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Data services and customer experience

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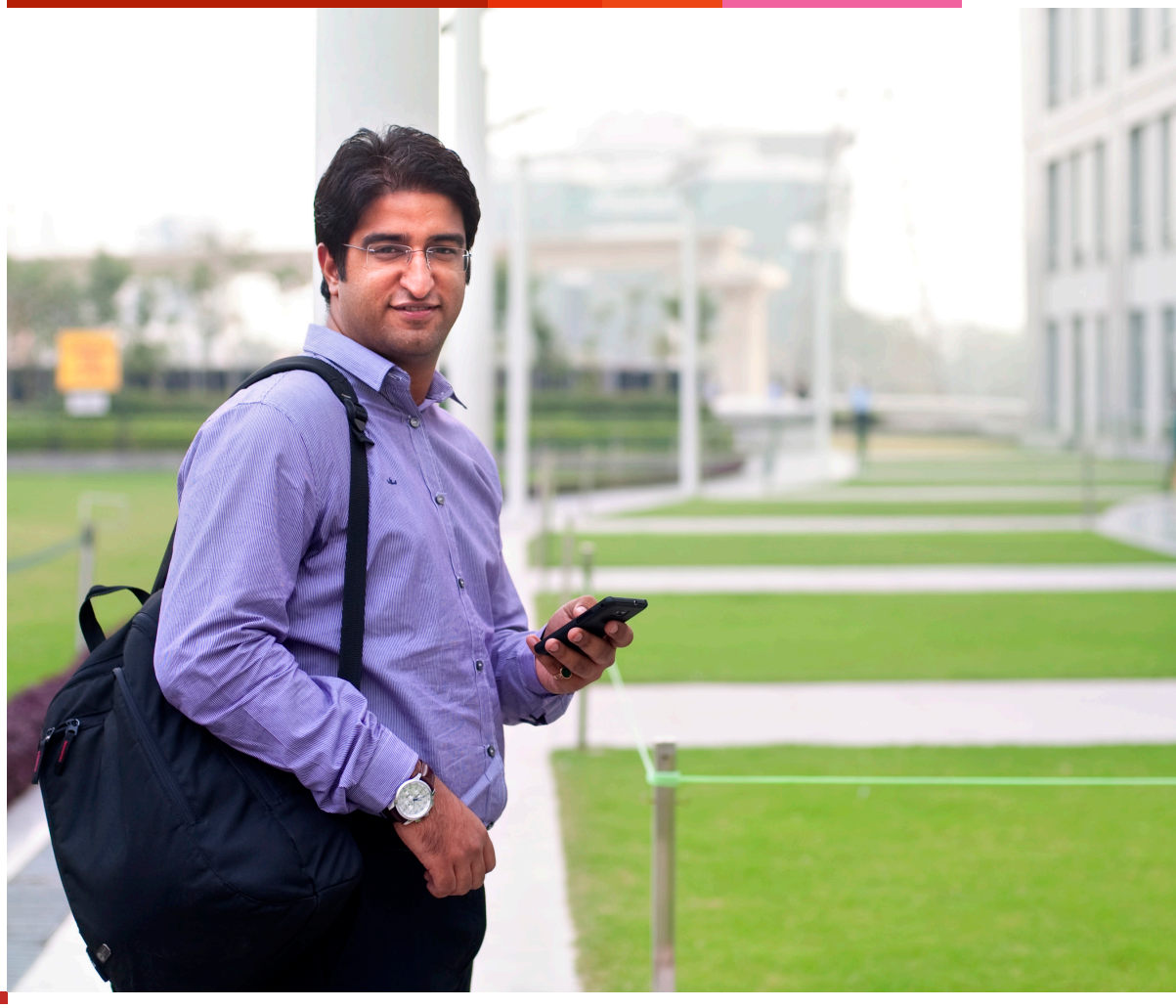

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Introduction

According to the latest data released by the Telecom Regulatory Authority of India (TRAI), by the end of December 2011, the country's mobile telephone subscriber base increased to 893.84 million. The high teledensity in urban areas has shifted the focus on rural areas to maintain the number of subscriber additions per month. Voice revenues tend to plateau as the number of subscriber additions moderate. With call charges at an all time low it is unlikely for users to increase the number of outgoing voice calls no matter what plan, promotion or pricing is used. Besides, rural subscribers have a low ARPU. This makes it imperative for the Indian telcos to look for additional sources of revenues. Introduction of the new VAS services is a right step in this direction.

The advent of 3G services and improved data speeds (lack of which was seen as a detriment to faster adoption of data services) was expected to change the landscape of data services. However, this inflection point did not turn the way it was expected. While 3G created a huge buzz, its adoption was not met with the same zeal. Besides, the service providers are looking forward to the 4G services which will be introduced later this year. Thus, the adoption of high speed data services can turn out to be a prolonged battle rather than churning out quick gains. This has proved that it is not just about faster data speeds but building an ecosystem which can provide customised experiences to consumers. In this white paper, we look at the challenges in adoption of the data and vas service in India and how service providers can focus on increasing customer satisfaction.

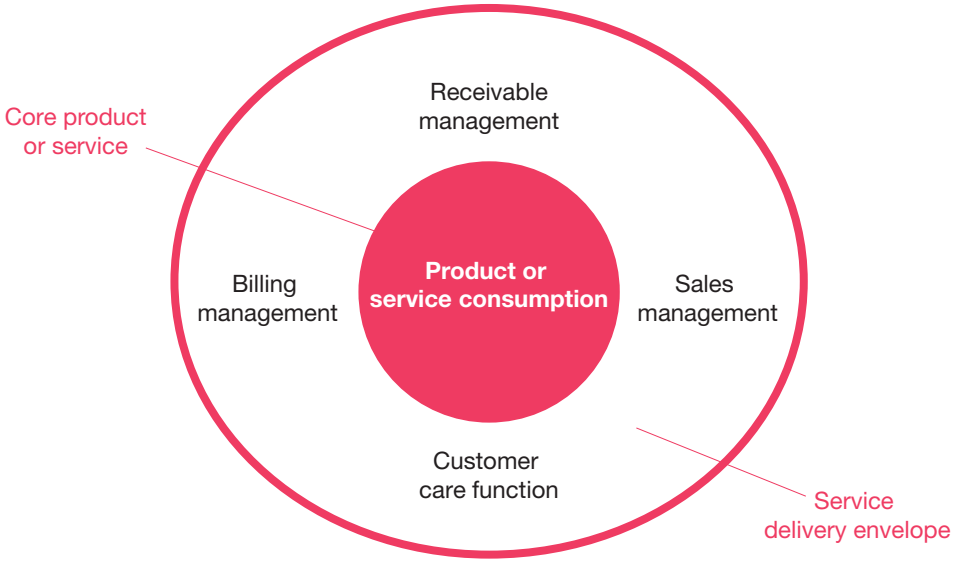
PwC is delighted to be a partner to the 20th Convergence India 2012 event. As an introduction to the issues which will be covered in the proceedings, it gives us great pleasure to introduce the key topics of driving the Customer Experience in telecoms and the Ecosystem for Data Services in these next few sections. Customer Experience is probably the key concern today of the Chief Marketing Officer, with the convergence of device, service and network to a level never seen before. The implications will spread from customer experience as we know it, to related areas, such as retail, and distribution. We will be releasing provocative thinking on these topics in the near future.

Customer experience

The TM Forum defines customer experience or consumer experience as, "The result of the sum of observations, perceptions, thoughts and feelings arising from interactions and relationships between customers and their service provider(s)."[1]

Consumer experience arises from touch points i.e., what a consumer experiences from the start till the end of using a product or service. It is not limited to the experience but also involves how the product or service was delivered. In fact, all products or core service are enveloped by an additional service delivery layer which covers areas such as sales management (pricing and sales channel), billing management, receivable management (collections and disputes) and customer care functions.

Layers of customer experience



Increasing consumer experience acts as a differentiating factor for the telcos and provides them with a sustainable competitive advantage over competitors. An organisation can have product or services providing different levels of consumer experience. E.g., in the BFSI industry, a bank can be highly renowned for their services in retail banking but commercial banking services may not be equally good. As each product or service has its own individual characteristics, they also have their own set of challenges in meeting the required level of consumer experience. This is particularly the case between voice and data services. Data services provide rich multimedia applications and require high level of consumer interaction during service consumption. As mobile is a new platform, consumers may give some leeway to service operators for poor quality of experience. However, this will not last as consumer demands for data service picks up, the demand for a better experience of using these services will also increase.

Before delving on the unique challenges of providing consumer experience for data services in India, we need to look at how the country's data services market is shaping up. A high potential demand should not only encourage the telcos to increase the bouquet of data services but also the customer satisfaction associated with these services.

1 http://www.tmforum.org/ManagingCustomerExperience/6513/home.html?linkid=37898&docid=12601

Current scenario

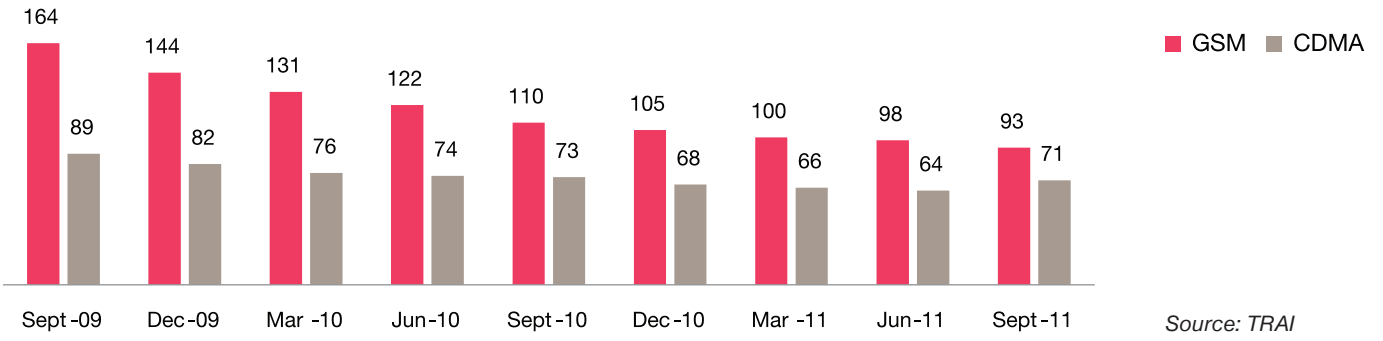
The Indian telecommunication sector has attracted telecommunication service providers from around the world. With 893 million[2] plus subscribers and counting and the country's subscriber data usage picking up, there are immense opportunities for global service providers. The evolving ecosystem for data services presents opportunities for innovations and entrepreneurship. However, amidst all this, telcos tend to lose focus on the most important thing-the consumer. With multiple channels available, only an enriching experience will make the consumer choose mobile as his preferred choice of communication.

Decline in the ARPU

For the past two years (Sept 09 - to - Sept 11) average revenues per users have been steadily declining in the Indian telecom sector for GSM (around 43%) and CDMA (20%) subscribers. This is primarily due to the falling call charges which are one of the cheapest in the world. However, the minutes of its usage have shown downward trend in the same period (falling by 22% for GSM and 25%for CDMA). This shows that there is a limit to which users can increase their talk-time.

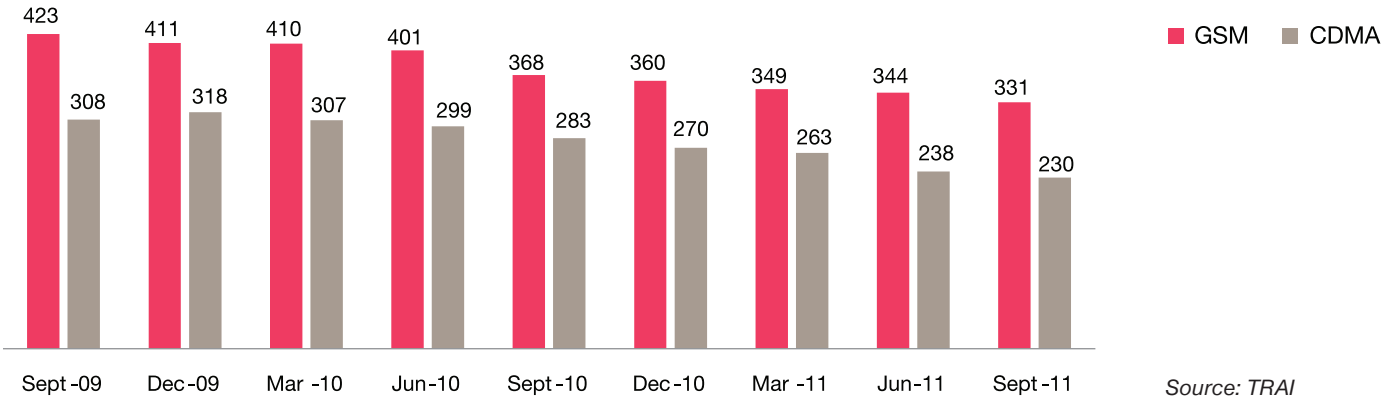
2 http://www.trai.gov.in/WriteReadData/trai/upload/PressReleases/869/PR-Dec-11.pdf

Average revenue trend per user each month (in INR)



Source: TRAI

Minutes of usage per subscriber each month



Source: TRAI

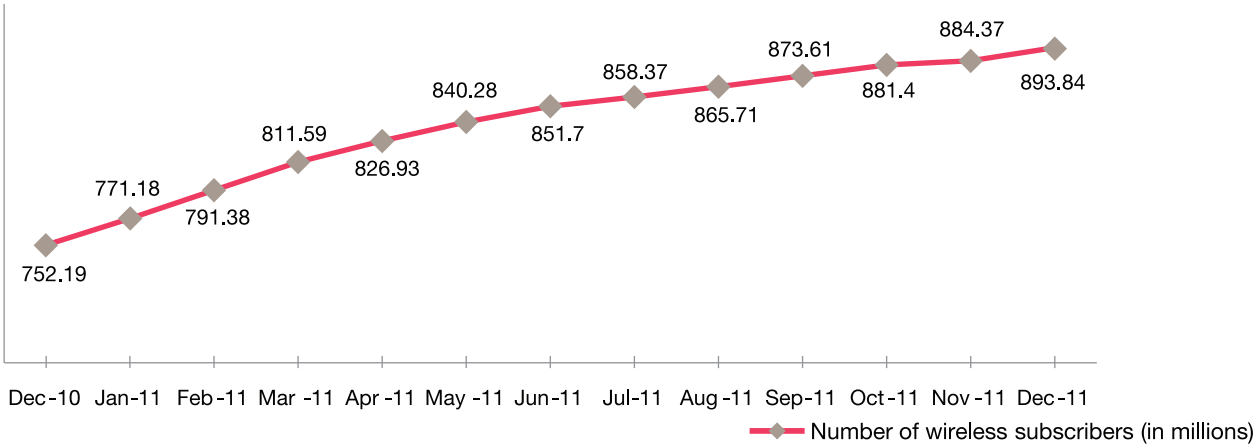
Increase in the subscriber base

Currently, as per the TRAI data, the number of subscriber additions is strong (around 142 million wireless subscribers were added in 2011 alone, an increase of 19%). This trend is likely to continue in 2012. Even though the overall teledensity has reached to around 74% (December 2011) there still exists a significant amount of untapped potential

Both rural and urban teledensities have risen in the last two years. The urban teledensity has increased from 103.2 to 161.01 (a growth rate of 56% from Dec 09-to-Dec11), while rural teledensity has risen from 19.95 to 36.56 (a growth rate of 83% in the same period). However, there still remains a large divide between the urban and rural teledensities. In Dec 09, the urban teledensity was 5.17 times the rural teledensity which reduced to 4.40 times in Dec11. While urban markets are nearing saturation, good potential still exists in rural teledensities. We believe that majority of the subscriber additions will occur in category B and C cities along with rural areas.

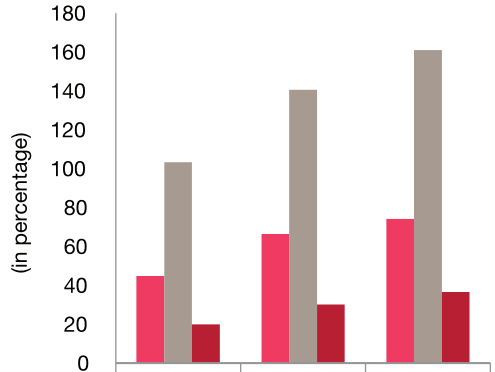
However, subscribers in these areas have a lower ARPU and it is unlikely to go up. As the prospect of significant increase in call prices seems bleak (due to the competitive intensity), service providers should gain a comparative data service advantage on which they can command a premium and higher profit margins. We believe that with increasing teledensities mobile phones have become one of the most pervasive commodities. This offers opportunities to provide different types of services to consumers and new revenue streams to service providers.

Number of wireless subscribers (in millions)



Source: TRAI

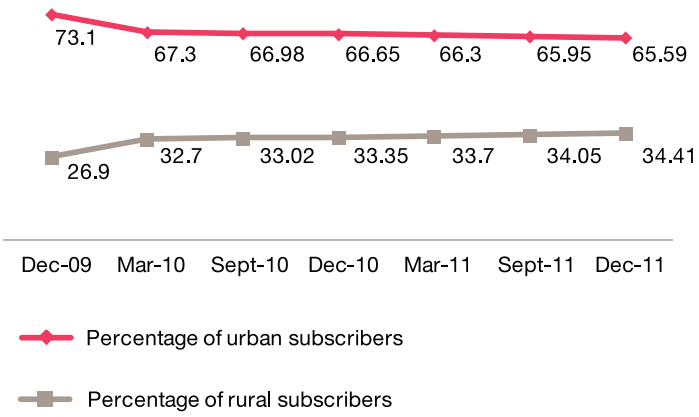
Teledensity in India



	Dec - 09	Dec - 10	Dec - 11
Overall teledensity	44.72	66.32	74.15
Urban teledensity	103.2	140.53	161.01
Rural teledensity	19.95	30.11	36.56

Source: TRAI

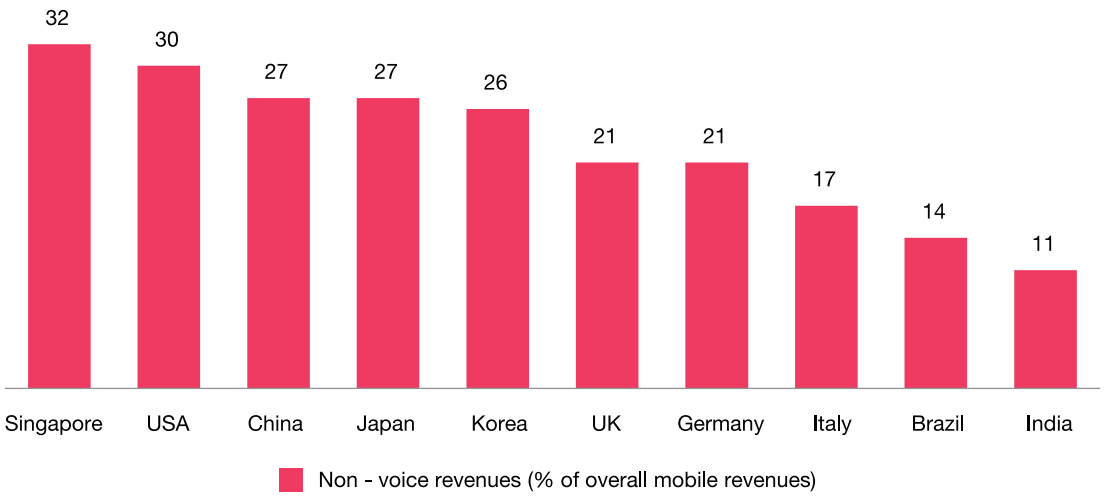
Urban and rural percentage share



Low non-voice revenue share

The contribution of non-voice to overall revenues for the Indian service providers is 11%-to-13% which is significantly less than the developed countries (it reaches up to 30%). Even in China the contribution of non-voice revenues is 27%. This gap is expected to be bridged with the introduction of more services under 3G and (soon to be launched) 4G technology. The challenge remains in understanding which services will find success in the Indian market. This can be achieved by having a deep understanding of the needs and behaviours of the Indian subscribers.

Non-voice revenues (% of overall mobile revenues)



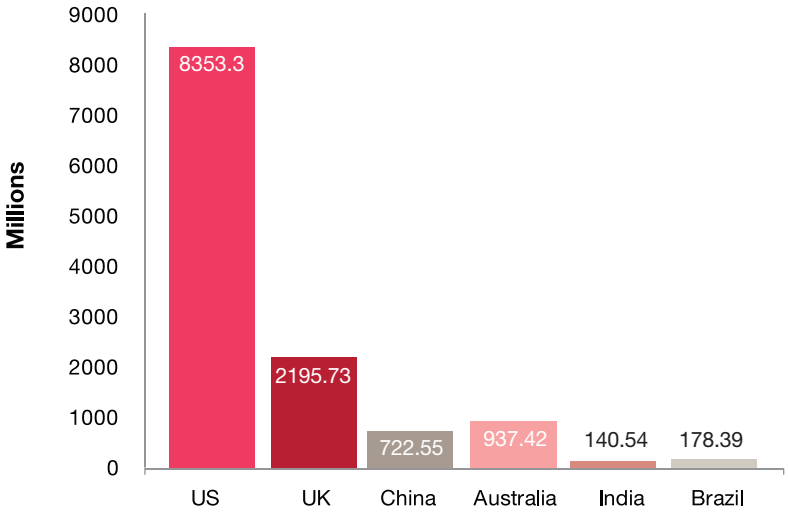
Source: TRAI

Increase in data speed

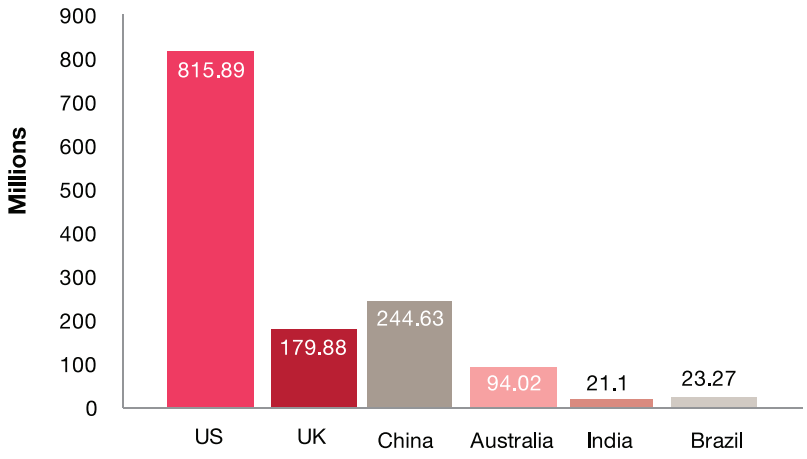
Data speeds have increased with the introduction of 3G services and is set to increase further with the introduction of 4G in India. The speed of 3G and 4G depends significantly on the type of networks being set up by the service providers. However, from a consumer viewpoint, for services such as video streaming, apps or transaction the emphasis is more on experience than just data theoretical speed rates. Higher speeds enable but do not ensure better consumer experience which may be reduced due to other factors. Telcos needs to focus on this assurance of seamless service experience.

Protocol	Data throughput
2.5G/GPRS	~144kbits/s
3G	~3.1mbps
4G	~3-5 mbps with a potential to go up to 100-300mbps

Total iPhone apps download



Total iPad apps downloads



Source: Xyologic[7]

Increase in smartphones and mobile apps

The use of smartphones is increasing at a rapid pace. As per the CMR, India's mobile phone sales touched 183 million units in 2011, out of which smartphones contributed 11.2 million units or approx 6% of the market share[3]. As per the IDC research, smartphones will have a CAGR of 63.4% from 2011-15 as compared to the overall mobile phone shipment CAGR of 13.03% (for the same period) in India[4].

Smartphones are also one of the major contributors to the mobile data traffic. As per the 2011 CISCO research, smartphones generated 35 times more mobile data traffic than a basic-feature mobile phone[5]. On the other hand, a Nielson research reports states that smartphones users in India spend 40% of their total active time on data-centric activities[6]. Therefore, high data consumption on smartphones, introduction of more data based services and the increase in number of smartphones will boost data flow in operator's networks.

Downloading apps and the subsequent data usage will significantly increase data consumption arising out of

3 http://www.cmrindia.com/press_releases/india_monthly_mobile_phones_market_review_for_cy_2011.asp
4 http://www.idc.com/getdoc.jsp?containerId=prIN23230811
5 http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html
6 http://blog.nielsen.com/nielsenwire/global/in-india-google-leads-the-smartphone-app-race/
7 http://xyologic.com/app-downloads-reports

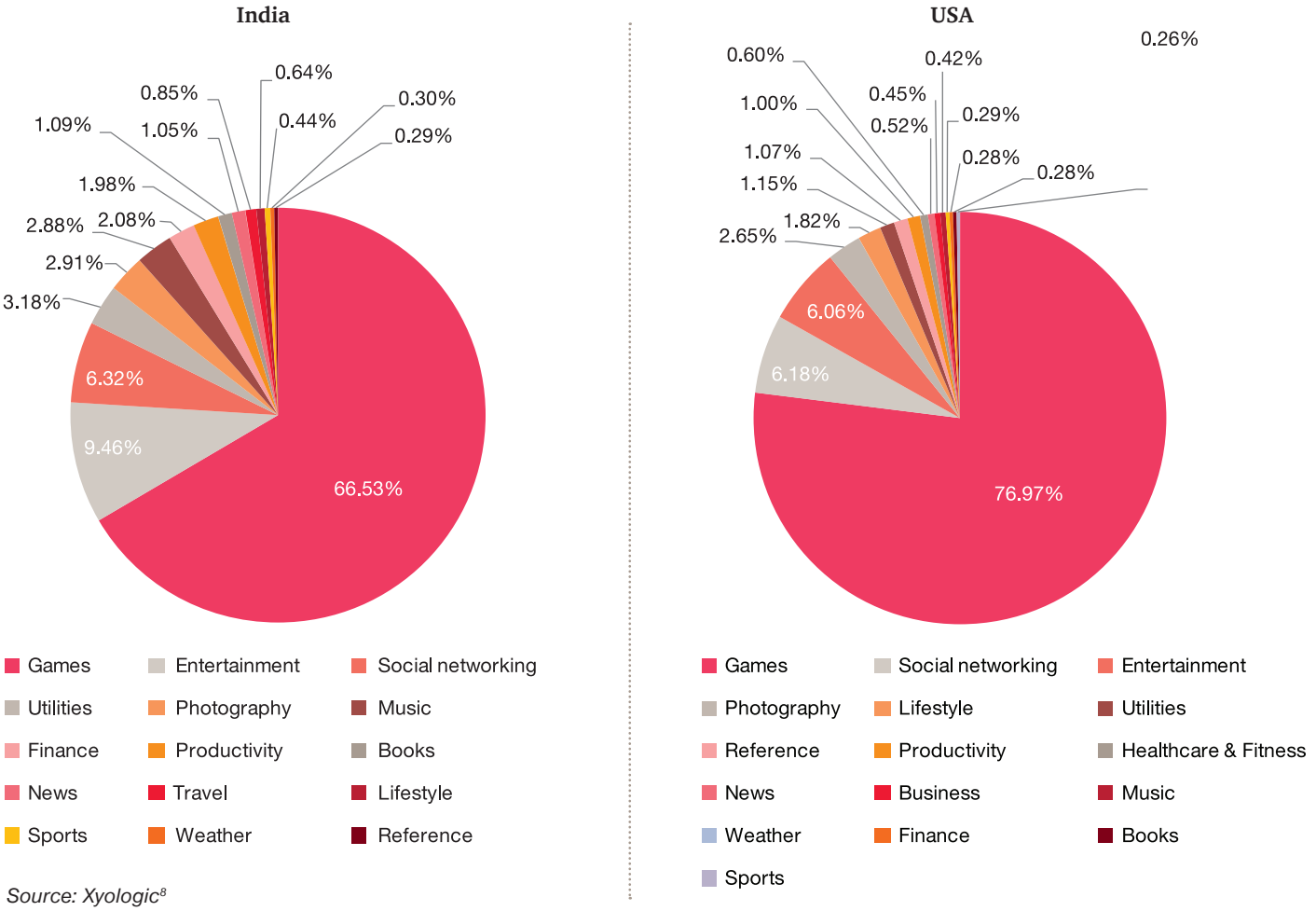
smartphones. India lags behind other countries in the number of apps download. This is a huge potential for telcos to introduce apps targeting Indian subscribers and their needs. Also, the country's young working population will boost the usage of mobile apps.

In Indian and US free apps market for iPhone, majority share is cornered by games, entertainment and social networking apps. Utilities and finance apps enjoy a higher percentage share in India than in the US, while healthcare and fitness does not even feature in the Indian list. Utilities and finance apps targeted at Indian customers will increase the apps usage in India.

Introduction of 3G services

In 2011, India had around 15 million 3G subscribers as compared to 128 million[9] in China. Even though the active subscribers in China would be less, in comparison, India's 3G subscriber base remains quite small. Unlike initial expectations, adoption of 3G services has been slow in India. What is needed is not just increase in 3G subscribers but also an increase in activity by these subscribers. This is possible if the right services are introduced which provide an enriching user experience, facilitating in repeat usage of the services.

Percentage share of downloads of top 150 free apps for iPhone in Dec 2011



Source: Xyologic[8]

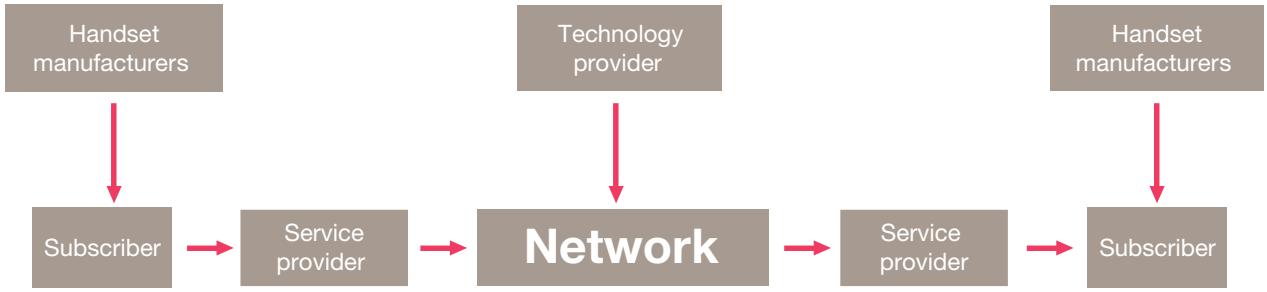
8 http://xyologic.com/app-downloads-reports
9 http://www.itu.int/ITU-D/ict/newslog/China+Ends+2011+With+128+Million+3G+Subscribers.aspx

The ecosystem for data services

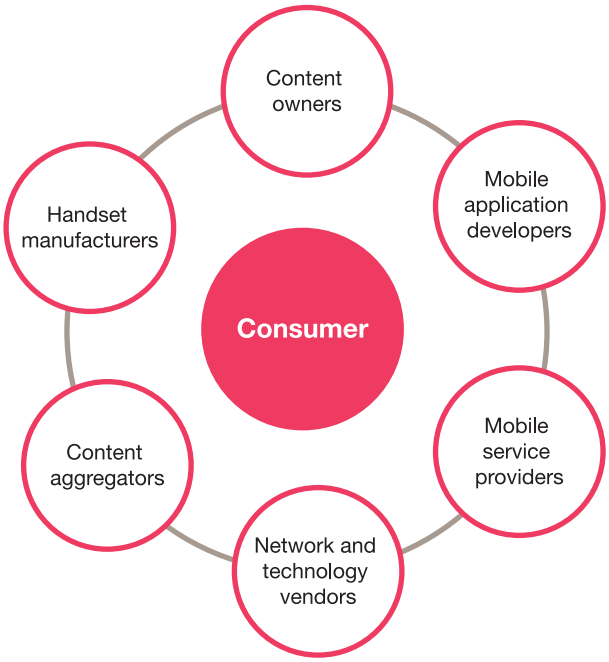
For services such as voice, the ecosystem consists of the service providers, technology enablers, handset manufacturers and the subscribers. For data services the ecosystems increases to include the content owners, mobile application developers and content aggregators. As more stakeholders are involved in its value chain, the dynamics of the ecosystem will keep changing before it settles down.

With services such as traditional voice and SMS, content is produced and consumed by the subscribers themselves. Thus, the job of the service provider is to facilitate this by providing the required infrastructure. Therefore, the focus in this value chain is more on the network and less on the subscribers.

Ecosystem for voice services



Ecosystem for data services

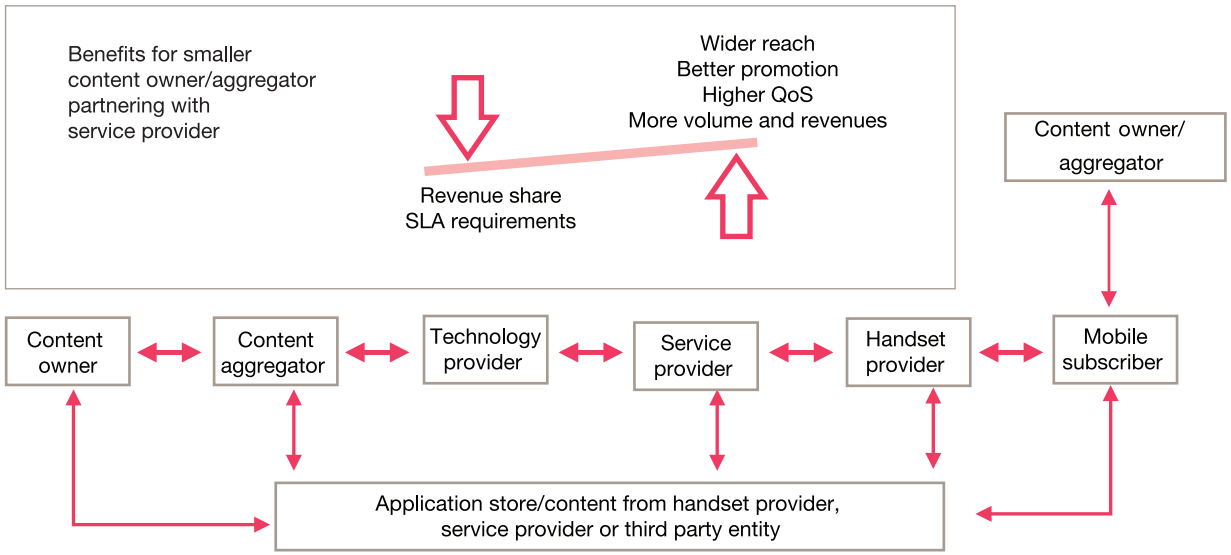


For some services such as video calling or conference, the subscriber will continue to remain the content creator while for a large number of data services such as video streaming, live television channels, news feeds, etc. the subscriber will primarily play the role of a consumer. For the latter, service providers will increasingly work with content owners and aggregators to source and generate content demanded by the users. Mobile subscribers take the centre stage in data services ecosystem with rest of the ecosystem working around to facilitate better user experience.

In data services value chain, content owners and aggregators can provide their services via a tie-up with the service provider or directly to the subscriber. In the direct route, the content owner or aggregator keeps the entire revenue, while partnering with the service provider results in distributing it. However, the latter ensures a wider reach, better promotion and higher QoS resulting in larger volumes which compensate for the split in revenue. We believe that smaller content owner or aggregators should go for tie-ups and offer their content through service provider or handset manufacturer portals for a wider reach and success.

Portals are offered by service providers, third parties and handset manufacturers such as Apple app store, Ovi store where small developers can list their products. A successful portal ensures a larger share of the revenue pie for the handset manufacturer, service provider and also increases stickiness to their core product, mobile handset and mobile service. For small content owners and aggregators, the choice of portals should be driven by the popularity of these portals and the resulting download traffic.

Value chain for data services



Many new data services also address the unarticulated needs of the subscribers as they are not aware whether they require these services or if it is possible to get these services on a mobile handset. Today, the subscribers do not tell what they can do with the mobile but ask what a mobile can do for them. As a result, the onus of identifying the unarticulated need for new data services and developing these solutions lies on the new entrepreneurs and their innovations.

In the future, data services and content will be the differentiating factors for a service provider and the role of the telcos will change from network service providers to content providers. For exclusive content there will be special tie-ups between telcos and content producers. Services which are transactional in nature such as m-commerce will compete with other traditional channels and the internet. Most e-services will have a business case on mobile and the trick will lie in providing the right consumer

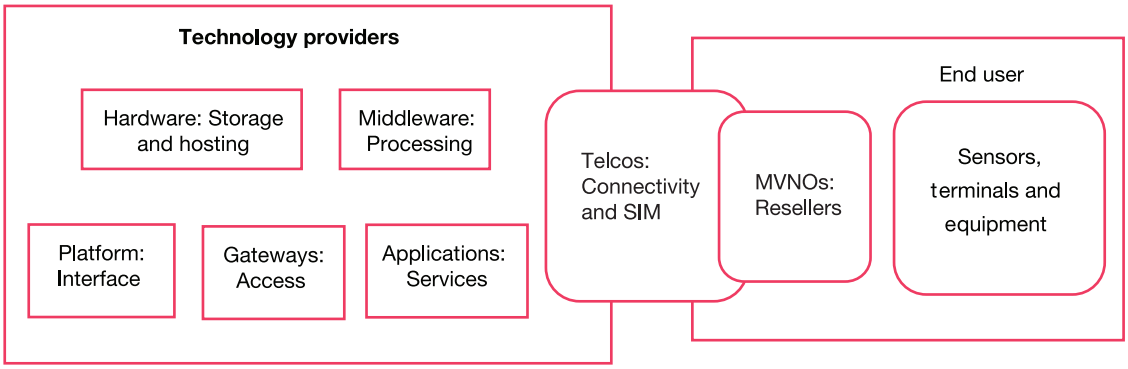
experience on the mobile handset. For mobile to become the preferred channel, the user experience of these services should be better than the other competing channels particularly the desktop Internet.

Even though the market for data services looks promising there will certainly be no one service which will be used by all. Hence, we believe that there will be a stronger focus on consumer analytics, segmentation and consumer-to-service mapping to target relevant services to each segment of subscribers. This will increase the chances of success for the services.

Voice over LTE and even a handoff of voice call over LTE between GSM and CDMA network has been successfully tested. In the future, voice will become just another data service running over data networks. We believe this will profoundly change the way operators will invest and manage their networks as they will move to a single technology platform capable of handling all services from voice-to-data.

Machine-to-machine services are also likely to pick up with mobile technology getting integrated in various appliances which will later get connected to the data network. Smart wireless automated solutions and next generation M2M services on 3G, 4G networks will drive demand for M2M service. For service providers the resulting traffic will lead to increased revenues. MVNO and resellers will exploit the niches in the M2M market by providing the necessary quality assurance, branding and industry specific customisation.

Value chain for M2M service



Enhancing customer experience

Challenges

According to our analysis, the top three factors inhibiting an enhanced customer experience are high tariffs for 3G services, lack of customised apps and services, and inferior mobile internet experience. Low data speeds as compared to wireline internet and lower mobile transaction reliability are also constraints faced by consumers.

High tariffs for 3G

High prices have been one of the major impediments to the mass uptake of 3G services. Presently, the prices of 3G services are higher than GPRS services for the same amount of usage. Also, several 3G services guzzle large amounts of data, leading to faster depletion of the data plan. Prices, therefore, need to be reduced. Similarly, the download quota for each price point needs to be increased in order to encourage subscribers to use data services without worrying about bill shocks. More importantly, data services for 3G and upcoming 4G needs to be priced comparably to prices for desktop broadband services in order to make subscribers switch to mobile phones for services involving heavy downloads such as video streaming, downloading and live streaming.

However, price lowering depends on mass consumption, which in turn depends on price lowering. To break this vicious cycle, service providers need to not simply levy flat volume based pricing for data services. They need to learn from usage-based models and price services on models like per-second billing, per-use basis and monthly basis, depending on the service. Revenue-sharing arrangements between the operator and content provider will reflect the charging model used. This will move consumer focus from data usage to service usage.

Lack of customised apps and services

Internet browsing remains one of the traditional ways of data consumption. In the mobile world, mobile apps are another major channel for data usage. Mobile apps are standalone applications that run on the mobile phone's operating system and can connect to the service provider's network or Wi-Fi to provide services like games, social networks and news. It is far more challenging to provide the same service through the website or web app on the mobile phone's browser As a result, mobile apps are becoming a leading source of data usage on operator networks.

Flurry Analytics has reported that mobile apps usage by US mobile subscribers exceeded their web browsing by 22 minutes in December 2011[10]. In the Indian market, apps usage as compared to developed countries is minuscule. One reason for this is the lack of mobile apps specific to Indian consumers. This is important as the needs of Indian consumers differ from those in other countries. Further, even in India, apps need to be customised as per the region, language and needs of the local population. Rather than looking for one exceptional app, developers need to exploit niches. The developer community in India realises this and we will see an increased number of customised apps targeted at the needs of Indian subscribers in the future.

10 http://blog.flurry.com/

Inferior mobile internet experience

The mobile phone interface has unique challenges, and not all internet websites are suited to view on mobile phones due to long loading times and layout issues. Though 3G offers increased data speeds, graphic-heavy websites take a long time to load and end up consuming the user's download quota. Moreover, websites designed for viewing on laptops and desktops are difficult to navigate on the smaller mobile screen, resulting in an inferior consumer experience. Though mobile internet is a relatively new medium, it cannot be used as an excuse for technical issues and poor experience. Developers need to make their websites mobile-friendly or develop apps that convert standard websites to mobile-friendly ones. Mobile internet needs to compete with desktop internet by providing equal or higher consumer experience to become the preferred option for consumers.

Low data speeds as compared to wireline internet

Data speeds have increased with 3G and are set to increase further with the introduction of 4G. Users still find speeds dismal and though 3G experience is better than GPRS, it has not quite delivered on its promise. Patchy connectivity is another issue as ensuring fast 3G speeds in every region, especially when the user is roaming, is a big challenge in a country like India. What needs to be understood is that users are more interested in the actual experience rather than theoretical speeds. Users tend to attribute poor experience to low speed, even if it is caused by other factors. Therefore, high quality and rapid delivery is of essence, and developing lighter, faster applications is one solution. As service providers make more investments in their 3G networks, network-related issues will get ironed out and lead to better user experience.

Low mobile transaction reliability

Transactions through mobile internet should be reliable and secure. Transaction failures will make consumers switch to another transaction medium. A failed transaction also means lost revenue for retailers as users may not transact with them again or switch to another retailer. For example, if an m-commerce transaction to purchase a airline ticket fails, consumers would likely switch to desktop internet, where they may get a better option from another airline, leading to loss of revenues for the original airline as well as the telecom service provider. Similarly, subscribers are likely not to reattempt a failed download of a game and are likely to also decide against downloading a wallpaper or a song due to poor download experience the last time.

Customer satisfaction levels for various mobile services in India

Service on mobile	Customer satisfaction level
Mobile internet	
Music streaming/download	
Video streaming	
Video calling	
Social media networking	
Online gaming	
M-Commerce	
M-Finance	
Location-based services	
Mobile TV	

Source: PwC analysis

How to improve the customer experience

Based on our analysis and interactions with telecom leaders, we have identified areas that deserve special focus for improving the customer experience.

Introduction of new services

Service providers should continuously look to provide new and innovative data services, thereby opening up new revenue streams. Service providers need to be open to change and adopt new ways of working as the existing ecosystem evolves. Nimble operators will be faster to react to market conditions and will have the first-mover advantage in the market by introducing new customer-focused data services. MVNOs are likely to grow as they can take bulk capacity from incumbents and use it to offer new innovative data services, which the incumbents are not providing. The table below shows some innovative services introduced around the world. Telecom market players in India will need to introduce innovative services like their global counterparts.

Data services available in some countries

Country	Top services	Some innovative services
China	Video calls, M-news , Music club, Instant messaging Mobile internet	• Money: Lottery, stock trading, shopping • Utilities: Emergency location, online translation, online virus kill, travel services • Business-related: CRM, training, medical treatment, remote education • M-commerce: coupons, tickets extending to physical goods
Japan	UGC, messaging followed by social networking services	• Jogging advisor: This service allows users to check their jogging courses, calories consumed, download locations and jogging programmes. • Friend Finder: This service prompts subscribers regarding friends who are nearby and provides directional maps to reach them. • Online music store: This service allows users to download, copy and share music on a mobile phone. • There are services that offer remote medical diagnostics, remote education and route navigation. • Some services allow users to decorate their emails with personalised videos and animations. • Some gaming services let users find friends in their vicinity and play interactive games. • Users can also purchase items on the spot using links while watching TV shopping programmes.
Australia	Mobile TV, mobile internet, ringtones, streaming, m-maps	• Mobile TV: Delivers condensed clips of TV shows in the form of 'mobisodes' and unlimited access to mobile cricket TV • Optus Zoo: Combines live TV, video sport, entertainment bulletins, news headlines and broadband access • Paypal Mobile Checkout: Browser-based mobile banking services for account balances and money transfers • Post-paid subscribers can purchase goods and services via phone and add the amount to their phone bill.
South Korea	TV, video broadcasting, M-commerce, Music, games	• M-commerce: Gift certificates, e-money, stocks, lottery using barcodes, commerce gateways • Public portals: Information about real estate, libraries, public health, tourism, suggestions • Mobile as a Smart Card • QR Commerce: QR Codes storing addresses and URLs appear in magazines and on signs, buses, etc. Users can scan the image of the QR Code to display text and contact information, connect to a network or open a web page in the phone's browser.
USA	Games, news, maps, social networking and music	• Facebook, Google Maps and weather channels • Mobile advertising via messaging, display, search and videos

Source: PwC analysis and various sources

Focus on individual subscribers

Mobile service providers need to identify and segment subscriber groups with similar behaviours and customise the products and services for each group. Service providers will increasingly try to understand the usage pattern of their subscribers, trends for different data services and issues affecting the network performance to offer customised options for subscribers. This will enhance the experience level of service usage. Offerings will be customised in terms of price, usage and bouquet of services used by the subscriber. Customer experience management (CXM) solutions and analytics will play a large role in offering this level of customisation.

Spectrum constraints will become more acute as rich media content drives data traffic on the network. For efficient usage of spectrum and network resources, configuration of quality of service (QoS) parameters will be customised for subscribers having similar usage patterns. So a subscriber who is a heavy user of mobile TV, but not of music streaming, will have higher QoS delivered for mobile TV service rather than music streaming. Similarly, if location-based services are more popular in urban areas and m-education services are popular in rural areas, then higher QoS will be provided for location-based services and m-education services in these areas, respectively.

Content Delivery Network (CDN)

Growing demand for media and entertainment content will also raise customer demand for higher quality. This demand will be even more pressing as distribution of content becomes more global in nature. CDNs enable improved user access through the use of caching and streaming techniques. A content delivery network caches the content on the peripheries of the network and uses intelligent routing mechanisms. This reduces the distance content has to travel to reach the end user, thereby reducing waiting time and substantially increasing customer experience. Scale, speed and reliability of infrastructure are extremely important for customer satisfaction.

In the CDN value chain, two scenarios are possible. In the first, pure play CDN players such as Akamai and EdgeCast provide CDN services to telecommunications companies (telcos) with the support technology service providers like IBM and Adobe providing hardware and equipments. Telcos can further provide CDN services to content owners like news and entertainment companies like ZEE and CNBC or content aggregators like Youtube. In the second value chain, pure play CDNs can take the capacity from telcos and directly sell CDN solutions to content owners and content aggregators. Initially, service providers should partner with pure play CDN players, but as the usage of rich media content increases, incumbent operators should set up their own CDN networks providing better service experience to users on their networks and also monetising their CDN networks by offering CDN services to enterprise customers.

Consumer experience service-level agreements (CE-SLAs)

SLAs for meeting the quality of experience are the most important SLAs in the delivery of data services. Different functions in the service provider must avoid working in silos and should be bound together by consumer experience SLAs. These SLAs need to be carefully defined after understanding the experience level at which the user would be delighted and also the level at which they would stop using the service. Once the consumer experience SLAs are defined, they should be regularly measured and monitored and should become a key performance indicator for the organisation. Customer service agents should also be trained adequately to develop insights into customer experience. This will help them in servicing the customers better.

Consumer preference and behaviours will change quickly for data services, especially with new disruptive services and business models expected to gain more traction in the market. Therefore, all service providers, whether incumbent or new, should continuously monitor consumer behaviours to spot changes in user preferences and change their product portfolio, service offerings and consumer experience SLAs accordingly.

Glossary

CE	Customer experience/consumer experience
TRAI	Telecom Regulatory Authority of India
CDN	Content delivery networks
M2M	Machine to machine
Apps	Mobile applications
LTE	Long-Term Evolution, standard for high-speed data wireless communication
3G	Third-generation wireless cellular standard
4G	Fourth-generation wireless cellular standard
VAS	Value-added services
ARPU	Average revenue per user
BFSI	Banking and financial services industry
GSM	Global System for Mobile Communications, wireless communication technology
CDMA	Code division multiple access, wireless communication technology
Apple apps store	Mobile applications and music store from Apple Inc.
OVI store	Mobile applications and music store from Nokia
MVNO	Mobile virtual network operator
CXM	Customer experience management
QoS	Quality of service
SLA	Service level agreement
KPI	Key performance indicator

Notes

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