



#IndiaTrends2018: Trends shaping Digital India

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Foreword by KPMG in India

The internet has gripped everyone's imagination and it still continues to evolve its avatar in India that irrespective of the age demographic, there is a constant desire to keep pace with the latest internet trends. With digital literacy on the rise, the last few years have witnessed significant mobile and internet penetration. Further, there has been a rise in adoption of new age technologies, plethora of digital avenues opening up and increasing internet enabled channels – thus 'heterogeneity' emerging as a key characteristic in the Indian internet landscape.

India's multi-lingual characteristics have brought in a unique diversity to the 'Indian Internet Consumer' who may or may not necessarily speak the dominant languages. This means that organisations today will need to focus on content that is both relevant and valuable to various language speakers for enhanced consumer outreach and attention. Direct selling to consumers can help organisations gain complete control over their brand presentation and reduce distribution costs. This model

also allows companies to collate customer data and hence facilitates a personalised shopping experience to the customers. Thus, social commerce and assisted e-commerce is also gaining ground.

Increasing number of e-commerce platforms clearly indicate that digital payments are on the rise. While there are yet certain challenges such as awareness and security with respect to digital payments in India, with time; these are only expected to be addressed gradually, eventually providing a boost to the economy.

There is no doubt that technology has played a huge role in the 'business-to-consumer' (B2C) and the 'business-to-business' (B2B) transformation. Some organisations have managed to leverage and combine the power of technology and the product/service, thus giving a new uplift to the traditional consumers need. We therefore are witnessing new sub-segments such as health-tech, agri-tech and ed-tech emerging from the business landscape. Diving into the near future, apart from

technology platforms available, the strength of data to deliver customers will be a game-changer. Adoption of robotics and artificial intelligence could gain clout, especially in the retail value chain. In order to augment the impact of AI and robotics, collaborations and strategic partnerships might emerge as the next big change in the business landscape.

This report aims to highlight significant internet-driven developments that could impact companies operating in the digital space in the coming year. We hope you find this report a useful and insightful read.



Sreedhar Prasad

Partner and Head

Consumer Markets & Internet Business, Advisory - KPMG in India

Foreword by NASSCOM

Data-driven insights, digital tech and ubiquitous mobile computing is changing the Indian landscape like no other. This report provides rich insights on the top 10 trends that are yet unfolding in varying degrees.

According to a Forbes article, companies globally lose upto USD300 billion annually because of poor customer experience.¹ Competitive advantage is fast becoming competing on experience. In India, 95 per cent of households have a single television, and smartphone screen has become a key source for streaming-on-demand.² It is no wonder then that by end of 2018, smartphone penetration would have risen to 530 million which is just a shade below the half-way mark. Just let it sink in – soon, half of India will own smartphones and their expectation to be served through this medium would have gone up disproportionately. The 'mobile-first' consumption pattern that

is seen in Media, Gaming and Entertainment frequently has now moved to other realms as well – Health-tech, Agri-tech, Ed-tech to name just a few.

At the heart of this disruption is of course data. Volume and velocity always existed. Variety (both structured and unstructured) is the new normal which has made it game-changing. Organisations too have been incredible in their ability to capture data and extract value out of it with the aid of emerging technologies. According to KPMG in India's CEO Outlook 2017, in the next three years, 80 per cent of Indian CEOs are gearing up to invest in cognitive technologies including Artificial Intelligence and Machine Learning.

The idea of robots per se is not new. For several decades, we have seen these applications particularly in manufacturing and warehouse operations. But what is new is that robotics is morphing into digital labour and it has been made possible due to AI,

exponential processing power, natural-language programming and massive spike in data generation.

As you turn the pages, you will find some deep insights ably backed by data (both global and Indian) trends, et al., and I believe it would be greatly beneficial in your digital journey.



K S Vishwanathan
Vice President
NASSCOM

1. Competing On Experience: How Retailers Can Stem The Amazon Effect, Forbes, 18 April 2018

2. TV & OTT In 2018: From Polarisation To Unification, MXM India, 29 December 2017

Foreword by YourStory

At YourStory, every story we publish, be it of an entrepreneur or an evolving business landscape, also showcases a trend at some level. So, we were thrilled to be a part of the initiative that tries to understand the trends that are shaping India, as seen from the eyes of its new-age entrepreneurs. As the buzz around the trillion-dollar digital economy builds up to a roar, India finds itself on the cusp of tremendous transformation. On one hand, we are steeped in tradition, on the other hand we are surrounded by disruption and change. Listen carefully and you will hear the rumble of the rising economic revolution. And why not? India is brimming with ideas, entrepreneurship, and the thirst for change and reform.

At the centre of it all is the digitally savvy, non-English-speaking consumer, who will represent nearly three-quarters of the country's internet user base by 2021. The question therefore, is whether or not the rest of the digital

ecosystem is ready to talk in her/his own language. Beyond entertainment, in e-commerce, in financial services, in healthcare – businesses that plan to expand on the basis of a digital explosion need to connect with her/him today. She/he and her/his family and friends are already generating terabytes of data that companies want to analyse and extract value from. They are already engaging with brands via social media; commerce will follow. They are also generating millions of data points on a daily basis. Which begs the question, who's looking at protecting this data? And therefore, is cybersecurity the next big opportunity? The report will tell you more.

These insights would not have been possible without the contributions of everyone who worked to make this report possible: right from those we surveyed to the dedicated efforts of everyone at Kalaari Capital, NASSCOM and KPMG in India.

Things are changing at a blistering pace. Next year, we could be discussing a whole new set of technologies and the changes are happening as we speak. Startups are making this happen. More power to them.



Shradha Sharma
Founder and CEO,
YourStory Media Pvt Ltd

Foreword by Kalaari

India over the last decade has risen in significance and is the third largest tech start-up ecosystem globally with close to a dozen unicorns being created. These start-ups have not only changed the lives of Indians but have played a pivotal role in laying the right foundations for India's digital economy to flourish. As we grow to become the world's third largest economy by 2025, there will be multiple opportunities and sectors where India can leapfrog in innovation. We will undoubtedly see technology companies accelerate this change with the next generation of entrepreneurs solving for uniquely Indian problems and scaling them globally. Today, India's rapidly evolving digital landscape is spawning start-ups across sectors that are attracting significant capital, resulting in innovative trends that we have highlighted in this report.

At Kalaari, we believe there is a need for stakeholders in the ecosystem to develop a deeper understanding of these transformations and collaborate to take a holistic view of India's start-up

ecosystem. After a few rounds of discussions with YourStory, NASSCOM and KPMG in India we conceptualised #Indiatrends2018 : Trends shaping digital India - an endeavor to explore trends that are influencing India's digital economy and summarise opportunities that lie ahead for entrepreneurs and corporations to be future ready. As part of this initiative, we conducted a survey across over 1200 entrepreneurs to understand what they believe will fundamentally drive innovation. Taking this a step further, we reached out to several key stakeholders in the ecosystem to get opinions on how their industries will play out going forward. The end outcome is a report that provides an in-depth analysis on how digitization is changing India's commerce landscape and its role in creating efficiencies across large sectors like financial services, healthcare, education and agriculture. Furthermore, it uncovers nuances emerging from India's first time smartphone users and the impact digital will have as consumer growth becomes more inclusive in the coming years.

The continued success of the Indian ecosystem depends on many efforts coming together. I am pleased that four organisations from different domain and expertise with unique perspectives collaborated on an initiative like #IndiaTrends and would like to thank all the respondents of our survey, industry leaders and everyone from YourStory, NASSCOM and KPMG in India for their support in making this report comprehensive. We hope you find it to be valuable!



Vani Kola
Managing Director
Kalaari Capital



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Introduction

From its inception in 1990s to its adoption in our day-to-day activities, the internet has drastically changed the way we communicate with one another. It has, in a matter of very few years, graduated from just being a simple platform to a necessity for every successful business around the world. New innovations have given us ways to harness the power of internet and leverage it to transform businesses around the world.

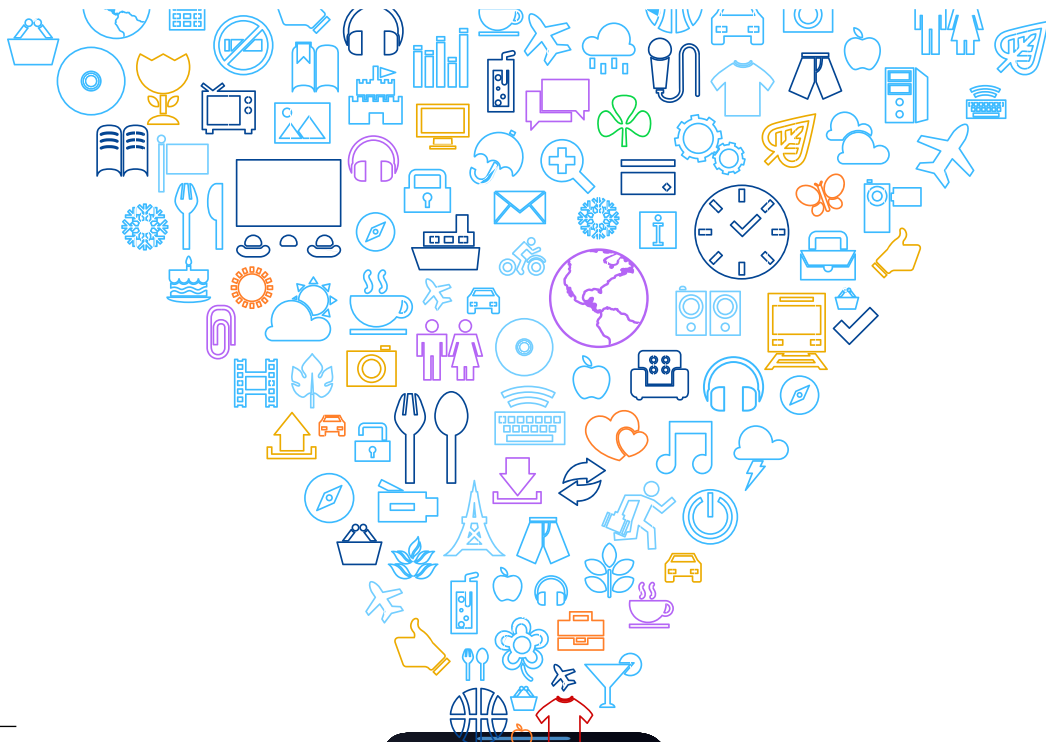
India, with over 450 million internet users, is the second-largest online market behind China.¹ Similar to the global trend, the country is also expected to witness a digital transformation in the next

few years. About 59 per cent of the country's population is expected to have internet access and about 2 billion devices are expected to be connected on the network by 2021.² This trend, largely driven by the government's push towards digital initiatives and availability and affordability of smartphones, is expected to continue in both rural and urban areas in the coming years.

The internet has transformed the business landscape of organisations by providing them with opportunities across four dimensions — affordability, brand, data and accessibility. Organisations, with the help of certain

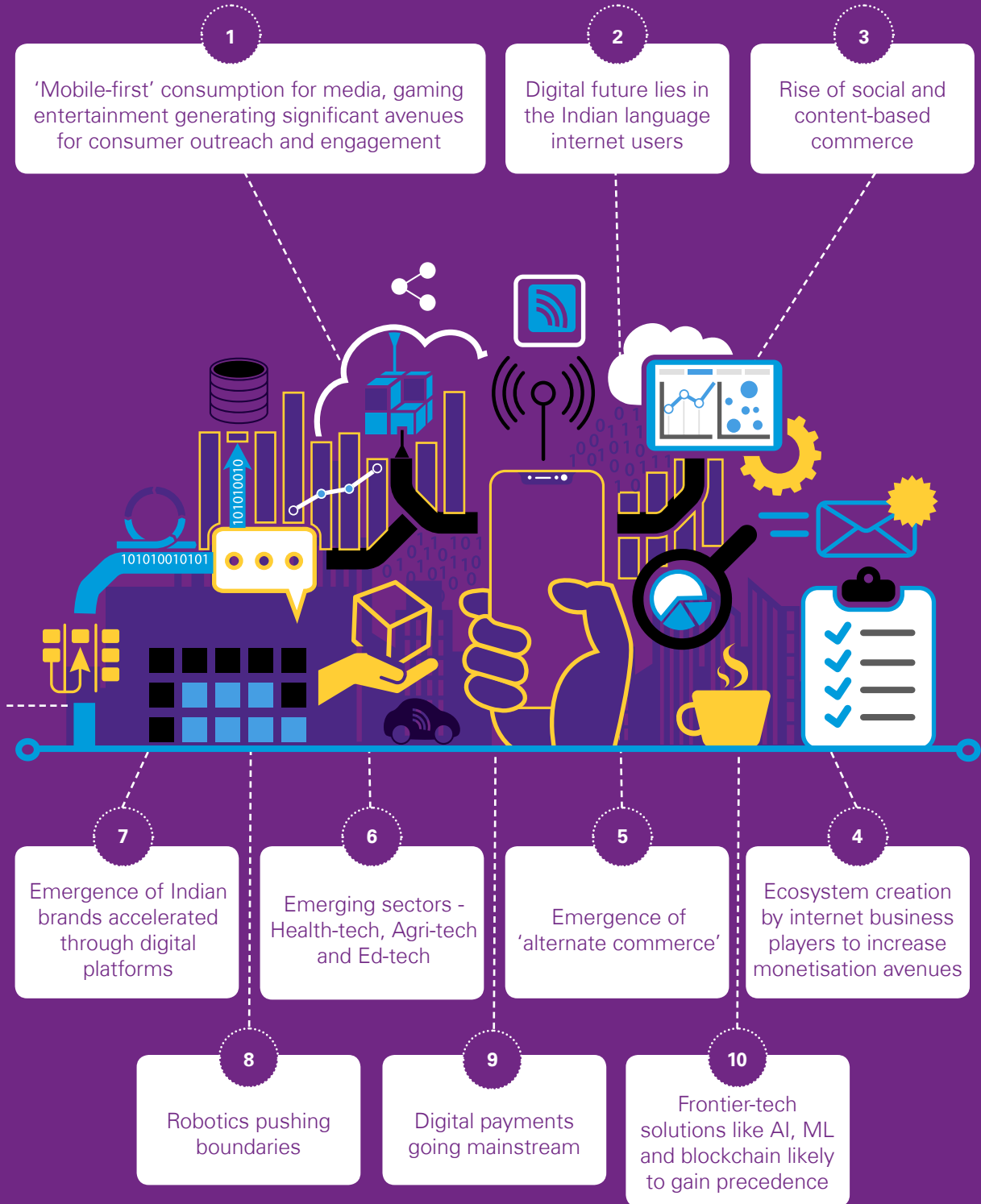
internet-driven technologies, are able to make products affordable for consumers, create their brands in the global arena, analyse large datasets to serve consumers better and make their offerings available to a large consumer base. From healthcare to retail, almost every sector is adopting new emerging technologies to digitise and transform their businesses.

Technology, backed by the internet, is on a path to transform not just our businesses, but also our lives. Through this report, we have delved into the key internet trends that are likely to shape businesses in India in 2018.



1. India tops list of countries where people 'can't live without the internet', Money Control, 17 January 2018
2. Internet users in India to stand at 829 million by 2021: CISCO, The Indian Express, 9 June 2017

#IndiaTrends2018: Trends shaping Digital India



'Mobile-first' consumption for media, gaming and entertainment generating significant avenues for consumer outreach and engagement

Increasing number of consumers accessing media beyond the living room televisions has resulted in the advent of an era of on-demand content. Personalised 5+ inch screens in the form of smartphones and tablets have emerged as the preferred entertainment enabler. Recognising the potential, a number of Over the top (OTT) media players have entered the market and have placed content like live sports events, reality programmes, kids shows, movies, TV series, original content and user uploaded videos on the fingertips of a user.

Global scenario¹

OTT players globally are exhibiting strong growth, with the OTT revenues expected to reach USD120 billion by 2022 as compared to ~USD64 billion in 2017, growing at a CAGR of over 13 per cent.

India likely to emerge as a key market for the OTT players

100
million

is the likely figure of unique monthly users in the OTT market in India by 2020, propelled by players' presence across the OTT video value chain²

Some of the key drivers propelling the OTT growth in India other than the internet penetration and smartphone growth include:

Single-TV homes: 95 per cent of Indian households own only one TV at home, making the smartphone screen, a key source for streaming on-demand.³

Low Digital Video Recorder (DVR) penetration: Role of providing catch-up TV content is being capitalised by online video platforms.

Indians on the move: Large target group is accessing the services while on the go, not from home or office.

Business models of OTT platforms are presently at an evolutionary phase

Players are still trying to achieve the balance between Advertisement Video on Demand (AVOD) and Subscription Video on Demand (SVOD) based revenue streams. The Indian OTT market still relies heavily on advertisement revenue. The SVOD model is yet to gain traction due to reluctance of consumers to pay for the content. With the entry of global players, the SVOD model is catching up though. Some leading players are also adopting a hybrid Freemium model, where some content is free and some is paid.

Figure 1: Business models in practice in India

Content Creators

Content Aggregators

Digital platforms

- SVOD
- AVOD
- Freemium
- Sponsored Content

Impact on other entertainment sub-sectors^{4,5}

Digital music now accounts for more than 70 per cent of the total music industry revenues in India. The industry has been witnessing a constant shift from traditional music consumption platforms to digital music, on account of affordable internet rates, improving digital infrastructure and enhanced content availability.



Online video consumption grew almost 5X in India in 2017, outpacing that of social media & data as a whole. More than 90 per cent of the watch time has been on mobile. An average user spends 2.5X more time watching content on mobile than the web. Small cities with population of 1-10L clocked highest growth rate in watchtime.

Ajit Mohan
CEO
Hotstar

1. Global Pay TV and OTT trends, digital TV research, accessed on 9 February 2018
2. Faster Internet speed spurring OTT growth in India, The Economic Times, 26 September 2017
3. Carving a Regional Strategy: Indian OTT majors and digital content creators firmly believe in regional power, Business Today, 8 November 2017
4. Media for the Masses: The Promise Unfolds, KPMG in India, March 2017
5. Online gaming in India: Reaching a new pinnacle, KPMG in India, May 2017

As most platforms are providing similar genres of music, differentiation has emerged as a key challenge for the industry. Players have started leveraging digital technologies such as analytics, machine learning and artificial intelligence to customise services.



Indian consumers are adopting digital consumption in a large way. What we've seen is that when consumers see great value in their experience, they adopt digital behaviors fairly quickly. For instance, in just over a year since the launch of Amazon Prime Video, we have already seen Prime members stream video content from across hundreds of towns and cities. As a mobile first country, more than 70 per cent of Prime video content consumption happens over smartphones in India.

Akshay Sahi

Director - Prime and Delivery Experience
Amazon India



The online Indian gaming sector has also benefitted significantly and is set to grow to USD1 billion in 2021 from USD290 million in 2016⁵. Nearly 75 per cent of gamers use affordable phones that are priced below USD300. This shows the acceptance of affordable smartphones as the primary medium for playing online games in India.

Mobile-first for faster adoption

With the internet penetration and smartphone story in India, the adoption for media, gaming and entertainment services has increased significantly in the recent past with a large number of new users being added every month. One of the key reasons for this is the ease of payments through the mobile service provider and a relatively higher trust in that medium.

A huge benefit with the mobile first model is that there are far more early adopters of these services since young Indians too have access to music, videos or games to suit their preferences, rather than depending on the family's preferences.

Mobile-first access for customer outreach

The adoption of media and gaming through mobile devices is opening up a totally new channel for customer acquisition, engagement and outreach.

The 'One Digital identity for a customer' view extends to the usage of media, entertainment and gaming services and the customer profile along with associated activities extends to these services as well. This leads to a new set of data points of the customer being generated, which can be curated for a better customer experience as well as outreach.

Retail and consumer packaged goods (CPG) brands as well

as mobile phone companies are evaluating this as a new channel for customer outreach.

Since these are services where there is a higher degree of involvement by the customers, brands are trying advertisements as well as engagement models through these platforms. One of the key reasons for the same being that the primary device used is the mobile, and there is continual engagement with the customer, far more than while using a computer.

Target customer profiling

Media and gaming platforms offer a far sharper profiling of customers based on the choice of genre and the propensity to pay. These are key inputs for tech product startups as well as mobile/laptop companies in targeting the right customer.

Challenges

Despite strong growth, several challenges make India a nascent market for OTTs.

Low data speed and unstable connection, coupled with low broadband penetration, are still prevalent in India. However, the mass adoption of 4G phones, growing affordability of data plans, and offline access to the otherwise bandwidth consuming video content is expected to propel growth towards digital media. Awareness and exposure to international content, has raised the demand for high quality content. Players in India also face monetisation challenges due to prevailing content piracy and still nascent mobile payments infrastructure. Moreover, the user group is restricted to younger age groups, who are usually resistant to pay for content. Further, digital video business is faced with high input costs, coupled with low returns due to still evolving business models.

5. Online gaming in India: Reaching a new pinnacle, KPMG in India, May 2017

Way forward⁶

Going forward, growth in SVOD revenues, regional content and vertical integration is expected.

1

SVOD revenues likely to see strong growth:

With improving data and digital payments ecosystem, coupled with demand for differentiated international content, SVOD model is expected to gain pace in India

2

Regional content to propel growth:

With 75 per cent Indians being able to speak at least one regional language, players have started including regional content in their portfolio for the next phase of growth

3

Vertical integration to be a key strategy:

Players are expected to focus on content and distribution capability, and build expertise across the entire value chain



Gaming is going to explode across all consumer segments from casual to hardcore gamers. Competitive Gaming happening in premise or over the network, if coupled with real time is going to really unlock the potential of the In-App Purchases in India across the consumer segments and gaming formats. The triangulation of real money gamification, familiar game mechanics and multiplayer features within the arena of game of skill will lead to real value creation. Domestic startups need to fix their own jigsaw puzzle to find the sweet spot.

Manish Agarwal
CEO

Nazara Technologies Limited



6. From VOOT to Viu, Sun NXT to Hoichoi, OTT platforms are offering a bounty of regional content, First Post, 1 November 2017

Conversion rate for USD,
USD1 = INR63.8



Digital's future lies in the Indian language internet users

A gamut of factors are driving the adoption of Indian languages on digital platforms

English has continued to be the most widely used language on digital platforms in India. However, with the growing base of Indian language users, particularly in the tier-II, tier-III cities and rural areas as well as the rising smartphone and internet penetration, it has become essential for organisations to focus on building an end-to-end digital ecosystem that is both relevant and valuable to Indian language speakers.

Currently, there are an estimated 521 million Hindi language speakers and about 500 million Indian language speakers in India¹. In contrast, number of English speakers stand at just 125 million². Further, the internet adoption rate of Indian language users is higher than English-speaking users, which mandates organisations to build full-stack solutions for supporting regional languages on their platforms.

Indian language internet user base increased at a CAGR of 41 per cent between 2011 and 2016 to reach 234 million users at the end of 2016. This remarkable growth has led to Indian language internet users surpassing the English internet users, which were 175 million in 2016.¹

Conducive government policies have been a beacon of change

Major drivers that are influencing the growth in Indian language consumption on digital include:



Digital infrastructure

- Internet penetration in India is expected to grow to 52 per cent by 2021³
- Increasing language support and content across the Internet ecosystem



Mobility

- Number of internet-enabled smartphone users crossed 300 million in 2016 and would reach 650–700 million by 2020⁴
- Average outgo/1GB data reduced from ~INR200 in June 2016 to ~INR21 in September 2017⁵



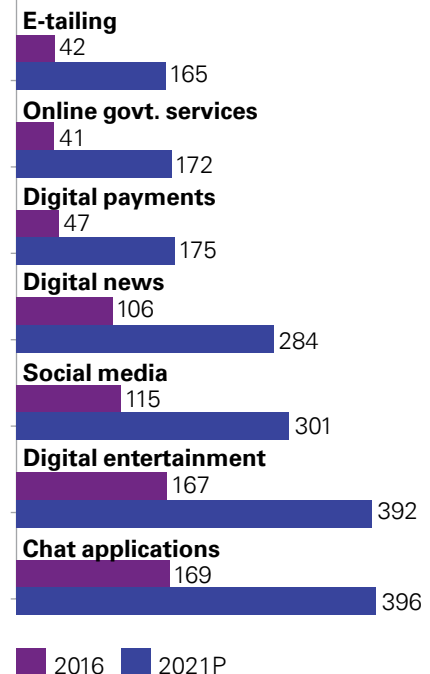
Government policies

- Government's digital literacy drive to reach 60 million rural households with an investment of USD351 million by March 2019⁷

A number of categories have witnessed growth

Over the last five years, news and entertainment have emerged as top categories amongst Indian language internet users. Furthermore, chat applications and social media platforms have seen increased adoption by Indian language users on account of local language enabled keyboards and smartphones. In recent years, e-tailing, digital payments and online government services have also been initiated to enable language content.

Figure 3: Category-wise Indian language internet users (million)⁷



1,3,7

Indian Languages – Defining India's Internet, KPMG in India and Google report, April 2017

2,4,5,6

India's internet users have more faith in content that's not in English, Quartz, 2 May 2017

While people in metro cities may use local language content primarily for entertainment purposes, increasing use of digital medium would also impact other aspects of life in smaller sects of the country. The instances of use of internet in rural areas could invariably be larger, including banking, healthcare, business transaction, information and research, widening the reach to Indian diaspora. One such instance is where a small farmer from Maharashtra's Konkan region was able to expand the reach of mangoes to other regions via social media platforms — and that too using his own native language.⁸

Language wise Indian language internet users - 2021


The Indian languages currently have different internet adoption levels. By 2021, the number of Hindi internet users is expected to be more than English users at 201 million. Bengali, Marathi, Telugu and Tamil internet users are expected to form 30 per cent of the total Indian language internet user base.⁹

The propensity to adopt internet for each of the languages will vary based on growth in language speakers, user requirements and content availability. Tamil and Kannada speakers have the highest propensity to adopt internet in future with the Indian language enablement of the ecosystem at 74 per cent each respectively. Telugu speakers follow next with propensity to use the internet at 60 per cent.¹⁰

8. Alphonso from Konkan reaches your doorstep as farmers take to social media for sale, DNA India, 18 April 2016

9,10

Indian Languages – Defining India's Internet, KPMG in India and Google report, April 2017



The future of the Indian internet is in Indian languages. However, the quality of user experience is significantly below par compared to that for English users. Lack of high quality content, discovery and ease of access to content, broken implementation of local language experience continue to plague these users, forming significant barriers to wider adoption of digital services. By treating the non-English users at par with English users and hence designing a rich digital experience for them, companies can have much greater reach and higher customer engagement.

Arvind Pani
Co-Founder & CEO
Reverie Language Technologies Pvt. Ltd.

Changes galore across the digital landscape

With the rising adoption of internet amongst Indian language users, a number of changes are being witnessed across the digital ecosystem, including content creation, device support, and enabling software and technologies.

Content


Players across several digital platforms have adopted a regional content strategy to reach out to the masses. For instance, a leading digital content provider has developed a content library with about 50,000 hours of content in eight regional languages and has also launched a web series in Tamil language.

Devices

Along with content, there is also an effort to enable devices with Indian language support. The Department of Telecom (DoT) has already made it mandatory to have local language support in smartphones from July 2017. Recently, we have seen the introduction of the Indic keyboard with local language fonts and Unicode standard to provide the base for content creation and discovery. Furthermore, many start-ups are also focusing on regional language assistance.

Software and technologies

With the rising adoption of Indian language content on digital, consumer facing digital players are required to innovate their offerings to conform to the growing native consumer base. This trend requires brands to embrace a multiple language policy to provide for the diverse needs of the digital community, which is compelling businesses to opt for multi-language data analytics tools to gather critical consumer insights, and direct and indirect feedback from content distributors and consumers.



Vernacular is the future of Digital India. We are witnessing a massive influx of non-English first-time internet users in India. As this userbase grows and goes deeper into the hinterlands of India, localisation is only going to become more and more important. Given the diversity of our country with 20 languages having atleast a million speakers, the best way to build scalable services for this new audience is through focus on User Experience (UX) and AI.

Ankush Sachdeva
Co-founder & CEO
ShareChat

The trend of multilingualism on digital media has picked up globally

Players in the digital domain have adopted regional language focused approach, distributing their content and promoting their businesses in different countries in several foreign languages. For instance, in 2006, only about 65 per cent of major global brands had a Chinese language version of their websites. However, in 2016, this share rose to a significant 97 per cent.¹¹

Challenges

India is a nation of having more than 1,600 dialects and 30 languages: Supporting different languages is an added cost for content developers, device manufacturers and software vendors. So far, players have been able to integrate, at most, seven to eight languages only.¹²

Difficulty in accessing content: Regional language users face challenges in accessing keyboards in English language and do not have much choice in accessing local language content online.

Low data speeds: Out of 122 countries, India was ranked 109 for mobile internet speed and 76 out of 133 countries for broadband speed in November 2017.¹³

Way forward

The Indian language internet user base is set to continue to grow markedly, registering a CAGR of 18 per cent to reach 536 million by 2021. This growth is likely to be faster compared to English internet user base, which is growing at 3 per cent to 199 million. Indian language internet users are expected to account for nearly 75 per cent of India's internet user base by 2021.¹⁴

-  Rise in user-generated original content online
-  Faster evolution of Indian language internet users to become active users
-  Internet platforms to become content aggregators and witness increased time share for Indian language internet users
-  Increase in hyper local consumption driven by content in Indian languages
-  Informed response to sales initiatives by B2C players
-  Indian language enablement of platforms, supplemented by mobile compatibility
-  Rise of digital advertisements in local languages
-  Indian language enablement of digital payment interfaces
-  Advanced technology to bring more Indian language users online
-  Monetisation of Indian language internet user behavior analytics



With a growing online language user base, digital players and brands would focus on capturing tier-II, tier-III and other untapped markets. There would be significant investments in creating a digital channel by the likes of e-commerce players, news sites, payments and small finance banks, m-wallets, insurance players, etc., enabling direct access to a large portion of consumer base.



11. 11Languages And Digital Media- Why are Facebook, Twitter and Instagram Using Translate?, Mayflower Languages, 6 April 2017
 12. 12 Indian Languages – Defining India’s Internet, KPMG in India and Google report, April 2017
 13. 13India ranked 109 out of 122 countries in mobile internet speed; below Pakistan, Nepal, Business Today, 12 December 2017
 14. Indian Languages – Defining India’s Internet, KPMG in India and Google report, April 2017

Rise of social and content based commerce: Brands are likely to create engagement with consumers by leveraging on content and community

Social commerce – an evolving trend

Social commerce has created a space for itself in the global arena by leveraging technology to build a virtual platform for conducting community-based commerce

Social commerce is an extension of e-commerce involving online media that supports social interactions and user contributions. Globally, social commerce represents a well-established trend and it is estimated that in 2016, sales worth USD50 billion were generated or triggered using social networks, an increase of USD20 billion over 2015. Social media was amongst the key factors driving global growth in social commerce, as it acted as a facilitator for conducting customer-to-customer (C2C) commerce.^{1,2} It has emerged as a platform whereby marketers and brands can bring together individuals across diverse culture and languages and multiple geographies, based on common interests to form a community. Such a community subsequently forms the foundation of commercial activity amongst members. The driving force is the learning and feedback from first hand experiences and the data generated through multiple reviews, consumer behavior, preferences and recommendations. These communities also act as lead generators for ecommerce platforms.

In India, the increasing significance of social commerce is anticipated to encourage enterprises, regardless of scale to establish a robust social media presence in an attempt to build communities. This in-turn, could help firms harness the millennial population, which has shown increased adoption of social commerce as a channel or reference for online shopping.

Evolution of social commerce in India

Social commerce is gaining traction in India, as the nation's cultural diversity coupled with an increasingly tech-savvy population is creating opportunities for marketers to establish community-based virtual platforms.

In the recent times, social commerce has slowly gained prominence in India with a focus on three pillars of content, community and commerce. The cultural diversity of India, further makes it an ideal breeding ground for social commerce to take root, as it provides the foundation to bring together fragmented individuals and communities into a consolidated marketplace.

Further, social media has also been augmented due to increasing penetration of broadband services, availability of cheaper data connectivity and proliferation of mobile devices that serve as a platform to access social media platforms.

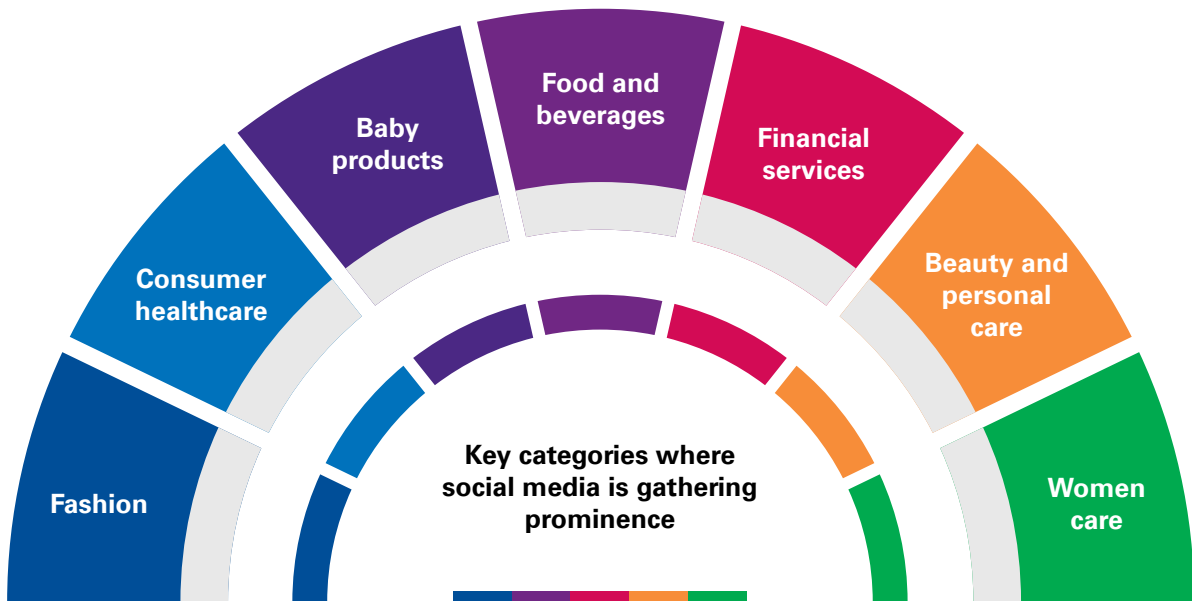


50 per cent of India is below 25 years of age – a largely young audience who are digitally inclined. Always on the go and hooked on to the internet through their smartphones, a characteristic common across urban and rural India. While engaging with such audiences, brands should understand that the process of driving engagement around content and community will be largely be aided by technology that will play a key role in getting consumers to feel that content and communities are personalised.

Umang Bedi
President
DailyHunt



1. 'The future of e-commerce is social; here's why', Financial Express, 7 March 2017
2. 'Social commerce is big business in Asia and it's set to change the way we buy and sell', Business Insider, 7 November 2017



370
million
Active social media users in India by 2022³

200
minutes
Average time spent per day by mobile internet users on online activities⁴

In addition, the emergence of a significant number of domestic start-ups, which have managed to successfully raise funding via the venture capitalist route, reflect the growing prominence of social commerce firms in India's evolving retail landscape.

3. 'Number of social network users in India from 2015 to 2022', Statista, accessed on 4 May 2018
 4. 'Indians spend 70per cent of mobile internet time on social media, entertainment', The Times of India, 19 December 2017
 5. Google Aims To Get India's 51 Million Small Businesses Online With Its New Digital Unlocked Program', Huffington Post, 4 January 2017

Several market places have been developed in India via the social media route. These allow small businesses to communicate with clients and consumers. They act as a platform to buyers and sellers for interacting and selling used products.

Business implications and market opportunities

The increasing online presence of Indian businesses is expected to directly create opportunities in the domain of social commerce.

The prospects of social commerce remaining a strong trend in the Indian retail segment are further enhanced by the growing online presence of Indian businesses. India has an estimated 51 million registered small businesses, of which about 32 per cent have online presence.⁵

Referrals, trust factor on personal experiences and ability to connect themselves with others in the community remain as the key reasons for the growth of this mode of commerce. Some examples where social commerce is influencing purchase decisions include:

- Financial investments for women
- Experiential restaurants in a city
- Health support products for senior citizens
- New fashion brands/curated fashion
- Insurance policies
- Maternity, baby care centres/ baby care products
- Automotive products.

Typically, social and content based commerce have a high impact on high engagement purchase decisions. This channel enables the customers to arrive at a decision faster as the community may provide multiple answers/experiences which could be related to the customer needs.

Enterprises are increasingly likely to leverage technology in the form of social media and data analytics tools in a bid to find innovative means to establish content-based communities, which could subsequently be used for identification of a target market for enterprises.

Challenges

Key obstacles for social commerce in India emanate from building and retaining consumer loyalty on a virtual platform as well as consistently monetising user engagement.

As social commerce gains increasing prevalence in India's retail landscape, it presents new challenges for businesses and brands going forward.

Consumer retention: The key issue for enterprises remains consumer retention, i.e. inculcating a sense of brand loyalty amongst members of a community-based virtual platform and preventing them from switching over to other similar online communities

Conversion rate: Achieving a higher conversion rate in terms of sales generated by converting online 'clicks' or potential interest of consumers into an actual revenue generating source is a major challenge for firms, hoping to tap social commerce as a mean to expand the revenue base

Increasing inclusion: A large portion of India's population remains without access to social media platforms. Bringing the social buying experience to those who do not currently enjoy access to virtual platforms is an obstacle faced by enterprises, which prevents them from accessing new markets.



Brands that connect with consumers going forward will follow two key principles: a message that has values at the center of their value proposition and a voice that delivers that message that is authentic. The former is connected to a young buying population that cares about how their purchases reflect who they are and the latter is an acknowledgement that in a social commerce environment, in which consumers can talk back, brands have to be sufficiently humble in recognition of that fact.

Shailesh Rao
Senior Advisor,
TPG



Way forward

Social commerce is expected to remain a strong trend in India. With the growing importance of e-commerce, presenting consumers with a wide array of options to choose from, social commerce is expected to be a key defining factor in the consumer decision making process by involving multiple digital influencers, and thereby creating a consolidated market for businesses to improve the shopping experience for consumers.



Ecosystem creation by internet business players to increase monetisation avenues

Ecosystems — a new bedrock for e-businesses

Globally, the internet is assisting e-players for mounting various strategic avenues (online/offline) for the e-business ecosystem. Internet is playing the role of a facilitator between consumers and service providers on a common platform. E-players are addressing consumer needs and desires for better consumer experience to fast-track their own learning and innovation for operational efficiency and, most importantly, to become a powerful business platform.

Global players are strategically increasing the cross-border business, transforming social networking to market places, incorporating multi-lingual integration and using the modified rebirth of brick and mortar model to cover more ground to reach consumers. International Data Corporation has predicted that about 50 per cent of big enterprises and more than 80 per cent of enterprises with advanced digital transformation strategies are inclined towards creating platforms to build business ecosystem by 2018 end.¹

Business ecosystems growing into a digital future in India

In India, e-businesses are creating altogether a new virtual economy with significant growth potential catering to buyers as well as sellers.²

- This ecosystem is driven by consumers demanding more intuitive, real-time, and integrated solutions and services
- Growing market complexity along with evolving consumer choices for products and experience and emergence of new players are compelling players for both forward and backward integration to provide a complete package of service to consumers under one roof
- Provision of end-to-end services, flexible payment models, integrated infrastructure network etc. have saved time and allowed smooth operations, which led to increase in monetisation avenues across most e-business segments.



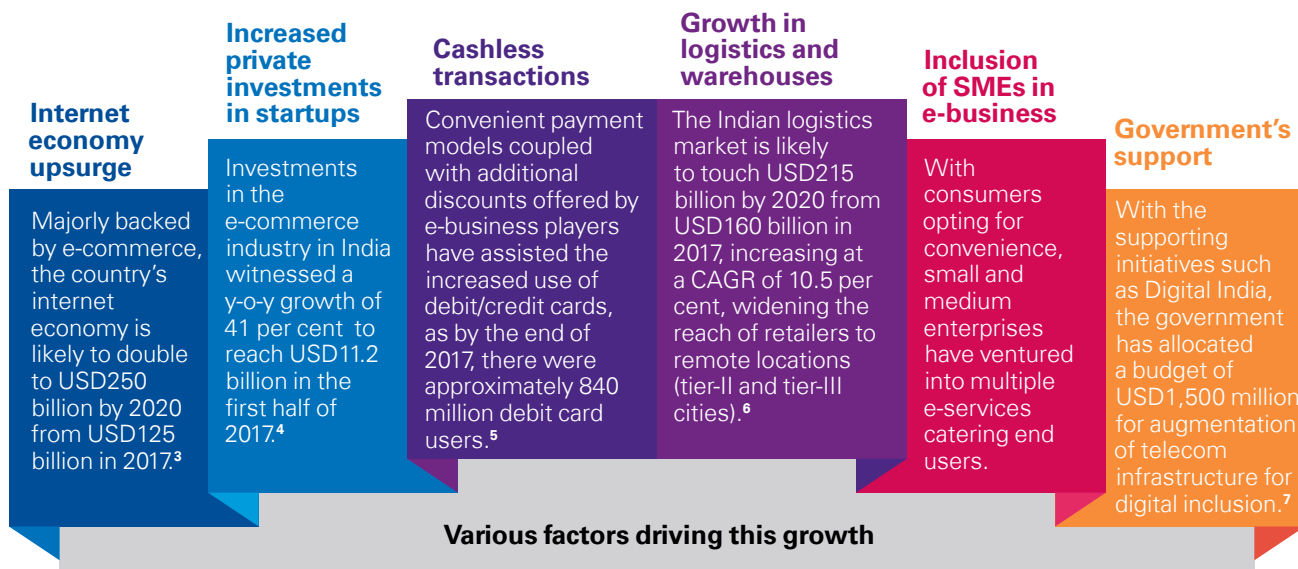
1. Digital business ecosystems and platforms: 5 new rules for innovators, CIO.com, accessed on 8 May 2018

2. E-Business: Issues and Challenges in Indian Perspective, Global Journal of Business Management and Information Technology, 8 March 2014

Growth drivers assisting the ecosystem

Growing internet penetration with increased use of smartphones is leading towards connected India, which has led e-businesses

to expand to provide a single platform for various services, resulting in the rise of online shoppers.



From sites to systems — strategies adopted

Flexibility and adaptability to changing situations, value chain optimisation of production and distribution, high productivity at low operating expenses have unlocked new avenues for e-players such as:

Expansion to different domains: E-commerce players are expanding their product range and venturing into different domains such as:

- **Logistics:** Due to declining margins in the supply chain and increased competition, e-business players are strengthening their delivery arms with an aim of being at the forefront of consumers' needs

- **E-services:** Major e-business players have additionally started offering other services such as ticket booking, listing businesses etc. to increase their market footprint leading to monetisation growth.

Supplementary and complimentary services:

Along with the core product/services, e-business players are providing supplementary/complimentary services such as quick services for nominal fee, introducing their own payment portals and e-wallet services.

Lead generation models:

Different ways to generate leads are incorporated by different e-business players including advertisements,

subscriptions, email marketing, direct mailing, digital real estate monetization, social media and search engines. E-commerce organisations are offering subscription-based services to provide additional benefits such as early access, free one-day delivery, discounted delivery and priority consumer services.

Payment services: Though a possible logical extension to building an ecosystem, this trend took shape in the past five years in India for the large E-commerce players. This gives an added control and customer stickiness for the internet business player.

3. Potential of E-Commerce in India, ondm.com, 18 January 2018

4. Private equity and venture capital investments jump 41 per cent to record \$11 billion in H1 2017, The Times of India, 03 August 2017

5. India has 29.1M credit cards, 840M debit cards in February 2017, Medianama, 21 April 2017

6. 6"India's logistics sector to reach USD215 billion by 2020: Survey, The Economic Times, 29 January 2018

7. Government allocates 10,000 crore to boost telecom infrastructure, The Telegraph, 01 February 2018

Challenges incurred

Catering efficiently to an individual's experiences in an integrated environment being

some challenge to the current Indian scenario.

1 Technical and security issues:
With the technology advancement and omni-channel retailing push, e-business organisations would require to manage technical challenges in the areas such as server, bandwidth, dynamic IP address, data privacy and security issues when there are multiple ecosystem elements to cater to.

2 Big data management:
Managing consumers' data silo to the best possible use is a challenge. Information leads generated through different models and sources have to be put in best use for reuse in the service domain.

3 High investments:
Creating an ecosystem requires upgrading back-end and front-end integration. E-organisations would have more data, and smart selling and multi-channel retail hub operations, which incurs significant investments.

E-business ecosystem is here to stay
The future lies in 'knowing the customer' and 'smart technologies', which could enable these businesses to work in robust harmony with each other and improve the lifetime value of a customer. Hence, a few key horizontal classifieds have already started investing in these technologies to track a customer through his/her mobile device.



Emergence of 'alternate commerce'

The e-commerce and consumer goods and services market is now expanding and turning to alternative ways to reach untapped audience across the country

India's e-commerce market is primarily driven by rising use of the internet and mobile phone penetration. This is expected to further expand at a CAGR of 30 per cent to reach USD200 billion by 2026.¹ Significant opportunities in the market are driving the country's brick and mortar players to change their strategy to offer services online, and vice-versa. Brands and businesses are moving towards an omni-channel approach to offer a complete and seamless consumer experience to an evolving consumer.



Traditional retail followed the model of customers coming to the brand. The retail reality of today is that we, as retailers, must go to customers. omni-channel is the vehicle by which consumer-centric brands are able to engage and reach out to their audience more intimately and discover the right customer answers.

Ashish Goel
CEO and Co-founder
Urban Ladder



1. India's e-commerce market to hit \$200 billion by 2026: Morgan Stanley report, LiveMint, 13 October 2017
2. Morgan Stanley explains why India's e-commerce market is a hot investment opportunity, Quartz India, 29 September 2017
3. Internet penetration in rural India abysmal: Report, The Economic Times, 29 September 2017

Despite its significant growth in the past few years, e-commerce only accounts for about 2 per cent of the total retail sector.² Currently, one of the biggest challenges retailers are facing is to connect with 67 per cent of the Indian population having no access to the internet.³

To address this issue, alternate commerce channels, such as assisted commerce, have been adopted increasingly by online retailers.

'Alternate commerce' — the concept

'Alternate commerce', a combination of omni-channel model and assisted commerce, is poised to become a key enabler to drive sales for the Indian retailers

How does it work?

In assisted commerce a consumer does not make a purchase on an online platform on his/her own. It is more like an integrated platform, alternative to traditional e-commerce, which brings together offline buyers, sellers and local merchants (such as kirana stores, Aadhaar centres, railway ticketing centres, medical stores and mobile shopping outlets).

The term-assisted commerce is not new to the global arena. In countries, such as Bangladesh and Indonesia, where retailers were unable to capture rural market due to several technical barriers, assisted commerce is playing a vital role, allowing them rural market access. By



leveraging newer channels, in addition to omni-channel models, retailers in such countries are able to tap the rural population by providing assisted services, thus enabling technology-deprived people access e-commerce.

Key enabler driving this trend in India

Untapped rural population that has limited or non-existent internet access:

With about 67 per cent of India's population residing in rural areas having limited or non-existent internet access, there is a growing need for retailers to come up with innovative solutions to cater to this market.⁴ Assisted commerce, by reaching to these remote rural areas, is becoming one such solution for the retailers.

Trust with the local merchant: One of the biggest concerns of retailers

is the lack of willingness of consumers to buy products without actually physically seeing the product themselves. Since a considerable consumer base is still comfortable with offline shopping. The consumer trusts the local merchant for the product recommendations and the platform used to buy the product; hence pre-paying for a product online which is a key barrier to adoption of e-commerce in these towns is not a deterrent to a buying decision.



How has the trend impacted the Indian retail sector?

Rise in start-ups offering assisted commerce services:

In the past few years, there has been an increase in the number of start-ups, which are partnering with retailers to help expand a brand's reach to remote areas in India. These startups have also been successful in attracting investors and raising funds to further expand their model in more towns and villages.

Established brands investing in assisted commerce through exclusive partnerships:

There have been some notable partnerships in the Indian retail industry that hints towards a promising future for 'alternate commerce' in the country. Brands are looking at leveraging the power of connected retailers through these platforms to take their products in the

rural areas in a cost effective way, and also use this medium for marketing their products to the masses.

Moving closer to the consumer behaviour: The use of assisted commerce is driving access to consumer behavior data and preferences using a combination of digital and brick and mortar stores and is expected to assist the brands in driving marketing decisions, try innovative value propositions and understanding the consumer better.

One of the biggest challenges for assisted commerce organisations is to get the right store for the product mix. Organisations with over 30,000 store network need to profile the stores well so that product clusters are available only at those stores with a catchment area matching the target audience of the brand.

Way forward

With the increase in number of start-ups and established retail brands foraying into this space, 'alternate commerce' is likely to have a promising future ahead. FMCG, fashion, mobile and electronics products would be the next wave of categories to choose assisted commerce as a channel to enhance their reach and gain further customer information.

The rural consumer who is going to be at the forefront of India's retail growth story in the future can be brought to shop online through these platforms while continuing to adopt internet.

It is an avenue for local merchants to be able to expand their product portfolio to their customer and hence an additional source of income.

4. 63 million people living in rural India do not have access to clean water, Hindustan Times, 21 March 2017

Health-tech: Leveraging technology to enhance healthcare

Emerging sectors



Beginning of a digital era in healthcare

Health-tech is improving the Indian healthcare landscape using three key mainstays of healthcare, i.e., quality, accessibility and affordability.

In recent years, several technological innovations have significantly transformed the Indian healthcare ecosystem. The country's rising population, scarce human resources, inadequate infrastructure (0.9 beds per 1,000 patients), coupled with a low doctor-to-patient ratio (0.62 doctors per 1,000 patients), lead to an increased demand for advanced integration into healthcare. Digital adoption and literacy could facilitate the growth of healthcare market from USD110 billion as reported for 2016 to USD371 billion by 2022.¹

Exponential growth has been witnessed in the number of Health-tech start-ups that reached ~320 in 2017 from 250 in 2016. The total funding for these startups also grew from USD70 million in 2016 H1 to USD160 million in 2017 H1, thus showcasing confidence within the investor community in this segment.²

Adoption of technology in Indian healthcare sector

Lower levels of IT investments and adoption rate, lack of infrastructure and tight data protection laws are the major challenges pertaining to technology implementation.

Technology adoption in India has its own share of challenges. Low IT budget in hospitals, lack of in-house IT expertise, slower adoption rate by doctors, unavailability of regulations, and cyber-attacks may act as impediments for organisations looking to invest in advanced technology products or services in India. In addition, the growing health insurance sector in India is likely to increase the demand for more efficient systems for storage and retrieval of information.³



As our economic situation improves and life expectancy increases, demand for healthcare services, particularly for chronic diseases management is exploding. Artificial Intelligence and Internet of Things are the two most high impact technologies assisted by 4G/5G data connectivity. Newer business models deploying these two technologies at scale have the potential to transform healthcare in India.

Dr. Ajay Bakshi, CEO
Parkway Pantai Hospitals India

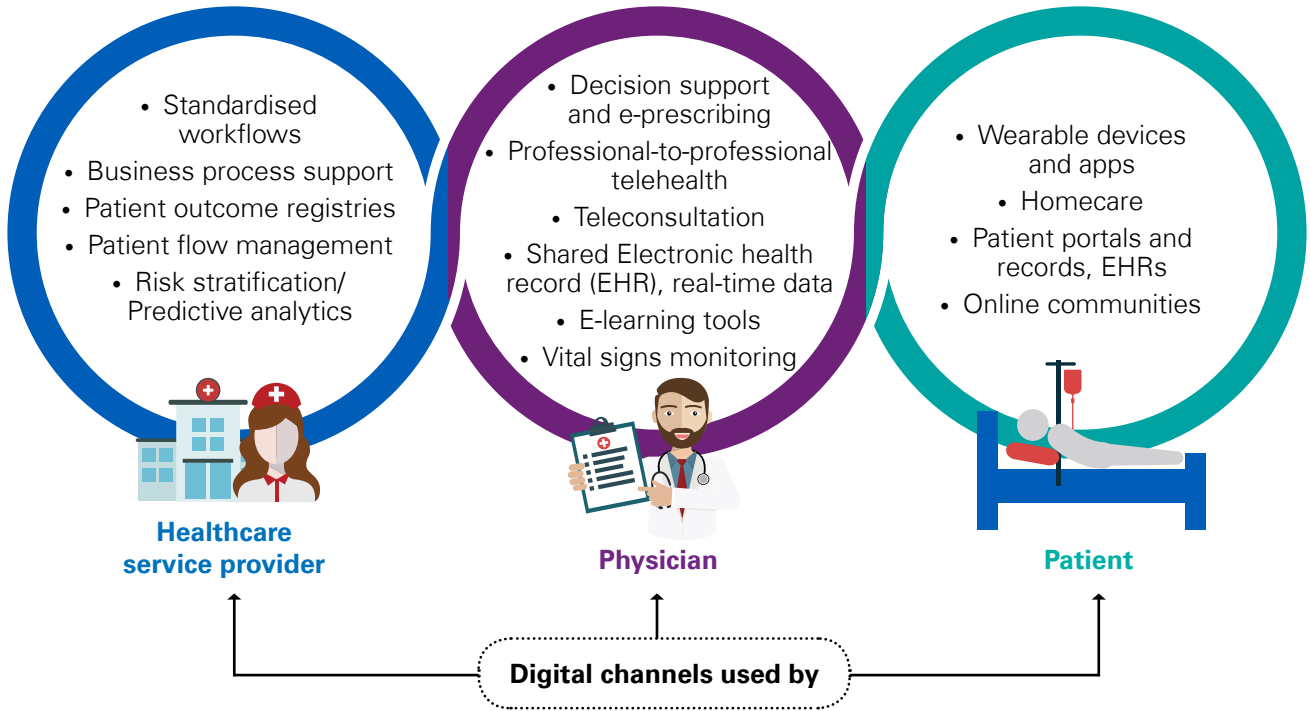
Local investors and digital start-ups in India have focussed more on e-commerce, appointment setting and telemedicine services, whereas global investors are getting more attracted towards other segments like mobile Health, wearables and big data.

Technologies empowering healthcare

Key digital healthcare trends in Indian healthcare ecosystem

- **Predictive Analytics**
Smart algorithms for patient data mining to identify risk factors and recommend preventive treatment
- **Online health services**
Due to booming e-commerce, rise in usage of services for purchasing Over-the Counter (OTC) drugs, booking diagnostic tests, and medical consultations
- **Remote monitoring**
Providing point-of-care diagnostics, teleconsulting and e-prescription capabilities to remote and rural population in India
- **IoT and Big Data**
Facilitates data collection with the help of distributed devices for diagnosis and treatment prediction
- **EHRs and Cloud Computing**
Reliable source of patient's complete information, storing of medical records using cloud, to facilitate early diagnosis
- **Wearable devices**
Devices such as smartwatches, activity trackers, fitbits, etc. for real-time monitoring of body vitals such as heart rate, blood pressure etc.

1. Indian healthcare market to hit \$372 billion by 2022, The Times of India, 3 December 2017
2. Fintech, healthcare startups most sought after, Fortune India, 7 November 2017
3. Emerging trends in Indian Healthcare – Technology to become a core function, Wipro: DandB Research, 2018



Opportunities for technology in healthcare⁴

Technologies such as Electronic Medical Records (EMR), Mobile Health (Mhealth), telemedicine, and big data systems are likely to have a promising future in the coming years.

Collection of health data: There has been an increased interest from several stakeholders to initiate collection of health data to assist healthcare providers with better clinical, economic and humanistic outcomes.⁵

Mhealth and Wearable devices: The demand for these wearable devices is likely to increase, driven by rising number of chronic disease patients, who require constant monitoring and check-ups.

Online appointments and e-Consultations:

There is a focus on appointment booking segment by digital start-ups via online portals and mobile apps.

Telemedicine: It can tackle India’s healthcare accessibility and affordability challenges, especially in tier-II and tier-III cities where quality tertiary care is not available.

E-Commerce for healthcare products: There is an increasing interest in products for elderly, hospital care as well as maternity. There are increasing number for health oriented ecommerce websites on the rise in India due to the niche requirements.

Consumer health: There is a significant increase in demand for products like

Advanced hair care, Maternity care, Nutraceuticals, Baby products and Senior care; and online channels will serve as a key channel for selling these products.

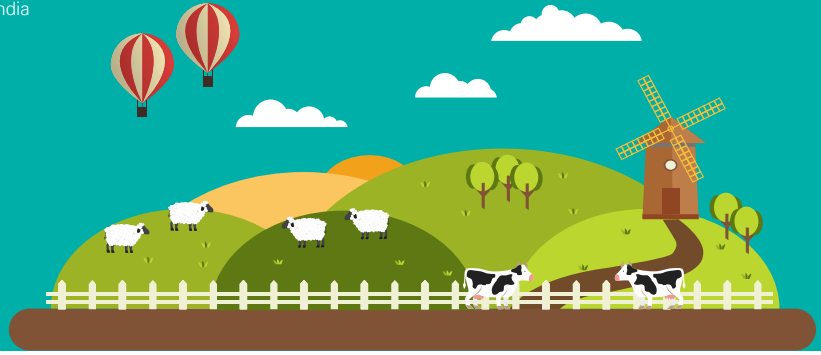
India’s digital health ecosystem is still at a nascent stage, and requires substantial investments and expertise through collaborations from both private and government sectors. There is a need to develop a framework for a smart healthcare system, and to use technology to improve clinical outcomes, healthcare delivery, patient safety and engagement. These digital healthcare platforms are pivotal to fundamentally reshaping the delivery of India’s healthcare.

4. 7 key market segments of digital health in India, Dr. Hempel Digital Health Network, 01 July 2017

5. Innovative Trends that will Transform Healthcare Industry in 2018, Entrepreneur India, 2018

Agri-tech: Enabling a new green revolution

Emerging sectors



Agri-tech — emergence of a new wave

The Indian agriculture sector is still in a nascent stage in terms of adoption of digital empowerment and new technology.

India is an agrarian economy with about 60 per cent of rural households being dependent on agriculture for their livelihood.¹ Apart from being the world's second-largest producer of fruits and vegetables, the country is the largest producer of milk, second-largest producer of sugar, and the leading country in terms of coconut production.² However, the contribution of agriculture to the country's Gross value added (GVA) has been continuously declining since FY14 and is expected to be around 3 per cent in FY18.³

Agri-tech has the potential to address a number of challenges faced by the sector and, subsequently, change the face of the Indian agriculture.

Evolution of Agri-tech in India

Upsurge in the internet usage, increase in smartphone penetration, emergence of start-ups and various government initiatives in rural areas are facilitating technology adoption in the farm sector.

Rise of start-up ecosystem:

The Indian Agri-tech sector is evolving with the emergence of several start-ups engaged in modernisation of the agriculture sector. Furthermore, a number of start-ups have emerged recently, which are engaged in providing innovative and sustainable solutions to challenges faced by farmers. These solutions include biogas plants, fencing and water pumping facilities, weather prediction service, solar-powered cold storage, equipments such as spraying machines and seed drills.⁴

Government focus on

Agri-tech: In a bid to boost the Agri-tech sector in the country, the Ministry of Agriculture launched a first-of-its-kind Agriculture Grand Challenge in December 2017. The initiative aims to benefit Agri-tech start-ups through incubation, mentoring, and providing access to markets to help solve some of the key challenges plaguing the agriculture sector.⁵

Some of the other key initiatives by the Indian government include AGRI UDAAN program, setting up a dedicated Agri-tech infrastructure fund, digital India, launch of e-National Agriculture Market (NAM) portal, etc.



Some key trends which could drive agri and food economy in short to medium term include - image processing to drive transparency and efficiency in agri supply chain, shopfloorization of agriculture to drive productivity and precision agriculture, combination approach of agri-tech, fintech, cleantech and foodtech will become commonplace, alternative proteins to go mainstream, personalised nutrition will become a norm.

Hemendra Mathur

Venture Partner
Bharat Innovations Fund



Upsurge in internet and smartphone penetration:

With increasing internet usage and rising smartphone penetration, Agri-tech organisations are now able to offer information, techniques, and efficiencies to farmers both for pre-harvest applications and post-harvest usage.¹

1. 12 Indian Agri-tech Startups To Watch Out For In 2018, inc42, 29 December 2018;
2. Digital Technologies Transforming Indian Agriculture, WIPO, 7 June 2017;
3. Monsoon blues, Business Line, 17 April 2018;

4. Agri-tech India: Towards Doubling the Farmers Income, Tech Story, 20 December 2016;
5. Government invites Agri-tech startups to resolve sector issues, Your Story, 16 February 2018;

Reforming agriculture using technology - Key offerings

Agri-tech organisations are engaged in addressing some of the key issues prevalent in Indian agriculture such

as increasing productivity, improving market access and weather forecasting.



Fintech platforms

Offering applications and platforms that connect farmers digitally and provides them financial, agricultural and government-related services based on their crops and crop cycle



Farming-as-a-Service

Offering farming services and machinery on rent for reducing capex and increasing affordability



E-commerce and market linkages

Providing platforms to farmers and merchants where they can buy agriculture inputs and sell products without involvement of middlemen



Nano technology

Providing facilities such as use of nanocapsules, nanoparticles and viral capsids to cure diseases, enhancing nutrients absorption by plants



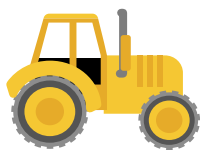
IoT and big data

Facilitating data collection and decision making using drones, sensors, IoT technology, and data analytics



Post harvest technologies

Offering technologies and machineries for cleaning, sorting and processing crops at the farm, and cold storage to reduce wastage and increase shelf life of food items



Smart machines

Providing remotely operated machines, operating with greater precision, and performing specific operations using harvesting robots, seeding machines, electrostatic sprayers, etc.



Precision farming

Facilitating application of precise amount of inputs such as water, fertilisers and pesticides, at the right time for increasing productivity

Market opportunities in Agri-tech

Rising investments and prevalence of substantial opportunities in the domain can boost the growth of Agri-tech organisations in the country.

The United Nations has predicted that, in order to meet the growing demand, the world would need to produce 70 per cent more food in 2050, than the current production value.⁶ Technology is expected to play a key role in increasing the agriculture output in the coming years. The global precision farming market

is expected to cross USD5 billion by 2023, registering a CAGR of more than 10 per cent from 2016-2023.⁷ The global agriculture robots market is expected to increase from ~USD3 billion in 2016 to USD11 billion in 2023, witnessing a CAGR of about 21 per cent.⁸ A number of global organisations are engaged in making use of latest technologies such as Artificial Intelligence, Internet of Things (IoT) and Big Data to develop new solutions for agriculture.

Similar to the global trend several organisations in India are engaged in devising new Agri-tech solutions. About

10 per cent (USD313 million) of the global investments in agriculture were garnered by 53 Indian Agri-tech start-ups in 2016. There are significant opportunities for Indian Agri-tech organisations in areas such as enhancing crop production, augmenting the nutritional value of the crops, improving the overall process-driven supply chain, reducing the input prices for farmers, and minimising wastage in the distribution system.⁹

6. Global IIoT Market in Agriculture 2017, PR Newswire, 8 January 2018;
 7. Precision Farming Market grow at 10per cent CAGR from 2016 to 2023, Agri-tech Tomorrow, 19 July 2017;
 8. Agricultural Robots Market ;PR Newswire, 2 November 2017;
 9. How Startups Are Changing The Face Of Indian Agriculture, Inc42, 16 June 2017;



Furthermore, India's population is expected to reach 1.4 billion by 2020. The increasing population, along with rising income levels, would generate increased demand for food and non-food crops in the country. Agri-tech organisations could prove to be effective in bridging the demand–supply gap existing in India.¹⁰



Growth in Agri-tech could also positively impact the financial services sector. Agri-tech organisations could engage in providing solutions such as insurance products based on weather predictions and crop data analysis; savings platforms tailored for the needs of farmers; alternative and more accurate credit scoring for facilitating micro loans, etc.¹¹

Challenges

Factors such as lack of awareness about new technologies, cost of technology and low computer literacy impede the growth of adoption of technology by farmers in rural areas.

As Agri-tech makes inroads into rural India, entrepreneurs would encounter a set of new challenges which could hinder their reach and effectiveness.

Lack of awareness: The reach of technology is very limited and unevenly

distributed across the country, as farmers lack awareness about new technologies and are still practicing old techniques

Cost of technology:

Affordability is one of the key factors which inhibits the growth of technology adoption. Small and marginal farmers do not have enough funds to purchase new technology-based products and are, thus, left out of its ambit

New middlemen: Owing to the digital divide and low literacy rate amongst farmers, a new class of middlemen has emerged who provide Information and Communication Technology (ICT) services to farmers. These middlemen could distort information for personal benefit¹².

In addition challenges such as lack of infrastructure, low connectivity, and lack of training in modern techniques and technologies could act as growth hurdles for Agri-tech start-ups.

Way forward

Increasing population, rising income levels, growing exports and increasing consumption could drive the demand in the agriculture sector. In addition, continuous government and local support as well as investments from foreign VCs has set the Agri-tech sector on a healthy growth path in India. The need is for all the stakeholders coming together to build a sustainable ecosystem for the growth of the sector.



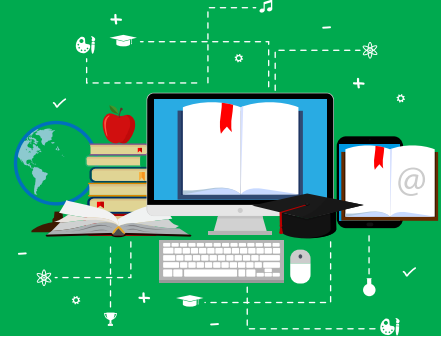
10. Agri-tech India 2018, Agri-tech India, accessed on 8 February 2018;

11. Can Next-Generation Startups Unite Agri-tech and Fintech for Farmers in Emerging Markets, Unitus seed fund, 19 September 2017;

12. Transforming agriculture with e-technology, The Hans India, 22 May 2017

Ed-tech: 'E-Learn India' – Digitally innovative learning for the masses

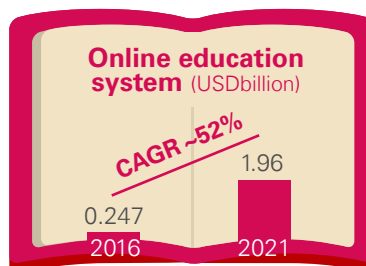
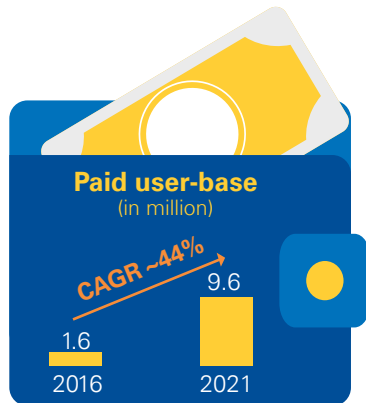
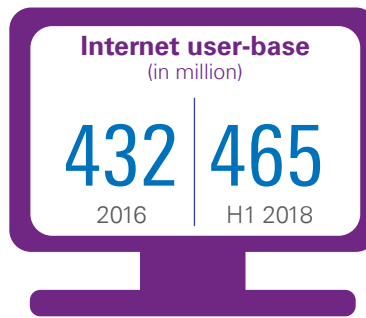
Emerging sectors



Technology is enabling the education system to explore new dimensions effectively and efficiently, as it allows personalised learning, builds capacity and drives decisions based on real-time data. Technology impacts three core issues of the education sector – access to quality education, effective learning and personalisation – at scale.

India has the world's largest K-12 education system, with more than 260 million enrollments today, which have risen at a CAGR of about 20 per cent during 2011–15¹. This is the largest user segment for learning in India. India's online education industry is expected to grow exponentially to touch USD1.96 billion by 2021 from USD247 million in 2016², majorly driven by increased consumer adoption supported by changing business models and improvements in product offerings. The technology-driven Indian education technology (Ed-tech) sector has propagated innovative learning products and promoted better learning experience leading to an enhanced acceptance of alternative modes of learning in India.

Market size^{1,3}



Advancements in the Ed-tech industry

Advanced technologies are being leveraged to disrupt traditional learning methodologies, enhancing user experience and eradicating bottlenecks for educators.

With the evolving dynamics, key recent trends in the Ed-tech industry are as follows:

Virtual Reality (VR) and Augmented Reality (AR)

Provides experiential learning through graphical simulation and gamification, increasing engagement and retention

Data analytics

Increasing digitisation and availability of augmented data is enabling new teaching methodologies with deeper insights

Machine Learning and Artificial Intelligence

Enables uniform learning experience for students through personalised content based on individual learning capabilities

Virtual classrooms

Virtual classrooms have emerged as an asset–light model for offline players to expand their network across geographies

1. Online education in India, a study by KPMG in India and Google, May 2017
2. Education startup Oliveboard surpasses 2 m subscribers in India, Business Standard, 20 January 2018
3. Number of Internet users in India could cross 450 million by June: report, Livemint, 15 February, 2018



Learning is becoming easier and more experiential. I believe that Ed-tech will bring innovations in not only the pedagogy, but also in the content. Making online education a more collaborative and immersive experience is one of these areas. Customised learning experience through hybrid models (online-offline) & using AI/ML to build smart products would be the way forward

Ishan Gupta
Managing Director - India
 Udacity



Growth drivers

Rising internet penetration and technological advancements are largely facilitating the rapid evolution of the education sector in India.

Ed-tech industry is expected to witness further transformation driven by:



Cost effectiveness of online courses:

The associated cost in traditional education is much higher as compared to that of online education system. Online skill enhancement courses are about 53 per cent cheaper than offline courses.¹



Rising enrolments aided by e-learning:

Government is targeting a Gross Enrolment Ratio (GER) of 30 per cent by 2020.⁴ E-learning aided by advanced technologies would meet the additional requirements and assist to reduce the supply gap.



Demand for specialised professionals and higher competition for professional courses:

In the wake of rising employee layoff and scarcity of jobs, online courses help impart 'on-the-job' skills. Research done by World Bank suggests that 69 per cent job threats are due to automation such as machine learning and artificial intelligence.⁵

Role of the government: From provider to facilitator⁶

The Government of India has recognised the role of technology in education via schemes and policies such as Revitalising Infrastructure and Systems in Education (RISE), ICT@Schools, Digital India and National Optical Fibre Network.

Ed-tech industry is expected to witness further transformation driven by:

Infrastructure

In the Budget 2018, RISE has received an investment of USD15.37 billion

Digital India

Allocation of budget for Digital India has been doubled to USD0.4 billion in FY18-19 from USD0.2 billion the previous year.

Skill development

To impart skill training, 306 Pradhan Mantri Kaushal Kendras have been established

For effective integration, key focus areas for the government are:

- Holistic approach focussing on providing appropriate and reliable access to infrastructure
- Pedagogically sound digital resources for students and teachers
- Capacity building programmes to enable teachers to use ICT as well as remodeling teacher education using technology
- Data systems for improved governance.

1. Online education in India, a study by KPMG in India and Google, May 2017
 4. India can provide higher education to 40 million students by 2020 through foreign collaboration, Indian Express, 26 December 2017
 5. Going, Going, Gone: Automation can lead to unprecedented job cuts in India, Business Today, 18 June 2017
 6. Education, POV, KPMG, 1 February 2018

Business opportunities

With the growing technological advancements, e-players are exploring diverse

opportunities in the education sector catalysing quality education at scale.

Opportunities	Expected characteristics
Innovative pedagogic models (Gaming, online laboratories and real-time assessment)	<ul style="list-style-type: none"> • Improve higher-order thinking skills • Increase conceptual understanding • Enhance creativity, imagination and problem-solving skills
Simulations (Remote or virtual online laboratories)	<ul style="list-style-type: none"> • Provide relatively low-cost flexible access to experiential learning
International collaboration platforms	<ul style="list-style-type: none"> • Overcome barriers of geography and formal classroom hours • Experience multicultural communication
Real-time formative assessment and skill-based assessments	<ul style="list-style-type: none"> • Monitor student learning and modify teaching accordingly • Enable active participation • Enable skill development to be monitored in a comprehensive way
E-learning	<ul style="list-style-type: none"> • Open educational resources and several open online courses • Helpful for autonomous learners.

Challenges:

With the progressive transition from traditional pedagogy to computerised learning, education sector has witnessed disruptive growth. However, certain obstacles such as infrastructure access and affordability are still a challenge.

Poor accessibility and inadequate infrastructure: The overall internet penetration is 33 per cent out of which rural area’s contribution is negligible⁷

Revenue optimisation: With easy availability of freely accessible resources, increasing the user base for paid services is a challenge

Substantial cost of development: Content revision is a costly mandate and remains a key challenge in the sector

Competition in Ed-tech sector: With increasing competition, providing a differentiated value proposition to users is a challenge

Reluctance to change: High installation cost and unfamiliar teaching methods hinder adoption in T-II and T-III cities, leading to adoption of conventional learning

Road ahead

With exciting disruptions taking place in the education technology sector, there is significant scope for unprecedented growth. Young entrepreneurs and education leaders are expected to create products and solutions to solve the core issues in the Indian education system. Assistance beyond school

teaching is still a culture and thus a large opportunity for the K-12 segment. Further, test preparation and certification courses form a large pie for the growth of Ed-tech space in India.

Growth of Indian ED-tech businesses in the international markets is also expected to be

a key trend in the coming years with markets like Middle East, South East Asia and select countries in Europe and Africa opening up for Ed Tech.

7. Year-Enders 2017: 5 major challenges faced by the Ed-tech sector in 2017, India Today, 19 December 2017

Emergence of Indian brands accelerated through digital platforms

Rise of online brands, globally

As billions of consumers are using internet worldwide, brands are reimagining the way products and services can be delivered to them online.

The increased digital attention and change in consumer behaviour have forced organisations to rethink the way they connect with the new-age consumer. Organisations across various industries are focusing on creating a seamless digital experience for consumers. The trend has also forced traditional brick and mortar brands to adopt online selling model, and are thinking beyond traditional ways of connecting with consumers.

Major brands around the world are investing and looking at different ways to tap billions of connected consumers. Building an online brand not only helps reaching a larger audience, but also helps monetising the untapped opportunity.

There are global organisations which are valued in billions, having no physical assets, and have managed to become industry leaders in a short span of time. Another success story is of a leading Chinese mobile maker who has since its inception, sold its mobile phones only through web portals and within a short span of time, has managed to become one of the leading mobile phone makers in the world.

Indian brands embracing digital platforms

India is not left behind by the wave of online only brands. The country's e-commerce market has grown from being an emerging industry to an industry steering towards momentous growth.

Currently, a large number of consumers in India are embracing the virtual world of shopping. Much of the growth of the industry has been triggered by the increased scope of the internet, smartphone penetration, increase in disposable incomes and comfort in online shopping. Indian population is now more inclined towards availing products and services online.

Consumers are now looking for more personalised and unique product offerings. As an outcome of which, many start-ups across various verticals have launched their products by creating a digital-first brand. Using digital platforms, Indian brands are targeting a large digital first consumer base which is purchasing anything to everything through online portals. These online brands are not only successful in running their businesses, but are also making significant profits. Venture capitalists in India, apart from supporting established e-commerce players, are focussing on specialised and online brands as well.



Digital platforms play a vital role in helping early stage brands by creating two way communication channels to the consumers. Wide adoption of digital platforms has increased accessibility for brands as well as consumers. Consumers are able to discover brands at a very early stage of their journey and brands benefit by finding early adopters from a wider range of consumer profiles. And most importantly, you can afford to build a geography specific brand (all Metro – tier I, because you can define the set of consumers that you want to talk to).

Neeraj Kakkar
Co-founder and CEO
Hector Beverages Pvt. Ltd.



Factors fuelling growth of online brands in India

Digital platforms are helping online brands to reach to a larger audience:

It has emerged as a new channel for online brands and is helping them in various ways:

- Reaching out to a larger audience
- Allowing better targeting and well-focused traffic effort
- Reducing time and cost to build a direct-to-consumer brand
- Focussing on less dependency on physical location or walk-in traffic to drive demand.

Matching consumer needs

- The increasing levels of awareness among the Indian consumers is creating demand for niche products.

Brick and mortar stores breaking legacy

- Many traditional manufacturers have started collaborating/ pairing with established e-commerce players to gain enhanced visibility for their collection online.



Market opportunities and impact

Traditional stores are acquiring niche online start-ups:

Many online first brands are becoming attractive acquisition targets for traditional stores that are struggling to adapt to the rise of online shopping.

Retail logistics sectors to witness further growth:

The e-commerce logistics sector continues to evolve rapidly with changes in the business environment. The sector is expected to witness increased penetration in tier-I and tier-II cities. Online only brands are dependent primarily on logistics players for delivery.

Opportunities created

The online brands are disrupting e-marketplace with differentiated products, and are also opening up significant opportunities for themselves and their buyers.

Start-ups helping artisans and craftsmen:

Several start-ups are working closely with artisans, small vendors, and craftsmen to put their work on display. They are also helping these communities gain visibility and sell their products directly on e-commerce platforms.

Fashion segment can drive growth:

Fashion e-commerce is one of the largest segments which received highest funding and investments in the recent years. As consumers look for a niche and affordable fashion, the segment is likely to create significant opportunity for new brands.

Challenges faced

Although online brands have seen a significant rise in their online sales, they still face various challenges like technological issues, personalisation, search and navigation while selling their products through desktop/laptop or mobile site/app.

Personalisation: With a variety of product options available online, it becomes mandatory for an organisation to understand the buying trend of users and come up with personalised offers.

Search enhancement and site navigation:

While browsing on a website or an application, search results play a vital role in converting a search into a sale. The organisations often fail to provide an intuitive platform and lose out on consumers.

Building trust: Trust forms one of the most important factors for online brands; any failure to deliver as per expectations would lead to failure in retaining consumers.

Way forward

Despite the above-mentioned challenges, as the internet economy continues to grow and more consumers look forward to online shopping in India, Indian brands would continue to invest and harness digital platforms to tap the millions of connected people in the country. The next ideal step for these Indian online brands would be expanding their footprint and presence globally.

Key sectors with prominent online brands will include fashion and accessories, personal care, baby products and mobile phones.

Robotics pushing boundaries

The convergence of emerging technologies, such as Artificial Intelligence, robotics and the Internet of Things (IoT), is paving way for a new tomorrow by displacing existing products and services. Advances in new technologies – from robots to new-age systems, equipped with rational thinking – are curtailing the limitations of human capabilities.

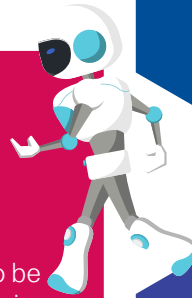
The global robotics market is expected to grow four times to reach USD147.26 billion from USD35.23 billion in 2016.¹ In many countries around the world, from mining to automobile, majority of industries are trying to automate their processes in order to eliminate human errors. Below are a few examples that highlight the mass adoption of robots globally:

Defence: In 2016, Russia developed a humanoid military robot designed to replace the soldier in a battle where conditions are harmful for humans.²

Mining: An Australian–British mining group — one of the world’s largest mining corporations — has deployed driverless trucks and unmanned drilling rigs and trains for its mining operations in Western Australia.³ The group is also expected to deploy robots for mining ore from nearly 7,000 feet below the Earth’s surface, mine it at temperature of about 175 degrees Fahrenheit and transport it to the surface.⁴

Autonomous vehicles: Tech majors around the world are developing fully autonomous cars that would be capable to navigate on its own without a human operator.

In October 2017, history was created when a humanoid robot, developed by a Hong Kong-based organisation, became the first non-human to be granted full citizenship in Saudi Arabia.⁵



Robotics revolution in India

India’s robotics industry, although in its nascent stage, is starting to show signs of speedy growth.

The country’s surgical robotics market is estimated to increase at a CAGR of 20 per cent to reach USD350 million in 2025 from USD64.9 million in 2016.⁶ Primarily driven by numerous government initiatives to promote robotics, and increase in the robotics and automation start-ups, the annual shipments of multipurpose industrial robots in India increased 27 per cent in 2016 to reach a new record of 2,627 units.⁷

1. Worldwide Robotics Market to touch USD147.26 Billion by 2025, Globe Newswire, 24 October 2017
2. Robot wars! Russia unveil humanoid supersoldier called ‘Iron Man’ as terrifying new weapon, Mirror, 27 May 2016
3. Rio Tinto puts its faith in driverless trucks, trains and drilling rigs, The Economist, 7 December 2017
4. These Are The Robots That Will Mine In Hell, Forbes, 14 July 2017
5. Meet the first-ever robot citizen - a humanoid named Sophia that once said it would ‘destroy humans’, Business Insider, 27 October 2017
6. Automation boom: India’s surgical robotics market to grow 5 times by 2025, Business Standard, 27 January 2018
7. Executive Summary World Robotics 2017 Industrial Robots, International Federation of Robotics
8. Future focus: Make in India 2.0 to stress on robotics, genomics, The Economic Times, 12 January 2018

Factors fuelling this revolution



Adoption of robotics going mainstream

Rise in investments: Many well-established multi-national organisations in the country are also heavily investing in robotics.

Rise in robotics start-ups: Increase in the number of robotic start-ups in several segments is also changing the country’s nascent hardware ecosystem.

Government initiatives: The Indian government’s efforts towards promoting digitisation of processes and skilling people in robotics and Artificial Intelligence (AI) through its ‘Digital India’ programme are likely to boost adoption of robotics in India. In January 2018, the government also announced its plans to launch ‘Make in India 2.0’ that would focus on futuristic segments such as robotics and genomics.⁸



Apart from more machinery parts being welded and floors being swept by robots, the new age robots have evolved to help us in executing tasks that involve the left (logical) half the brain. It's time for humans to work on re-skilling themselves with a focus on the right (creative) half of the brain.

Jayakrishnan T
CEO
Asimov Robotics



Market opportunities and key sectors impacted

With the Indian government's continued focus on promoting digital culture in the country, futuristic technologies such as robotics are likely to have a promising future ahead.

Trying to keep pace with the growing adoption of futuristic technologies, organisations in India are also investing significantly in robotics. From autonomous shop floors to hi-tech robot-driven surgeries, below are a few examples of sectors that have adopted robotics to enhance their efficiency.



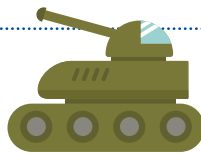
Automotive industry:

India's largest carmaker has deployed about 5,000 robots that perform tasks such as welding on its shop floor.⁹



Banking:

A humanoid robot, equipped with face recognition and autonomous navigation features is operational in one of the branches of a leading Indian bank.¹⁰



Defence:

The Indian Army has already been using a remotely operated vehicle for locating and handling explosive devices. In August 2017, a proposal from the Army of deploying 544 robots in the field was approved by the defence ministry.¹¹



Healthcare:

India currently has over 50 surgical robots and a pool of over 300 trained robotic surgeons that perform about 700 surgeries per month.¹²

Challenges

High cost of adoption along with unavailability of skilled talent are amongst the key obstacles to the growth of robotics in the country.

The adoption of robotics is a step up in the direction of creating a digital workforce. This may also lead to reducing costs and driving new strategic advantages. In addition, there would be challenges related to adoption cost, redesigning business models, recruitment, redeployment of workers and training them the desired skill sets.

High cost

The high cost of robots, primarily due to expensive imported hardware components, is one of the barriers for adoption of robotics

Technology complexity

While current technologies develop newer capabilities, businesses and consumers are likely to face integration and complexity challenges

Skill gap

Availability of skilled talent is another challenge that is hampering the growth of robotics in the country

Acceptability

The fear of getting replaced and losing jobs may create hindrance in widespread acceptance of robots in India

Way forward

Despite certain challenges, robotics in India is poised for a bright future and is expected to transform the way things are done in industries. With the advent of Industry 4.0 and the global trend of adopting automation, robotics is fast entering into various sectors in the country.

9. Robots sweep across Maruti Suzuki's shop floor, Live Mint, 9 May 2017

10. Mitra and Candi: The robots who take care of consumers at Canara Bank in Bengaluru, Hindustan Times, 22 September 2017

11. Indian Army Is Planning To Deploy 544 Robots To Fight Terrorists In Jammu and Kashmir, India Times, 12 August 2017

12. India can become second largest market for robotic surgery, The Economic Times, 19 November 2017

Digital payments going mainstream

Faceless, paperless and cashless — new phase of digital payments in India

Disruption in payments is inevitable due to the growing interest towards digital channel across all demographics in India

The year 2016 was marked by the demonetisation move which paved way for the most exciting times for digital payments in India. While demonetisation was definitely the highlight, other government initiatives such as introduction of Aadhaar-based KYC, launch of the Bharat Interface for Monday (BHIM) application, commercialisation of mobile internet, and identification of fintech under the regulatory purview were other milestones that ensured that digital-cash is inevitable.

Electronic transactions*, by value, grew by 25 per cent YoY in February 2018¹. UPI grew 904 per cent in transaction value between February 2017 and February 2018.²

The digital payments ecosystem is expected to be a significant contributor to the internet business in the coming years across two important factors:

- It brings in a newer dimension- the digital financial profile of customers, providing a new set of information regarding the customer on the spending avenues, size of spend, modes and other preferences
- The payments ecosystem itself forms a powerful channel for consumer businesses, where the

payments company becomes a powerful customer acquisition partner. These could be for products, digital classifieds, bill payments, ticket booking etc.

Adoption drivers

The Indian payments sector is in the midst of rapid innovation that has been embraced to the mass market, leading to an increase in adoption. Some of the factors that are driving this spectacular adoption of digital payments are as follows:

Demand factors

Need for quick, secure and innovative payment solutions as part of the daily life and while conducting business transactions

01

Supply factors

Influx of next-generation payment platforms from the government, fintech players and incumbents

02

04

Push factors

Demonetisation of high-value currency along with launch of UPI and BHIM

03

Pull factors

Value deals; speed of transactions; online payments for shopping and entertainment; online utility payments

Demand factors: As per a recent survey conducted by YouGov, 78 per cent³ Indians are keen to embrace new forms of digital payments. Consumers today are digitally empowered, hyper-connected and better informed. As a result, their expectations for a secured and simplified payment interface for

to create a collaborative ecosystem that would help address concerns such as trust and security, and provide seamless cashless touchpoints.

1,2, Electronic payment systems, RBI, accessed on 4 May 2018

3. Indian consumers keen to adopt to digital payment solutions, Business Line, 14 November 2017

Push factors: The Indian government and National Payments Council of India (NPCI) have taken significant steps in pushing digital payments with an aim of turning India into a cashless economy. The government initiated demonetisation of high-value currency in November 2016 as the first bold step to curb supply of cash, and then also levelled the cash-crunch situation by launching BHIM and UPI, and formally promoting fintech players in its addresses to the nation. Digital payments are also being promoted to make financial services available and affordable in the rural areas.

Pull factors: Freebies, cash-backs, and value-deals are the most common pull elements of digital payments especially from fintech players. Plans to incentivise BHIM and Bharat Bill Payment System (BBPS) are also on the cards⁴. The speed at which transactions are completed is the second pull factor. Many consumers are still in awe of this feature and are excited using it. Successful establishment of online retail and online payment gateways for most utility payments are other factors that pull users towards the digital payments ecosystem.

4. Govt to incentivise online payments to push digital transactions, Hindustan Times, 09 November 2017

5. UPI live banks, NPCI website accessed on 14 February 2018

6. BHIM partners, BHIM website accessed on 14 February 2018

7. India Could Have a World-Class Digital Payments Market, Investopedia, 16 November 2016

8. World Payments Report, 2017, Capgemini

***Note:** Electronic transactions or non-cash transactions refers to Real time gross settlement (RTGS), National electronic funds transfer (NEFT), Cheque truncation system (CTS), Immediate payment service (IMPS), National automated clearing house (NACH), Unified Payments Interface (UPI), Unstructured Supplementary Service Data (USSD), debit and credit cards at PoS, Prepaid payment instrument (PPI), mobile bankin



The wave of digital payments has just started in the country. Tide is rising not just from e-commerce but all other essential segments such as tax payments, education, government payments etc. Further, UPI will soon become mainstream payment option by consumers and will bring down cost of digital transaction. Digital payments is also going to solve credit access problem in the country. Banks and fintechs will be able to provide credit based on digital footprints of the consumers and with more confidence. Further, GST and invoice data will help Small and medium enterprises (SMEs) easier access to capital.

Jitendra Gupta

Founder - Citrus Pay
MD - PayU India



Business implications of digital payments going mainstream

Less number of middlemen: Online payments create a direct link between businesses and consumers, eliminating the need for existence of number of middlemen.

Partnerships across the value chain: There continues to be partnerships between big and small organisations to provide consumers multiple choice of platforms for using digital payments. UPI⁵ and BHIM⁶ now have over 60 banks live on their networks and are also being supported by a number of eminent fintech players and wallets. Additionally, banks are launching their own mobile wallet applications and partnering with fintech players to provide innovative

payment solutions to consumers.

Collaboration and interoperability: With consumers engraving digital payments even in their utility payments and lifestyle, interoperability between wallets is the next wave that is awaited. Currently many users pay their electricity bills online, a trend that was not very mature about a year ago.

Government support: Private players, telecom giants and government are joining forces to enhance cyber security in the digital payment ecosystem.

Challenges towards building a world-class digital payment ecosystem

Lack of security, lack of infrastructure and lack of awareness are major challenges towards adoption of digital payments.

India is still a highly cash-trapped economy compared to most of the global counterparts. The cash to GDP ratio is approximately 18 per cent⁷, compared to some of the developed nations that feature between 3–8 per cent. Additionally, non-cash transactions* in India was about 11 billion in 2017 — about 2 per cent of global non-cash transactions recorded in 2017⁸. Some of the challenges that India faces in this space are as follows:

1. Security issues: A number of consumers are still wary of security issues in digital payments. Giving a formal introduction to fintech by the government has helped lift some of these reservations

2. Awareness: People in India are cautious about using digital payments due

to lack of awareness and financial illiteracy. As the next step in promoting digital payments, the Directorate of Advertising and Visual Publicity (DAVP) of the Ministry of Information and Broadcasting (MIB) and Ministry of Electronics and Information Technology (MEITY)⁹ are working on plans to start promotion of digital payments.

3. Infrastructure: Apart from the multi-national brands in malls and the urban population, many retailers and consumers, still prefer traditional payment methods due to the lack of infrastructure. Many shops are yet to have their bank accounts which are imperative for digital payments. The government is working towards building smart cities and also promoting financial inclusion — steps which would help businesses and consumers shift from cash to e-payments.

With influx of wallets, UPI is likely to become the face of digital payments in India as it focusses on consolidation and interoperability. Government initiatives are giving due impetus to promote e-payments within the country. Two key areas where digital payments are less explored and have high opportunity are:

1. Corporate e-payments:

Emerging technologies such as blockchain are likely to revolutionise the B2B and international payments markets. Private players support international B2B payments, and have started entering this market, especially for Micro, Small and Medium Enterprises (MSMEs).

2. Rural penetration:

Initiatives such as Payments Bank and players with rural market target are likely to drive deeper penetration of digital payments in rural and semi-urban areas.

3. Customer acquisition for other business: Payment companies are graduating to becoming channels for customer acquisition as well as behaviour analysis.

4. Digital voucher business for safe transactions:

There is an increasing need by customers to not use their credit card or internet banking while transacting with international websites/ gaming websites etc. were the trust on the platform is relatively lower. On demand digital vouchers is expected to be the next wave for such transactions.

With rapid usage of mobile and higher internet penetration, digital payments would become a front runner for all businesses. The market is gearing up with newer types of Point of Sale (PoS) systems and devices, which are contactless, Aadhaar-based and QR code-based. Additionally, foreign players are likely to explore this growing opportunity in the Indian market.



UPI is the world's most advanced payment system. Its concept of a virtual payment address makes it easy to send money, as easy as sending an email, and it does so in real time. Which is why we saw government launching BHIM, Google launching Google Tez, Flipkart launching PhonePe, with other players like Paytm and more recently WhatsApp joining the bandwagon. Today, UPI has done more transactions in 18 months than credit cards have done in 18 years. I expect by December of 2018, UPI alone will do one billion transactions.

Nandan Nilekani
Chairman
UIDAI @ Kalaari Summit'18



9. Govt likely to launch 2nd phase of promoting digital payments, Live Mint, 07 November 2017

*Note: Electronic transactions or non-cash transactions refers to Real time gross settlement (RTGS), National electronic funds transfer (NEFT), Cheque truncation system (CTS), Immediate

payment service (IMPS), National automated clearing house (NACH), Unified Payments Interface (UPI), Unstructured Supplementary Service Data (USSD), debit and credit cards at PoS, Prepaid payment instrument (PPI), mobile banking

Frontier-tech solutions like AI, ML and blockchain likely to gain precedence

The beginning of a deep tech era

Organisations are now expanding their horizons to capture, manage and derive valuable insights using deep data led tech.

As businesses worldwide continue efforts to expand data capture and storing the exponential amount of information across the organisational value chain - research & development, marketing and sales, production systems, sensors and applications across the supply chain, etc., the information can be leveraged in ways hitherto largely unexplored. With rapid sophistication in machine and deep learning algorithms, these large data pools can be processed to generate meaningful insights. The availability of large amount of data to train these algorithms has been a clarion call for industry to pave the way for more intelligence and decision making reliance on business systems and applications.

Organisations across various industries are adopting deep technologies to improve consumer experience (CX), generate revenue opportunities and drive operational efficiency through warehousing (automated retrieval systems), hub and spoke models (where to form clusters for delivery) and more to ensure unit economics are positively

inclined. As per a recent study in 2018, organisations would strive to improve their understanding of what AI is best suited for, and how it can be deployed. Advances in virtual assistants and deep learning would foster adoption of artificial intelligence¹.

Adoption of deep tech in India

AI-powered systems are expected to be mainstream, as major Indian industry verticals are experimenting with these deep technologies.

India is one of the fastest growing economies and one of the fastest growing technology markets in the world. This opportunity is driven in part by the Indian government's ambitious digital transformation projects such as 'Digital India', apart from enabling increased opportunities for private sector to transform as well. This is translating into increasing adoption of emerging technologies especially artificial intelligence, machine learning and blockchain across almost all industries.

Indian enterprises across industries including retail, Banking, Financial services and Insurance (BFSI), IT-BPM, automotive, manufacturing, agriculture and healthcare have already accelerated the adoption of these frontier technologies and are starting to reap benefits. BFSI and

retail (both online and offline) are early adopters of AI and machine learning technologies, with several firms already automating operational processes leading to cost reduction and faster turnaround time.

Similarly, block chain is also gaining traction, with banks in India experimenting with the new technology. The technology is not just limited to financial transactions, but also applicable in several other fields and has great potential for areas such as addressing real estate, new voting systems, revamped public benefit and distribution systems building new levels of trust and transparency.

The other significant trend is the dematerialization or miniaturisation of these technologies thus allowing it to get embedded into mobile, sensors, existing machinery morphing into new avatars of digital labour, an amalgamation of strong processing power, artificial intelligence, natural language processing and exponential data growth.

From software robots to sophisticated cognitive systems, advances in these automation technologies are changing the game, reducing costs in some areas while improving speed, accuracy, quality, and control.

1. 2018 Will Mark the Beginning of AI Democratization, Gartner, 19 December 2017

Drivers of adoption

The key factors which are fuelling the growth of deep technologies are identified as follows:

The Indian firms are adopting deep-tech-related technologies to improve business efficiencies, reduce operational cost and increase profitability, increase employee productivity and obtain faster innovation cycles.

In addition to this, the government has been quite proactive to announce the adoption of next-generation technologies that can bring the economy on a par with developed countries in terms of becoming a digital economy. The recently announced Union Budget 2018-19 emphasised on using leading technologies in digital space to augur India's ambition to have a digital society. It proposed a national

programme on AI, mission on cyber-physical systems supporting the establishment of centres of excellence, and allocation of INR3,073 crore on Digital India programme in 2018–19.³



Artificial intelligence (AI) with the latest breakthrough from deep learning (DL) has made it possible for the very first time for software to write software. AI has the promise to exponentially transform healthcare, transportation, agriculture, education and bridge language barriers in India. In healthcare, AI will revolutionise transportation by reducing accidents, improving the productivity of trucking and taxi services and will enable new mobility services. Adoption of AI will bridge language barrier by applying this technology to respond to spoken words, translate speech or text to another language.

Vishal Dhupar
Managing Director
Asia South NVIDIA



Market opportunities

As the Indian public and private sector focusses on the adoption of next generation technologies, the demand for advanced AI-related technologies would also grow enormously in the near future, creating an opportunity for start-ups and tech players to provide innovative products and services.



Rise in start-ups to offer deep tech

- A number of start-ups have increased their focus on technologies such as AI, ML and blockchain; AI focussed start-ups grew 75 per cent in 2016²
- Indian government's initiatives such as 'Make in India' and 'Start-up India' have further supported AI start-ups growth ecosystem in the country.



Global and Indian firms backing up AI-based start-ups:

Many leading international and Indian technology players, and venture capitalists firms are readily investing in India-based start-ups focussing on artificial intelligence and machine learning space.



Indian IT firms offering various products and services based on deep tech:

Major Indian organisations have launched their AI-based platforms and are further investing into strengthening their portfolio. These leading players have launched their standalone products to monetise global and local AI market.

2. Artificial Intelligence is now the hottest tech spot and startups in India are working on its cutting edge, Financial Express, 20 November 2017

3. Govt doubles Digital India allocation to ₹3,073 crore; telecom sector disappointed, Business Line, 1 February 2018



Just like we did for IT Services, India has an opportunity to become the world's leading provider of business automation. AI was first widely adopted by the large B2C companies, and has now moved to B2B. The large opportunity for India to become a global leader is in Citizen AI. India can be a pioneer in building massively scaled AI capabilities that improve the lives of over a Billion people.

Atul Batra
CTO
Manthan

Challenges

Challenges such as the high cost of implementation, cyber security concerns and legal privacy are having implications on the deep tech journey.

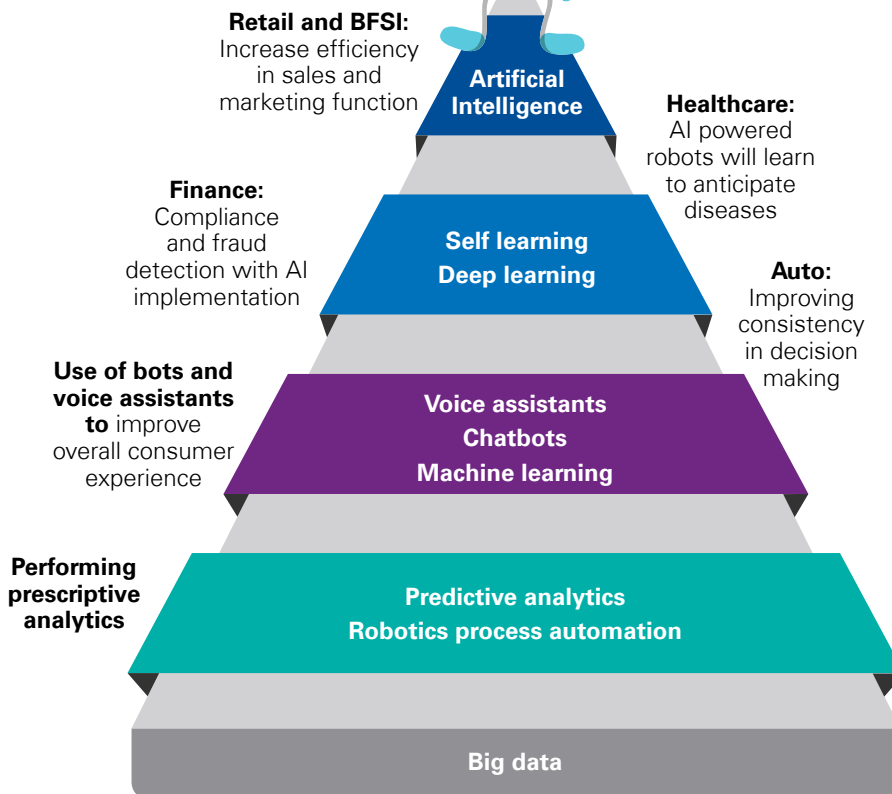
Talent crunch is the other challenge as a lot of this technology requires multifunctional individuals who have a sectoral focus coupled with technology. This may, in the future, be another major opportunity within the education sector.

Way forward

Deep tech adoption in India is picking up pace and we expect increased adoption across all major industry verticals with retail, auto, manufacturing, healthcare, IT-BPM and BFSI organisations leading the pack in India.

In the next five years, rapid adoption and silent embedding of deep tech in various business applications and processes is likely, especially in standardised rule based process operations. Deep tech would add to the bottom line by automating processes and creating better, faster always on service options for almost all sectors. Some firms have already deployed Chatbots, voice assistants and image recognition/analysis etc., technologies and have started to reap benefits. To provide better and personalised consumer experiences while interacting with organisations, adoption of new technologies is likely to increase further.

80%
Indian CEOs plan to invest in cognitive technologies, including artificial intelligence and machine learning, over the next three years — KPMG India CEO Outlook 2017



DEEP TECH PYRAMID

Annexure - Our methodology

The premise of this report is based on several discussions, meetings and brainstorming sessions that were conducted by Kalaari Capital, YourStory, NASSCOM and KPMG in India between December 2017 and January 2018. A total of 20 internet trends were identified that could shape the Indian business industry, going forward.

I. Survey

Ten trends were shortlisted in this report based on a survey conducted in India in January 2018. About 1178 respondents participated in the survey held on YourStory and NASSCOM platforms. The graph below indicates the results of rankings based on public opinion of the survey.

To support the survey data, Kalaari Capital further provided insights gained from top executives of some renowned Indian organisations. The responses from a range of sectors include, but not limited to, financial services, consumer products, healthcare, technology and retail.

II. Discussion with experts

Besides external validation, Kalaari Capital has also organised an event in Bengaluru that was attended by 100 top executives from some of the well-known Indian organisations. Inputs were sought via a live polling application and face-to-face interactions.

III. Secondary research

Lastly, the industry experts at KPMG in India conducted a detailed secondary research for each of the ten trends. The team relied on organisation's proprietary databases and public websites to deep dive into the local trends and understand the current scenario of the Indian market. We also referred several KPMG in India reports that were published in the past to help conclude on the trends.



1. KPMG in India, NASSCOM, Kalaari and YourStory digital trends survey 2018

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Rashmi Chotia

KPMG in India

Sreedhar Prasad
Ankur Nigam
Abhijit Varma
Mohit Bahri
Puneet Tandon
Ankit Arora
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About KPMG in India

KPMG in India, a professional services firm, is the Indian member firm affiliated with KPMG International and was established in September 1993. Our professionals leverage the global network of firms, providing detailed knowledge of local laws, regulations, markets and competition.

KPMG has offices across India in Ahmedabad, Bengaluru, Chandigarh, Chennai, Gurugram, Hyderabad, Jaipur, Kochi, Kolkata, Mumbai, Noida, Pune and Vadodara.

KPMG in India offers services to national and international clients in India across sectors.

We strive to provide rapid, performance-based, industry-focussed and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.

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About NASSCOM

NASSCOM, a not-for-profit industry association, is the apex body for the 154 billion dollar IT BPM industry in India, an industry that has made a phenomenal contribution to India's GDP, exports, employment, infrastructure and global visibility.

Established in 1988, NASSCOM's relentless pursuit has been to constantly support the IT BPM industry in India, in the latter's continued journey towards seeking trust and respect from varied stakeholders, even as it reorients itself time and again to remain innovative, without ever losing its humane and friendly touch.

NASSCOM is focused on building the architecture integral to the development of the IT BPM sector through policy advocacy, and help in setting up the strategic direction for the sector to unleash its potential and dominate newer frontiers.

About YourStory

YourStory is India's no. 1 media tech platform for entrepreneurs, dedicated to championing and promoting India's entrepreneurial ecosystem. As the pioneer of telling the stories of entrepreneurs' dreams, struggles, failures and successes, it is the definitive voice of startup trends in India and the most sought-after platform for visibility.

Founded in 2008, yourstory.com has published

nearly 75,000 stories of entrepreneurs, innovators and change-makers. This rich repository of content is available in English and major Indian languages, as well as in German via YS Germany. YourStory has also provided business networking opportunities to over 65,000 entrepreneurs through the various conferences and meetups it holds across the country, such as TechSparks and Mobile Sparks.

Founder and CEO Shradha Sharma has won several awards for her work in media, entrepreneurship, women's leadership and other allied areas. She has featured in Fortune's 40 under 40 for three straight years and has been a top LinkedIn influencer the digital media space. Investors in YourStory include Kalaari Capital, Ratan Tata and UC Berkeley, Qualcomm Ventures, and T V Mohandas Pai.

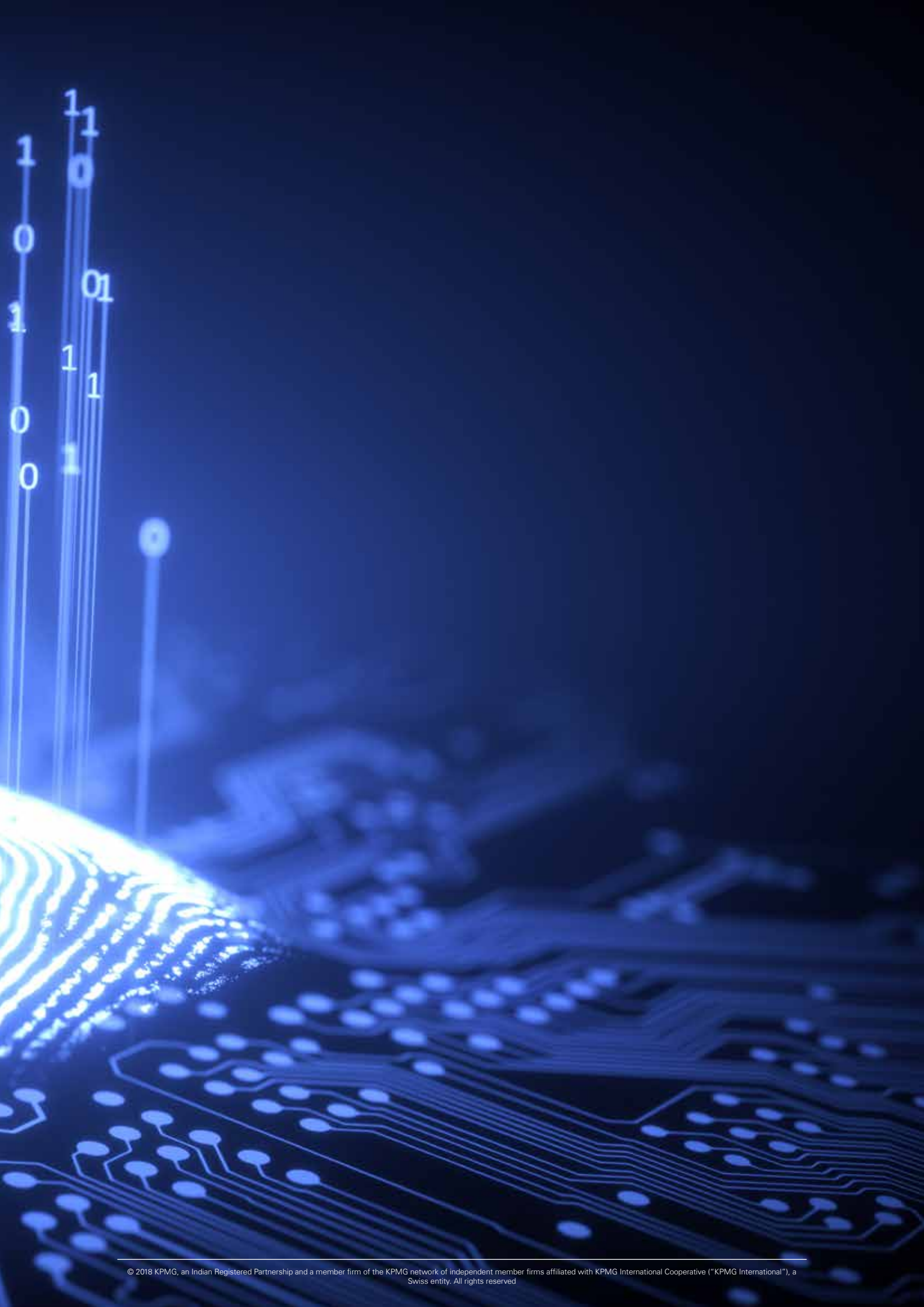
About Kalaari Capital

Kalaari Capital is an early-stage, technology-focused venture capital firm with \$650 million in assets under management. Since 2006, we

have empowered visionary entrepreneurs building unique solutions that reshape the way Indians live, work, consume and transact. Along

with capital, we focus on a long-term partnership with entrepreneurs to help unlock large value through disruptive innovation.





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