KPMG

FCM TRAVEL SOLUTIONS

The Digi-Smart Indian Business Traveller

How emerging technologies are impacting corporate travel

2018

Table of contents

Forewords

The year 2018 will be the year of embracing smart technology in business travel. After our first whitepaper on 'Business Travel in India', we're delving deeper into the biggest disruptor in travel – digitalisation and how we're preparing ourselves to stay ahead of the increasingly tech-savvy business traveller.

This whitepaper on the 'The Digi-Smart Indian Business Traveller' will focus on how technology is rapidly revolutionising travel by maximising efficiencies, improving experience and increasing choice and options for the average traveller worldwide and increasingly in the Indian market. Rapid penetration of smart phones, near field communication, in flight WIFI, faster networks and many such advances are only accelerating the penetration of technology into every aspect of travel. Self-booking tools, travel analytics, AI, and sharing economy services are not only here to stay but hold myriad and exciting possibilities for the future.

For the travel industry, this has not only given rise to many opportunities but also challenges that need to be addressed. Security concerns, cost effectiveness and user acceptance need to be carefully evaluated while working out the pace and operating process for introduction of any new technology. Reskilling of employees and an attitudinal shift that embraces 'the new' are other areas which might have to be worked upon.

Any organisation that wishes to serve today's digi-smart traveller must align itself with their expectations and even anticipate them. This whitepaper will help such organisations understand the needs of their customers and make strategic decisions for 2018 and beyond based on these insights.

Rakshit Desai
Managing Director
FCM Travel Solutions – India
FCM is part of Flight Centre
Travel Group, Australia

In early 2017, KPMG India and FCM Travel Solutions came out with a comprehensive report on the Indian business travel market — capturing various facets of it, including the size, potential, drivers, inhibitors and challenges. This year, we have chosen to explore a niche, however rapidly evolving aspect of global business travel — technology.

Globally, technology has penetrated deep into business travel practices — from generating a booking request to expense management and reimbursements. It finds a host of applications in travel, including online booking tools, sharing economy services, travel analytics, virtual assistance, payments and compliance. Coupled with key enablers of a technology-driven travel experience — including in-flight Wi-Fi, near-field communications and integrated ticketing — these applications are likely to significantly enhance business travel in the near future.

India is also witnessing a gradual rise in the adoption of these technological advancements, which have led to the birth of what we call the 'digi-smart Indian business traveller'. These travellers — primarily comprising millennials — are technology-savvy and progressively seek simplification of travel-related processes ranging from booking to claims settlement. This trend is expected to drive the travel management companies in India to equip themselves with 'smart offerings', and push the corporate travel managers to adopt the aforementioned technological advancements.

However, will technology truly change the way business travel is managed in India? If yes, by when? Also, what do travel managers expect from their TMCs and what can the TMCs do to brace for the imminent changes? With this whitepaper, we set out to answer the aforesaid questions, and explore the concept of 'digi-smart business traveller', technology trends in business travel, their enabling ecosystem, as well as some potentially disrupting developments that could transform business travel landscape.

Jaideep Ghosh
Partner and Head
Transport, Leisure and Sports
KPMG in India

Executive Summary

Growing smartphone penetration and internet accessibility is making Indian business travellers more demanding..

Business travellers who have been at the forefront of using technology as part of their routine work are slowly demanding its extension for their work -related travel.

Growing smartphone, internet and digital networking penetration combined with ever-growing plethora of online travel choices accessible have made technology part of a business traveller's DNA. Business travellers are increasingly veering towards technology for virtually all answers for their travel needs.

This is leading to the emergence of a new age digi - smart business traveller, which implies **"a technology-empowered traveller, who leverages technological touch points and tools to minimise encumbrances in his travel journey, improves his/her travel experience while also ensuring a safe, compliant and cost -effective business travel".**

Figure 1: Factors driving digi-smart business travel in India

..and expected to drive them towards a futuristic 'digi-smart travel experience'..

Figure 2: Current journey of Indian business travellers

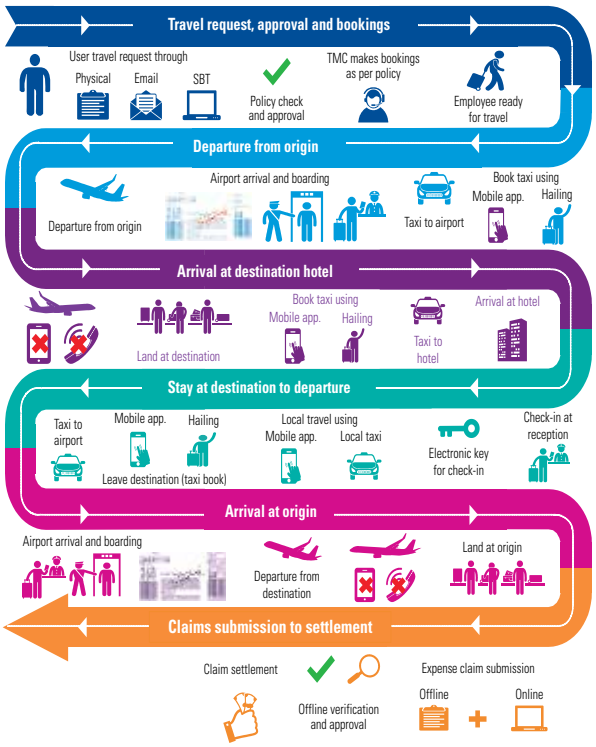
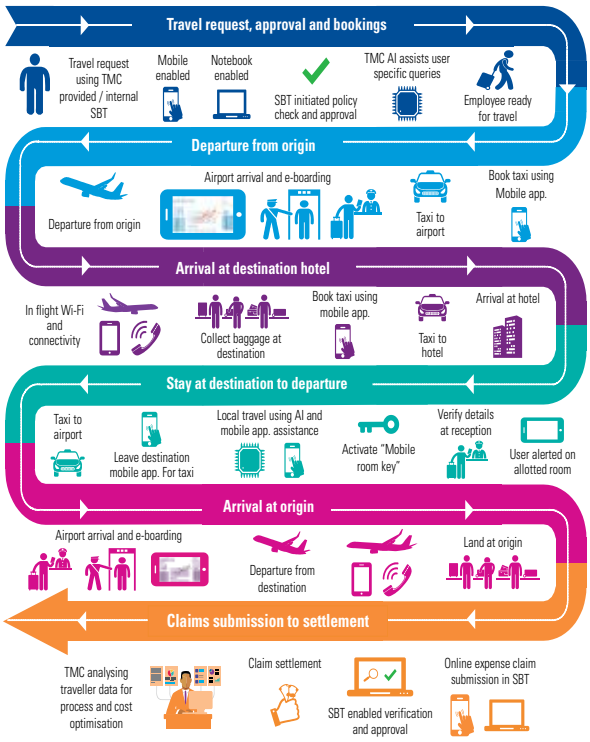


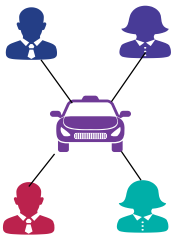
Figure 3: Future digi-smart journey of Indian business travellers



1. *"Economic Survey 2013 - 14", Ministry of Finance, Government of India, February 2013*
2. *"Millennial Careers - 2020 Vision", Manpower Group, May 2016*
3. *"Business travel in India - Emerging Trends and Opportunities", FCM - KPMG Report, January 2017*

..entailing increased usage of technology for a more immersive corporate travel experience.

Table 1: Key business travel technologies - concept, value proposition and implications for TMCs

Technology	Value proposition	Value proposition	Implications for TMCs
 Self-booking tool	• Online based tool where users themselves make travel bookings • Users are able to make travel choices with little or no human / external intervention • Based on "Do it yourself" principle • Integrate GDS, corporate travel policy and internal systems such as HR, finance, legal etc. making it one-stop travel management solution	• Enhance end-to-end travel visibility • Control cost and increase savings • Enhance policy compliance • Reduce turnaround time for end-to-end travel management	• Integrate other solutions such as travel analytics and AI etc. enhancing functionality • Develop common user SBT for SME travellers / business • Offer end-to-end SBT solutions to address integration issues
 Artificial Intelligence (AI)	• Machine capable of replicating intelligent human behaviour • Four core tasks - sense, think, act and learn • Key applications: chatbots, driverless cars, smart devices, virtual assistants etc.	• Give 24/7 'touch and feel' with minimal human intervention along with real-time assistance • Track, records and store travellers' preferences for future use and reference	• Shift "routine queries" to AI chatbot, enhance travel assistant productivity • Identify traveller pain points and 'programme' chatbot to address them real-time to enhance travellers' experience
 Sharing economy Services	• Peer-to-peer sharing of travel services • Different from traditional renting of services like hotels, taxi etc. as sharing economy is driven by online service selection using mobile apps, desktop etc. • Service booked through an intermediary, who aggregates multiple similar service providers (providing the service offline) and make services accessible to users using an online tool • Sharing economy service providers - Uber, Ola, Oyo Rooms etc.	• Service available across multiple locations • Easy access to service provider through the sharing economy service provider's online platform • Ease of booking (typically through mobile apps) • Reduce travel costs due to principle of "pay as you use"	• Interface between business travellers and sharing economy service providers with enhanced control over data and traveller security • Mega aggregator services coordinating the services of sharing economy service providers and other service providers to offer seamless solutions
 Travel analytics	• Collection and collation of traveller data across travel value chain • Analysis of traveller data in terms of time, cost and compliance levels • Aimed at monitoring, controlling and optimising travel compliance and costs	• Track travel spends and visibility • Enhance compliance level • Identify areas of cost optimisation	• Integrate analytics with SBT • Advisory and expense reporting solutions • Identify cost saving areas in business travel programmes
 Blockchain	• Cloud based transaction recording and management system, e.g. booking a flight ticket • Each process of booking a ticket is a block with all processes to be followed together forming a chain (hence blockchain) • All parties involved have access to respective blocks only • Transaction "block chain" monitored centrally (by TMC / travel manager)	• Traveller data security on cloud due to access control • For travel managers, centralised control on corporate travel process • Ability to detect pain points or process delays if any	• Ability to replicate traveller data on cloud as well as on corporate server system • Provide travellers the flexibility to operate travel transactions anywhere

TMCs will need to use a combination of these technology intervention(s) using a modular framework to provide 'integrated technology enabled travel services', which can be customised to the user organisation's business travel programme needs

TMCs would need to continually reinvent and prove their value proposition for travel managers and travellers by integrating current solutions, using a modular framework, with…

..the potential technology solutions emerging from the initiatives taken by the Indian government to enhance technology infrastructure ...

Table 2: Key enablers for digi-smart Indian business travel - concept and value proposition

Technology	Concept and features	Value proposition
Introduction of 5G technology	• Proposed telecom standards beyond the current 4G standards, enhanced mobile broadband speed 50 - 100 times than the current speed • Supports the needs of Massive Internet of Things (MIoT) and Mission Critical Services (MCS).	• Enables applications requiring high reliability, ultra - low latency connectivity • Key applications include artificial intelligence, connected vehicles, smart cars, drones, virtual reality, smart airports etc.
In - flight Wi-Fi	• In flight internet services, currently not available on Indian business travellers • Currently available in over 50 countries including top business travel markets • India is the only country in top 10 business travel market rankings not having in-flight Wi-Fi	• Seamless travel connectivity • High speed onboard enables uninterrupted business even in mid-air • Can support advanced applications including video conferencing and VOIP, hence optimise business travellers' time
Near Field communications	• Establish communication by bringing two electronic devices (one device being portable) by bringing them in close proximity • Enable contactless transactions and card emulation • For example, Visa Pay Wave, Samsung Pay, Mobile Smart cards and e-boarding using mobile phone as ticket	• Replace the need for travel cards, credit cards, documentation for access / payments etc. • In case of airports/hotels, mobile phones become the primary mode of access to facilities • Remove stress or need to carry multiple documents/cards etc. for traveller
Electric Vehicles (EV)	• Vehicles operate on battery power instead of petrol and diesel • Use lithium ion batteries for charging • Cost of operation lower than petrol and diesel cars due to fewer moving parts in EVs	• Reduce cost of ground/taxi transport due to lower operational cost of EVs vs current vehicles • Promote sustainable business travel
Wi-Fi on Rail	• On rail internet services, currently available only in few trains in India • Need of the hour as the current mobile internet connectivity is not standard throughout the country	• Seamless connectivity for business travellers taking short haul rail journeys • Can support advanced applications including video conferencing, VOIP etc. hence optimise business travellers' time
Integrated ticketing	• Common and single ticket giving access to all transport systems in city i.e. bus, train, taxi etc. • Ticket may be physical (paper based) or digital (mobile based)	• Enables travellers to travel between multiple modes without having to repurchase tickets • Reduces the need to carry multiple tickets and bills for using multiple transport services

..and with the globally emerging disruptors, to provide 'integrated technology enabled travel services' led by SBT and travel analytics, considering the Indian users' constraints

Table 3: User perspective on technology trends and implications for TMCs

Indian user technology perspective	Travel manager challenges	Implications for TMCs
• Gradual technological enhancement in the business travel programme • Technology adoption dependent on its cost effectiveness as well as user acceptance. • Key concerns: User expectations, security concerns (both user and data), rising costs	• Pressure to reduce costs while enhancing technology usage • Employee reluctance due to enhanced transparency from higher technology usage	• TMCs need to pilot their solutions with users to enhance users' 'visual concerns' prior to adoption • Identify relevant global best practices and integrate the same as an extension to the user's existing travel programme

..aimed at transforming Indian business travellers into...

truly global digi-smart business travellers

To achieve this futuristic experience, certain initiatives need to be undertaken by key stakeholders..

Table 4: Stakeholder wise initiatives to address key challenges

For Industry	For travel managers/users	For government
• TMCs need to showcase value addition to their clients using technology to address the pain points faced by travellers	• Travel managers to consider gradual migration from offline/ partial offline travel management process to complete online-based processes to enhance speed and efficiency of travel management process	• Standardise technology processes at all Indian airports to give travellers similar experience as provided by Hyderabad airport
• TMCs need to update their booking platform to include services provided by sharing economy service providers in their platform	• Travel managers need to engage with and leverage the business travel industry knowledge and expertise and include aspects such as technology offerings and duty of care in existing TMC evaluation norms	• Urban public transport planning, standards and regulations need to consider seamless connectivity between transport terminals and the city centres
• TMCs need to adapt their technology service offerings relevant to Indian traveller needs		• Infrastructure and regulations pertaining to onboard Wi-Fi on flights need to be updated and upgraded to provide seamless ground connectivity and enhance travellers' experience
• TMCs need to widen their market scope to include SME business travellers as target users of their technology solutions		• Integrated ticketing system at the city level is required to enable travellers to travel uninterrupted within the origin / destination city
• TMCs need to enhance the skill levels of employees to enhance their knowledge and capabilities		• The government would need to take the lead in developing a dedicated electric car charging infrastructure as part of achieving the objectives outlined under the FAME 2030 initiative

...jointly and severally, over the next few years

Indian organisations are increasingly realizing the benefits of a tech enabled business traveller, whose seamless travel can potentially reduce stress and enhance his productivity and ROI from the travel.

This requires bringing forth global emerging and best practices in business travel management with support from disruptive technologies and key technological enablers.

Keeping in mind the growing needs of technology usage and expectations of business travellers, Indian travel managers need to encourage global best technology practices in their business travel programmes by jointly working with TMCs and other technology solution providers.

The government as part of its "Digital India" initiative needs to enhance the quality of the digital and physical infrastructure to keep pace with the changing needs of Indian as well as global business travellers.

For TMCs, while constant engagement with their clients, travellers and other stakeholders on technology solutions is imperative, they also face the perennial challenge of differentiating themselves to meet the evolving technology needs of the growing new breed of the **"digi-smart Indian business traveller."**

Concept of Digi-smart Business Traveller

Concept of digi-smart Indian business traveller

The emergence of the modern information age has brought about an interesting paradigm in business travel. In contrast with the incumbent paper-based process of travel management (right from travel request to claim settlement), business travellers are increasingly taking the smarter electronic route to manage the entire travel process.

Business travellers who have been at the forefront of using technology as part of their routine work are slowly demanding its extension for their work -related travel. Growing use of smartphone, internet and digital networking penetration combined with ever growing plethora of online travel choices accessible have made technology part of a business travellers' DNA. business travellers are increasing veering towards technology for virtually all answers for their travel needs, right from bookings to managing claims. This is leading to the emergence of the new age Digi - Smart business traveller.

While Indian travellers are using their new age digital empowerment to define their personal travel choices, they are yet to experience it while travelling for business purposes. This is primarily due to decision making on business travel being made by their respective employers through pre-defined compliance driven standard processes, which are yet to be fully integrated with the online managed business travel environment.

The concept of digi-smart Indian business traveller implies to a tech-empowered traveller who leverages technological touch points and tools to minimise encumbrances in his travel journey, improves his/her travel experience while ensuring a safe, compliant and cost effective business travel.

Drivers for Digi - Smart Indian business travel

According to GBTA, India is the world's fastest growing business travel market. However, unlike its peers in other large business travel markets, Indian business travellers have lower technology propensity in managing their business travel.

The growing share of millennials in the Indian workforce work for longer hours than their global peers along with increasing business travel spends that has brought Indian businesses on the cusp of 'online interface enhancement' to manage their business travel programmes.

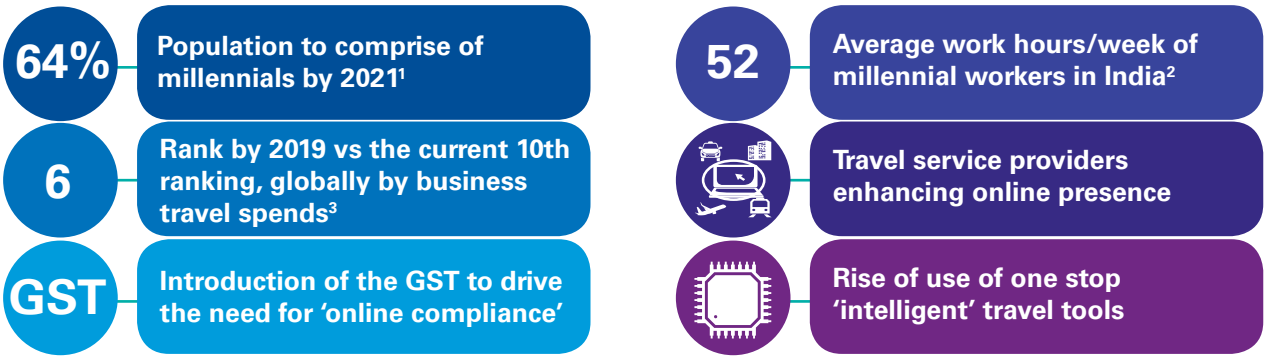
Furthermore, travel service providers (i.e. airlines, hotels, taxi operators etc.) are enhancing their available capacity for online users, which is becoming an important travel booking channel.

The introduction of the GST is also driving businesses to use the online route to meet the regulatory and compliance requirements.

The emergence of user friendly technology solutions such as Artificial Intelligence and SBT is also making Indian travel managers use the digital platform as the mainstay in managing their travel and claims.

Figure 4 below summarises the key factors driving Indian business travellers towards becoming digi-smart.

Figure 4: Factors driving digi-smart business travel in India



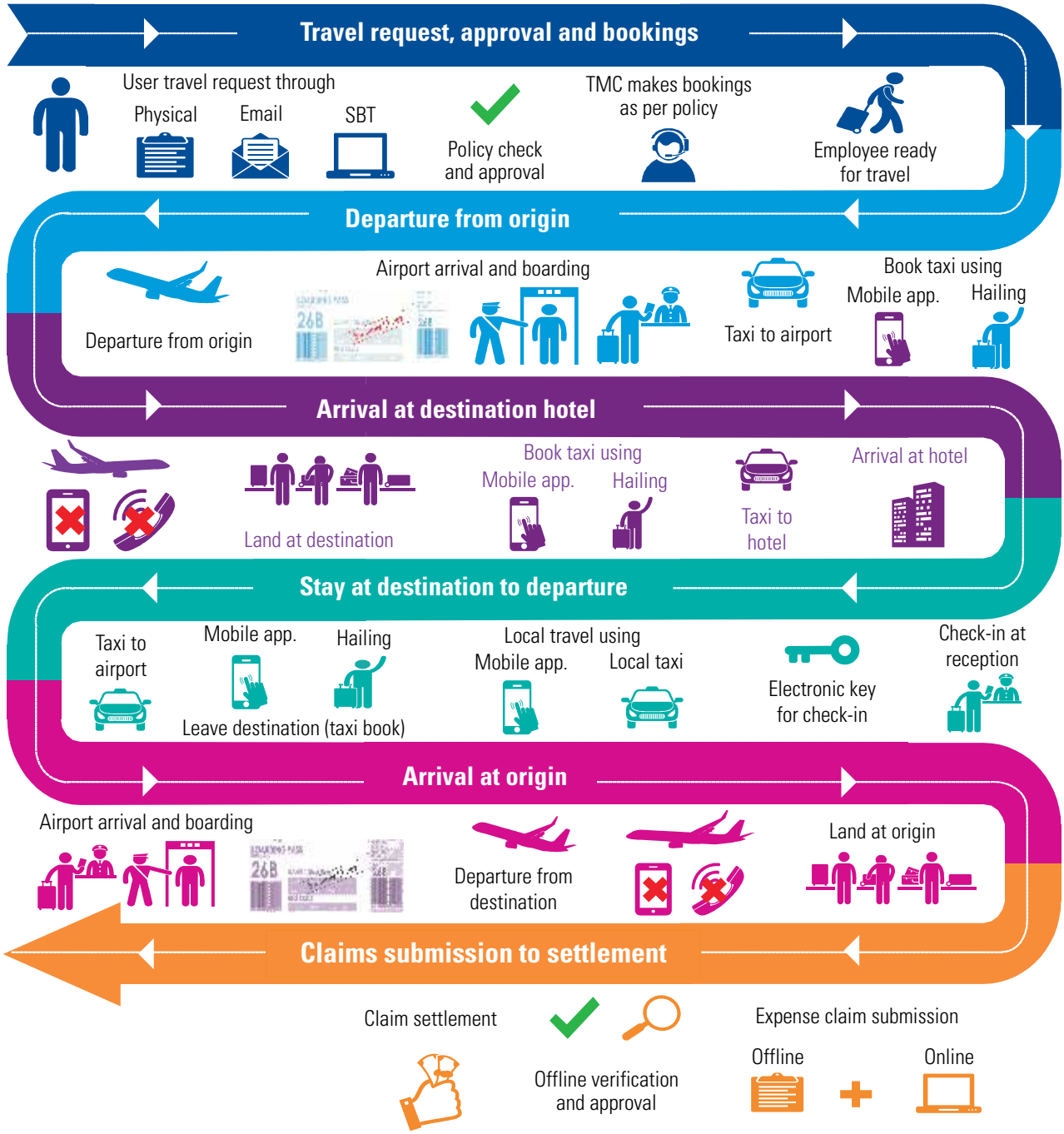
1. *"Economic Survey 2013 - 14", Ministry of Finance, Government of India, February 2013*
2. *"Millennial Careers - 2020 Vision", Manpower Group, May 2016*
3. *"Business travel in India - Emerging Trends and Opportunities", FCM - KPMG Report, January 2017*

The Indian business traveller today

Contemporary Indian business travellers although tech -savvy, use a mix of digital and offline medium to manage their end-to-end travel. Limited technology integration and use of online booking and travel tools in business travel programmes are the primary reasons.

Figure 5 below illustrates the journey of today's Indian business traveller using a mix of online and offline tools.

Figure 5: Illustrative journey of a contemporary Indian business traveller

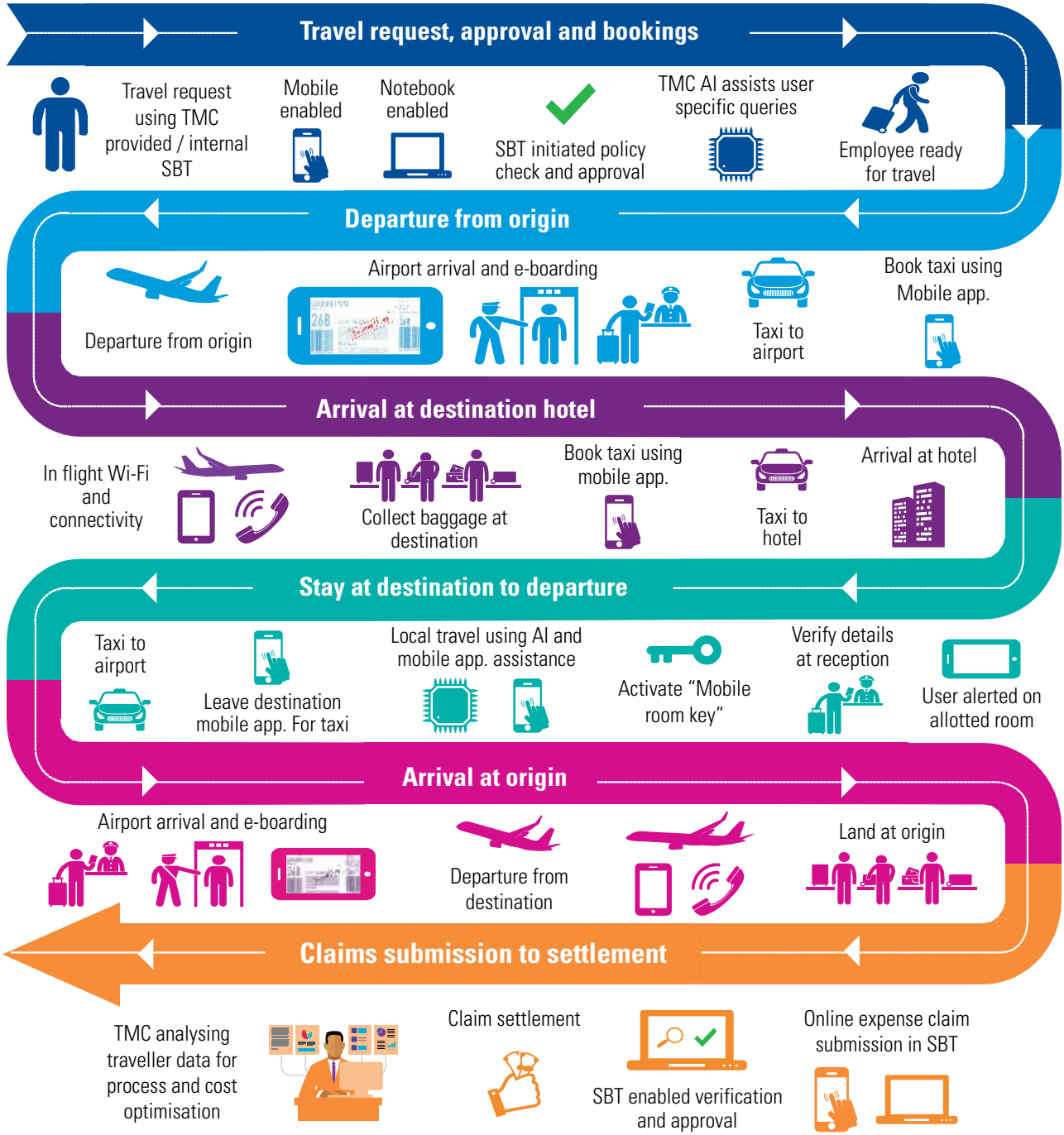


The future digi-smart Indian business traveller

The future digi-smart traveller envisages an e-sensitive business traveller using technology across touch points during his journey to enhance travel predictability, minimise travel stress and anxiety while ensuring seamless connectivity at all times.

Figure 6 below illustrates the journey of tomorrow's digi-smart Indian business traveller, who is tech-savvy, and uses intelligent tools to enhance the efficacy and efficiency of his travel experience.

Figure 6: Illustrative journey of a digi-smart Indian business traveller



Making digi-smart business travel a reality

In order to realise the dream of "digi-smart business travel", it is imperative for Indian businesses to incorporate a technology enabled integrated business travel programme. While there are no "one size fits all" solutions, there are multiple technology initiatives that travel managers need to consider to balance the trilemma of cost control, enhanced compliance and meeting the business traveller expectations.

Self Booking Tool (SBT) is the primary tool used for end-to-end travel management - right from booking to claims settlement. Globally, SBT is being increasingly used by businesses as the primary business travel management tool. Currently, SBT adoption in India is limited to a few large volume business travel users. However, growing awareness and enhanced SBT features offered by TMCs is making the ROI attractive for businesses to consider its adoption.

Artificial Intelligence (AI) is another area which can enhance business travellers' experience. While chatbots (a computer system powered by AI that can carry on a conversation with a human) can be in-built as part of SBT, they can also be programmed to be "virtual private assistants" (VPA) guiding the business traveller towards a smoother, safer and hassle-free journey. They can provide assistance in areas as simple as booking a flight, issuing reminders/alerts, navigation assistance, upgrading a hotel room, guiding on travel options etc.

The emergence of service providers such as Uber, Airbnb, Ola etc. have brought about an emerging service provider in business travel - sharing economy services. These service providers provide travel services through a web based platform with travellers experiencing human interaction only at the point of using the services. Sharing economy provides twin advantages of lower costs (compared to incumbent travel service providers) and an online interactive user friendly travel management platform.

Travel analytics is an emerging technology that aims to address the issue of analysing travel spends and behaviour to enable greater visibility over individual traveller and overall travel spends. Analytics aims to address the primary issue faced by travel managers i.e. accurately track savings and evaluate clearly the value of the travel programme in an environment of rising costs and detecting potential leakages. With travel budgets constantly under pressure, analytics provides travel managers with a smart tool to enhance cost visibility and the organisation's travel programme effectiveness.

Blockchain is another emerging technology that enables all stakeholders to map their individual processes as a block, thus allowing all stakeholders to create a chain that maps a traveller's journey from starting point (i.e., travel booking) to the end point (expense claims settlement). This blockchain is mapped on a cloud platform accessible to all stakeholders (with access for each stakeholder restricted to their respective processes or blocks). Besides, each block within the travel journey can also be a blockchain comprising multiple sub-processes. Blockchain enhances transparency and helps identify potential disruptions in a traveller's journey whether flight disruptions/delays, safety, payments etc. However, blockchain is a relatively new concept with new applications being developed in and around travel services.

While there are other technological solutions being developed to enhance the quality and experience of business travellers (e.g. NFC and e-tags), the above five technologies are relevant for the Indian business travel market given the growing awareness for these systems and their potential in enhancing the quality, expectations and transparency for the key stakeholders i.e. business travel managers, travellers and TMCs.

Key Business Travel Technology Trends

Self-booking Tool

Concept of Self - booking tool (SBT)

SBT can be defined as an online system/software used for making and managing travel bookings by an individual personally. Simply put, an SBT is where a user himself makes and manages the travel bookings without the need for any travel assistant.

The central theme of SBT is based on the **"Do It Yourself"** principle where the user gets access to information on travel services provided by service providers (i.e. airlines, hotels, taxi service providers etc.) through a real - time user-friendly online interface, allowing the user to select, book and manage travel services as per his/her convenience.

For business travellers, the SBT could be an open platform of OTAs or a customised platform developed in-house or sourced from a professional TMC. Typically, Indian businesses engage services of a TMC for provision of SBT and related services.

Businesses customise an SBT by incorporating elements, such as travel policy requirements, compliance and integration with other MIS systems, thus **developing a corporate SBT**, that can meet the business travel requirements of the organisation.

How corporate SBT works?

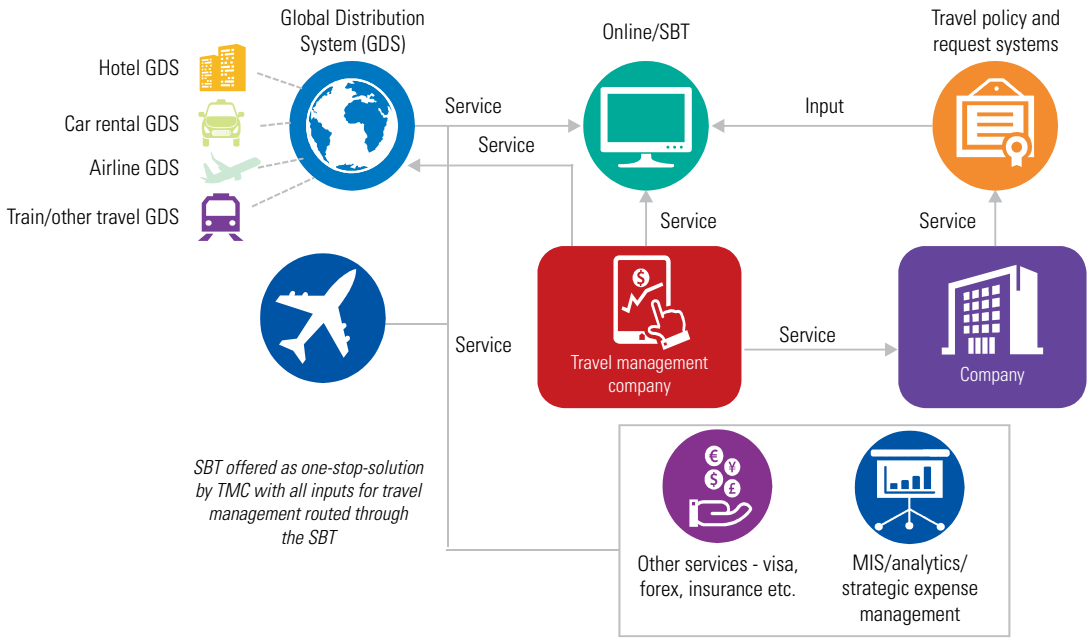
A corporate SBT involves the following steps:

- Step 1: User logs-in to SBT and checks the travel options available
- Step 2: User selects travel preferences and makes the bookings
- Step 3: Bookings once made are auto-checked for any compliance requirements, if any
- Step 4: Post checking, they are confirmed and bookings are made.
- Step 5: Travel details auto-updated into the corporate MIS

While steps 1 to 4 are common across corporate SBT systems, integration of corporate SBT with other MIS systems of the organisation is contingent upon system compatibility, level of automation and organisation preferences.

Figure 7 below summarises the typical operating model of a corporate SBT system using TMC.

Figure 7: Typical operating model of an SBT[1]



1. *"Business travel in India - Emerging Trends and Opportunities", FCM - KPMG Report, January 2017*

What makes SBT different?

The Indian business travel market is characterised by three operating models namely

1. Conventional travel management model through email / paper-based application
2. Companies using TMC owned/self-developed SBT
3. Companies opting for OTAs (Online Travel Aggregators)

While the conventional model is more prevalent due to legacy operating models, relationships with incumbent 'TMCs and 'TMC cost' focus; growing need for process improvements and travel life cycle cost is expected to drive the demand towards TMC led SBT. While the TMC led SBT is an emerging concept in India, the OTA model is still in its infancy.

According to Prokonsul[1], SBT adoption in India stands at approximately 2 percent. This is primarily due to low awareness, limited visibility of the travel life cycle costs and larger focus on managing TMC costs.

To enable users to adopt SBT, TMCs, are innovating with potential 'hybrid SBT' solutions. A hybrid SBT merges the conventional travel booking system with SBT using mechanisms such as 'click and approve', automatic approvals and booking tracking systems etc. While the

hybrid SBT system is more user friendly, it does not have the advantage of 'multiple service integration' offered by a compact SBT system.

However, increasing domestic and international travel costs and increasing integration of Indian economy with global developments are driving travel demand for Indian travellers. Business travel spends have grown at a CAGR of about 9.5 percent in last five years to reach USD 33 bn[2] in 2016. According to GBTA[2], India is likely to become the sixth-largest business travel market by end of 2019.

Growing spends is forcing Indian business leaders to rethink the way travel is managed. Compared to conventional models, SBT enables travel managers to have real-time view of their travel costs, enabling quicker decision making in controlling travel costs.

Table 5 below compares the three operating models, allowing travel managers to determine the suitability of the respective model for their organisation.

Table 5: SBT vs Other travel management operating models

Factor	Conventional	SBT	OTA
Primary mode of booking	Email / physical	Online software tool	Online software tool
Human interface	Very High	Minimal	Minimal
Compliance check	Needs physical check per request	Auto checked by system	Auto checked by system
Travel policy integration	Needs physical check per request	Auto checked by system	Challenge due to confidentiality issues
Integration with corporate MIS	Manual integration required	Auto integration using IT interface hence can be customised	Challenge subject to system compatibility check
Integration with other travel services	Separate requisition for each service	Single requisition for all services	Systems yet to develop integrated solutions
Travel analytics and intelligence	Needs to be analysed separately	Can produce MIS reports on expense analysis, compliance levels etc.	OTAs developing solutions for it

1. Demystifying Travel Management in India", business travel IQ, 12 October 2015, accessed on 4th October 2017

2. "Business travel in India - Emerging Trends and Opportunities", FCM - KPMG Report, January 2017

Why SBT?

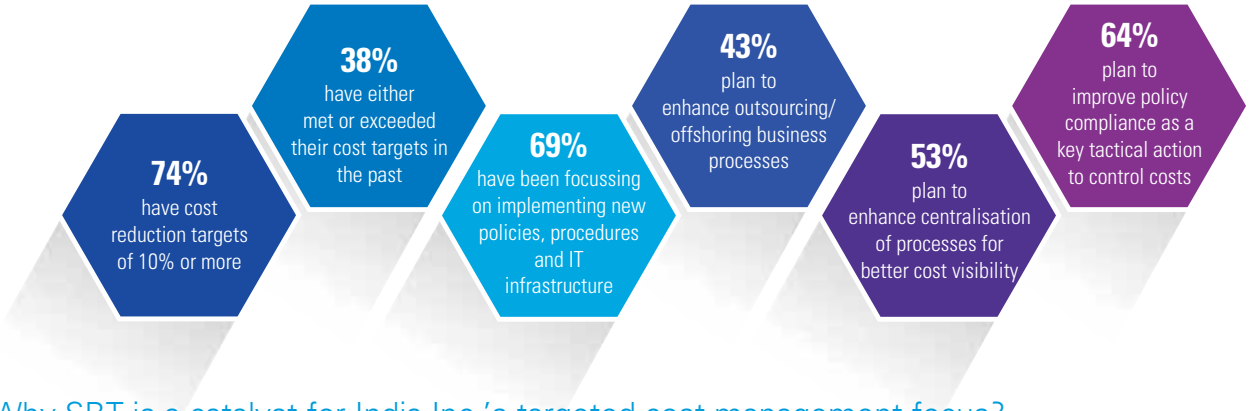
Corporate travel managers are increasingly under pressure to optimise costs and processes in the face of growing competition and enhancing profitability.

According to a survey conducted in 2017 on cost improvement practices and trends in Asia-Pacific covering 80 Indian companies -

- Indian companies (across industries) had the highest cost reduction targets compared to their other APAC peers.
- Indian companies had the best results for their cost reduction programmes amongst their APAC peers showing the commitment and willingness to take required steps to achieve the targets.
- Majority of Indian companies have been focussing on process improvements and adapting to the changing business environment in the last 24 months

Figure 8 summarises the key cost management strategies Indian companies plan to pursue over the next few years.

Figure 8: Indian companies planned cost management strategies over the next few years[1]



Why SBT is a catalyst for India Inc.'s targeted cost management focus?

Considering the strong tactical and strategic focus on cost reduction, SBT offers significant advantages to catalyse India Inc.'s targets to become more cost competitive.

According to a study by Paystream Advisors Inc.[2] amongst 200 mid-to-large companies in North America, companies using SBT experiences 60 - 70 per cent reduction in processing cost per request by switching from manual to full automation.

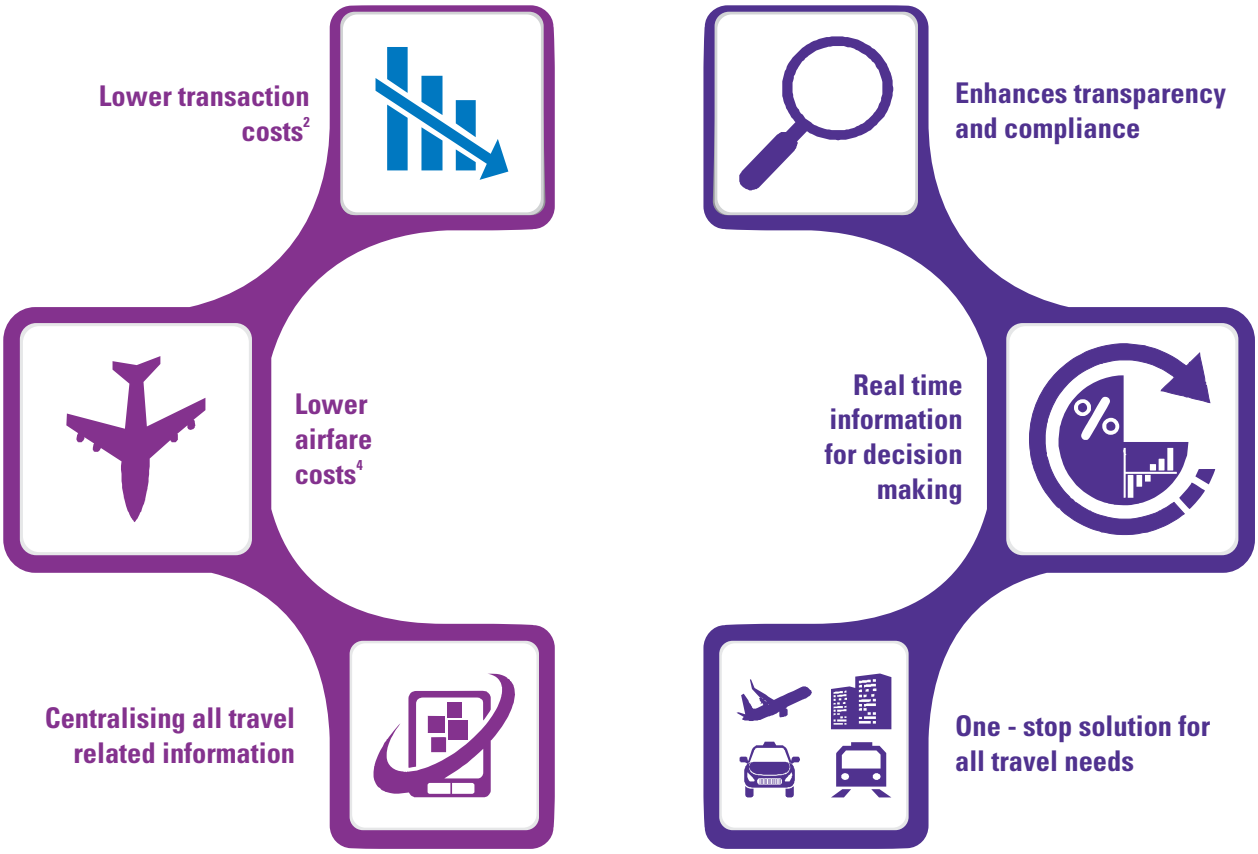
According to a study by Amadeus[3] amongst 590 companies in Europe, 59 per cent of the SBT users have saved more than 10 per cent on their travel budget including air travel costs.

SBT integrated with expense management systems (EMS) ensures that all aspects related to travel management are controlled through a single interface thus ensuring centralisation, transparency and policy compliance as a one-stop solution. Hence, SBT addresses the issues faced in traditional travel management tools through a single interface.

Figure 9 in the next page summarises the benefits of SBT system based on global experiences from its usage while also meeting the criteria of India Inc.'s proposed cost management strategies.

1. *"Thriving in Uncertainty - Cost improvement practices and trends in Asia-Pacific", July 2017*
2. *"2016 Travel and Expense Management Report", Paystream Advisors Inc., Q3 2016*
3. *"2015 European business travel and expense analysis", Amadeus, 2015*
4. *"Business travel in India - Emerging Trends and Opportunities", FCM - KPMG Report, January 2017*

Figure 9: Benefits of using SBT



What is the global experience from using SBT?

SBT as a concept has been prevalent in the global business travel sector for over a decade. Numerous studies and surveys have been conducted by leading travel technology companies such as Amadeus, Concur, FCM and Carlson Wagonlit, across North America, Europe and Asia-Pacific to highlight the experiences and benefits of using SBT by user organisations.

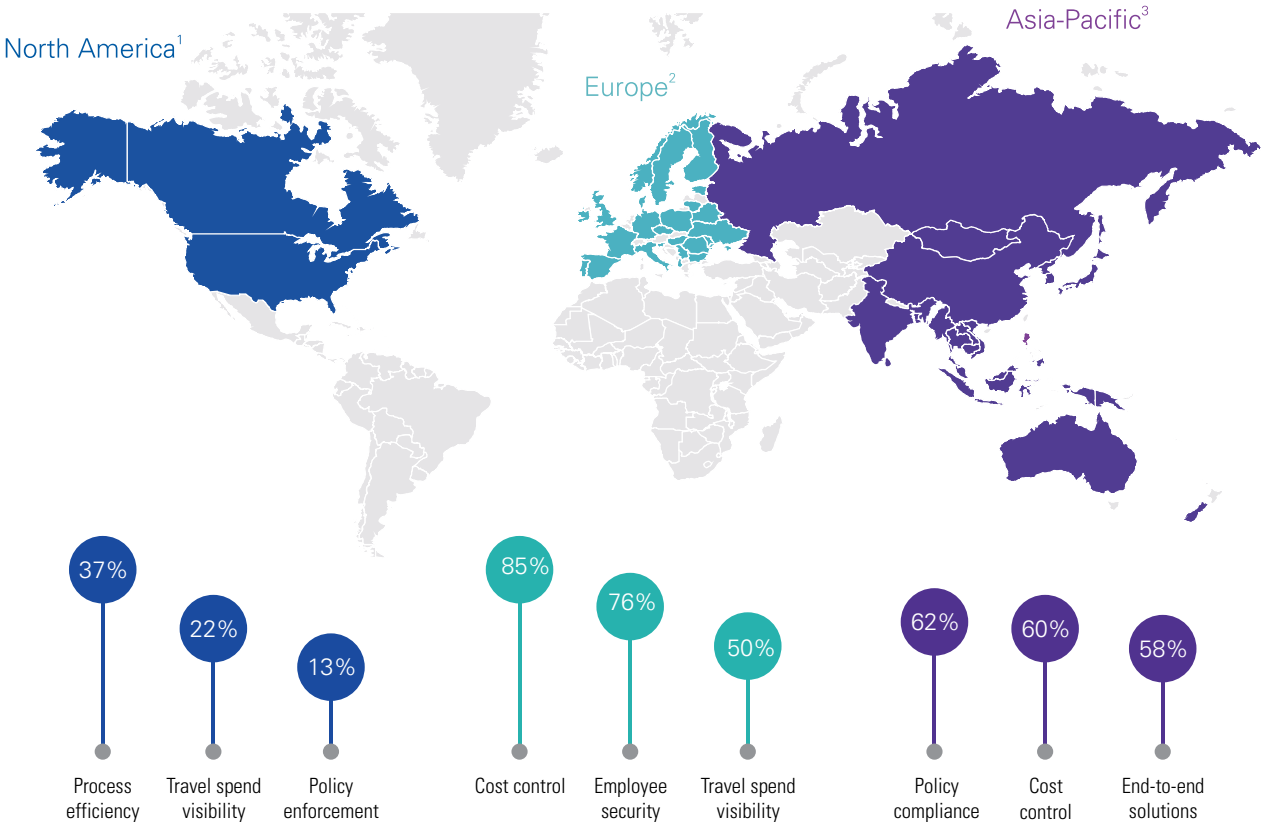
The concept, which initially started off purely as an air ticket booking tool has graduated to include hotel bookings, taxi bookings, travel policy check, EMS systems, and hence therefore becoming an integrated travel management solution.

While cost reduction, globally, was the primary driver for adopting SBT, growing volume of business travel, increasing travel complexities and constant adaption of SBT with changing user trends and preferences have expanded the rationale for using SBT.

For North American travel managers, process efficiency is the primary reason for using SBT compared to cost control and policy compliance that are vital for travel managers in Europe and Asia-Pacific, respectively.

Figure 10 below summarises the region-wise drivers for SBT adoption. The drivers are based on surveys carried out by travel technology service providers with travel managers in the respective regions.

Figure 10: Region-wise drivers for SBT adoption



In terms of usage experience and levels, North America has been at the forefront of SBT usage primarily due to its drive towards end-to-end adoption compared to Europe and Asia-Pacific.

While SBT is gaining popularity across regions, there is a long road ahead to realise its potential benefits. Some of the benefits experienced from using SBT are discussed in the next page.

1. *"2016 Travel and Expense Management Report", Paystream Advisors Inc., Q3 2016*
2. *"2015 European business travel and expense analysis", Amadeus, 2015*
3. *"Sabre Asia-Pacific Corporate Travel Practices Survey 2015", Sabre, 2015*

Cost Savings

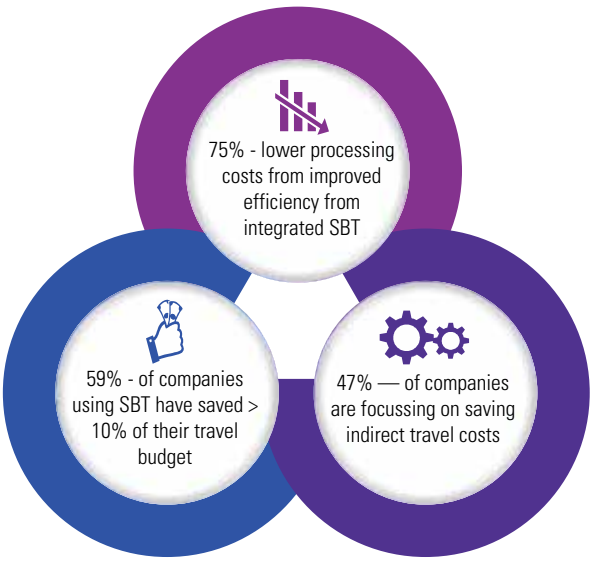
Being one of the primary drivers for SBT usage, users have been able to identify savings and to some extent have achieved the desired results.

From saving processing costs to lower travel spending due to better expense visibility, SBT has enabled travel managers to analyse travel spends as and when they are incurred so as to take necessary action on further travel bookings. Hence, SBT has enabled real-time expense tracking and management of spends while also reducing time and enhanced productivity in travel cycle (from booking to claim settlement) completion.

While travel managers in North America have reported 60 - 70 per cent reduction in travel processing costs (due to lower manpower and lesser time in processing each request), those in Europe have reported reduction in travel costs by 10 - 20 per cent across their travel budgets.

Figure 11 summarises the cost saving perspectives of travel managers across regions.

Figure 11: Cost-saving perspectives



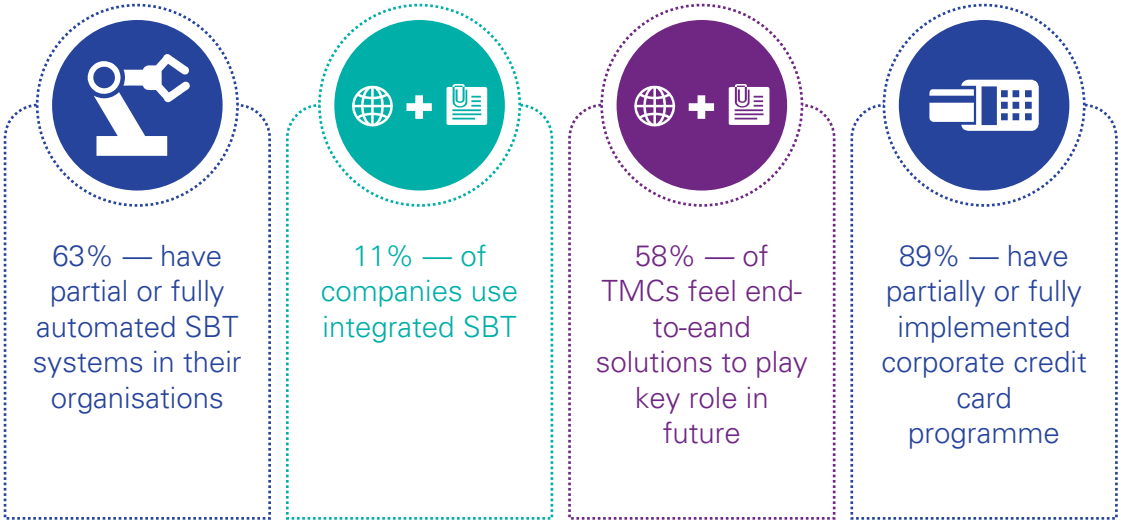
End-to-end SBT enhances visibility

SBT has enabled travel managers to have more visibility and check the effectiveness of their corporate travel programme. The scope of visibility includes costs, compliance, traveller behaviour and identifying potential optimisation areas.

While travel managers in North America are enhancing corporate card programme implementation to enhance end-to-end visibility, those in Europe are taking incremental steps towards the same objective. Travel managers in Asia-Pacific are yet to achieve visible results in end-to-end implementation.

Figure 12 summarises the end-to-end SBT perspectives of travel managers and TMCs across regions.

Figure 12: End-to-end SBT perspectives



Data analytics

The usage of SBT has enabled travel managers to collect and analyse data on employee travel almost instantaneously to understand booking patterns, travel choices and preferences.

With modern SBT systems equipped with tools to statistically analyse data at each booking, employee, location, time period etc. it is possible to identify the level, understand deviations and trends, while allowing corrective actions to be taken, if any.

Figure 13 summarises the perspectives on data analytics of travel managers and TMCs across regions.

"2016 Travel and Expense Management Report", Paystream Advisors Inc., Q3 2016

"Sabre Asia-Pacific Corporate Travel Practices Survey 2015", Sabre, 2015

"2015 European business travel and expense analysis", Amadeus, 2015

Figure 13: Data analytics perspectives

Are Indian companies prepared to adopt SBT?

SBT is a relatively new concept in India. According to Prokonsul research study in 2015[1] , SBT adoption rate was approximately 2 per cent. Low cost manpower availability and high dependence on legacy practices are the primary reasons for low SBT adoption.

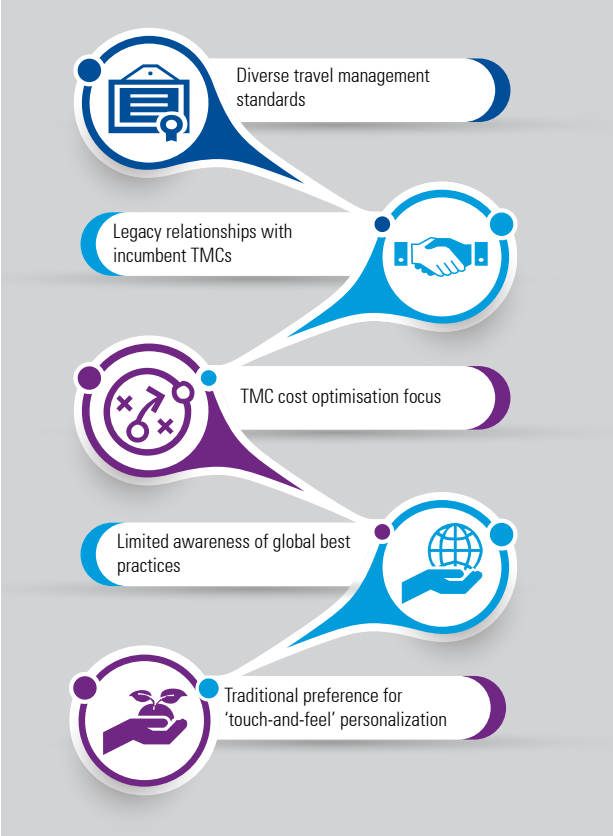
Given the high dependence on local travel agency (54 per cent share) and limited TMC penetration (21 per cent) in the Indian business travel market, SBT adoption remains the domain of large spenders.

However, growing travel volumes, increasing spends and varying preferences of travellers are challenging travel managers to control costs, maintain compliance and influence over the widely prevalent "partial online" travel management process. A travel head of a leading Indian construction company[2] says, "Integrating our in-house SBT with corporate MIS is our primary challenge due to our widespread global operations and varying mobile data speeds, which restricts our ability to standardise travel processes".

While SBT enables travel managers to have in-built cost, compliance and control through an integrated travel management process, the travellers' habits and preferences need to be addressed as well.

Figure 14 summarises the current habits and preference of travel managers and business travellers that SBT needs to address to enable more widespread adoption.

Figure 14: Factors slowing SBT adoption in India



1. *"Demystifying Travel Management in India", business travel IQ, 12 October 2015, accessed on 4th October 2017*
2. *Primary interviews, KPMG Analysis 2017*

How TMCs globally drive SBT adoption?

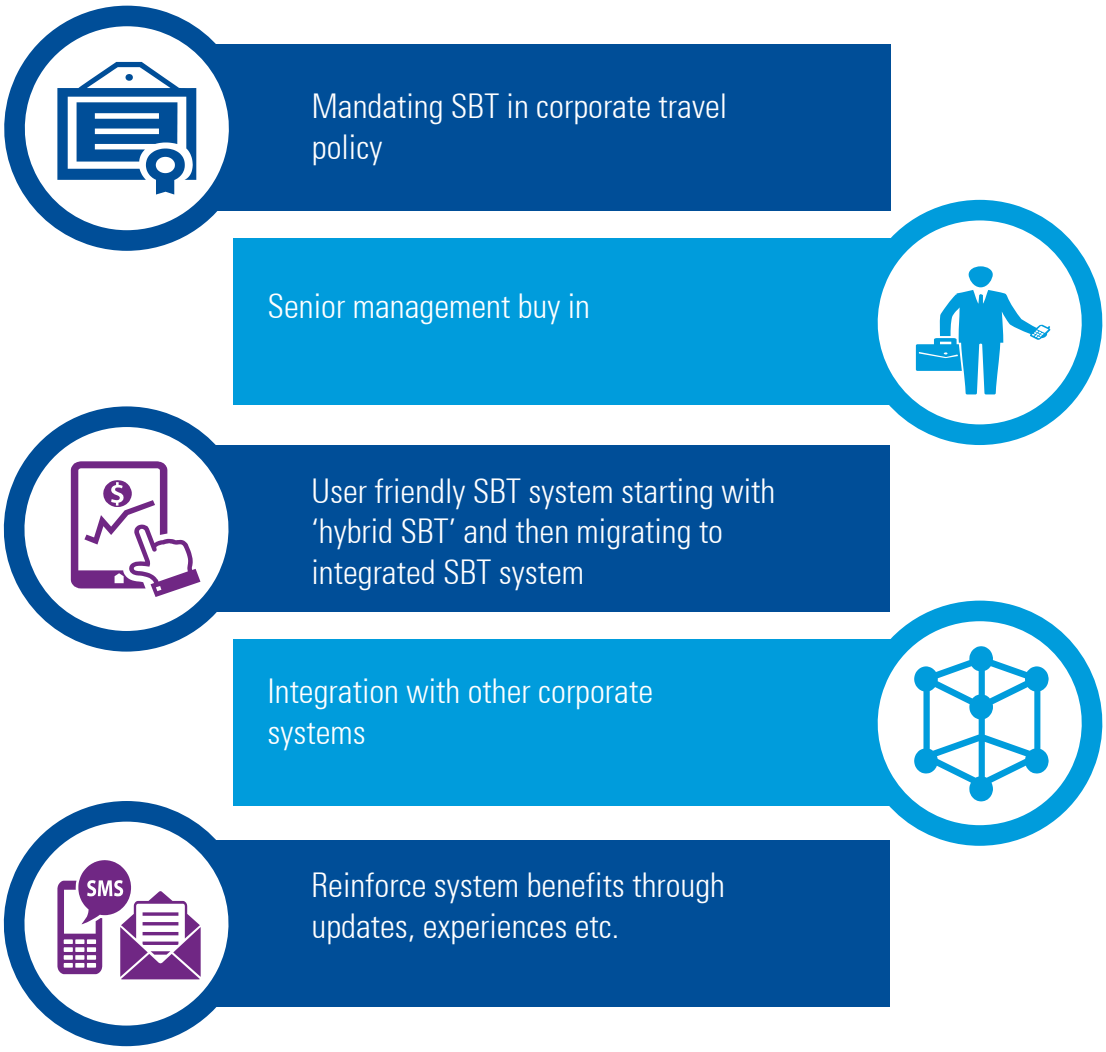
Globally, travel managers have used multiple methods to enable a smooth and steady transition towards SBT adoption in their organisations. One of the primary steps towards higher SBT adoption is for the senior management and travel managers to be convinced about its benefits and its compatibility with the existing corporate systems.

While there are no set rules or principles to enhance SBT adoption, it is imperative to understand travellers' behaviours, preferences and 'tech attitude' apart from its user friendly features expected from an SBT to drive its adoption and continuous usage.

For travel managers, the real challenge is to convince users about SBT benefits including improved travel management experience. This requires use of enforcements and reinforcements to bring about collective change in user behaviour. A travel head of one of India's leading IT companies[2] says, "Our employees don't have an option but to use the in-house travel booking tool. Employees are not complaining because we have a completely paperless and seamless travel process".

Figure 15 summarises some of the catalysts used to drive SBT adoption by global travel managers.

Figure 15: Key catalysts for enhancing SBT adoption in India



Implications for TMCs

TMCs in India have been traditionally viewed from a booking agency perspective with the primary objective of securing 'best deals' using their economies of scale in servicing multiple corporate clients.

However, growing complexities in business travel management attributed to rising costs, diverse employee expectations and growing transparency in travel deals / rates (led by emergence of OTAs, e-retail etc.) apart from growing online presence of airlines, hotels and taxi companies that are forcing TMCs to identify strategies to differentiate themselves.

Growing client expectations and transparency in travel management is forcing TMCs to enhance their business model to suit the changing needs of clients.

Table 6 below summarises the emerging bouquet of TMC services in the "SBT environment"

Table 6: Emerging bouquet of TMC travel services[1]

Emerging service bouquet	What corporate clients need	How TMCs are responding
Travel analytics / intelligence	• Greater visibility on spends • Traveller spends behaviour throughout the travel lifecycle	• In-built analytics tool in SBT • Generation of MIS reports on travel expenses / trends • Identification and recommendation on areas of improvement
Employee compliance mapping	• Track employee compliance levels • Identification of potential areas of compliance improvement	• In-built compliance preventing bookings outside policy norms • AI enabled SBT detecting "opportunistic" behaviour
Billing and claims management	• Single interface for travel and expense management • Accurate filing, processing and approval of claims	• EMS integrated with SBT ensuring single interface • Depending on implement ability, enabling zero paperwork
24/7 employee travel assistance	• Ability to provide 24/7 assistance to employees	• Mobile app enabled SBT ensuring any time access to assistance • AI enabled SBT ensuring that "routine requests" are addressed without need for human travel counsellor
Employee safety/ duty of care	• Ability to provide information to employees for their safety and security	• News and live feeds on security developments in locations where employees are travelling

1. Primary interviews with TMCs and travel managers, KPMG Analysis 2017

Industry initiatives on SBT

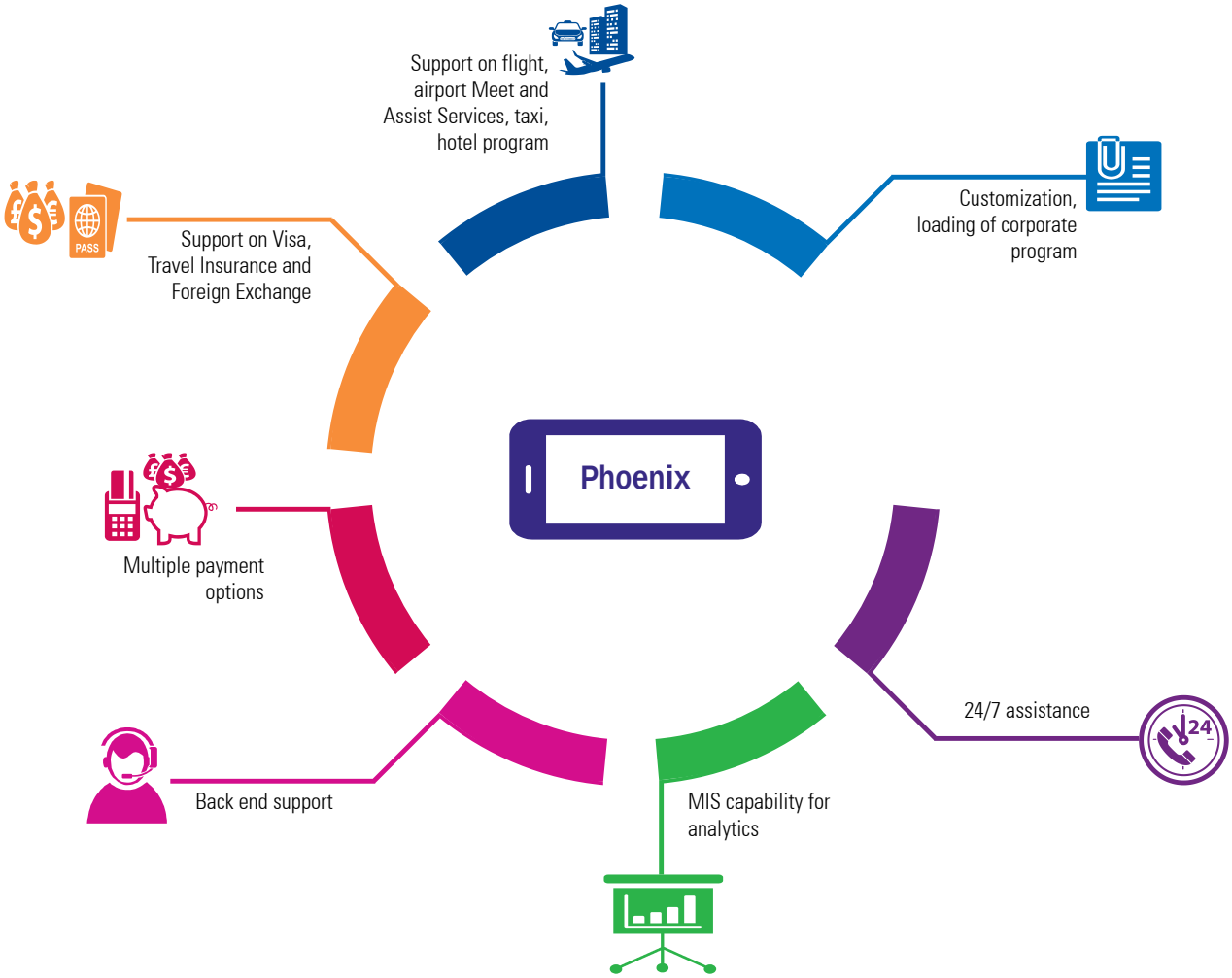
Development of a user focused universal SBT solution: Case study of Phoenix

Phoenix is an industry developed SBT offering a comprehensive and innovative online business travel booking experience by delivering a broad selection of travel content and providing a user friendly online experience.

Phoenix gives users greater control over their corporate travel programme by providing the required travel content to business travellers with policy enforcement and compliance.

The platform enables 'real time bookable' fares to business travellers and gives users the advantage of 'booking what they see' - a feature not common on OTA platforms.

The multi-functional capabilities of Phoenix is represented in the figure below

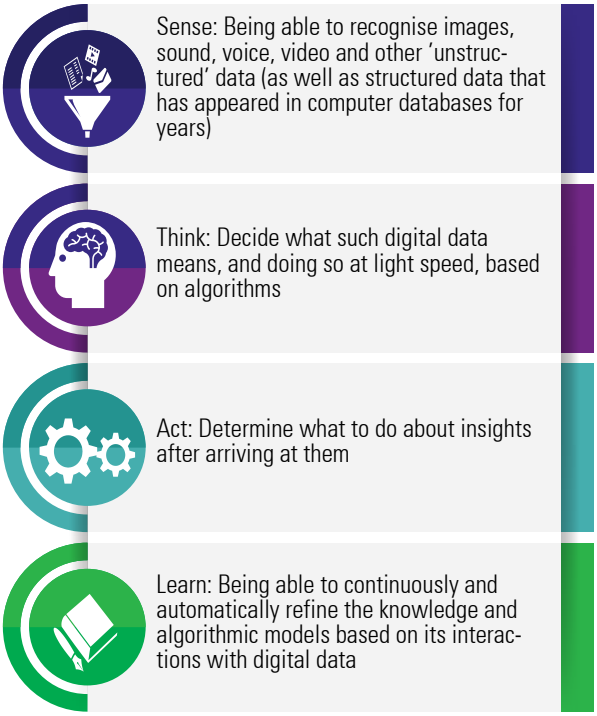


Artificial Intelligence

Concept of Artificial Intelligence (AI)

AI is the capability of a machine to imitate intelligent human behaviour :

Figure 16. Four core tasks of AI



Companies are using AI to enhance products and services or create entirely new offerings today that touch people's lives.

- The vast majority of companies have begun to understand the possible applications and potential implications of these cognitive technologies
- About 84 per cent of the 835 companies surveyed around the world are using some AI technologies today in their businesses.

The most frequent user of AI in 2016 was the IT department. However, by 2020, 70 per cent of executives believe AI's greatest competitive impact would be on functions outside of IT.

- Thirty-two per cent expect that the impact of AI will be greatest in sales, marketing, or customer services
- Twenty-two per cent expect to see its impact on non-customer-facing corporate functions of the corporate centre, finance and strategic planning.

Technology developments in AI-led travel has expanded to include driverless trains, driverless cars, chatbots in travel booking tools, drones and even driverless ships.[1]

Key Applications of AI

1. *"Getting Smarter by the Day 2016", Tata Consultancy Services, as accessed on 9 October 2017*

Applications of AI in travel services

AI is changing the rules for the travel industry and the ability to predict the behaviour of travellers, which would unlock new revenue opportunities for travel players. Global travel brands such as Marriott, Uber and Hilton are deploying AI solutions to understand behaviour of travellers and identify 'attributes' to enhance revenues and travellers' experience.[1,2]

AI in Transport

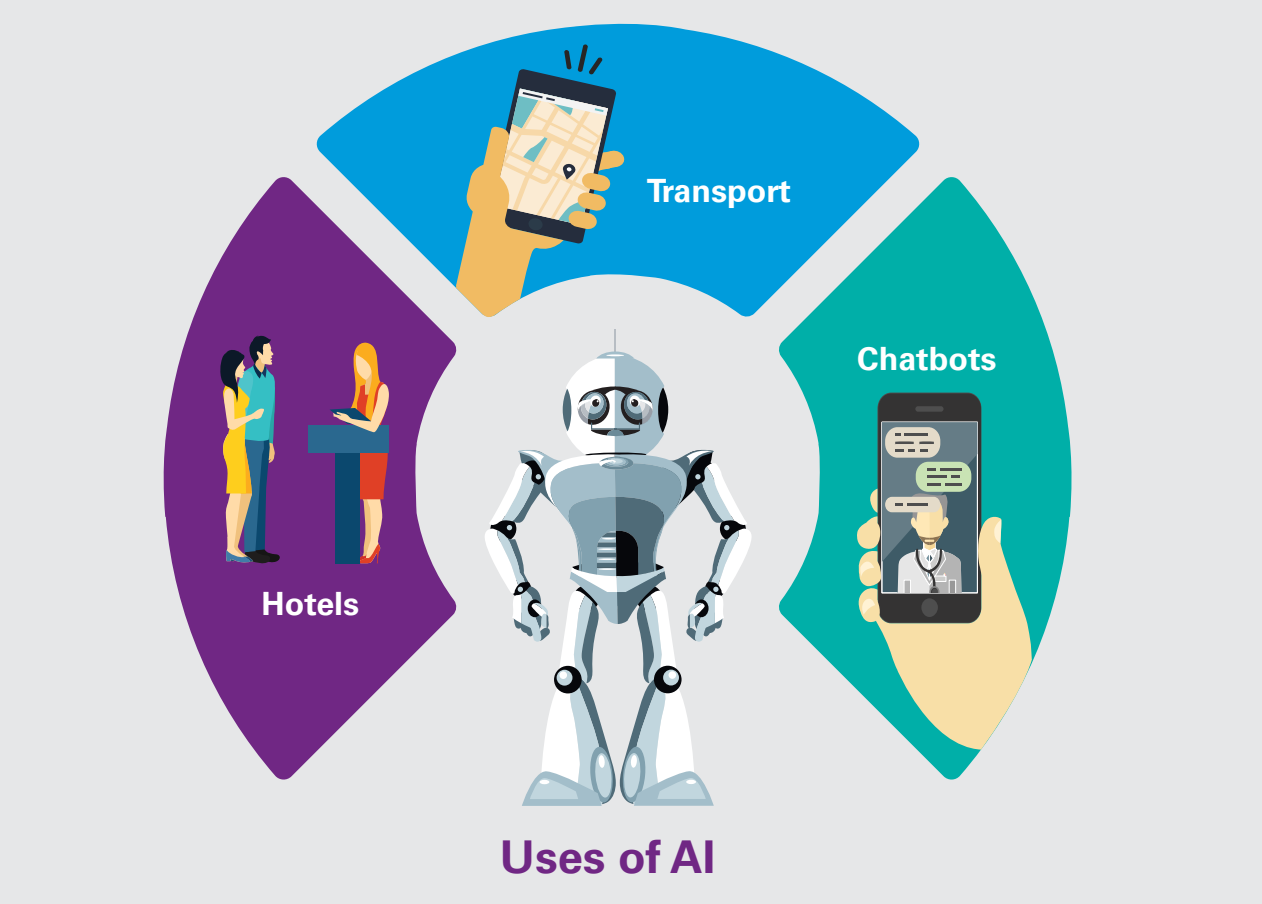
- Uber's new 'route based pricing' system uses AI and machine learning techniques to tweak pricing and identify customer willingness to pay depending on destination, time of day and location
- In the government space, Delhi Metro is piloting driverless train systems and would be shortly introducing the same in early December 2017 in its upcoming Magenta line (Janakpuri West to Botanical Garden). With this level of automation, staff members would only be required for customer service and not for safe operation.

AI in Travel Industry

Chatbots and virtual assistants are enabling a fundamental shift in how people interact with technology. Over the next decade, they have the potential to become a core part of our normal experience across most everyday activities.

Chatbots simplify the end-to-end booking process with natural language commands. Due to the amount of data required for true intelligence, there are currently only a few advanced travel applications with actual AI. Most things marketed as chatbots are still interfaces placed over existing legacy systems, or they have humans hurriedly processing the commands at the back end.

Chatbots such as Google Assistant and Apple Siri are useful in certain aspects of travel -knowing weather details, real-time navigation, etc. Moreover, by combining context (location, time, language) with personal information (age and interests), chatbots are able to push relevant offers to customers, courtesy AI.



1. "Getting Smarter by the Day 2016", Tata Consultancy Services, as accessed on 9 October 2017
2. "How AI is changing traveller experience 2017", Techzone360, as accessed on 15 October 2017

AI in Hotels

- The Cosmopolitan of Las Vegas recently unveiled its new AI concierge, 'Rose'. This is both a brand differentiation effort and a way to improve guest services; after all, Rose never sleeps and is marketed with a catchy personality
- Edwardian Hotels has launched its chatbot 'Edward' and Hilton Worldwide teamed up with IBM to develop its AI-based hotel concierge 'Connie'
- Hilton Worldwide's AI concierge, Connie, is a two-foot bipedal robot, which guests could interact with while arriving at the check-in desk. Connie advises guests on local attractions and interesting sites using inputs from IBM's Watson AI and travel database WayBlazer.

Virtual assistants, on the other hand, perform tasks for an individual based on user information and access from many external sources such as user flight schedules, hotel availabilities, country events, weather, and traffic conditions.

For example, intelligent virtual assistants like Evature's EVA, and Amazon's Alexa perform tasks by combining user input with their preferences. Scheduling is handled particularly well by virtual assistants. In the not too distant future, a virtual assistant could scan its user's calendar to identify events that require travel and, accordingly, offers to book flights proactively, while taking into account the traveller's preferences and past booking behaviour. Virtual assistants would change the way people make travel plans as they increasingly become the new mediators between travel players and travellers.

Current trends in business travel

Globally, business travellers' expectations are increasing and there is a high demand for customised services.

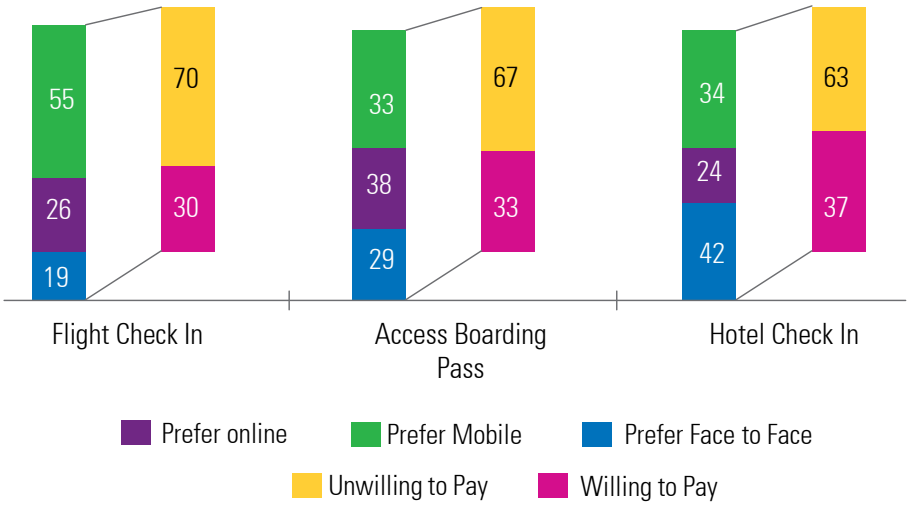
Amongst Asian business travellers, face-to-face interactions have become the least-popular option, except for hotel check-ins. They value the transparency of choice and information that autonomous digital channels, such as AI, can provide.

Similarly, Indian business travellers are shifting to digital, with only 17 per cent of them preferring face-to-face interactions for process like flight check-ins.[1]

When choosing flights, convenient schedules and direct flights were consistently amongst the top-three priorities across all business travellers. Travel managers are aware of this and choose travel providers based on their ability to provide convenience and ease travellers' journeys. Some these functions can be taken over by AI, which can process large about of data faster, and hence increase the efficiency and reduce cost.

AI in India has already begun adapting to its consumer bases with Amazon's Alexa speaking a mix of regional languages, such as Hindi and English.

Figure 17. Asian Business traveller Preferences



Source: Asian Business traveller's report 2016

Voice of Frequent Business travellers

I would like my travel management company (TMC) to be available to make changes and answer questions, but I expect to be notified about the problem directly from the airline. They are the ones providing a service to me. In addition, I expect other providers like hotels and rental cars to be sensitive about the fact that problems happen with airline travel and be flexible with me when that occurs.

I appreciate being given choices. If my morning flight is cancelled, I don't want to be automatically rebooked on the flight at midnight – maybe I could accept a flight to a nearby airport that leaves in one hour

My primary needs are for information and timeliness. I realise that the nature of airline travel is that problems will happen: I just want to be kept informed when they do. To me, there is nothing more frustrating than being kept in the dark. I also would like the problems to be addressed in as quickly and efficiently as possible

When passengers face a challenge, they demand greater visibility, more information, and personal input into the resolution of their situation. AI such as FCM's chatbot SAM :] can be used to address these challenges.

1. *"Asian Business Travellers, Five thing you need to know 2015", Singapore Tourism Board, accessed on 15 October 2017*

Case Study: AI-enabled travel assistant — SAM :]

Sam:] is a travel assistant designed to simplify life for corporate travellers by blending artificial intelligence with the expertise of a real FCM travel consultant.

SAM assists in all aspects of travel via a 24-hour conversational interface, including Facebook, WhatsApp and in-app chatbot, answering questions, making recommendations and performing actions.

It can pick up on cues, such as travel patterns and preferences, to update travellers accordingly; the more a traveller uses the more intelligent SAM becomes, so that information delivered to the user is even more personalised.[1]

Figure 18. A traveller's Journey with SAM :]

Testimonials from SAM :] users

I love to feel on top of things when I travel, feel that I am informed at all times. Sam is always there, even when you are not aware that you could use some help!

Iñaki Uribarri
Head of Media Beach Soccer Worldwide

Sam has become my favourite travel companion. He's proactive, very helpful, and has a nice fun touch. He makes my trips smoother!

Aurélie Krau
GBTA Operations Manager France

Growing adoption of AI

The benefits of using AI in enhancing the process efficiency and customer service are significant; however, specific solutions are still being developed.

About 84 per cent of the 835 companies surveyed by Tata Consultancy Services around the world are currently using some AI-based technology application in their businesses.

According to a Capgemini survey conducted during March–June 2017, 58 per cent of Indian organisations state that they are using AI at a scale that is going beyond pilot and test projects, and are ready to adopt it at a larger scale.

A travel manager with a leading IT services company says, "We are planning to introduce AI-enabled services for all our employees covering all employee-related services including travel. In case of travel, the employees would get real-time flight status, update on visa applications, claims status, etc."

Implications of AI for TMCs

Travel service providers are also realising the need for using AI to standardise service delivery including interactions to enhance business travel experience.

- AI helps travel companies create highly-tailored offers based on customers' needs and preferences.
- Past behaviours feed AI computers to predict future purchase actions
- Deep learning algorithms can help travel companies make the most out of their customers' online activities.

Computers are now able to understand images, videos and sounds, creating opportunities to better understand travellers. For example, knowing that they usually go on vacation in March and they have liked many pictures from Malaysia on social media would represent a valuable insight for any travel agency or airline.[1]

Travel management requires human intervention right from booking to checking in whether for flights, hotels, taxi/ground transport, etc.

Due to multiple interactions involved right from booking, modifications, status check to check-in, there potentially exists risk of human errors due to bias, language, understanding, etc., which impact travellers' experience. Using AI to carry out certain functions can mitigate these risks and lead to faster processing of tasks.

According to a survey by Egencia, amongst 4,521 business travellers in North America, Europe and Australia in April–May 2017, travellers desired greater objectivity in communication to improve their travel experience by —

50% of respondents
talking to a human when a problem occurs

48% of respondents
the desire to update their business travel itinerary using text messages

43% of respondents
believing that AI advances will improve their travel experience

Hence, AI is an important supplementary tool for TMCs to enhance business travel experience in India and is currently in an exploratory stage of evolution in travel management. [2]

1. *"Getting Smarter by the Day 2016", Tata Consultancy Services, as accessed on 9 October 2017*
2. *"Business Travel Quarterly 2017", GBTA, as accessed on 15 October 2017*

Sharing economy

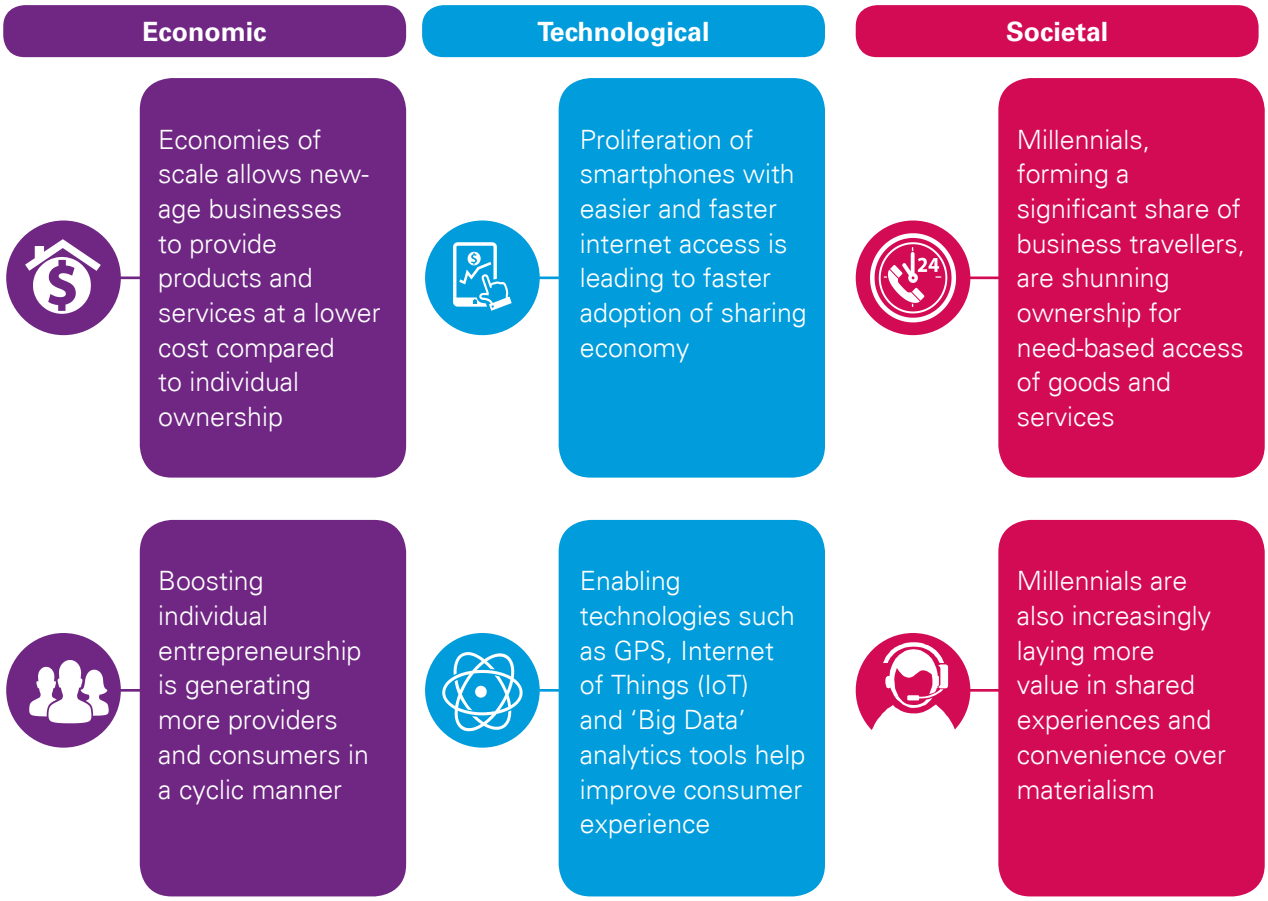
Introduction to sharing economy

Sharing economy, also referred to as 'collaborative economy' or 'access economy', refers to peer-to-peer activity of obtaining, giving or sharing access to goods and services.[1] With rising costs of owning products and services, the concept of renting and hiring has sprung up rapidly over the past few years — helping businesses and consumers save both money and time.

It impacts various sectors including transportation, accommodation, redistribution markets (sale/renting of used goods), education and financial services. However, the two segments of sharing economy that have transformed travel are transportation and accommodation. These two have witnessed a strong surge in activity globally — led by Uber and Airbnb.

Broadly, there are three major driving forces for the sharing economy, globally as well as in India, as depicted in **Figure 19** below.

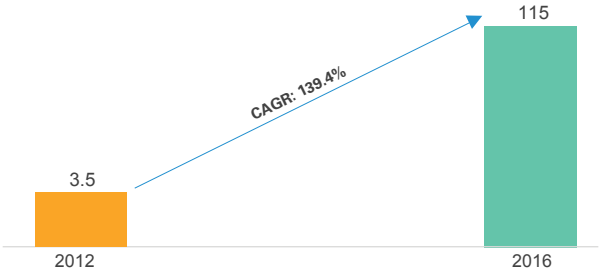
Figure 19: Key drivers of sharing economy[2,3]



Within a short span of time, the sharing economy is already on its way to become a significant contributor to the global economy. According to a report by the Indian IT and BPO industry body NASSCOM, the global sharing economy market was estimated to grow at 139.4 per cent CAGR during 2012–16 to reach USD115 billion.

1. *The Current and Future State of the Sharing Economy, Brookings, 29 December 2016*
2. *How Technological Advancements are Beneficial for Sharing Economy, CIOReview, 24 August 2016*

Figure 20: Global sharing economy market (USD billion)



Source: "Sharing Economy in Transport: Adapting & Excelling International Car Sharing Model in India", BWDISRUPT, 22 December 2016

This market is likely to continue growing at a fast pace, owing to rapid expansion of digital technologies, evolving regulatory scenario and its innate cost effectiveness. Moreover, it is expected to penetrate deeper into many other sectors including healthcare, logistics, labour/jobs and apparel.[4]

In India, people are increasingly buying pre-owned goods, renting cards and hiring taxis, opting for homestays instead of hotels, and borrowing money from other people instead of banks. The sharing economy is set to make big in India primarily because about two-thirds of the country's population comprises millennials, and these people are looking to save money, contribute to environment safety and also seek community belongingness.3 In addition, the country's high population density makes it easier to match the increasing number of goods/service providers with consumers — especially in urban areas.

3. The rise of sharing economy and why it will work in India, YourStory, 3 February 2016

4. The Current and Future State of Sharing Economy, Brookings India, March 2017

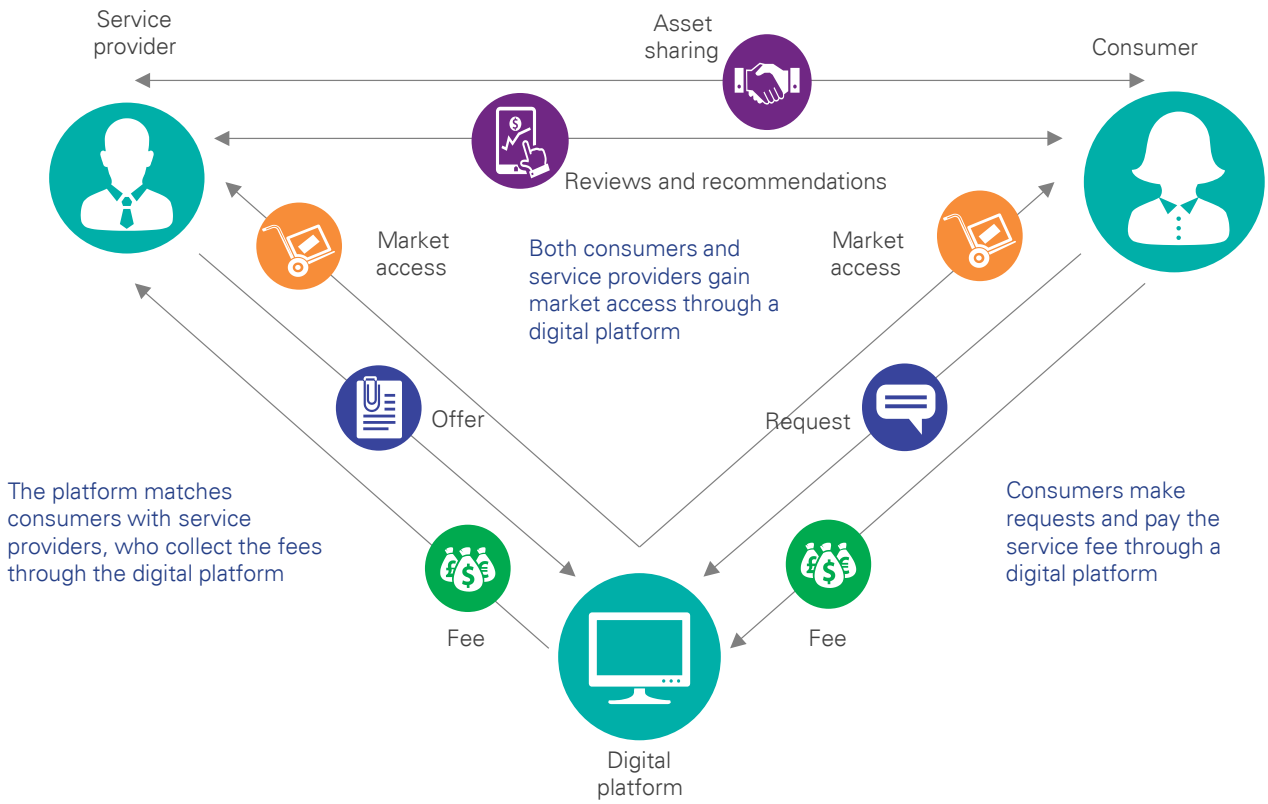
Role of technology

Technology is the key enabler of sharing economy — allowing people from around the globe to converge at common virtual platforms and indulge in the trade of goods and services. Organisations are leveraging GPS, Big Data, machine learning, online payment gateways, powerful search algorithms and the overarching internet to enable consumers to access shared goods and services irrespective of geographical boundaries.[1] Furthermore, the ease of access has improved significantly with the proliferation of smartphones. Moreover, at the front end, technology has contributed to building trust amongst consumers for shared goods and services.

Consumer reviews of service providers empanelled with platforms such as Uber, OYO Rooms and Airbnb are now integral to the service offering, and arguably one of the key decision-making factors for other users.

Technology has essentially helped improve the utilisation of resources, while also providing autonomy to providers and a multitude of choices to consumers. It also helps reduce the overall cost of accessing goods and services. **Figure 21** below depicts the business model of sharing economy with technology at its core.

Figure 21: Technology at the core of sharing economy[2]



Source: Deutsche Post DHL Group

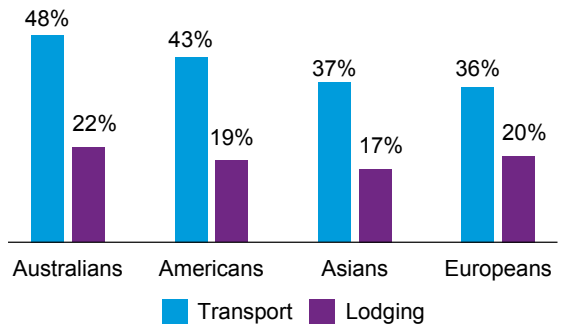
1. *How Technological Advancements are Beneficial for Sharing Economy, CIOReview, 24 August 2017*
2. *Deutsche Post DHL Group website, accessed on 18 October 2017*

Impact on business travel

Globally, businesses are increasingly incorporating the sharing economy in their travel policies. According to a January 2017 report by the Global Business Travel Association (GBTA) Foundation, 50 per cent companies allow ride-sharing (up from 44 per cent in June 2016) and 30 per cent allow home-sharing (up from 28 per cent in June 2016) in their travel policies.[1] Some countries are more evolved in this aspect than others; for example, 79 per cent business travellers in Mexico and 61 per cent in the US are allowed to use ride-sharing, while 42 per cent of business travellers in Hong Kong are able to use home-sharing services officially.[2]

Moreover, international business travellers expect their use of shared transport and lodging services to increase in the future, as depicted in **Figure 22** below:

Figure 22: International business travellers who expect shared transport/lodging to increase in future (as of 2016)



Source: Share Economy For Business Travel, International SOS, 2016

To capture the business travel segment, industry players have also been introducing customised offerings. 'Uber for Business', 'Ola Corporate', 'OYO for Business' and 'Treebo for Business' are just some of the customised offerings for business travel. Airbnb also offers homes for work travel with 24-hour check-in facility and other workspace-friendly features — in addition to tools for businesses to track and manage their employees' travel spending.[3]

Essentially, people are incorporating their personal ways and preferences for travel into their business travel as well. This trend is more prevalent amongst millennials than in other age groups.[2]

As they continue to become the dominant force in shaping business travel globally, the sharing economy is also expected to form a stronghold in this space.

Is 'sharing for business' truly beneficial?

The use of sharing economy for business offers several benefits, as depicted in **Figure 23** below.

Figure 23: Benefits of 'sharing for business'

With their business-focussed offerings, these players are gradually gaining ground. Adopting and incorporating the sharing economy for business travel can allow organisations to provide more control to their travellers, and increase their convenience and flexibility. In addition, more choices enable lesser need for local transportation, ultimately reducing costs. Many travellers also seek new experiences and cultures while travelling for work. These factors, collectively, can help improve employees' satisfaction with their company's business travel policies.

However, the sharing economy does pose certain challenges that hinder its adoption by businesses. **Figure 24** and **25** ahead hint at some of these.

1. *Ride-Sharing Services Now Allowed by One-Half of Corporate Travel Policies Across the Globe, According to Latest Survey by the GBTA Foundation and American Express, GBTA Foundation, 31 January 2017*
2. *Most Business travellers Satisfied with Trip Experience, GBTA Foundation, 23 June 2016*
3. *Why Short-Term Rentals Will Change the Business Travel Landscape, Skift, 21 November 2016*

Figure 24: Challenges inherent to the sharing economy

Figure 25: Challenges as perceived by corporate travel managers

Quite understandably, many people are wary of sharing a room in their house with a stranger, and vice versa, primarily due to risk of safety, theft and damage to property. With ride-sharing, the lack of trust has been built up, in many cases, by incidences of crimes committed by and negligence on behalf of service providers. While reviews and ratings can help, they may not always be sufficient to make a decision, as they can be mixed depending on individual experiences. Moreover, establishing the genuineness of reviews is another challenge.

The players of sharing economy — especially cab aggregators — have time and again been facing multiple regulatory issues, not just in India, but globally as well. For example, Uber has faced service disruptions in key business travel locations such as Bulgaria, Denmark, Italy, Hungary, Taiwan, Australia, London and Delhi.[4] Accusations of unfair trade practices, opaque pricing, inadequate driver verification mechanisms and labour law violations. In India, the evolving regulations, which also vary with each state, makes compliance even more challenging.

Furthermore, since the business model of sharing economy is based upon peer-to-peer access, it is inherently subject to variations in service quality. As these companies exercise little control over day-to-day operations of their partner drivers/ hosts, they find it difficult to ensure a highly consistent level of service quality.

In addition, most of the players in this business are relatively new, and are highly dependent on investor funds. Most of them have been burning cash at a fast pace to attract customers and expand rapidly. However, going forward, the focus of these players is likely to shift from scale to profitability.

Globally, while travel managers are increasingly incorporating the sharing economy into their travel policies, led by attraction of traveller convenience and cost savings, they also face a newer challenges. The primary one, amongst these, is 'Duty of Care' — to ensure the safety of business travellers and insuring their travel is a key aspect of travel management. However, lack of visibility into quality, reliability, regulatory compliance or insurance coverage of services obtained from vendors other than the trusted partners can hinder the ability of a TMC or travel manager to resolve an issue. A travel manager with a leading conglomerate says, "We would prefer that our TMC to incorporates sharing economy services for our corporate programme without compromising traveller experience".

Moreover, long-term ongoing relationships with suppliers are also valuable to many corporates — sometimes also indicating a resistance towards adopting new methods.

4. Uber: Which Countries Have Banned The Controversial Taxi App, Independent, 22 September 2017

What are players doing to counter these challenges?

The sharing economy players realise the significant potential of business travel, and are actively tackling challenges to succeed in this segment as well. Companies are enhancing stringent measures to maximise customer safety and service quality.

For example, after facing a slew of complaints regarding their service quality, OYO has started working towards ensuring standardisation of services at its partner hotels. It has started a concierge service called 'OYO Captain', wherein city-wise dedicated managers look after customer complaints and act as a single point-of-contact.[5] The company is also moving towards a full inventory model — making a shift from the partial inventory model, minimising inconsistency in operations, and service quality.[6] There are other hotel aggregators as well, such as Treebo Hotels, which have started with the full inventory model to ensure standardised services to guests.[6]

To ensure smooth operations from a regulatory standpoint, these players have been working to address the regulatory concerns by meeting all the requirements imposed by concerned authorities. The Government of India is working to clarify the legal framework for cab aggregators, defining the roles and responsibilities that are mandatory for these players to follow, including driver training programmes, 24/7 call centre support and GPS tracking facility.[7]

Furthermore, to address the concerns of corporate travel managers, the players are offering dedicated business travel solutions and integrating their offerings with business applications such as expense reporting and traveller tracking.[8]

For example, OYO and Airbnb offer such business travel solutions. Airbnb offers 'Business Travel Ready Homes', which has a set minimum standard for guaranteed amenities and facilities.[9] In addition, it also provides solutions to directly address the needs of travel managers. **Figure 26** below describes the key features of Airbnb's business travel offerings:

Figure 26: Key features of Airbnb's 'Business Travel Services

5. *After adding properties, OYO now invests in quality service, Hindustan Times, 22 December 2016*
6. *These online budget hotel startups swear by the full inventory model, The Economic Times, 25 September 2016*
7. *Putting Ola, Uber on the road to legal compliance, Financial Express, 14 October 2015*
8. *Share Economy For Business Travel, International SOS, 2016*
9. *Airbnb India Website, www.airbnb.co.in, accessed on 23 October 2017*

Similarly, multiple other players offer business travel solutions, which enable travellers to create separate 'business' and 'corporate' profiles, respectively. These offerings can be integrated with a company's Human Resource Management System (HRMS) and expense management system — allowing expense-less rides, expense report submissions and a dashboard to view all the activity. Business offerings also enable real-time tracking of travellers by employers/travel managers.

In addition to simplifying travel management, these players are also working to ensure the safety and security of travellers. Some of the measures taken by Ola and Uber include stricter background verification of drivers and installation of SOS buttons in their mobile application or cabs.[10] Uber has also introduced a 'real time ID check' feature that randomly asks drivers to upload a selfie, which is then verified with records in Uber's database.[11] Moreover, there are reports that Ola, Uber and Airbnb could also employ the 'Aadhaar' card for verification of drivers and hosts.[12]

Implications for TMCs

Despite its challenges, the sharing economy is likely to continue gaining increased adoption by business travel managers globally, as well as in India. According to a September 2016 article, 'Uber for Business' in India was reported to be growing at 50 per cent month-on-month.[13] More recently, in August 2017, the company revealed that its overall India business (in terms of completed trips) grew 115 per cent y-o-y during July 2016–July 2017.[14] 'Ola Corporate' also counts several companies including Airtel, Reliance ADAG, Larsen & Toubro and Godrej amongst its list of enterprise customers.[15] Since the launch of its business travel solutions in June 2016, the number of corporate clients for OYO has also quickly escalated to over 5,000.[16] These statistics indicate a very positive outlook for sharing economy in the Indian business travel segment.

10. Ola kidnapping case: Cab firms likely to make hiring of drivers stricter, Livemint, 21 July 2017
11. Suddenly, getting into a cab does not seem as safe as it was earlier, The Hindu, 4 May 2017
12. Uber, Ola, Airbnb might soon use Aadhaar for identification: Report, BGR Media, 19 July 2017
13. Uber India Sets Focus on Enterprise Partnerships, AdAge India, 19 September 2016
14. India business growing at over 100% year-on-year: Uber, Livemint, 10 August 2017
15. Ola streamlines corporate travel for top companies like Airtel, Reliance ADAG, L&T across India, OLA, 16 September 2016
16. OYO website, www.oyorooms.com, accessed on 23 October 2017

What should TMCs do to tap into the sharing economy?

Traditional travel management policies, which are reliant on established relationships with hotels and ground transportation providers, have their own benefits in respect of safety measures (e.g., fire protection, security arrangements, etc.), consistency in service quality (globally/nationally renowned brand names) and amenities provided (generally better than a no-frill-shared service provider).

However, the benefits of sharing economy discussed earlier are also not to be ignored. In the current scenario, a travel management policy that makes the best use of both kinds of options would probably emerge as the most preferred approach.

Integrating the sharing economy services into travel management would require several vital considerations for TMCs. **Figure 27** below describes these considerations.

Figure 27: Key considerations for TMCs

Research and study perceptions

Find out whether your business travellers are interested in sharing economy

Policy re-evaluation

Create a travel policy that is detailed and informs travellers of the risks and considerations, by city/country

Assess and select partners

Explore the local market in each city/state/country to find and select the best partners, considering the regulatory and risk aspects, and 'Duty of Care'

Integrate partners' systems with own

Adopt services like 'Uber for Business' instead of allowing travellers to use personal accounts — for ease of tracking and expense management

Transition gradually

Maintain existing relationships and strike a balance between the traditional and disruptive options to get the best of both worlds

Maintain cost control

It is not necessary that sharing services would always result in lowest cost; there is a need to continuously evaluate best possible options

Seek feedback and evolve continuously

Seek feedback from travellers on their experiences and incorporate their suggestions to improve travel management services in these times of change

Traveller data security interface

Act as the primary information interface for the service providers with only 'necessary traveller data' shared with them amid growing data security concerns

Thus, TMCs are expected keep in mind their larger objective — providing clients the best possible travel arrangements at the lowest possible cost — and embrace the sharing economy while treading carefully on the path to its adoption.

Travel analytics

Analytics in travel

Modern, Digi-smart travellers leave long trails of data while making travel bookings, across the various stages such as research and planning (including price comparison), booking, cancellation and feedback.[1] This data comprises critical information on consumer behaviour around the travel and tourism industry's offerings. The key, for travel industry, is to collect and process this data to cull out insights that can help provide that much-needed competitive advantage through improved product and service offerings, processes, experiences, pricing, marketing, and other internal and external customer experience/ business efficiency parameters. It is essentially about finding recognisable patterns in vast amounts of data to predict the future.

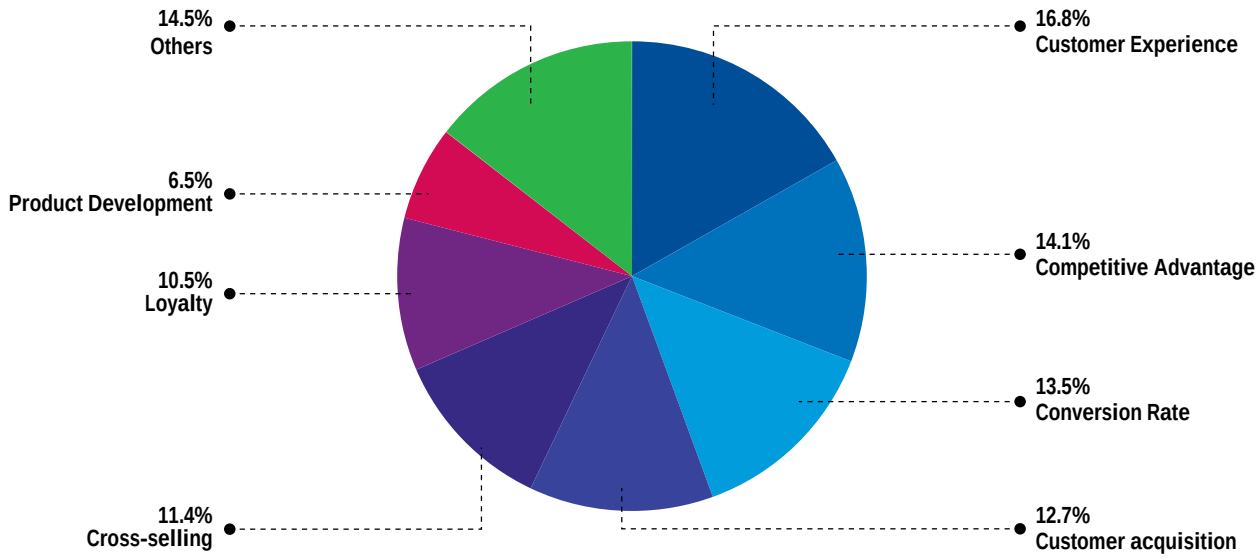
Travel and hospitality companies are rapidly adopting data analytics tools and services to stay ahead of competition. Currently, 65 per cent of these organisations globally have a dedicated data, analysis or insight team.[2] Moreover, an impressive 74.5 per cent of travel data professionals from these organisations expected their company's budget towards data and analytics to increase, while 21.8 per cent expected it to remain as is in 2017.[2]

With growing storage capacities, faster processors and powerful data mining and analytics tools, it is increasingly becoming easier to make sense of data. Furthermore, travel managers of the day have many companies at their disposal who are specialised in handling data and providing insights — especially in India, with the country being one of the major IT hubs globally.

Major driving forces

There are multiple factors driving travel companies to incorporate analytics in their travel operations. **Figure 28** below describes the most important drivers for travel organisations to implement a data and analytics programme; the shares represent the percentage of respondents choosing a factor as the single-most important driver.[2]

Figure 28: Key drivers for deployment of data analytics in travel



Source: The State of Data in Travel Report 2017, EyeforTravel, 2017

1. *How Big Data Analytics is Redefining the Travel Industry, Happiest Minds, 12 May 2016*
2. *The State of Data in Travel Report 2017, EyeforTravel, 2017*

Enhancing customer experience is the most important factor for implementing a data analytics programme for a travel company, followed by others including acquisition of new customers and driving retention (loyalty).[1] Collectively, these factors indicate that customer focus is one of the major drivers of analytics in travel.

How does it help?

The key drivers of analytics in travel are directly correlated with the benefits it can provide to travel companies. **Figure 29** describes the ways in which it can enable travel companies to succeed in a competitive business environment.

Figure 29: How analytics can help travel companies succeed

Source: How Big Data Analytics is Redefining the Travel Industry, Happiest Minds, 12 May 2016

Evidently, using a customer's available search and booking data, travel companies can provide customised recommendations for services that are aligned with their preferences towards flight timings, in-flight services, hotel services and car rentals. Analytics can also help optimise sales and marketing efforts through targeted marketing based on customers' search data; for example, a person who has been searching for flights on a particular route for a couple of days straight may respond to a promotional offer designed specifically for them — triggering a purchase.[2] Furthermore, using analytics, companies can identify why people are leaving a booking mid-way and take corrective measures to continuously improve processes as well as products and services. Pricing is another crucial aspect that can be optimised and forecasted to generate maximum value — through assessment of seasonal variations in bookings, historical price data, competitors' pricing, etc.[3]

How analytics fits into corporate travel management globally

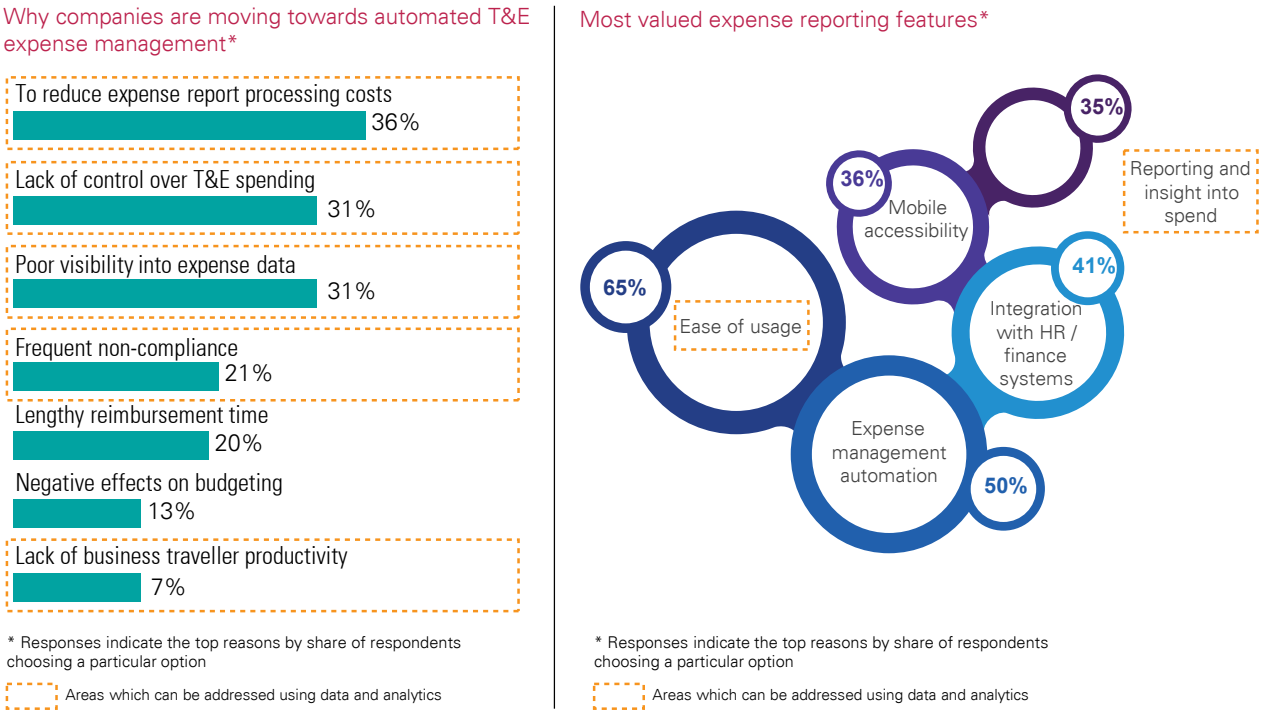
Travel and entertainment (T&E) is one of the major spend categories for businesses globally; in fact, it is the second-largest operating expense for a company (after payroll).[4] Companies typically spend 6–12 per cent of their total annual budget on T&E.[4] Traditionally, it has been difficult for companies to keep a close track of their travel expenses due to manual processes and long paper trails. However, with the advent of powerful analytical tools and automated processes, controlling and managing business travel expense has become easier. Moreover, business travellers are more satisfied when their experiences and preferences are taken into consideration, which in turn drives up compliance to travel policies.[5] This is where TMCs can step in — benefitting from their expertise and scale to employ analytics tools to provide insights and help corporates reduce their travel spends while improving employee satisfaction.

According to a survey conducted by the US-based travel and expense management company, Certify, 46 per cent companies still handle T&E expense reporting manually (using MS-Excel spreadsheets and pen/paper-based expense filing), while 37 per cent do it over the web and 17 per cent through an Enterprise Resource Planning (ERP) system.[5]

1. *The State of Data in Travel Report 2017, EyeforTravel, 2017*
2. *www.woopra.com, accessed on 1 November 2017*
3. *How Big Data Analytics is Transforming the Travel Industry, EXASTAX, 26 January 2017*
4. *2017 Expense Management Trends: Annual T&E Outlook and Benchmarks, Certify, 9 February 2017*
5. *The Digital Business traveller, Sabre, 2016*

Some of the other findings of the survey highlight the current state of T&E expense management and use of analytics in it that are described in **Figure 30** below.

Figure 30: Corporates seek insight into T&E expense management

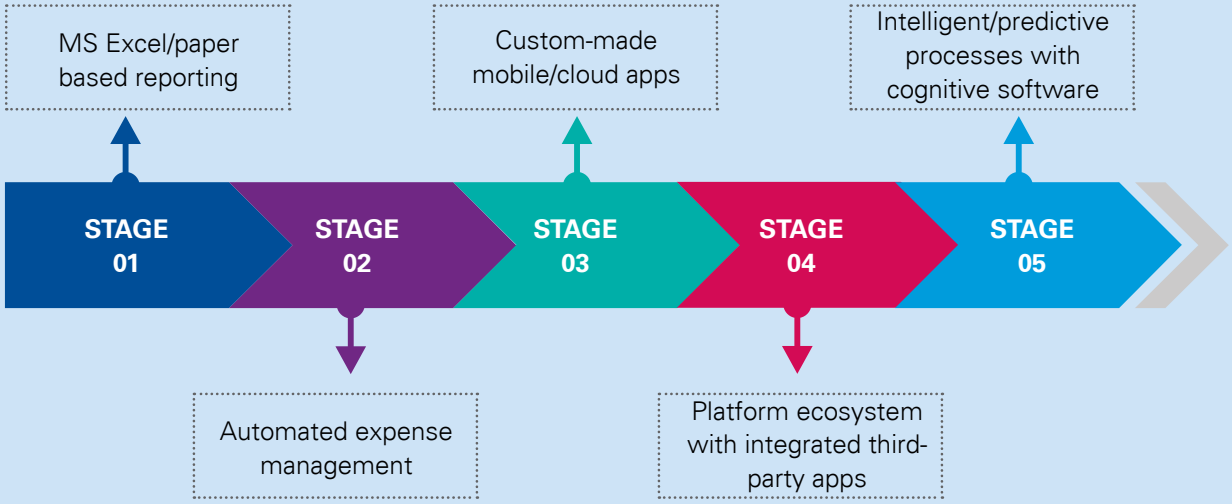


Source: 2017 Expense Management Trends: Annual T&E Outlook and Benchmarks, Certify, 9 February 2017

Conclusively, analytics can play a big role in T&E expense management as well as improving business travellers' experiences. While travel and hospitality players are leading the change and increasingly adopting analytical tools to enhance customer experience and build competitive advantages, corporate travel managers are also likely to follow suit and utilise the travel data they generate to improve business travel management.

Case Study: Concur — Driving value through travel and expense management maturity[1]

There are five stages of travel and expense management maturity; these are:



User problem

As companies grow, they may lag behind in upgrading their T&E maturity stage commensurate to their needs, and face inefficiencies as a consequence.

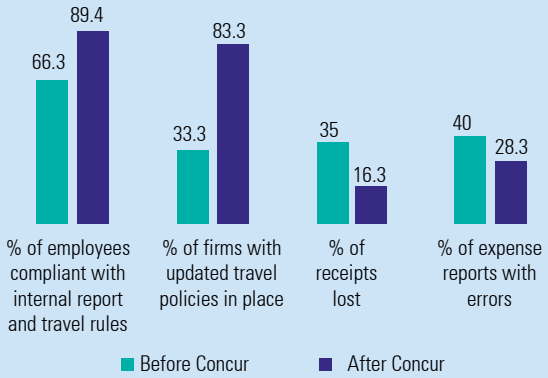
Solution by Concur

Concur offers T&E expense management solutions across the maturity stages. The key technology features of Concur's solutions include

- Cloud based and mobile based expense reporting system enabling real-time system operability
- Segregating expenses that require foreign VAT refund claims wherein Concur's travel partners i.e. major airlines, hotel chains etc., can account for direct bookings that can be linked back to a corporate travel profile for a given traveller
- Capability to link a travel itinerary to a third-party mobile data management service via an expense function that provides pre-trip alerts asking a user to switch data plans

Concur usage can increase travel policy compliance and minimize risk associated with invoicing and auditing, as shown in Figure 31.

Figure 31: Key Performance Metrics for Concur



Other Benefits

Based on survey conducted with eight organisations using Concur 's T&E expense management solution, the users were able achieve (on an average) annual benefits worth USD 1.19 million per organization over three years through:

- Reduced travel costs with greater visibility in spends
- Improvement in staff productivity
- Reduced lead time for support

1. *Driving Business Value Through Travel and Expense Management Maturity, IDC, January 2016*

The scenario in India

For the past several years, Indian companies across sectors have been utilising Big Data analytics to cull out valuable business insights. The country's travel sector has also been gradually moving towards analytics-enabled decision making. For example, several airlines including Indigo, Jet Airways and SpceJet are using Big Data analytics for applications including enhancing on ground fuel efficiency, tracking and reporting emission levels, personalisation of offers and social media analytics to understand customer behaviour.[1] Similarly, the Indian hotel industry has also made way for analytical tools primarily to optimise pricing, improve yield management and personalise services. Some of the players employing such tools include Sarovar Hotels, Clarks Exotica Resorts & Spa, Treebo Hotels and OYO Rooms.[3]

While the Indian travel and hospitality sector is readily embracing analytics in travel, Indian corporates are also increasingly looking to streamline costs and improve travellers' experiences. However, adoption of big data/ analytics in business travel management in India, as well as globally, is still quite low, due to factors shown in **Figure 32**[4] below.

Figure 32: Inhibitors for analytics in business travel

Basic MS-Excel analysis sufficient

For many travel managers, basic MS Excel-based analysis of travel data is sufficient to reduce costs and negotiate preferential contracts[5]

Level of travel spending

About 90 per cent of businesses globally are small and medium enterprises (SMEs)6; many of them may not have spends that require travel analytics

Understanding of value vs cost

Corporate travel managers may not be privy to the benefits analytics can drive for employees in terms of travel experience

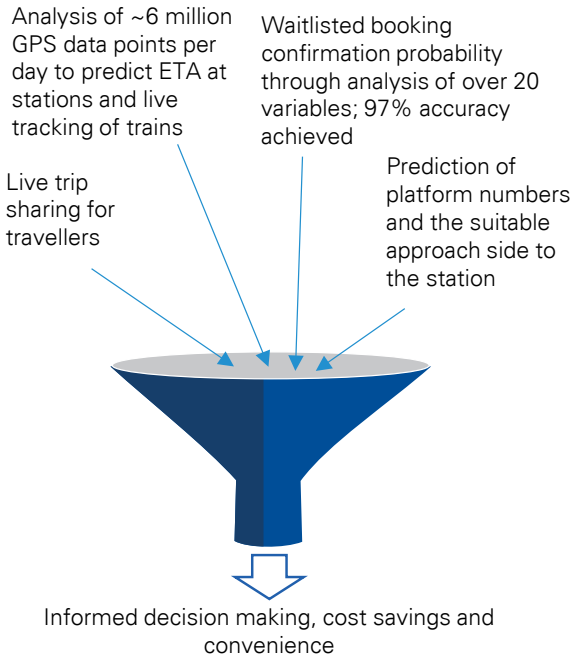
Others

General 'Big Data and Analytics' adoption challenges include integration with existing systems, skill gap and data privacy concerns[7,8]

1. *Driving Business Value Through Travel and Expense Management Maturity, IDC, January 2016*
2. *Predictive analytics propels Indian airline industry to great heights, CIO, 9 December 2016*
3. *Data-rich hotels wow guests, SmartInvestor.in, 1 June 2017*
4. *Making Travel Data Smarter: Where Are We Now?, BTN, 24 October 2016*
5. *KPMG Primary Research*
6. *The big business of small companies, ISO, 4 March 2015*
7. *Top Big Data Adoption Challenges faced by CXOs, TatvaSoft, 14 January 2016*
8. *Making predictions with Big Data, Livemint, 2 May 2017*

Thus, travel analytics is yet to find its way through to the typical corporate travel manager. Nonetheless, as more and more TMCs push the adoption of data analytics for their clientele, it is likely that companies understand the value it can drive and gradually help increase overall adoption. Moreover, there are other companies that are using data analytics to facilitate easier, more reliable travel. Case in point — home-grown travel services provider RailYatri:

Analytics enables RailYatri to make intelligent predictions for travellers[1]



RailYatri also has a corporate travel offering that enables management of travel approvals, reimbursement process, travel assistance and expense tracking — through an online platform.[2] In conclusion, considering the long-term benefits of travel analytics for corporates — in terms of cost savings and enhancement of travellers' experiences — it is likely that more and more companies opt for analytics-driven services.

Implications for TMCs

India is one of the fastest-growing business travel markets globally[3], and leading TMCs are building capabilities to tap into this market's likely demand for enhanced business travel management in the near future. While some players are doing this organically, others are taking the inorganic route with mergers and acquisitions.

It is imperative for TMCs to evolve with the changing trends and build capabilities in the data analytics space. In addition, these players would be required to overcome a host of challenges ranging from overcoming the contentment of a typical travel manager with their existing manual processes to improving data quality and demystifying 'Big Data' to enable easier access to valuable insights. Moreover, analytics is typically a part of the overall gambit of T&E expense management solutions. FCM Connect (by FCM Travel Solutions) is one such integrated system that acts as a 'single gateway for the connected traveller, connected booker and the connected manager'. **Figure 33** below describes its key features, including analytics:

Figure 33: Key features of FCM Connect[4]

Profile A traveller's profile information accessible online	**Secure** Travel risk management programme	**Approve** Approval solutions integrated with online booking tools/third-party vendors	**Reporting** Detailed analysis of travel activity through customised dashboards
Booking Streamlined travel booking processes	**Expense** Technology-driven transparent and integrated payment and expense reconciliation	**Mobile** Mobile-friendly system for on-the-go access	**Analytics** Advanced solution for benchmarking, forecasting, behavioural economics planning and analysis

Going forward, it is expected that incorporating analytics with other T&E expense management services can help drive the growth in adoption rates.

Therefore, the industry players could aim to enhance or build such capabilities and promote them collectively.

1. *How RailYatri is using analytics to make intelligent travel predictions, Analytics India Magazine, 27 June 2017*
2. *www.railyatri.in, accessed on 2 November 2017*
3. *India is World's Fastest Growing Major Business Travel Market in 2016 Despite Demonetization Fears, GBTA, 1 February 2017*
4. *Transforming The Business Of Travel Through An Integrated Global Platform, FCM Travel Solutions, accessed on 2 November 2017*

Blockchain

Concept of Blockchain technology

Blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions, but also virtually everything of value.

It is a type of database built by an expanding list of records, or blocks, each linked to a previous block and connecting back to an original 'genesis block'.

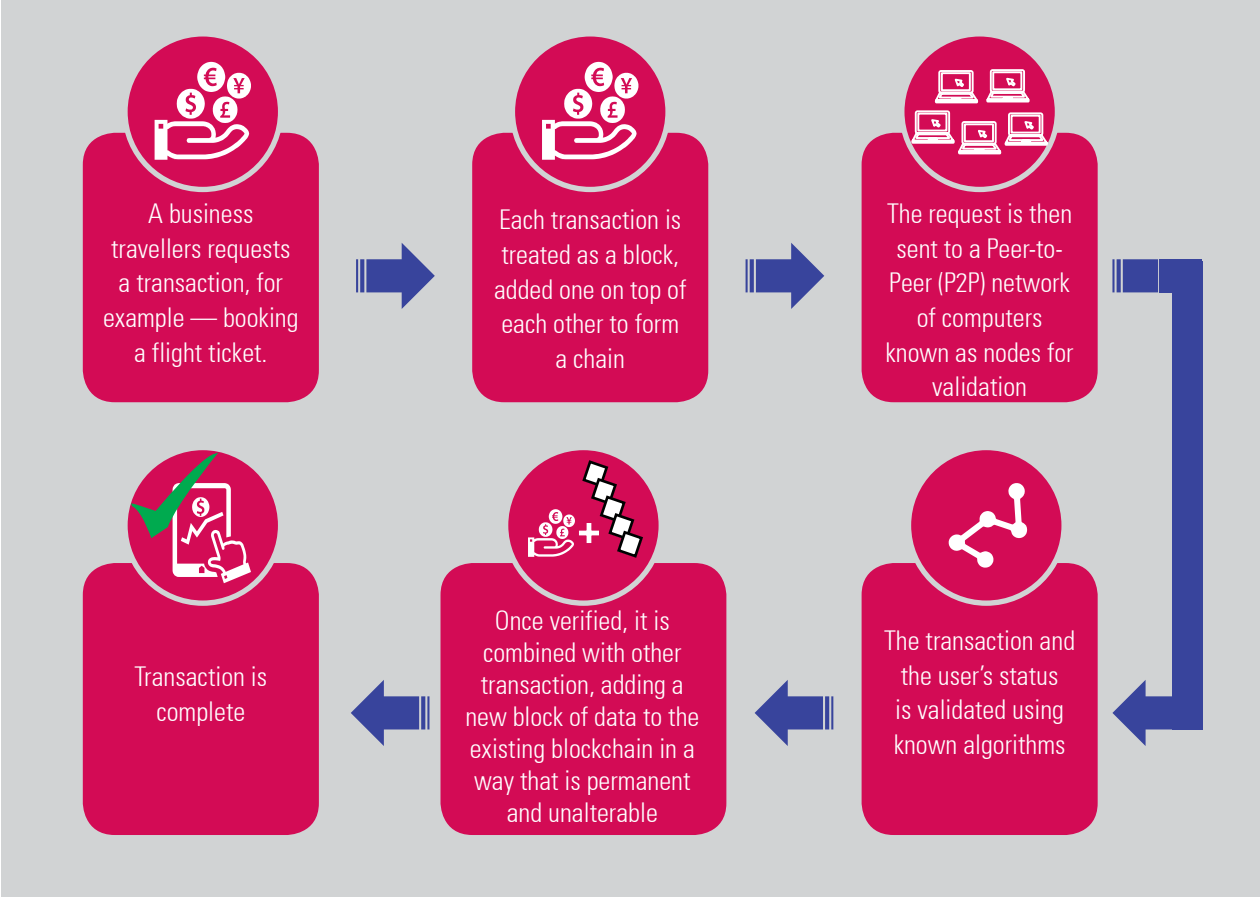
In a traditional database, users add, alter and remove data. The blockchain setting allows users only to add data, making it unalterable.

Blockchain was originally devised for Bitcoin in 2009, a cryptocurrency; however, it is now being used for different applications due to its secure nature.

Altering any unit of information on the blockchain would mean using a significant amount of computing power to override the entire network.

Another one of its key features is its transparency. All related parties can view the data, although it is encrypted to protect identities. Blockchain data is very secure while remaining accessible.[1]

Figure 34. Blockchain Technology



1. *"What is blockchain technology 2017? ", Blockgeeks.com, accessed on 4 October 2017*

Key Features of Blockchain Technology

Blockchain works on the concept of decentralisation, on a peer-to-peer basis.

Information held on a blockchain exists as a shared — and continually reconciled — database.

By storing blocks of information that are identical across its network, the blockchain cannot:

1. be controlled by any single entity
2. has no single point of failure.

A verified transaction can involve crypto currency, contracts, records or other information

Key features of crypto currency:

a. It has no intrinsic value and is not redeemable for other commodities such as gold

b. It has no physical form and exists only in the network

c. Its supply is not determined by a central banks and the network is completely decentralised

d. It is limited in quantity.

Challenges faced by the travel industry and users

Business travellers face many challenges in today's travel industry. A survey by Global Business Travel Association revealed that:

48% of travels identified flight delays as major concern

46% of travels identified safety as major concern as they are not provided insurance

Blockchain technology can be used to address many of the concerns in the corporate travel industry, such as—

- Multi-party payments
- Safety of travellers
- lack of customer loyalty
- Distribution

Potential Applications of Blockchain Technology in Business Travel [1,2]

DUTY OF CARE

Corporates have a duty of care to ensure the safety of their employees. With blockchain, traveller information would be available with ease when required and real-time updates such as when a traveler boards a plane, checks in at the hotel or starts the rental car can be provided to the corporate.

SETTLEMENT/PAYMENT

Blockchain could provide real-time transactions direct from buyer to supplier. Those transactions would be instantly trackable and auditable, and would eliminate the need for cards or a bank as a middle point.

FRAUD DETECTION

Blockchain payments/transactions are irreversible, reducing fraudulent chargebacks and refunds in the industry. With a peer-to-peer network, any fraudulent attempt would be instantly detected.

CUSTOMER LOYALTY

When a flight is delayed/cancelled, passengers are not compensated efficiently or at all. This leads to disgruntled passengers and lack of customer loyalty. Using cryptocurrency to compensate passengers proactively can alleviate the challenges.

DISTRIBUTION

Airline tickets and hotel bookings are nothing more than database entries. This opens the door for tickets to be sold by different partners, and in real time, thereby removing intermediaries and their fees. For example, Lufthansa is integrating its APIs with the Winding Tree platform, a decentralised business-to-business marketplace built on blockchain.

OVERBOOKING

Overbooking by airlines can be eliminated. Each seat booking could be treated as a block of data which cannot be altered. Hence, a seat cannot be booked twice.

1. *"Embracing Airline Digital Transformation", Amadeus 2017, accessed on 7 October, 2017*
2. *"How Blockchain could end Pain Points in the Travel Industry 2017", CoinDesk, accessed on 4 October, 2017*

Using blockchain to compensate for travel disruption: Case study of Travacoin

Customer loyalty is one of the key pain points in the travel industry. A blockchain-based loyalty programme could address this issue by instantaneously allowing earning and usage of points in real time. This would put a big tick in that all important traveller satisfaction box through 'Smart Contracts'.

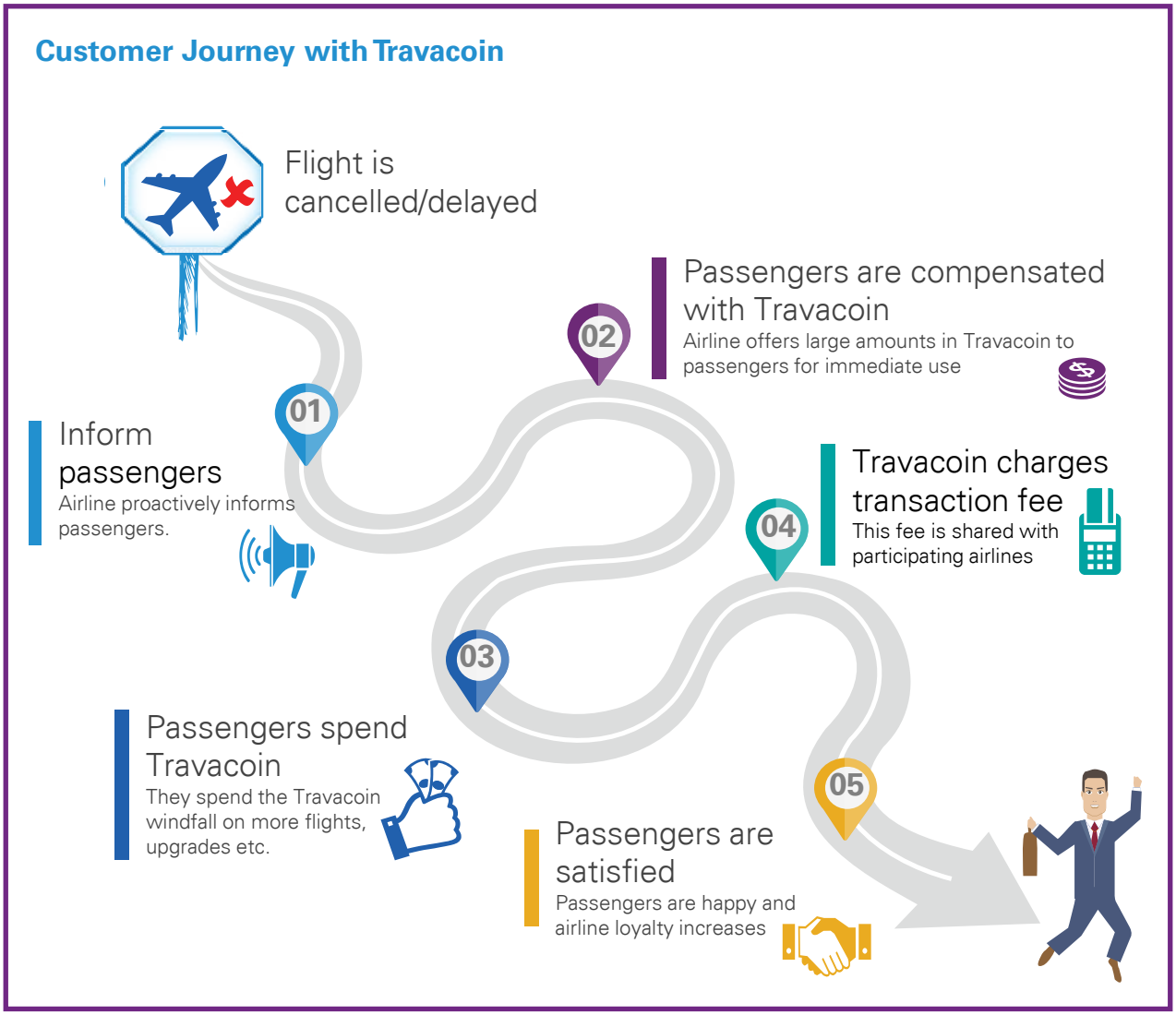
Distributed ledgers enable the coding of simple contracts that would execute when specified conditions are met. For instance, a derivative could be paid out when a financial instrument meets certain benchmark, with the use of blockchain technology.

Travacoin is an Irish start-up that provides a payment solution that enables airlines to compensate and refund passengers immediately using a blockchain-based voucher system and 'Smart Contracts'.

The payment would be designed in such a way as to incentivise passengers to reinvest in new flights and/or ancillary services such as upgrades, lounge access and duty free benefits. This creates a win-win situation for both passengers and airlines, thereby retaining customers.

TMCs can partner with airlines that have adopted Travacoin, hence ensuring customer satisfaction and loyalty

Figure 35: Illustrative customer journey with Travacoin



Blockchain in India

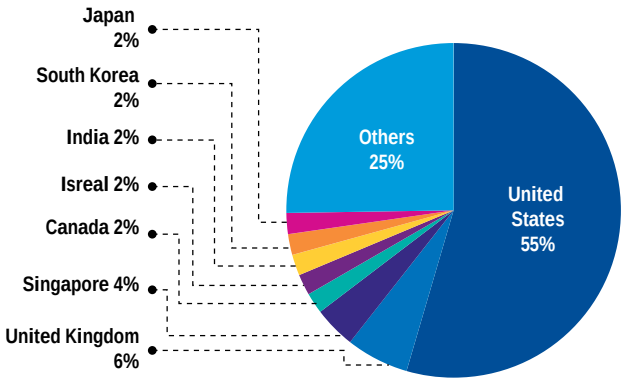
Blockchain is gaining traction within India majorly in banking, insurance and cards industry.

Many Indian players have tested usage of blockchain in the areas of trade finance, cross-border payments, bill discounting, supply chain financing, loyalty and digital identity areas.

Some of the Indian banks, business conglomerates, and one stock exchange are amongst the pioneers for exploring blockchain in India for improving their business processes across their subsidiaries and business partners as well.

Bajaj Finserv, the holding company of Bajaj Group's NBFC and insurance firms, is using blockchain technology for services like travel insurance, for settling claims even before it is registered by the customer concerned. For example, in case of flight delays, the information comes to the system and the claim amount is automatically generated and paid through smart contracts.

Figure 36: Blockchain Global Deal Share, by Country, 2016 [1]



Source: CB Insights

Challenges faced by Blockchain in India

- Lack of readiness of ecosystem
  - However, according to a survey by Infosys, 80 per cent of respondent banks expect financial services industry to adopt blockchain-based application commercially by 2020.[2]
- Integrating blockchain applications with existing enterprise applications
  - With regulatory and compliance policy pressures, organisations find it hard to invest effort and capital in new technologies
- Lack of clarity on regulatory environment.

Drivers of Blockchain Adoption in India

The key drivers for blockchain adoption in India are;

- Growing awareness of the technology
- Deeper understanding the evolving nature of blockchain platforms
- Application integration initiatives.

The Reserve Bank of India (RBI) has been closely monitoring developments related to blockchain technology. In July 2016, the Institute for Development and Research in Banking Technology, the technology research arm of the RBI, took the initiative of exploring the applicability of blockchain to the Indian banking and financial industry by conducting a workshop involving all the stakeholders such as academicians, bankers, regulators and technology partners.[3]

Blockchain technology in India is still at a very nascent stage and would take many years for it to mature in the travel industry.

Implications on TMCs

Any transactions where there are multiple parties involved, such as agreement between airlines, TMCs and companies, a blockchain can really speed up the process, because parties would be working on the same ledger.

Blockchain could enable instant payment between TMCs and airlines, and thus reduce credit costs and delays.

The reduction in TMC costs would also mean lower fees for its customers.

Speedier settlement would mean quicker confirmation and shorter service times, leading to smoother customer experience and higher satisfaction.

1. *"Trends in Blockchain Technology", CB Insights, accessed on 10 October 2017*
2. *"Blockchain Technology, From Hype to Reality", Infosys, accessed on 6 November 2017*
3. *"Companies using blockchain to better services", Economic Times, accessed on 7 November 2017*

Other technology interventions

Other technological interventions

Besides the above-mentioned interventions, there are other potential technological intervention areas, which can play an important role in reducing business travellers' stress and enhance comfort during the travel.

Considering the infrastructure limitations at Indian airports leading to congestions and/or delays resulting in increased travel uncertainty, there is a need to improve processes to enhance speed of operations, reduce travel process turnaround times and improve travellers' experience.

Table 7 below summarises some of the other innovations that may be undertaken either by passengers themselves and/or other stakeholders to improve processes and enhance speed, comfort and seamlessness for business travellers.

Table 7: Other technological interventions

Technology intervention	Concept and applicability	Value proposition for business travellers
 Cloud passports[1]	• E-passport for immigration and clearance • Identity and biometric data checked and verified digitally • Elimination of the need to carry physical passports • Pioneered by Australia and currently under trials	• Lesser documentation and faster check in and clearance • Enhanced safety and security • Reduces / eliminates fear of losing passports • Limited or no need for reissuance
 Electronic bag tags[2]	• E-tag with barcode storing passenger and flight information • Can be attached to any bag • Alerts passenger on bag location and when it comes at the arrival belt	• Easy to locate the bag in case of loss / theft or loading of the bag in a wrong flight • Reduced hassles and claims issues with airlines
 Virtual reality	• Enables traveller to experience the look and feel of the seat and room in an airline and a hotel, respectively	• Quick decision making • Reduced uncertainty in quality of service • Sets travellers' expectations without worrying about "last minute surprises"
 Wearables	• Smart electronic devices that can be worn on body as implants or accessories (e.g. smart watches, smart spectacles, etc.)	• Empowers travellers to 'wear their travel schedules' hence anywhere, anytime accessibility without using the smart phone • Yatra 'smart watch wear' application allows travellers to process their airline web check-in and real time flight status
 Digital wallets and tickets	• Single point mode for payment of travel services without the need for multiple retail accounts	• Reduces the hassles of carrying multiple travel cards • Google wallet allows digital payments across travel touch points through partnerships with airlines, hotels, car rentals, etc.[4]

Implications for TMCs

Other technological interventions are aimed at identifying niche tech solutions to meet certain specific concerns faced by travellers such as loss of valuables, service quality uncertainties, last minute surprises etc. which can potentially impact a traveller's experience.

For TMCs, while these solutions not only serve as insurance against "bad travel experience", they also enable TMCs to adequately prepare travellers against the consequences of these surprises and mitigate the adverse impact on a business traveller's journey.

1. *"The Future of Passports - Cloud/Virtual Passports", Patrick Mutabazi - Zip Consulting, 21 April 2017, accessed on 26 October 2017*
2. *"E-Tag Presentation by Graham Kelly, IATA 6th World Passenger Symposium, 18 - 20 October 2016, accessed on 26 October 2017*
3. *"Yatra.com launches 'Smart Watch Wear App' to ease travel bookings", Hospitality Biz India, 18 August 2017, accessed on 27 October 2017*
4. *"Google Wallet Eases Travel, Trazee Travel", 21 November 2014, accessed on 28 October 2017*

User perspective on technology trends and implications for TMCs

With technology usage in business travel processes expected to increase in line with global trends & practices, Indian travel managers have either taken the required initiatives or are planning the same to enable a seamless cost effective business travel. Based on industry interactions (with travel managers and TMCs), their perspective on respective technology interventions is summarized below.

While travel managers believed that usage of technology tools is imperative for a safe, convenient and cost effective business travel, they are treading the path of higher digital adoption gradually given the growing travel complexities, changing user expectations, security concerns (both user and data), costs involved and choice of technology solution. Travel managers believe that higher technology adoption in their organization's business travel programme will be gradual and depend on its cost effectiveness as well as user acceptance.

In terms of SBT adoption, larger organizations (with travel spends of over INR 0.5 Bn) largely prefer having a customised SBT system. The rationale being data security, preference for multiple TMCs and ease of integration with other corporate functions. While larger organizations can justify the ROI (through time & cost savings etc.) on in-house SBT due to their larger spends, businesses with smaller spends including SMEs may need to rely on a common user SBT (with multi-functional and integration capabilities across different corporate systems). For TMCs, it is therefore imperative to develop a common user SBT tool to address the needs of smaller spenders who cannot justify a customised SBT tool for their organizations.

Artificial intelligence (AI) is a relatively newer concept with limited user level awareness in India. AI usage in Indian business travel is currently restricted to few corporates only, partly due to limited awareness and limited range of AI solutions offered by TMCs / travel service providers etc. Users are yet to visualize any potential benefits of using AI in their travel programs due to absence of a 'visible prototype'. TMCs need to develop AI based solutions and pilot the same with potential users (and later upgrade the same) to showcase the benefits. This is necessary to enhance awareness, acceptance and mass usage.

"Sharing economy" has grown from a buzzword to an increasingly preferred way of using business travel services. Service providers such as Ola, Uber, Oyo rooms etc. armed with their evolving technology platform, growing network and user friendly service delivery mechanism are slowly enhancing their presence to cover a wider spectrum of the business travellers' journey through partnerships with other travel service providers. However, security issues (both data and traveller) and long-term business model sustainability need to be addressed to make sharing economy more prominent in business travel programmes. TMCs being the primary interface for travellers may consider providing enhanced security assistance to business travellers using sharing economy services. Alternatively, TMCs may consider provision of mega aggregator services coordinating the services of sharing economy service providers and other service providers to offer seamless solutions.

Travel analytics, while being actively used by Indian travel managers, to track travel costs and employee compliance, is restricted to few large travel users only. Besides, the larger users are using analytics primarily for costs and compliance. Growing use of big data and predictive analytics is enabling analysis of behavioural trends through step-by-step tracking of employee travel behaviour, thereby enabling travel managers to 'objectively understand' traveller behaviour. TMCs need to enhance their analytical abilities and assist travel managers in proactively understanding their employee travel behaviour and detect 'potential non-compliance traits of travellers' through predictive traveller analytics solutions.

Blockchain is a new concept in Indian businesses, gaining traction mostly in the financial services. Blockchain usage in the travel industry is at a very nascent stage, with ample potential for growth over the next decade. With limited awareness about the concept amongst Indian travel managers, TMCs need to constantly evaluate global developments in blockchain applications in travel and educate travel managers about the benefits of the technology through structured solutions.

Travel managers are using SBT (with travel analytics abilities) as a starting point in automating their travel management process with some level of personalisation. However, further automation in their travel management programmes is dependent on industry best practices and solutions on offer by leading travel service providers and TMCs.

However, TMCs need to consider travel managers' constraints of cost and employee resistance towards new technology tools while proposing any new technology enabled solutions.

For a start, TMCs will need to approach users and 'pilot' their technological innovations that complement the users' current travel management systems with limited cost impact to assess the users' willingness to adopt and pay for the same.

Potential disruptors in Business Travel

Business travel disruptions

Technological advances across sectors whether e-commerce, travel, financial services, IT-enabled services, manufacturing, energy, healthcare etc., have given rise to a new breed of business - **disruptors**.

In the emerging universe of technological innovation, disruptors are defined as products, systems, methods, processes, etc., that displace an existing market, industry and/or technology and produce something new, more efficient and revolutionary. Hence, it is destructive as well as creative.

Some common names associated with disruption in travel include Uber, Tesla Motors, Hyperloop, AirBnB, SpaceX etc. While some of these disruptors are operating in key travel markets around the globe, others are enhancing their capabilities, both technological and user friendliness, to operationalise in the coming years.

Disruptors such as Uber and Tesla Motors, which offer the premise of user convenience, next-generation and "futuristic feel" to their users, face the challenge of mass acceptance given the need for long term commercial viability, which is yet to be proven. However, they have the potential to revolutionise user travel experience through speed, convenience and cost.

In the Indian travel context, we will discuss three potential disruptions, which can potentially address two most common business traveller concerns - time and cost.

Hyperloop

Hyperloop is a proposed mode of passenger transport comprising of a sealed tube (or system of tubes) through which a pod (or train) may travel free of air resistance or friction hence conveying people or objects at optimal speed and acceleration. Hyperloop envisages cutting down on current travel times running into hours to within minutes. Companies in the US and Canada are at the forefront of developing Hyperloop technologies. Amongst the companies, Hyperloop Transportation Technologies (HTT) promoted by Tesla Motors' Elon Musk has taken steps to operationalise its technology.

HTT's proposed concept of a 350 mile long route between Los Angeles and San Francisco proposes a travel time of 35 minutes, which is faster than the current rail and air travel time. Transport analysts believe that the technology is yet to be proven and needs to address concerns around power outage, safety, user comfort and financial viability.

In India, in September 2017[1], HTT signed a Memorandum of Understanding (MoU) with the state government of Andhra Pradesh to develop a Hyperloop transportation route between Amaravathi and Vijayawada cutting the travel time between the two cities from over one hour to about six minutes.

The two phase plan includes Phase 1 - conducting a feasibility study starting from October 2017, which would last for about six months and Phase 2 - Actual system construction, which depends on land availability and respective clearances required.

While the process of introducing hyperloop technology has been initiated in India, its success and long term feasibility in the Indian travel scenario is yet to be seen. If successful, it could potentially shift (hence disrupt) travellers from air and conventional rail travel considering the time savings.

Figure 37 below shows an artist's depiction of the Hyperloop transport system.

Figure 37: An Artist's depiction of Hyperloop transport system

1. *"Andhra Pradesh signs MOU for Hyperloop, feasibility study to start next month", Live mint, 6 September 2017, accessed on 27 October 2017*

Cloud based guest reservation system

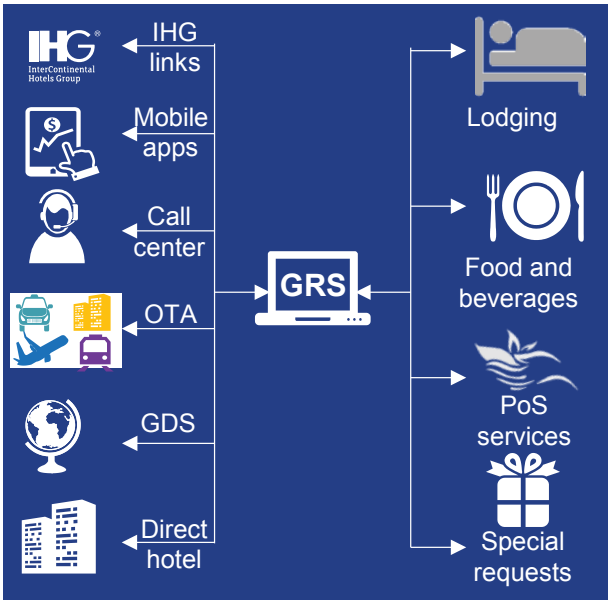
One of the key challenges that the hospitality industry is addressing is the need for more personalised travel and stay solutions for their business travellers.

The Intercontinental Hotels Group (IHG) in partnership with Amadeus have developed a cloud based GRS (Guest Reservation System) with the aim of personalising the stay experience of travellers.

GRS unbundles traveller hotel request into individual attributes with options of hotel rooms and services across each individual attribute and bundling them to provide maximum customisation. For example, if a customer requests for a beach view hotel in Mumbai with tariff below INR 5,000/ night with free Wi-Fi, the GRS will search for hotels which meet each of the attributes i.e. beach view room, price as specified and free Wi-Fi and then consolidate choices, which altogether address all the requirements.

GRS is different from traditional hotel booking tools in a way that it prices each attribute separately and based on a traveller's preference and behaviour, and offers tailored solutions with unbundled pricing. The basic objective of GRS is 'pay only for what you need and use'. Even though the system has been developed by IHG, the system is proposed for user access across multiple booking channels for booking multiple services thereby making it a 'community-based system'. **Figure 38** below summarises the proposed functionality of GRS envisaged as a system with multi- channel accessibility for various hospitality services.

Figure 38: Proposed GRS functionality[1]



GRS benefits hotels as well as travellers. For hotels, it simplifies delivery of products/services with unbundled pricing, enabling them to offer each services as value- added service. For travellers, it enables paying only for services required and not pay for services offered by the hotel but not used by the traveller.

GRS enables flexibility in choosing services with more granularity in service choices as against standard service packages offered by hotels. For hotels, it means more revenues, more granular guest data and more agile offerings in future based on traveller trends and preferences. Hence GRS offers a win-win scenario for both users and hotels. Currently, the system is under development and is expected to be launched by IHG and Amadeus in 2019.

Figure 39 below summarises the features and benefits of GRS

Figure 39: Proposed GRS benefits[2]

1. *"Presentation made by IHG in EyeforTravel Europe 2017", Eyefortravel.com, 15 May 2017, accessed on 27 October 2017*
2. *"Presentation made by Amadeus at London 2016 Investor Day, Amadeus, June 2016, accessed on 6 November 2017*

SpaceX - Anywhere on the Earth in one hour

In September 2017, SpaceX CEO Elon Musk unveiled its latest invention BFR - a new interplanetary rocket system that allows passengers to take long distance trips to less than one hour **for the same price as an economy airline ticket.**

The system envisages passengers take a large boat from a dock near the city to a floating launchpad out in the water. They board the rocket that launches into the atmosphere and then into the Earth's orbit.

After few minutes (depending on the route), the ship re-enters the atmosphere and touches down on another floating pad. The rocket proposes to cover the distance between New York and Shanghai in about 39 minutes, which currently takes approx. 15 hours.

This proposed method of city-to-city travel would be the fastest ever created by humanity (even faster than Concorde). SpaceX plans to begin construction of the rocket in early-to-mid 2018.

While the proposed disruption is innovative, details regarding passenger capacity, regulation, "space travel stress", passenger experience, safety, health, etc., require further research.

While SpaceX has been able to land its existing Falcon 9 rockets (unmanned) in both land and sea successfully, successfully landing a rocket full of people without any hiccups remains to be seen.

Table 8 below summarises the current air travel time and SpaceX's proposed travel time for few city-to-city routes.

Table 8: Select city pair-wise travel time (Current vs proposed by SpaceX)[1]

Origin	Destination	Current travel time	Proposed travel time
Shanghai	New York	~15 hours	39 mins
Hongkong	Singapore	~4 hours	22 mins
London	New York/Dubai	~7 hours	29 mins
Los Angeles	Toronto	~5 hours	24 mins
Bangkok	Dubai	~6.5 hours	27 mins
New Delhi[2]	Tokyo	~8 hours	30 mins

Disruptions - Future implications

Disruptions in the travel industry have the potential to bring game changing experiences for travellers. While Hyperloop, GRS and SpaceX are yet to reach large scale commercial acceptance level, they promise travellers with enhanced experience through more personalised, cost-effective and less stressful travel experience.

While service providers are gearing themselves to meet the challenge of living upto the promised advantages through their disruptive solutions, they also need to understand their business travellers' end-to-end travel perspective to ensure that advantages offered by "one leg" of the journey is not diminished by the disadvantage at "another leg", thereby making the "whole experience" futile.

For TMCs, they need to keep a close watch on these disruptive developments, discuss with own clients on their perspectives and accordingly structure the offering in partnership with the service providers to seamlessly coordinate the other legs of the business traveller's journey.

1 *"Elon Musk proposes city-to-city travel by rocket, right here on Earth", The Verge, 29 September 2017, accessed on 27 October 2017*

2 *"Elon Musk's new plan: Travel from New Delhi to Tokyo in 30 Minutes", NDTV Gadgets, 29 September 2017, accessed on 27 October 2017*

Enablers for Digi-smart Travel

Enablers for digi-smart business travel

For travel managers, the benefits of using emerging technological solutions to facilitate business-friendly travel can be realised provided the technological ecosystem supports and matures to the level to enabling large scale commercial applications.

Significant growth in smartphone adoption combined with Indian employees spending more time at work (than their global peers) with increasing time spent online makes development of mobile-enabled technological ecosystem a natural choice for the stakeholders in the Indian business travel market.

The introduction of 4G has reduced data usage costs for users significantly as telecom players have rushed to provide fixed data plans led by the aggressive data pricing plans launched by Reliance Jio.

According to a study published by Kleiner Perkins[1], India's monthly wireless data usage rose to 1.3 bn GB in March 2017 up by approx. 8x from under 200 MB in March 2016, indicating rising data consumption led by the launch of Reliance Jio in late 2016. According to study by Ericsson[2], Indian users' data traffic per smartphone is expected to grow approx. 9x by 2022 to reach 11 GB/month.

Applications such as AI and block chain require real- time uninterrupted access to business travellers to enable quick decisions and/or modifications to travel plans.

Besides, growing travel choices and the need to remain connected at all times has sparked innovations in traveller connectivity around the globe. With India being one of the key influential players in the global economy, Indian business travellers would need to embrace these technological innovations to remain a globally competitive workforce.

All stakeholders including the government, travel service providers, TMCs, travel managers and travellers themselves need to take note of the growing smartphone and internet consumption in India and the global technological innovations to make the experience of India business travellers "truly world-class experience"

Some of the key technology enablers to enhance the travel experience of Indian business travellers include:

- Introduction of 5G services in India to support low power, high speed and ultra reliable connectivity
- Provision of onboard Wi-Fi on airplanes to permit Indian travellers to have uninterrupted connectivity with the 'ground'
- Introducing NFC-enabled travel services to ensure paperless and mobile enabled transactions and authentication throughout a business traveller's seamless journey
- Onboard Rail Wi-Fi to enable standardised internet connectivity for business travellers travelling by rail
- Integrated ticketing system to enable uninterrupted switch between different modes of transport for business travellers

While some of the above measures have already been undertaken by the Government of India through the 'Digital India' initiative, other measures are either under consideration, evaluation and/or require further assessment before introducing the same.

We will discuss each of the above enablers in terms of their applicability in business travel, actions taken till date and challenges, if any, in bringing these solutions to modern Indian business travellers.

1. *"Internet Trends Report 2017", Kleiner Perkins, June 2017*
2. *"Ericsson Mobility Report - June 2017", Ericsson, July 2017*

Introduction of 5G mobile networks in India

The 5G or the 5th generation mobile/wireless systems are the proposed telecommunication standards beyond the current 4G standards. It aims at higher capacity than 4G allowing a higher density of mobile broadband users, and supporting device-to-device, ultra reliable, and massive machine communications.

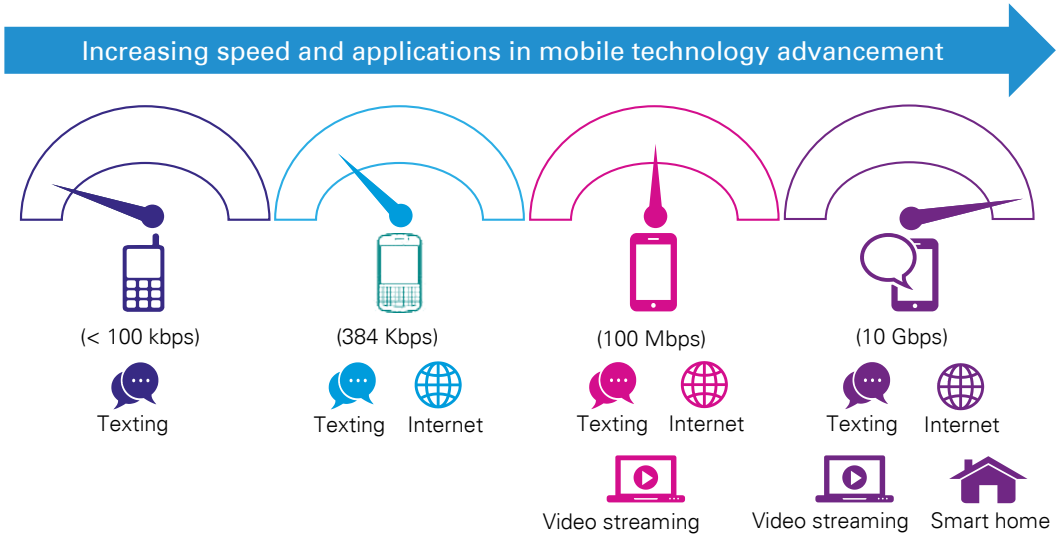
Each successive generation of mobile network technology has improved to address the voice experience, data usage, efficiency and capacity challenges presented by the current set of mobile broadband applications.

One of the biggest improvements is the average speed of data processing, which is approx. 100 MB/sec in 4G to about 20 GB/sec in the 5G regime.

This not only improves user experience (i.e. downloading a movie in seconds, faster connectivity to data heavy applications), but also provides a near anytime to anything connectivity to make the world look like a real Wi-Fi zone.

Figure 40 below summarises the evolution in speeds and application of each generation of mobile technology.

Figure 40: Evolution of speeds and applications in mobile technology[1]



5G applications

5G aims at not just improving mobile broadband experience but also evolving to address the particular requirements of Massive Internet of Things (MIoT) and Mission Critical Services (MCS).

5G's improved low-power requirements and its ability to operate in licenced and unlicenced spectrum enables wider, deeper and flexible coverage thereby enabling lower costs within MIoT settings.

5G enables support for applications that require high reliability, ultra-low latency connectivity. This allows wireless technology to provide ultra-reliable connection (similar to wired systems) to enable remote control applications such as autonomous vehicles, remote automation control of complex equipment etc.

Figure 41 below provides some of the application areas of 5G technology.

Figure 41: 5G potential application areas[2]

1. *"Is 5G really coming soon?", rechargeit.com, 7 December 2015, accessed on 19th October 2017*

2. *The 5G Economy: How 5G technology will contribute to the global economy, IHS Economics and IHS Technology, January 2017*

Applications in travel

5G enables support for ultrafast broadband network. With travel being increasingly managed by online platforms, its support for IoT is expected to transform the travel management.

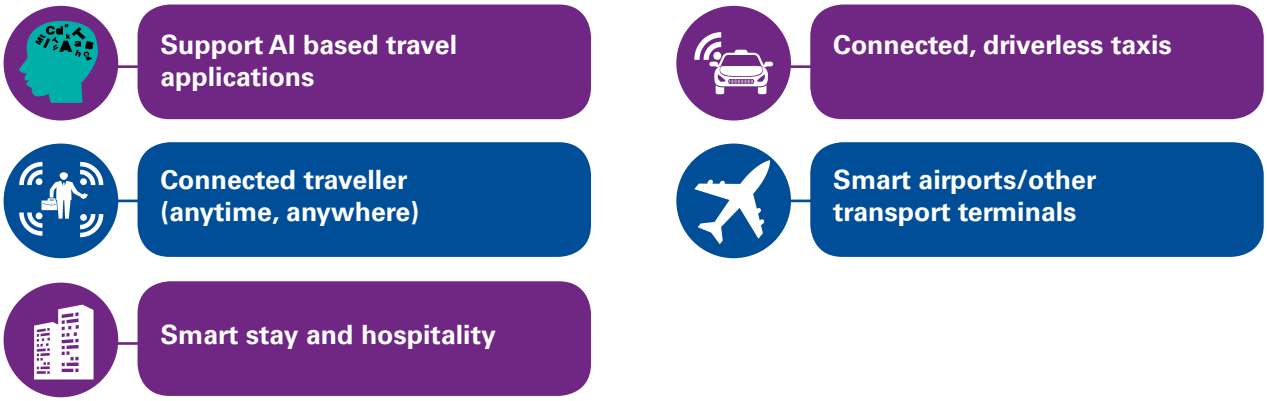
IoT enables internetworking of physical items, which allows everyday objects to be sensed and remotely controlled through the existing network infrastructure. All items whether luggage, vehicle, etc., would have network connectivity allowing them to be collected, sent and received with minimal human interaction.

Another aspect is its ability to support AI-based applications, which combines the advantages of "human touch" with "machine intelligence" giving users the feel of a personalised travel manager.

The introduction of 5G, therefore, would enable development of multiple applications in the ongoing disruptions in the travel industry to enhance user experience.

Figure 42 below summarises some of the identified applications of 5G in business travel.

Figure 42: 5G application in business travel[1]



5G implementation in India[2]

The Government of India, realising the importance of an enhanced digital infrastructure is preparing to launch 5G services in India.

In August 2017, the Telecom Regulatory Authority of India (TRAI) floated a discussion paper on auction of 5G spectrum in India.

The discussion paper gives details of the spectrum availability, potential application areas and roll out plans including auctioning of 5G spectrum to telecom operators to enable availability of 5G services by 2020.

The government has set up a "High Level 5G India 2020 Forum" along with INR 5 Bn funding on research and development for the same. The amount would be spent by three ministries - Telecom, Electronics and IT and Science and Technology. The terms of reference for the forum are to evaluate and approve the road map and action plans for 5G implementation in India by 2020.

Besides the government, the Indian private sector is also gearing up to introduce 5G enabled services. Recently, Microsoft and taxi aggregator Ola announced a global partnership for developing "connected cars" for improved digital experience for users.

However, considering the current state of the Indian telecom sector, where existing players are struggling to generate sufficient returns and cash flows led by high capex and growing competition lowering ARPUs (average revenue per user) and profitability, there appears to be limited appetite within the industry to invest in enhancing 5G infrastructure.

However, considering the connectivity advantages offered by 5G and the political willingness to support its implementation, it is still uncertain by when business travellers will be able to witness the advantages offered by 5G.

1. *The 5G Economy: How 5G technology will contribute to the global economy, IHS Economics and IHS Technology, January 2017, KPMG Analysis 2017*
2. *Consultation Paper on Auction of Spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300 - 3400 MHz and 3400 - 3600 MHz bands, TRAI, 28 August 2017, KPMG Analysis 2017*

Introduction of in-flight Wi-Fi

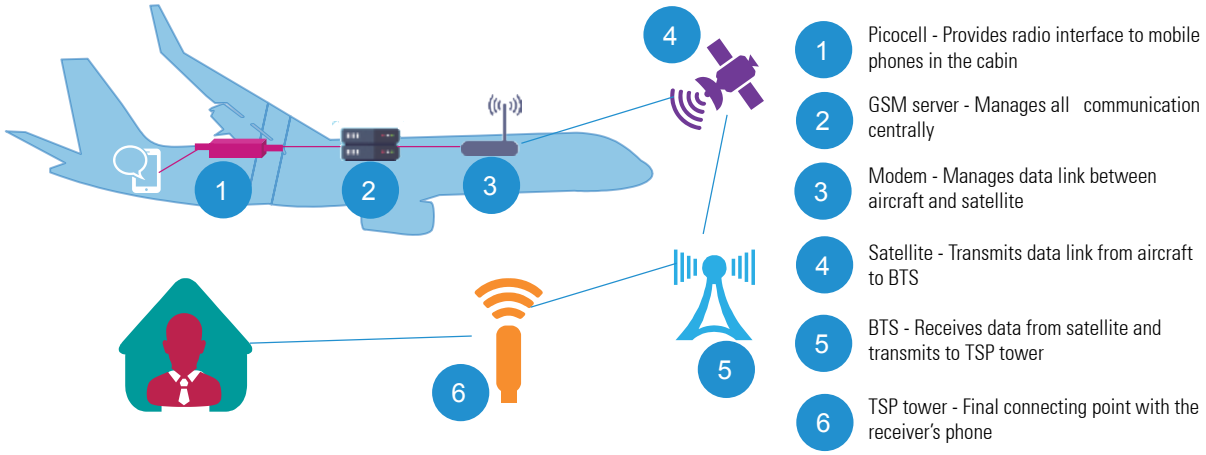
One of the most pressing demands of modern Indian business travellers is the desire for mid-air seamless connectivity. Safety and security concerns have inhibited Indian travellers from connecting with the ground while still in air until now.

Advances in satellite technologies are making it possible to have pervasive coverage around the globe. It is now possible for passengers to have access to telecom services even in aircraft travelling at a speed of about 800 km/hour and at 10,000 metre in the sky through satellite-enabled connectivity.

Currently. fliers are requested to switch off their mobile phones when onboard an aircraft. A special equipment called "Mobile communication services on board aircraft (MCA)" comprising a picocell (akin to a mobile base station), a network control unit (NCU), satellite link, an aircraft GSM server connect the base transceiver station (BTS), the NCU and the satellite modem.

Figure 43 below shows the functional overview of the in-flight Wi-Fi connectivity system using the MCA.

Figure 43: How in-flight Wi-Fi connectivity works[1]



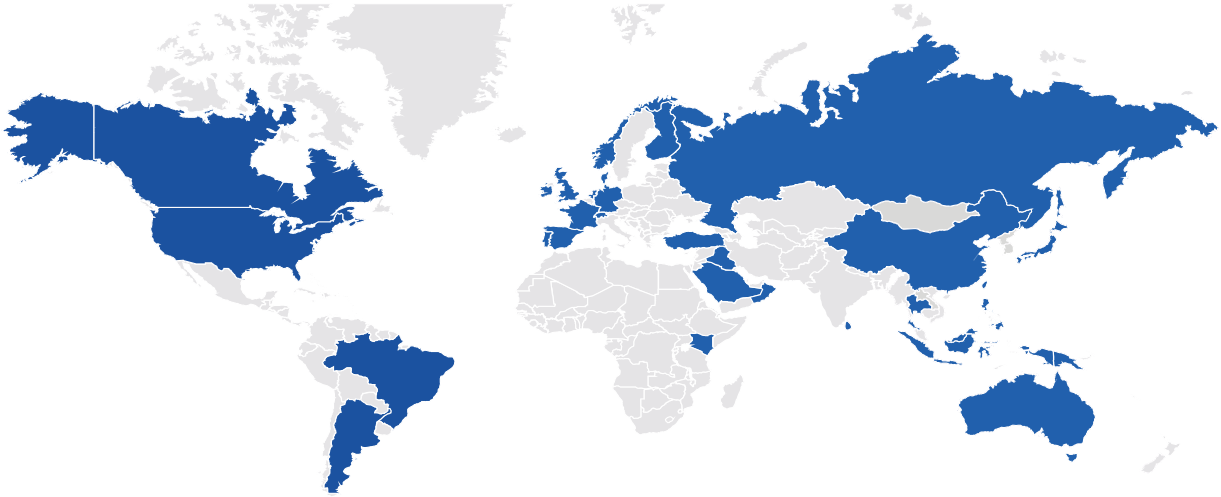
Global in flight Wi-Fi usage

The growing need for seamless connectivity and technology advancements have enabled close to 50 countries globally (spread across regions) providing on-board Wi-Fi services to their passengers.

Depending on the user demand and ability to pay, airlines charge by the hour (e.g. Delta, Finnair and Qatar Airways), by data usage (e.g. Emirates) or provide the same free of cost (e.g. China Eastern, Turkish Airlines and Philippine Airlines), etc.

Figure 44 below represents the countries that currently provide onboard Wi-Fi service (either for free or as a chargeable service).

Figure 44: Countries providing onboard Wi-Fi[2]



1. Consultation Paper on In Flight Connectivity (IFC), TRAI, 29 September 2017, KPMG Analysis 2017
2. "Sky high internet without sky-high prices: The airlines that offer inflight Wi-Fi for FREE", dailymail.co.uk, 16 March 2017, KPMG Analysis 2017

In-flight Wi-Fi - An Indian traveller perspective

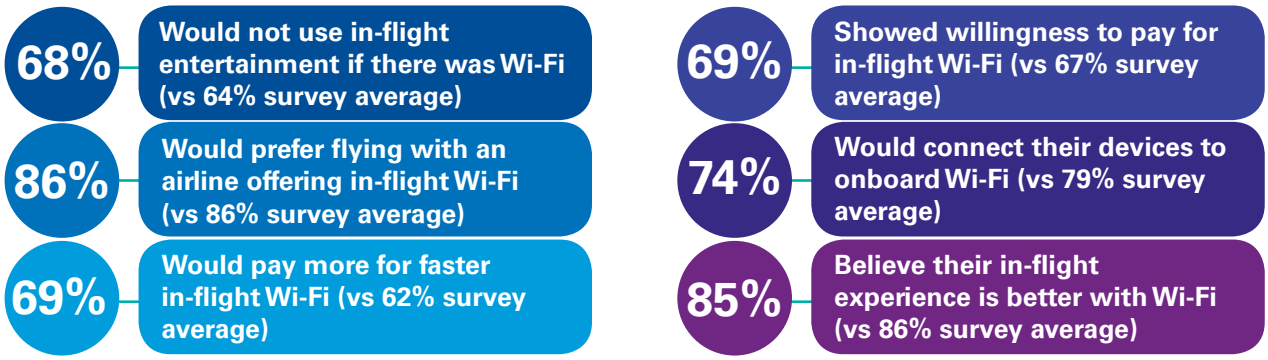
In-flight Wi-Fi is being touted as an important differentiator for modern travel. For business travellers, the need for seamless connectivity makes them natural users of these services. India is amongst the few large economies that does not allow Wi-Fi.

According to a survey conducted by Inmarsat amongst 3,000 travellers from 14 countries including India[1], in-flight Wi-Fi is becoming increasingly popular amongst passengers, while also enabling airlines to enhance ancillary revenues. Indian travellers showed higher than average inclination towards in-flight Wi-Fi vs travellers from other countries surveyed.

With current nil penetration and high demand amongst Indian travellers, in-flight Wi-Fi can be potential game changer in enhancing business traveller experience considering that fliers are potentially willing to shift travel preferences for onboard Wi-Fi.

Figure 45 below shows the key excerpts of Indian travellers' response and preferences for in-flight Wi-Fi services based on the Inmarsat survey.

Figure 45: Indian flyers' Wi-Fi preferences[1]



Status of onboard Wi-Fi in India[2]

The Government of India, realising the significance and demand for in-flight Wi-Fi has taken some steps towards introducing onboard Wi-Fi services in India.

The Ministry of Civil Aviation (MoCA) and Directorate General of Civil Aviation (DGCA) have already given in-principle approval to introduce onboard Wi-Fi subject to defining the technical, operating, licencing and tariff standards, for which TRAI has been mandated. TRAI is currently working on the same.

As part of developing the standards, TRAI floated a discussion paper in September 2017 on introducing in-flight Wi-Fi in India.

The discussion paper covers the scope of in-flight Wi-Fi, the technical requirements and possible frameworks for introducing Wi-Fi (i.e. amendments in existing regulations, spectrum rights for MCA services, licencing requirements, selecting service provider, user charges etc.).

TRAI invited comments from various stakeholders on all aspects to put forward in the discussion paper.

While the usage of inflight Wi-Fi should be encouraged, it is necessary to consider various factors including aircraft upgrade requirements, connectivity speed and quality, cybersecurity concerns (i.e. airlines should have the ability to track down the IM addresses, safeguards against cyber terrorism etc.)

Until the above requirements are identified, understood and suitably modified to suit Indian security concerns, Indian business travellers would have to wait for onboard Wi-Fi services.

Considering the current regulatory and political willingness and preparedness, the wait may not be too long.

1. *"In-flight Wi-Fi: Smart airlines listen to Asia-Pacific passenger demand, Inmarsat, May 2016, KPMG Analysis 2017*
2. *Consultation Paper on In Flight Connectivity (IFC), TRAI, 29 September 2017, KPMG Analysis 2017*

Introduction to Near Field Communications

Near Field Communications (NFC) is a set of communication protocols that enables two electronic devices, one being a portable one (such as a smartphone) to establish communication by bringing them into close proximity (usually 4 cm or less) to one another.

NFC is typically used for contactless transactions (e.g. Samsung Pay, metro smart cards etc.) thereby replacing the need to physically carry credit cards, smart cards, identity cards etc. hence enabling the users to have their mobile phones as the primary interface for monetary and non-monetary transactions without having to carry multiple documents for authentication requirements.

NFC is different from other contactless communication systems such as Bluetooth and RFID that it does not require pairing and has capabilities to read and write (thus enabling payments, access control etc.) and card emulation. Hence NFC combines the limitations of Bluetooth and RFID to enable single point of paperless authentication without compromising on data security.

NFC applications in travel

Mobile phones enabled with NFC can enhance business travellers' experience while reducing time and costs with enhanced security.

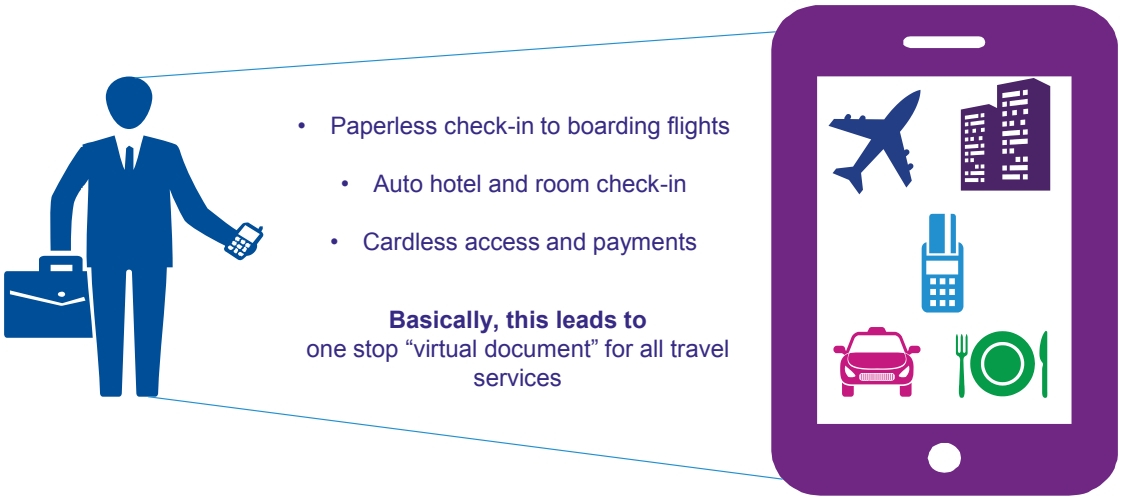
Starting with air travel, the entire process - right from booking to check-in, boarding, security etc., - is carried out using an NFC-enabled phone. This reduces queues, waiting time at airports and enhances paperless travel with e-authentication at each stage, ensuring no fake entries.

NFC applications in hotel enables auto guest identification, room allocation and access to room using a mobile phone.

NFC application in payment systems ensures that business travellers can use mobile phones as virtual corporate credit cards and virtual wallets (e.g. payment using QR code identification similar to PayTM) for payment.

Figure 46 below represents how NFC can enhance business travel experience

Figure 46: How NFC enhances business travel experience



NFC applications in India

The concept of NFC is currently at a nascent stage. Limited largely to over the counter payment systems, NFC is slowly being used across multiple applications.

In December 2015, the Rajiv Gandhi International Airport (RGIA) in Hyderabad[1] became the first Indian airport to go live with an in-house developed e-boarding facility. This innovative e-boarding enabled paperless access right from entering the airport to boarding an aircraft. The process of boarding pass stamping (both physical and e-boarding pass) has been done away with at RGIA. Other airports in India are expected to follow suit.

Novotel hotel in Pune uses a system called "SPG Keyless" (SPG - Starwood Special Guest)[2] where one can open a room with a mobile phone. Travellers need not wait at the reception for check-in to issue a room keycard.

1. *"E-boarding goes live at Rajiv Gandhi International Airport Hyderabad", Hyderabad.aero, 28 December 2015, accessed on 23 October 2017*
2. *"NFC - Wave-n-Pay is here", Deccan Chronicle, 3 October 2016, accessed on 18 October 2017*

E-boarding pass in India: Case study of Rajiv Gandhi International Airport, Hyderabad[1]

The Rajiv Gandhi International Airport (RGIA) in Hyderabad is the sixth-busiest airport in India handling 15 mn passengers or approx. 5. per cent of India's total passenger in FY17. The airport is operated by GMR Hyderabad Airport Ltd (GHIAL), an SPV formed by GMR Infrastructure Ltd. The airport was inaugurated in March 2008.

On 28 December 2015, RGIA became the first Indian airport to implement the e-boarding process for all domestic passengers after getting the approval from the Bureau of Civil Aviation Security (BCAS) under the Ministry of Civil Aviation (MoCA) in August 2015.

The e-boarding solution at RGIA fully eliminates the need to manual stamping of boarding cards even for physical boarding cards issued by CUSS (Common Use Self Service) machines or check-in counters. Furthermore, it covers end-to-end all the key passenger processes at the airport starting from entry to terminal, check-in, security check, boarding gate and, finally, the boarding bridge check before entering the aircraft.

Now a domestic passenger flying from the airport would need only a mobile e-boarding card and the Aadhaar card to gain entry into the airport. The passenger workflow designed for the e-boarding process makes it robust through integration with Aadhaar card and biometric credentials for veracity check, along with integration with airlines database for real-time information about the passenger within the airport terminal. This leads to enhanced security wherein passenger details are checked online with Airline DCS (Departure Control System) at the main entry and security hold area for authenticity check, thereby avoiding fake entries. This enables a paperless and minimal manual interface.

The process of e-boarding is seamless and integrated with the passengers' name list from the airline. This also makes it very easy to check whether the passenger is actually at the airport or not. Passenger entry timings and other touch points are recorded, enabling RGIA to continuously enhance its operational efficiency. With entry through e-boarding being time bound, the e-boarding reader does not allow passengers inside the terminal before the stipulated time, thus reducing congestion inside the airport.

NFC - Next steps

The concept of NFC is relatively new in India. While RGIA has taken the initiative to introduce e-boarding, Bengaluru and Mumbai airport are expected to follow soon. However, considering the varying technology levels at Indian airports and sensitive security situation, it is a long way until e-boarding becomes a standard operating procedure for Indian business travellers.

In the hospitality segment, while Starwood Hotels has replicated the Pune hotel system at its Aloft-branded hotel in Bengaluru, it is long way before other hotels become more aware of the benefits of NFC and consider implementing such services to enhance quality of stay for their business guests.

Other service providers (i.e. taxi operators, public transport systems etc.) too need to upgrade their systems to NFC-enabled services to enable a convenient and paperless travel.

TMCs and travel managers too need to encourage and incentivise NFC-enabled business-friendly travel for travelling employees through various measures including NFC-enabled SBT, giving preference to travel service providers who have NFC-enabled processes for business travellers, etc.

1. *"E-boarding goes live at Rajiv Gandhi International Airport Hyderabad", Hyderabad.aero, 28 December 2015, accessed on 23 October 2017, KPMG Analysis 2017*

Electric vehicles

Electric vehicles (EVs) or e-vehicles are regarded as one of the most prolific travel technologies in recent times. EVs envisage the use of batteries against the conventional ICE (internal combustion engine) technology for powering vehicles. While EVs have been in existence since the 19th century; however, due to its relative unease of operation compared to ICE powered vehicles, EVs had limited adoption.

The start of 21st century saw the resurgence of EVs aided by technological improvements, growing environmental concerns and cost control measures from rising crude prices. The changing focus towards EVs emanates from the operating cost economics.

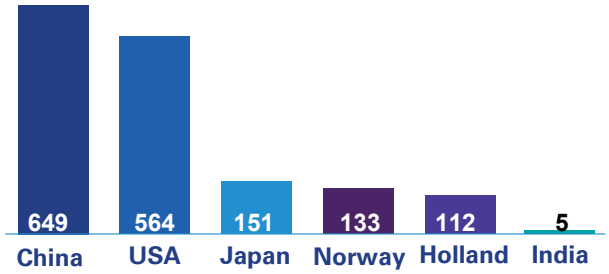
According to industry estimates, the energy cost of electric car is a fraction of the conventional ICE cars. However, the mass adoption of EVs is restricted by two key factors - high cost of lithium-ion batteries (accounting for bulk of EV cost) and charging infrastructure.

While the average cost of lithium ion batteries have come down from over USD 1,000/Kwh in 2010 to USD 200-250/ Kwh currently[1], according to industry estimates, a further reduction to about USD 150/ kwh or below can potentially enhance mass EV acceptance.

In terms of charging infrastructure, it is widely believed that unless "fast charging" points are not set up, it would be difficult to gain customer acceptance for EVs.

Globally, EVs are gaining traction in Europe, North America and China. The electric car stock, which stood at 1.26 mn units in 20152 increased approx. 60 per cent to about 2 mn by end of 2016[2] indicating the growing EV popularity. Germany, the UK and France are considering ban on petrol and diesel cars 2040 onwards. **Figure 47** below showcases the stock of EV cars in top five markets at the end of 2016.

Figure 47: EV stock, by key countries in 2016 (in '000s)[2]



In India, the concept of EVs has received a major push when the Ministry of Road Transport and Highways (MORTH), under the FAME (Faster Adoption and Manufacturing of Electric vehicles) scheme announced plans to have only electric cars by 2030[3].

While the government has already taken steps to introduce EVs for government departments, it would be few years before EVs become the norm in India. Large scale adoption of EVs would depend on cost economics. **Figure 48** below summarises the energy cost difference and the economics associated with using EVs vs ICE powered vehicles.

Figure 48: Energy cost per 100 km[4] (EV vs ICE vehicles)

1. *"Electrifying Insights - How automakers can drive electrified vehicle sales and profitability", McKinsey and Co., January 2017*
2. *"Global EV Outlook 2017 - Two million and counting", International Energy Agency, 2017*
3. *"100% electric vehicle mobility by 2030: Is India really prepared for it?", Indian Express, 6 April 2017, accessed on 28 October 2017*
4. *"Start up, Plug In, Drive Out", Economic Times, 31 August 2017, KPMG Analysis 2017*

Wi-Fi on Rail

One of the most awaited reforms in Indian business travel is Wi-Fi availability onboard trains. With Wi-Fi onboard flights expected to become a reality over the coming months, on-rail Wi-Fi is the need of the hour.

For business travellers travelling on short duration journeys by train (e.g. Mumbai - Surat, Delhi - Jaipur, Delhi - Chandigarh, Delhi - Lucknow etc.), onboard Wi-Fi would offer uninterrupted connectivity considering that current mobile internet connectivity is not standard throughout the country. While Tejas Express running between Mumbai and Goa provides onboard Wi-Fi, passengers have repeatedly complained about connectivity issues[5].

In case of station Wi-Fi[6] , an initiative has already been undertaken through the Google-Railtel partnership. The mandate of this partnership is to enhance internet connectivity at Class A and Class A1 railway stations in India. Under the partnership, Railtel provides the high speed network via fibre lines while Google provides technology support and sets up the wireless infrastructure. Launched in January 2016, currently 140 stations have been covered with the target of covering 400 stations by 2018.

While the advent of 4G may limit the significance of station Wi-Fi, considering the bandwidth limitations and the varying internet connectivity throughout the rail journey, there is scope for enhancing onboard Wi-Fi infrastructure. The current initiative on station Wi-Fi needs to be extended to onboard Wi-Fi.

Integrated Ticketing System

Integrated ticketing allows a person to make a journey that involves transfers within or between different transport modes with a single ticket that is valid for the complete journey.

In most cases, integrated ticketing is made possible through electronic ticketing technologies such as smart cards and magnetic stripe cards. While integrated ticketing is largely used for public transport systems (i.e. buses, trains, ferries, subways etc.), certain countries such as Switzerland covers entry into museums or leisure destinations.

One of the biggest advantages of integrated ticketing is the convenience for travellers. For business travellers, an integrated ticketing system covering air, rail, taxi etc. reduces the hassles of buying a new ticket every time a different mode of transport is used.

For Indian business travellers travelling to/from locations not connected by air, integrated ticketing allows them to have seamless journeys between multiple modes of transport.

Similarly, for air travellers, travelling from airport to hinterland regions by road, rail etc. would not be required to buy tickets every time when travelling in regions not connected by air.

The objective is for business travellers to have seamless travel between multiple modes of transport. A national integrated ticketing system based on Aadhaar (for traveller identification) combined with BHIM (for payments) may be considered for business travel.

5. "Mumbai - Goa Tejas Express passengers' grouse: Bad Wi-Fi, music and movies" Hindustan Times, 26 June 2017 accessed on 27 October 2017
6. "Inside Google's RailWire Project Which provides Free Internet That Works", NDTV, 1 August 2017 accessed on 26 October 2017

Implications for TMCs

For TMCs, technology is expected to be key differentiator in delivering seamless services. While the primary onus of introducing tech-enabled services such as 5G, in-flight Wi-Fi, NFC, Wi-Fi on rail and integrated ticketing lies with the government, it is important for TMCs to start building their offerings considering these enablers in order to provide an immersive experience to business travellers as soon as these technologies become available .

With 5G supporting AI applications and other tech enabled services for "connected traveller", TMCs need to develop customised offerings for their corporate clientele (similar to SAM mobile application of FCM) to ensure uninterrupted travel and maximise the business traveller productivity while also minimising the uncertainty and travel stress.

In-flight Wi-Fi services can enable TMCs to provide potential value-added services to their clientele (with services being primarily provided by the airlines themselves) through customised data packs, fixed data usage plans, in-flight video conferencing etc.

TMCs can potentially use NFC as a single "documentary interface" for virtually all interactions of business travellers, where physical documentation is currently is the requirement for access, identity checks and other travel formalities. NFC-enabled SBT removes the need for multiple mobile apps, documentation etc. for all "business travel touch points" whether access to airports, lounges, hotels, corporate credit card payments etc.

Lastly, Wi-Fi on rail and integrated ticketing system enables TMCs to offer enhanced seamless convenience irrespective of mode of transport used and travel even to the remote areas within the country.

Hence TMCs need to understand each aspect of their business travellers' travel pain points, identify potential technology intervention areas and work with their clients to customise (to the extent possible) offerings for their clients' travellers.

Way forward for a Digi- smart Future

Way forward

India is not only one of the world's fastest-growing travel markets, it is also at the forefront of new technology adoption and a promising destination for travel innovation. Travel managers believe that while overall business travel experience in India has improved over the last three-five years, it is yet to achieve parity with global standards. For India to emerge as a preferred destination, certain initiatives need to be taken by all concerned stakeholders i.e. the industry, users and government.

However for the respective initiatives to be successful, it is equally important for each of these initiatives to be coordinated to achieve the objective of seamless travel.

Based on global and local technological developments, opportunities and available infrastructure-the issues, proposed resolution and recommendations for the respective stakeholders is outlined in **Table 9, 10** and **11** for the industry, travel managers and government.

Table 9: Way forward for the Industry

Issue	Resolution	Recommendation
• TMCs are largely following what the customers want - low fees and are yet to invest in solutions to show value to their clients beyond low commercials • This requires engaging with clients on value-added technology services through pilots and test marketing initiatives, which are not prominent amongst TMC service providers	• TMCs need to showcase value addition to their clients using technology to address the pain points faced by travellers	• TMCs need to collect, collate and analyse traveller data available with them through their bookings, traveller feedback received and other information based on their experiences and study the "Big Data" in detail to understand business travel pain points • Research and learn from international best practices and solutions used in dealing with business travel challenges, keeping in mind the Indian travellers' preferences and constraints • TMCs need to develop customised products/services such as SBT, AI tools and analytics solutions besides other solutions that address the travellers' and travel managers' pain points
• Users are currently accessing services of sharing economy service providers through the respective service provider platform, which may or may not fall within the booking platform of their respective organisations or TMCs	• TMCs need to update their booking platform to include services provided by sharing economy service providers in their platform	• TMCs may consider providing "mega aggregator services" wherein they coordinate services of existing travel aggregators/sharing economy service providers (in addition to other travel service providers), enabling their clients to view all travel choices in a single platform
• TMCs in India are yet to adopt and adapt global best practices according to the needs of the Indian business travellers, with traits varying from those of other countries	• TMCs would need to adapt their technology service offerings relevant to Indian traveller needs	• TMCs need to adapt global best practices and/or technology solutions according to needs and requirements of Indian business travellers • For example, having AI-based travel assistant speaking / communicating in local and regional languages, customised meal options in destination hotels etc.
• TMCs in India offer limited technology solutions to Indian SMEs, who do not have the required spends, but can potentially benefit from the innovative technological solutions developed by TMCs	• TMCs need to widen their market scope to include SME business travellers as target users of their technology solutions	• TMCs may consider offering technology solutions such as SBT, AI and data analytics through subscription to SMEs through cloud-based / mobile app-based platform thus offering technology solutions on pay per use model instead of enterprise level adoption model
• TMC employees are neither knowledgeable nor equipped well enough to deliver the required advanced technology services to the clients	• TMCs need to enhance the skill levels of employees to enhance their knowledge and capabilities	• TMCs need to upgrade the skill levels of their employees and make them more 'tech-enabled' to be able to deliver the required tech services to clients • TMCs may jointly work with GBTA - India to design training programmes for TMC employees and upskill them with latest developments in global business travel

Table 10: Way forward for travel managers

Issue	Resolution	Recommendation
Travel managers need to be aware of the time cost involved in managing end-to-end travel processes, which are either partially or completely offline; impacting employee and organisational productivity	Travel managers to consider gradual migration from offline/ partial offline travel management process to complete online-based processes to enhance speed and efficiency of travel management process	• Travel managers need to enhance awareness and measure the employee time cost involved in managing travel processes (through employee surveys, feedback, data analytics etc.) and determine potential time savings and impact on employee productivity through "completely online" travel management processes • Travel managers may, based on " employee time cost savings", consider automating their entire travel management process starting with introducing SBTs (whether in-house or outsourced from third-party), integrating it with other corporate systems and ensuring all processes are "seamless and paperless" without impacting relevant compliance requirements
Travel managers are largely focused on optimising travel costs through lower TMC fees, access to GDS system etc. instead of using TMCs' experience, knowledge and technology tools to optimise overall travel costs	Travel managers need to engage with and leverage the business travel industry knowledge and expertise and include aspects such as technology offerings and duty of care in existing TMC evaluation norms	• Travel managers may consider sharing travellers' pain points with TMCs (using travellers' feedback) during the RFP stage (when appointing TMCs) and encourage TMCs offering innovative solutions to address the challenges • Travel managers may also encourage TMCs to conduct pilots on innovative solutions such as AI assistance and data analytics to test the effectiveness of best industry practices in their respective organisations and roll out such solutions where feasible.

Table 11: Way forward for the government

Issue	Resolution	Recommendation
Technology implementation in Indian airports is not standardised requiring varying documentations at different airports resulting in complex airport entry and flight boarding procedures thereby impacting traveller experience	Standardise technology processes at all Indian airports to give travellers similar experience as provided by Hyderabad airport	• The Ministry of Civil Aviation in consultation with other authorities (i.e. DGCA, BCAS, AAI, MoD etc.[1]) may consider replicating the Hyderabad airport e-boarding process at other Indian airports through NFC enablement using Aadhaar, biometric credentials etc. allowing travellers to receive a standard and similar experience across all Indian airports • Use of technology enables faster embarking and disembarking thereby reducing time spent at airport reducing passenger congestion at airports (especially metro airports) • In medium-to-long term, this would enable using larger aircraft on domestic routes, increase seat capacity and stabilise airfares (hence optimising business travel costs)
Public transport infrastructure in Indian cities has not been upgraded to provide seamless connectivity between transport terminals (i.e. airports, railway stations etc.) and the city resulting in traffic congestions and long commute times for travellers	Urban public transport planning, standards and regulations need to consider seamless connectivity between transport terminals and the city centres	• Airport and railway station development and/or upgrade projects in cities with population more than 1 million could mandatorily have mass transit/public transport connectivity with key regions within the city (e.g. central business districts and high traffic density regions etc.) similar to Delhi Airport Metro Express Line • No airport/railway station development/upgrade project may be approved without the mandatory requirement of "seamless connectivity with key regions within the city"

1. DGCA - Directorate General of Civil Aviation, BCAS - Bureau of Civil Aviation Security, AAI - Airports Authority of India, MoD - Ministry of Defence

Table 11: Way forward for the government (continued)

Issue	Resolution	Recommendation
• Travellers in India do not have access to in-flight communication (Wi-Fi, calls etc.) compared to their peers in other developing countries such as China, Indonesia, Thailand, Sri Lanka and Kenya	• Infrastructure and regulations pertaining to onboard Wi-Fi on flights need to be updated and upgraded to provide seamless ground connectivity and enhance travellers' experience	• While TRAI has issued a discussion note on introducing onboard Wi-Fi in flights, standards pertaining to onboard and ground equipment, spectrum requirements and regulatory approval requirements need to be defined • The Ministry of Communications and Broadcasting in consultation with the Ministry of Civil Aviation and relevant regulatory authorities may form a high-level forum (similar to the one developed for 5G roll out by 2020), which would help develop the road map for implementing in-flight Wi-Fi along with the roles and responsibilities of the respective authorities concerned
• Travellers in India do not have seamless transportation access between multiple modes due to different physical ticketing requirements for each mode	• Integrated ticketing system at the city level is required to enable travellers to travel uninterrupted within the origin / destination city	• Integrated ticketing system can be introduced in tier-1 cities within common ticket across all modes of public transport (i.e. taxi, rickshaws, mass transit systems etc.) to mandatorily accept a common ticketing system • The Regional Development Authority may be mandated to introduce integrated ticketing in their respective cities. For example, MMRDA[1] is pioneering the integrated ticketing system (ITS) and will be responsible for managing the project for Mumbai city. • The common ticketing system may be based on Aadhaar (for traveller identification) combined with BHIM[2] (for payments) to promote digitisation across public transport infrastructure
• Electric vehicles, although considered as a cost-effective mode for travel, require dedicated charging infrastructure to enable its mass adoption and acceptance	• The government would need to take the lead in developing a dedicated electric car charging infrastructure as part of achieving the objectives outlined under the FAME 2030 initiative	• The Ministry of Road Transport and Highways in consultation with the Ministry of Petroleum may consider mandating every fuel station operated by state-owned fuel retailers i.e. IOC, HPCL, BPCL etc.[3] to have atleast two electric car fast charging points • However standards for setting up charging stations need to be defined by relevant agencies i.e. BEE, EESL etc.[4]

1. MMRDA - Mumbai Metropolitan Regional Development Authority
2. BHIM - Bharat Interface for Money
3. IOC - Indian Oil Corporation, HPCL - Hindustan Petroleum Corporation Ltd, BPCL - Bharat Petroleum Corporation Ltd
4. BEE - Bureau of Energy Efficiency, EESL - Energy Efficiency Services Ltd

Conclusion

The Indian business travel market is on the cusp of technological innovation led by its fast growing millennial workforce, smartphone usage, internet connectivity and Indian organisations' growing investments in state-of-the-art IT infrastructure and compliance levels given the heightened physical and cybersecurity risks. Indian organisations are increasingly realising the benefits of a tech-enabled business traveller, whose seamless travel can potentially reduce stress and enhance his productivity and ROI from the travel.

Tech solutions such as SBT and AI give users the flexibility to personalise their travel choices, while also enabling travel managers to balance the trilemma of cost control, enhancing compliance and meeting business travellers' expectations.

Sharing economy services enable travellers to unbundle and personalise travel choices along a vast array of options offered by service providers. However service quality issues, complex regulatory landscape, data security concerns and 'yet to be proven' business models are making travel managers' transition towards these services gradual and on 'wait and watch' mode.

Travel analytics is an emerging area for travel managers to constantly re-evaluate their business travel programmes as they look to enhance cost visibility, control and compliance levels without compromising on traveller expectations.

Blockchain is an upcoming tool that addresses the key concerns of travel managers-travel process visibility and data security on cloud; however, its applications in Indian business travel scenario are yet to evolve.

Technological disruptions such as Hyperloop, GRS and SpaceX promise a 'revolutionary business travel experience' while they are still some time away given their novelty and 'long road to reality'.

In terms of enablers, technological developments such as 5G, in-flight Wi-Fi, NFC, EVs, Wi-Fi on rail and integrated ticketing are dependent on the evolving regulatory environment to bring these into the fold of Indian business travellers to realise the dream of a 'seamless and cost-effective business travel'.

Keeping in mind the growing needs tech usage and expectations of their business travellers, Indian travel managers need to encourage global best technology practices in their business travel programmes by jointly working with TMCs and other technology solution providers.

The government as part of its "Digital India" initiative needs to enhance the quality of the digital and physical infrastructure to keep pace with the changing needs of Indian as well as global business travellers.

For TMCs, while constant engagement with their clients, travellers and other stakeholders on technology solutions is imperative, they also face the perennial challenge of differentiating themselves to meet the evolving technology needs of the growing new breed of the **"digi-smart Indian business traveller"**

Glossary

AAI	Airports Authority of India
AI	Artificial Intelligence
APAC	Asia Pacific
BCAS	Bureau of Civil Aviation Security
BEE	Bureau of Energy Efficiency
BPCL	Bharat Petroleum Corporation Limited
BPO	Business Process Outsourcing
BTS	Base Transceiver Station
CAGR	Compounded Annual Growth Rate
DCS	Departure Control System
DGCA	Directorate General of Civil Aviation
EESL	Energy Efficiency Services Limited
EMS	Expense Management System
ERP	Enterprise Resource Planning
ETA	Estimated Time of Arrival
EV	Electric Vehicles
GBTA	Global Business Travel Association
GDS	Global Distribution System
GPS	Global Positioning System
GRS	Guest Reservation System
GST	Goods and Services Tax
HPCL	Hindustan Petroleum Corporation Limited
HR	Human Resources
HRMS	Human Resource Management System
HTT	Hyperloop Transportation Technologies
ICE	Internal Combustion Engine
IHG	InterContinental Hotels Group
IOC	Indian Oil Corporation
IT	Information Technology
MCA	Mobile Communications on board Aircraft
MCS	Mission Critical Services
MIoT	Mobile Internet of Things
MoCA	Ministry of Civil Aviation
MoD	Ministry of Defence
NASSCOM	National Association of Software Services Companies
NCU	Network Control Unit
NFC	Near Field Communications
OTA	Online Travel Aggregator
RGIA	Rajiv Gandhi International Airport
SAM	Smart Assistant on Mobile
SBT	Self Booking Tool
SME	Small & Medium Enterprises
T&E	Travel & Entertainment
TMC	Travel Management Company
TRAI	Telecom Regulatory Authority of India
UK	United Kingdom
US	United States
USD	United States Dollar

FCM Travel Solutions

Contact in India

Vikram Kohli
President
FCM Travel Solutions
T : +91 9811754100
E : vikram.kohli@in.fcm.travel

in.fcm.travel

(017_THL0616)