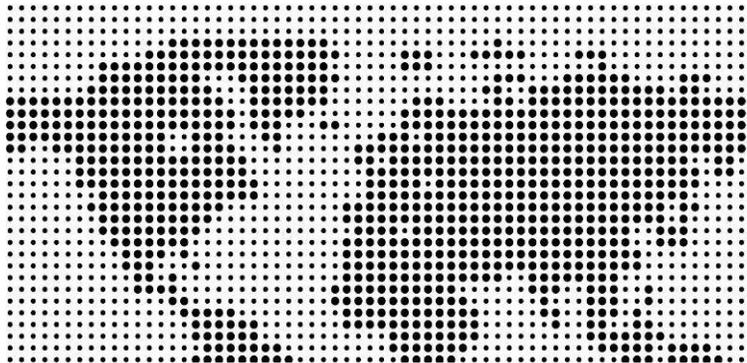




# Winning Strategies for Wireless Data



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### [1] Introduction

The global wireless telecommunications market has experienced an unprecedented expansion in recent years and there has been a phenomenal growth of EV-DO and HSPA data services in developed markets. Emerging markets are expected to take on a similar growth trajectory in the near future as operators work to meet the growing demand for mobile broadband services.

Flat or declining voice revenues have compelled many operators in developed markets to look beyond voice. By deploying 3G mobile broadband solutions such as EV-DO and HSPA, operators are benefiting from increased capacity, higher data rates and enhanced user experiences. These technologies allow operators to achieve market differentiation by enabling them to offer innovative, rich broadband data services with the potential to generate important new revenue streams.

For leading operators, data services currently represent 25-30 percent of total revenue, but more importantly, they contribute significantly to both subscriber and revenue growth. As of July 2009, globally, there were more than 385 operators offering EV-DO and HSPA services to more than 265 million users. And the number of subscribers is projected to grow to 1.4 billion by 2013.

In emerging markets, where voice is the primary revenue generator, data services are still in their infancy, but starting to show growth. Realizing the pivotal role that broadband services can play in socio-economic growth and development, particularly in emerging markets, various stakeholders including governments, operators and nonprofit organizations are working hard to promote the proliferation of these advanced services.

With limited fixed-line infrastructure in place and financial and geographic obstacles impeding new deployments, decision-makers in emerging markets are increasingly viewing wireless as the most economical option for increasing teledensity and broadband penetration. 3G mobile broadband, with its vast ecosystem, quick time-to-market advantage and superior performance, is a natural choice for operators seeking to offer reliable and affordable broadband data services to the masses. To chart the most effective path forward into the world of mobile broadband, operators in emerging markets can learn potentially valuable lessons from

the experiences and successes of their counterparts in the developed world.

This paper presents key strategies employed by leading operators, including some in developed markets as well as some early adopters in emerging markets that have successfully introduced broadband data offerings to expand services, grow subscriber base and increase profits. The following examples are just a sampling of the growing list of such operators around the world.

### **[2] Successful Strategies**

A coherent strategy encompassing choice of technology, market segmentation, devices, as well as applications and services is paramount for the sustained success of any operator. With vast differences in market dynamics, it is obvious that no single approach fits all. However, many of the challenges and opportunities in various markets across the globe are very similar. The solutions highlighted here, which have been proven in both developed and emerging markets, may be easily adopted by operators on the path to 3G broadband.

#### **2.1 Market Entry**

Many large operators have focused on technology excellence as a strategy for continually strengthening their market position and ultimately, for tapping into new revenue streams. As reported by *Strand Consult, Denmark*, in most countries around the world, the operators that launched mobile telephony first are still the largest in their markets.

Verizon in the U.S. is an excellent example of an operator that has successfully leveraged its technology strength. Verizon pioneered the concept of *ubiquitous* mobile broadband service when it deployed EV-DO in 2003. This service fundamentally changed the way people accessed corporate networks and browsed the Internet. It was an instant hit, particularly with road warriors, who were, at the time, constrained by the limited data speeds of existing technologies and the limited availability of Wi-Fi hotspots. The first-mover advantage allowed Verizon and other similar pioneers to achieve higher data ARPUs, until their competitors came up with comparable solutions.

Identifying the appropriate target market is a critical first step in executing a successful data strategy. Operators in the U.S. and Europe initially

targeted the enterprise segment and then went after consumers in later phases. For example, when AT&T launched the world's first HSDPA service in 2005, it targeted enterprises, addressing their inherent need for "anywhere, anytime" broadband access. AT&T's initial offering of PC cards and USB dongles was well suited for this market as well. The enterprise segment also had the advantage of being less cost conscious.

In Asian markets, especially Japan and South Korea, where data services were already popular on phones, move toward mobile broadband enabled handsets was a natural progression, and consumers were the initial target market. KDDI, a leading operator in Japan, successfully introduced EV-DO handsets coupled with an array of new and innovative value-added services (VAS), while improving the performance of existing ones. These services helped KDDI grow rapidly and significantly increase market share. KDDI recently indicated its intent to be an early adopter of "Multicarrier EV-DO," the first phase of EV-DO Rev. B, which significantly improves the broadband user experience and network data capacity through a relatively simple software upgrade.

Iusacell, Mexico's third largest operator, was the first to bring 3G mobile broadband services to market (with EV-DO). Iusacell successfully leveraged rich, EV-DO based services to differentiate itself from its bigger rivals and increase market share. Similarly, Reliance, Tata and BSNL in India are enjoying 3G mobile broadband first-mover benefits in their markets.

## 2.2 Applications and Services

In developed markets, before the introduction of 3G mobile broadband, voice services constituted the bulk of network traffic, along with limited SMS and other low-speed data services. CDMA2000 1X and GPRS/EDGE-enabled smartphones like the Blackberry and the Palm Treo were primarily used for emailing.

The introduction of 3G mobile broadband services via EV-DO and HSPA platforms dramatically expanded the data services market. The powerful capabilities of 3G not only improved existing apps/services but also enabled a plethora of new ones, opening the door to entirely new revenue streams. A quick glance at the websites of leading 3G operators offers the vast variety of apps/services, ranging from simple broadband connectivity to advanced video telephony services offered by KDDI, to interactive

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mobile TV services such as the Flo™ mobile TV offering from AT&T and Verizon, to name a few.

Operators throughout the world are leveraging their apps/services offerings to provide differentiation and stay ahead of completion. For example, in South Korea, where the cellular and broadband penetration rates among the highest, the country's leading operator KTF is reaping the benefits of successfully targeting the youth demographic through its HSPA offerings branded as *SHOW*. *SHOW* addresses the key need of this demographic — rich communication with peers — through services such as 3D multiuser gaming, MMS videos, mobile blogging, user generated content, tools to personalize the mobile experience on a daily basis (through *My SHOW*) and more. Such services have allowed KTF to be successful in the highly competitive South Korean market.

AT&T's Videoshare — a one-way, live streaming video call service based on HSPA — is a unique offering in the North American market. AT&T was also among the first to employ the strategy of incorporating existing services such as Napster, Yahoo! Music and eMusic into its own offering, departing from the traditional approach of investing in one's own music store. This gave AT&T a time-to-market advantage as well as the ability to offer a wide variety of music selections. As reported in February 2008, the strategy paid rich dividends with a 400 percent YOY increase in music revenues. Continuing its dominance, Napster music was also among AT&T's top three apps in Q1 2009, in terms of revenues.

Apps stores launched by various industry players are bringing a new dimension to the applications space. These stores have lowered the barrier to entry by providing a basic platform and a very large user base, allowing scores of innovative application developers to participate in the proliferation of such services. Juniper research forecasts the total global mobile app revenue to exceed 25 billions by 2014.

Emerging market operators like Maxis in Malaysia and MTN in Africa have achieved dramatic success by leveraging HSPA for fixed broadband services. Since many users in emerging markets have not experienced the Internet before, operators must not only provide cost-effective connectivity, they often must also become "market creators," providing applications and services that bring value to their unique users. Successful examples of these types of offerings are diverse and creative, ranging from applications

that provide commodity prices to farmers, to remote education services for underserved students, to programs for telemedicine, personal productivity or entertainment.

As quoted in a case study published by GSMA, Dr. Wijayasuriya, Chief Executive, Dialog Telekom, Sri Lanka, confirms, “...as an operator, we have to do more than offer Internet access. We have to participate in the value chain, giving users information on agriculture prices, telemedicine, training and so on...”

A classic example of such market creation is Safaricom's *M-PESA* peer-to-peer money transfer service in Kenya. *M-PESA* offers simple SMS-based money transfer services for individuals and businesses. Users can withdraw or deposit cash at registered retail outlets. Since banks and other financial services institutions are seriously lacking in the region, Safaricom's service, which does not require users to have credit cards or bank accounts, was an instant hit. Launched in March 2007, by early 2009 the *M-PESA* service boasted more than 5.5 million users, achieving a remarkable penetration rate of more than 25 percent. This service also encouraged entrepreneurship and increased employment through its more than 1600 agent-owned retail outlets.

In emerging markets, where incomes are traditionally lower and mobile network operators typically experience correspondingly lower ARPUs, music “side-loading” is often more popular than the paid mobile downloading that is so commonplace in developed parts of the world. In contrast, emerging market operators like Tata, Iusacell, and China Unicom have successfully used mobile advertising in their respective markets to bring *free* mobile music to users.

Taking advantage of this approach, users are exposed to embedded advertisements while downloading clips, full tracks and other types of music content. The service also has interactive features including the ability for users to vote or send SMS, as well as a click-through to attractive advertiser portals where ringtones may be purchased, coupons downloaded, etc.

These services have shown healthy uptake with China Unicom acquiring 1.7 million users within the first 14 months and Iusacell recording 500,000 downloads within the first 18 months of launch. Some of these services

are initially offered on CDMA 1X and WCDMA networks, and will be rolled over to EV-DO and HSPA as part of the next logical step in the evolution of the network's technology. The benefits are many. For example, EV-DO and HSPA will immensely increase data capacity and provide added flexibility to operators seeking to enhance the services and features they offer their customers.

### 2.3 Devices

Device strategies go hand-in-hand with strategies for apps/services and all require careful market segmentation.

The 3G ecosystem is huge and growing. As of March 2009, there were more than 2500 HSPA and EV-DO devices addressing numerous form factors, price-points and market segments. Thanks to economies of scale, 3G device prices are already at record lows, as illustrated in *Figure 1*. In addition, the influx of millions of subscribers from China and India into 3G is expected to push prices even lower.

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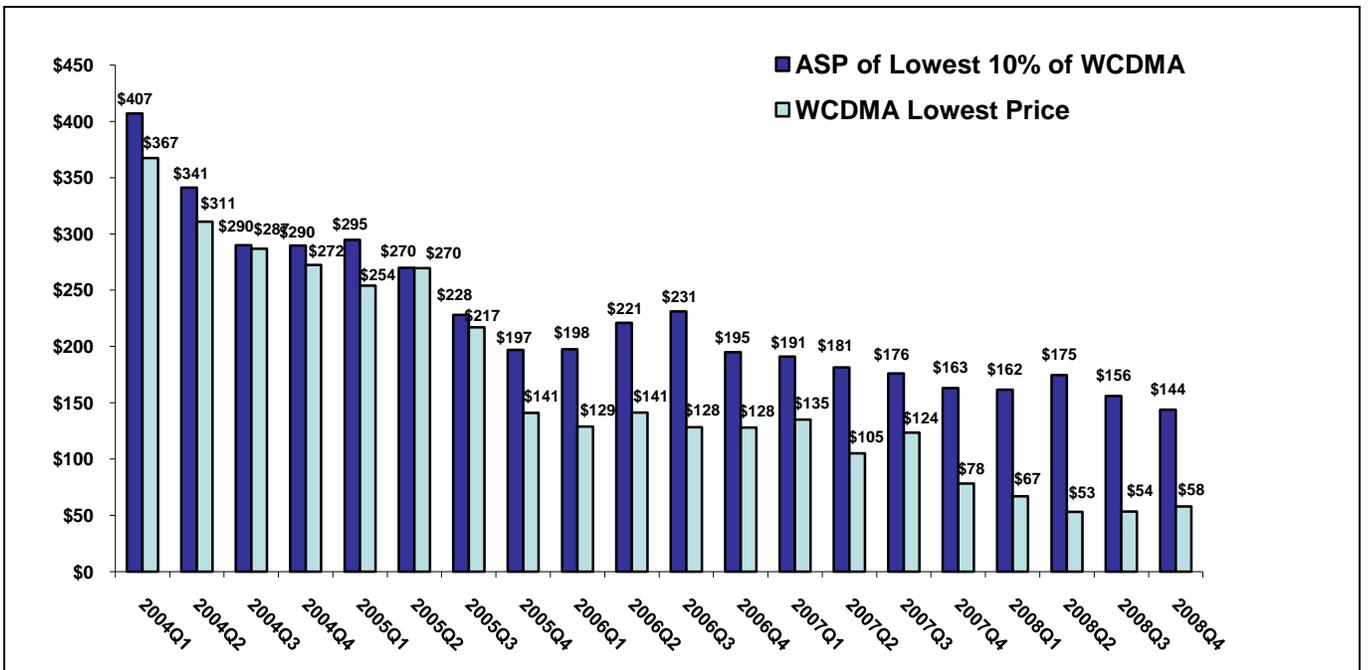
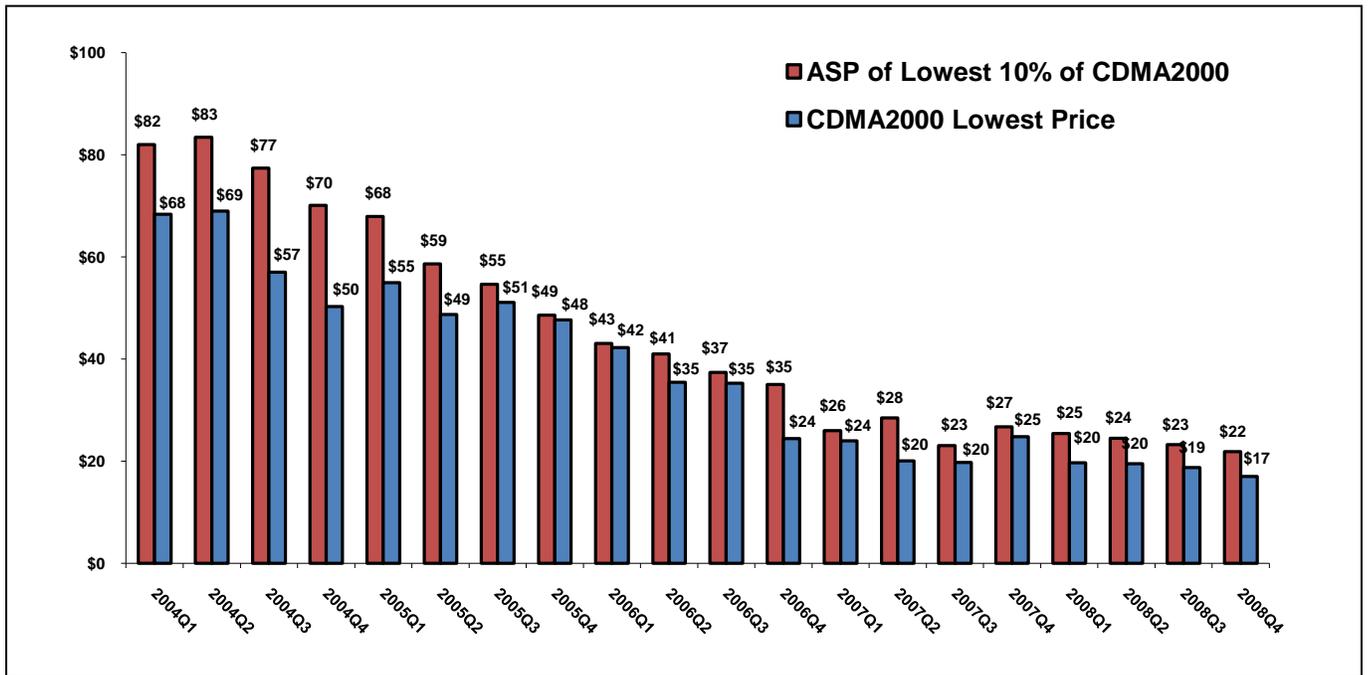


Figure 1: The costs of CDMA2000 and WCDMA devices have been continuously declining

Many operators in western markets, especially in the U.S., have successfully employed the subsidization model to keep device prices at attractively low levels, while locking-in future revenues through long-term service contracts. Operators like AT&T and Sprint have leveraged this model even further by offering exclusive devices like the iPhone and the Palm Pre. This has contributed to the increasing popularity of mobile data services and helped to stimulate significant subscriber and revenue growth.

Operators in western markets have historically opted to take a phased approach to introducing broadband devices. Their strategy was to initially cater to unmet demand in the enterprise sector for ubiquitous mobile broadband connectivity via PC cards and USB dongles. The most basic form factor for providing access to mobile broadband technology, these devices were simple to productize and offered an important time-to-market advantage. Following the initial introduction phase of cards and dongles, embedded modules and smartphones came to market, followed by a wide range of increasingly feature-rich handsets.

Thanks to the vast 3G ecosystem and lessons learned from the many commercial success stories experienced in the developed world, operators in emerging markets now have the flexibility to employ a device strategy that best suits their unique needs. For example, Tata in India followed the traditional model of initially offering broadband connectivity to enterprise and residential segments through EV-DO USB dongles as well as EV-DO enabled Wi-Fi routers. In a slight departure, Iusacell in Mexico opted to take a broader approach by offering EV-DO USB dongles, PC cards as well as handsets along with a full set of value-added services under the *Banda Ancha Movil (BAM)* brand. Realizing that the phone is the first and only computing device for most of its customers, Visafone in Nigeria, launched handsets that focused on delivering music, video and other entertainment services as well as services that enhanced productivity.

### 2.4 Service Pricing

As part of the effort to effectively commercialize their mobile broadband businesses, network operators have experimented with a variety of new approaches to pricing their data service offerings. The transition from familiar plans based on “per minute of use” to plans based on “per byte of use” initially proved to be a difficult sell, even in developed markets. However, thanks to continuous efforts to evolve and simplify pricing

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structure, operators now offer time-tested and commercially successful plans that suit their customers and promote increased data consumption.

The various price plans offered by today's successful 3G operators can be loosely grouped into three major categories:

- 1) Tiered flat-rate plans, ranging from unlimited to very low usage, priced appropriately to facilitate all levels of *frequent* users;
- 2) Per day or per MB plans for *occasional* users;
- 3) VAS plans for services such as navigation, on-demand music, etc.

Most operators now offer a combination of these options, in either individual or bundled plans through post-paid and/or pre-paid subscriptions. For example, major operators in the U.S. offer unlimited (up to 5GB) plans with differentiated pricing between devices like PC cards/dongles/embedded modems and smartphones. Typically, devices are subsidized for a lock-in period of one year or more.

In the UK, 3 has multiple plans addressing all types of users, ranging from *Broadband Lite* for a max of 1GB/month, to *Broadband Max* offering 7GB/month. 3 also offers the *Broadband Casual* plan with per MB pricing addressing, as the name suggests, *casual* users. T-Mobile UK has a prepaid product called *Pay per day*, which offers customers greater flexibility — allowing them to conveniently recharge the account whenever needed through online or through “top up cards” sold in general retail stores.

Operators have used access and VAS bundling to increase the uptake of mobile broadband on handsets. KDDI's *Lismo* music service, SKT's *cyworld* social networking service, *Sprint Arcade* gaming, Alltel *Mywaves* video streaming service, AT&T's navigation service and Orange's *HD TV* service (TV over HSDPA) are excellent examples of successful implementations of this strategy.

Some operators have leveraged both fixed and wireless assets to offer “triple-play” bundled services like AT&T's *U-Verse*, which combines fixed phone, TV and wireless in a single convenient package. These discounted offerings typically save money and simplify billing for users while reducing churn and customer acquisition costs for the operator.

Pricing plans in emerging markets also offer combinations of traditional tiered flat-rate and usage based plans with VAS services. Tata, Reliance, MTN and many others have launched services with tiered flat rates. China Unicom and Iusacel have also seen initial success in advertising-funded services in which users accept embedded advertisements as part of a *free* service offering. This model has proven particularly successful for music and video content distribution services.

As evident from these examples, 3G mobile broadband enables a wide range of applications and services that meet the rapidly growing demand for mobile broadband services. Thus a large number of operators are successfully combining these services with innovative pricing plans and business models that are enabling them to achieve remarkable growth in subscribers and revenue.

### 2.5 Innovative Business Models

Devising and implementing successful business models has been the hallmark of 3G operators. For example, Verizon pioneered the concept of *ubiquitous* mobile broadband via the EV-DO technology platform. Offering mobile broadband service for enterprises and consumers has proven to be the most successful wireless data service everywhere around the world.

Recently, Amazon scored a major industry coup with its innovative Kindle e-book reader service. Kindle represents an impressive collaboration between an operator, a technology provider, a retailer and multiple content providers. The resulting business model offers consumers a convenient, user-friendly content buying experience without the hassle of a monthly service obligation/charge. Kindle was the first broadband business model in which access charges are effectively recouped through content sales, without requiring customers to pay a traditional access subscription.

With mobile subscriptions reaching saturation level in the U.S., AT&T and Verizon are now experimenting with new strategies. Both the operators are offering subsidized netbooks (with integrated 3G broadband connectivity) on long-term contracts, applying their time-tested techniques to this emerging device segment. With all major computer vendors now entering the smartbook/netbook market and with newer game changing technology platforms like Qualcomm's Snapdragon™ debuting this year, the convergence of mobile communications, computing and consumer electronics is set for significant proliferation.

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Another example of an operator taking a new approach to commercializing broadband is Maxis, in Malaysia. Rather than following the conventional model of targeting mobile voice subscribers for its broadband data service offering, Maxis reached out to the *residential* broadband segment and hit a homerun by offering HSDPA as a cost-effective alternative to DSL.

The decision to deploy HSDPA also allowed Maxis to reach customers in untapped markets where fixed broadband was prohibitively expensive. The speeds enabled by HSDPA allowed Maxis to effectively woo traditional DSL customers and offer the added benefit of portability across both 3G and 2G networks. To launch the fixed broadband service, Maxis partnered with its device vendor to develop a custom-built, 3G wireless modem designed around Qualcomm's chipset. This unified voice and data device combined with a convenient and cost-effective billing plan proved to be very appealing to customers, resulting in tremendous success for the operator. Since then, Maxis has evolved its network to offer HSPA, providing higher data rates and capacity.

MTN in South Africa is successfully using HSPA to power community Internet kiosks in suburbs and villages. Developed as part of the MTN@access project, these kiosks are owned by local entrepreneurs thanks to financial help from MTN and the GSMA development fund. Bringing broadband and computing services to low-income townships, the program is providing a much-needed boost to education and healthcare in the region while providing a source of income to participating entrepreneurs. These kiosks allow aggregation of demand, making the broadband networks more economically viable, even in extremely low-income markets. The concept has been so popular that some kiosks were able to turn a profit within just two months of opening.

Government and public-private partnerships in collaboration with nonprofit entities can also be an effective catalyst for socio-economic progress in developing markets. Qualcomm's Wireless Reach™ initiative in rural Indonesia to bring Internet connectivity to underserved areas is one of many such remarkable success stories. Wireless Reach partnered with local 3G operator Sampoerna Telekomunikasi Indonesia (STI), IndoNet, Axesstel Inc. and the Indonesian government to bring EV-DO high-speed Internet connectivity to the remote township of Way Kanan in Lampung. The project established a computer laboratory to provide Internet access

to more than 1,000 students in the region as well as an Internet data center for the local community.

There are many new business models like these now being tested across the globe and the prognosis for future growth is strong. 3G mobile broadband is now entering high-growth emerging markets like China and India. There is a well-defined 3G roadmap to guide the evolution of 3G networks moving forward. Advanced evolutions of 3G including HSPA+ and EV-DO Rev. B/DO Advanced are already coming to market. And thanks to the combination of these factors, many more broadband networks and new business models are expected to become commercial in future.

### [3] Impressive Data Revenue Growth

The impressive data traffic and revenue growth achieved by leading 3G operators provides excellent evidence of the outstanding opportunities in the mobile broadband space. *Figure 2* gives a glimpse of the increase in data revenues that some of the world's leading 3G operators are experiencing.

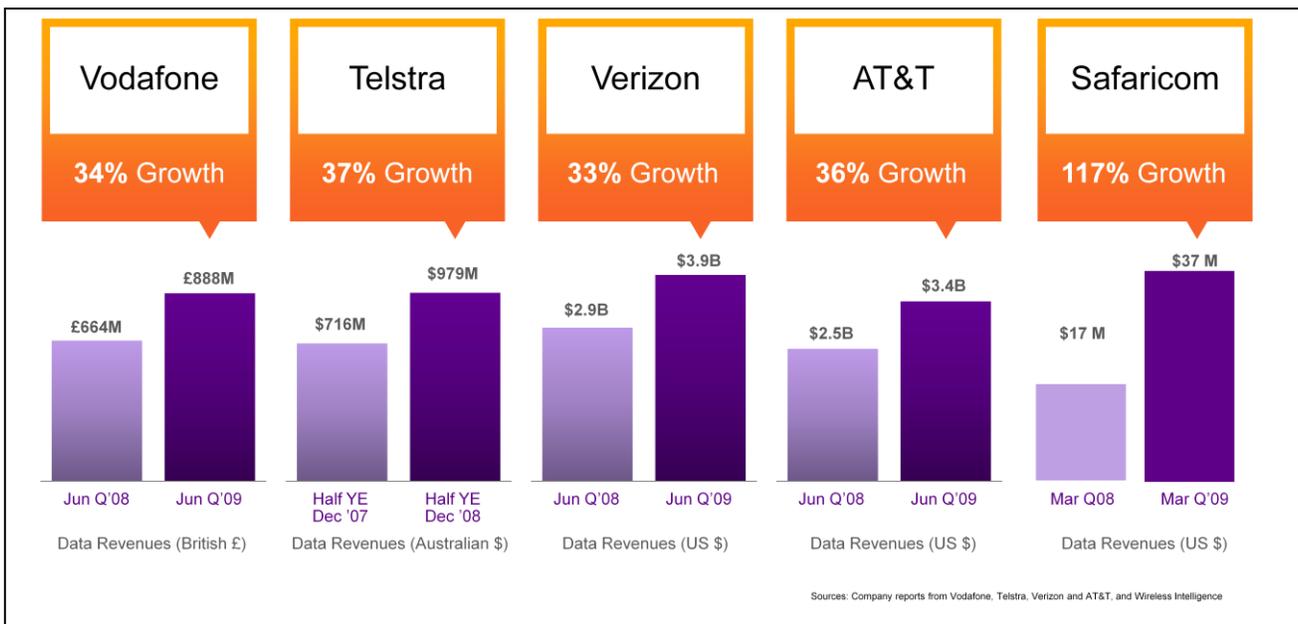


Figure 2: Leading 3G operators across the world have shown impressive data revenue growth

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- Vodafone's data revenues (not including messaging) for the full year ending in March 2009, grew nearly 44 percent to £3 billion (\$4.64 billion USD), of which £2.5 billion (\$3.86 billion USD) was generated in Europe.
- AT&T and Verizon reported impressive data revenue figures for Q1 2009, despite the global economic downturn. AT&T's postpaid data ARPU increased to \$16.48, up 26.8 percent compared to a year ago. Its wireless data revenues grew 38.6 percent to \$3.2 billion, representing 27.2 percent of total revenues for the quarter.
- Verizon reported an increase of 56.2 percent in data revenues, a strong 20.8 percent ARPU growth rate while also achieving the industry's lowest churn of just 1.14 percent.
- Safaricom reported an impressive 117 percent year-over-year increase in data revenue growth in Q1 of 2009, underscoring the phenomenal success that early adopters of 3G are achieving.

The financials of many leading operators like Telstra in Australia and others across the globe convey similarly impressive growth stories.

### **[4] Conclusion**

The numerous success stories being reported across the world have emphatically proven 3G to be an ideal solution for operators seeking to launch profitable, broadband data services. The tremendous capabilities of 3G mobile broadband have inspired operators to innovate exciting new applications/services and to launch new business models that provide them with competitive differentiation and market leadership.

With the introduction of 3G in emerging markets, operators are gearing up their broadband data service offerings and there are noteworthy early successes. Operators in these markets are expected to benefit from the successful strategies that their counterparts in the developed world have employed, when it comes to charting a profitable course for sustained growth in the future.