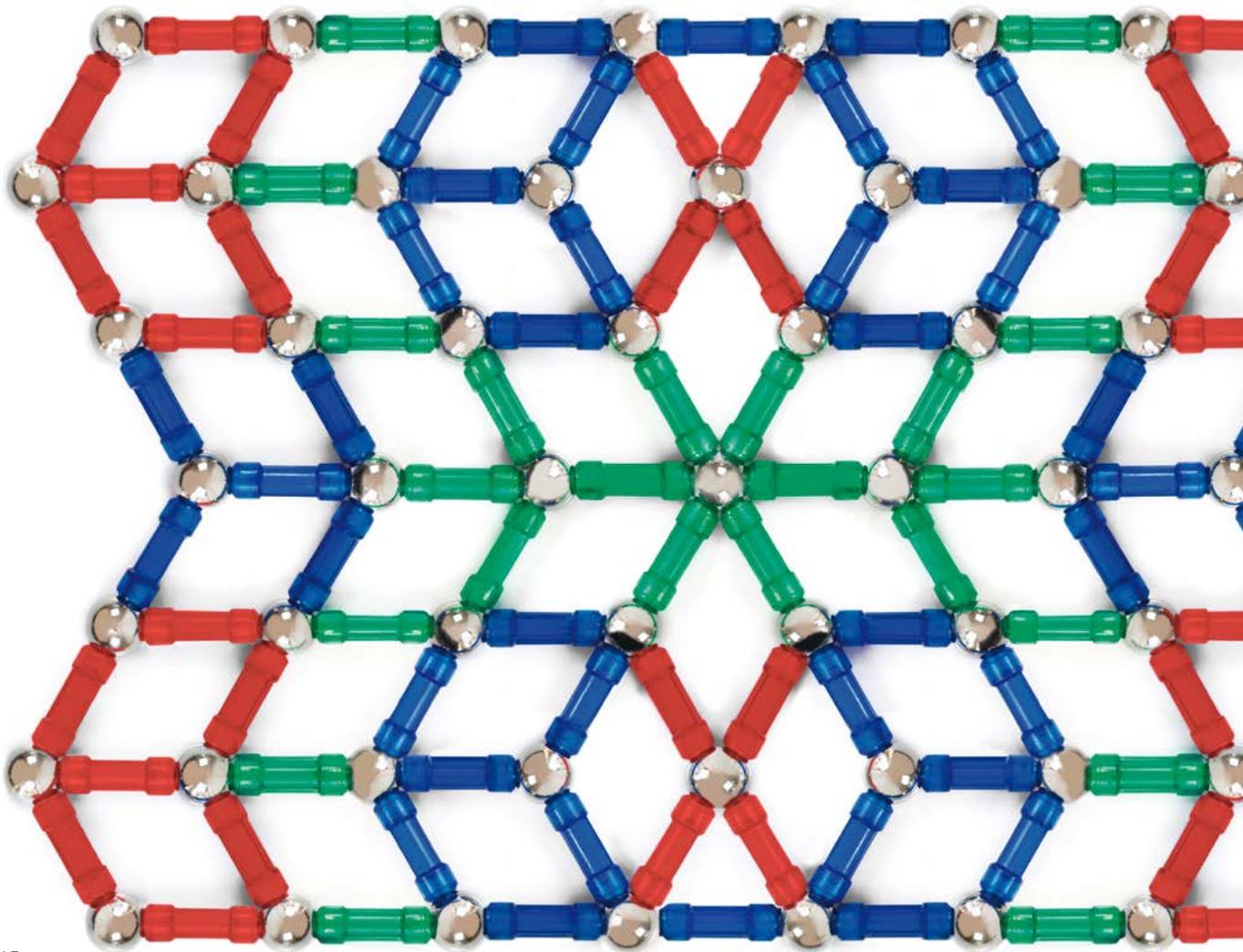




Technology, Media &
Telecommunications
India Predictions 2015

#TMTIndiaPredictions2015



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Foreword



Hemant Joshi

Welcome to the 5th edition of Deloitte's predictions for the Technology, Media and Telecommunications (TMT) sector in India. Deloitte believes that across every global industry, knowing what is likely (and unlikely) to come in the TMT trends in advance serve as a key competitive differentiator.

This publication is released in conjunction with Deloitte's global TMT Predictions report. Our objective with this report is to analyze the key market developments over the next 12-18 months, which are likely to have a significant medium- to long-term impact on companies operating in TMT and TMT-induced developments in other industries in India.

Our endeavor is to provide a considered point of view on key industry trends. Developments in each sub-sector are now so inter-linked and interdependent that TMT executives need to be cognizant of key trends across all sectors. In some cases we seek to identify the drivers behind major inflection points and milestones while in others our intent is to explain why we are not expecting fundamental change.

There are few other industries as volatile as TMT. TMT is the agent that brings in a constant stream of change to business in particular and society at large. The regularity with which computing power of processors has made its quantum leaps and the exponential increase in communication channels and devices are the best examples to corroborate the same. These changes can provoke massive disruption, but can also strengthen existing industries. And this is where predicting gets really interesting.

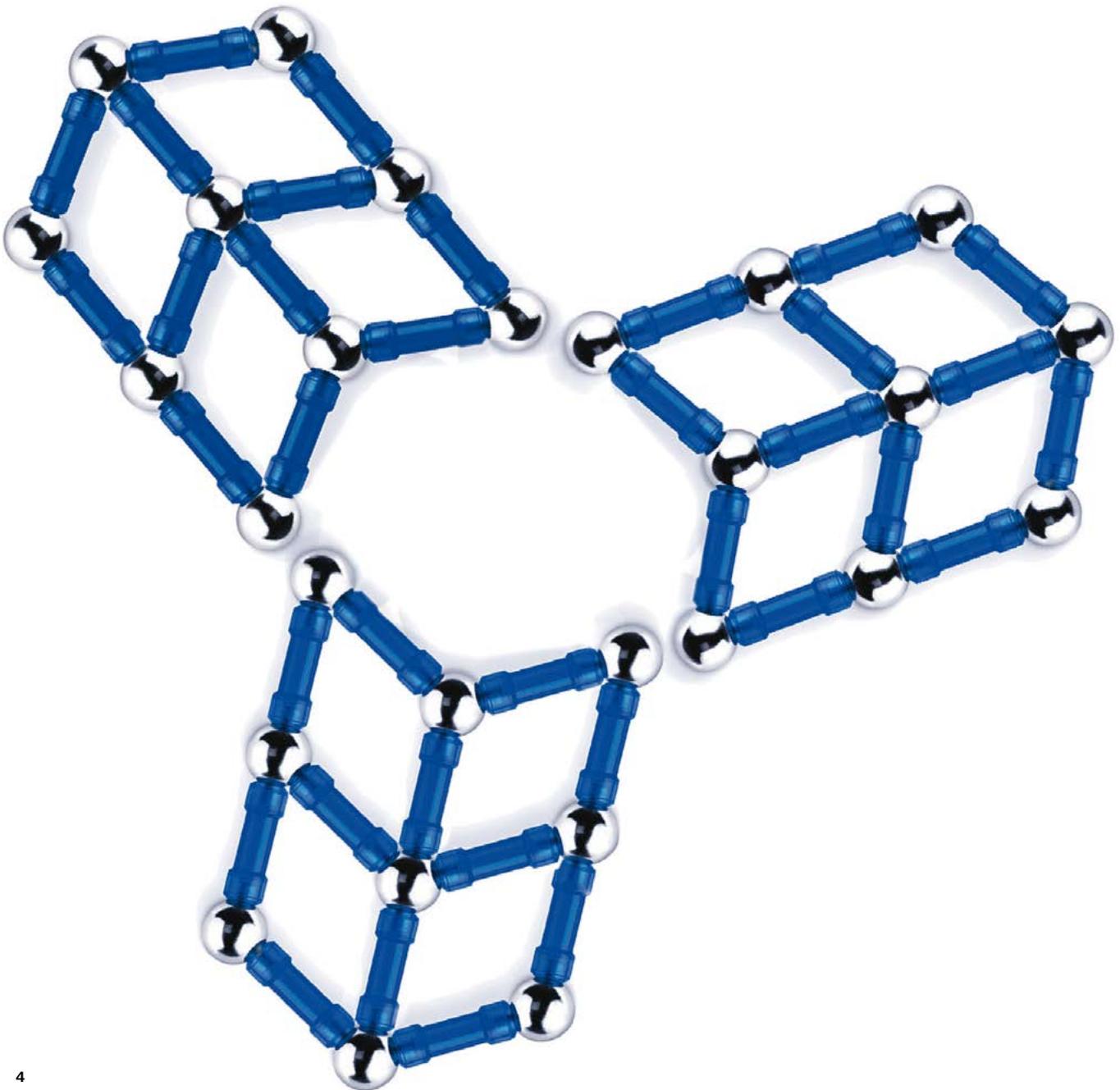
Arguably the bigger challenge in making predictions about the TMT sector is not about forecasting what technologies will emerge or be enhanced, but in how they will be adopted.

It is a reminder to readers that Deloitte's aim with predictions is to catalyze discussions around significant developments that may require companies or governments to respond. Deloitte provides a view on what may happen, what could likely occur as a consequence, and the likely implications for various types of companies.

Deloitte hopes that you and your colleagues find this year's predictions a useful stimulant in your strategic thinking. We look forward to discussing these with you.

Technology

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MOOC: Not yet disruptive but could create a few local storms

Deloitte predicts that in 2015, Massive Open Online Course (MOOC) registrations would have a significant upswing across the country though it would be primarily driven by corporate offtake and pockets of tertiary education.

India definitely has a strong use case for being a consumer of MOOC, though it is some way off from being a content generator. With the government providing thrust to MOOC by introducing Swayam, it would seem that 2015 would be the year in which MOOC, would gain mainstream acceptance. However Deloitte predicts that while government push might bring a few courses to a few colleges/universities via MOOC, MOOC itself may not become a significant medium of imparting tertiary education in the initial years.

Deloitte also predicts that next 12-18 months would witness a large number of corporates especially in technology and knowledge services industry to embrace MOOC at the cost of proprietary-developed content for internal learning.

As per 2014 QS university rankings, there is not a single university in India that ranks among the global Top 200¹. However focus on academics remains a relatively strong area for Indian universities. The greatest challenge is the faculty/student ratio and the level of internationalization which includes both proportion of international faculty members and students. These two factors combined should make Indian tertiary education sector, especially the mid-tier institutes that cannot expect to develop substantive content on their own but nurse greater ambition for their students, a hungry consumer for MOOC sourced from top tier global institutes. The top-tier Indian institutes too, with their focus on academics may be expected to join the bandwagon.

Also the Gross Enrolment Ratio (GER) in higher education in India was about 18.8% in 2012, which is far lower than countries like the US at 34%, the UK at 59%, Japan with 55% and China at 28%^{2,3,4}. The Government has set itself an aggressive target of achieving 30% GER by 2020. For this to happen there needs to be significant amount of brick and mortar infrastructure that needs to be established. This would consume sizeable portion of the budgeted expenditure towards education. MOOC would serve as an alternative to address cost over-runs while ensuring parity in terms of quality.

However, there are various roadblocks in the adoption of MOOC in the tertiary education sector. The courses need to match with the ability of the faculty to impart the concept. The lack of quality faculty would present a significant roadblock towards the actual benefit of such courses being realised. Lack of bandwidth and technology infrastructure would make MOOC only an alternative to textbooks – and would not provide an alternative medium for interactive classroom education that ideally it is geared to be. Over the next two years, the government's thrust on MOOC may focus more on developing infrastructure to make the institutes Wi-Fi ready rather than the substantially enhance actual offtake of the content. But on the brighter side, there is already a blueprint that is currently under development that uses the services of various bodies like ERNET to set up the necessary ecosystem.

The critical challenge at least in the short term towards MOOC would actually be from the perception of recruiters – who are the ultimate consumers of skills, carry in their minds about online courses. India has a long tradition of what are termed as Open Universities and correspondence courses. Most of the recruiters ascribe scant value to such courses. This is primarily due to the lacunae in the skill assessment that accompanies these online courses. For MOOC to succeed, it is imperative that innovative skill assessment and online proctoring platforms are simultaneously developed that provides a sense of credibility to such courses.

At an individual level though, Deloitte predicts significant adoption of MOOC courses especially among educated professionals who would use it as reference for certain subjects of their choice – most of which would aid in their professional sphere. However, in line with the global trend where the dropout rate is very high, we expect lower single digit completion of courses that would be taken up by individuals via MOOC.

MOOC as a concept is considered in many quarters as restrictive for a country like India where the digital divide is massive. However the divide owing to the differential quality of content and teaching amongst different institutions is perhaps higher than the divide perpetrated by differential bandwidth availability. However, Deloitte predicts that such an apprehension can be gradually addressed by a two-pronged approach of developing primary digital infrastructure and also providing pre-loaded tablets to students. The second approach

however would be more pertinent in case of primary and secondary education where government control over content and the educational institutes is much higher than tertiary education.

The area where MOOC would create a more immediate impact – something which is already visible would be in the test preparation space. This space remains unregulated, with a number of start-ups trying out different models, and thus is more geared towards disruptive innovation in democratizing digital education content. Tests for most of the entrance examinations are in multiple-choice format and many especially for MBA are analytical reasoning-oriented which can be more easily taught via online medium – unlike courses in arts and pure science which have a significant subjective element.

The other area where MOOC offtake could become significant in next 12-18 months is in corporate education. The knowledge services and IT industry cater to a large number of verticals and work across different technology and functional areas. While there is a significant need for such knowledge workers to understand the nuances of these fields, their undergraduate or postgraduate courses barely address

these specific requirements. Their remoteness from the actual market aggravates the problem. MOOC courses can be ideal in such scenario where the students are mature enough to self-learn and are provided with adequate infrastructure to ensure a smooth learning process. The tangible benefit attached to such learning makes it doubly attractive. The corporates too can limit their investment to developing a learning ecosystem including sophisticated Learning Management Systems, good facilitator, robust infrastructure – while leaving the content to the industry participants and educational & research institutes; who know the space best. The industry can further benefit from the fact that many innovations and concepts actually emanate from their own company – thus enabling students to learn straight from the horse's mouth. Industry bodies like NASSCOM have already been playing a proactive role in skill development and thus can further push the adoption of MOOC in corporates.

While as a mass phenomenon MOOC is some distance behind, it is nevertheless necessary for a country like India to keep pushing it as the alternate option by developing corresponding brick and mortar model looks at a much longer and winding road.

Bottomline

With a less than average GER as compared to global peers and the significant cost attached to the brick-and-mortar model of education, India is a fertile ground for adoption of MOOC. The government's push towards implementing MOOC should result in widespread adoption in next two to three years. However Deloitte predicts that MOOC may not become a significant medium of imparting tertiary education in the initial years primarily owing to challenges relating to infrastructure and the poor perception of such courses/certifications among the recruiters. The lack of appropriate proctoring and assessment models would dent the credibility of such courses. However till the enabling infrastructure and the ecosystem grows, MOOC as a concept will start gaining traction in areas like corporate learning and test preparation. The latter would mostly be a Freemium model, where the basic content would be free while advanced content and tutoring would be a paid service. We, at Deloitte, also foresee individuals joining global MOOC platforms in large numbers primarily to aid them in their professional field.

Complicated supply chain & discerning customers: Boon for vertical e-Commerce

Synchronizing with the global trend, product based Indian e-commerce industry has witnessed consolidation with a set of four to five large players acquiring dominance and a handful of other vertical specific portals or single category players of significance.

On the other hand, services e-commerce has so far primarily been limited to travel, payments and classifieds and in these segments the mature players are locked in a tough battle with new entrants. The services model is still emerging with interplay between various types of B2B, B2C and C2C models. Themes like aggregation have gained prominence in models where the supply side is huge but fragmented (with the suppliers having limited marketing muscle and reach to address a larger audience) and where a very strong demand exists (which too is tied to a very limited choice of service provider owing to locational constraints and lack of information).

Deloitte predicts that certain product categories may not be as easily absorbed into the product mainstream and would see existing players emerge stronger or witness fresh entrants.

Such product categories would have the following characteristics:

- They should require very differentiated sourcing strategy than the standard channel model as seen in white goods or FMCG segment.
- The buying behavior is significantly different from a standard product purchase (standard products are defined as white goods, books, consumer electronics, home and kitchen ware, personal hygiene and grooming). This means that the product standardization is very limited which gives rise to a wide range of quality perception, varied price points and unstructured product features that is judged more subjectively by the buyer.
- Where customization plays a major role and thus the number of Stock Keeping Unit (SKUs) required within a category would be very high.

With the above hypothesis, we predict a strong showing by the following segments where one or a combination of the factors would drive a differentiated and sustainable growth in the face of competition from the horizontal behemoths.

Fashion products, especially apparel and accessories like leather-ware, are sourced from a wide range of suppliers cutting across geography and business models. Such sources include sophisticated fashion houses in Milan, mass production units in China to cottage industries in Varanasi. Their level of technology adoption, business terms, credit policy, production management and logistics vary widely. Such complexities in supply chain deter larger generalized players to subsume the specialised players in this segment. Along with the complexities involved in supply chain, factor in the widely variant buyer behavior and corresponding choice which makes a very wide range of SKU a critical element in this business. It would need significant effort to adapt the business model to complex supply chain and quirky buying behavior. The continued success of lingerie and women's wear as a segment is a testament to this fact. The horizontal portals may shy away from such niche strategy.

Jewelry is similar to fashion in terms of consumer behavior. However the market is dominated by a large number of regional or neighborhood brands especially in tier II cities. This provides an ideal opportunity for a market-place model to gain prominence in this segment, though the initial spurt may be witnessed in the low value fashion jewelry segment.

Home decor including furniture, interior decoration may emerge as strong independent online market segments due to the combination of high degree of customization requirement, absence of standard pricing and wide variances in quality of the current supply chain.

Healthcare may present a conundrum as it is a combination of products which are very standardized or extremely customized. Such companies would perhaps find niches as differentiators that would help in customer acquisition and stickiness and position plain Over-the-counter (OTC) products as volume drivers.

We do not see much scope for information aggregators or price catalogues in the product segment. The underlying set of platforms is not too crowded for a

user to get hassled while comparing the products and pricing. Market-place models where the fulfilment responsibility is assumed by the platform however would see significant traction. While most of the horizontal market-places would be dominated by the existing large e-commerce players who have already established themselves in the market, we can expect innovative models to spring up in C2C, local search and classifieds space where consumers would eventually seek more concrete services rather than only obtaining information and whose usability remains questionable. Services would be a dominant theme for the next two-three years. Services have so far been dominated by online travel, urban transport (taxi), ticketing and utility payments and financial services. Deloitte predicts that a new breed of service that touches the daily lives of the consumer would play a pivotal role in the growth of e/m-commerce in next two years. Such services will cater

to areas which are fragmented, where latent demand is high and where parity between price and quality remains a major issue. Segments like handyman services, delivery, healthcare (like physiotherapy, nursing, etc.) would see major traction.

The above segments will see the emergence of a fairly large number of players, though we expect the initial lot to be much smaller than what we had seen in e-commerce 2.0 wave in 2009-10. While creating a great "On-device" user experience can be critical in catching the eye of a potential customer, the online/mobile commerce players now need to focus on order fulfilment which would be the cornerstone for any sustainable business model. Thus areas like multichannel network design, ensuring diligent delivery, automation and reverse logistics would play a central role in the success of these models.

Bottomline

Segments with a highly differentiated buying behavior and complex supply chain would spur the growth of a new breed of e/m-commerce players that would have sustainable business in the face of the horizontal behemoths that exist in the market. Segments like fashion, jewelry, home decor and to an extent healthcare will lead this pack. Services like home care, last mile logistics and healthcare too would witness strong traction. While creating online user experience would be critical, the real differentiator for such businesses would be very strong order fulfilment strategy.

Aided by mobile apps, Indian consumer will share to gain

A very high level of economic inequality prevails in India despite significant strides being made in the last few years to bridge the gap⁵. It is not merely a question of simple haves and have-nots, but an outcome of a high level of stratification in the society in terms of income and access to resources and infrastructure. This is true for individuals as well as businesses.

On one hand while there remains a high level of inventory of resources which are under-utilized, on the other side there is an equally high level of unmet demand due to access and affordability issues.

For example an upwardly mobile young professional earning ₹40,000 per month could be an avid traveler but limited options of stay thwart his travel plans. Similarly a commuter, who may not be able to afford a car, may be happy to incur a small expenditure every day to enjoy a comfortable ride.

On the other side of the spectrum we have hotels which are under-filled, second residences bought by the affluent community, empty residences of individuals who are out of country for a foreign stint in their job or a set of idle and under-utilized vehicles .

Clearly this seems to be a case of matching unmet demand with idle supply. Fundamentally, the idea of pooling resources has been prevalent in India since a long time. Business communities have long since managed Hundis, a safe albeit expensive alternate financing scheme for businesses; sharing of auto-rickshaws is common in many parts of the country. However, the model in its current avatar has got impetus with the advent of globally successful models like Airbnb and Uber.

Deloitte predicts that a few consumer segments like carpooling, car aggregation and hotels will see a definite spurt in sharing economy in next two years. On the enterprise front, we predict a surge in shared IT infrastructure & workspace and human resources.

There could be a few other innovative models that come up especially in the consumer businesses like sharing of home furnishing, consumer electronics and toys. Deloitte believes that such models would take a substantial time to achieve maturity especially because of trust issues discussed in greater detail in the later part of this paper.

Urban transport may lead the pack in terms of shared economy, albeit with some twists. The taxi aggregation model is one such example where idle capacity is substantially utilized by renting it out to a very high base of unmet demand. Uber in its true form utilizes the idle capacity of cars which are owned by individuals when the vehicle is not in use. In India however there could be concerns around the well-being of the car and thus the model has been tweaked to accommodate car or fleet owners/drivers who use their car dedicatedly for commercial purposes. Notwithstanding the current climate of uncertainty around aggregation services, we could witness a surge in car-pooling services. These services would be hyper-local and would be essentially encouraged by offices, residents associations, etc.

Similarly while renting out one's home to complete strangers is yet to take off on its own in India, we see a strong case for alternate sharing models.

In enterprise segment though Deloitte predicts that next two years could witness a surge in sharing of infrastructure. While co-working space models have been existent in major IT hubs for quite some time, we predict that we will soon see more models that would encompass sharing of technology infrastructure. While adoption of cloud services (as IaaS) is a macro step in that direction, Deloitte expects more localized models of the same to evolve in next two years. We could also witness sharing of infrastructure (plant and machinery) in hitherto insular areas like manufacturing industry.

The hyper local sharing trend as witnessed in the consumer space would also have its equivalent in enterprise segment. Deloitte believes that a set of last mile logistics providers which would be intimately aware of the local terrain (and thus could reach the consumer a lot more efficiently than the larger players, especially in product e commerce segment) would emerge, who would be used by a whole range of tier I players.

The other area where we see strong use case for sharing



is in freelancing space. We would see an enhanced mobility of skilled resources, especially in areas like design and mobile technology. Such workers would become freelancers and would be increasingly used by organizations (especially start-ups). To enable the same, India may see businesses that model e-lance and Dribbble.

The ubiquity of this model has to overcome barriers like

lack of user sophistication, issues with redressal in case of dispute and damage and most importantly, safety.

While the use case of the model becomes progressively stronger and the market matures to accommodate quality supply and a trustworthy demand, the adoption of the model especially those with a real-time element – like carpooling would be enabled by more sophisticated mobile apps.

Bottomline

India has a large number of business segments where idle supply and unmet demand co-exist. With the ubiquity of mobility, such a large gap can be bridged by facilitating sharing of resources to increase utilisation and productivity and thus providing greater ROI to both the providers and users.

Areas like urban-transport, hospitality, etc. would witness innovative models in sharing and so would services aggregation in the areas of home-care, etc., where service providers would be used across customer clusters. Similarly enterprises too could share resources starting with a strong demand for freelancers followed by sharing of logistics, real-estate and technology infrastructure.

The re-enterprization of IT

Deloitte predicts that in 2015, the enterprise market would lead the charge in adopting new technology after a decade long consumer-led IT adoption.

Enterprise was at the forefront of IT adoption till the first half of last decade. Mainframe computers had been the exclusive domain of large corporates owing to both size and affordability. As the trend swung in favor for more distributed computing paradigm and PCs gained prominence, enterprises continued to be the biggest buyers. In the telecom space, the latest in technology was first conceptualized by the equipment vendors who either catered to enterprise space or to the telcos whose technology adoption had limited dependence on the kind of device that the consumer used. In fact the terminology that was generically used for the consumer device “Customer Premise Equipment” had a very audible enterprise ring to it. The first version of smartphones were also marketed clearly with an enterprise segment in mind with applications such as email having far greater prominence than consumer focussed apps like games, messaging, etc.

It wasn't just the ownership bifurcation that followed this pattern. For the same hardware and software there remained clearly differentiated versions in terms of firepower with the more cutting-edge technology being branded as “Pro”/“Enterprise” and the ones with significantly trimmed down features being marketed for “Home” segment. While the mass market of consumers was buying their first bulky cell phones, business people were lining up for sleek flip-phones, and early smartphones incorporating full-sized keyboards and ‘giant’ 2.0 inch monochrome screens.

But the last ten years has seen several examples where the trend has been exactly opposite: the consumer has led the way.

Large touch screen smartphones were adopted by consumers first. Enterprises were not only slow to adopt these now-ubiquitous devices; in many cases they tried to restrict usage of such devices for work purposes. Although tablets are widely used by enterprises now, this happened after millions of units had already been bought by consumers for nearly a year.

There have been a number of other technologies that reflected the consumerization shift. Voice over IP

telephony is common at many large enterprises today, but was largely a consumer-driven product through services like Skype initially. Desktop videoconferencing was also consumer-led, while many enterprise laptops had their cameras disabled by the IT department. Storing emails on a web service was a popular consumer service while enterprises continued to own dedicated email servers.

The nature of R&D work that is being done by enterprise networking companies over past 10 years too clearly reflected an effort to ensure that the consumer technology could be adapted to enterprise IT. Thus the focus was on “software defined networks” that would intelligently decide how it should behave towards different kind of users accessing the network through a wide variety of devices.

In 2014 we had predicted that “a large number of BYOD and multichannel customer facing applications would be the two most important drivers for enterprises to adopt completely new range of applications”⁶. A Deloitte global survey had also noticed that organizations are responding to the increasing use of mobile devices in the workplace with nearly 45% of organizations having BYOD policies as on November 2013⁷. These predictions still holds true especially in enterprise mobility, where the consumer segment had been an early adopter of collaboration, communication, search and productivity tools as compared to the enterprises.

The opening up of application development process in iOS and Android gave rise to a very large set of consumer-focused apps which would start with minimum level of security and scalability and with increasing popularity a few would develop enterprise class product, where such opportunities are lucrative enough. Not surprisingly, the most recent examples of technological adoption have been “consumer first; enterprise after” (also known as the consumerization of IT).

However, there appears to be strong evidence that in certain areas of cutting-edge technology, the pendulum is swinging back to enterprise first adoption, or at least a world where the consumer doesn't always lead the way.

In 2014 we had predicted that Home automation and utilities would lead the way for M2M and IoT⁸. Our ongoing interactions with the industry suggest



that while the use case for IoT/M2M is very strong for utilities, we are seeing increasing adoption of M2M in the shop-floor rather than at home. According to recent survey, APAC region is among the leaders in early adoption of M2M technology with India being one of the top countries. Deloitte predicts that segments like Healthcare, Transport & Logistics, Utilities and Shop-floor manufacturing will see increasing adoption of M2M technologies.

Except for the manufacturing industry, all these segments require remote monitoring due to problems in last mile access. The M2M market would get further propelled as the telcos may seek to leverage the investments made in 3G and 4G rollout and thus enterprise usage would be critical.

A digression from the global trend, our ongoing client interactions suggest that wearables (smart glasses and smart watches) would be adopted by a mix of consumer and enterprise clients. The most visible application of wearable in India may be in healthcare where both individual consumers and hospital are likely to adopt these for monitoring. While consumer devices would be more geared towards simple fitness and other basic health indicators, hospitals would be adopting wearable for more complex monitoring. The wearable in hospitals would be interconnected with a host of other devices which would be an example of the early adoption of IoT as well.

Cloud-based telephony is another case that reinforces our argument. Indian SMBs have enthusiastically adopted cloud-based telephony models that handle all the functions of a traditional EPABX and IVR system. The consumer focussed applications are yet to come up with a clear use case on this front.

New technologies like Drones and 3D printing while still at the realms of hobbyists in India may find increasing application in enterprise before they become mainstream consumer models. Our interaction with companies manufacturing or integrating drones reveals that the immediate order book has a significant tilt towards government agencies, research bodies and utilities companies. The most popular usage for Drones would be in areas such as crop surveying, surveying for resource extraction and inspecting wind farm turbines.

In India while the Maker Community is growing, with the global household penetration being well under 0.007%,⁹ we do not see them surpassing the enterprise usage of 3D printing. We expect to see the SMB leading the way in 3D printing not just using plastic (as is the case with most of the home devices) but also metals specifically used for the manufacturing of tools such as molds, jigs and fixtures.

In addition to the latest technologies being adopted by the enterprise segment ahead of the consumers, the areas where consumers had led the way is also giving rise to new use cases for enterprization. The rise of BYOD and enterprise mobility had clearly given rise to a heightened demand for security which otherwise wasn't necessary as long as the technology was limited to the realm of consumers. Thus we expect cutting-edge innovations to emanate from enterprises in areas like mobile security, interoperability, and collaboration.

It is not our case that all technology trends will be pioneered by the enterprise in future. But it seems increasingly likely that the consumerization model will not be the 'only game in town', in 2015 and beyond.

Bottomline

After a decade of IT adoption being led by consumers, we see the tide turning again in favor of enterprises. The standardization and security needs of consumer-driven mobility wave would spur new breed enterprise mobility solutions.

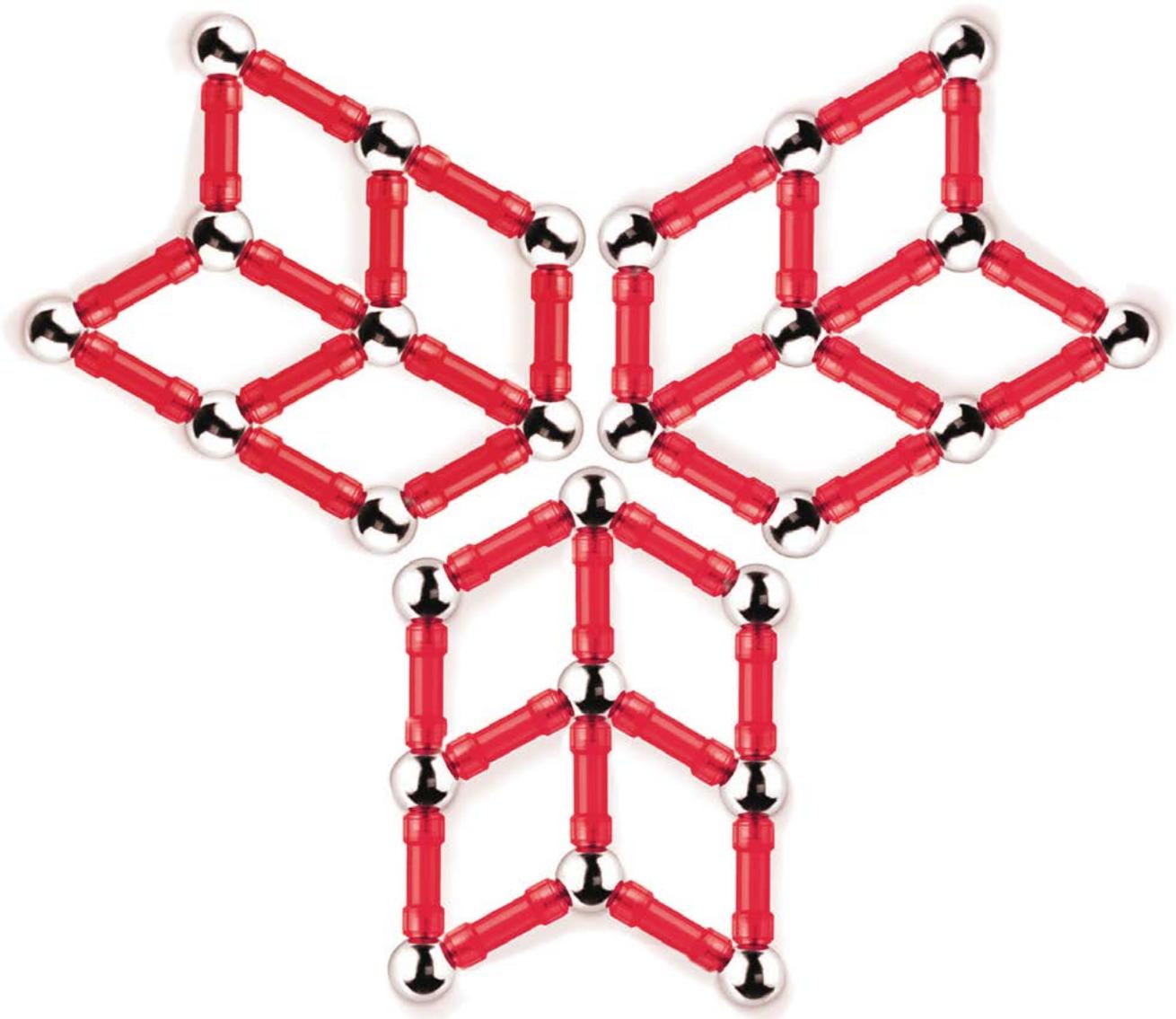
In Internet of Things, we see more immediate use cases in areas like utilities, shop-floor, healthcare and logistics which would primarily be enterprise grade technology. Areas like cloud based EPABX has significant bottom-line impact for the SMB to be early adopters of any innovation in this segment. Drones and 3D printers, while cultivating a growing set of hobbyists in India, would find more immediate application in a more controlled enterprise environment.

Also now that BYOD or multichannel enterprise applications is an accepted phenomenon, the sheer diversity of operating systems and form factors and security concerns has been a challenge to the CIO, and if a similar trend were occurring around wearables, 3D printers or the Internet of Things, it would enhance the diversity and create further challenges. The CIO would like to overcome such challenges by adopting new security and interoperability standards.

While consumer technologies would still dominate the headlines, Deloitte believes that we would see a parity being restored between the two segments in next 1-2 years.

Media

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Digital advertising: On an upswing

In 2015, online advertising market in India is estimated to grow by 30% over last year¹⁰. Digital marketing is set to liven up things in the coming year. Consumer behavior is evolving. Business models are changing. With the rapid growth in penetration of the Internet across urban and rural India, marketers are focusing more on spending their media budgets on different digital avenues. Digital advertising is the new trend as it's on its journey to become an integral medium for advertising.

Evolution of Internet

Internet accessibility has undergone a sea change. More and more people are getting added to the Internet user base.

The Internet in India took more than a decade to move from 10 million to 100 million users and three years to move from 100 to 200 million users. However, it took only a year to move from 200 to 300 million users. In October 2014, there were 278 million Internet users in India. Currently, India has the third largest Internet user base in the world but it is estimated that in near future India will overtake the US as the second largest user base after China¹¹.

In urban India, for nearly 93% of the respondents, the primary use of Internet is search, followed by online communication and social networking. However, in rural India, entertainment is the primary reason for Internet usage, followed by communication and social networking¹².

Growing Internet penetration and a large youth population has helped world's largest social network platform Facebook to expand its user base in India to 112 million - the second largest after the US. Globally, the company has 1.35 billion users, while the number of daily active users now stands at 864 million. India has the largest user base outside of the US for Facebook. Interestingly, of the 112 million user base in India, about 99 million users are using the platform through their mobile phones at least once a month¹³.

A trend that is unique to India is that users who access the Internet only through a mobile or tablet device will constitute around 75% of new users and 55% of the aggregate user base in 2015, leading to increased demand for content that is optimized for a small screen¹⁴.

Online advertising on fire

Internet has spoiled the customer for choices. People have become more aware of the different options that they have. Online advertisers target the customers based on geography, their choices, sites visited by them etc. Online advertising is the new choice for the marketers.

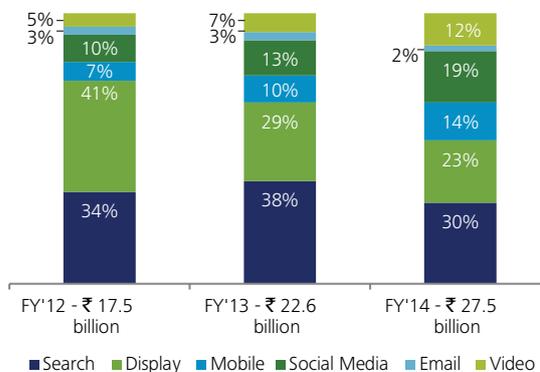
The online advertising market in the country is estimated to grow by ₹ 8250 million over 2013-14. According to the Digital Advertising in India Report 2014, the online advertising market in India is projected to reach ₹ 35,750 million by March 2015, a growth of 30% over last year. The Internet and Mobile Association of India (IAMA) and IMRB International have jointly published the Report. The online advertising market stood at ₹ 27,500 million in March 2014¹⁵.

Figure 1: Digital advertising growth in India (₹million)



Source: The Internet and Mobile Association of India

Figure 2: Total online spends



Source: The Internet and Mobile Association of India¹⁶

Table 1: Industry wise Ad spends

Industry Verticals	FY2012		FY2013		FY2014	
	Overall Ad spend (₹ in million)	Proportion to overall spend	Overall Ad spend (₹ in million)	Proportion to overall spend	Overall Ad spend (₹ in million)	Proportion to overall spend
Overall Ad spend	17500	-	22600	-	27500	-
E-commerce	1230	7%	1130	5%	4950	18%
Telecom	2280	13%	3160	14%	4130	15%
FMCG & consumer durables	2450	14%	3620	16%	3850	14%
BFSI	1930	11%	2710	12%	3030	11%
Travel	2100	12%	2710	12%	3030	11%
Auto	2980	17%	2940	13%	2750	10%
Education	1050	6%	1580	7%	1930	7%
IT/IITes	1400	8%	1810	8%	2200	8%
Others	2080	12%	2940	13%	1650	6%

Source: The Internet and Mobile Association of India¹⁷

Search and display are the top two contributors to the total digital advertisement spends in India. Of last year's total expenditure of ₹ 27.50 billion, search ads constituted 38% followed by display ads, which contributed 29% and social media, which accounted for 13% of overall digital spends.

In the previous year, the contribution of search spends fell to 30% of the overall digital spends. This trend of reduction on spends on search advertisements is expected to continue in 2015, whereas the expected spends on e-mail, video and mobile advertisements will increase. By 2015, spends alone on video ads will contribute 12% to the overall market share of digital advertisements.¹⁸

Mobile advertising – the new entrant

Mobile is no longer only traditionally used to make phone calls. A smartphone is not a luxury any more but has become a necessity. The number of the smartphone owners has skyrocketed in the past year.

The number of mobile Internet users has also witnessed a steady rise, with 159 million mobile Internet users in October 2014¹⁹.

Ad spend mobile devices is growing at a CAGR of 43% and that of social media by 41%. Spend on video grew

at a CAGR of 51% while spends on e-mail ads grew at a CAGR of 16%.²⁰

Mobile advertising volume in India grew the fastest in the world, climbing a record 260% since July 2013, even as the larger Asia Pacific region, where ad impressions delivery rose 70% in 2014, emerged the fastest-growing region globally.²¹

Bottomline

- With the rapid growth in penetration of the Internet across urban and rural India, marketers are focusing more on spending their media budgets on different digital avenues.
- The masses are practically getting hooked on to Internet and the numbers are increasing by the passage of each day. Online advertising is the new choice for the marketers.
- Search and display are the top two contributors to the total digital advertisement spends in India.
- A smartphone is not a luxury any more but has become a necessity. Ad spends on mobile devices is growing rapidly.

Print: It's still not the end

Driven by regionalization, the print media has continued to grow in terms of circulation and revenue. Deloitte predicts in 2015, the Indian print sector will continue on the growth path as in the past few years. This growth will be fuelled by the regional markets and deeper penetration of the markets. Despite the global downward trend in this sector, print in India will tread on a stable road.

Sustainability and growth is predicted based on the following factors:

- Increase in population
- Rise in literacy rates
- Entry of big players in the tier II and III markets
- Further expansion of regional circulation and readership

There are more than 70,000 newspapers printed in India and around 90% are either printed in Hindi or other vernacular languages. The demand for regional print media is growing at a faster pace than that of the English language print media. The competition is high in print media for Hindi dailies. There are companies operating in print media sector which are listed on stock exchange which, demonstrate the faith corporates are putting in this sector. In the print space, efforts are being seen towards consolidation of business rather than aggressive expansions²².

Digital media is not encroaching on the market-share of the print media. Dominance of print media which follows the paid model will sustain. Deloitte believes publishers would look at evolving a paid model for the digital media in the long run.

Newspapers

According to a survey conducted by Media Research Users Council (MRUC) for FY2013, Times of India is the only English daily in the top 15 list of newspapers as per their circulation. All others are dailies either in Hindi or other vernacular languages²³.

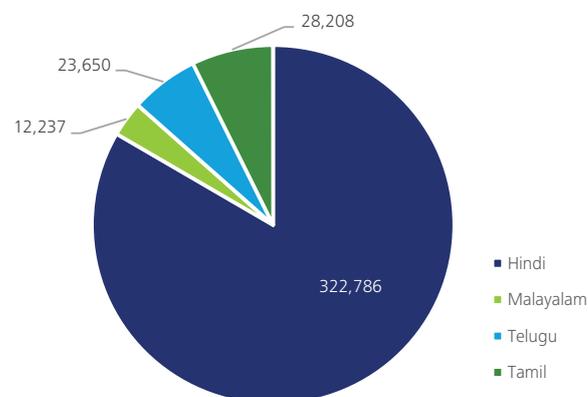
Table 2: Top 15 Newspapers in India

Rank	Newspaper	Readership numbers
1	Dainik Jagran	54,254,000
2	Dainik Bhasker	33,432,000
3	Hindustan (local)	29,411,000
4	Amar Ujala	28,720,000
5	Lokmat	23,276,000
6	Daily Thanti	20,305,000
7	Dinakaran	16,741,000
8	Ananda Bazar Patrika	15,318,000
9	Eenadu	14,726,000
10	Rajasthan Patrika	14,205,000
11	The Times of India	13,447,000
12	Hindustan Times	6,254,000
13	The Hindu	5,140,000
14	The Telegraph	2,877,000
15	Deccan Chronicle	2,816,000

Source: Survey done by Media Research Users Council²⁴

As per Audit Bureau of Circulations, the daily newspapers in Hindi or other vernacular languages have registered a significant growth over second half of FY2013 to first half of FY2014²⁵.

Figure 3: Increase noted (Average qualifying sales Jan - June 2014 v/s Average qualifying sales July - Dec 2013)



Source: Survey done by Media Research Users Council

Deloitte predicts that the above numbers will continue to grow in FY2015 in the same or increased proportion based on the CAGR stated above.

Magazines

The Indian magazine industry is one of the biggest and most varied in the world. Top magazines with top content, both B2B and B2C, are available for the Indian customer at low cost as well as high quality.

The international publishing industry has grown to its full potential. Book publishing in India is booming at a CAGR of 30%. India is the world's seventh largest book publishing country and there are over 16,000 publishers in India, the huge majority of them small players and family-owned units.²⁷

One has noticed the opening of new book stores across the urban areas. The growth of book publishing industry has been constant over the years. Also the enthusiasm of people is noticed by their large turnouts at book festivals and fairs.

India's books market, barring educational books, is valued at ₹ 16 billion and is part of an estimated ₹ 35 billion books-music-stationery industry. Book retailing is expected to grow, especially in India with growth in young and new consumers, rise in literacy levels and expansion of regional circulation and readership. Dedicated book publishers and distributors venturing into book retailing are optimistic about the retailing model giving the impetus to increase in the book selling business. Large bookstore chain retailers and publishers are also increasing their presence in tier II cities in India to reap the benefits.²⁸

According to industry body FICCI, the Indian publishing industry, which is worth ₹ 120 billion, is currently growing at a CAGR of 25%. The Indian publishing industry produces over 100,000 titles every year²⁹. Deloitte expects an increase in the spread of book stores in tier II and III cities.

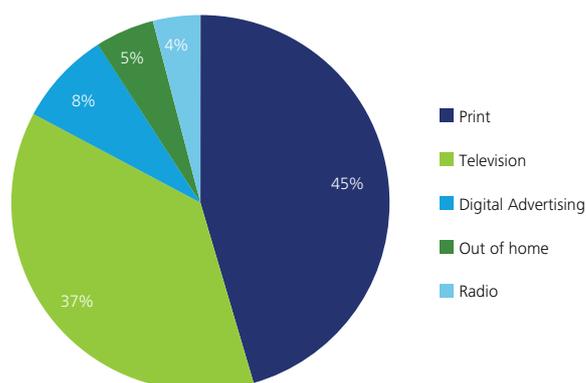
Niche publications

The growing literacy rate in regional market has increased the demand of magazines especially niche publications. News stand are full of niche magazines targeting men, women, kids, students, sport lovers, travel lovers, foodies and so on. People love to read magazines of a particular genre, where passion is involved.

The Indian Government has allowed 100% foreign ownership in the non-news and special interest categories in print media due to which there has been a spurt in the number of magazine brands in India.

Though this segment is small at present, the magazines have a direct connect with the consumer and hence Deloitte predicts a surge in growth of the niche publications.

Figure 4: Advertising revenue share (2013)



Source: India Brand Equity Foundation³⁰

Deloitte predicts that the print sector will continue to maintain a market share of 40% to 45% in the near future. Advertising revenue share is also expected to grow steadily.

Bottomline

- With increase in population, rise in literacy rates and entry of big publishers in tier II and III cities circulation and readership of newspapers is expected to increase.
- With more than 90% of newspapers being published in either Hindi or other regional languages – regional content in print media will continue rule over English print media.
- With increase in population, rise in literacy rates, increase in young readers the corporates will expand existing network of book stores in tier II and III cities.
- With the Government allowing 100% foreign direct investment in non-news and special interest category print media there will be a surge in niche publications.
- Print media having largest reach among all forms of media will continue to have largest share of advertisement spends.

Television content branching out

With increased pace of digitization throughout the country in 2015, Deloitte predicts that television content is likely to become more target audience oriented catering to different viewer tastes. We would see more experimentation in terms of innovative and big budget shows not seen in the history of television content so far. Moreover, with advent of 3G and 4G technologies, we will see creation of a new digital market for the users wanting to consume content on the go.

The television segment dominates the entertainment industry, accounting for 45% of the market share in terms of revenues, which is expected to grow further to 50% by 2018³¹. Digitization will facilitate increased number of channels and high quality viewing. Digitization of cable, along with changing consumer preferences for 'type of content' and 'medium of content consumption', will drive growth in the coming years. Content preferences are fast changing, thus requiring industry players to modify strategies accordingly.

Regional content

Industry discussions suggest that regional channels are expected to grow at a faster pace than Hindi channels. Some industry participants also believe that regional channels may be more insulated in economic downturns than national channels, as they usually have a "local" advertiser base which is less impacted by global trends / slowdown. Advertising by local as well as national players is on the rise on regional channels, thus enabling players to connect with their target audience at reduced costs. Consumer demand for content in local languages has also been increasing over the past few years.

Innovative content

Experimentation is the new buzzword in the Indian Television industry these days. Big budget shows aired recently like 24, Yudh, Everest are the few examples of such innovative content dished out to the viewers who want to experience something different from run of the mill shows aired over various channels. They are high-budget productions, supported by several big names in the Bollywood in terms of star-cast never seen before on the Indian Television that have taken Indian television programming to another level. Though, these shows have not been huge hits in terms of garnering impressive TVRs, they definitely have created a niche market for such innovative programming which will expand in the future years as the viewer interest grows.

As the market digitizes, the need for programming that

pulls 160 million TV homes into paying more is getting urgent. Several new channels like Zindagi, Sony Pal and Epic have been launched recently with contents targeting a particular segment of the television watching audience. With digitization of television taking place, segmentation of the television content is going to be the order of the day going forward to increase the market share and revenues.



Non-fiction shows with novel concepts have found traction with consumers who until a few years ago were hooked to family dramas. Although fiction will always be the mainstay of Indian television, non-fiction shows are seeing greater acceptance by consumers. This has been amply demonstrated by success of reality shows like Comedy nights with Kapil, Satyamev Jayate, Big Boss, Dance India Dance, MTV roadies etc. Almost all the channels have their fair share of reality shows aired during prime time and on the weekends.

New media

With increasing number of users wanting to consume content 'on the go', national as well as regional broadcasters are creating a digital universe parallel to the traditional TV watching experience. They are increasingly investing on various digital platforms i.e. online and mobile portals/ applications. Digital media consumption is expected to be higher with increasing broadband penetration and faster access through 3G and 4G technologies. Share of video in Internet data traffic is expected to rise from about 41% in FY2012 to 64% in FY2017. The number of app downloads in India is expected to grow from 1.56 billion per annum in 2012, to 9 billion by 2015, which translates to a CAGR of 75%. An increasing number of users appear to be accessing content via mobile handsets and tablets, as against PCs. In India, consumer Internet video traffic is expected to reach 1.4 exabytes per month in 2017, up from 121 petabytes per month in 2012. Top ranking Hindi General Entertainment Channel (GECs) now feature in the list of top 10 most subscribed channels on YouTube³².

Bottomline

- The Government's mandate of digitizing the entire country in four phases is expected to benefit consumers, distributors as well as broadcasters.
- Digitization of cable, along with changing consumer preferences for 'type of content' and 'medium of content consumption', will drive growth going forward.
- Content preferences are fast changing, thus requiring industry players to modify strategies accordingly as seen from shift towards regional content, HD content and innovative programming etc.
- Greater device (smartphone, tablet) and pipe (broadband, 3G, 4G) availability is expected to enable rapid adoption of digital consumption of content.

Bollywood reaching out globally

In 2015, Bollywood would venture out into new markets globally and tap into revenue from countries like Japan, China, France, Italy etc. Production houses will try and increase acceptability of Indian films among the foreign audience by customizing films to suit the needs of the local audience of each country.

Filmy content

The genre of Indian films has evolved over the past few years, opening up new overseas markets. The traditional markets include the US, UK and UAE and contribute around 75% of overseas collections. But, movies like 3 Idiots, Vicky Donor, and The Lunchbox did well in Japan, South Korea, Malaysia, France and Italy, as well. Offbeat themes and concepts (Barfi, Taare Zameen Par, Jodhaa Akbar, etc.) work well in the overseas market. Indian film makers experimented with concept cinema over the years, which has been appreciated by both NRIs and the local foreign audience. This has given the producers confidence to go wider - with number of screens and territories. Territories such as Morocco, Taiwan, South Korea, Japan, Peru, Israel and France have now a dedicated audience base that is finally being accessed.

Accessing new markets

Production houses are now taking their films like 3 Idiots, Two States, Jodhaa Akbar etc. to new markets many years after their release in India. Jodhaa Akbar was one of the first Hindi movies to be viewed on Turkish television and on MBC (MiddleEast Broadcasting Centre). The Italian television network, Rai, used to premiere Hindi movies on weekends. Similarly, in Germany, Hindi movies found an audience on TV and home video. South Korean and German women love Indian movies and its stars.

A lot of markets originally opened up to Indian movies such as Poland, Malaysia and Russia. Broadly speaking, there are three to four large new import hubs for Indian movies in the world - Latin America, Turkey, Egypt and Korea. Off late, Turkey has shown excellent growth for its demand for Indian Cinema. Turkey's bordering with Asia as well as Europe makes Indian movies click more with the people and next in line is Australia. Australia is an untapped market but one highly plagued by piracy. While the US and the UK remain conventional markets, there's an emerging tail of countries hungry for Indian movies including Georgia, Croatia, Uzbekistan, Armenia, Azerbaijan, and Greece.

Last year, Eros took Sanjay Leela Bhansali's Goliyon Ki

Raasleela: Ram-Leela overseas and it collected ₹ 540 million (₹ 1100 million in domestic collections). On an average, a big-budget Hindi movie earns around 20-25% of its total domestic collections, overseas. The Lunchbox, however, made double the money in overseas than in India.

Once a movie's collections surpass the minimum guarantee given to the local distributor by the studio, the normal revenue-share model kicks in.

Table 3: Top Bollywood film earners overseas

Rank	Movie Name	Collections
1	Dhoom 3	\$28,000,000
2	3 Idiots	\$26,000,000
3	PK	\$25,000,000
4	My Name Is Khan	\$23,000,000
5	Chennai Express	\$19,300,000
6	Happy New Year	\$15,000,000
7	Jab Tak Hai Jaan	\$13,560,000
8	Bang Bang	\$13,100,000
9	Don 2	\$11,750,000
10	Kick	\$11,100,000

Source: Top 10 Highest-Grossing Bollywood Films In Overseas³³

New avenues of accessing Indian movies abroad

Indian movies are now also available on Netflix, the famous American app for movies and content on the go which is available on all mobile devices. Currently on Netflix, there are about 200 Hindi movies to select from, and watch at your own convenience. Netflix periodically adds new titles (just like English movies and shows), and removes less popular ones. When the user sorted the Hindi movies by release date, it showed many recent Bollywood movies, some of them released recently like Dhoom 3, Chennai Express, Kick, Krrish 3 etc. Alternatively, other Indian TV channels are also available on mobile devices but have not penetrated much due to their pricing.

Regional films

While the Hindi movie industry in India is the largest, the country also has a fairly large and active regional movie industry. With audiences looking beyond Bollywood, regional films are fast catching the fancy of Indians living abroad.

Many of these will have English sub-titles for a wider appeal, a trend that started last year with Tamil film Vinnayithaandi Varuvaayaa. It was followed by Rajinikanth's Endhiran, which earned ₹ 700 million overseas.

The Indian film industry is hardly restricted to Bollywood; while it is the most prestigious industry on the local market and the best known abroad, the 255 films certified in the Hindi language represented 15% of the country's film production in 2013.

With audiences looking beyond Bollywood, regional films are fast catching the fancy of Indians living abroad. More than a dozen movies in an array of languages Punjabi, Tamil, Telugu, Bhojpuri, Bengali and Marathi are scheduled for overseas launch this summer.

Film distributors are moving fast to cash in on the trend. Eros International, for instance, has kept 15% capital expenditure for distributing regional films overseas. It aims to ensure that 15-20% of the total revenue from regional films comes from abroad. Typically, regional

movies are made on a budget of ₹ 6-10 million, but revenues are ₹ 30-40 million. The returns are high.

On an average, regional language movies are released with 50-100 prints overseas, while a Hindi movie is released with around 250 prints. Production houses have lined up many films in Tamil, Telugu and Malayalam for release in the US, the UK and the Gulf countries, besides South-East Asian countries such as Singapore and Malaysia.

Hollywood Bollywood collaboration

Indian entertainment companies are increasingly interested in developing and co-producing Hollywood films intended for Western audiences. Indian film companies are also making their mark in Hollywood. UTV Motion Pictures co-produced many movies in Hollywood with big production studios. The Anil Ambani's Reliance Big Pictures has invested \$325 million for a 50% stake in Steven Spielberg's DreamWorks. The group has also formed partnerships with several US production houses and film studios.

Bottomline

- Bollywood will improve its acceptability and earnings in the overseas market with both main stream and off beat cinema.
- Indian film industry begins with Hindi and goes regional with regional movies earning significant revenues from overseas market.
- Indian film industry will fly globally especially to the west and, western studios will co-produce with Indian production houses both in India and globally.

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The Indian APportunity

Deloitte predicts that in 2015, about 9 billion apps will be downloaded in India, more than 5 times the number of apps downloaded in 2012 (1.56 billion) at a CAGR of 75%³⁴. Also revenues from paid apps are estimated to exceed ₹15 billion in 2015, up from ₹9 billion in 2014³⁵. We expect this growth to be driven by the increased app usage on smartphones. In 2013, an average Indian smartphone downloaded 17 apps, out of which 4 were paid apps compared to a global average of 26 apps with 5 paid apps³⁶. With smartphone penetration expected to rise to around 13.4% in 2015, up from about 10% in 2014³⁷ and the rapid adoption of mobile internet, we expect that apps downloaded per smartphone will move closer to the global average.

According to analysts, as of Q3 2014, India contributed to 9% of global downloads, ranking 3rd behind China (13%) and the US (19%) and in terms of per capita app downloads (number of apps downloaded per 100 users), India stood at 1.9 versus a global average of 1.7³⁸. With smartphone penetration set to rise from a relatively low 10% in 2014 to around 13.4% in 2015, we expect this trend to continue in 2015, and the Android platform will continue to dominate the Indian apps market.

India is the second largest telecom market globally with over 937 million wireless subscribers (active wireless subscriber base of over 824 million) and a teledensity of 75% as of November 2014³⁹. According to industry estimates, India is ranked 3rd in the number of apps downloads globally⁴⁰. However, the revenue generated by the app market of India is not in the top 5⁴¹ - the major reasons can be attributed to the price sensitivity of Indian customers, lack of locally relevant apps, local language content and low levels of digital literacy.

Almost 90% of app downloaders in India prefer free apps, thereby generating low revenues for mobile app developers. Also, more than 80% of the apps downloaded in India are global apps, further disincentivizing local app developers to make money through app development⁴².

In addition, there seems to be a dearth of apps that cater to the local needs of semi-urban and rural India. The primary reasons for this could be the lack of network infrastructure to support high data speeds and telecom operators' revenue sharing models which are unable to incentivize app developers who prefer leading app stores like Android and Apple.

Another reason for the lag can be attributed to the low digital literacy level in India. Nearly 85% of the population is in digital poverty which leads to difficulty in understanding of the smartphone capabilities and required data infrastructure, in terms of downloading apps⁴³.

Burgeoning smartphone and mobile internet usage, a growing developer community and the potential for regional/localized apps are likely to favor an app revolution in India

More than half of the app users in India are aged between 18 and 24 years and a further 29% between 25 and 35. 45% of these users reside in the top 4 metros⁴⁴. In terms of app usage, a study reveals that Indians on average spend 3 hours and 18 minutes on their smartphones and one-third of this time is spent using apps⁴⁵. We expect that this trend will continue into 2015, and a bulk of the app downloads will be driven by the urban youth.

The Indian mobile handset market is in a period of major transition, moving from a predominantly feature phone market to smartphones and tablets. According to mobile consumer survey conducted by Deloitte in 2013, almost 64% of the respondents are likely to purchase a smartphone in the next 12 months⁴⁶. Around 44 million smartphone units were shipped in 2013 and the current market scenario hints at 80 million plus shipments in 2014, representing 82% annual growth.⁴⁷ Going forward, expansion of 3G network coverage and the rollout of 4G networks in 2015 are expected to further boost smartphone sales in the country and the number of active smartphone users is forecasted to increase to around 200 million by 2016⁴⁸ from 120 million in 2014⁴⁹.

India is already home to the third largest number of Internet users globally with 259 million users, of which 241 million are mobile internet users as of October 2014⁵⁰. The total number of 3G subscribers in India as of June 2014 is estimated to be 67 million (i.e. a miniscule 3G adoption rate of 7.4%)⁵¹. However, as in the case of developed nations, with smartphones getting traction, we expect 3G data consumption to take off in India. Industry projections measure 3G adoption to be around 250 million by the end of 2016⁵². As 4G networks get deployed in India in 2015, we believe that the demand for video and rich media content will grow the demand for apps.

Another factor favoring an app revolution in India is the growing app developer culture and software development talent available in the country. India has around 300,000 app developers and is already the second largest Android developer community in the world after the US⁵³. By 2017, India is expected to have the largest number of software developers.⁵⁴

Lastly, there is huge potential for regional mobile apps/localized content to cater to the needs of semi-urban and rural India. Of the literate 74%, only 10% read English while the rest consume content in the vernacular medium⁵⁵. This continues to offer app developers, mobile publishers, telecom operators, as well as advertisers various monetization and advertising opportunities, apart from a large under-served user base.

Social networking, instant messaging, gaming, and music streaming continue to dominate while lifestyle and e-commerce apps are gaining popularity

Every month, more than 100 million apps are being downloaded in India⁵⁶. According to a survey conducted by an analyst, games were the most popular category among paid apps, closely followed by instant messaging and music streaming⁵⁷. Popular free app categories include social networking, games, news, photo and video apps. Lifestyle applications that help people find restaurants, book a movie or show tickets, or find friends are also gaining popularity.

Chat or Instant Messaging has become an integral part of modern day lifestyle and has witnessed dramatic uptake, with almost 90% of smartphone users using some chat application or the other⁵⁸. Indians also appear to be doing lot of shopping on mobile. The top e-commerce companies have reported between a third and half of their sales happening through mobile apps⁵⁹. Going forward, we expect mobile apps to play a bigger role in online sales.

Indian app developers are finding innovative ways of monetizing and distributing apps

According to Global Developer Economics survey in 2014, almost 50% of iOS developers and 64% of Android developers live below the 'app poverty line' (i.e. below \$500 per app per month)⁶⁰. This issue is further exacerbated in India owing to price sensitive customers as well as low penetration of credit and debit cards, the high failure rate of online payments due to low network

capabilities and the mobile payments regulation. Since traditional models of monetizing apps like pay-per-download and in-app purchases have not worked very well in India, developers are continuing to find innovative ways to lure and engage with customers.⁶¹ New models like renting apps before buying, offering free mobile recharges & discount coupons and virtual currency models are picking up.

Indian app developers are also recognizing the need for local app distribution platforms. International app stores do not lend themselves to the easy discovery of highly India-specific regional content⁶². This is prompting a move towards an offline distribution of apps. Some companies are selling app bundles to customers through offline outlets like mobile retail outlets, mobile recharge and accessory outlets in order to cater to the predominantly cash-based Indian economy⁶³.

Deloitte believes that for the mainstream app economy to take off, easier payment methods need to be made available. As solutions like carrier billing or mobile wallet solutions i.e. the ability to pay for purchases using mobile phones get implemented, app monetization will pick up.

All players in the app ecosystem may be forced to reinvent their business models in the smartphone and mobile internet age to stay relevant

Leading value-added services (VAS) companies are evolving into full-fledged Internet companies that use telecom operators' pipes to deliver their apps or over-the-top (OTT) content. This has caused the revenue share proportion between VAS providers and telcos to favor the VAS companies⁶⁴. In addition, subscribers' rapid adoption of OTT-based services, continued price wars, declining ARPU and huge investments in telephony and data networks are prompting Indian operators to rethink their role in the app ecosystem.

Telecom operators have already announced partnerships with OTT players under which they offer unlimited access to OTT services by charging a monthly fee⁶⁵. We are also witnessing the trend of telcos launching their own proprietary based OTT services. Deloitte predicts that as OTT app usage will increase, driven by smartphone penetration and mobile data adoption, partnerships with OTT players may be a stop-gap approach taken by operators until VAS like VoLTE that can offer improved quality of service can be introduced.

While smartphones are driving traffic to third-party app stores, there will still be a significant mobile user base on feature phones going forward and we may see the rise of telco OTT apps that have increased regional focus and improved language capabilities.

Bottomline

India's app economy is making its mark in the global arena. India is already the preferred market for leading app stores and is the fastest growing smartphone market in the world⁶⁷. Additionally, India's skilled pool of software developers and growing entrepreneurship culture adds to its competitive advantage. However the Indian app ecosystem has some challenges, which need to be addressed in order to realize its full potential.

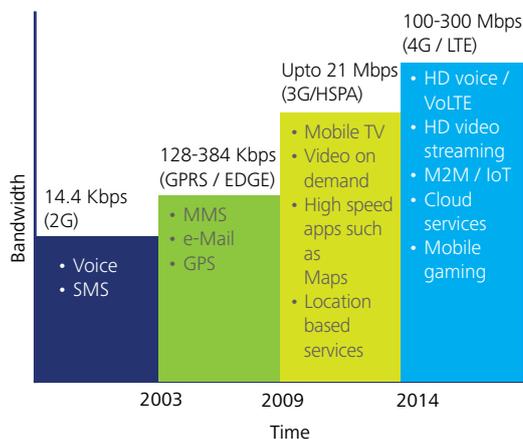
- To promote the growth of locally relevant apps, the government can act as an enabler especially in the pursuance of socio-economic development and inclusive growth in domains such as healthcare, education, agriculture, finance, and governance. The government's Digital India initiative could be a facilitator.
- Also Indian app distribution platforms may need to adopt a revenue sharing model which is globally competitive in order to incentivize app developers.
- Telecom operators could play a potentially pivotal role in facilitating the billing of apps through carrier billing and mobile wallet solutions.
- The app economy's true potential can be realized if network coverage increases, smartphone penetration continues to rise and the 'absorptive capacity' of the Indian population towards new technology grows through schemes that promote digital awareness and literacy⁶⁸.

In conclusion, all players in the ecosystem i.e. app developers, distributors, the government, device manufacturers, and other stakeholders must work together to ensure that India successfully taps into this APPportunity.

Growing demand of high bandwidth to drive 4G services

Deloitte predicts that 4G adoption rate in India would be 1.5-2% of the total wireless subscriber base in the next 1-2 years and reach an inflexion point post this period. 4G offers significantly higher peak rates for downloads (100-300Mbps compared to 21Mbps for 3G/HSPA) and lower latency.

Figure 7: Evolution of mobile technology



Source: Deloitte Analysis

The number of smartphone users in India is likely to grow from 85 million in 2013⁶⁹ to 204 million by 2016⁷⁰, driving higher uptake of data services and mobile data traffic.

Over the same period, mobile data traffic in India is expected to grow by 8 times, reaching 443 million GB per month by 2016, from 52 million GB per month in 2013⁷¹. Further, average data consumption per user per month could grow by over 2 times to reach 390MB per user by 2016⁷². While one-third of all mobile broadband data traffic is currently driven by social media, browsing and instant messaging via popular apps⁷³, an increasing trend of using smartphones for video and entertainment is predicted to drive growth in data usage per subscriber.

Higher bandwidth and lower latency offered by 4G networks provides a better user experience and more seamless connectivity, and this is likely to drive their adoption. The aggressive roll outs for 4G services being expected in the next 1-2 years along with significantly lower prices for 4G services are expected to drive affordability and growth.

Deloitte expects that increasing adoption of data-intensive services, applications, and solutions by consumer, enterprise, and utilities segments would necessitate adoption of 4G services in India.

Affordable pricing of 4G smartphones could increase 4G subscriptions in India

Most low and medium-priced smartphones in India support 2G/3G networks. However, various handset manufacturers are looking to introduce 4G devices and it is expected that around 10-15 such handset models would be introduced in 2015 at the critical pricing of less than ₹ 10,000.^{74,75,76}

Deloitte expects that increasing availability of 4G smartphones, comparable to 3G smartphones in pricing, would drive 4G adoption in India as it has in SEA countries. In countries where 4G has been deployed relatively early, mass-market pricing of 4G services and number of 4G smartphones available have been the two key factors behind driving rapid 4G adoption⁷⁷. For example, operators in South Korea started offering 4G smartphones at prices comparable to 3G since its launch in 2011, resulting in an adoption rate of more than 50% by 2014.

Increasing share of consumers are watching videos on their smartphones/ tablets and the trend is expected to spur migration towards 4G

Currently 29% of smartphone owners in India are regular users of video/movies apps while 60% of smartphone users are likely to watch videos on mobile internet⁷⁸.

As per research, mobile video traffic in India could reach 190 million GB per month by 2016, up from 22.7 million GB per month in 2013. Growth drivers include wider range of content, increasing smartphone base and change in user behavior resulting in higher streaming of video content.

Deloitte expects that growth in video traffic would heighten importance of managing bandwidths, especially as users currently face issues in accessing high quality video content - 4 out of 10 mobile videos are interrupted by buffering or stalling, leading to a move towards 4G.



Mobile gaming is leading to demand for higher bandwidth on mobile devices

As per industry estimates, only 2 out of 100 mobile subscribers in India are mobile gamers, significantly lower than mobile gamer penetration in the US, Japan, South Korea, and the UK⁷⁹. This indicates significant growth opportunity for mobile gaming industry in India which is projected to grow from \$130 million in 2013 to \$220 million by 2016⁸⁰.

Deloitte predicts that growth in mobile internet users (310 million in 2016⁸¹ from 241 million in June 2014⁸²) as well as higher smartphone penetration would lead to increase in mobile gaming and by extension 4G adoption, as it provides the necessary high bandwidth with low latency.

Consumer cloud is seeing increasing adoption and is expected to drive bandwidth requirements in future

Increasing user preference for storing and sharing content such as music, photos, & videos and accessing it on multiple devices would drive adoption of cloud based services. By 2016, it is predicted that 36% of consumers worldwide are likely to store content on cloud, up from 7% in 2011⁸³.

Cloud service providers are also driving adoption, with some providers reducing charges for storing data by up to 80%⁸⁴, and others bundling their software products with cloud storage plans⁸⁵.

Further, increasing smartphone penetration is expected to result in increased usage of the cloud for maintaining backups. Deloitte expects these factors to significantly increase bandwidth requirements, requiring faster and agile 4G networks.

Higher bandwidth would be consumed in browsing web pages which are becoming heavier

Web browsing is a key driver for mobile data traffic, which is influenced by the size of the web pages being visited. Increase in web page sizes results in higher data consumption while web browsing and thereby higher bandwidth consumption. According to research, average web page size has grown 3 times over 2010-14 to pass 1700Kb⁸⁶. Increasing data subscribers and increased browsing of heavier web pages would contribute to data consumption growth, ultimately warranting higher bandwidth solutions for web browsing.

Faster networks would be required to service growing enterprise bandwidth requirements

Resource optimization and the need to increase employee productivity are expected to drive enterprise mobility market in India to grow from \$394.3 million in 2012 to \$1.4 billion by 2016⁸⁷. Employees are increasingly connecting to the internet on the move, for applications such as e-mails, video conferencing, office communicators, and sharing of presentations & documents. Growth in enterprise mobility is likely to drive dongle demand in India, rising to ~31 million by 2016 from 21 million in 2013⁸⁸. While traditional plug-and-play dongles connected to only desktops / laptops, newer dongles can be turned into Wi-Fi hotspots, connecting multiple smart devices simultaneously.

With average data usage per subscriber in India expected to grow by more than 2 times to reach 390MB per month by 2016 and number of smartphones crossing 200 million by 2016, Deloitte expects that there would be a significant uptake of 4G dongles, to keep pace with growth in mobile data traffic and provide high speed connectivity.

The Bring Your Own Device (BYOD) trend is likely to spur the remote access of enterprise applications by an increasing number of employees across multiple devices. Enterprises are deploying various cloud based mobility solutions including consumer facing, and sales force automation enterprise apps. For example, cloud based mobile CRM solutions enable field sales staff to use mobile apps to collect access, update and interact with customer data and improve sales cycle by making informed decisions. Further, enterprises can also leverage cloud storage solutions - highly accessible and scalable storage mechanisms that serves data on demand to an end client like a mobile device. Growing popularity of such cloud based solutions would drive demand for higher bandwidth 4G services.

Enterprises are focusing on large scale adoption of M2M solutions which would necessitate low latency networks

Improved productivity and efficiency is increasingly driving Indian enterprises across various sectors to adopt M2M-enabled solutions, enabling seamless communication and interaction between machines and devices. The number of M2M devices is expected to reach ~100 million by 2016⁸⁹.

While most M2M applications require low latency networks (due to continuous real time monitoring), emergence of bandwidth intensive M2M applications such as remote video surveillance, and remote diagnostics would intensify demand for higher bandwidth as well. Therefore, Deloitte predicts that expected increase in number of connected M2M modules and lower latency needs of M2M applications would significantly drive adoption of 4G services in India.

Enterprises are increasing use of video conferencing to cut costs, and users are beginning to access such services on mobile devices

The video conferencing market in India is expected to grow at a CAGR of 14% over 2013-2016⁹⁰. With an increasing trend of BYOD behavior among employees to access corporate applications, enterprises are using video conferencing applications to facilitate virtual meetings with mobile, remote, and extended teams. Increased adoption of such video collaboration applications among enterprises would drive 4G adoption.

4G services could gain popularity among companies due to demand for high reliability networks for Internet of Things (IoT)

Internet of Things refers to a collection of Internet-connected consumer devices, manufacturing systems, business tools, customer service appliances, medical equipment, agricultural sensors, and other equipment.

With increasing adoption of IoT, enterprises would witness significant amount of low-bit data traffic coming from a massive number of sources. However, though IoT does not need high bandwidth, 4G can provide higher reliability for low-bit rate services through flexible bandwidth allocation.

Mobile-based services are being used to increase reach and quality of health and education services in India and would progressively require greater bandwidths.

- Healthcare providers are leveraging mobile technology to deliver cost effective health services such as telemedicine which involves video conferencing between patients and doctors⁹¹. Such mobile based applications are expected to drive increased usage of 4G services
- Mobile platforms are also being used to enhance reach and quality of education in India. Some of the m-education applications include game and simulation based educational tools and virtual classrooms, involving two-way video feed between teachers and students, which are being adopted to aid learning in India⁹².

Bottomline

Deloitte expects 4G services to reach an estimated subscriber base of 18-20 million (1.5-2% adoption) by 2016 and reach an inflexion point post this period. Adoption of 4G would be driven by growing need for higher bandwidth services across consumer, enterprise as well as the utilities segments:

- Increasing preference for streaming videos on mobile, increasing mobile gaming and higher adoption of cloud based storage services are likely to drive data consumption among consumers in India. These factors could push up average data consumption significantly, driving bandwidth requirements and thus higher uptake of 4G services to obtain fast and seamless connectivity.
- Increasing trend of BYOD is driving adoption of high bandwidth enterprise mobility applications and mobile based video conferencing solutions to increase employee productivity and cut costs.
- Sectors such as Health and Education are increasingly adopting mobile based applications such as video conferencing and virtual classrooms to increase access and quality of these services across India.

With all of the above factors driving the demand for higher bandwidth, it is expected that 4G technologies and services would start to witness significant adoption over the short to medium term.

Mobiles driving Financial Services and Commerce

Mobiles may continue to gain importance as a channel to drive financial services and commerce this year. The key drivers will be the expanding user base of enabling devices, increasing mobile data and internet usage, and growing adoption of the mobile channel by financial services and other consumer businesses. These businesses have increasingly begun to realize the distinct advantages provided by the mobile channel such as improved user experience, productivity gains, and ubiquity. We also note that the Central Government is taking various steps to promote a Digital India with mobile as a significant channel.

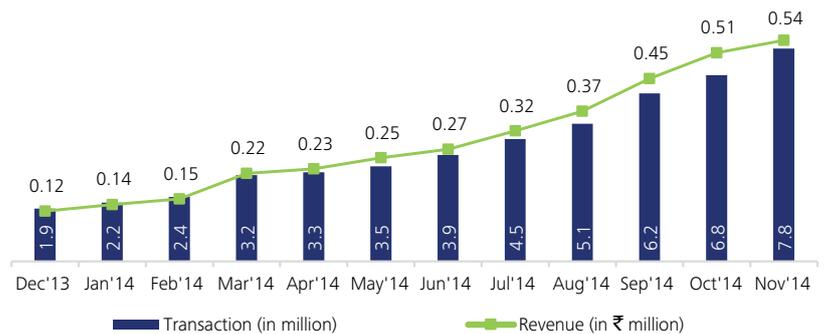
India, especially its hinterland, faces many barriers to access formal financial services. Smaller transaction amounts, higher costs of setting up brick and mortar branches, and the lack of financial literacy have deterred banks from extending their reach⁹³. Only 48% of Indian adults have access to bank accounts. Moreover, almost half of them (47%) are dormant⁹⁴. The mobile channel holds the potential to address these issues. The existence of a nationwide mobile infrastructure and the large telecom subscriber base of 964 million⁹⁵ means that banks and financial services providers have a ubiquitous and inexpensive platform to provide effective solutions for unbanked/ under-banked individuals/ households. As such, banks are shifting their focus to mobile solutions, and consumers are responding in terms of adoption. A good indicator of this shift has been the increasing transaction volume on Immediate Payment Service (IMPS)⁹⁶, the mobile number-based platform created by National Payments Corporation of India (NPCI). Another key indicator is the sharp increase in mobile banking transactions by value witnessed by various banks in India⁹⁷.

Figure 8: Monthly value of mobile banking transactions (₹ billion)



Source: Business Standard

Figure 9: IMPS monthly transactions (By value and volume)



Source: NPCI

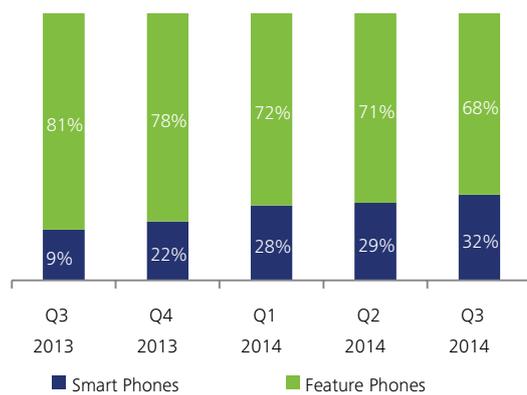
Mobile commerce has seen strong growth in the country and has the potential to expand further. The value of mobile commerce based transactions has increased from ₹ 78 billion to ₹ 360 billion between FY2013 and FY2014⁹⁸. A lot of players are witnessing a remarkable shift in channels from desktop to mobile. For instance, HDFC securities expects that brokerage earned from transactions done on mobiles would increase from 2.5% of total revenues currently to 50% in two years⁹⁹.

E-commerce presents another interesting example in the country. Snapdeal currently records 60% of its transactions on mobiles, up from 18% in March 2013, and expects to reach 80% in two years. Other players such as Flipkart and Amazon have also seen mobile becoming the dominant channel, accounting for more than 50% of the transactions¹⁰⁰. The majority of the internet users (over 57%) in India access internet over mobile¹⁰¹. The 'mobile first' nature of Indian internet user base would only further the usage of mobiles as the preferred channel for commerce in the country.

Increasing base of enabling mobile devices and data usage

Favorable regulatory policies¹⁰² related to access to FDI, ease of MNP, free roaming, and decreasing tariffs have led to a tremendous increase in the mobile subscriber base in the country. The current subscriber base in the country stands at 964 million, out of which 937 million are wireless subscribers leading to a wireless teledensity of approximately 75%¹⁰³. With PC penetration languishing in single digits¹⁰⁴, mobiles become the obvious choice for attaining a wider reach.

Figure 10: Phone shipment market share



Source: IDC¹⁰⁵

Further aiding this medium of commerce is the trend of smartphone usage in the country. India currently has an estimated 120 million smartphone users and is expected to cross 200 million users by 2016, making it the second largest smartphone market in the world¹⁰⁶. Feature phones dominate the market today but the shift to smartphones is being witnessed at a rapid pace¹⁰⁷.

Growing in tandem with the smartphones is the overall data usage on mobiles. Backed by various steps taken by operators to increase 3G coverage¹⁰⁸ and lower tariffs apart from improved regulations,¹⁰⁹ the 3G user base in India is expected to grow to 250 million by March 2016¹¹⁰. As far as data usage is concerned, 3G data payload in India grew by 146% in 2013¹¹¹, a growth rate much higher than that of other parts of the world. Further, the impending launch of pan-India 4G services would only provide a spurt in data usage and data subscribers in the country.

Significant advantages of mobile as a medium of commerce

Using mobile as a medium provides distinct advantages to consumer businesses.

Improved Customer Service and User Experience

Financial institutions have used the mobile phone technology not only to increase revenues but also to provide a seamless customer experience. Apart from multinational banks and international corporations, Indian firms have also adopted the use of the mobile

platforms to interact with their customers. Recently, ICICI Bank launched two new mobile banking applications intended to improve customer service. The apps, iLoans and iTrack¹¹², enable customers to easily access product-related information without having to call the bank or personally visiting a bank branch. Similarly, IndusInd Bank's customer-centric video app¹¹³ allows users to interact face to face with their relationship/ branch manager from the comfort of their homes. Such apps provide services round the clock and help customers carry out various transactions, access information, and get their issues resolved with ease.

Increasing Agility in Processes

Financial institutions in India are looking to enhance their efficiency by simplifying both their customer acquisition and service processes, (e.g. onboarding, KYC) and post registration processes (e.g. transactions, payment, risk, and compliance). The usage of mobile phones helps users reduce time spent transacting or visiting a branch. For instance, ICICI Bank, with its eKYC service¹¹⁴ allows relationship managers to open up bank accounts through their tab banking application. All major banks have already launched their mobile apps in addition to existing USSD/SMS based channels which enables users to conduct majority of day-to-day transactions without visiting a branch and removes any human intervention in the process.

Lowering Cost of Service and Operations

Financial institutions are expected to gain savings in operating costs due to the shift in the traditional financial service operating models relying on brick-and-mortar branches, towards digital and mobile customer servicing models. As an example from the developed markets, Bank of America has reduced the number of branches to fewer than 5,000, a reduction of 10% from 2012¹¹⁵, betting that over 14 million customers, who are already on their mobile banking platform, can be serviced via the mobile channel. Similarly, in India, financial institutions, are striving to reduce their transaction and service cost apart from providing low-cost modern financial services to the rural and urban population alike.

These key advantages on offer and the increasing comfort factor with mobile as a medium only strengthens the case for mobile channels to be increasingly used by service providers.

Government's impetus to support financial inclusiveness through mobiles

The government is taking multiple steps to push financial inclusiveness to India's unbanked population. It launched the Pradhan Mantri Jan Dhan Yojna, which aims to offer banking facilities to 100 million households by Jan 26, 2015¹¹⁶. The scheme puts special focus on mobile transactions using telecom operators and their established centers as cash out points. Enhanced reach, round the clock availability and low cost delivery are the key factors strengthening the case for mobiles to be an integral part of this policy push.

The Reserve Bank of India has recently announced that card issuers, non-banking financial companies, telecom companies, super market chains, co-operatives and business correspondents are eligible to set up payments banks¹¹⁷. These niche banks will be able to provide payment and remittance services through various channels including mobile banking and internet banking to offer low cost banking solutions.

Bottomline

Mobile phones in India would continue to rise in dominance as the preferred channel for providing financial services and commerce driven by the following:

- Increasingly greater penetration of enabling devices and rise in data usage among Indians
- Higher adoption of mobile channel by service providers due to improved customer experience, on demand availability, increased agility and efficiency, and lower cost of service
- Policy push from the government for financial inclusiveness

However, a faster and wider acceptance of the mobile channel would be contingent on the below critical success factors:¹¹⁸

- Focus on customer experience: User experience still has ample room for simplification for higher adoption of mobile-based services, particularly those provided by banks. The focus needs to shift from a mere provisioning of services on mobile channel to frictionless, minimal, and superior customer experience aimed at solving customer pain points.
- Network effect: Building a larger base of avenues (e.g. merchant networks, billers, government subsidies) which use mobile payments would create a network effect and ease adoption.
- Multilingual ability: Since the majority of the mobile applications are in English, the rural population will especially benefit from the multilingual ability, thereby ensuring wider adoption.
- Data Security: Security concerns related to sharing of confidential data is a key challenge, which is why there is a need to create awareness on data leakage and related threats.
- Better network infrastructure: 3G coverage in the country needs to be improved for providing superior customer experience¹¹⁹.

Transforming Governance through mobile and broadband technologies

Deloitte predicts that in 2015, India's e-Governance will significantly improve (the extent of improvement will depend on effectiveness of some of the key initiatives). India's EGDI (e-Government Development Index), as per the United Nations e-Government Survey 2014 which currently stands at 0.3834, may move closer to the global average of 0.4712¹²⁰. We expect this trend to be primarily driven by the increasing adoption of smartphones and tablets, increased number of e-government initiatives at the central and state levels as well as the increased participation of private players in e-governance initiatives. Also going forward, while disparity in terms of prevalence of e-governance initiatives across states will continue, we believe that more states will adopt e-governance projects.

We also believe that the rural urban digital divide will continue to exist as adoption of e-governance services in rural India will be delayed due to lower mobile and internet connectivity, low levels of digital literacy and resistance to embrace new technologies.

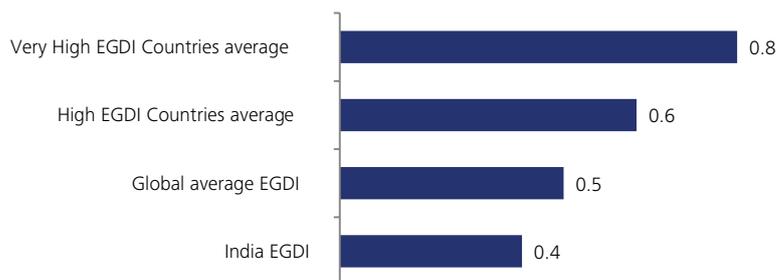
e-Governance in India: India's EGDI lags global average; however the future looks promising

As per the e-Government Development Index (EGDI) estimated by the United Nations as part of the UN e-Government Survey 2014, India not only lags behind the top 25 countries by a large margin but is also behind the global average. EGDI is a composite measure of the state of e-governance initiatives in the country.

However, given the increasing smartphone penetration, increasing user requirements for convenience, increasing investments and roll-out of high speed telecom infrastructure by telecom operators, the initiatives and push by the Government, namely, 'Digital India' initiative and 'National Optical Fiber Network' and increased involvement of private players, India might be on the cusp of an e-governance revolution.

We believe that the Public Private Partnership (PPP) model is essential to the success of e-governance in India. Recently, Akodara, a village in Gujarat, was adopted by the ICICI Group as part of its 'Digital Village' project along the lines of Prime Minister's brainchild, the 'Sansad Aadarsh Gram Yojana'¹²¹. Global players like Facebook, Google and Microsoft have also expressed a keen interest in participating in the Digital India initiative in order to provide Internet access to all Indians¹²².

Figure 12: EGDI comparison

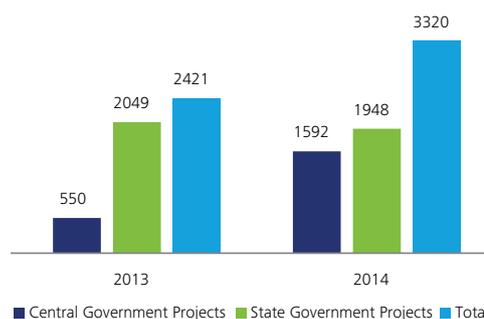


Source: UN e-Government Survey 2014

e-Governance in India: Growing, but wide disparities exist within

Indians are increasingly becoming comfortable transacting online – Growth of e-commerce in India over past 2-3 years is a testament to this fact. The top e-commerce companies have reported between a third and half of their sales happening through mobile apps¹²³. Similarly, there is a boom in online transactions for the National and State level e-Governance projects. e-Taal (Electronic Transaction Aggregation & Analysis Layer), the government web portal that provides statistics on transactions done electronically by citizens with various e-Governance projects, shows that Indians have done over 3 billion e-transactions in 2014¹²⁴. While the e-transactions on account of State Government Projects have pre-dominantly stayed flat at an overall India level, the transactions for Central Government Projects have increased significantly by 189% in 2014 from 2013¹²⁵.

Figure 13: Number of e-transactions in state and central projects (million)



Source: ETAAL, Department of Electronics & IT

Note: Total number doesn't include mission mode projects.

Gujarat emerged as a clear leader in 2014 with ~690 million transactions and the top 3 states of Gujarat, Madhya Pradesh, Tamil Nadu accounted for more than half of all the e-transactions done in 2014. Top 5 states accounted for almost 73% of all e-transactions¹²⁶.

Table 4: Top 5 states by number of e-transactions

State	No. of e-Transactions (million)
Gujarat	687
Madhya Pradesh	268
Tamil Nadu	212
Uttar Pradesh	136
Maharashtra	123

Source: ETAAL, Department of Electronics & IT

Table 5: Top 5 states by number of e-transactions per capita (per 1000 population)

State	No. of e-Transactions per capita (per 1000 population)
Lakshadweep	22589
Gujarat	11381
Uttarakhand	4198
Madhya Pradesh	3693
Tamil Nadu	2937

Source: ETAAL, Department of Electronics & IT

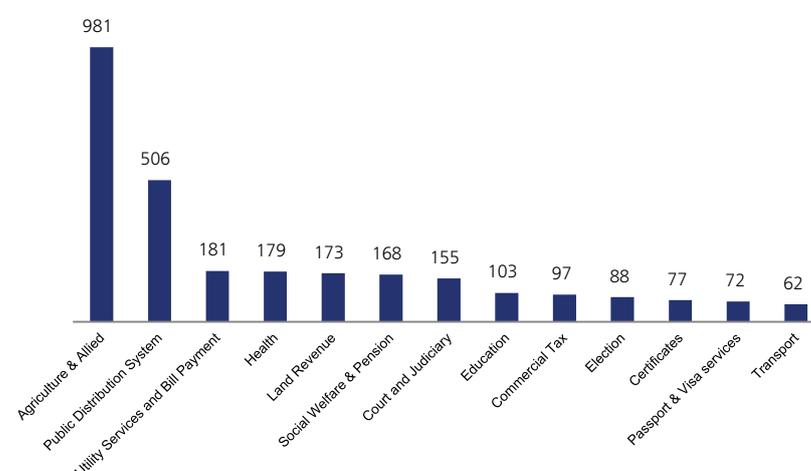
While e-transactions per 1000 population in Gujarat was greater than 11,000 in 2014, in states such as Sikkim, Bihar and Arunachal Pradesh per capita e-transaction is as low as 62, 55, and 35 respectively¹²⁷.

Going forward, we expect that e-transactions for central government projects will continue to grow, and more states will join the bandwagon hence witnessing an increase in number of e-transactions for state government projects as well. However, the wide disparity in terms of prevalence of e-governance initiatives across States is expected to prevail.

Among all the services used, agriculture was by far the biggest one used by Indian citizens: 981 million were from agriculture sector alone. We expect this trend to continue in the future. Public Distribution System, Utility services and Bill Payment and Health are other

verticals that may continue to witness high number of e-transactions in 2015 as well.

Figure 14: Services with highest number of e-transactions (million)



Source: ETAAL, Department of Electronics & IT

e-Governance in India: Availability of online Services, Telecom infrastructure in the country and awareness, know-how of the human capital are key determinants of success

India's e-Governance will improve significantly in near to mid-term future. Growth is expected to be higher than the growth witnessed in recent years, as the trend gathers a critical mass. The extent to which e-governance will grow is contingent on:

Availability of Online Services

As the Indian populace adopts internet increasingly on phones - for e-Governance service to succeed, Mobilization of the service (making service available on the mobile) is imperative. The service should be developed such that it can be accessed both through smartphones and feature phones.

Moreover, India is a high user of mobile applications. According to analysts, as of Q3 2014, India contributed to 9% of global downloads ranking 3rd behind China (13%) and United States (19%)¹²⁸. Also Deloitte predicts that in 2015, about 9 billion apps will be downloaded in India, more than 5 times the volume of apps downloaded in 2012 (1.56 billion) at a CAGR of 75%¹²⁹. Hence developing user-friendly apps could significantly trigger the growth of these services.

A case in point here is the recently launched M-One application by the Karnataka Government¹³⁰.

Karnataka launched its ambitious mobile governance project in December 2014, the first of its kind in the country that allows citizens of the state to access as many as 637 government services at a tap on their cell phones. The mobile app allows citizens to pay utility bills for electricity, pay property tax, and apply for a host of services like driving license, passport or PAN, pay up for traffic challans, book tickets on rail and road transport, among others. People can even lodge complaints with civic authorities about garbage strewn around. The app has features that allow citizens to access many of these services even without a smart phone. Over 3500 services related to healthcare, transport are also available on the same platform.

Telecom Infrastructure in India

Telecom infrastructure in India is expected to get a large boost from both the private sector and the Government. While the private sector has large investments planned in the high-speed networks, the Government has planned

to make significant investment for establishing the National Optical Fibre Network (NOFN) and Government User Network (GUN) to overlay optic fibre across the country. The project will connect 250,000 Gram Panchayats with 100Mbps speed, provide broadband connectivity to Gram Panchayats, primary schools and health centers and provide community Wi-Fi services at Gram Panchayat level. NOFN will support e-governance services, telemedicine, tele-education, financial services, e-commerce and e-entertainment¹³¹.

The timeliness and effectiveness of the above plans of both the private sector and the Government will play a pivotal role in defining the growth of e-governance in India. NOFN will especially play a critical role in making e-governance more pervasive in the country i.e. penetrating the rural pockets of the country as well.

Awareness, know-how of the human capital

India has experienced vast digital divide between rural and urban in adoption of digital services. New emerging technologies such as mobile telephony, broadband, DTH & mobile internet are adopted first in urban India in top 30 cities while in rural India, adoption and usage is relatively later. This is due to various factors such as lower literacy rate, high cost and lack of technical knowhow in rural India.

We believe that in rural India the adoption of e-governance services will be delayed due to lower connectivity, low levels of digital literacy & income and resistance to embrace new technology. This gap can be plugged through awareness programs by the government; affordable smart phones coupled with Digital India Initiatives like NOFN and connected panchayats, etc.

Bottomline

If we take an objective view of the 3 pillars namely availability of online services, telecom infrastructure and human capital on which success of the e-governance growth depends, India could be on the cusp of an inflection point for growth in e-governance transactions.

- The timeliness and effectiveness of NOFN will be critical to the success of e-governance in India.
- The private telecom operators too have an important role to play, as they roll out high speed 3G and 4G networks and price its data usage.
- The 'Digital India' initiative - \$18 billion project, led by the Prime Minister himself, is expected to boost the supply of online services, and play a large positive role in the development of e-governance in India.
- The rural urban digital gap can be plugged through awareness and education programs by the government in collaboration with private players to improve digital literacy and facilitate faster adoption of new technologies.

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