The company's licence is valid for 25 years and requires the operator to bring services to 14 stipulated network areas of the country.

Since 2007, Telkom has faced competition from Neotel after the latter launched its wholesale, corporate and residential retail services. Telkom has started to feel pressure from multiple other sources, including fixed-to-mobile substitution, while alternative network service providers (formerly classified as value-added network services, or VANS) have been moving into wholesale data services and beginning to carve a slice of the voice market using IP. In response, Telkom launched its own mobile W-CDMA network, 8ta, with coverage initially in the metropolitan areas of the country. For outlying areas, Telkom roams on the MTN network, which makes the service available countrywide.

Telkom still enjoys a commanding role in the country's fixed-line broadband market in respect to ADSL, with the number of subscribers having reached 751,625 in March 2011. Telkom has also sought to divest itself from its WiMAX network to concentrate on its 3G W-CDMA rollout. The arrival of competition in the form of access to international capacity, with the SEACOM and EASSy cables going live, has already spurred several operators and service providers to pass savings on to the consumers. An example is MWEB's uncapped ADSL options, and others are following suit almost overnight.

Other submarine cable systems, like the West Africa Cable System (WACS), will go live in 2012, fuelling competition further. The South African express cable is expected in 2013. It will link South Africa, Angola and Brazil, creating the shortest route to North America.

Four mobile operators – Vodacom, MTN, Cell C and Telkom SA's 8ta – serve the South African market. At the end of 2010, there were 52.2m active SIM cards on the networks in South Africa, representing an increase of 5.2% over 2009. Mobile network operators have been particularly aggressive in launching 3G services, starting with Vodacom's offer of free upgrades of data cards for existing 3G customers. Drastic price cuts have added to this competitive dynamic. MTN led and Vodacom followed shortly thereafter, giving reductions of up to 60% and an increase in data allowances for contract and pay-as-you-go customers.

The mobile operators also have been aggressively rolling out their own fibre backbone networks. A major threat to mobile network operator revenues has been the RICA (Regulation of Interception of Communication Act), which has contributed to a slowdown in the growth of subscriber numbers. The proposed mobile termination rate regulations have caused and will continue to cause, interconnection revenues to be cut. In addition, the operators are seeing messaging and data revenues eroded by innovative services like Mxit – a mobile instant messaging service that has an estimated five million users across the networks.

The South African telecoms sector is expected to grow at a much slower pace in the future. The number of active mobile SIM cards was expected to rise to approximately 53.8m by the end of 2011, while the fixed-line market was expected to remain constant at about 4.3m connections.

Regulatory environment and outlook

The Independent Communications Authority of South Africa (ICASA) is the telecommunications and broadcasting regulator, created through the merger of the South African Telecommunications Authority and the Independent Broadcasting Authority in 2002, under the terms of the ICASA Act No. 13 of 2000. In 2006, the ICASA Amendment Act No. 3 of 2006 amended the ICASA Act.

The regulator operates three divisions – the broadcasting, telecommunications and postal divisions. The authority is funded through parliamentary appropriation, interest earned on funds deposited, application fees, licence fees and service fees. ICASA's main functions include regulating players in the communications sector, issuing operating licences to service providers (telecommunications, broadcasting and postal), managing the frequency spectrum and numbering plan, plus protecting consumers against unfair business practices. The regulator is charged with implementing policy as directed by the Department of Communications (DoC), the public service arm of the Ministry of Communications.

The DoC developed several policy documents in 2009, among them the broadband policy document and the cyber security document. The broadband policy document seeks to increase the penetration of broadband services in South Africa by making the service more cost effective to the average South African, and to allow the country to begin building an information-based society and economy. The regulator has managed to stamp its authority on the jurisdiction of the issue of determining the appropriate regulations for the mobile termination rate, thus superseding all other agreements made among the DoC, the Minister of Communications and the operators.

The South African telecommunications regulatory environment can be defined as being in the second wave of sector reform, a stage normally characterised by more vigorously liberalising the sector. Over the past few years there have been significant movements towards implementing the Electronic Communications Act (ECA) of 2005. Many of the outstanding liberalisation objectives, which are embodied in the ECA, are being addressed.

The ICASA Amendment Act has widened the scope of responsibility for the regulator, ICASA, to include postal services while entrenching the regulator's independence. In the 2007-2008 financial year, ICASA granted 150 value-added network service licences from 163 applications and granted 36 private telecommunication network services licences from 38 applications.

The regulator has also managed to stamp its authority on a number of critical issues, perhaps the most important being the mobile termination rate debate, which raged across the country during 2009 and the early part of 2010. The issue has been settled and a glide path for interconnection rates has been agreed on. ICASA has forced the reduction in interconnection rates on a sliding scale over the next three years to reduce the cost of retail cellular call rates. By March 2013, the rate will be capped at 40c per minute.

The ICASA Act amendments and the ECA redefine and expand the powers of ICASA to control the communications market. The main provisions of the ICASA Act amendments remove the minister's power to approve regulations made by ICASA, increase ICASA's power to conduct enquiries and to enforce its rulings, and establish a Complaints and Compliance Committee to assist ICASA in hearings and issue findings on complaints and allegations of noncompliance with the ECA.

Botswana

Located in Southern Africa, Botswana had 137,422 fixed-line connections and 2.36m mobile subscribers at the end of December 2010. That's a fixed-line market penetration of 7.5% and a mobile-line penetration of 121%. The Botswana mobile market is expected to reach 2.65m mobile lines, representing a mobile penetration of close to 135% by the end of 2011. Fixed lines, though, will drop further, to 133,000 lines, which represents a penetration of just over 7%.

The Botswana Telecommunications Corporation (BTC) enjoys a monopoly position in the country's fixed-line services market. BTC was established in 1980 under the Botswana Telecommunications Corporation Act. The operator is wholly government owned and initially served as the sector regulator. The planned privatisation of BTC was postponed in 2008 in the wake of the global economic crisis but was resumed in 2011. The incumbent is in the midst of privatisation. Under the sale plans, a 49% stake will be sold to investors and BTC employees, while the government will retain the remaining 51%. Shares will be sold to citizens in stages on the condition that when investors wish to dispose of their shares, the government will have the first option to buy them back.

Three public telecommunication operators bring mobile telephony services to Botswana – Orange Botswana (formerly Vista), Mascom Wireless and Botswana Telecommunications Corporation's beMobile. Orange Botswana and Mascom Wireless started offering services in Botswana in 1998, and BTC beMobile started in 2008.

Regulatory environment and outlook

The Botswana Telecommunications Authority (BTA) was created through the Telecommunications Act of 1996, and its mandate is to regulate the Botswana telecom market. The regulator is an independent entity enjoying autonomy in respect of its financial and other resources.

The New Licensing Framework introduced in Botswana in 2007 provided a platform for technology-neutral licences, which takes into account the increasing convergence of technologies and services. The country has one of the most liberalised telecom markets in the region. The service- and technology-neutral licensing regime has allowed for the provision of telecom service under a unitary Public Telecommunications Operator Licence.

The BTA has liberalised the international voice gateway and has lifted restrictions on voice over Internet Protocol (VoIP), resulting in the licensing of value-added network services. Neutral licensing has also allowed mobile operators to provide their own transmission links. The result of implementing these provisions has been to strengthen competition and make more services available at lower prices. To manage spectrum efficiently, the BTA has put in place an Automated Spectrum Monitoring System, which is characterised by remote spectrum monitoring towers connected to a state-of-the-art Spectrum Monitoring Centre located in the suburb of Phakalane in Gaborone.

In 2010, the BTA, consulting and collaborating closely with public telecommunication operators – Botswana Telecommunications Corporation, Mascom Wireless Botswana (Pty) Ltd and Orange Botswana (Pty) Ltd – and other industry stakeholders, updated the 2005 cost model and pricing framework. On the basis of the results of the 2010 updated model, the BTA defines and directs new pricing developments in the telecom market. The purpose of the BTA's directive is to implement the recommendations of the 2010 cost model and pricing framework. In so doing, the BTA seeks to foster competition as well as make sure there are appropriate incentives for long-term sustainable investments in information and communications technologies in Botswana. The desired outcome is the increased penetration and use of telecom services. The cost model and pricing framework is in line with international best practice methodologies for costing and pricing of telecom services.

Together with stakeholders, the BTA is developing a framework on infrastructure sharing in an effort to enhance the regulatory environment for the growth and development of the industry. Sharing infrastructure will facilitate the provision of affordable services – as the cost of provision of such services becomes manageable through sharing – and will deal with the global concern about the effect of infrastructure on the environment. The study is finished and the BTA has issued the draft report for discussion with the stakeholders.

Namibia

The Namibian telecommunications market is served by a single fixed-line network operator, Telecom Namibia, and three mobile network operators: Mobile Telecommunications Corporation (MTC); Cell One, which operates under the brand name Leo; and Telecom Namibia, which offers a mobile service on the CDMA platform under the brand name Switch. Namibia had 145,400 fixed-line connections and two million mobile subscribers at the end of December 2010.

As a monopoly, Telecom Namibia enjoys a market share of 100% in fixed telecoms. The company was established in 1992 and is wholly government owned through Namibia Post and Telecom Holding Limited.

Namibia has two GSM mobile network operators – MTC and Leo – and a third mobile operator, Switch, which offers mobile telephony services on the CDMA platform. In December 2010, the two million mobile subscribers in Namibia represented an increase of 28.2% over 2009, giving the country a mobile penetration of 87%.

The Namibian mobile telecom market was expected to grow to approximately 2.4m connections by the end of 2011, and the fixed-line connections to inch upwards to 146,000 during the same period.

Regulatory environment and outlook

The Communications Commission Act of 1992, amended in 1995, created the Namibian Communications Commission (NCC) as the country's telecommunications regulator. Following the Communications Act 8 of 2009, the Communications Regulatory Authority of Namibia (CRAN) superseded the NCC as the communications, broadcasting and postal services sector regulator as of May 2011. This latest Act opens up a new playing field for operators, especially MTC and Leo, as it allows them to move into the convergence and integrated services space. This move undoubtedly will broaden the range of services and alternatives available to customers.

CRAN has just been established and has recruited Stanley Shanapinda as its chief executive officer. The body is still in the process of setting itself up operationally and administratively, while coordinating with industry players to transform the sector. Once the remaining vacant posts have been filled, the first challenge will be to implement the full provisions of the Communications Act 8, especially with regard to licence convergence.

Zambia

The Zambian telecommunications market is served by four telecommunications network operators – Zamtel, which is the incumbent fixed-line operator, and three GSM mobile network operators.

At the end of October 2011, there were seven million mobile subscribers in Zambia, representing an increase of 21% over December 2010, and a mobile penetration rate for 2011 of 50.3%.

Zamtel, which enjoys monopoly status in fixed-line services, was created when the post and telecommunications entity, the Zambian Post and Telecommunications Corporation, was separated in 1994. In January 2012, the Zambian government took over the ownership of 100% of Zamtel, and the entity is now under new management. Zamtel increased its subscribers to one million in the year 2011.

The three mobile operators – Airtel Zambia (formerly Zain); MTN Zambia (formerly Telecel); and Cell Z (a subsidiary of Zamtel) – serve the highly competitive Zambian mobile market. The Zambian mobile telecom market grew in 2011, as all the operators claimed to have increased their subscriber base substantially during the year.

Regulatory environment and outlook

The telecom regulatory environment in Zambia has undergone a transformation. The former regulator, the Communications Authority of Zambia, which the Telecommunications Act of 1994 created, was changed to the Zambia Information and Communications Technology Authority (ZICTA) and formed by the Information and Communication Technologies Act No. 15 of 2009 (the ICT Act). The ICT Act has ushered in a new licensing framework, although the framework is still technology dependent rather than technology neutral.

The Cost of Service Study for the ICT sector was commissioned by ZICTA and finished in September 2010. The study consisted of a regulatory and legal due diligence, a licensing regime review and a comprehensive market analysis. The report made many recommendations, and the regulator has the responsibility of implementing the findings of the report. This was still in progress at the end of 2011.

Africa Central:



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Nigeria

The Nigerian telecommunications sector is Africa's largest market and is fully liberalised. The fixed market segment has at least 25 operators offering fixed and fixed-wireless services. Those operators have contributed to the transformation of the Nigerian telecom market in various segments, including fibre and satellite backbone provisioning, voice, data and Internet services.

The Nigerian mobile market is the largest in Africa. At the end of 2010, the mobile market had 87.4m mobile subscribers on the GSM network and 6.1m subscribers on CDMA networks. That represents a mobile market penetration of 59.1%. There were 1.05m fixed subscribers, representing a market penetration of 0.71%.

The Nigerian fixed-line market is served by the incumbent, Nitel, and by the second national network operator, Globacom, together with more than 25 fixed-wireless access (FWA) and private telecommunications operators (PTO).

Nitel was formed in 1985 when Posts & Telecommunications merged with Nigerian Telecommunications Limited. The operator was awarded a fixed and GSM mobile licence for a fee of US\$1.8m in 2002 as part of the liberalisation initiative. The Nitel privatisation efforts have been beset with troubles, and the most recent attempt collapsed in April 2011.

Globacom secured the country's second national network operator licence in 2002. The company's major shareholder is the Nigerian petrochemical company Conoil, while Detecon Consulting of Germany has been selected as the strategic partner for operational and network issues. The operator's fixed-line businesses are divided into Glo Gateway, Glo 1 and Glo Broadaccess.

The NCC established the PTO licensing category in 1997 as a means of increasing private-sector participation. It includes a range of licence categories, most of which are various subclasses of private network links and FWA licences. They are generally local exchange carriers with restricted territory of FWA provision, value-added network services, Internet service providers, long distance and international gateway operators, including VSAT, in some combination. The regulator has licensed these operators according to services they are permitted to offer.

The mobile market is served by five GSM network operators, MTN Nigeria, Glo Mobile, Airtel (formerly Zain),

MTEL and Etisalat Nigeria. The Nigerian mobile market was expected to continue its aggressive growth and reach 102.6m subscribers by the end of 2011, representing a mobile penetration of 69.41%. The number of fixed-line subscribers was projected to decline to 900,000 during this period.

The Nigerian CDMA market has 12 operators but is dominated by four major operators – Starcomms, Telkom Multi-Links (now owned by Helios Towers), Reliance Telecom and Visafone Communications. The country had 6.1m CDMA subscribers at the end of 2010, continuing a downward trend from an estimated eight million subscribers in 2009.

Regulatory environment and outlook

The Nigerian telecommunications regulatory environment is directed from two distinct levels: the government, which operates on a national and state level through the Ministry of Communications, and the sector regulator, the Nigerian Communications Commission (NCC).

1 Durbar festival, Kano, Nigeria.

2 Maasai man with cell phone, Kenya.

3 Entebbe, Uganda, mutatus drop off and collect passengers.

The Ministry of Communications formulates communications policy linked to the overall objectives of government policy, plus the state government is operating through the respective legislatures. The NCC was created by Decree 75 in 1992. The authority is responsible for implementing government telecom policy. This includes creating an open and competitive telecom environment with a view to stimulating the growth of telecom services and introducing entrepreneurs into the market. The NCC is regarded as one of the more progressive telecom regulators in Africa and has sought to adopt the so-called big bang approach to market development through licensing.

The National Telecommunications Policy stipulates that the NCC is an independent organisation, empowered to issue licences, assign and manage radio frequency spectrum and regulate all telecom licences and service providers. The independence of the regulator was further entrenched by the Nigerian Telecommunications Act of 2003. Part IV of the Act stipulates that a parliamentary appropriation committee is to oversee the funding for the regulatory body. As the NCC depends on parliament for funding, it may not be entirely independent.

Although Nigeria is one of the world's fastest-growing telecom markets, the government failed in its latest efforts to privatise Nitel after it announced in June 2011 that it had terminated the process when the reserve bidder failed to pay a US\$105m bid security. The government has been trying to sell Nitel for almost a decade, but the state of its fixed-line infrastructure and its levels of debt present challenges. Globacom announced recently that it might launch a bid for the embattled operator.

The Central Bank of Nigeria recently licensed 11 mobile money firms in the country, excluding mobile network operators from the process to allow banks and independent players to enter the market and serve the estimated 100m unbanked Nigerians. Nigeria's second national carrier, Globacom, has been the first to take advantage of the opportunity created by the payment system by striking a partnership with Afri-pay Limited, a subsidiary of the United Bank for Africa (UBA). Globacom and the bank are set to launch a mobile money service called U-Mo in the near future. Other players are expected to enter the market soon.

Kenya

The Kenyan telecommunications market is the giant of the East African region. The incumbent network operator, Telkom Kenya, which operates under a monopoly, dominates the fixed-line market. The country boasts a competitive mobile market with four network operators.

Telkom Kenya was established in April 1999 by the Companies Act and offers integrated communications solutions in Kenya through a range of voice and data services. In December 2007, Telkom Kenya entered into a partnership with France Telecom Group, which bought 51% equity in the company for US\$390m.

The Kenyan mobile market is served by four operators – Safaricom, Airtel (formerly Zain), Orange (Telkom Kenya) and Yu, a subsidiary of the Indian-based group Essar. According to the Communications Commission of Kenya (CCK) 4th Quarter Sector Statistical Report, Kenya had a total of 25.27m subscribers by June 30, 2011, representing 64.2% of the population.

Pre-paid subscriptions represented 99% of the total mobile subscriptions, with Safaricom and Telkom Kenya registering positive gains in new subscriptions as Airtel and Yu recorded a decline.

Fixed-line connections were expected to continue declining to approximately 300,000 lines at the end of 2011.

Regulatory environment and outlook

The telecoms sector is regulated by the CCK, established by the Kenya Communications Act 1998. The legislation was preceded in 1997 by the development of a telecom policy framework in the form of the Postal and Telecommunications Sector Policy Statement (amended in 1999, 2001 and 2006). In terms of the Act, the regulator is an independent body with funding obtained from licensing and spectrum fees. The CCK's mandate includes licensing operators, resolving disputes, managing the nation's radio frequency spectrum and developing regulations like interconnection and tariffs.

CCK started implementing its unified licensing regime in 2009. The regime was designed to streamline regulatory interventions in the telecoms industry and open opportunities for operators and service providers to develop innovative products and services for users. Under the unified licensing regime, licences have been separated according to services and infrastructure and segmented as follows:

- International Gateway Systems (IGS)
- Network Facilities Provider Tiers 1 to 3 (NFP-T1)
- Application Service Provider (ASP)
- Content Service Provider (CSP)

Under the Kenya Information and Communications Act and the regulations it led to, the CCK has the power to manage certain aspects of competition in the industry. Included are identifying market segments, examining the levels of competition in those market segments, making declarations of dominance, carrying out tests to determine whether there has been abuse of dominance and, in such cases, implementing proportionate and appropriate remedies.

In August 2011, the regulator published new regulations and guidelines, including the Competition Guidelines, in hopes of further levelling the playing field and enhancing competition. Differing interpretations of new regulations have forced operators to take hard-line positions as they prepare to protect their turf. The regulator has already identified voice and text message services offered by Safaricom, as well as fixed-line telephony services by Telkom Kenya, as among those that require further regulatory approaches.

The Kenyan telecom regulator and the government are talking about making more spectrum available commercially. CCK also wants operators to redistribute their assigned spectrum and launch 4G services.

Uganda

The Ugandan telecommunications market is served by seven operators, including two fixed-line operators and five licensed mobile network operators. One more licensed mobile operator intends to roll out its network soon.

The mobile market is served by five operators – MTN Uganda, Airtel (formerly Zain), Mango (a subsidiary of UTL), Warid Telecoms and Orange Uganda (formerly Hits Telecoms). The sixth licensed network operator, Anupam Global, has yet to roll out its network due to spectrum issues. Sure Telecom, a Singapore-based mobile phone company, has imminent plans to launch services in Uganda, and is aiming to roll out services first in Kampala before expanding into other areas. The Uganda Communications Commission said that Sure Telecom is investing US\$400m in the Ugandan project. The company plans to create a landline niche through data, voice and other services to compete with Uganda Telecom and MTN Uganda's fixed-line service.

The number of mobile subscribers in Uganda was forecast to reach 14.6m in 2011 and give the country a mobile penetration of about 45.7%. Those figures imply that more growth will be possible in the short term.

Regulatory environment and outlook

The Uganda Communications Commission (UCC) is the telecommunications, broadcasting and postal regulatory body of Uganda. The UCC was created by the Uganda Communications Act of 1997. This statutory body is tasked with licensing operators, managing and allocating spectrum, approving tariffs and monitoring quality. The Ugandan information and communications technology market is regarded as one of the more liberalised and open in Africa. The telecoms sector enjoys full competition in both services and infrastructure.

In 2011, the regulator was finalising the draft Retail Tariff Guideline for Voice Telephony Services document on telecom tariffs. The principal objective of the guideline is to promote a fair, efficient and competitive market in the telecoms sector. The difficulty the UCC has is how to keep all stakeholders happy; at the moment, the tariffs favour the end customer.

Francophone Africa:



1



2



3

Ghana

The Ghanaian telecommunications market is highly competitive with two fixed-line network operators and six mobile GSM network operators. Ghana had 277,897 fixed-line connections and 17.4m mobile subscribers at the end of December 2010, giving market penetrations of 1.2% and 67%, respectively.

Vodafone Ghana Telecom occupies the leading market position in Ghana's fixed-line market. The operator's 267,033 fixed-line connections at the end of December 2010 represent a market share of 96.1%. Ghana Telecom was incorporated in 1974, with the government retaining 100% ownership of the incumbent network operator. In August 2008, Vodafone acquired a 70% stake in Ghana Telecom from the government of Ghana, and the company has since been rebranded Vodafone Ghana Telecom. The government retains a 30% stake in the business.

Airtel (formerly Zain) is a fixed and mobile wireless telecom network operator in Ghana. The mobile operator Celtel International, part of the Zain Group, acquired 75% of the operator from the government of Ghana in late 2007, and the company was rebranded Zain in August 2008. Zain was then acquired by Bharti Airtel and rebranded once again as Airtel Ghana at the end of 2010. The government of Ghana remains a shareholder in the company, with a 25% holding through the Ghana National Petroleum.

The Ghanaian mobile market has six licensed mobile operators – Airtel, Tigo, Vodafone Ghana, MTN Ghana, Expresso (formerly Kasapa) and Globacom's Glo Mobile. (Glo Mobile was still in the deployment phase and not actively competing at the end of 2011.) The total subscriber base of 17.4m at the end of December 2010 represented a rise of 33.1% over 2009.

The Ghanaian mobile sector was expected to continue this rapid growth and reach 22.1m subscribers – or a market penetration of 95.5% – by the end of 2011. Fixed-line connections were expected to rise to 300,150, or a market penetration of 1.28% during the same period.

Regulatory environment and outlook

The telecom regulator in Ghana is the National Communications Authority (NCA), created by Act 524 of 1996. The legislation was the result of the policy directions contained in the Telecommunications Development Policy of 1995. The NCA is an independent body charged with implementing regulations as directed by policy from the Ministry of Communications. The NCA's responsibilities include the licensing of telecom network operators and service providers, as well as developing interconnection guidelines, equipment approval, spectrum allocation and consumer protection.

1 The port of Tema is the larger of the two sea ports in Ghana.

2 Cameroon, Dschang market.

3 Ivory Coast, Yamoussouka, herder with sheep and goats talking to friends.

The Ghanaian telecom regulator has indicated that it won't issue any new licences in the near future. But the director general has indicated that the country has made provisions for additional data and Internet service providers to be licensed. Perhaps the most important new regulation to impact the market will be the imposition of the new SIM registration regulations by the NCA, which began on 1 July 2010.

Under these regulations new users are forced to give personal details as well as a copy of their national identity document before they may purchase a SIM card. The NCA is working on more ways to stimulate competition, like mobile number portability, which was implemented in July 2011 and is fully functional.

Côte d'Ivoire

Côte d'Ivoire had 14.5m mobile subscribers and 370,000 fixed-line subscribers at the end of 2010. Those numbers translate to penetration rates of almost 70% for the mobile sector and 1.76% for the fixed-line sector.

Côte d'Ivoire Telecom was partially privatised in 1997 with the initial sale of a 21% share to France Telecom. France Telecom has since increased its shareholding to 51%, the government holds 47% and 2% is reserved for staff. The operator had an estimated 340,400 fixed-line connections at the end of December 2010, enjoying a 92% market share. Arobase Telecom became the country's second national network operator after being awarded a 20-year licence from the government in 2004. Civil unrest in the country delayed the launch of services until 2005. In 2008, MTN of South Africa acquired the company. Arobase Telecom had 29,600 fixed lines at the end of December 2010, an 8% market share.

The mobile services market of Côte d'Ivoire is served by seven mobile network operators: Orange; MooV; MTN; Comium, trading under the brand KoZ; Libya's LapGreen, trading under the brand Oricel; UAE-based Warid Telecom; and Nigeria's Globacom, which was licensed in 2009. Warid Telecom and Globacom are at various stages of network deployment. The market has experienced some growth, rising to 14.5m subscribers in 2010, an increase of 12.7% over 2009.

Mobile subscriber numbers were expected to continue to increase, reaching 16.7m, or a penetration rate of 79.2%, by the end of 2011. The fixed-line telephony market was expected to rise marginally, reaching 380,000 lines, but stay at the same penetration rate of almost 1.8% during 2011.

Regulatory environment and outlook

The telecom market of Côte d'Ivoire is regulated by the Agence des Télécommunications de Côte d'Ivoire (ATCI), which was created by the Telecommunications Act of 1995. The Act paved the way for liberalising the sector and licensing mobile network operators. Two independent departments under ministerial supervision (technical and financial) ensure the regulation of telecoms in Côte d'Ivoire. They are the ATCI, which looks at the technical regulation, and the Conseil des Télécommunications de Côte d'Ivoire (CTCI), which looks at the financial regulation. There may be a need, in the future, to combine the ATCI and the CTCI into a single regulatory entity to avoid the conflicts of jurisdiction that regularly occur between these two regulatory bodies, and to make the function of regulating the telecoms sector smoother.

The ATCI is reviewing its licensing framework to introduce further competition, particularly in the services layer of the market, and to review spectrum allocation.

Cameroon

Cameroon had 153,818 fixed-line connections at the end of December 2010, representing a penetration rate of 0.8%. The mobile market had 8.41m customers, giving the country a mobile penetration rate of 43.1%.

Cameroon Telecommunications Corporation (Camtel) is the incumbent national fixed communications and Internet service provider in Cameroon. It is completely owned by the government of Cameroon and enjoys a de facto monopoly status in fixed-line services.

There are two GSM network operators in Cameroon – Orange Cameroon and MTN Cameroon. Camtel recently secured a mobile licence, although it's mired in controversy, and is in the process of rolling out a mobile service based on the CDMA platform. There's also Yemba, a mobile virtual network operator launched in 2008 using the CDMA technology and numbering systems of Camtel. Yemba is owned by local investors under the banner of Providence Technologies. The take-up of the CDMA services has had limited success and is regarded more as a fixed-line-services replacement. Yemba had a modest 5,000 subscribers in 2010, but that figure was expected to increase in 2011.

The Cameroonian mobile market was expected to grow to 9.85m lines by the end of 2011, representing a mobile penetration of 50.5%. Fixed-line connections should reach 160,000, maintaining a flat penetration rate of 0.8% during the same period. The mobile sector is expected to become highly competitive once Camtel launches its mobile operations. Third generation mobile services still haven't been introduced in the country, apart from Camtel's EV-DO fixed-wireless service.

Regulatory environment and outlook

The Cameroonian telecoms sector is governed by the Telecommunications Act of 1998. The Act allowed for creating an independent sector regulator – the Agence de Régulation des Télécommunications (ART) – and for licensing the two mobile networks and the fixed-line incumbent. The ART is tasked with developing and implementing regulations, and the Ministry of Posts and Telecommunications determines policy for telecoms and for information and communications technology. The regulator demonstrated its ability to intervene effectively in the country when it reduced the interconnection rates between the mobile and fixed-line operators, resulting in an overall tariff reduction of approximately 20%.

The ART will have major challenges and opportunities in the near future: licensing two more mobile network operators; reducing prices and breaking the Camtel monopoly on international submarine fibre optic cable access to allow the sector to grow. The new mobile operators likely will affect both MTN and Orange, which are looking to expand into rural areas to maintain their market share.

Creating a solid foundation for growth

The combination of the explosive use of mobile devices, the increasing complexity of network infrastructure and the competitive pressures within the market has brought many telecom networks to their knees in terms of performance. Degraded network performance has a significant business impact: it leads to reduced usage, increases care and assurance costs, lowers customer satisfaction and increases churn. Those effects come as operators around the world are busy investing in the deployment of next generation networks while hobbled by dwindling investments in their existing networks, cuts in network operating expenditures and declining average revenue per user (ARPU).

Operators that take stock of and invest in improving their existing networks before the next generation technology rollout not only gain valuable insights into their existing network but also perform better and rollout new technology networks faster.

**by Shailabh Atal, Mohamed Kande
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Network performance issues are confronting operators in the emerging markets, particularly in Africa, at a critical time. In these markets, the growth in recent years has come largely by subscribers benefitting from easier access to mobile telephony, cheaper cost of calls and lower up-front investment in devices. Voice remains the killer application in these markets but as 3G networks are deployed widely in the emerging markets, the next wave of growth will come from data usage through a multitude of devices like smartphones and tablets. For operators, ‘cleaning house’ – fixing their current network performance issues – is imperative before they upgrade the network to 3G, or even 4G, technologies.

Cleaning house involves thoroughly assessing network performance issues and their root causes and then launching a cross-functional operations improvement programme. In emerging economies like those in Africa, taking these steps isn’t a luxury, but a necessity. Every dollar of capital expenditures (capex) per subscriber is even more precious there due to lower ARPU, and every opportunity to do more with less should be thoroughly exploited before putting the next dollar of capex into the network.

The temptation to move to the next generation of technology is great, but the rewards of fixing the network while it is still operating on existing technology are too lucrative to ignore. The good news is that operators can tackle this challenge successfully by using a structured methodology that captures near-term wins and modifies strategies for the long-term sustainability of their operations.

The case for change: rethinking the operating model

Operators looking to the future should fundamentally rethink the operating model they believe has made them successful. This lesson is hard for many but necessary for all. The notion that what has made them successful in the past will continue to keep them successful isn't reasonable for several reasons:

- Third- and fourth-generation (3G/4G) technologies are a significant step change from 2G technology. Operators have to retool (personnel skill sets, tools and organisational structures) to think about abstract concepts such as packet losses and quality of service rather than binary on-or-off circuit-switched connections.
- Internet Protocol technology transforms the operator into an Internet service provider. This places a new, far-reaching set of requirements on the operator that go beyond the engineering organisation. End users expect that access to content and connectivity is delivered with the same five 9s reliability as voice calls do.
- Diversity among vendors and interoperability requirements for technology cause more complexity and an operator's 'walled garden' approach to managing its infrastructure isn't sufficient anymore.
- The co-existence of multiple generations of technologies in a network also places extraordinary demand on core engineering tasks like managing spectrum, coordinating interference, and planning and designing the network.

Programme in action

Operator

Geography:
Middle East and North Africa (MENA)

Network:
2G mobile network

Size:
Largest national operator

Results

The 2G mobile network of one of the largest MENA-based national wireless operators lagged behind its main competitor in key performance indicators, causing it to lose significant market share and share value. The operator launched an audit of its network performance and operations, and developed a focused plan to improve its network operations. It managed that plan until improvements in the network's key performance indicators – and in customer satisfaction data – were clearly visible. These steps not only led to better capex and opex outlay, but also formed the basis for successfully launching its 3G network. And both improvements let the operator keep its lead in the market.

- Customers are ever more discerning about value for their money, sometimes carrying multiple SIM cards and selecting their own 'least-cost routes.' Regulatory regimes are embracing lower mobile termination rates, increasing number portability and improving consumer protection. Over-the-top applications by companies like Skype and Google are offering services that operators used to provide. And both trends are empowering customers.
 - Competitive pressure between operators is forcing them to rethink cost structures. Expensive public marketing battles, increasing sales promotions, higher retention costs and increasing customer acquisition costs are leaving little room for error in deploying capex or managing operating expenditures (opex).
 - A new set of customers (e.g., M2M devices, data MVNOs), attracted by the new capabilities of the networks, demand more organisational collaboration to serve them effectively while placing significant operating pressures on the operator due to the lower ARPU they bring.
- After many years of aggressively building a 2G network to compete on coverage and capacity, many operators are left with a cobweb of 'stranded assets,' still insufficient network capacity, inefficient processes, a hodgepodge of tools and a 'spent' workforce. To roll out another technology (3G or even 4G) after the long 2G phase would have disastrous results – often manifested as capex deployed inefficiently, network quality problems and overall delays in the rollout of the new network.

Operators that take stock of their networks at the end of the 2G phase and before they roll out the next technology tend to perform better because knowing more about their existing network helps them make the necessary changes faster for a 3G rollout. Their house-cleaning assessment includes focusing and aligning all aspects of their network planning, design, engineering, deployment and operations. The assessment is comprehensive across technology processes, technology organisation, network infrastructure and operational support systems. Often (and certainly recommended), this assessment extends far beyond the reaches of the technology organisation.

While the transition from one network technology to another is a good time to conduct a network assessment and improvement programme, another opportunity arises when an operator is about to enter into a merger or an acquisition. It's usually done as a preparatory step for a due diligence exercise that focuses on network assets and operations. Another compelling impetus to conduct such an assessment is to understand and remedy the perception of poor network performance or to improve costs. Any opportunity for deploying significant capex, such as revamping a major platform or launching a new portfolio of products, is also a good opportunity for an operator to step back and take stock of its network.

As operators around the world are either launching or getting ready to launch next generation networks, this is the right time for them to conduct such an exercise so that they build their newer networks on a solid foundation.

Network performance: focus on Africa

Africa, in particular, has more than 200 distinct mobile operators spread across more than 50 countries, with a few major multinational operators and a large number of smaller operators. According to the GSMA, mobile penetration in Africa is slightly above 62% and has had a compound annual growth rate of 35% over the last ten years. Penetration ranges from as high as 145% in Botswana and as low as 5% in Eritrea. ARPU in Africa ranges widely, but subscriber growth and network competition have brought ARPU levels down by as much as 60% over the last four years in some countries. While 2G networks are the standard, almost every country has an operational 3G network. There are even a handful of LTE networks already in operation.

But with the twin forces of significant growth and falling ARPU levels, network operators have had to manage significant capex and opex outlays while seeing revenues fall. All of that is putting pressure on profitability, and operators are looking for every means to manage costs. Network performance degradation is often one of the first unintended consequences of belt tightening.

Looking through the lens of the traditional 2G network performance measures of call blocks, call drops, voice quality and reliability shows clearly that African operators have been facing numerous challenges. They've risen to these challenges in many ways, often being able to do more with less. However, degraded performance has had its impact on their businesses – reducing usage, adding to customer care costs, lowering customer satisfaction and increasing churn. It's becoming quite clear that the African operators have to improve their network operations to meet the twin demands of satisfying and retaining more customers while still keeping a lower cost structure.

Taking stock v1.0: old-style assessments

Most mobile operators that undertake some network assessment and improvement programme do so with a very limited scope that's largely an internal programme of the technology department. As a result, the focus is typically primarily technological and the scope is limited to technical solutions. Examples of this include: new diagnostic tools are purchased to assess and fix problems but leave problems to resurface later. Automated network inventories are started but never finished. New tools and vendors are introduced to the network but aren't able to get very far due to the limited scope of tools deployment.

Such problems happen because the root causes of the problems – that lie in operating processes, organisational structure and network management systems or tools – can't be tackled as part of these network improvement programmes that focus solely on technology and tools.

This shortsighted technical approach manifests itself in various ways. If there are problems with the processes, a good tool will resolve them only temporarily, and may even increase the rate at which problems occur. For example, the absence of cross-functional network design reviews involving network operations and maintenance teams may cause the network design database to quickly run out of synch with the actual network because of the lack of a feedback mechanism to gather network updates and incorporate them into a database. Also, having the right tools but in the wrong organisational structure may even hasten the development of problems. For instance, using a good network diagnostic tool capable of pinpointing network problems and their locations, but doing so without proper privacy safeguards, can lead to privacy issues.

Taking stock v2.0: a new approach to assessing network performance

A newer but proven way to assess network performance and operations involves being more comprehensive, as shown in Figure 1.

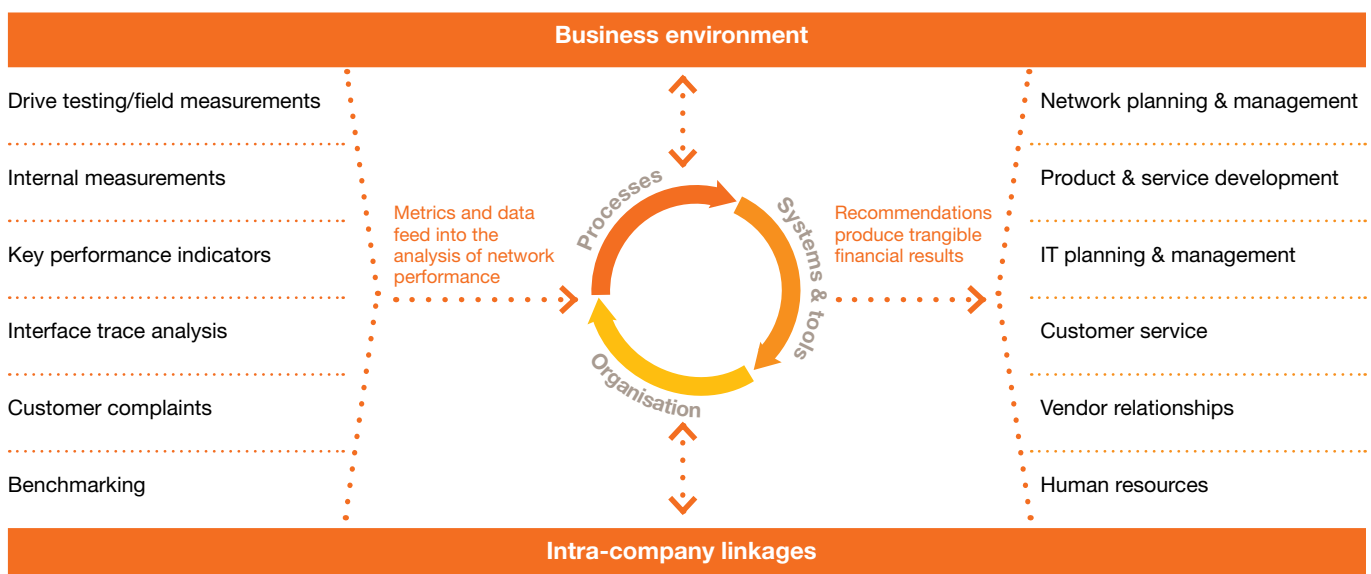
The first step of this approach is an assessment that gives the chief network officer or the chief technology officer a comprehensive view of network and information technology problems. These problems range from simple configuration issues to deep flaws in network design guidelines. A comprehensive set of data collected from internal and external sources is used to create this view. Internal sources of data include network performance reports, trouble ticket reports, analysis of customers' complaints, and deep analytics like interface trace analysis and network drive tests. External sources of information include third-party drive tests and customer satisfaction surveys.

In the second step, a similar assessment maps major process flows across technology organisations and their linkages, both internal and external. This mapping involves identifying important activities undertaken during the life cycle of a network (plan, design, build, operate and remediate), stakeholders in the execution of these processes, and the outcomes associated with the processes and tools that support the execution. The process analysis also includes reviewing the process documentation and execution metrics to assess their accuracy, compliance and effectiveness. During this assessment, a pattern typically emerges that points out that the root causes of the issues found in the first step lie in the issues identified in the second step. For example, a high number of incorrect cell-site modifications are sometimes caused by a network engineering team sending the wrong instructions to a network operations team.

The next step is to understand the organisational structure and governance associated with the most important programmes the technology organisation runs. Based on interviews of the stakeholders, including the leadership team, a comprehensive review of all the elements illustrates the major problem areas within the network and also points to the root causes of the problems. Often the root causes lie in organisational structure or supporting processes. The organisational portion of the assessment enumerates challenges in the command and control structure as well as the flow of information and decision making through that structure.

The last, but crucial, step involves assessing the systems and tools that support the technology organisation's workflow. This part of the assessment identifies surplus and gaps in the tools portfolio, as well as the tools' cohesion for effective network operations. It also involves assessing the overlap in the tools' capabilities, data sources and workflow, and the organisational stakeholders associated with the various systems.

Figure 1: Comprehensive network assessment



Programme in action

Operator

Geography:
South America

Network:
Multi-country mobile network with multiple technologies

Size:
Niche wireless operator with national footprint

Results

A multinational Latin American wireless operator was in accelerated growth mode and was experiencing a significant increase in telco costs. The costs, growing at a compound annual rate of 30%, included roaming, backhaul, interconnection and termination. The operator's initial impetus to perform an assessment was based on the cost-optimisation opportunities it anticipated in deploying its 3G networks. A cross-functional assessment found specific opportunities to improve costs and a larger, more strategic need for organisational change. The cost-optimisation opportunities were distributed to the various country operations teams to implement. The operator also established an organisation (with emphasis on centralising coordination and decentralising execution) with the sole charter of managing telco costs. The organisation was to collaborate across its various country operations to rationalise tools, define and standardise processes and establish a single standard, multi-tier dashboard for managing decision making on telco costs. Through its telco management organisation, the operator has executed global contracts to save on costs. It has also streamlined the telco life cycle set of activities that include forecasting, planning, sourcing and settling across all its operations.

This comprehensive assessment of network operations gives an operator a list of improvement programmes to implement in order of importance – that is, how much each does to satisfy customers and how quickly gains can be captured. These initiatives may range from revenue assurance to expanding roaming coverage to streamlining network maintenance operations. The priority of each will vary from operator to operator.

Launching and executing a network improvement plan, post-assessment

Identifying the root cause of network operations problems is tough because it requires operators to look at non-technical causes, which is often the opposite of their instincts. The cross-functional nature of an improvement programme is more complex, involving not just internal stakeholders but also external stakeholders, such as vendors and partners, making it significantly more difficult to execute. Thankfully, there are a few basic principles to base a successful improvement programme on.

The first ingredient in launching a successful improvement programme is to assign leadership and a team to manage the programme. A well-defined governance structure has 1) a steering committee consisting of senior executives; 2) a cross-functional programme strategy and an execution office consisting of functional leaders and led by a chosen programme management expert; and 3) a series of core teams dedicated to specific initiatives or programmes defined in the charter of the improvement programme.

Crucial to the success of the improvement programme is the agreement that the steering committee is able to establish with the core teams involved in the execution, and how the programme strategy and execution office manages the dashboards, reporting and escalations during the course of the programme. Early on, a successful improvement programme establishes clear entry/exit and gate review criteria for managing the cadence of execution and then holds the execution teams accountable to those criteria.

Finally, the initiatives in the improvement programme are designed by grouping the set of similar-themed issues and recommendations outlined in the assessment conducted earlier. It's important to plan the execution of these initiatives in collaboration with other teams and the rest of the organisation. Examples of some typical themes to group initiatives around include:

- Network 'Get Well' programme to improve the quality of the existing network
- Organisational improvement programme to turbo-charge the organisation and its morale
- Process improvement programme to work better and faster
- Systems and tools improvement programme to ensure the organisation is able to work smarter.

Once an organisation has gone through a rigorous process of developing initiatives and categorising them in specific operational areas, the next step is to synthesise the initiatives into a set of programmes for executing gradually. These programmes should:

- have a tangible timeline, a set of financials and a specific statement of results they seek to achieve
- have a dedicated owner who's accountable for executing the work and achieving results
- rate the priority of the initiatives by a number of criteria that include how easy or difficult they'll be to implement, the likely return on investment, expected effect on customer experience, and their interdependence with other initiatives or with the launching of a new technology (3G, for example)
- be categorised into a set of short-term, medium-term and long-term activities that are funded appropriately.

The executive leadership that is assigned ownership of an improvement programme should be constantly involved during its execution phase. This gives visibility to executives at the top and ensures broad participation from all levels of the organisation.

The overall planning and management of initiatives and programmes under the umbrella of network improvement differ from operator to operator. They vary depending on the root causes of performance uncovered during the assessment, the maturity of the operator, the intensity of the competitive landscape and the outlook for upcoming programmes. But all operators can benefit from some common elements of these initiatives. The following sections provide a fairly detailed set of topics and questions that form the basis of planning initiatives and defining their scope.

The financial elements

In the financial arena, the improvement plan should focus on making capex as effective as possible, eliminating wasteful opex and identifying where revenue is leaking. A plan also tries to make sure operational costs are at industry-accepted levels. The objective of this step is to build a profit-and-loss view of the technology organisation. Typically, that includes answering a number of basic questions:

1. **Network deployment costs.** How does the cost of equipment compare to market rates? How is the location of network selected and how much does it cost? How much do the sub-contractors charge for building network facilities? How can the cost be reduced?
2. **Leases.** How do leases compare to industry standards? Are leases structured to enable technology scaling and backhaul growth? What changes in strategy may be desired?
3. **Transmission.** How do backhaul strategy and costs compare to industry standards? Is backhaul scalable to enable traffic growth beyond 3G? What changes may be desired?
4. **Interconnect/roaming/long distance.** How do minute-of-use costs compare to others? Where might costs be reduced through partnerships with other providers? How reliable is the revenue assurance process for inter-carrier settlements?
5. **Annual maintenance fees/licensing costs.** How do annual maintenance fees and contracts compare to industry standards? What changes may be appropriate? What are the various costs associated with licensing the major systems and network elements? How can licensing costs be reduced by consolidating systems' functionality and eliminating overlaps?

6. **Utilities.** How do utility costs and strategies compare to others? Where might costs be reduced through contracts, alternative energy or government grant programmes?

The technical elements

In the technical arena, the plan should look at a converged set of data – including quality indicators, drive test data, customer care data, site audits and data from other network sources – to identify specific quality improvements for the network. Typically, that includes answering a number of basic questions:

1. **Network design.** How does the network architecture stand up to the demand presented to it? What are the processes for managing network capacity? How is traffic routed on the network? Are there elements of least-cost routing?
2. **Deployment management.** How are new sites deployed? What are the rules for site engineering vis-à-vis capacity, coverage or quality? How are RF frequencies allocated? Is spectrum management reliable?
3. **Network operations.** What systems and tools are used to operate and manage the network? Does the network operations center have full visibility into all network elements? How fast are network outages resolved? What is the level of collaboration across different functions for problem resolution?
4. **Data network management.** How is throughput measured? How is customer experience measured across multiple devices, locations and usage models? What measures are in place for managing data traffic? How are network abuses managed?
5. **Network quality of service.** What are the measures of quality of service? What are the sources of data for an aggregated view of the network's performance? How are competitors' networks measured? How is accountability distributed for network performance?

Programme in action

Operator

Geography:
Sub-Saharan Africa

Network:
2G mobile network

Size:
National operator in one of the largest African countries

Results

A multinational European telco recently acquired a telecom operator in Africa that was considered to have the low-cost and low-quality network among its competitors. The company's new leaders started laying the groundwork quickly for a large-scale transformation project of this operator. This included reorganising its operating structure, establishing a long-term strategy vision, increasing revenues and modernising the company's network to take advantage of the only 3G licence acquired as part of with the transaction. Using the network operations improvement approach, the operator has achieved disciplined execution of the expansion projects, redefined the network KPIs and reorganised the Operations & Maintenance group and the call center. This has led to an improvement in overall network KPIs and quality of customer service, thus propelling the network to number one in voice quality and planting the seed for a successful rebranding in the market.

Results

This approach to assessing the network and planning improvement combines technical know-how with identifying the organisational root causes behind operational weaknesses. The approach becomes extremely powerful when used with external benchmarks and competitive assessments of other operators.

The emphasis on fixing the root causes of network issues rather than symptoms makes the solutions more sustainable. It focuses resources on the most impactful set of issues rather than saddling the organisation with multiple incoherent initiatives; and it justifies financially and identifies the immediate benefits to customers of every initiative. In most cases, by prompting investment, it lets critical areas of the technology organisation grow to the next level.

A well-executed network operations assessment and improvement programme not only improves performance of network assets but also prepares the operator for the next phase of growth based on gaining productivity. This use of capital is much better than the hundreds of millions of dollars operators spend on customer loyalty schemes.

In PwC's experience, the improvements in a network's key performance indicators alone are upward of 20%. Capex savings – from avoiding or delaying buying equipment – have ranged from 5% to 30% in the first year alone. Opex savings have shown a similar trend. The result is higher ARPU, more satisfied customers, increased productivity, better use of capex and opex, and a more satisfied employee base. Very few arrows in the operator's quiver are capable of hitting so many targets at the same time.

The operational elements

In the operational arena, the plan should look at processes, tools, systems and organisational constructs and linkages to identify specific improvements to information flow, collaboration, decision making and governance. This step is the heart of the assessment because it makes changes that often are very close to an operator's culture. Typically, that involves answering a number of basic questions:

1. **Organisational structure.** What operational, organisational and cost improvements may still exist, and what's the potential opportunity for each? How do structures and headcount compare to leading practices for operators of this type? How will current approaches scale for the future? How can equipment vendors and technical service firms be better leveraged?
2. **Network supply chain.** How do the scope, approach, data and tools used for the network supply chain management compare to leading practices? How could the planning process for the network be enhanced to improve accuracy and predictability, lower working capital and reduce vendor costs? Are the planning and procurement processes adequately integrated? Can capital allocation be better forecasted?
3. **Engineering/marketing/finance interface.** How do engineering, marketing and finance communicate with one another? What mechanisms exist for developing a tight forecast and reviewing quarterly progress? Do these organisations operate with the same definitions?
4. **Reporting.** How could performance management reports' scope, process, cadence, data and presentation be improved to improve execution, performance and communication? Are there opportunities to enhance and/or automate data collection and reporting?

Enabling possibilities through mobile payments

Mobile payments (using a mobile device to make payments electronically) are radically changing the shape of personal and business banking in Africa. The results of a 2012 PwC survey highlighted mobile payments as an accelerating trend, and already a number of success stories have been established, notably in Kenya. Mobile operators and banks are now trying to replicate those successes in other countries where the gap between banking and mobile penetration levels means much potential for expanding.

**by Ahmed Chohan
and Adrian Dunsby**

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Mobile operators and banks in Africa are focusing on an enormous and fast-growing opportunity – the large population of unbanked people in areas where physical banking infrastructures often don't exist but who need access to financial services. Already, more people across the continent have access to cell phones than bank accounts. And mobile penetration is increasing all the time. According to the International Telecommunication Union, mobile penetration in Africa had reached 45.2% by 2010.

This situation is in line with global trends in developing countries. The CGAP (an independent policy and research centre dedicated to advancing financial access for the world's poor) estimates that 1.7bn people in developing countries will have mobile phones, but no bank accounts, by the end of 2012.

Mobile payments: efficient, convenient, accelerating

According to PwC's recent research on mobile payments in Africa, the industry has gained significant momentum in the past year. We surveyed 11 mobile operators in eight countries across the continent: South Africa, Tanzania, Botswana, Zambia, Cameroon, Ivory Coast, Namibia and Kenya. Completed in February 2012, the survey shows that mobile payments are on track to become a preferred mode of banking in a number of countries, as more people are attracted by the efficiency of this process.

The survey (which included mobile operators, banks and joint ventures between operators and banks) highlights the approaches being taken to make mobile-payment schemes as easy as possible for people to access. All respondents offer free registration to users and enable bank transactions within an hour of signing up. The majority require no minimum balance for savings, and none charge monthly fees to register for the service. All operators set limits on the amount people may transfer when making a mobile payment, with the maximum being US\$1,270.

The survey results also indicate the broad appeal of mobile payments for multiple types of transactions. Most often, people pay for groceries, clothing and restaurants as well as transportation and school fees and utility bills.

For Africa’s unbanked – from farmers, traders and craftsmen to small and mid-sized businesses – paying by mobile phone gives easy access to financial services that many banks’ qualifying criteria and branch network locations have, until now, made unattainable. Using their mobile phones as portable teller machines, these people now can transfer funds, pay for products and services and secure access to loans and microfinance – all without having to carry physical cash around or keep it at home.

Understanding the models: with and without banks

Distinguishing mobile payments from mobile banking is an important step. The two terms are often conflated, but mobile banking is the broader of the two concepts.

Mobile banking covers delivering ‘traditional’ financial services and new e-commerce capabilities by mobile phone, usually in the more-developed markets where established and extensive bank infrastructures already exist. In such markets, this service is becoming increasingly personalised and relevant, focused on customers’ needs and integrated across channels. All these trends reflect the wide availability of mobile broadband and the proliferation of smart devices.

In spite of the hype surrounding mobile banking, banks are struggling to make this service profitable. The rates of take-up remain comparatively slow because consumers view mobile financial services as a lifestyle choice, not a necessity.

Figure 1: Comparison of mobile-payment models

Primary issues	Model	
	<i>Bank-based</i>	<i>Non-bank (NB) based</i>
Who regulates?	Financial regulator	Telco & financial regulator
Scope	Additive	Transformational
Who holds the deposit?	Bank	Bank
Cash-in and cash-out points	Bank	Telco/NB & Bank
Dominant brand	Bank	Telco/NB
Who has access to the service?	Limited to account holders	Limited to subscriber/ universal access
Carrier/gateway	Any	Telco
Who owns the customer?	Bank	Telco/NB
Examples	MTN (S-Africa), other SMS banking services	G-Cash, Smart, Celpay (Zambia), M-PESA, Mobile Money

Source: *Mobile banking: Overview of Regulatory Framework in Emerging Markets*, Rasheda Sultana.

By contrast, mobile payments – the focus for this article – thrive where users are ‘new to banking’ (not ‘new to mobile banking’). Much more complex than mobile banking, and depending on collaboration and on retail infrastructures for ubiquity, mobile payments are ideally suited to consumers in developing markets. There, the service is, in many cases, the only way people can access essential financial services.

Mobile-payment schemes can be profitable at scale but for most operators, this will not be the principal business case. Retaining the average revenue per user by reducing churn and lowering the cost of dispensing airtime are the main benefits operators will perceive.

Two models for mobile payments exist – bank based and non-bank based. In the former, customers have direct contractual relationships with supervised financial institutions (even though they often transact exclusively through retail agents). In the non-bank model, no such contractual relationships exist. Instead, customers exchange or transfer cash or funds through retail agents in exchange for cash credits on their mobiles. A crucial distinction of the non-bank model is that operators maintain customers’ bank accounts and balances, and banks simply hold deposits to represent the e-cash flowing through the system.

The non-bank model has proved to be the most successful in Africa (as subsequent examples will illustrate). The reason is straightforward. The combination of high mobile penetration with widespread availability of retail agents means operators are placed better to connect unbanked people with the basic financial services they need.

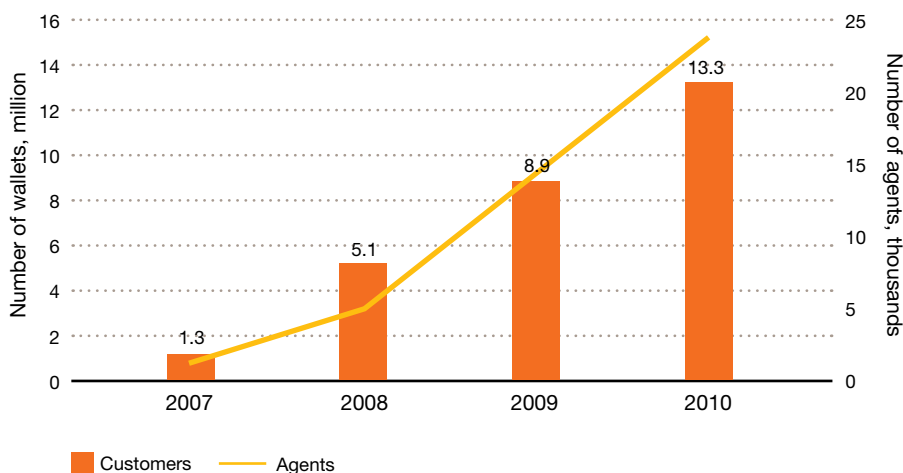
Figure 1 lists the elements of the bank-based and non-bank-based models.

Let’s take a look at some of Africa’s mobile-payment success stories. We’ll also identify some of the issues confronting operators and banks as they try to capitalise on the opportunity of mobile payments.

Pioneering mobile payments in Africa

The most successful example of non-bank-based mobile payments in Africa continues to be M-PESA. Vodafone’s Kenyan affiliate, Safaricom, launched M-PESA in Kenya in 2007 in partnership with Equity Bank. The service now has more than 13m users – more than 30% of the total population (see Figure 2). Although the values of cash transferred and credited on users’ accounts are small, the very high volume of transactions and commissions has made the service profitable from early on.

Figure 2: M-PESA wallets in Kenya, 2007-2010



Source: CGAP, Safaricom.

Partnering among mobile operators, banks and other players looks set to accelerate.

In its first year, M-PESA generated approximately KES 370m (US\$4.2m) for Safaricom. Today, Kenya has around 20,000 M-PESA agents that are easily accessible throughout urban and rural areas. In comparison, the country has 840 bank branches, according to statistics issued by Safaricom. To put the scale of its success into perspective, there are now more M-PESA customers in Kenya than there are bank accounts. Providing the 'right service, at the right time', M-PESA enables users to deposit and withdraw money from a network of agents (including airtime resellers and retail outlets acting as banking agents), as well as transfer money to other users and non-users, pay bills and purchase airtime.

Building on its success, Vodafone went on to roll out M-PESA in Tanzania in 2008. The initially slower-than-expected adoption of this service was attributed to a number of issues, including population density, lower penetration rates achieved by mobile service providers, agent networks and pricing schemes. By strategically addressing these challenges, Vodafone moved towards replicating Kenya's success. By 2010, Tanzania had more than nine million M-PESA subscribers.

In September 2010, Vodacom and Nedbank announced they were launching the service in South Africa. Although estimates indicate South Africa has more than 13m 'economically active' unbanked people¹, progress has been slow. The initial projections of ten million users within three years were not realised. By May 2011, the service had registered approximately 100,000² customers. This expectation gap has been attributed to significant differences between Kenya and South Africa, like the banking regulations that applied at the time M-PESA was launched in each country.

According to MoneyWeb, a South African investment website: "A tough regulatory environment with regards to customer registration and the acquisition of outlets also compounded the company's troubles, as the local regulations are more stringent in comparison to [our] African counterparts. Lack of education and product understanding also hindered efforts in the initial roll out of the product." In June 2011, Vodacom and Nedbank launched a campaign to reposition M-PESA that targeted potential customers with higher living-standard measures than those addressed by the initial rollout.

Collaborating with banks for growth

Galvanised by M-PESA's non-bank-based success story, mobile operators and banks have been forming partnerships to capitalise on the opportunity mobile payments represents in Africa (primarily in countries with the political and economic stability needed to establish the infrastructure for mobile payments). These relationships make sound strategic sense. Mobile operators have the reach that banks lack. For banks to maintain and support branches in remote rural regions is prohibitively expensive. These partnerships provide access to communities that would otherwise be 'off the map'.

One interesting example of the bank/mobile partnership model is Zap-M. The mobile-payment service was introduced in Kenya and Tanzania in 2009 by Zain, Tanzania's second-largest mobile operator after Vodacom. Well-recognised for its One Network borderless mobile network in Africa (a world first), Zain launched Zap-M in partnership with Citibank and Standard Chartered Bank, to link micropayments direct to merchants. Zain's sole source of revenue comes from a fixed fee (regardless of transaction size) for

¹ Source: www.howwemaditinafrica.com

² Source: www.techcentral.co.za

every transfer made through Zap-M. The service leaves it to agents and customers to agree on a fair price, with the agent receiving commission once the transaction occurs.³

Zain's business model means that its relationship with banks is quite distinct from M-PESA's. Zain's relationships with its two partner banks enable customers (merchants or individual users) to move virtual money from Zap's platform directly into their bank accounts. The attractions for banks are obvious. First and foremost, they can tap into the money flows of large companies without having to make any large investments in their own infrastructures (Zain provides the platform). And, what's no less attractive, banks gain access to Zain's customer base (for customers without bank accounts, the virtual money sits on Zap's platform and is held in a settlement account).

Plenty of other such partnerships are springing up. FirstBank of Nigeria and Airtel Networks recently agreed to combine their strengths to provide seamless mobile money services in Nigeria; Celtel and Celpay have joined forces to provide mobile-payment services in the Democratic Republic of Congo; Wizzit was formed in South Africa to link debit cards and bank accounts to mobiles (Wizzit partners with Absa Bank and the South African Post Office); and Lonestar Cell MTN and Ecobank teamed up to bring mobile-payment services (called Mobile Money) to customers in Liberia. Interestingly, in this last example, the Central Bank

of Liberia played the critical role of ensuring that local banking regulations allowed both partners to turn vision into reality – as pragmatically as possible.⁴

Operator-led vs. bank-based experiences

For the reasons discussed earlier – comparatively unfettered access to unbanked people through the high penetration of mobile phones – operator-led (non-bank) models for mobile payments have achieved the most traction across the continent.

Put off by the risks involved – issues of knowing your customer, principally – and constrained by regulators, few bank-led mobile-payment schemes have been successful. Probably the best-known example of a scheme that has made inroads is MTN Mobile Money in South Africa, a joint venture between MTN and Standard Bank (now acquired by Standard Bank).

In comparison, mobile or cell phone banking, which is limited to balance enquiries and statement and transaction notifications, is a booming market. About 40% of South African mobile subscribers already make use of mobile-banking services. That's according to PwC's 12th survey on banking in South Africa, published in 2011, which highlights strategic and emerging issues in the banking sector.

Another recent survey, carried out jointly by World Wide Worx and FNB, highlights how cell-phone banking has increased significantly in the past year. The Mobility 2011 survey shows that 44% of cell-phone users in urban areas now use banking services, compared to 27% a year earlier. In smaller towns, 27% of cell-phone users rely on mobile banking. In total, 37% of South Africans above the age of 16 are using cell-phone banking services.

The big four banks in South Africa (FNB, ABSA, Standard Bank and Nedbank) have all made significant inroads into the mobile-banking market. FNB, for example, recorded a 150% jump in transaction growth for its 'Cellphone Banking' service and 1,384% growth for eWallet (which allows FNB customers to send money to anyone with a valid SA cell number) for the month of December 2011 (compared to December 2010). In December 2011, the bank's customers made 2.4m cell-phone transactions in Botswana, Namibia, Swaziland and Lesotho to the value of R214m (US\$25.7m) as compared to 986,000 transactions in December 2010. The bank also recently launched its Pay2Cell solution that allows account holders to make payments to other existing account holders using only the recipient's cell-phone number.

3 See <http://technology.cgap.org> for further analysis of Zap-M.

4 Source: www.mobilemoneyafrica.com

Recognising regulatory and other challenges

Partnering among mobile operators, banks and other players looks set to accelerate.

Noting that trend was Seigne Dioum, general manager for Mobile Money for MTN's Western and Central Africa division, speaking at the 2011 GSMA Mobile Money Summit: "Although there are a number of partnership models being explored, an interesting concept is the cooperation between banks and telecommunications companies with advertising companies, where the focus would be on creating a great product and customer experience (as some of the advertising companies have managed to do) based on a different economic model where the focus is on generating advertising revenue online, as opposed to through the traditional banking environment. It, however, remains important to involve banks in these relationships as they have always been in the money business and, at the end of the day, it is about payments being made....therefore creating trust through strong security and regulatory governance remains important."

The reference to regulatory issues is especially pertinent. With mobile payments increasing the convergence between the telecommunications and the banking sectors, national financial regulators have a number of concerns. They must address and overcome the concerns before mobile-payment schemes can be implemented.

At the top of the list is consumer protection – safeguarding clients' funds held as electronically stored value, ensuring the safety and reliability of services and reducing opportunities for agent fraud and other harmful conduct.

Other vital areas include the impact of mobile payments on the stability of a country's banking and national payment systems, as well as the ability of existing regulation to provide for e-money issuance.

If mobile-payment schemes are to continue to bring financial services to Africa's unbanked, ICT regulators in many countries across the continent also need to play their part by moving towards more transparent regulation of telecommunications. The GSM Association (GSMA: the operator-led association representing the global mobile industry) recommends that, when formulating their tax policies, governments should recognise the ways in which mobile phones and mobile broadband have become a vital part of Africa's socioeconomic landscape. This mind-set needs to extend to mobile payments. By identifying economically active people in Africa's enormous informal cash economy, mobile payments are predicted to jump-start the growth of the gross domestic product in many countries.

Addressing security, fraud and other issues ahead for operators

As they assess mobile payments as an opportunity, operators need to take into account a number of issues (see Figure 3). Security risks are uppermost, with identity theft and money laundering among the main concerns. Fraud committed by employees, agents and subscribers has been part of the learning experience for operators to date. Typically, employees have circumvented security or access controls, or agents intent on stealing identities have misled subscribers into giving up confidential information.

With such risks in mind, operators should ensure that controls are sufficient and security expertise is brought to bear. The cost of control failures in a banking environment may have very different consequences compared to those in a telecommunications environment.

Business models need careful scrutiny. The profitability of mobile-payment schemes as stand-alone businesses remains uncertain. Once M-PESA's service in Kenya reached seven million registered users, corporate and institutional accounts surged – but up to that point had grown very slowly. In other words, scale is essential to profitability.

Agent coverage and liquidity is another crucial area, particularly so where the expansion of agent networks lags growth in mobile payments. And, of course, operators must select the optimum approach to negotiating relationships with bank partners. Points to bear in mind when negotiating include non-exclusivity arrangements; liquidity provisions; concentration risk; the reputation of the bank among the unbanked population; marketing responsibilities, terms and conditions; what data will be shared; and interest rates and bank charges.

Beyond question, Africa's population of unbanked people urgently needs access to financial services. And operators are ideally placed to service this need – provided they recognise the challenges that lie ahead and take steps early on to address them.

Figure 3: Mobile payment challenges and solutions

Challenge	Considerations
Regulatory challenge <ul style="list-style-type: none">• Meeting know-your-customer (KYC) requirements• Choosing a bank-led or a telco-led model• Identifying the scope of services	<ul style="list-style-type: none">• Get KYC right the first time; although the initial investment may be high (e.g. use of biometrics) it's likely to be a better option in the long term• For new entrants, agree on KYC minimum requirements with the regulator, particularly in countries where there is low adoption of an identity system and a lack of addresses• Design data collection with the end in mind, e.g. mining collected data to understand customers better• Use empirical evidence – citing countries such as Kenya, the Philippines and Uganda – to support the model most conducive to achieving national objectives (e.g. banking the unbanked)• Manage any impact on the money supply by replenishing bank deposits and ensuring that they're synchronised with e-cash in circulation
Evaluating the profitability of mobile banking as a stand-alone business	<ul style="list-style-type: none">• Define objectives – this may have less to do with mobile banking profitability in so much as it has to do with reducing churn in highly competitive prepaid markets• Define criteria and metrics to measure and monitor the achievement of objectives and to evaluate return on investment• Design commission structures that motivate agents to achieve the defined objectives, e.g. proliferate take-up and usage• Create a sub-product roll-out plan, e.g. mobile insurance, lending facilities, tie-ups with third parties
Agent coverage and liquidity	<ul style="list-style-type: none">• Be the first to market• Give competitors' agents incentives to distribute your product• Design clear and transparent commission structures that are attractive and competitive• Take pre-emptive measures to manage liquidity challenges agents may face through, for example, training and education and through arranging daily borrowing facilities for agents (with the banks or telcos)• Penetrate your corporate market before your competitors do to accelerate adoption and usage• Market services to other bulk payers, e.g. donor funders
Guarding against identity theft	<ul style="list-style-type: none">• Educate about and create awareness of fraud risks through the mobile-banking sub-organisation and third parties, e.g. field staff, agents• Enhance existing SIM swap processes, as this is a common target for defrauders• Monitor data quality continually• Institute measures to ensure that agents comply with data-quality standards
Monitoring fraud and implementing security and controls	<ul style="list-style-type: none">• Make the best use of control and security experts and don't depend on technology people to have sufficiently deep controls, security or fraud expertise• Design and implement fraud monitoring systems and reports and ensure that appropriately senior individuals review important reports• Create a control culture in the sub-organisation, which may be very different than the way the telco managed other product launches or product changes• Design commission structures in a manner that minimises the risk of commission fraud• Monitor agent behaviours to identify suspicious activity; deal with irregular behaviour timeously and decisively to avoid being perceived as condoning behaviour or not being on top of things• Conduct criminal infiltration assessments• Design and implement appropriate levels of control and security at the operating system, database and application levels
Partnering with the right vendors	<ul style="list-style-type: none">• Select the right bank(s) to partner with• Select the right technology partners• Select strategically critical partnerships to promote the use of mobile payments, e.g. municipalities

Delivering results

Commitments to doing more business globally are accelerating in 2012 despite economic, regulatory and other uncertainties. CEOs see the fundamentals for future growth still squarely in place.

PwC's 15th Annual Global CEO Survey explores CEOs' confidence in prospects, and how they are building local capabilities and creating new networks for new markets. CEOs are adapting how they go to market, reconfiguring processes and – at times – entire operating models. They are also addressing risks that greater integration can amplify and are focused on making talent more strategic to pursue market opportunities.

This article looks at the key findings in the communications industry, based on interviews with 42 communications CEOs in 23 countries.

by Pierre-Alain Sur

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To explore the full results of the *15th Annual Global CEO Survey*, please visit www.pwc.com/ceosurvey.

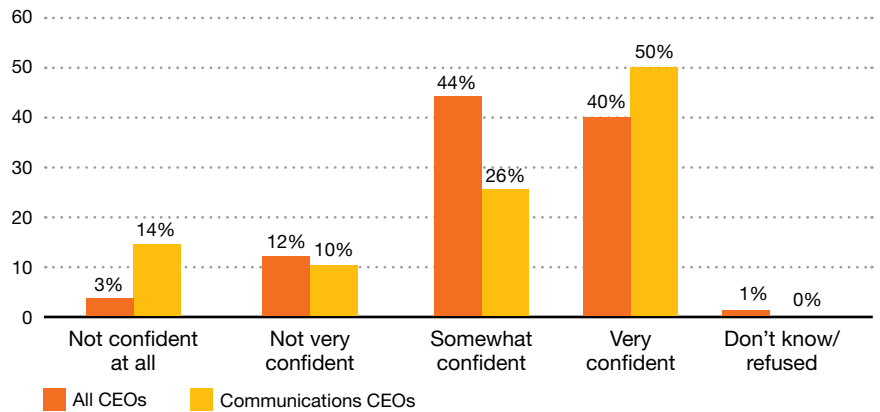


Companies in every sector have entered 2012 amid deep uncertainty about the global economic outlook, and especially about the potential impact of Europe’s sovereign debt crisis. Expectations are receding that output in fast-growing markets such as China and India can take up all the slack, with just 15% of the 1,258 CEOs we surveyed believing the global economy will improve in 2012.

This pessimism is – if anything – even more marked among communications CEOs: 55% believe the global economy will decline over the next 12 months, compared to the overall average of 48%. But though communications CEOs are gloomier about the general economic prognosis, they are more positive about the likely fortunes of their own companies than their fellow CEOs in other sectors. Fifty percent are very confident they can generate higher revenues in the next 12 months, whereas the average in the total sample is only 40% (see Figure 1).

Figure 1: Confidence over 12-month revenue growth

Q: How confident are you about your company’s prospects for revenue growth over the next 12 months? Are you ...?



Base: All respondents (Total sample, 1,258; Communications, 42)
 Source: PwC’s 15th Annual Global CEO Survey

That said, the percentage of communications CEOs who are not at all confident of being able to deliver growth is also noticeably higher (14% versus 3%). This polarisation of views continues a theme that emerged in last year's survey: namely, the contrasting fortunes of different companies in a sector that is experiencing extremes of success and failure.

Specific concerns about the global economy

Communications CEOs are more worried not only about the global economic outlook, but also about several related risks. As Figure 2 shows, 45% are extremely concerned about the risk of economic volatility (versus 32% of the total sample). Similarly, 40% are extremely concerned about the measures highly indebted governments are taking to cut their fiscal deficits (versus 27%). Conversely, they're more relaxed about the prospect of inflation. Only 19% of communications CEOs are somewhat concerned on this score (versus 31%).

Strategy: all change!

Disruptive change is a constant feature of the communications industry and the results from this year's survey indicate that CEOs see little sign of the pace and scale of change diminishing in the future. The rapid emergence and adoption of new technologies, devices and channels – from smartphones to tablets and Twitter to Groupon – can create overnight stars and catch the unprepared off guard. So it's hardly surprising that 36% of communications CEOs are planning to make fundamental strategic changes in the next 12 months, compared to 13% across the rest of the survey population (see Figure 3).

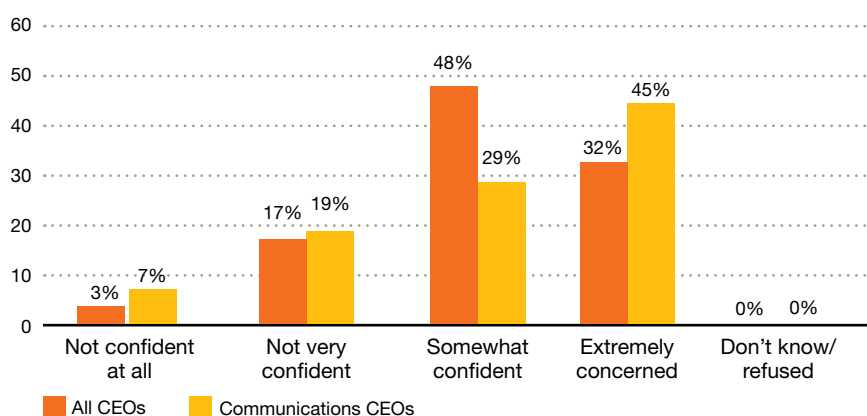
This disruption takes a number of forms and has generated understandable nervousness. Communications CEOs are more worried about new market entrants than their peers (48% versus 38%) and more than twice as likely to be 'extremely concerned' about shifts in consumer spending patterns. They're also more anxious about the security of their supply chains, and a significant proportion (19%) believe the lack of basic infrastructure in some markets is likely to be a serious problem for their business in the next 12 months.

The pessimism communications CEOs feel about the state of the global economy has triggered concerns about the availability of funding, too. The percentage who are apprehensive about being able to finance their companies' growth in 2012 is more than double the average in the survey population as a whole.

So how do communications CEOs propose to deal with these challenges? They're planning various strategic changes covering a wide range of financial and organisational areas over the next 12 months. Capital investment decisions and capital structuring activities feature prominently in their plans, for example: 31% intend to make major alterations to the former and 29% to the latter (versus 19% and 14%, respectively, of the total sample). And 29% expect to make major alterations in the way they manage risk, whereas the overall average is just 17% (see Figure 4).

Figure 2: Concern over volatile or uncertain economic growth

Q: How concerned you are, if at all, about ... Uncertain or volatile economic growth?



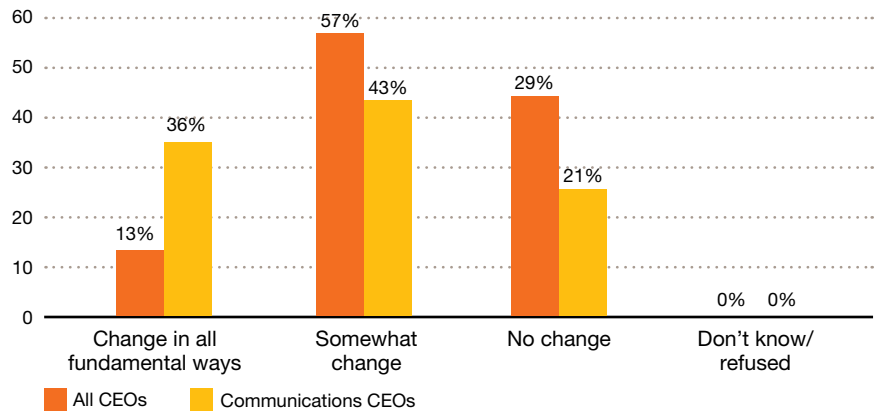
Base: All respondents (Total sample, 1,258; Communications, 42)
Source: PwC's 15th Annual Global CEO Survey

“The potential for growth can neither be taken for granted nor does it come at zero cost. It takes effort and hard work, radical shift of mindset, collective vision and long-term planning. Above all, strict, consistent implementation of plans and measures according to schedule.”

Michael Tsamaz
Chairman and Chief Executive Officer
OTE Group

Figure 3: Expectation of strategic change

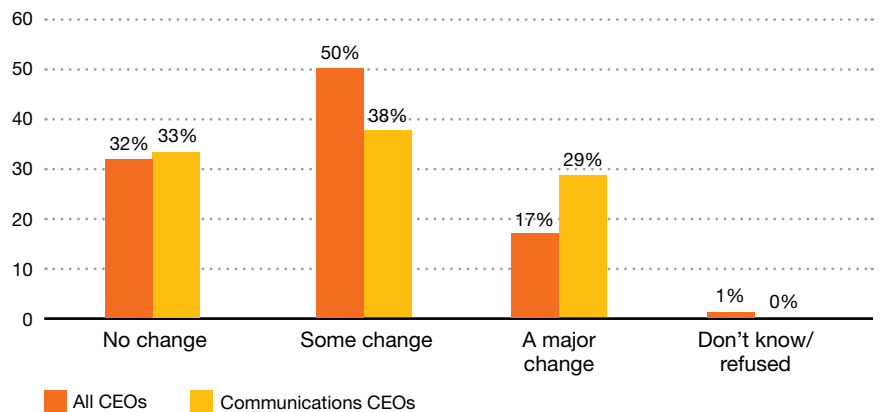
Q: To what extent do you anticipate your company’s strategy will change over the next 12 months?



Base: All respondents (Total sample, 1,258; Communications, 42)
 Source: PwC’s 15th Annual Global CEO Survey

Figure 4: Expectations of changes to risk management

Q: To what extent do you anticipate changes at your company in... Approach to managing risk...over the next 12 months?



Base: All respondents (Total sample, 1,258; Communications, 42)
 Source: PwC’s 15th Annual Global CEO Survey

As well as changing their approach to investment and risk, communications CEOs say they're likely to continue cutting costs. A full 90% have already implemented cost-reduction initiatives in the past 12 months, which is significantly more than the 75% who've done so in our entire survey sample. And 48% expect to outsource a business process or function in the next 12 months (compared to the overall average of 33%). Of course, outsourcing may be motivated by the need to reduce costs, but it's also a component of the major organisational changes that two-fifths of communications CEOs expect to make in 2012.

Many communications CEOs are reconsidering how best to manage innovation, too. That's not surprising, since new technologies play such a key role in the sector. Communications

CEOs are repositioning their portfolios to focus on developing new products and services, and fine-tuning existing products and services. But 60% also intend to adopt new business models in response to a fast-changing environment.

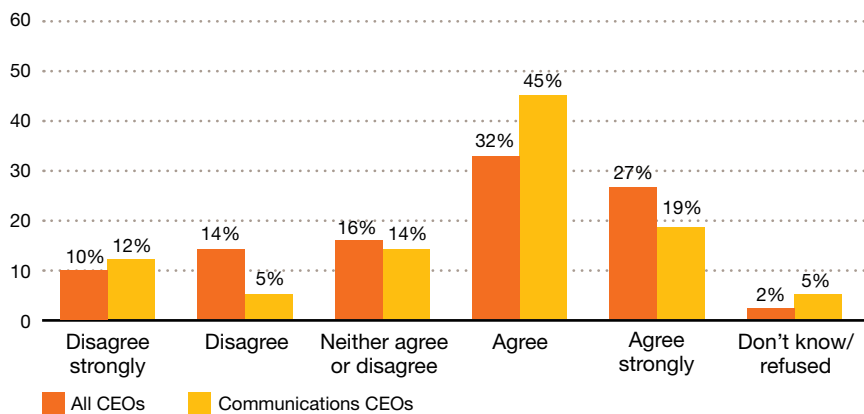
These strategic priorities are reflected in the 'wish list' of activities on which communications CEOs most want to spend more time. Whereas CEOs in many sectors put developing the leadership and talent pipeline first, communications CEOs are more interested in meeting customers. Three-quarters of them think talking to the consumers who buy their products and services would be the best use of their time, if only there were more hours in the day.

Operating in a global future: new world, new priorities

Communications CEOs are more positive about the changing dynamics of the world economy than their counterparts in other sectors, as befits the global nature of the their industry itself. Some 69% of the communications CEOs we surveyed think cross-border flows of capital will become increasingly easy, with fewer restrictions in place – a view only 56% of all CEOs share. Similarly, 55% (as opposed to 45% of the total sample) anticipate that globalisation will continue to erode the barriers to free trade, making it easier to move goods, services and capital across borders.

Figure 5: Importance of emerging versus developed markets

Q: How strongly do you agree that ...Emerging markets are more important to my company's future than developed markets



Base: All respondents (Total sample, 1,258; Communications, 42)

Source: PwC's 15th Annual Global CEO Survey

Predictably, perhaps, many communications CEOs are pinning their hopes for future growth on the emerging markets rather than the developed markets – as, indeed, are their peers in other sectors (see Figure 5). And while most CEOs with plans to expand abroad are focusing on China, communications CEOs prefer Brazil: 26% believe it will be a key growth market in the next 12 months (versus 15%).

Managing talent: a mixed picture – and challenges around information

When it comes to managing talent, communications CEOs present a mixed picture. On the one hand, they foresee less difficulty finding the talent they'll need than CEOs in other sectors: 40% are very confident of being able to hire the people they require to execute their corporate strategies over the next three years, compared to just 30% of the total sample. On the other hand, they're more likely to have cancelled or delayed a strategic initiative in the last 12 months as a direct result of skills shortages (see Figure 6).

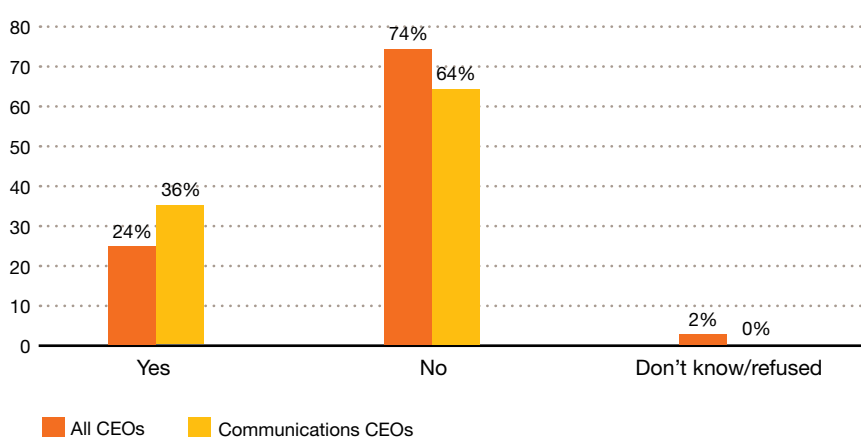
Communications CEOs also tend to transfer employees from one country to another as the need arises, rather than recruiting local people: 31% prefer to relocate existing employees, whereas the overall average is only 19%. And the senior management team is more likely to be based in the country where the company has its headquarters (43% versus 29%).

That said, communications CEOs expect to get more information about their employees than CEOs in other sectors – and they're often more satisfied with the quality of information they receive. Fifty percent think information about return on investment in human capital is very important, for example, compared to only 29% of the total sample. Communications CEOs also place much greater weight on measures like staff productivity (62% versus 50%) and labour costs (57% versus 41%).

One possible explanation for this emphasis on hard data is the fact that many communications companies have been cutting back on the number of people they employ. Nearly three times as many communications CEOs have reduced their company's headcount substantially – i.e., by more than 8% – in the last 12 months. So communications CEOs want to make sure they're armed with all the facts when they face difficult decisions about who to keep and who to let go.

Figure 6: Delay strategic initiative due to shortage of talent

Q: Have talent constraints impacted your company's growth and profitability over the past 12 months where...you cancelled or delayed a key strategic initiative?



Base: All respondents (Total sample, 1,258; Communications, 42)

Source: PwC's 15th Annual Global CEO Survey

Cable car descending from the top of Table Mountain, Cape Town, South Africa.



Perspectives

The differences between telecom markets across Africa bring both challenges and opportunities to operators already there, as well as to those looking to invest. There are economic and technological variations, incredible linguistic diversity, and individual regimes and regulations from country to country, to name just a few. Managing to grow the business, improve customer relations and introduce innovative, useful services in one market – let alone multiple markets – can be a major undertaking for any telecom executive. Here, the CEOs from MTN in two different countries present their views on how they navigate this interesting and evolving market.

An interview with:

Wim Vanhelleputte
MTN Côte d'Ivoire

Côte d'Ivoire has a population of around 21m, and seven operators serve its mobile market. In such a competitive mobile environment, being part of a pan-African telecommunications group has its benefits. MTN Côte d'Ivoire is the country's number one operator and is setting its sights on 3G mobile broadband services to fight off the increasing pressure from local and international operators. Here, Chief Executive Officer Wim Vanhelleputte shares his insights on the role of mobile banking in developed and developing countries; the symbiotic relationship of operators and regulators; and how transitioning to new operating models requires not just a smart approach, but also patience.



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Wim Vanhelleputte joined MTN Group in 2008 and was appointed Chief Executive Officer of MTN Côte d'Ivoire in 2009.

From 2003 to 2008, he was CEO at Chad Mobile, Imaginepartners Uganda and Sentel Senegal, successively. Prior to that, he was CEO of Telcel Gabon and held various positions within Siemens Atea.

Wim is a graduate of the University of Brussels and Gand University, where he studied nuclear physics and power plant management.

For more information, visit MTN Côte d'Ivoire's web site at www.mtn.ci.

Communications Review:

What's your perspective on the role telecommunications has played in Africa in developing the economy, enhancing knowledge and introducing new technologies? More specifically, what has been the impact in Côte d'Ivoire?

Vanhelleputte: If you look back over the past 10 to 15 years, the telecoms industry – in particular, mobile telecoms – has played an enormous role in the development of the continent. It's one of the industries, or technologies if you want, where we have closed the gap between the first world and the third world, or any world. There's no difference anymore. Today, if you're in Côte d'Ivoire and getting an Internet connection, it can be even better than the Internet connection you might have in France or Switzerland or other parts of the world.

That tremendous leapfrog step that the industry has made in this part of the world is really a major driver of development, which I think will continue. Up in the most rural areas, MTN is present. And the impact of telecom services on the daily lives of millions of people is just enormous: it allows people, including those in the most remote areas one can imagine, to connect with the global village.

From a psychological point of view, for the population – but also for economic growth and development – mobile telecoms has had an enormous impact in this part of the world. And that continues, because we're looking at mobile money, data connectivity, applications for mobile handsets and social networking. Although they still are used modestly in most of our markets, they will catch on. In another three or five years, our subscribers will be using their data applications even more intensely, the same way they're

using voice every day now. And that will be another revolution. Not just in peoples' mind-sets, but also in allowing a certain level of economic growth, development and connectivity that, I think, a few years ago nobody could even imagine because there wasn't any infrastructure capable of doing that.

Communications Review: In Africa, the fixed-line infrastructure wasn't that developed historically, for obvious reasons. So mobile is playing a very significant role there. How do you see the interconnection of those two technologies in the future? What will be the role of fixed line, and what will be the role of mobile? And will this relationship be different from what it is in developed countries?

Vanhelleputte: Technology wise, you can't beat the cable [fibre]. That's what I always tell my people when we have discussions. Having a physical connection entering your house or your office will always be of superior quality compared to a wireless connection – that's just how technology is.

Today, we're not interested in putting any copper wires in the ground because we will lose them. There's enough history and enough bad experience with the fixed-line operators that it just doesn't work. Now, to bring fibre to offices and to industrial areas, or to connect the country by submarine cable to the World Wide Web, obviously, fibre optic is the technology you need. We're investing heavily in fibre because you can deploy 3G networks, and you can have the last mile connection between your mobile handset and the base station over the air, but once you're in your base station you need solid backbone transmission capacity. And that's where fibre optic cable is the only right solution.

We're investing in this fibre because it's the superior technology, and we can't give ten million or 20 million Ivoirians reliable access to the Internet via their handsets if we don't have a reliable fibre optic backbone behind it. The technologies go hand in hand; it isn't a question of one or the other. That said, will we deploy fibre to ten million Ivoirian households over the next five years? No. Nobody can afford that kind of investment. It wouldn't make any economic sense, and also people have moved on from a fixed world to the mobile world. A combination of both is what can give the superior quality of service, and the investments will be done over time.

Communications Review: How do you think the interaction between the operators and governments and the need to invest massively in infrastructure – like fibre – will evolve? In Africa, every country is different, governmental issues are very specific and, of course, operators are seen as big companies with a great capacity to contribute to the wealth of the population and facilitate investment and development.

Vanhelleputte: Both government and the operators must understand that they need each other. No country in the world can develop a 21st century world economy – a knowledge-sharing and information technology economy, a service economy – without having the proper IT or ICT infrastructures in place. Taiwan, Singapore and South Korea are all good examples of the benefits of investing in this infrastructure. Governments realised 20 or 30 years ago that investing in this kind of undertaking alone is not a sustainable model.

Don't forget that the real success factor for the whole mobile industry in Africa was the concept of prepaid.

In Africa, you really feel a renaissance driven by technology. If countries' governments are truly interested in developing their economies, they know that they need communications infrastructure. If operators like MTN find a government in place that encourages us to invest and to be there for the long term, we will put money in the ground for these investments. The problems in the government of Côte d'Ivoire a year ago with the contested election caused MTN to freeze our investment plan for six months. The risks were limited, but we immediately stopped our investment. So government and operators go together; one needs the other.

If we have to pay additional taxes, levies, whatever, then it's a trade-off. At the end of the day, if by contributing more in taxes we're helping indirectly to build a better economy because of more investment, which causes more people to come to MTN and causes more people to have more money to spend, then it's wise spending by us. If the taxes really develop the country, indirectly we'll get our money back tenfold.

So, when a government is serious, knows what it's doing and really wants to concentrate on growth, then obviously we have to be – and we are – partners in development.

Communications Review: Everyone is trying to build more network capacity, and probably not all the players have been hit by the same situation that you had here in Côte d'Ivoire with the elections. What are your views on the future evolution of the communications market in Côte d'Ivoire?

Vanhelleputte: I think we're moving away from a situation where we didn't have that much long-term visibility or a regulatory environment. The tax environment was a bit shaky because of the long-term political situation that actually didn't allow for voting on a new telecom act. We had telecom laws that were outdated for the current technology.

I believe that there's political will to create regulatory transparency in the telecoms sector. On the other hand, I also expect, and it's already the case, that we'll be taxed more than before. Transparency, law and order and all that come with a price, but ultimately I think investors prefer to work in a clear, transparent environment with a bit of higher taxes than in an obscure environment where they don't have to pay that much tax. I think we all prefer the first option, because at least we know where we stand and we don't have unpleasant surprises popping up in the morning.

Communications Review:

Across Africa, many operators are testing, trying to launch or even successfully launching various mobile banking offers. Kenya is a great success story, partly because of what Vodafone did there. What's your take on mobile banking and how it will evolve in Africa and Côte d'Ivoire?

Vanhelleputte: Let's talk about Africa as a whole. The way I see it is like the same thing that happened ten years ago with the launch of prepaid mobile. Don't forget that the real success factor for the whole mobile industry in Africa was the concept of prepaid. If we had stuck with the postpaid model, we would never have reached 5% of the subscribers we have today. There was no alternative, because there were no fixed lines.

The same is true today – mobile money is filling in a gap. If the 35m Kenyans all had their own bank accounts, mobile money wouldn't exist in the first place. It would be like in Europe, where mobile money isn't called that and functions more like a mobile wallet because the applications are secondary. Some applications allow paying for the metro by flashing a phone in front of an electrical eye and such, but those are minor applications. Europe has no 'killer' mobile-banking applications because the necessity isn't really there.

In Africa, as a whole, I think the latest studies show that there are 20 times more mobile phone users than people who have bank accounts, so we're filling a gap with a technology that is absolutely suited to banking because we have the security, the distribution footprint and the brand. All the ingredients to fill in the gap exist. Now, to both fill the gap and make money on mobile banking presents a challenge. In Côte d'Ivoire, for example, historically speaking, the country has a ratio of people with bank accounts that's much higher than in other parts of Africa. So the necessity is less. In the countries with few banks or where the banking sector is the least developed, that's where mobile money is picking up quickly.

We don't offer mobile money with hopes of it being a standalone profit maker. For us, mobile money is really a retention tool. We know that the loyalty of our customers when they're using the mobile-money services is like ten times higher than the loyalty of non-users of mobile money, because people can easily change SIM cards or change networks. But changing banks is not something they do overnight. There actually is a certain resistance for people changing banks quickly, and mobile money is our main way of creating retention among our subscriber base – not just to make profits out of transfers, which is secondary for us.

Communications Review: If mobile banking is more a retention tool than a big revenue stream, what types of applications do you think are needed to fill the gaps? Are they in health, social networking or mobile advertising? What applications might appear that could make a big difference in the market in Africa and particularly in Côte d'Ivoire?

Vanhelleputte: In the coming years, mobile data applications will skyrocket. We're launching 3G in a few months' time. It will allow millions of subscribers to play games and access Facebook over the handset. A lot of the applications that are already being used in other parts of the world will follow here, because, at the end of the day, we're just in one big village now.

I don't expect very many African-specific applications that would create huge revenue streams for us. What I see happening more is that people will shift part of their monthly spending from voice to mobile applications, like gaming, health, whatever it may be. There's a wide range of applications to spend your money on, but I'm not really sure whether one will jump out of the crowd and be a major differentiator here if it isn't already big in another part of the world, be it Indonesia or Brazil. Those kinds of markets are two or three years ahead of us. Everything that's happening in Egypt or Tunisia is going to happen two or three years later in this market.

I'm not expecting any surprises. Sometimes the beauty of working in this part of the world is that you usually know what will happen in the next two years just by looking at other countries and what's happening there now.

Communications Review: As CEO for MTN Côte d'Ivoire, how are you making the most of the MTN network of companies on the continent? What benefits are you taking out of the pan-African coverage?

Vanhelleputte: MTN is in 21 countries. We are in South Africa, Iran and Nigeria. Those three countries alone make up the lion's share of MTN. Iran and South Africa are more advanced, more developed markets than most of the other 19 countries, so products and services, new promotions and the like are all shared with us; we don't have to reinvent anything because we're part of a group. That's the advantage of a multinational compared to a single operator in just one country. The single operator doesn't have the view of what's really happening in the rest of the world or in similar markets or more advanced markets, and that's where MTN, with 21 countries, makes the difference.

How did we launch mobile money here? We got people from MTN Uganda, who launched six months before us, to come here, and they did the whole launch for us. There's a lot of geographical sharing of knowledge and experience in which the bigger, more advanced markets are stimulating the growth of the less advanced markets. That's where we get our economies of scale.

Communications Review: How do you think operating in 21 countries is affecting competition in those 21 markets or, specifically, in Côte d'Ivoire? In some countries, you still have local players, and those players may have difficulties reinventing themselves or covering the needs of the market to provide the services that are expected. Do you think the trend will be, to some extent, that the big global players will have more and more of a footprint in those countries and that local players will disappear? How do you see this evolving?

If countries' governments are truly interested in developing their economies, they know that they need communications infrastructure.

Vanhelleputte: In Côte d'Ivoire, it's the big players that will squeeze the smaller players; it's already happening. MTN, Airtel, Orange, Etisalat, Vodacom, Maroc Telecom – already those six players are taking 90% of the revenues in most of the African countries.

We all do our homework. The differences are in the details but we are all doing similar things in many of the same markets. If I want to know what Orange is going to do in six months' time in Côte d'Ivoire, I call my colleague from MTN Cameroon because Orange is in Cameroon. What it's doing there is what it will be doing here. Or I call my friends in Senegal. I'm pretty sure that at least one out of two promotions will be repeated a few months later here in Côte d'Ivoire, and vice versa. All the multinationals move along that same path of sharing knowledge and doing similar promotions. If you have smaller local players, those are the ones suffering because they don't have the leverage of a big multinational behind them.

Another big success factor for MTN, whether in Côte d'Ivoire or the rest of Africa, has been our brand and positioning the company as being the true African success story. If we didn't have that story as a core part of our brand, our success would be different. I'm not saying that we wouldn't be successful but that our success would be different. If tomorrow MTN were bought by Vodafone and it rebranded MTN as Vodafone, I think we would be losing a certain value, a certain extra that we have that other players might not have.

Communications Review: How important are alternative business models – sharing networks, service platforms, outsourcing, shared service centres – to MTN? They will evolve, but at what pace and with what barriers?

Vanhelleputte: That absolutely is going to happen and already is happening. It makes a lot of sense to try to run cross border as one company with one set of procedures, one set of platforms. With so many overhead duplications, there's a lot of room for rationalising, consolidating, sharing services, outsourcing, you name it.

The business will look completely different in two or three years' time – the way we'll be structured, the number of people we'll employ directly. One big obstacle that has always complicated this trend is interconnectivity.

It's very nice to say, I'm going to outsource my call centre to Chad because the cost in Chad is half that in Côte d'Ivoire. Yes, on paper it works. But in reality we need reliable fibre optic transmission capacity and huge capacities between all these countries, and that has been missing for a long time. Only now, with the arrival of some additional submarine fibre optic cables, plus the massive deployment of fibre optic over land, are we all getting interconnected through reliable, massive bandwidth connectivity. That's the necessary condition before we can think about anything else we want to do.

Communications Review: Another barrier – already being experienced in developed countries and one that can't be underestimated – is the impact of different cultures and different countries. Regulations may be but aren't always similar among countries. The culture and languages of countries in Africa aren't similar. Maybe the differences in cultures and countries are a not-yet-visible issue, but are they a barrier there or not? And what is their impact?

Vanhelleputte: Change is always difficult and change impacts people. If a machine is affected by change, it won't go on strike or complain. Nobody will tell you the opposite. I think there's a general understanding today in Africa that certain things can be done more efficiently or better in another country. For example, if we tell the guys from MTN Benin that we're going to run their switch from Côte d'Ivoire, I don't think they'll throw a party – but they will understand and perhaps say, OK, maybe I can get the position in Abidjan to work there and do part of the job. So, people – especially the highly educated, our core people – have the mind-set that their field of interaction is no longer limited to just their family, their village or their town.

They're also becoming players on a much wider, pan-African or international scale. They understand much more than maybe ten years ago, and because of this trend, they see opportunities that otherwise wouldn't be there. Dealing with change won't be easy, but I'm not too pessimistic about it.

Communications Review: Customers aren't the same in every country. Although they're part of this global village, they may have a unique way of consuming, of behaving, of doing things. Do you think that affects how you have to manage this new business model? From a cost perspective or an infrastructure perspective, the model doesn't have to account for that fact, but you may need to tailor your marketing and services to differences among customers.

Vanhelleputte: This is a big issue, but addressing it depends on how smart you can be when you implement changes. You can do it the simple, rough, basic way, for example: suppose we outsource our call centre to Nigeria and nobody sitting at the other end of the phone in Nigeria speaks French. Obviously, that wouldn't work. I'm using an extreme example to stress the point that there are smart ways of moving forward while avoiding these kinds of problems.

A real example I can share is that for a long time internally at MTN Côte d'Ivoire there was resistance when we were told that we should work with an advertising agency that worked with MTN Ghana. The thought was, it will be a big disaster, it will never work. We're French-speaking people, and they're English-speaking people. Even the pictures will be a problem because the faces of the people from Ghana are so different from the ones in Côte d'Ivoire that anyone looking at the pictures will instantly recognise Ghanaians, not Ivoirians. If you put an English billboard in Abidjan, yes, a lot of people won't understand it. But doing it the right way it works. We are using the agency from Ghana.

To get the benefit from centralising or from outsourcing, a company must keep in mind that certain local aspects will have to be fine-tuned – that it's not one size fits all. You have to be smart about these kinds of things. Otherwise, you can make very silly mistakes that destroy value. And you can throw all the benefits you think you're gaining out the window because you're losing ten times more than what you're gaining by centralising. You also have to accept that there might be limitations to the model. Using a bit of courage and imagination and a smart approach, usually you get the benefit more than the downside of it.

An interview with:

Karel Pienaar **MTN South Africa**

When mobile penetration soars past 100%, operators need to focus more on developing innovative services and reevaluating their business models. MTN is no stranger to innovation – it pioneered prepaid mobile – and the company is embracing new technologies through its LTE pilots. It's also investing in submarine cable to improve broadband capacity and support consumer demands. Here, MTN South Africa's Chief Executive Officer Karel Pienaar talks about how MTN is exploring opportunities within the financial industry, the importance of telecoms in bridging the digital divide and the necessity of moving to shared-services models and partnering to deliver new services and stay competitive.



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Karel Pienaar has been the managing director and chief executive officer of MTN South Africa (SA) since August 2009. Before this appointment, Karel had served as the chief technology and information officer of MTN Group since January 2005. His association with MTN Group started in 1991 when he directed the M-Net/Multichoice and later MTN's thrust to acquire the second GSM cellular telephone licence for South Africa. When the cellular operator launched its services in 1994, Karel was appointed group executive in charge of MTN's network, a position he held for ten years.

Before his long association with MTN Group came the South African pay-television company M-Net. There he developed new businesses and services, including Business TV, data broadcast services and corporate satellite-TV services.

Prior to joining M-Net, Karel started up and managed the Communications Division of Cortech Ltd. The computer and communications equipment supply and support company provided data communication products and services to South African corporations.

Born and educated in South Africa, Karel received a degree in electrical and electronic engineering from Rand Afrikaans University in 1982. He is a registered professional engineer and a member of the Institute of Electrical and Electronic Engineers.

For more information, visit MTN-SA's website at www.mtn.co.za.

Communications Review:

What's your perspective on the role telecoms has played in Africa and, more specifically, in South Africa? And where is that role headed?

Pienaar: There is little doubt that mobile, especially, has made a huge difference in South Africa and in Africa by providing everyone with a voice.

When MTN started in 1994, there were about 4m fixed lines connecting the 'haves' to each other. Today, there are more than 53m mobile connections linking all the people of South Africa (and similarly in the rest of Africa) together. How this has changed the ability of all our people – to communicate and to do business, to connect with their loved ones and to have the benefit of the security and peace of mind of being able to connect anywhere at an instant – is immeasurable.

We've seen many World Bank and industry studies, such as those from GSMA, which show that for every 10% of mobile penetration in a country, the country's GDP increases by 0.8%. In my book, that's an underestimation of the real benefits of such connectivity.

As for the future, in South Africa we have more than 100% penetration of mobile voice. Before 2020, I expect the same with the Internet to ensure connectivity to the broader masses. With the growth rates we're starting to see now, it's a real possibility – subject to regulatory reality and business smarts. Once that happens, I envisage that all South Africans will have access to the Internet and enjoy the benefits that it offers from the perspectives of content, speed and functionality. Accessing the cloud and its applications will become a reality for all connected.

Can you imagine the benefits of having all our people connected to the World Wide Web, as well as to ICT [information and communications technology] services and upstream applications like mobile banking, e-learning, e-health and e-government? Not to mention the many applications being developed that are specific to South Africa or Africa?

I can't think of any telecommunications change coming to South Africa that will have a greater impact on our people than this transition into full ICT for all. MTN will be – and is already – a leader in this space.

With available capacity increasing, limits will no longer be a roadblock to expanding services. A push to increase the volume of what's offered over the network infrastructure will become very important. The mobile device will become everything for everybody; it will be the equaliser between the sophisticated and the unsophisticated markets by bringing the same applications and services that are available in traditional urban areas to the more remote rural areas of South Africa. This will contribute extensively to bridging the digital/economic divide in the country. The majority of South Africans will have access to knowledge – it will be at their fingertips.

Communications Review: Mobile banking is well established in many parts of Africa, especially in Kenya and South Africa. What do you see as the next steps in taking the service forward and expanding its application?

Pienaar: I think it's possible that telcos could get banking licences in the near future as regulators come to understand that telecom operators – mainly due to their network and distribution footprint – are well placed to assist in bringing financial services to the unbanked. Getting banking licences would open up the playing field in some way, as telcos would be able to participate in the financial services space.

One of the challenges in achieving this is to change the mind-set of some of the regulators who in the past have protected their legacy institutions from the entry of other participants. The participation of telcos in the financial-services sector could lead to a 'zero transaction fee' environment due to differences in the respective business and cost models of the telco in comparison to the banks. Telcos have the ability to leverage their existing infrastructure and cost base and wouldn't be constrained by legacy infrastructure drawbacks that may be prevalent in the banking industry. Telcos would be able to embrace the latest technology and start with a clean sheet, making it possible to move rapidly into this market.

In South Africa, 70% of the population is banked. As a result the services offered here are not the same as in the rest of Africa. For example, in Kenya, MPESA was so successful because the population of those banked is significantly lower than in South Africa.

Today, none of the mobile-banking services being offered addresses segmented customers' real needs effectively, including simplicity, cost and accessibility. That will change, because meeting those needs is directly linked to the distribution footprint of a telco and the penetration levels of the mobile device.

ICT players shouldn't be focusing on becoming telcos themselves. They should be forming partnerships with the current telecom players that combine best-in-class offerings to create solutions focused on the customer.

Communications Review: What role do you believe the equipment manufacturers will play to help the communications industry grow?

Pienaar: Before responding to the role of the equipment manufacturer, per se, let's first consider the ICT ecosystem. In this environment, customers, telecommunication networks, equipment providers, regulators and application and content providers are all connected. None can be considered in isolation from the others, especially when looking at how to bring new services or products into the market. Each of the players has an important role to play in moving mobile banking and other similar services forward.

As for the equipment manufacturers, in particular, their role will be to make sure that their product road maps – as defined by their value chain, meaning with the telcos and banks and other institutions – align better with the customer and future customer needs. So, manufacturers will need to listen to the telcos and their requests when developing their road maps.

We're working very closely with suppliers, such as Ericsson, in defining what we want. Our current initiatives are focused mainly on ensuring that we obtain the analytical and customer information required to service our customers better and offer a seamless, integrated approach.

Communications Review: What other mobile applications do you think will drive revenues in Africa: mobile health, social networking, mobile advertising?

Pienaar: The ones you mention, plus insurance applications and e-learning in all its forms. There is a big push from operators, handset manufacturers and over-the-top providers like Google to develop applications for our local environment and cultures.

The future telco model is one of partnerships. Historically, when telcos were offering only voice-related services and products, they really didn't need a lot of support from other players. Possible exceptions were the distributors and the distribution channel. The services being offered will expand with the introduction of new applications. And we'll see a greater push for partnerships with banks and insurance companies and also between the integrators – for example, companies like Internet Solutions, Business Connexion and Gijima in South Africa.

I believe that, considering the scale of the current telco operators in South Africa and the scale required to establish a successful telecommunication company, other ICT players shouldn't be focusing on becoming telcos themselves. They should be forming partnerships with the current telecom players that combine best-in-class offerings to create solutions focused on the customer. These partnership models would further require telco operators to collaborate more to share infrastructure.

As partnerships go forward, we likely will see a number of them break up in areas like banking. The cause will be the constraints of legacy issues, i.e. if one of the partners cannot adapt or change quickly enough because of conflicts between a new and an old business model, or conflicts between an old technology system and implementing the latest and greatest on offer.

One attribute that telcos normally have is knowledge about their customers' needs and habits. The partnership model will make even further use of such information.

We're in a situation where operators can't change quickly enough. So we need to partner with an entity that has new skills and capabilities that will assist us in servicing the customer.

Communications Review: MTN already operates in several countries on the continent. How important is that to your operations, and how do you get the best results from the network of MTN companies? How does this impact competition in your market?

Pienaar: Telecommunications is about scale. With the increase in speed, reliability and latency of connectivity, telecom operators are now getting to a level that supports a shared-services environment (or cloud services, to use the latest buzzword). This means the telco of the future will consist of one network with scalable, centralised services.

MTN is in the perfect position, as the number one operator and brand in Africa and the Middle East, to leverage this change. MTN can get to the position where the infrastructure across all the territories in which we operate is connected, where MTN becomes a content aggregator and provides content to customers across our footprint, i.e. delivering the cloud services of the future.

I believe this is a significant advantage in the business model of the future.

Communications Review: How important are alternative business models – such as sharing network and service platforms, outsourcing or shared-services centres – to you?

Pienaar: Sharing networks and service platforms is very important in the business model of the future. Operating a successful telco is all about scale and creating scalability. We're moving into an era of unlimited capacity with the introduction of the latest fibre technologies. Therefore, it is imperative that we leverage this capacity by offering additional services over our network. It follows that for each additional revenue-generating service we offer across our network, the cost of operation decreases. Ultimately, better utilisation of our infrastructure will lead to more customers, applications and revenue.

Currently, MTN is considering a number of infrastructure-sharing initiatives especially within the network area and those initiatives will further improve profitability.

I believe that outsourcing is viable only under certain circumstances, which need to be carefully considered prior to entering into these arrangements. One such instance is when outsourcing is offered in areas that are considered to be non-core to the business. Another is when a telco cannot itself provide the required service at world-class level due to certain inhibiting factors, such as in-country legislative constraints (like labour legislation) or the culture of the organisation. Additionally, if a telco can't achieve the scale necessary to deliver the required capabilities on an efficient basis, outsourcing should be considered.

Implementing a shared-services business model is probably the biggest change coming to our business in the medium term. With increased speeds, reliability and latency of connectivity, shared services and the ability to provide services on the back end (i.e. relating to internal functions) and on the customer-facing front end (i.e. cloud services) will become a necessity in leveraging and mining future efficiencies.

This won't happen overnight. It's going to take time to align business processes and to ensure proper change management throughout the process.

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The following publications, authored by partners at PwC, provide thought-provoking and informative discussions of interest to various segments of the industry. To obtain PDF files or hard copies of the publications, please visit the websites listed below.

We need to talk about capex

Global capex levels in the telecommunications industry have soared from \$50 billion to \$325 billion, in real terms, over the last 30 years. This tremendous investment is not producing returns that telecom operators require. Based on our analysis of the financial performance of 78 fixed-line, mobile and cable telecoms operators around the world and a qualitative survey of senior telecoms executives, we developed an analysis and perspective of the situation. This paper explains the four key reasons telecom companies allocate capital inefficiently. It identifies 12 shared attributes of a well-designed capital management programme and is applicable to any type of organisation: fixed, mobile or cable, whether a new entrant to the market or an established major telecoms operator. To read or download the PDF file, please visit www.pwc.com/communications.

No wires attached: Changing trends in the North American wireless industry

The accelerating pace of smartphone adoption and data usage, increasing capital expenditure driven by the transition to 4G networks, and declining mobile voice usage is creating significant pressures on existing revenue models and profitability for wireless carriers. And, as the industry continues to mature, prepaid and mobile broadband services will represent increasingly important revenue opportunities for operators. These trends and more are explored in the annual survey report for 2011. PwC surveyed US and Canadian wireless operators to analyze financial accounting and operations practices of the wireless telecommunications industry. The survey aims to inform wireless, telecom, and broadband industry participants of the current and emerging trends to empower them in decision making in this fast-changing environment. To read or download the PDF file, please visit www.pwc.com/communications.

Technology Forecast: Reshaping the workforce with the new analytics (2012, Issue 1)

This issue explores the impact of the new analytics and a culture of inquiry enterprises can foster with the help of emerging data analysis tools and services. A new generation of data scientists have taken on the challenge of mining the social media data cloud, as well as the under-used data enterprises are collecting internally. What they're finding can provide direction and momentum to a wide range of different organizational change strategies. To read or download the PDF file, please visit www.pwc.com/techforecast.

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