TULI COLLEGE OF HOTEL MANAGEMENT
NAGPUR

One Day National Conference

AMELIORATION 2018

"Techno Touch Changing the Face of Hospitality and Corporate Market"

About the Institution

Tuli College of Hotel Management, Nagpur.

Our college stands 4th in Maharashtra as per Competitive Success Review. Tuli College of Hotel a Management the premier institute in central India is committed to the world of hospitality since 1990, being one of the oldest private institute in Maharashtra it has always taken an initiative to produce quality hoteliers. In view of the growing trends where in graduation with technical qualification was preferred, henceforth, a Degree in Hotel Management and Catering Technology in 1999 was started. The institute has been providing excellent results; the institute is situated amidst greenery and noise free atmosphere away from pollution, which provides an ideal learning experience.

College is spread on acres of lush green land away from the hum- drum of the urban areas. It promises conducive atmosphere to educate and grow to face the world.

College offers well lit classrooms with teaching aids like Computers, LCD, etc. College has well equipped labs for the smooth conduct of the practical's. It has four food production labs including bakery, with sophisticated equipments. It has two Training Restaurants with modern equipments and a bar set up. To aid in House Keeping Department training college provides guest room, linen room and laundry room. There are two Front Office labs to teach the students about reception and welcome of the guest.

There is a Seminar Room and Conference Hall for guest lecturers and conferences. It has extensive state of the art Library, Auditorium is situated in the heart of the college and all the extra- Curricular activities are conducted there, college also has very good computer lab, common room,

Mr Mohabat Singh Tuli

We live in a society, where caring parents make all efforts to give best possible to their children. The best possible learning, best preparation for communication, best of cloths, best of living, etc. all this to enable children for success and prosperity in life ahead to face life challenges with confidence and happiness.

In addition to this curriculum is implemented with honest dedication and continuous improvement, it has facilitated the development of students to be resilient, happy, intelligent, flexible, reflective and balanced. We are proud to tell you that our alumnae are happily and strongly pursuing their profession and enterprises, playing roles as house holders, responsible citizens and social leaders in India and worldwide.

Tuli College of Hotel Management exists to serve humanity, to develop students and serve the world with

Dr. Urvashi Yashroy

It is imperative, that the education being imparted is holistic and qualitative. Classroom education must be more and more combined with equivalent amount of practical and realistic world. These activities surely augment the development of future professionals. It is equally important that various social values such as obedience, discipline, politeness respect for teachers, punctuality, care, unselfish behaviour and truthfulness are well imbibed by all the students genuinely. The Tuli College of Hotel Management tradition happily brings together sound academic achievement with an extensive, vibrant co-curricular

Programmed that includes sports, and leadership training programmers. Our mission is to Inculcate the love of knowledge in our students and, for this, we aim to develop the skills and Demean of lifelong 'learning,' essential for making responsible global citizens. This will make them immensely capable of facing the future with resilience and optimism. On the deeper level, we try to instill the values of respect and trust in relationships that are the foundation of real success. At Tuli College of Hotel Management then, we believe that 'education' is a wholesome, holistic exercise and as such we strive to give a whole new meaning to the word. Coupling this basic premise with the idea of a sense of belonging to ourselves as 'care-givers'. We care for the mind—ours is a Professional academic institution.

INFRASTRUCTURE

ACTIVITIES

ACTIVITIES

Contents

1.1 HOTEL INDUSTRY ---ROMANCING THE TECHNOLOGICAL WAY

By Dr Urvashi Yashroy
Director
Tuli College of Hotel Management

Once long ago, hotels, motels and other hospitality businesses occupied a fairly simple space in people's lives—they were a place for guests to lay their heads away from home. But anyone who's spent time in the hospitality industry in the last several years knows that the role of technology in hospitality businesses has drastically expanded.

In many cases, they're becoming hubs of activity unto themselves. Most of this activity relies directly or indirectly on technology, making IT more important to hotel operations and the guest experience than ever before.

So we're here to explore top communication technology trends in hospitality today.

Check them out.

Think about which ones make sense for your business.

And if you see an opportunity, you can get out in front and begin planning accordingly.

After all, in life "Every thing is fair in love and war"

 Same way   in hospitality, "Every advantage counts."

Many such technological changes now dance on guest's fingers

LET'S START WITH A FEW

MOBILE DEVICE AS DOOR KEY

It's fascinating that a function as simple as a door key could undergo so much evolution. But the tool that once started as a carefully shaped piece of metal quickly turned into electronic key cards, and is set to shed its physical form altogether. The next evolution of the hotel key transforms it into data on a guest's mobile device.

AUTOMATION

Self-service is in. Today, many guests prefer technology over human interaction for simple tasks. Remote check-in and check-out options are becoming popular, and some hotels are beginning to work with apps that let guests order room service right from their mobile devices. There's a whole range of basic guest requests that can be automated with the right technology, which lessens the burden of human interaction and leaves hotel staff up for other activities that enhance the guest experience. And the trend is only going to accelerate.

FIXED-MOBILE CONVERGENCE

Once upon a time, people used their room phones. However, the pervasiveness of mobile devices has relegated the conventional room phone to a vastly reduced role. But that doesn't mean it doesn't have a role moving forward. The room phone of the future may serve as a hub for a larger connected experience. Eg laundry reminder, wake-up calls etc

It may sound like science fiction, but many of the pieces of this scenario are already available or in development. The guest of tomorrow will be more connected than ever before.

APPS

The vision of the connected guest entails nearly every aspect of the guest experience. Something as complex as that needs a single hub from which to operate—and guest apps for personal mobile devices are the natural place to

host all of these functions. A smartly designed guest app combines everything from deal notifications to hotel services to loyalty programs. If you see a guest used the group rate for a conference, you could use the app to electronically send your guest the event itinerary, complete with a map of meeting spaces where sessions will be held.

Most major hotels have some element of this picture in play already, and they're adding capabilities every day. Some of the major flags are closer, but much of the technology and integration is still in development

Regardless of who gets there first, one thing is certain—the hotel with a truly connected experience will be full of very happy, very empowered guests.

BATTLE FOR BANDWIDTH

A smart phone. A laptop. A tablet. An e-reader. It seems like hospitality guests bring every Internet bandwidth-sucking device they own when they travel. And whether they're travelling for business or pleasure, you can bet you're going to hear about it if they can't connect as quickly and reliably as they're used to at home. But a hotel is not a home. You have to multiply those data needs by dozens, if not hundreds, of guests—possibly thousands if you land a big conference. It's a huge strain and one that many of the best hospitality brands are working on. Whatever your solution, rest assured, the demand for bandwidth at hotels is only going to grow.

TECH LOUNGES

Airline check-ins. Local info guides. A place where guests can get out of their rooms but still access Wi-Fi to relax or get work done. The use cases for technology in hospitality seem to grow every year, and savvy hospitality businesses are transforming these guest desires into stylish semi-public spaces where guests can engage tech on their terms. Many guests are even beginning to include these kinds of technologies in their online hotel search criteria, so hospitality businesses that lack them may eventually find themselves at a disadvantage

TECH-ENABLED MEETING SPACES

The modern meeting space has evolved. No longer is it about tables and chairs and nice serving carts. Modern meetings run on technology. Business people need to make multimedia presentations and videoconference remote attendees—sometimes both simultaneously.

And for the marathon meetings, they'd like access to services like catering with minimal interruptions. Most of all, smart hotels know they need these spaces to be as user-friendly as possible. The A/V rooms of the past that required dedicated engineers are no longer an option.

If you think these kinds of business needs are limited to boardroom-style conference spaces, you're missing an important part of the picture—business customers are increasingly asking for advanced technology enablement in ballrooms and event halls, as well.

SOCIAL LISTENING

Guests have a lot to say about their experiences at hotels, but they don't always say it directly to you. And in a hospitality world where word of mouth and online reviews have more influence every day, it's one of the reasons that more and more hotels have started investing in social listening tools. These tools allow hotels to find out about guests' wants, needs, desires, complaints and more—and jump into the conversation if it makes sense. Some even let you keep an eye on the competition. The Internet is treasure trove of business intelligence if you know how to look.

Technology has become critical to attracting and retaining hotel guests, and today that means investing in a wide range of solutions that create immediate and personal engagement. With rising expectations, surprise and delight has been replaced by expected and assumed. Reservations must be easily made via any smart device, guestrooms must facilitate any type of content, networks need to be rock-solid, and data is now your most valuable asset.

To meet escalating guest expectations, 54% of hotels will spend more on technology this year, according to *HT*'s 2016 Lodging Technology Study. Their biggest priorities for technology spending, in order, are: payment security, guest room tech, bandwidth, and mobile engagement

Mobile solutions in particular will dominate the list of capital investments this year — six of the top new rollouts have a mobile component, ranging from mobile keys, to mobile payments, to location-based technology. Also high on to-do lists are improving data accessibility and security.

In this mega-trends special report, *Hospitality Technology* pulls together data from its 2016 Lodging Technology Study, combined with insight from industry thought leaders and hoteliers, to find more about, what's shaping technology spending today.

According to PhoCusWright, 87 percent of TripAdvisor users feel more confident in their decision when they read travel reviews, and 98 percent say they find them "accurate of the actual experience." Similarly, according to LateRooms, 90 percent of travelers avoid booking hotels labeled as "dirty" in online reviews.

With consumers committed to in-depth research before making travel decisions, the balance of power has now unquestionably tilted toward guests, as hotels must work even harder to exceed expectations and solve service problems as they occur. The threat of a poor social media review is a highly powerful tool to the consumer, and hotels must now think twice as to the negative implications of bad reviews to potential future reservations when making guest compensation decisions.

The hospitality industry is a dynamic environment in a constant state of movement and evolution. Through technology, the last several years have witnessed the industry change at an unprecedented pace. To be successful in the hospitality industry in today's landscape, those entering the field must be open to using a variety of new tools to ensure satisfaction in both leisure and

business travelers.

The prevalence of social media has radically changed the relationship between guests and hoteliers. Through social media, guests and potential guests can share experiences with each other and exchange information on room rates, hotel amenities, and more. Social media also allows visitors to rate the services and post reviews of hotels and hotel services online.

These reviews have a huge impact on potential guests as they do research before making travel decisions, and travelers are doing pre-trip research like never before

Large hotels now have social media departments to address bad reviews that guests have posted online in the hope of catching the guests while they are still on property to correct the issue. Often, a hotel or restaurant will ask unhappy guests to delete the negative review or update it as a gesture of goodwill. Again, it is now not solely the service deficiency of one guest at stake when considering compensation to an unhappy guest. A potential scathing and negative review forces hoteliers consider the potential multiplier effect of future guests.

At large hotels particularly, the check in and check out procedures can be time-consuming, create lines, and long wait times. Guests have made it very clear through feedback that they want fast check in/check out procedures to allow more time for enjoyment and quick departures. In response, many large hotels are now offering guests the opportunity to preregister for their hotel stay before they even arrive.

This can significantly reduce the wait at the registration desk. Even larger properties now offer smartphone apps that not only allow guests to preregister but also enables the smartphone to act as a room key. With this, guests could potentially go straight from the airport to the hotel room.

For convention and business travelers, technology allows many impressive advances. Through text messaging, hotels can inform convention guests as to

meeting room and schedule changes for their events. Text messaging also lets the hotel target particular convention groups to offer daily specials on anything from spa treatments to show tickets and restaurants. The real-time ability to reach current hotel guests has tremendous implications for reaching the target market at a low cost

Perhaps the most convenient and favored advancement in hospitality technology for guests is the ability to check out of the hotel while still in the comfort of the hotel room. Hotel guests can review all room charges on the television screen in the room. If all charges are accurate, guests can complete the checkout with a few clicks and avoid a visit to the front desk.

Through technology, hotels can continually raise the level of service expectations. The importance of technology to hospitality will only increase in the future, and professional hotel managers should embrace the change and remember it can be a powerful tool to ensure guest satisfaction

The ROL s

MEGA TRENDS expectations in coming times:

1) Mobile ubiquity. "Drop the expectation that we have offline and online customers," counselled travel industry analyst Henry Harteveldt at HTNG's 2016 North American Conference in March. Harteveldt, a former Forrester analyst, recently founded Atmosphere Research Group and is arguably one of the world's most sought-after travel industry advisors. "Mobile has produced a permanent sense of immediacy. It's changing forever how our guests interact with us and how they expect us to interact with them."

Indeed — from mobile bookings, to check-in options, to room access — mobile dominates the list of top new technology rollouts in 2016. Hotel-branded customer mobile apps are poised for ubiquity, with 84% of operators planning to have the technology within the next 18 months. In the same time frame, about one quarter of hotels plan to deploy mobile keys.

In addition to simplicity for guests, mobile room access can make financial sense. For Village Hotels (www.village-hotels.co.uk), a UK brand with 28 properties attached to large gyms, mobile check-in and mobile key were added for financial reasons. The brand's hetras (www.hetras.com) cloud-based property management system interfaces with a mobile key system from Kaba (www.kabalodging.com).

According to Rob Paterson, commercial director for Village Hotels, the brand was seeking to align its four-star costs with its three-star status. Village Hotels that offer mobile check-in/keys or kiosks are operating more efficiently, with no lines, Paterson says; the rest will rollout weekly this year. Village has found that "pre-arrival communication is pretty important to explain the whole process, because it's not common today," says Paterson, along with on-property signage. Security is actually enhanced because the hotel has more info on the guest possessing the key, he adds, and ensuring payment pre-arrival is essential.

2. Integrating mobile data. Hotels have long amassed data but underused it. Data is the most valuable asset for many brands, and tapping into it will be a priority to deliver the personalization that travelers want. "If guests don't find what they want from you and you aren't leveraging your data in the right way to serve them, they will move onto a competitor," says Harteveldt. Mobile technology is exponentially increasing those data inputs.

Nearly 80% of all data today already has a location-based element, according to The Location Based Marketing Association (LMBA; www.thelbma.com). "Location has become the new 'cookie'," says LMBA founder and president Asif R. Khan. According to *HT* research, 30% of hotels plan to roll out location-based technology in 2016. Using mobile data together with reservation information from the PMS has helped Fontainebleau Miami (www.fontainebleau.com) upsell guests through pre-arrival and checkout

offers, enabling the resort to optimize room revenue by inviting guests to arrive early or stay late for an additional fee. According to the resorts' mobile check-in provider StayNTouch (www.stayntouch.com), 20% to 40% of guests select mobile check-in, and the resort saw a 141% ROI from late checkout offers in the first 30 days. Balancing early check-ins against actual arrival times also helps hotels better manage room availability, the solution provider says.

3. *Enabling guestroom tech.* Once a technology playground of on-demand content and flat screen TVs, the guestroom has become a challenging area for hotel technology. More than half of hotels (56%) say that guestroom technology upgrades will be a priority this year. The most activity inside the guestroom will be to boost bandwidth — 36% of hotels have allocated resources for this in 2016—in order to support the content and devices that guests are carrying with them. Hoteliers are also investing in delivery platforms to elevate the in-room experience and catch up to what guests have at home. That means bigger, better TVs that interface easily with guest mobile devices for a great viewing experience, says Mike Blake, CEO, HTNG (www.htng.org). About one in four hotels will upgrade flat screens and enhance their HD content.

4. *Future-proofing networks.* With guests sporting their own mobile devices, delivering standout guest room and mobile experiences is now about delivering robust, secure and accessible infrastructure. "The number one thing guests want is for their WiFi to work," according to HTNG's Blake. Hoteliers are increasing their coverage and updating their networks to accommodate these demands—adding bandwidth will be a top priority for 45% of hotels in 2016, and it's tied for first place as the largest budget line item (along with property management systems).

Fiber, or passive optical LAN, is quickly becoming the standard for new builds and retrofits, either all the way to the room or as part of fiber/copper hybrid

networks. According to Corning (www.corning.com) and VT Group (www.vt-group.com), rather than running new cabling every four to five years, hotels can tap fiber's high capacity to install once and gain huge increases in capacity and reach, since unlike copper, bandwidth is unlimited and does not degrade over distance. A single fiber optic cable can replace separate wiring for WiFi and cellular backhaul, building controls and triple-play networks, freeing up space and increasing performance while enabling parallel redundancy.

At Mandarin Oriental Hotel Group (www.mandarinoriental.com), vice president of technology David Heckaman and his colleagues considered multiple hybrid networking models for the one to two construction projects the brand undertakes each year, but found fiber to the room was equal or lower cost across geographies. "Fiber used to be expensive to terminate, but it has come down in price and is much simpler to terminate now than copper," particularly with the availability of pre-terminated wiring closets, Heckaman says. With the need for as many as eight ports per room, Mandarin Oriental worked with Corning to select dedicated active switches for each room, while other hotels choose in-room access points as the switch. "Our goal across the brand is to make sure from an infrastructure standpoint that we always leave the bandwidth chokepoint at the back door, at the hand-off to the ISP," says Heckaman.

Another factor supporting fiber is that no one wants to log into WiFi just to open their door. VT Group's hotel clients are increasingly investing in DAS solutions such as Corning's fiber for in-building cellular. Mandarin Oriental also sees fiber as providing the infrastructure to support future use of small/microcell designs and help the brand keep up with evolving cellular network technology.

5. *Beefing up security.* With hackers becoming increasingly sophisticated and a recent rise in crypto-ransomware attacks, "people's attitudes toward security are totally changed, and this area is highly funded," says HTNG's Blake. Security is garnering investment particularly as payment becomes increasingly mobile and new non-bank payment vehicles emerge. Providing for more secure payments and data is the top objective driving technology investments for the hotels in HT's study. It'll receive about 12% of overall IT budgets this year, which is a 25% budget increase over the year prior. Guest privacy in general is a growing challenge with the addition of mobile and social channels, and the increasing sophistication of data piracy is drawing increased investment in intrusion detection and prevention.

6. *Energy conservation.* Among capital IT rollouts planned for 2016, 20% of operators plan to focus on energy management. For most hotels, energy is among the top three largest costs, so efficiency efforts are an attractive proposition in order to yield financial savings. Intelligent technologies are helping hotels monitor and report on energy consumption. At the end of 2015, Hilton Worldwide (www.hilton.com) became the first hotel company to achieve Superior Energy Performance certification from the Department of Energy for energy management at three properties.

Hilton has deployed its proprietary measurement platform, LightStay, across 4,500+ hotels. By gathering data from across its global portfolio, the company is able to analyze how hotels are managing energy performance and drive improvements. In addition to energy, the company has set targets in the areas of water conservation, waste diversion and carbon reduction.

Interel (www.interelme.com) nabbed its second TechOvation award from HTNG for its TCP/IP-based Water Management System. In addition to giving guests instant control over water flow and temperature, the system is IoT and big data-enabled to deliver monitoring, while creating usage and consumption statistics that help to optimize settings.

The ability to program water control settings, including an "eco" mode that automatically engages energy-efficient settings, provides operators with savings, leading to ROI.

The Future is Now: 5 Next-Gen Technologies with Value Today

Already seeing some use, these five technologies are likely to garner more share of the IT budget as operators find value in customer engagement and ROI.

IoT – Hospitality use of Internet of Things technology can already be seen in Disney's MagicBands and guest room control systems, but that's just the tip of the iceberg. IoT will expand to enhance both guest experience and operations efficiency in everything from deploying staff where guests are congregating to preventing equipment breakdowns. On exhibit at CES this year, for example, was a sensor that measured UV risk at its specific location and advised when to reapply sun-screen; imagine this sensor embedded into a hotel pool chair.

Wireless charging. Already 41% of properties offer in-room charging stations, but charging is going wireless, such as Kube Systems (www.kubesystems.com) chargers using the Qi standard in 29 Marriott lobbies. The next generation is longer-range wireless charging such as TechNovator's (www.technovator.co) XE, which uses resonant electromagnetic fields to charge multiple phones with special cases up to 17 feet away.

Virtual reality. Last Fall Marriott piloted a virtual reality headsets program at two properties that enabled guests to take virtual trips to exotic locations. HTNG's Blake envisions using VR glasses and apps to enable prospective guests to tour conference spaces and guest rooms. In HT's study, 14% of hoteliers said they think personal holograms have real-world potential as property concierges/guides.

Robotics. A robot as the hotel mascot? It's already happening, and in fact 22% of hotels in HT's study said robots have real potential in this industry. Relay robotic concierge from Savioke (www.savioke.com) was named first runner-up "Most Innovative Hospitality Technology" at HTNG's 2016 TechOvation Awards. Relay autonomously delivers amenities to guest rooms, and the technology is already being used at select Aloft Hotels (www.aloft.com). In a similar move, Hilton Worldwide (www.hiltonworldwide.com) has teamed with IBM (www.ibm.com) to pilot its robot concierge, "Connie." Connie uses cognitive technology to process information as it interacts with guests, enabling it to adapt and improve recommendations as it learns.

Interactive walls. Gesture-controlled, interactive walls received 36% of respondents' votes for futuristic technology most likely to take hold. The Renaissance New York Midtown Hotel (www.newyorkrenaissance.com), which is set to open in the spring of 2016, will feature interactive digital displays created by Montreal-based digital design firm REalisations Inc. (eng.realisations.net) in public spaces. Using a variety of technology including motion detectors, projectors and 3D cameras, the firm created a "living" wall that will interact with guests and respond to their movement.

AIMS

To understand how the technology has embraced the hospitality industry

OBJECTIVES

- Understand the latest technology being used in hotels
- Study the impact of the latest tech trends being used in hotels
- Understand the speed with which technology is capturing the hotel working

LIMITATIONS

Time constraints

DATA COLLECTION

- Primary Data
- Through personal interviews
- Secondary Data
- Through Internet

ANALYSIS

It was observed that technology has definitely taken over the functioning of the hotels by storm. An industry that runs24/7 needs a system that will flawlessly function to keep systems updated Besides the guest expectations in this fast moving world is a connected trip , where he does not have to compromise on the virtual world he is living in on daily basis. But the smaller hotels do not like to invest much in the technology, keep in view only the immediate cost , though long term gains are much higher

SUGGESTIONS AND RECOMMENDATIONS

Hotel industry runs on customer satisfaction , hence the industry needs to keep upgrading themselves. In a time where the global industry is so adept with latest technology, no one should leave any stone unturned

CONCLUSION

As technology makes giant strides in hospitality, so does the importance of each opportunity to interact with hotel guests. Professional concierges and other employees must fully understand that with fewer human interactions, each opportunity to interact with a guest must be executed flawlessly with a warm smile as to create a pleasant lasting impression.

With fewer interactions with hotel staff, guests could very easily base an entire hotel stay on a handful of interactions with hotel employees. This provides fewer opportunities to get it right if lapses in service occur. A warm smile and thank you will always be timeless in the hospitality industry, no matter where technology may lead us.

While speed is clearly the positive gain from bypassing the interaction with front desk staff, the negative aspects include not being able to ask the front desk agent about possible room upgrades and special room deals. It is important to consider the positive and negative implications when making the decision to bypass contact with front desk employees at registration.

Additionally, minor charge disputes can often be resolved with a phone call to the front desk. Anyone who has ever checked out of a Las Vegas hotel on Sunday at noon can appreciate the benefits of not visiting the front desk during this time of day. This rapid checkout process lets guests have more time to enjoy the final hours of the stay and allows for a faster departure to get to the airport.

Also the need for manpower will go down ,with putting the managements in more comfortable position, and using only the best of employees Quality will rule over quantity and humans will be replaced by robots

We are standing at a revolutionary time where the most glamorous industry is about to become the most technologically driven industry

The future holds many more surprises being unfolded

Trends that might turn into reality soon are

Location Based Services

Much of this technology is in its infancy, but the implications are huge. Being able to understand where hotel staff and guests are located at any given time creates all kinds of opportunities to improve the guest experience—from being able to deliver services to guests while freeing them from their rooms to helping event staff operate more efficiently to turning over rooms more quickly and beyond. Some employee location-based features are already available using SIP-DECT, but this is just the beginning. This is a category to keep an eye on.

SIP-DECT

Already popular in the hospitality space and other industries in Europe, SIP-DECT is a mobility-enabling alternative and radio-based networks that are starting to get attention in North America.

Many SIP-DECT setups bring the kind of features usually found on a fixed network to mobile workers all over your hotel or campus without tethering them down to specific locations. Since hotel service staff, like housekeeping, valet, concierge, and event staff are often on the go, SIP-DECT a natural fit for hoteliers.

With relatively low cost compared to the alternatives, ease of deployment and quality, predictable voice quality, SIP-DECT is poised to take off in a big way

1.2 EDIBLE TECHNOLOGY

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Abstract

As the worlds population is continues to grow, so the amount of garbage that people produce .On the go lifestyle requires easily disposable products, but the accumulation of these products has led to increase amounts of plastic pollution around the world .As plastic is composed of major toxic pollutant ,it has a potential to cause great harm to the environment in the form of air ,water and land pollution ,includes killing plant life & posing danger to local animals .If overfishing continues many of the endanger species will disappears off the face of the earth.

Introduction

Tiered of seeing mountains of plastic cutlery polluting valuable land fills!!!!!!

What if you could eat your disposables spoons rather then throwing it out and polluting landfill???????

Researchers and agriculture consultants from research and development centers of the india developing the edible products which will contribute to resolve the mysterious problems of landfills due to the waste generated after using disposable products. This effort will also boost the indian economy and will be providing employment to the abundance unskilled manpower of india as minimum or as such no education is the requirement for working as an employees.

Eco-friendly, biodegradable and edible cutleries, chopsticks, and all utensils used to lift food into mouth wherein the cutleries, chopsticks, and all other such utensils are made of flours having about 65% w/w or above carbohydrate content and contain no added preservatives or chemical additives and having a shelf life of a year or more. The method of preparing Eco- friendly, biodegradable and edible cutleries, chopsticks, and all utensils used to lift food into mouth.

Aim & Scope

- To encourage people to reduce use of plastic disposables such as plates, spoons ,bowls ,glass etc.
- To introduce the edible cutlery concept among general public and its benefits.
- To promote the use of biodegradable products among hospitality sector.
- To ensure minimal use of water for washing utensil& cutlery.
- To promote one step towards clean & hygienic cutlery concept.
- **The Study**
-
- **Edible cutlery: Eat with it then eat it.........**
- IMAGINE,,,,,,You are sitting at the restaurant with your lovely better half on a special occasion ,ordering all time favorite dish .Your ordered food served to you in a very stylish manner on the table ,U pickup the spoon ,,,,And suddenly you realized ,the spoon u you as a cutlery on the table is greasy and already used by some other guest still smelling off his favorite food aroma to the spoon u picked up...How will you feel that moment???? YYYaakkk ....

In this very competitive market, hygiene has become the first casualty of cost cutting. The process of cleaning the cutlery by manufacturing units. In India involved just a rag of cloth being used to wipe the final products that came out of the mould in which molten plastic was injected. Eco-friendly and biodegradable edible utensils including cutlery and chopsticks and methods of making them.

The invention relates to a novel method of making eco-friendly and biodegradable edible utensils. More particularly, the invention relates to novel method of making eco-friendly and biodegradable cutleries which term includes spoons of all shapes and sizes, forks, knives, chopsticks and all other such items that are used to lift food into the mouth. The invention also relates to eco-friendly and biodegradable edible utensils including but not limited to eco- friendly and biodegradable edible cutleries, including chopsticks. The eco-friendly and biodegradable edible utensils of the invention are prepared from healthy and hygienic edible materials and can be consumed by the user after their use as utensils, or if thrown away, they biodegrade naturally within less than two days.

This edible cutlery is a perfect alternative to harmful cutlery, it is not only environmentally safe but also enriched with nutritious ingredients.

Edible cutlery is made from a mix of jowar (sorghum), rice and wheat flour. The spoons and chopsticks do not get soggy if placed in water and food. They only soften after some time (10-15 minutes), and thus can be eaten easily at the end of the meal. Even if discarded, they decompose within five to six days, if not eaten by insects or rodents. Typically, among other things which we come across in our routine life, utensils are of great importance. Various utensils which we generally use in our routine life can be named as cups, bowls, plates, cutleries, bottles etc. Generally, utensils and cutleries are made of silver, steel, aluminum, brass, copper or any other alloy, wood or plastics.

Utensils made of metals and alloys are generally re-used after washing and cleaning whereas, those made of wood and plastic utensils may be re-used or thrown away. Re-use of these utensils comes with the advantage of multiple times use of the utensil but it also has certain limitations like cost of the utensils, their safe storage, proper hygienic cleaning of the utensil before and after use. An improperly cleaned utensil can carry various harmful pathogens, dust particles and chemicals used in the cleaning. The proper cleaning can be altered due to various reasons including poor handling by the person responsible, poor quality of cleansing material used, contamination in the water used for washing and cleaning or even deficiency of clean and hygienic water. Carrying these utensils, more particularly, cutleries in travels and journeys is generally not very user friendly due to scarcity of clean and hygienic water for cleaning and their safe storage.

Flours of suitable food materials, rich in starch content are selected from cereals, millets, lentils, fruits and vegetables rich in starch content. The dough is obtained by kneading the flour. Flour of one single food material or a combination of two or more can be kneaded to obtain the dough. Total carbohydrate content of the dough obtained by kneading of the flour should be 65% w/w or above, of the total dough volume.

The kneading of the flour can be done with water, milk, oil or any other material in cold, hot or boiling form at a temperature suitable for kneading. The said liquid used for kneading the flour may be plain i.e. only with natural taste of the liquid without any added flavor or it may be sweetened and / or salted as per the requirement.

In one embodiment, when utensils are made for diabetic patients or patients with high blood pressure, sweetening agents and salts are not used. In another embodiment, adding suitable micro or macro nutritional elements can fortify the product and enhance the nutritional intake by the consumers.

Readers Benefits

*The invention relates to a method of making eco-friendly, biodegradable, edible utensils produced from safe, hygienic and healthy food materials which can be also be consumed by the user after their use as utensils.

*Flours of suitable food materials, rich in starch content are selected from cereals, millets, lentils, fruits and vegetables rich in starch content. The dough is obtained by kneading the flour. Flour of one single food material or a combination of two or more can be kneaded to obtain the dough. Total carbohydrate content of the dough obtained by kneading of the flour should be 65% w/w or above, of the total dough volume.

*The kneading of the flour can be done with water, milk, oil or any other material in cold, hot or boiling form at a temperature suitable for kneading. The said liquid used for kneading the flour may be plain i.e. only with natural taste of the liquid without any added flavor or it may be sweetened and / or salted as per the requirement.

*In one embodiment, when utensils are made for diabetic patients or patients with high blood pressure, sweetening agents and salts are not used. In another embodiment, adding suitable micro or macro nutritional elements can fortify the product and enhance the nutritional intake by the consumers.

*Kneading can be done with any of the liquid or a combination of two or more liquids with 55% to 75% w/w of the total flour weight. Complete or partial gelatinization of the starch is done in the process of kneading. Kneading is done with a liquid at temperature between 65° C to 90° C or boiling water or water steam.

*Stirring time in kneading is adjusted as per the temperature of the liquid. The starch present in the flours get gelatinized and acts as binding force that holds all the particles in the flour or flour mix together to form tight yet

pliable dough.

Merits & Demerits of Edible Tech

* Through this article researchers mission is to start a cutlery revolution. Worldwide, this becomes a figure at 16 times this magnitude. A majority of these utensils are only used once and then discarded.

* Sweet by adding little sugar to the three flour mixes Savoury by adding- rock salt, black pepper, carom seeds and cumin seed.

*There are no preservatives, chemicals, additives, colouring agents, raising agents, fat, trans fat, artificial chemical nutrition or animal ingredients, milk or milk products.

* It is 100% Vegan, vegetarian. It is baked at high temperature to make it crisp, hard and moisture free.

*It can be made totally gluten free Sorghum with very high on micronutrients.

*Utensils made of edible material may seem like an answer to the problem, it turns out, a good percentage of ecofriendly based biodegradable utensils ,cutlery.

* A small steps towards conservation of bio diversity.

*A unique useful concept , but lack of awareness among general public.

* Proper channelized marketing is the requiment for introducing the edible cutlery concept in to the market.

*As the edible cutlery concept is based on eco friendly principle so the product has a shelf life of a very short term ,say for around 6 months to 11monts .

*Made up of edible flour so the sustainability in a hot beverages & in liquid is limited.

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1.3 TECHNOLOGY BASE SELF SERVICE VS. TRADITIONAL HUMAN TOUCH SERVICE

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ABSTRACT

We all love new technology, especially when we have access to it free while staying at a hotel. However, despite the fact that in-room technology makes guests' stay nothing less than an exceptional experience, and makes hotel staff jobs nearly effortless compared to the past, there are some definite downfalls. From the guest standpoint, having every hotel guestroom function handed to you on a silver electronic platter, literally, it can be delightful, but it has also made us much more lazy human beings. If the remote that is situated bedside —within arms reach— can turn off the lights or order room service, what is the point of getting up and doing it manually? Using electronic components has also made us much less interactive with the real world. Studies from the University of Gothenburg have shown that heavy use of technology has been linked to depression, sleeping disorders, stress and mental health issues.

KEYWORDS Self**service, Techno Touch, Human Touch**

INTRODUCTION

Understanding the effects, both good and bad, of innovative technology in today's hospitality industry. Whether we are keen on the technological gadgets introduced into the work place or not, we need to adapt due to the fact that technology is improving and expanding daily in attempt to make our lives easier. My research findings that are outlined in the following report, will express the pros and cons of technology replacements in the industry, as well as Technology Based Self-Service (TBSS) versus Traditional Human Touch Service (THTS).

Information Technology was initially introduced into the hospitality industry in the 1950's. Since then it has substantially expanded and revolutionized. In today's world, technology has grown to be apart of our everyday lives. From computers to handheld devices, any information we are looking for is readily available 24/7 in the palm of our hands—as long as there is internet we have access to current, up-to-date information. In this day and age, there is a technologic device or software used by a device for every operation in the hospitality world, such as reservation systems, security cameras, point of sale systems, property management systems, mobile communication, meeting matrix, energy management systems, key card encoder, etc. By incorporating the use of such devices into the workplace, it has changed the way we conduct business while saving time and money as it dismisses many time consuming tasks.

AIM AND OBJECTIVES

AIM: To study about the technology based self services vs traditional human touch services

OBJECTIVES:

1) To study about the current technology used in hotel

2) To study the benefits of technology in hospitality industry

3) To study about the technology downfalls

LIMITATIONS

1)Study is limited to Nagpur city only

2)Time ,Money and Energy was major constraint

REVIEW OF LITERATURE

Many of the examples of technological advances listed above are clear indicators that the trend Technology Base Self Service is slowly taking over the Traditional Human Touch Services in the hospitality industry little bits at a time. The confusion for a hotel business emerges when they are trying to decide which (TBSS or THTS) will bring them a higher ROI and still provide quality customer satisfaction. Although, we as humans, are constantly being bombarded with technology innovations and enjoying the outcome of their functions, there are some positions in the hospitality workplace that could not be replaced by TBSS. Travellers generally come to stay at hotels to be catered to and pampered. Is it possible for Technology Based Self Service to provide the same level of total quality service as the Traditional Human Touch Services? Some guests may not mind while others will be negatively impacted resulting in a loss of business. Wan Chi Chen from the University of Nevada Las Vegas says "Since it is hard for TBSS to express empathy in today's technology, consumers would still prefer to complain to an employee than a machine. Human employees can have a better understanding on another's feeling, such as anger frustration, sadness, happiness, excitement, etc."Building and maintaining a solid relationship with frequent transient and business guests could quite possibly be a factor that contributes to them choosing one hotel over others in the area. That is why human interaction is an important piece of the overall hotel experience. However, the simple truth is, you can't please everyone. You are going to attract some while repelling others according to their interests and what they are looking for in a hotel stay.

As technology is advancing we will start to see more of it taking over. As a result, procedures of the past will be altered, and several jobs will be replaced in the near future. The wide range of innovations will continue to assist hotels in keeping up with their competitions.

Although gadgets will bring lots of benefits to the workplace, it will bring some hotels to an all-time low for the reason that they may not be able to keep up with such investments and competitors. Regardless of what is brought to the table, the whole point will always be to meet and exceed the needs of guests.

From the hotel side of things, there are also issues regarding the use of technology in business. While doing anything online, hotel staff must be aware of copyright issues and security. All hotels use guest credit cards for either payment or authorization, so credit card theft is another critical reality hotels could potentially face, so it is crucial that the hotel meets all of the Payment Card Industry Compliance (PCI) requirements in order to avoid this circumstance. Some businesses are also concerned that they may not get the anticipated Return on Investment (ROI) from incorporating such technology into their organization, leaving them in a situation that can either make or break the hotels future. (This is where FERQ would come in handy.) Lastly, one of the biggest issues associated with growing technology in the hospitality industry is the need for fewer employees. As a result of iPads, smartphones, touch smart screens, online bookings, etc. they are slowly replacing jobs leaving employees desperately looking for work elsewhere. The majority of hotel functions in the future will be faceless

Technology currently used

New innovative technology trends that are currently being used in some hotels are the following:

The do-it-all remote (room personalization) – This allows guests to dim or turn on/off lights, control room temperature, open/close curtains, order room service, turn on the do not disturb sign, set wake-up calls, view TV channels and movies all on the television with the click of a button on a remote. However, understandably, some guests may be somewhat queasy at the thought of touching a remote that has been in the hands of so many other,

after all, it is a hotel room. There is an easy alternative for guests who feel that way, to still take advantage of the in-room technology from their iPhone, iPad or android. They can just simply download the app called Lodgenet and sync their smartphone with the TV, which will then give access to all the functions the remote has to offer.

Self Service Concierge – This touch smart screen kiosk is located in the lobbies of hotels, which can help a guest find out information(restaurants, activities, flights) without the hassle of carrying a laptop or waiting for someone to assist them.

Smartphone keyless room entry –

1. *Guests book their stay on their handheld smartphone*

2. *On the day of arrival, they will receive an text with their room number*

3. *Guests can then go straight up to the room and swipe your smartphone over the door handle. Voilà they're in!*

4. *Guests can also check out the same way they checked in via smartphone*

- **In room iPads/ tablet devices –** This is a user friendly way to order room service, housekeeping service, make appointments/reservations all at one's fingertips. Hotel managers can also use tablets in place of the original in-room guide book

- **Digital Door Viewer –** This is a handy alternative to the old fashion "peephole". A little screen that is mounted on the inside of hotel room doors, so guests are able to have a clear view of visitors while eliminating all uncertainties before they open the door.

- **LED touch screen panels –** Panels are located in hotel bathrooms, allowing guests to set the lighting, curtains and control music to indulge in an ultimate relaxation experience

Benefits Of Technology In The Hospitality Industry

Although technology can be very costly, it pays off in the long run by simplifying and condensing everyday tasks at work resulting in valuable time being spent more efficiently. Computerized technology has impacted both front-of-house and back-of-house staff in a positive way. While some individuals may take longer to embrace new computerized systems, once they catch on they will have a new appreciation for technology as it has made a tremendous difference in workload while still generating revenue. Many electronic components are currently used in hotels to make work easier for employees and to keep guests content and happy during their stay at a hotel. Some examples are:

- High definition television
- High speed wireless internet
- Telephones and mini bars that are connected to a computer system which automatically posts charges to the guest folio as they take advantage of those items
- iPads for guest use so they can search activities, restaurants, etc. in place of a concierge
- iPod docking station/alarm clock – all in one
- Connectivity panels for business travellers
- Mirror televisions
- Climate control

Energy management systems (EMS) have aided many hotels in reducing energy bills. A motion sensor that is placed in guest rooms can detect when the guest has left, which then essentially shuts the room down (lights, television, air conditioning) saving energy and saving costs.

Electronic Distribution Systems (EDS) are yet another benefit of technology in hotels. EDS helps hotels reach customers all over the world by advertising their business online as well as allowing travellers to make reservations at their fingertips in a short amount of time. Most importantly, they are at low cost for the hotel to use, and research shows that online bookings are continually growing. Computers in general have made daily tasks much more organized and easy to access. Storing files on a hard drive in a folder rather than in a filing cabinet with thousands of other papers where they can be easily lost is a big advantage for hotels. Also, with the help of technology, some jobs can even be completed in the comfort of your own home via smartphones, Ipads, computers, etc. which could be a great benefit (provides flexibility) to some employees.

In today's world, it is important that hotels keep up with the evolution of changing technology as the hospitality industry is, and always has been, a competitive business. As guests are more often exposed to new cutting-edge technology, they will slowly start to have different needs and expectations of what an everyday hotel should consist of. With the proliferation of SSTs, the service provision is delegated to the customer, and tasks are shifted from the service employee to the self-service customer. The role allocation of buyer and seller seems to be turning upside down. Why do consumers buy services when actually producing the service by themselves? To what extent is this process of handing over the responsibility of service provision accepted or even welcomed by consumers? Fact is that not all consumers are likely to adopt SSTs and not all SSTs offered by companies are successful (Bitner et al., 2002). Some SSTs are highly successful, such as ATMs or pay-at-the-pump gas, while others are marked by low adoption rates, e.g. grocery self-scanning or phone banking (Curran & Meuter, 2005; Zeithaml et al., 2006). Fact is that there are strong efforts by companies to implement SSTs, either to supplement or replace the traditional face-to-face service encounter (Barnes et al., 2000).

As the implementation of those SSTs increasingly appears on the agenda of many companies, obtaining a more precise understanding of the factors underlying consumers' adoption of SSTs is not only of interest, but also of importance for both manager and academics.

METHODOLOGY :

DATA COLLECTION:

The researcher used the survey method for collection of data .The method used in study is divided into two parts.

PRIMARY DATA: It includes data collection from interview.

SECONDARY DATA: Includes data collection from books related to the topic and various other journal,websites and notes.

CONCLUSION

Recently, in hospitality industry, hoteliers use self service technology replacing traditional labors. Buyers now a day are more familiar with this kind of service and are holding more open minded to this kind of service. However, while this practice has become more and more common to most people, one can still see people standing in front of the kiosk waiting for the help from employees. Moreover, it looks like there is always a longer lane in front of the human register than a self service kiosk. This make people question whether TBSS is a better and faster way of service. According to the literature review, regardless of all the benefits from the self service technology, self service technology does not yet capable to provide the matching level of customer satisfaction that human employees are capable to provide. Thus, some consumers still favor in personal service over than the technology base self service and some companies move back to human register.

TBSS is a popular trend in the industry now, it create a high tech and fashion image for the company; however, the TBSS does not yet have a matching service quality as THTS, what should hoteliers do?

RECOMMENDATION

The objective of this paper is to understand the TBSS movement to learn whether TBSS is a forward or backward practice in the hospitality industry and whether it generates higher or lower customer satisfaction. Both TBSS and THTS have their own group of fans. While people often get higher satisfaction when they get what they want, hoteliers could make both kinds of services and allow the customers to make their own choice. However, since the customers in upscale hotels do not have as much concern on financial limitation, they might wish to get a more personal service, Technology Base Self Service in Hospitality Industry 30 such as butler or personal host. Thus, in upscale hotels, hoteliers could have more focus on THTS. However, the customers still value their time during their stay and do not wish to spend too much time during the service encounter but enjoy their vacation or work on the business during their business trip. Hoteliers might as well train employees to work more efficient and try to reduce the length of the waiting lane to generate higher customer satisfaction. In addition, hoteliers might try to increase the service stations to increase the accessibility of the service. Moreover, since the there are limit high end customers in the market, hoteliers might as well encourage the employees to build interpersonal relationship with their guests to ensure their stay and loyalty remain in the hotel. In addition, although the customers in limit service hotel might prefer the financial saving over the service, customer service still remains very important. The customer service can affect customer satisfaction and indirectly affect customer loyalty. Nevertheless, it requires five times more to get a new customer than to keep a previous one. Thus, even in the limit service hotel, hoteliers still need to ensure the service quality fit with consumers' expectation.

Moreover, since the groups of customers, whose age are between 18 to 34, are very technology savvy, most of them know, accept and adapt TBSS very well. Hotel operators or service providers who wish to target this group of customer can focus on TBSS; however, the customer service, customer relationship and consumer emotion attachment remain very important. Otherwise the consumers will view the hotel or the service provider as another option to get a service and will not remain loyal to the brand or company. To conclude, although there are more and more business entities moving from THTS toward TBSS and many companies stay with TBSS after they implement self service technology,

Technology Base Self Service in Hospitality Industry 31 there are some businesses moving back to THTS from TBSS. It is hard to say whether TBSS is a forward or backward trend, but it is obvious that there are some irreplaceable factors in THTS that make some corporations cannot afford to get rid of it. In addition, from service quality perspective, THTS can achieve more service quality evaluation components than TBSS, and this can lead to a conclusion that THTS is more capable to provide quality service than TBSS. Using TBSS in hospitality industry can add convenience to the guests experience; however, when it comes to service and relationship THTS is a better choice. This information can help hoteliers to understand the trend of TBSS, and other's opinions, both positive and negative comments, on the TBSS. There are reasons that people go for TBSS and reasons people get rids of TBSS and back THTS. Experts and users' opinion with the TBSS and THTS' SWOT analysis, theses information can help the hoteliers to make an easier decision on what type of service they want to provide.

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1.4 MOBILE FOOD APP IMPLEMENTATION IN RESTAURANT INDUSTRY

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Abstract

The paper aligns technological advances with the experiences of a senior professional's food outlet experience in operating and managing restaurants throughout a period of sustained technology change like Pizza Hut, Dominos etc. This offers a strategic viewpoint on the evolving nature of food app of restaurant operations and the various ways in which technological innovation is driving new applications and change in the Food outlet sector.

This paper develops a framework for assessing the awareness of use of Mobile Food App for a nation and its sub regions. A case study of online food App in India, shows how the framework can be implemented.

Keywords:

Hotel, Restaurant and Catering industry, Communication technologies ,Mobile App Innovation

Introduction

The restaurant market has attracted many people over the last few years since the time the technology started playing a vital role in redefining the restaurant industry in India. Almost each and every restaurant is established to offer customers a highly satisfying and a convenient experience[2]. Admittedly, the growth of any business depends on upon the revenue generated by operating it. Over the last few years various sectors, including the food and restaurant business have utilized information technology solutions to enhance their overall performance, efficiency, quality, and customer satisfaction. Customers seem to have developed a fascinating image as far as technological integration is concerned. It has made things easier for them to get done with menu viewing and ordering activities. Information technology has not only helped the restaurant businesses' owners to improve the quality of customer services, but it has also enabled them to go beyond their limitations in reshaping their businesses.[4] No one wants to cook all of the time. Some days, you just want to kick back and relax, either by ordering in a takeaway or heading out to a delicious establishment near you. But how do you know where the best places to dine are? Sure, you can ask your friends or simply take the plunge and try somewhere new, but sometimes you could do with more focused help.Food App keep growing in popularity, and the variety of cuisine now available is amazing in different food brand.[3]

Aim:- **To Study the Mobile Food App using in Restaurant Industry .**

Objective:-

- Highlight the new trends and applications in Restaurant industry.
- Hospitality trends of the future
- Digital operations in 2025

Limitations:- Time, Money and location constraint.

The sample size are limited.

Review of Literature

The massive influx of young professionals into big towns and cities in India has ensured that the restaurants and food delivery segment also grows at a fair clip. Coupled with the sharp rise in smartphones and app downloads, it was only inevitable for the food delivery apps to hit the mainstream.

Below you'll find a list of the most popular and impressive apps that you can use to quickly and securely get your favourite food delivered to your doorstep with the help of your smartphone.[3]

Foodpanda

Available on:iOS, Android, Windows Phone

Foodpanda is by far the most popular online food delivery service in India. The reason for its popularity is its large database of restaurants from most big Indian cities and the discounts and offers available.

The Foodpanda mobile app lets you create your profile so that you can save your favourite restaurants and orders for quick access the next time around. Creating a profile will also let you save multiple addresses under different labels (work, home etc.). The app also gives you access to features available on the website including the ability to use coupons and avail discounts and opting for different payment methods including credit or debit cards and cash on delivery.

The app currently offers restaurant listings for 34 Indian locations including big cities like Delhi and Mumbai and smaller ones like Amritsar, Howrah and Vapi.

Just Eat

Available on:iOS, Android, Windows Phone, Windows 8
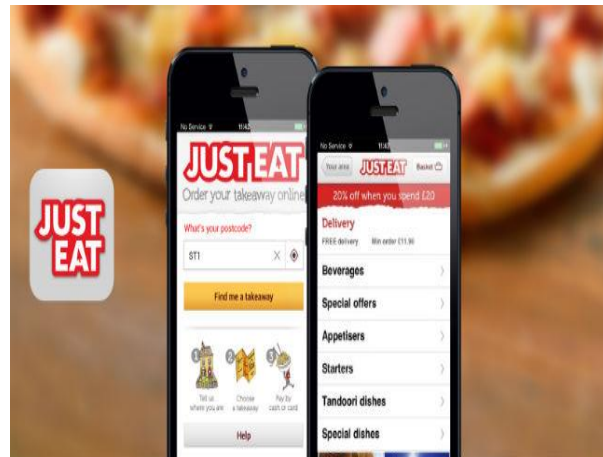
Just Eat may not offer the same number of restaurants (or as some may argue- the same quality of service) as Foodpanda, but it is undoubtedly very popular especially in Indian metros. The Just Eat app offers relatively the same features and services as Foodpanda including access to a large number of menus and restaurants and the ability to pay using cards or cash on delivery.

The Just Eat app caters to nine Indian cities including Delhi, Mumbai, Hyderabad and Chennai among others.

TastyKhana

Available for:iOS, Android

TastyKhana is one of the newer names in online food delivery but that doesn't mean that it falls short in any respect. It offers access to more than 7,000 restaurants across all the big cities in India and lets you, like the apps above, save your profile and data such as multiple addresses and favourite orders. TastyKhana also lets you pay using the method of your choice including net banking, credit/debit cards or cash.

TravelKhana

Available for Android
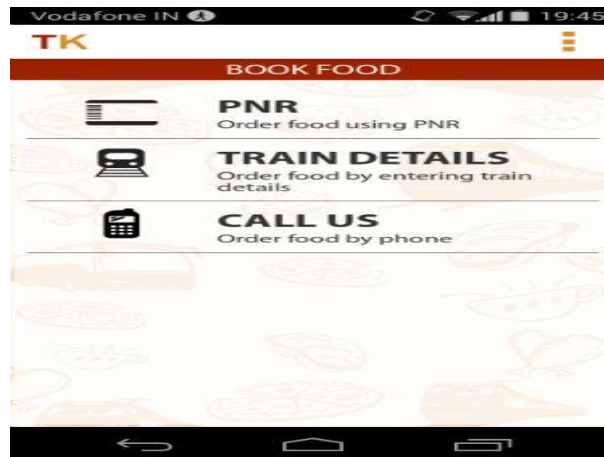
Okay, now it gets interesting. How often have you felt hungry on a train but didn't really want to eat the food on offer in the pantry or the train stations? If you've faced this issue before then TravelKhana is the app for you. Using the app, you can place an order for the food you want to eat and it will be delivered to you at one of the stations on your route. The app has a database of restaurants from across India and especially along popular train routes. Once you pick a restaurant, the app then lets you go through the menu and pick what dishes you'd like to offer.

Currently, the app does appear to be a little anemic with respect to the number of restaurants on offer across different cities but hopefully that number will go up soon.

Domino's Pizza

Available for:iOS, Android, Windows Phone
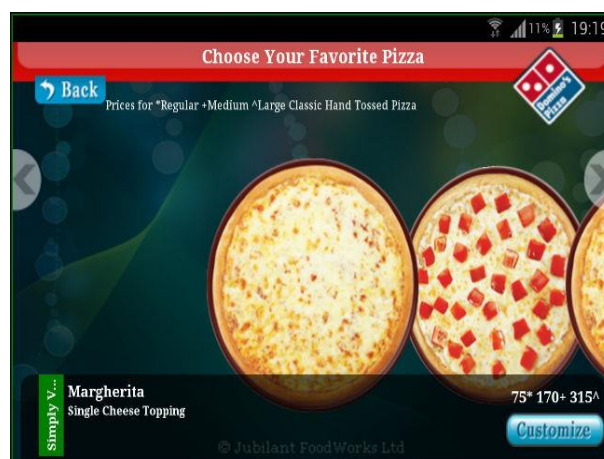
Alright, I'll be the first to admit that the Domino's Pizza app in India is not very good. Actually, it's pretty terrible. From the forced landscape perspective to the touch controls that require a couple of taps to register, it's pretty clear that Domino's could have done much more to make its app better. However, if you regularly order from the pizza chain, then for better or for worse, the app gives you the most exhaustive and easiest way to order without resorting to a call.

To its credit, the Domino's app lets you add coupons to your order and also pay using your method of choice.

FoodMingo

Available for:iOS, Android, Windows Phone (only in Hyderabad)
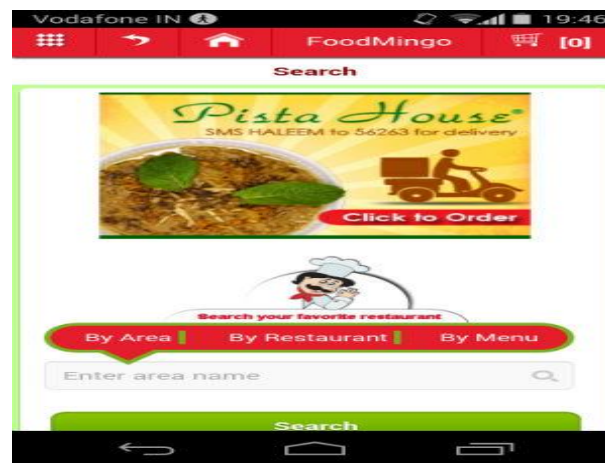
FoodMingo is a food delivery service that's currently only operational in Hyderabad. Even though that effectively reduces its audience, if you happen to be a resident of the city famous for its cuisine, FoodMingo will serve you well. The FoodMingo app (and website) has a repository of over 200 restaurants from the City of Pearls that cover a wide variety of cuisines.

The FoodMingo app lets you place orders online and opt from a set of payment options including cash on delivery, net banking and credit/debit cards. Apart from that, the app also lists out exclusive deals that some of its partner restaurants may be offering.

Faaso's

Available for:iOS, Android, Windows Phone

Faaso's is a very popular fast food joint in Mumbai, Bangalore, Ahmedabad and Pune that's known for its large selection of wraps. Unlike Domino's, Faaso's has done a great job with its app and treads a fine line between making the app stick to the restaurant's aesthetics while still being easy and simple to use.

The app gives you the options to customize your orders in multiple ways. Once you've finalized your order you can either opt for cash on delivery or use the app to make an online payment or pay using your credit/debit card. You can also use the app to track your orders.

Okay, now that we've seen apps that work hand-in-hand with restaurants to help you order online, let's also check out some popular apps that work with huge databases of restaurants and help you decide where to order from. Of course, because of the large number of restaurants, these apps do not let you order directly but instead give you the restaurant's details.

Zomato

Available for:iOS, Android, Windows Phone
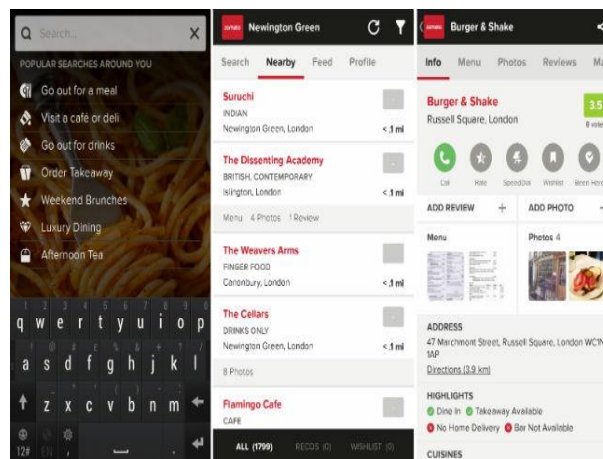
Zomato is the most popular, and some would argue, the best, restaurant recommendation service in India. The service covers most Indian towns and cities and has a massive database of restaurants, outlets and even 'thelas' on offer. The Zomato app is understandably excellent to use and receives updates consistently to keep the UI in tiptop shape and to iron out bugs.

Apart from offering you restaurant recommendations, Zomato also works as a sort of social network for foodies. You can follow different people to read their restaurant reviews and also create your own profile. The Zomato team also regularly creates curated lists, called 'collections', in which they list out the best or the most impressive restaurants and joints under different categories.

If you relate to terms like 'eat out', 'dine in' or 'take out', Zomato should be installed on your smartphone.

Times City

Available for:iOS, Android, Windows Phone
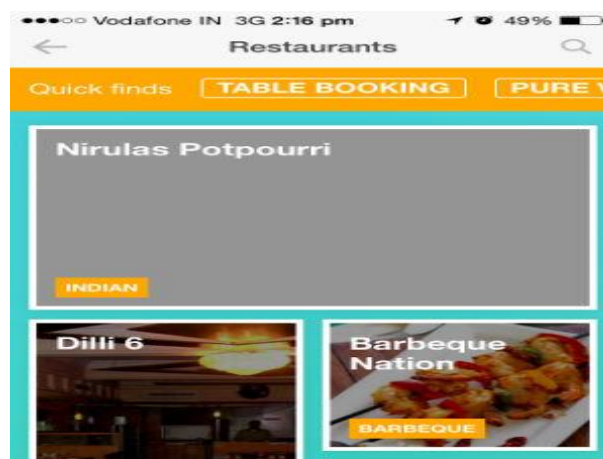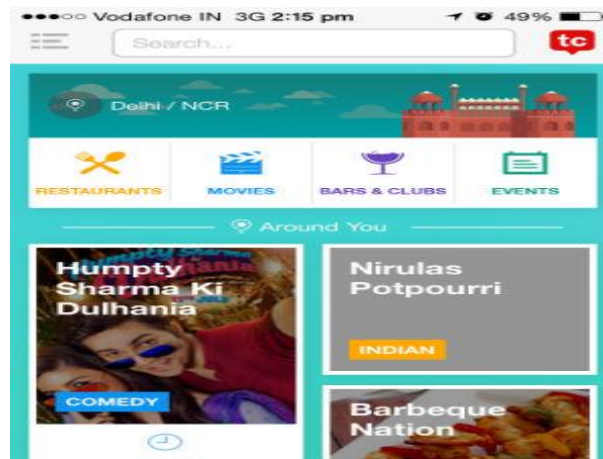
The Times of India's app is a multi-purpose one for anyone who lives in an Indian city and likes to be informed on stuff that's happening around him/her. The Times City app lets you know everything that may be going on around you with respect to the theatre, movies and other events but it's also a great restaurant recommendation service on its own.

Like the Zomato app, the Times City app has a comprehensive listing of restaurants from 10 Indian cities. The app is well designed and follows the design cues of iOS 7 and Android Material Design by being good looking and minimalistic. Once you find a restaurant that you like, you can get the info so that you can either visit them or call them for home delivery. Similar to Zomato, you can also read other users' reviews of restaurants or write your own review.

Swiggy

Available for:iOS, Android, Windows Phone, Windows 8.1

Ordering food online is easy on the Swiggy app. Not only can you choose from a range of top local & global restaurants near you like Dominos, KFC & Pizza Hut among others but you can also track your order's status from the restaurant to your doorstep! What's more - you can order as much (or little) as you like because there's no   minimum   order   value. Install Swiggy to order in delicious food and avail offers & discounts waiting for customer on the app!

Mobile online Benefit of App.

Mobile apps are quickly becoming the norm for most quick-service restaurants, and that's good news for restaurants and consumers alike. With easy ordering and accessible rewards for consumers and faster revenue for franchise owners, there's really no downside for anyone. It's only the beginning though, and it will be exciting to see how this corner of the industry evolves with fast-moving mobile technology.

Indeed, every business owner in the restaurant sector strives to have a highly organized mobile application and impressive online presence so that they attract large numbers of people in a short time span. Here are six benefits of implementing information technology solutions in a restaurant business.

1# Online Slot Reservation

There are plenty of mobile applications that connect users with the closest restaurants and provide them with the required details to reserve the table. Various active restaurants, through online registration, are connected to such requests.
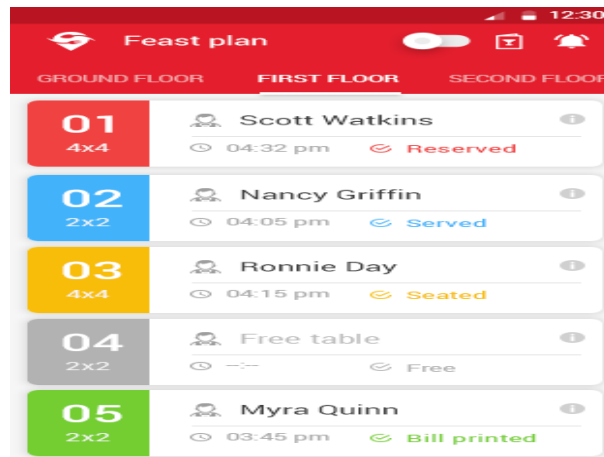
They also enable end users to book their slots or determine whether it has a free table or not. So, it reduces traffic congestion in front of restaurants. They also manage customers' data and keep on updating them with relevant information, such as discounts, special offers, and attractive deals.

2# Digital Menu Card

There are various websites like Foodlitter that allows people to place their orders using a digital menu card. This allows end users to place their order online without much hassle and with just a few clicks on their phones. It provides end users with a highly convenient experience.

Many restaurants already have the same facility for their mobile applications, but few of the restaurants have their digital menu cards uploaded on a mobile application. It allows customers to choose the food item with the click of a button.
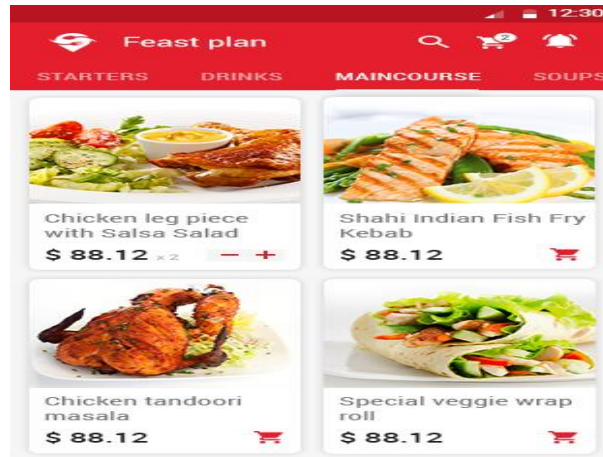
Also, you can choose a restaurant according to your budget and preferences in terms of food items. Various applications provide end users with recommendations, especially those who have not reviewed the menu card correctly, for example, Hello Vino.

3# Ordering Online And Online Delivery {Fast food chains}

Fast food chains will also eradicate the mediator's role in booking orders as they will allow end users to book their order over the online platforms and mobile applications. It will make food ordering easier for customers. It ends up saving much time as it saves the time that a mediator takes to pen down the entire order.
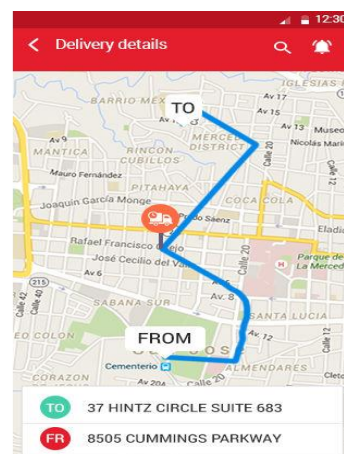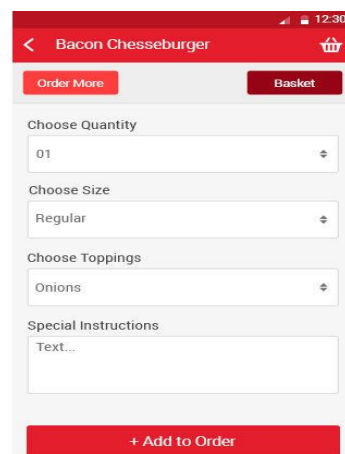
It is also easy to track the order delivery over a mobile application. Once the customer orders the meal online then they can also track where the deliverer is. With the use of GPS technology, restaurant owners can also keep a tap on where the deliverer is and thereby strengthen the delivery process as well.

4# Online Presence, Especially On Social Media Websites

No matter what kind of industrial sector your business belongs to, it is critical to have an active online presence on social media sites like Facebook, Twitter, and Instagram to keep on going ahead with the changing trends. It attracts large numbers of people in a short time span provided effective online marketing be done.

It also enhances brand value and its image. Moreover, many people get to know about new restaurants on online platforms only. Therefore, it is a must for every restaurant to have an aggressive online presence. It also allows them to interact with customers directly and respond to their feedback.

There are so many restaurants that also provide end users with Wi-Fi connection as they know this facility attracts a lot of Internet-obsessed people who do not like to get off track for a long time for personal or professional reasons.

5# Online Promotion Through 'Check in' Apps

Restaurants also give these customers an additional feature using which they can let their friends know where they are through mobile applications like Foursquare. It attracts many customers towards the restaurant as they get to know its name and it also acts as a real-time recommendation.
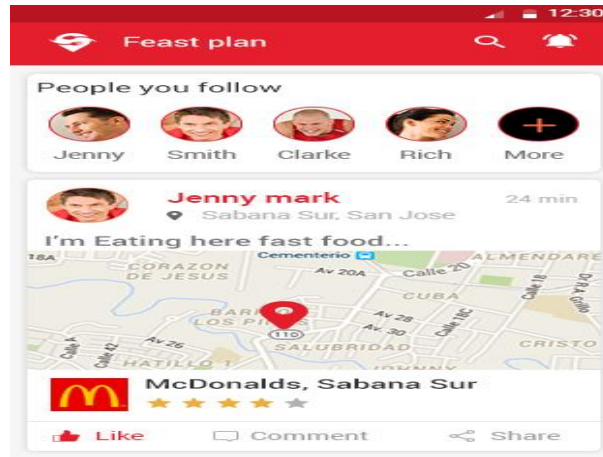
6# Online Reviews and Ratings

These days, end users are allowed to give their feedback or opinions about restaurants' services on websites like Zomato, Gayot, Dine, and Yelp. Often, customers prefer to view a particular restaurant's rating or reviews on such websites to decide whether they want to visit there or not. If you are rated well on one of these websites then the chances are high that people will visit your restaurant once, at least.

Interestingly, these websites allow restaurants' owners to plan their activities to enhance customer services according to these reviews as they get to know what sections have the scope for improvement.

This is how food outlet works app :

Find a restaurant

Enter your postcode on the home page. Browse from our extensive list of restaurants that deliver to your

area. Pick a restaurant you like and browse its menu.

Order what you want

Build up your meal by choosing from any of your favorite restaurants, browse the menu and select the items you will like to order. If options are required, e.g pizza toppings, you will be asked to choose them one you click on an item. Your items will appear on your cart on the right.

Checkout & Payment

Once you are happy with your order, click on the "ORDER NOW" button and enter your delivery address. Simply follow the checkout instructions from there. You can pay online or using cash on delivery.

Delivery

We will send you an email and SMS confirming your order and delivery time. Sit back, relax and wait for piping hot food to be conveniently delivered to you! If you have already placed an order and need help, please reach us at Live chat.

METHODOLOGY :

SELECTION OF TOPIC

The topic selected for to study the role of " Mobile Food App Implementation in Restaurant Industry".

DATA COLLECTION:

The researcher used the survey method for collection of data .The method used in study is divided into two parts.

PRIMARY DATA: It includes data collection from questionnair Method .

SECONDARY DATA: Includes data collection from books related to the topic and various other journal,websites and notes.

RESULT AND DISCUSSION

RESULT AND DISCUSSION

1) How is the experience of Restaurant Owner and customer using the food app.

Experience person	% of use
Owner	90%
Customer/Guest	80%
Manager	99%

Table: Percentage of owner and Customer using App.

2) The different food app brand followers using in 2018.

	zomato	swiggy	Teasty Khana	Travel hanan	Food Panda	Fassos	Time taste	Food Mingo
100								
90	90	60	70	40	80	60	50	40
80								
70								
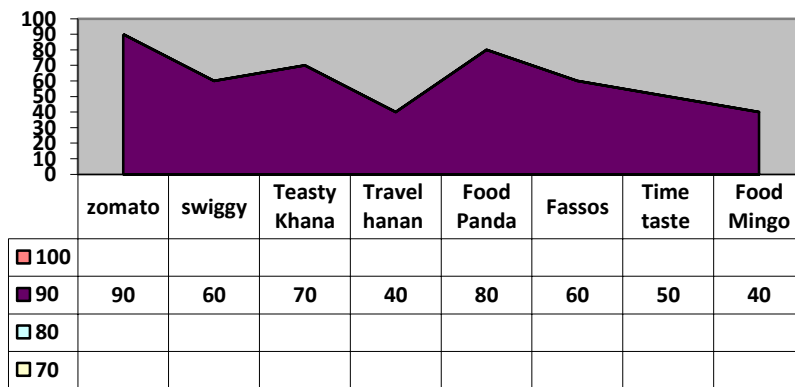
Graph: The use of Food App in percentage 2018.

1. Online Slot Reservation

2. Digital Menu Card

3. Ordering Online And Online Delivery {Fast food chains}

4. Online Presence, Especially On Social Media Websites

5. Online Promotion Through 'Check in' Apps

SUMMARY

The summery of this paper is to provide a practitioner perspective on the impact of technology on restaurant operations. This reviews the development of technology and its application to restaurant operations, as viewed by a senior practitioner. It offers a viewpoint on the current state of development and the future developments that are needed and expected. The paper cites significant examples of mobile technological innovation over on food app and discusses the impact of technology on food Outlets operations, organization, management and Customer satisfaction.

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All the reference will be given along with the required information and the sources of data collection .

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1.5 THE PRODUCTIVE ROLE OF INFORMATION TECHNOLOGY IN HOSPITALITY AND TOURISM INDUSTRY

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The Hospitality and Tourism Industry is indispensable source of revenue of many countries. Likewise, Hospitality and Tourism is a major contributor to the Indian economy. Information technology trends in industry are leading to great improvements and savings for hospitality industry companies. In the recent years, the role of information technology became very significant in various aspect of business and of course hospitality and tourism industry is not an exception. Information Technology has become a fundamental part of the hospitality industry, such as: management, reservation, reception, housekeeping, maintenance, advertising and communication with the potential customer etc. This paper is an attempt to review the productive role of IT in Hospitality and Tourism industry. With the growing competition and increasing number of tech savvy customers it became necessary for Hospitality and tourism industry to update their business by incorporating information technological tools to cope with the changing needs of customers and to survive in the competition. The technological advancement can benefit both customers and businesses from reservation stage to checkout stage. Technology helps in better communication, quick reservation, hassle free transactions and improved guest service which ultimately lead to profitability and better economy.

Keywords: Information Technology, Hospitality and Tourism, Economy, Profitability etc.

Introduction

In this era of technology, where the new innovations in the field of information technology keep emerging all the time, hospitality industry can't remain unaffected. The hotels those gratify the guest needs first are in a position to win. Technological innovations made it possible to access most updated information anywhere in real time, custom-made services are now been provided. Advance hardware and software greatly improving operational efficiency. For example travelling reservations and hotel booking can be made online; orders can be made faster, cheaper and better. In short, making decisions have been easier and faster through the use of technology. Hoteliers are investing in cloud based management system to improve operational efficiency of multiple properties. Due to cloud based PMS (Property Management System) hotelier can keep track of multiple properties from one location.

The most important thing for hospitality and tourism industry apart from guest service is revenue generation. As growth of number of travelers is not the only factor for generating revenue but growth in spending among those who are travelling is also matters. As the industry moves from a revenue model based on an individual room to a model based on the value of the guest, data about guests *and* about other things outside of a property's control—weather, events, competitor rates, etc.—must be integrated for maximum revenue management opportunities. Thus far, the hospitality industry has relied "solely upon property management systems (PMS) and central reservations systems (CRS) to set business rules, yet these tech platforms fail to leverage a growing number of data sources required to manage increasingly volatile demand in most hotel markets."

In this paper, we take a review of some innovative IT tools that can help the hospitality and tourism industry to generate revenue and sustain the growth in today's competitive environment.

Content Marketing

According to the Content Marketing Institute, content marketing is:

"A marketing technique of creating and distributing relevant and valuable content to attract, acquire, and engage a clearly defined and understood target audience – with the objective of driving profitable customer action."

In the Digital Marketing of hospitality and Tourism, content marketing means taking a holistic view of all of your digital content and aiming to have this content answer your customers' needs as opposed to presenting them with just facts and figures. These content may be in variety of form such as text, imagery, video, virtual tour etc. are then distributed through your digital marketing channels such as on your hotel website, in email marketing campaigns. Content marketing is probably the cheapest and best way to advertise your product when compared to traditional advertising.

Since the internet is omnipresent you can advertise your product, the way you want all over the world. These days' people prefer direct booking and make their transactions online. Hence, strong online presence is imperative. Apart from own website and email marketing, presence on interactive social media (like Face book, twitter), eBooks, newsletters, photo (e.g. Instagram) and video sharing (e.g. you tube) etc. are efficient, yet cost effective tools that will enable your brand to reach people quickly. Relevant and attractive content is a direct way in which you can outshine your competitors.

Google's travel ads have an amazing conversion rate and help hotels to drive local business. Similarly, retail giant Amazon, Flipkart and review site like TripAdvisor are helpful to extend the reach of hotel. Many tech savvy customers tend to read and compare online reviews before choosing hotel or trip. Beside this, presence of other online competitor makes it imperative that online content must be frequently updated and should provide user friendly interface and navigations. In addition to this, online content must support hassle free transactions to stay ahead of the other competitors.

Wi-Fi and conference facility

Nowadays, Wi-Fi has become necessity for the hotel guest who travels with their devices such as mobiles, tablets, computers and other electronic devices that needs internet. Hotel guests expect to be able to connect to the internet easily without any interruptions as soon as they check in hotel. In order to fulfill this requirement of tech savvy guest, hotel must invest in installing faster Wi-Fi infrastructure so that hotel customers can use their technology devices with ease during their stay in Hotel. Wi-Fi facility must be available in the entire premises of the Hotel including rooms, lobbies and screens in suites.

In addition to Wi-Fi facility, Hotel must have Audio/Video conference facility for business customers. Such conference facilities should be easily accessible whenever required and easy to operate.

Mobile Trend

Over the last few years, smart-phones became more powerful and cheaper, popularity of smart-phones enhanced considerably due to their small size, portability and availability of different Apps. More and more people prefer to hang on social media using smart-phones rather than PCs and Laptops.

Hoteliers should focus on ways to capitalize mobile applications. Mobile applications have strong potential to improve the different aspects of hotels functioning. For example, keyless room entry can improve the efficiency of

check in process. Such mobile apps for keyless room entry are already available in the market (for e.g. OpenKey). These mobile apps bring the room key to the guest's mobile phone. With a single download, guests can check-in and gain access to their hotel room and hotel amenities. Tired travelers and long lines lead to stressed out staff and unhappy guests. Change the way they enter your hotel. Give guests the option to check-in and access their room from mobile phones.

In addition to this, more hotels are likely to allow point of sale payments through mobile devices. Customers want to be able to do everything from checking in at a hotel to ordering room service with a digital device instead of standing in queues and moving around the hotel premises to order food.

Advance **Mobile Analytics App** has the capability to help hotel Owners and General Managers to have real-time information on their properties' business even while on the go. Such innovative Hospitality Technology platform provides users real-time information on various parameters including Room Summary, Revenue Comparison etc. With such business critical information at their fingertips, management at hotels can be empowered to take prudent decision with ease.

Thus, hotel can improve the efficiency of functioning by investing in digital apps for check-ins, room service , mobile payments and business management. The time saved and reduced stress gives the staff an opportunity to focus on better ways of improving guest experience to keep them coming back.

Safety and Security Standards

Safety is a term which relates to protecting guests and staff within the hotel from the potential hazards, injury, and death by dealing with different kinds of accidents. In contrast, security regards the protection of property from criminal accidents and terrorist activities. Providing the highest levels of safety standards and security ensures good marketing for the hotels by preventing an accident before it becomes a major issue causing loss of life and property.

Hotel management needs to be aware of the responsibility of the guests' safety inside the property. Emergency systems should be installed to ensure the safety and protection from fires and other hazards. The effective usage of safety surveillance such as closed circuit television (CCTV), metal detectors at entrance, electric emergency generators, body guards, fire extinguishers, fire sprinklers, emergency lights, and trained hospitality personnel will prove significant in handling emergency situation and to ensure guests safety.

This will reduce the costs, improve management of the employee and guest activities, and improve the ability to recognize the criminal activities. A clear, strong message must be spread everywhere to ensure the awareness between the tourists and the service providers. This will transmit a positive image: hospitality may gain a lot by using its safety and security as a marketing tool to attract more tourists to the destination.

BOTs for Business Decision Making

A bot (short for "robot") is an automated program that runs over the Internet. Some bots run automatically, while others only execute commands when they receive specific input. There are many different types of bots, but some common examples include web crawlers, chat room bots, and malicious bots.
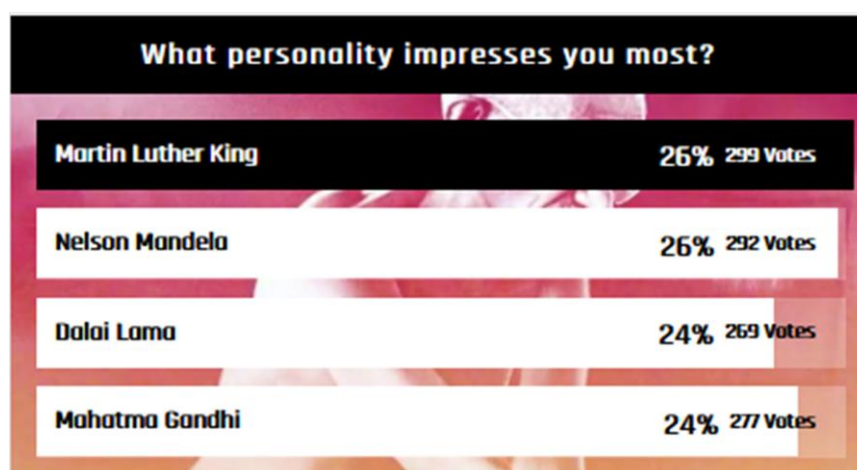
One important rule of the business is to keep watch on the changing requirements, likes and dislikes of the customers and most convenient way of doing so is to conduct online polls and surveys. We can use BOTs for conducting online surveys and polls. One such bot is Polly bot can be used to make effortless polls and customized surveys. Polly bot gives real time result directly in slack. Hotelier can use the data obtained from polls and surveys to make better business strategy and implementing that strategy to enhance their profitability.

NFC Technology

Near field communication (NFC) is an innovative wireless communication technology that gives users the ability to exchange data between electronic devices such as smart phones. NFC is actually based on radio-frequency identification (RFID) technology. RFID uses magnetic field induction to initiate communication between electronic devices in close vicinity. Communication between NFC devices can transfer data at up to 424 kbits/second and the communication is enabled when two devices are in close proximity with each other, which makes mobile payments an instant, secure process.

H   re
pa   m
er

Cloud Solutions

Cloud computing is a method of delivering technology to the consumer by using Internet servers for processing and data storage, while the client system uses the data. Third-party clouds enable organizations to focus on their core businesses instead of expending resources on computer infrastructure and maintenance. Cloud computing allows companies to avoid or minimize up-front IT infrastructure costs.

Cloud technology can play an important role in integrating different hotel operations and it will become a norm for the hotel of all sizes. Today's hotel consumer has the ability to compare multiple hotels and book from their mobile device. Over the last few years, hoteliers have realized that online transactions and booking increased considerably, they have to fulfill the customized demands of customers at very short span of time and hence, they need to integrate their systems in order to save time. This dynamic environment tend more and more hoteliers to use cloud-based PMS systems, as these solutions enable them to scale quickly, work from anywhere, and get real-time insights into various aspects of their business.

Cloud technologies improve operational efficiencies especially if the hotel owns multiple properties. It gives them the liberty to monitor properties scattered at multiple locations from one place. Cloud based hotel management software with Customer relationship management (CRM), Point of Sale (POS) and Property Management System (PMS) allow hoteliers to focus on their main responsibility i.e. guest relations.

Robots working as waiter

Some hotels are already offering more futuristic experiences, with robots delivering any items ordered through room service to a guest's door. For eg. Chennai, Dec 13 (ANI): A Chinese restaurant named as MOMO in Chennai's Old Mahabalipuram Road (OMR) has employed robots as 'waiters' to serve food to their guests at the table. One of its kind in the country, the restaurant is based on robot theme and has four robots serving various types of dishes to the guests. It has been founded by Venkatesh Rajendran and Karthik Kannan. Here customers can order Thai and Chinese, by using the phone tabs placed on every table. Once the food is ready, the robots fetch food from the kitchen and serve it the customer. Robots serving food in restaurants is an idea that has been executed in several parts of the world. There are various Chinese restaurants which started using robots as early as 2006.

(Source: ANI News Official Published on Dec 13, 2017)

Fig. Robot serving a waiter in a restaurant.

Internet of Things and Big Data

IoT is a system which consists of a things (including people) in the real world, that are provided with unique identifiers and the ability to transfer data over Internet via wired and wireless network structure without requiring human-to-human or human-to-computer interaction.

IoT rollouts continue to move from trials to full deployments. The analyst firm Gartner says that by 2020 there will be over 26 billion connected devices... That's a lot of connections (some even estimate this number to be much higher, over 100 billion). These huge numbers of things will generate very large volume of data (called big data) will be stored in cloud. Hospitality industry can use this data to help their customer to provide external information of nearby places or things to improve the guest experience.

Instead of Conclusion

Technology keeps changing at brisk pace, in this era of IT, Hospitality and Tourism industry can't afford remaining aloof from the trends which are inculcated by their potential customers (guests). In order to survive in the competition and enhance the revenue hoteliers needs to adopt technology in trend compatible with their potential customer to improve the guest experience.

The key role of Information Technology in the hospitality and tourism industry can be remote monitoring of assets, systems, and even people, increasing operational efficiency and staff productivity, Digital Marketing, Safety and Security, real time data obtained using IT tools can be used to make strategic business decisions.

The future of businesses will be driven by innovations in AI, Internet of Things, Big data, Data Analytics, Communication and Security. It's up to hoteliers how quickly and wisely they adopt the power of technology and use it for making their business profitable.

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1.6 CHANGING TECHNOLOGY AND ITS IMPACT ON

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Abstract – This paper discusses the changing technology its applications to the hospitality environment. Effects of developments in technology and, more recently, IT on the lodging (hotel) industry are discussed. Technology benefits, such as internet, mobile technology, energy management and the safety and security of guests and their property, are discussed. This article also clarifies the issues that must be considered in the application of new technology and examines future trends. Technology plays an important role in the hospitality and tourism industry. Both customers and businesses can benefit from advances in communication, reservations and guest services systems. Technology allows continuous communication and streamlines the guest experience, from reservation to checkout.

Keywords:-

Technology, Hospitality, Tourism, Hotel Industry

Introduction:-

The hospitality industry is a dynamic environment in a constant state of movement. Through technology, the decades have witnessed the industry change at an unprecedented pace. To be successful in the hospitality industry in today's world, those entering the field must be open to using a various type of new technology tools to ensure satisfaction in hospitality sector. The prevalence of social media has radically changed the relationship between guests and hoteliers.

Through social media, guests and potential guests can share experiences with each other and exchange information on room rates, hotel amenities, and more. Social media also allows visitors to rate the services and post reviews

of hotels and hotel services online.

At large hotels particularly, the check in and check out procedures can be time-consuming, create lines, and long wait times. Guests have made it very clear through feedback that they want fast check in/check out procedures to allow more time for enjoyment and quick departures. In response, many large hotels are now offering guests the opportunity to preregister for their hotel stay before they even arrive. For convention and business travelers, technology allows many impressive advances. Through text messaging, hotels can inform convention guests as to meeting room and schedule changes for their events. Text messaging also lets the hotel target particular convention groups to offer daily specials on anything from spa treatments to show tickets and restaurants. The real-time ability to reach current hotel guests has tremendous implications for reaching the target market at a low cost. The most convenient and favored advancement in hospitality technology for guests is the ability to check out of the hotel while still in the comfort of the hotel room. Hotel guests can review all room charges on the television screen in the room. If all charges are accurate, guests can complete the checkout with a few clicks and avoid a visit to the front desk. Through technology, hotels can continually raise the level of service expectations. The importance of technology to hospitality will only increase in the future, and professional hotel managers should embrace the change and remember it can be a powerful tool to ensure guest satisfaction.

Due to technology fewer interactions with hotel staff, guests could very easily base an entire hotel stay on a handful of interactions with hotel employees. This provides fewer opportunities to get it right if lapses in service occur. A warm smile and thank you will always be timeless in the hospitality industry, no matter where technology may lead us.

Aim: - Changing technology and its impact on hospitality industry

Objectives: -

➢ To know the changing technology.

➢ To know what type of technologies are used in the hospitality industry.

➢ To know how technology is changing the hotel job market

➢ To understands the impact of technology on hospitality industry.

Review of Literature:-

Changes in the Hospitality Industry

Once upon a time, a physical metal key was needed to open the door to a hotel room. Nowadays, in some hotels you can open your room with your phone, showing just how much the hospitality industry has changed and continues to change. The main driver of trends right now is technology. There are new devices and apps that are coming out daily that are changing the way restaurants, hotels, airlines, and cruises are doing business. Technology is also increasing competition in the industry as it is used by travelers who themselves are changing.

Technology currently used in Hotels

🖱 **The do-it-all remote (room personalization)** – This allows guests to dim or turn on/off lights, control room temperature, open/close curtains, order room service, turn on the do not disturb sign, set wake-up calls, view TV channels and movies all on the television with the click of a button on a remote

- ☝ **Self Service Concierge –** This touch smart screen kiosk is located in the lobbies of hotels, which can help a guest find out information(restaurants, activities, flights) without the hassle of carrying a laptop or waiting for someone to assist them.

- ☝ **Smartphone keyless room entry** – Guests book their stay on their handheld smart phone. On the day of arrival, they will receive a text with their room number. Guests can then go straight up to the room and swipe your smart phone over the door handle. Guests can also check out the same way they checked in via smart phone.

- ☝ **In room iPads/ tablet devices –** This is a user friendly way to order room service, housekeeping service, make appointments/reservations all at one's fingertips. Hotel managers can also use tablets in place of the original in-room guide book

- ☝ **Digital Door Viewer –** This is a handy alternative to the old fashion "peephole". A little screen that is mounted on the inside of hotel room doors, so guests are able to have a clear view of visitors while eliminating all uncertainties before they open the door.

- ☝ **LED touch screen panels –** Panels are located in hotel bathrooms, allowing guests to set the lighting, curtains and control music to indulge in an ultimate relaxation experience

IMPORTANCE OF TECHNOLOGY IN TOURISM AND HOSPITALITY SECTORS

Market wisdom today suggests that hospitality companies must embrace technology to compete against traditional competitors, as well as entrants that build their businesses with the latest technology. In this changing environment, new models of distribution must be designed to lead the charge. A strategic information management function should facilitate the business mission of its enterprise through managed information, managed processes, and managed Information Technology (IT).

Broadly, current applications of computer technology in the tourism and hospitality industries can be grouped into three main areas, operational, guest services and management information. The overall functionality of these applications is similar across a range of different hospitality organisations though the technology used to support them may vary. Large, city-centre hotels, for instance, tend to use minicomputers for their property management system (PMS) work. Microcomputers are employed elsewhere.

The diffusion of the system of information technologies in tourism and hospitality will increase the efficiency, quality and flexibility with which travel services are supplied. It has already led to the generation of new services, such as online brochures and interactive videotext. Technology has the greatest impact on the marketing and distribution of travel but leaves relatively untouched the human-intensive areas of guest-host relations and supplier-consumer relationships. Information technologies applied to the tourism system will increase the efficiency and quality of services provided and leads to new combinations of tourism services. All this could not be achieved without changing the manifest human high touch content of travel. It is the systematic use of the system of information technologies by all tourism suppliers, together with its profound impact on the travel industry, which creates the foundation for a new tourism best practice and a total system of wealth creation.

Information and communication technology can be used not only for operational purposes, but also for tactical and strategic management. This empowers tourism and hospitality enterprises to communicate directly and more efficiently with prospective customers and suppliers as well as to achieve competitive advantage.

One of the most established ways to analyze and develop complex systems (such as e-business) is to organize them in a meaningful structure.

IMPACT OF INTERNET ON HOSPITALITY INDUSTRIES: -

With the advent of the Internet, marketers have access to the technology to customize products and communicate directly with smaller target markets. The Internet is now firmly established as a marketing tool. It serves as an integral part of the marketing mix, serving as a digital distribution channel as well as an electronic storefront.

Consumers in the Internet medium are more than just passive recipients in the marketing process. The Internet is an interactive medium as opposed to traditional marketing which usually allows only one-way communication from marketer to consumer

IT and the Internet have transformed distribution of the tourism product to form an electronic market-place where access to information is instantly achievable. Principles and consumers continue to experience unprecedented interactivity. The dramatic ongoing development of the Internet has resulted in the re-engineering of the entire production and distribution process for tourism products. As a consequence of this technological explosion, the packaging of tourism is becoming much more individualistic, leading inevitably to a certain degree of channel disintermediation, a process that will offer new opportunities and threats to all tourism partners.

Latest technology trends in the hospitality industry

- **Cloud / Software as a Service (SaaS) -** Software delivered as a service, rather than held on premise is already a mainstream technology topic and despite being a new concept in the hospitality sector, it is already big news. Two main factors are behind this. Firstly, upfront investment is lower with the cloud as there are no initial hardware costs or associated expenses such as full time, in-house IT staff to maintain the system. Secondly, hotels like the idea of taking the headache and distractions of IT off their site, leaving them free to focus on the day-to-day business of looking after their guests. As well as the low capital expenditure of the cloud and the cultural "fit", there is also the fact that implementation timetables can shrink from months to days, resulting in immediate and obvious benefits in obtaining time to value. The sum total of these drivers is that cloud technology is no passing fad: for the hospitality sector it is the new normal. Being able to provide entertainment on tap and mobile content has led to the trend of hotels investing in cloud services. While hotels want to be able to offer digital content, they don't necessarily want to invest in IT infrastructure and IT staff, making cloud computing the ideal solution.

  Not only is the initial capital investment lower than IT infrastructure and servers, but it gives hotels the flexibility to expand and adjust their IT needs along with business growth, invest in upgrades without causing a complete IT system overhaul and it removes the administrative burden of managing an IT system in-house. Cloud computing is becoming the norm and we will continue to see hotel groups replacing their legacy IT infrastructure with cloud solutions.

- Mobility - **Mobile** is the new face of computing as devices such as tablets and smart phones revolutionise the way we interact with technology. Hospitality is no exception to this revolution, in some cases leading the war. There has often been the expectation that because hotels are, by their very nature, fixed entities, mobile technologies may have minimal impact. However, this myth has been thoroughly laid to rest as tablets, mobile phones, smart phones and laptops have become critical tools on both sides of the check-in desk. These benefits are not reserved for just large international chains: the low capital expenditure investment for mobile hardware and much reduced software costs mean that mobile is a viable option for small independent properties, looking to develop customer service as a competitive edge.

- **Social -** Social media has had a profound impact upon the hospitality industry. Trip Advisor has become one of the main sources of information for people researching holidays, hotels and leisure facilities. Meanwhile, newer social tools like Facebook or Twitter are quickly becoming just as influential. For any hotel to not at least monitor social media is tantamount to willingly flying blind. The online reputation of a property is business critical. It does not however, stand alone as a marketing department concern, but relates directly to daily operations. As such, social media monitoring MUST be interfaced with the hotel management systems so that swift, appropriate action can be taken.

Technology has infiltrated almost every aspect of our lives and hotel developers need to realise that almost any person checking in at a hotel, resort, spa or lodge, will have a smart phone in their pockets.

Many companies in the hospitality industry are already using social media to their advantage as guests check-in on location-based social media apps, tweet about their experience on Twitter and share their holiday photos with friends and followers on Instagram and Facebook. This trend will continue and hotels can expect to see even more social media engagement from guests who use these platforms to give feedback about their experience, complain and give compliments about their stay. Hotel staff are also expected to provide feedback and address and complaints or queries from guests in real-time.

From an online, reputation management perspective, this is a trend that marketers and hotel management need to manage proactively. Consumers don't make decisions about where they're going to travel to or book a stay in a vacuum – they turn to community-developed content and rating systems such as Trip Advisor and social media to make decisions about holiday destinations, hotels and leisure. This shift has led to many hotel and leisure groups developing active social media monitoring and communication strategies in order to stay on top of what's being said about them online and making sure that both marketing and operational staff address feedback that has been given online.

An additional way in which operator can take full advantage of technology in this space is using it to communicate how well they are doing (in real time) with respect to their various environmental initiatives (such as real time electricity/water usage reporting, etc.)

- ✍ **Personalized systems -** Customers expect their experience within a hotel to be totally personalised to them: from the welcome message on the television screen and food preferences to additional services such as personal training or flowers in the room. This quickly creates a huge range of valuable customer preference data that needs to be fed into the hotel management system in order to deliver a personalised, high quality service for each return visit. This is not just a case of linking the customer relationship management system into the hotel operations - it is embedding the process of capturing guest preferences and proactively using that data. For example, if a guest comments on the facilities in the room to someone on the front desk as they leave for the day, the data can be passed to the relevant operational team for the issue to be rectified and the guest notified upon their return - delivering a truly personalised service at all levels of the stay.

- ✍ **Integration -** Hotels span many functions - from accommodation and event catering to specialised facilities such as golf or health spas. Each of these areas has, traditionally, operated an individual software system. Whilst this approach has delivered specific functionality, it has also led to silos of information. Integrating these systems can provide more comprehensive management information, faster reporting and a truly comprehensive view of profitability. For example integrating the hotel management system with the restaurant point of sale application means that the hotel has a comprehensive view of revenue per guest or event. The hotel can also pull together truly holistic reports for management information and customer communication.

- **Globalisation -** The last major trend currently in the hospitality industry is globalisation. In the 21st century, hotel companies will need to adopt different management approaches to survive and develop amidst high levels of economic uncertainty. As international trade and business expand, there is no question that international links will become more important for the hotel industry. This means that the technology systems in use - especially those in large chains - must account for the global perspective. This may be something as relatively simple as issues of scalability or international languages, or something as complex as accounting for different regulations and working practices in different countries.

- **Wi-Fi infrastructure overhauls -** Nowadays, hotel guests who travel with devices such as phones, tablets and computers no longer see Wi-Fi as a perk, but as a must-have when they check in at a hotel. Hotel guests expect to be able to connect to the internet seamlessly and without too many interruptions, leading hotels to invest in better, faster Wi-Fi infrastructure so that people can do business and use their technology devices with ease when they book their stay. Hotels are also starting to move away from user pay models. In the past, hotels could charge exorbitant rates and guests knew they would have to pay if they wanted to go online. Installing and maintaining a hotel-wide wireless network may be coupled with costs, but many leading hotel groups have started to install high density Wi-Fi and started to offer in-building mobile phone coverage as guests have come to expect these services during their stay (not only for themselves, but also for their guests if they are hosting a conference or function at the hotel). It might not yet be financially feasible for hotels to completely abandon the user pay model, but many of them are re-thinking their current infrastructure and pricing models.

✍ **Digital conference facilities -** Besides being able to offer high density Wi-Fi for conferences and meetings, hotels also need to be able to offer access to audio-visual (AV) and digital facilities for conferences. While the amount of AV and digital equipment that goes into a typical conference room is fairly minimal, staging companies are often hired for various projects in order to equip the facility as required. A key component in designing effective conference facilities that can accommodate this type of technology is creating easily accessible, concealed pathways in ceilings and flooring where adequate power and data connectivity can be facilitated. If a hotel has extensive conference facilities, network design becomes critical to ensure indoor mobile phone coverage, Wi-Fi connectivity, real time location services (RTLS) and internet protocol television (IPTV) as well as all the accompanying AV and digital equipment.

✍ **Mobile communication and automation -**In many airports, it's no longer necessary to stand in a queue to check in and people are expecting the same kind of easy, technology-driven check-ins at hotels. Guests want to be able to do everything from checking in at a venue's automated kiosk to ordering room service with a digital device instead of standing in queues and moving around the hotel premises to order food.

Thanks to digital innovation and social media, guests also expect digital interactions with the hotel to be personalised. When investing in digital apps for check-ins, room service and other customer-oriented digital interactions, hotel operators are investing in systems and technologies that can personalise the experience for guests, including a guest's name being displayed on the welcome desk at a digital check-in station; their food preferences or past purchases being displayed in a digital room-service order system; and similar.

In addition, the 'concierge in your pocket' concept is fast gaining popularity due to its ability to allow operators to include useful information such as surrounding entertainment venues; medical facilities; and similar services. Like many of the other technology trends in the hospitality industry, investing in a check-in/cocierge app requires a small initial investment and can lead to greater efficiency and savings as hotel staff are able to focus on customer service and property developers don't have to create large static reception desks at each entrance and hotel location.

- ⏻ **NFC technology -** Near field communication (NFC) technology is the next-generation short-range high frequency wireless communication technology that gives users the ability to exchange data between devices. Communication between NFC devices can transfer data at up to 424 kbits/second and the communication is enabled when two devices touch each other, which makes mobile payments (by touching the smart phone to a credit card) an instant, secure process. This technology is also ideal for self check-ins by guests at hotels as well as the next trend in this article: smart room keys.

Besides payments and an easier way to gain entry to hotel rooms, NFC technology can also be used to personalise a guest's experience at a hotel or resort. For example, advertising can be targeted based on gender and age (so if a child walks by a digital sign in the lobby, the advertisement can change to promote a local theme park or the hotel's kids club) and this technology could also be used to track loyalty points from a guest's use of the conference facilities or room service. This opens many doors for hotels who want to offer a more personalised experience at their establishment.

- **Robots and infrared sensors -** Some hotels are already offering more futuristic experiences, with robots delivering any items ordered through room service to a guest's door. A boutique hotel that is nestled between Apple's headquarters and other tech companies, called **Aloft Cupertino**, has a **robot butler called Botlr** that is able to move between the various floors of the hotel in order to take items such as toothbrushes, chargers and snacks to guests. These types of digital systems not only make it easy for hotel staff to deliver items to guests, but it also offers a forward-facing digital experience to people who stay at the hotel.

  Infrared scanners are now also used to minimise disruptions relating to housekeeping (which is a common complaint from customers). Instead of hanging a 'Do Not Disturb' sign on doors or having cleaning staff wake up traveling guests with knocks and phone calls, hotel staff can take a more innovative approach by using infrared scanners that will detect body heat within a room and tell cleaning staff that they should rather come back later if the room is currently occupied.

- **Smart room keys -** Hotels will increasingly install smart room access systems that allow guests to unlock their doors by simply swiping their phones across a keyless pad on the door. Starwood (owner of the Sheraton, Weston and "W" hotel chains) has already upgraded 30,000 room locks across 150 hotels with this system and Hilton will be implementing a similar system at 10 of their US properties this year. They will be deploying the smart room key technology globally. This technology will mean that guests don't have to worry about picking up keys and front desk staff won't have to issue new keys in the event that a guest loses their room key.

Another innovative way to offer a keyless experience is through fingerprint-activated room entry systems and retina scanning devices. Retina scanning is even more accurate and secure than fingerprint scans and hotels like the **Nine Zero Hotel in Boston** have **already installed an iris scan system** in place of key cards to control access to the hotel's presidential suite.

- **Entertainment on tap -** According to a Smith Micro Software trend report entitled **The Future of Hotel In-Room Entertainment;** people are increasingly plugging in their own devices for in-room entertainment. The hotel room's television, radio and clock are taking a backseat as travellers use their own technology to keep themselves entertained.

- **Converged LANs to support multiple services** Converged local area networks (LANs) will also help hotels to create more intelligent buildings. A variety of computer-based building services can be automated in order to control lighting, refrigeration, air-conditioning and heating. Besides reducing energy consumption, converged LANs can also be set up to provide a smarter, more personal experience. If a guest is known to prefer his or her room temperature at 18°C with the lights dimmed to 65%, for example, this can be programmed before the guest checks in at the hotel.

- **Integrated, seamless experiences**

  Technology doesn't mean that customer experience can only happen online and through devices, check-ins and online comments. All of these experiences need to be part of an integrated, dynamic system so that the guests' experiences are at the forefront of the marketing and operational team's mind. If a guest leaves a comment about their

stay when they check-out of the hotel, for example, the right people need to reply and acknowledge this type of communication. If a guest leaves a complaint about not being able to stream mobile content during their stay, then processes should be put in place to ensure the right person follows up by communicating with the guest and solving the problem at the hotel.

Marketing, management and hotel developers can no longer work in silos and these technology trends are giving them the opportunities, tools and solutions they need to create memorable experiences that can lead to positive change and growth in the industry.

All of these trends have already brought about profound change in the hospitality industry - and they will continue to disrupt and redefine operations. From the back office to front of house, the kitchen to the corporate boardroom, the technology that underpins these changes will deliver a sharp competitive edge at all levels.

Technology is changing the hotel job market

As technology makes its way into nearly every aspect of our lives, we see it taking over the more repetitive, routine tasks that take place at a hotel, saving time for both guests and staff. So what does that mean for hospitality jobs in the future? Many innovations will help hotels compete and grow (perhaps creating even more jobs) in the market as well as meet and exceed the needs of   their   guests.

The hospitality industry is largely customer-driven and using technology strategically speeds operations and allows guests to "customize" their experience. Tech is more intuitive than ever and it's constantly improving, allowing guests to decide when they need to interact with a person and when they can simply use a device to order room service, ask for more towels or book tickets to a show.

- ❖ **A Multi-Skilled Workforce -** Hotels are always striving for better operational efficiencies. Technology is empowering the staff to handle a wider variety of guest services and move around during peak times to stations that need the most help at different points in the day. That may mean the front desk staff is also trained to help out at the bar and servers step in to greet guests when there's a rush of check-ins. Procedures of the past will need to change and some jobs may be replaced. However, many jobs will expand offering new responsibilities and better interpersonal as well as problem-solving skills.

  A coordinated hotel platform makes it easy to communicate between departments and meet the needs of guests quickly and effectively. Using mobile devices, a concierge professional can engage with guests from any location on the property and take care of their needs in real time; housekeeping shifts can be better informed about changes in schedules and the entire staff can act as a multi-skilled workforce, all focused on the same goal: guest service. In this way, technology elevates customer service and the hotels that manage their operations efficiently provide superior guest experiences.

- ❖ **Using Artificial Intelligence (AI) -** Having more and better information about your guests and their preferences means you can provide even more personalized service. Tech tools that utilize new developments in AI can also save time and free staff for more complex tasks. Artificial Intelligence is already impacting the hospitality industry in a variety of ways:

  Guests are using online resources: Consumers have access to so much more information than ever before when selecting a hotel. Using smart devices, they can query very specific criteria and compare results easily. That means they have higher expectations and are pre-selecting for specific environments and services.

❖ **Consumers are accustomed to self-service**: Guests are comfortable using kiosks and apps to deliver services and will use their devices to interact with the hotel by controlling their room environment, ordering room service, etc. Staff needs to be comfortable in supporting these devices and apps.

AI provides rich guest profiles: Hotel associates will experience a change in traditional roles and responsibilities, using these expanded tools/devices and intelligent data to enhance guest personalization. Specifically, hotel staff will be able to ensure the highest quality of service by having more relevant information available at just the right time.

Common use of Chatbots: short for *chat robot*, it's a computer program that communicates using natural language (like "English" or "Hindi") and can execute requests and interface with other apps. Chatbots are useful as a way to reduce costs and improve efficiency, by automatically coordinating with other apps to make reservations (book a table), arrange an Uber, retrieve a weather forecast, check flight schedules or order flowers.

❖ **Robots Taking over Routine Tasks -** Robots are already performing routine tasks such as delivering extra towels, toothpaste or supplies to a guest's room, adding a bit of fun along with the delivery. They can also greet guests in multiple languages and can provide basic information when asked. Last year, Royal Caribbean installed cocktail-mixing robot bartenders on several of its cruise ships. While robots free up the front desk staff for more complex tasks, people are still looking for a personalized touch, especially in the high end market.

The Big Picture - The landscape of hotel hospitality is changing and embracing new technologies to cut costs and streamline services. But that doesn't necessarily mean you'll lose your job or be replaced by a robot anytime soon. The same social aptitude, upbeat personality and problem-solving skills that have always been valued, are still central to outstanding customer service. Being flexible and open to learning new roles will go a long way toward fitting into the multi-skilled workforce that is emerging as staffing needs flow from one area to another during peak times.

Bots are still only capable of elementary tasks and may be able to process a credit card faster than a human, but when it comes to social interactions, a warm and caring staff still makes the guest experience memorable. Automation doesn't mean substitution. While technology is changing the way we communicate, meeting and exceeding guest expectations is still the ultimate goal.

Tech jobs on the rise in hospitality

When you think about possible hospitality jobs, guest service agent, housekeeper, concierge, cook, waiter and bartender probably spring to mind before any position involving technology. However, tech employment within the hospitality industry has actually been increasing, driven by a desire to increase efficiency (with digital tabletop ordering and payment systems, for example) and enhance guest service (with innovations such as smart room programming and self-check-in).

If you have a background and/or interest in technology and want to use your skills in the dynamic, fast-paced and exciting world of hospitality, you may want to consider one of these possible positions.

☝ **Technical　　　　　　　Support　　　　　　　Analyst**

A common role within casinos, technical support analysts provide technical assistance, support, and advice pertaining to the hardware, software, and systems used. This includes installing, modifying, cleaning and repairing computer hardware and software as well as performing system procedures and maintenance to ensure the efficient use of system resources. These positions may require an associate's degree or equivalent experience. Specific certifications, such as Microsoft OR A+ may be preferred.

☝ **AV Technician -** From casinos to hotels, resorts, and even some restaurants, wherever conferences or entertainment is scheduled, you'll find AV (Audio Visual) technician positions. These individuals wire, plug, patch and program A/V equipment including projectors, lighting, mixers, sound systems, video, laptops and personal computers as well as troubleshoot issues when they arise. In many cases, a high school diploma and some technical aptitude is all that's required, though some experience with A/V equipment is usually preferred.

☝ **IT Security Administrator -** A very common job at casinos, IT security administrators perform a variety of complicated tasks from provisioning, maintaining and deactivating user accounts to performing routine system audits to ensure security compliance. A Bachelor's degree in computer science or information systems is often required. Knowledge of specific software and systems—such as LMS, MMS, Infinium, and Kronos—is usually a plus, as are professional IT security certifications including CISSP, CISA, and CISM.

- **Systems Analyst (also IT Analyst) -** Systems analyst and IT analyst positions can frequently be found at hotels and resorts. These professionals support the organization's computer users in the operation of the software packages in use. This often includes overseeing the installation and enhancement of software and hardware as well as the maintenance and enhancement of software application systems. At times, the systems or IT analyst may be asked to assist with the identification, development, and implementation of new systems applications and to oversee the operation and development of interfaces between various computer systems. A Bachelor's degree is generally preferred along with previous systems experience.

- **PC Support Technician (also Desktop Support Specialist) -** PC support technicians and desktop support specialists provide a variety of services to other employees and guests at hotels and resorts. This includes troubleshooting basic software and hardware issues, preventative maintenance, the setup of new computers and applications, and monitoring backups, error logs and systems users. They may be called upon to interface with third party vendors and provide remote field user support as well. These positions usually require familiarity with Windows and Mac PCs as well as iPhones, iPads, and Android systems. A Bachelor's degree is helpful, as is experience supporting computers in a networked environment.

- **IT Support Specialist -** IT support specialists work in hotels, resorts and casinos providing IT department support to employees and guests. This includes responding to requests for assistance, identifying and troubleshooting problems, fixing guests' phone and data issues, rebuilding broken PCs, and installing applications. Experience and training in troubleshooting and help desk support is

generally required, as is a working knowledge of networking hardware such as NIC cards, hubs, and cabling.

Hotel apps used to focused on guests

Today's travelers are never far from their mobile phones. In fact, a 2015 TripAdvisor study of 44,000 global travelers found that 42 percent regularly use their mobiles to plan and book trips. But many want more—and hotels are listening. From apps that speed up the check in/check out process or unlock room doors to apps for ordering room service, major hotel chains around the world are embracing mobile technology as the amenity of the future.

Hilton

The Hilton HHonors app, available for free on Google Play and the AppStore, is the official mobile app for all 4,600 of Hilton's hotel and resort properties under the brands Hilton, Canopy, Conrad, Curio Collection, DoubleTree, Embassy Suites, Hilton Garden Inn, Hampton, Homewood Suites, Home2 Suites, Hilton Grand Vacations and Waldorf Astoria. The app allows travelers to book rooms, access special discounts, view receipts, check in remotely, unlock their room door, order from room service, request extra towels and pillows, and redeem HHonors Points.

Hyatt

The Hyatt Hotels app, available for free on Google Play and the AppStore, allows travelers to explore Hyatt's mobile website in eight different languages, search and view hotels and special offers, book or cancel reservations, and track and redeem Hyatt Gold Passport points. In addition, Hyatt guests can use the app to check in and check out as well as request an Uber to the hotel.

Marriott

The Marriott International app, available for free on Google Play and the AppStore, is impressively comprehensive. It allows travelers to search Marriott properties, book rooms at more than 3,800 hotels worldwide, and earn and track Marriot Rewards points. In addition, guests can use the app to check in from anywhere, unlock the door to their room, request extra towels and toiletries, and chat with Marriott hosts before, during or after their stay.

Ritz-Carlton

The Ritz-Carlton Hotels app, available for free on Google Play and the AppStore, allows travelers to check in and out from their mobile phone, request services (from fresh towels to shoeshines), access their bill and track charges, and transform their travel photos into vintage-style posters. However, enrollment in the Ritz-Carlton Rewardsprogram is essential to unlock all of these features.

Starwood Hotels and Resorts

The Starwood Hotels and Resorts app, available for free on Google Play and the AppStore, works on iPad and Apple Watch in addition to mobile phones. Travelers can use it to browse more than 1,200 hotel and resort properties, book rooms and redeem rewards points. The app also allows guests to review their reservation details, access special offers, and track their reservations in addition to providing mobile check-in and keyless room entry.

Methodology:-

There are basic two types of methods being adopted for data collection. In this research, researcher has focused on secondary data collection method for analyzing the trends in recent times observed in hospitality industry. Secondary data collection method was used while evaluating technological changes for specific industry. Various secondary data collection sources like journals, internet and books used while carrying out the data collection. Predominantly the data was collected from previous work of researchers. This was to ensure that qualitative data is obtained for the study.

Result & Discussion:-

1. Participant designation

Participants' department
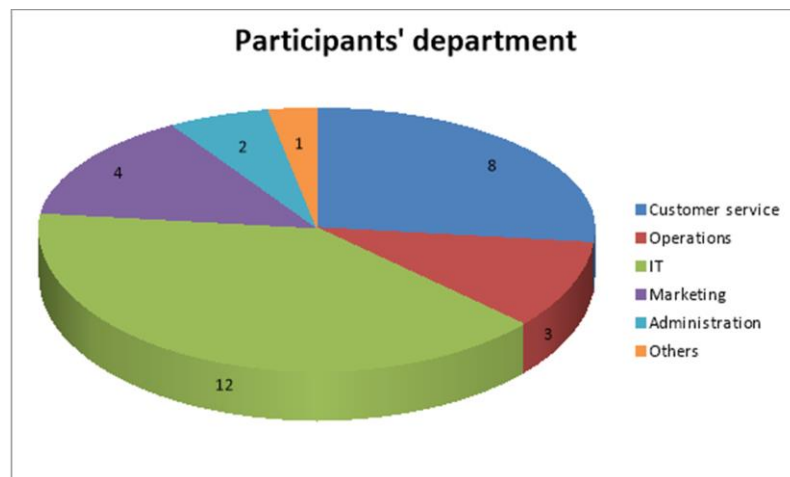
Most of the employees participated in the study were belonging to IT department of Hotels.

2. Role and importance of technology in hospitality sector in following areas:
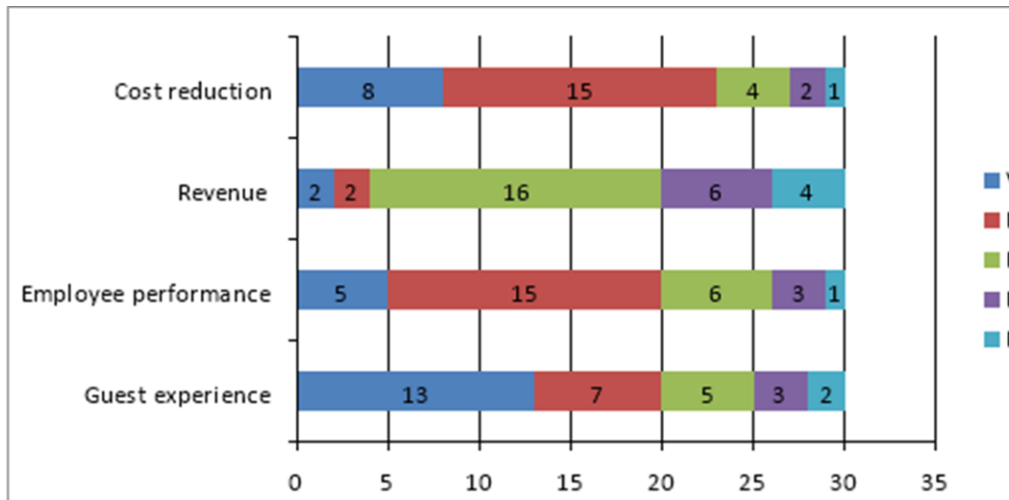
Current technologies in hotels have important role in improving guest experience, increasing employee performance efficacy, enhancing revenue of the hotel and minimizing costs of operation of the company.

3. Relative importance future IT goals in the 3 year plan.
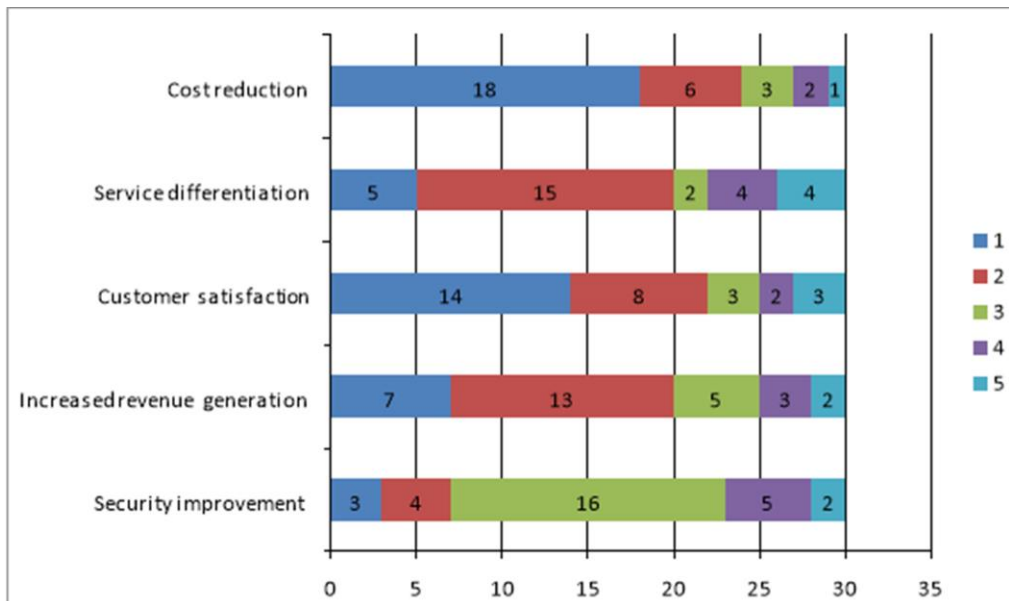
Cost reduction, customer satisfaction, service differentiation and increased revenue generation were the important IT goals of hotels in the next 3 years.

4. Customer demand for technology.
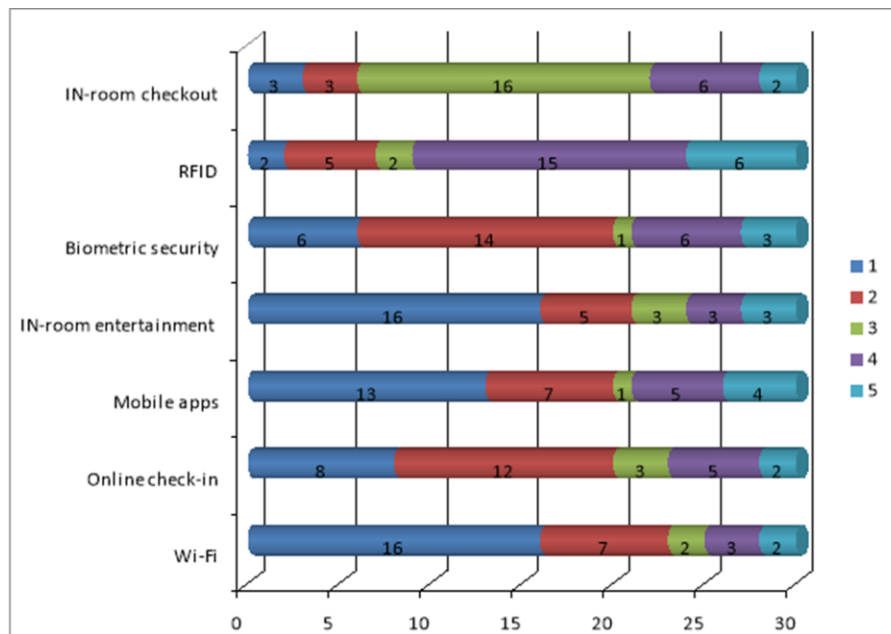
Wi-Fi, Mobil apps and In-room entertainment were mostly demanded technologies of hotels. Biometric security and online check-in technologies of the company also have high customer demand. But RFID (Radio-frequency identification) has low customer demand.

5. Important technology issues that hotels are likely to face in next years:
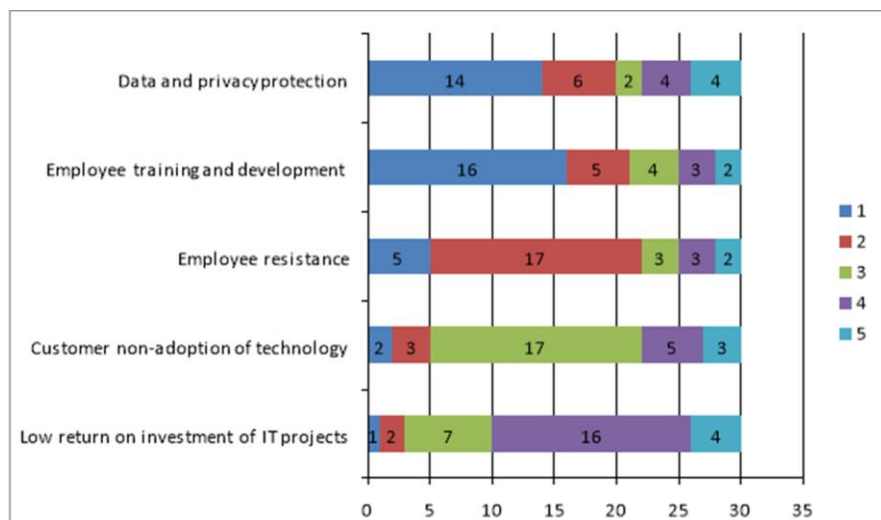
The key issues associated with technology use in hotels were the ineffective employee training and development and lack of data and privacy protection.

Suggestion & Recommendation:-

✓ **Improve training and development:** It was identified from the research that, employees of hotels were incapable for handling the new technologies of the company due to improper training and development. So, company needs to offer effective training for its employees to improve their skills in handling the new technologies through e-learning and on-the-job training programs.

✓ **Implement new technology for data protection**: The survey findings revealed that, lack of data and privacy protection was one of the main issues associated with hotels technology. Thus, the company needs to adopt effective technology for ensuring privacy and data protection.

Conclusion:-

In this paper various trends in the technology were discussed in detail. In the edge of cut throat competition, it is recommended that hotel to adopt the technological changes in order to expedite growth of business. It was also noted that technology is advancing at a faster pace than ever with the examples like cloud computing, wireless communication and digitization. Some of the trends in the technology are leading to great improvements and considerable savings for the hospitality industries. One thing is very evident that growth in technology in hospitality industry will definitely help in enhancing a customer friendly experience and ultimately enhancing customer satisfaction.

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1.7 HOSPITALITY IN THE DIGITAL ERA"

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Abstract:-

The purpose of this research was to determine the level of knowledge of currently available information technology (IT) systems, to gauge hoteliers' understanding of future IT requirements in the hotel industry that can benefit hotel management professionals, and gain an understanding of the IT requirements of the hotel industry in the near future.

Introduction:-

During the past decade, IT has significantly changed the way the lodging industry plans, controls and manages operations. For example, the hotel industry is beginning to utilize kiosks and other self-service technologies. Use of self-service technologies in the hotel industry has grown considerably, especially in the areas of self check-in, in-room check-out, and foodservice kiosks.

Hotel managers have come to expect benefits from this technology in the form of enhanced customer services and operational efficiency. Wireless technologies have also experienced an unprecedented growth despite the rising concerns about security issues. Some of the most significant IT applications involve the use of mobile handheld devices, such as personal digital assistants (PDA), tablet PCs, and cellular phones. Additionally, one of the most common wireless technologies impacting the hotel industry is Wi-Fi. This allows hotel customers to access the Internet from a bar, restaurant, lobby or guest room.

In order to offer a variety of payment options, some hotel managers have adopted cashless payment systems via the use of POS systems to process credit card and debit account transactions. Some hospitality companies even accept biometrics, such as fingerprints, iris scans, facial scans or hand geometry analysis systems to increase physical or data security.

The area of in-room entertainment has seen dramatic improvements in recent years. Today's consumers have multiple entertainment options at their finger tips. Many hotel guests have come to think of their hotel room as a home away from home. As such they expect hotels to offer at least the same level of options for entertainment as they have at their homes. This increasing level of guest expectations has brought about a surge of methods for integrating consumer entertainment technologies into hotel rooms. As such the number of technological devices being utilized in hotels rooms for guest entertainment is becoming increasingly diverse.

As the use of technology has increased, so have the risks associated with it. The most common threats to IT systems were virus attacks, insider abuse of net access, laptop theft, and spoofing. In order to protect themselves as well as their guests from potential threats hotels are utilizing a variety of security options.

This research will help to support hotel operators in making better decisions in terms of selecting proper IT applications for business success.

<u>Aim:-</u> To study about the hospitality in Digital era.

<u>Objective:-</u> Highlight the new trends and applications in hospitality industry.

Hospitality trends of the future

Digital operations in 2025

<u>Limitations:-</u> Time constraint

<u>Review of literature:-</u>

From the .... lered a king. Retaining .... for hotel and tourism in... and dislikes) into the sy... elps hotels in retaining g... se database to provide services that go beyond the guest expectations. This also helps hotel sales and marketing/Revenue Managers to analyze crucial business data for loss.

Few years ago air travel was a luxury. Today with the application of yield management various Airlines in India are able to offer best rates to passengers depending on the current load and increase their PLF (Passenger load factor) creating a win-win situation for both the Airline and the Customer. Many private Airlines have started concept of e-ticketing and

advance seat booking.

Websites like expedia.com, makemytrip.com, Yatra.com and Travelguru.com have helped customer plan holidays / business trips within a set budget as they can take advantage of buying tickets available at the lowest fare directly without the involvement of an agent.

Similarly hotel room booking and various other travel-tourism related services could be booked by a customer on-line at the best available rate. Advance IT software and systems make it possible for many agents and operators to provide a bouquet of complete services- i.e. from Airline ticket booking, airport pick and drop to Hotel room booking along with sightseeing at very nominal rates due to consolidation and integration of all travel and tourism related services using various software's and booking engines interface. Due to this integration, booking engines are empowered to great deals to customers online.

To improve operations and record guest feedback hotels deploy 'Hotel communication system'. In this application all guest calls are recorded. This helps the Hotel management to know the key repetitive issues and challenges that are required to be addressed. This system also helps hotels to measure the productivity of employees for employee recognition programs.

Internet facility has become a vital factor for the guest in the selection of hotel for his/her stay. Wi-Fi (short for 'wireless-fidelity') is no more a Greek word. Wi-Fi is the popular term for a high-frequency wireless local area network (WLAN). Many airports, hotels, and fast-food facilities now offer public access to a Wi-Fi network; these are known as hotspots.

Most of the hotels have started providing both wireless and wired Internet services in guest rooms and public areas which is also known as 'Broadband' or 'High-speed Internet Access'. With the availability of Broadband, a guest is able to browse at a much faster speed and download files in a short span of time. In comparison Broadband is definitely 4 times faster than dialup connection. WI-FI offers freedom from wires. 90% of guest carry WI-FI enabled latest laptops.

Looking at this new source of revenue most of the deluxe Hotels have started providing 24 x 7 Technical support service to assist guest pro-actively with the Internet and IT related services, fixing problems before it affect guests.

Plasma interactive televisions have though helped hotels in marketing their services. It fulfills guest's business and recreational needs. It also offers additional services like express check out, details about city, tourist spots, shopping venues etc. Various applications loaded on a common server which connects to set-top of box in the guest room offers additional multifunctional entertainment functions like Games, Music on demand and guest can also listen to FM radio of the country he belongs to or to international radio channels etc. Guests who don't carry laptop and like to browse Internet from their respective room can browse on these interactive TV with the help of cordless (infrared) keyboard.

'Information Kiosk' available in many hotel lobbies and public areas also act as a great marketing tool. Hotels have started marketing various products and services they offer via it for example details of various 'multi cuisines restaurants' available in the hotel, ongoing promotions, spa facilities and other various services i.e. Airport pickup and drop timings and list of functions happening in the hotel etc. Other than hotel information it can also be configured to display useful city information e.g. shopping venues, distance of various landmarks from the hotel, major events happening in the city, tourist spots etc.

'Banquet function display screen'-Many hotels have started keeping attractive screen before Banquet pre function area, which is interfaced with hotel Sales and catering application from which it directly picks up 'Events-Functions of the day'.

Most of the deluxe chains have started their own or outsourced reservations. Today guest from anywhere in India can dial a common toll free number for make booking instead of calling respective property directly. This helps guest in accessing the central reservation office for room bookings.

Hotels have started using PDA's in the restaurants, which make the F&B order taking simpler and faster. This speed ups restaurant operations i.e. reduced delivery time of the ordered food and also helps hotel management to keep tight F&B control. PDA's are also used for stores, mini bar inventory stock take and for check-in of the guest right from the airport etc.

Increase accessibility with mobile devices

Clunky computer hardware has become virtually extinct from most modern homes as desktop computers get replaced with more mobile tablets and smart phones. Many hospitality related businesses find that mobile devices fit their strategic vision, operational methods and budgets better than traditional computers in many cases. For instance, concierge professionals can engage guests from anywhere on the property and take care of their needs in real time when otels replace the stationary desktops with fast, mobile computing devices. These devices are sometimes less expensive to purchase and maintain than desktop computers.

Hospitality Trends of the Future:-

The World Travel Market points out tablets and smart phones are creating a new business environment for the travel and tourism industry. Consumers are becoming increasingly comfortable using their devices creating with this a significant transactional channel.

Within 2-3 years 45% of the world's population (about 3.3 billion people) will be Internet users, they will have smart phones and will be online 24/7. The travel industry will count on this data, and considers it as a primary principal in the future.

Skyscanner is one of the most popular websites among travellers as it provides data about

more than 1000 airlines and millions of routs and hotels while makes comparison between

prices and offers them from the cheapest options within seconds. Skyscanner and its 56 editors, researchers and future networkers came up with the *Future of Travel* report (2014), how the hospitality industry (especially travel and hotel industries) will change in the next ten years.

By 2024 the "Artificial Intelligence" will change the whole way we manage our reservations

for a holiday and most likely travel websites will provide personalized offers even without

asking.

Last twenty years was about social networks, by registration on different Internet sites, creating online profiles, giving personal information, sharing opinions, comments, habits and likes.

The next twenty years will be about using up these data, which has been gathered during the

Years, Skyscanner (2014) just calls it the 'Big Friendly Data' (BFD). Moreover it mentions another "friend", the Digital Travel Body - each of us will have one in the future - which is

basically a wearable technological achievement powered by microchips, a watch or a jewelry

what we will wear all the time and constantly connected to the Internet and it will understand

our individual preferences based on our *likes* and *dislikes*. It will act as a tour guide, letting us

know all the interesting information about a particular destination of anything we are interested in.

According to the report in 2024 there will be websites which are operated by travel brands and offer "virtual reality samples" that show the potential traveller the view of the particular destination, she/he plans to see and be able to hear the sounds as well and enables to the user to take an amazingly realistic walk through the streets for instance.

By 2024, the virtual concierge will become standard. Syncing guests' current and previous stay records will enable hotels to offer virtual assistants that, for

example, deliver breakfast to the rooms of guests with early-morning departures.

How the report emphasizes, booking will be a quick and easy process and the future travel

Websites will know our preferences from the previous online actions.

The Skyscanner report also shares what the most popular destinations will be in the future. It

will recommend some relaxing destinations at the blue-green curvature of the Earth for instance and commercial flights to the Mars. Space travel will be a great trend in the next decade. Of course it is not a new phenomenon, as tickets to the space are already available for $ 75 000, but commercial companies are already working on to provide more affordable possibilities.

Underwater hotels are already existed as well but the number of them will be increasing

in the future and becoming popular destinations in the future.

Shimon is a musician, Big Jim is a cop and Mind Mentor is a therapist while RUBI is a teacher. What is common in all these four? They are all robots. By the end of this century 70% of today's occupation will likewise be replaced by automation, robot replacement is just a matter of time".

By 2020 personal robot slaves are going to be found in every households and they will act like butlers. In August 2014 in Aloft Hotel in California the very

first hotel butler ("Botlr") introduced as a new trend for enhancing personal connection with the hotel guest.

"Botlr" is capable to deliver items between the reception and the hotel rooms.

There has been a large amount of IT investments in the hotel industry, and hotels are in the forefront when it comes to deploying technologies. ***Dheeraj Gehani*** *Information System Manager, Hyatt Regency.* (Network Magazine, Indian express)

The way we purchase and consume hospitality services is changing dramatically as the lodging industry transforms its offerings, products, services and infrastructure to meet the needs of the digital age.

Digital Operations in 2025

It's not just the guest experience that will transform over the next decade. Hotels' internal operations will also see major shifts:

Workforce management. By 2025, biometrics-driven advances will enable hotels to improve shift monitoring, surveillance and fraud detection. The technology, as well as the convergence of devices for gathering biometrics data, will be key digital enablers for the success of shared inventory models in the hotels industry.

Staff support and development. Conversational AI's ability to answer routine questions will free front-desk staff to provide the human touch for service issues and questions that require it. AI's rise will also fuel a shift toward digital specialization in the skill set of hotel marketing and customer service personnel. While chatbots aid guest interaction, staffs need to be both tech savvy and able to personify the brand.

Process automation. By 2025, robotics in the hotel sector will automate processes related to housekeeping (think butler robots) and self-service contact centers. Automation will also ripple through accounts receivable and payable, purchase to pay, and supply-chain management. The effect will be nothing short of a seismic shift in the labor-intensive hospitality sector.

The financial industry is already experimenting with RPA to perform the repetitive, standardized and rules-based tasks of standard functions such as accounts payable and purchase to pay. RPA will be relevant in the next decade as the travel and hospitality sectors work to reduce their turnover rates, which rank among the highest in the industry, according to the Bureau of Labor Statistics.

Smart sensors to streamline operations. By connecting IoT sensors with mobile and wearable devices for staffs, hotels will be able to optimize operations. For example, sensors will be able to notify housekeeping when rooms are ready for cleaning. RFID-connected room-service carts will signal they're ready for removal once guests wheel them into the hallway. In addition, predictive analytics from the sensor data can recognize hazardous conditions such as egress-blocking carts and unlocked rooms. Sensors can also contribute to predictive maintenance on elevators and escalators.

Yotel – New York

Inspired by luxury airline &
Japanese capsule hotels.

LEED Gold Certified

- Smart design
- 50% more rooms
- Guest room 'cabins'
- Automatic sensors
- Heat recovery system
- Rainwater storage
- Purple mood lighting
- Integrated AV
- Motorised couch that
  expands to a bed.
- Convertible tables
- Airline style check in kiosks
- Robotic luggage storage.

smart hotel

Pros & cons of Information Technology

Pros of Technology in the Hotel Industry for Employees

With technology, it makes a hotel employees job that much better. They are able to have all the information they need to know about the hotel and the customer right in front of them on a computer.

Employees do not have to look through other employees notes and papers to find a customer who needs to check-in. This makes check-in and out smoother for the employee and as well as the customer.

To help eliminate the wait to check-in, some hotels have even started using kiosks to check-in all by yourself. This would be impossible if it wasn't for technology. These kiosks are computers that allow you your customer to:

1. Pull up all their information

2. Check-In

3. Give them a room key

4. Send them straight to their room

These make it easier on the employee so that the wait is not long for people who know what they need to do and do not need a lot of guidance.

With employees having access to computers they are also able to pull up any information they need regarding the customer when they are already checked-in and in their room.

With the advancement in technology, employees have more time to focus on specific needs from customers as well as things they need to get done on their job.

Overall technology helps the employee make the best of out the job

Always remember a happy customer is a returning customer.

Pros of Technology in the Hotel Industry for Customers

Technology in the hotel industry is great for the customers. They are able to quickly pull up the hotels internet homepage from their computer or their mobile device and look at just about anything about the hotel. Some of these things include, but not limited to:

- Information about the Hotel
- Restaurants in the hotel or around the area
- Around town
- Pictures of the hotel, including rooms
- Information about staff
- Amenities of hotel

With all of this information right at customers finger tips it is perfect for anytime they need to use it, whether it be at work, at home or on the go.

With a nice, neat and effective homepage for the hotel it will drive busy up. This being because people like to know what they are getting for their money. When they see pictures it makes it even better because they know exactly what they are getting.

Some hotels even have started making apps for smart phones for customers. The apps range from:

- room keys
- room service
- remote controls to the t.v. as well as the temperature
- and even the lights

Customers expect to have technology available to them because that is what they are use to in their everyday life.

Information Technology downfalls

We all love new technology, especially when we have access to it free while staying at a hotel. However, despite the fact that in-room technology makes guests' stay nothing less than an exceptional experience, and makes hotel staff jobs nearly effortless compared to the past. Studies from the University of Gothenburg have shown that heavy use of technology has been linked to depression, sleeping disorders, stress and mental health issues.

From the hotel side of things, there are also issues regarding the use of technology in business. While doing anything online, hotel staff must be aware of copyright issues and security. All hotels use guest credit cards for either payment or authorization, so credit card theft is another critical reality hotels could potentially face, so it is crucial that the hotel meets all of the Payment Card Industry Compliance (PCI) requirements in order to avoid this circumstance. Some businesses are also concerned that they may not get the anticipated Return on Investment (ROI) from incorporating such technology into their organization, leaving them in a situation that can either make or break the hotels future. One of the biggest issues associated with growing technology in the hospitality industry is the need for fewer employees. As a result of iPads, smart phones, touch smart screens, online bookings, etc. they are slowly replacing jobs leaving employees desperately looking for work elsewhere. The majority of hotel functions in the future will be faceless.

Cons for Employees

"The production of too many useful things results in too many useless people." --Karl Marx

The quote above is a perfect example on how technology is a disadvantage for hotel employees. The more technology could just mean the less people the company will need, which means no jobs.

It could mean that with hotels not needing people anymore that the world will lose a lot of jobs due to it, since hotels are one of the top job makers.

Could you imagine going to a hotel and having no employees there? I could not imagine this.

In the hospitality field it is all about customer, employee interactions and face to face time with them. If an employee does everything online with a customer there could be lost translations and wrong meanings of things.

It also gives employees the chance to meet new people and love the job that they are doing, since that is why they are there.

With how far technology has come, it would be very hard if not impossible to go back to when there was no technology.

Who knows it might not even be better. What might be best it to have it so that you have a balance of both:

- New Technology
- No Technology

Cons for Customers

The disadvantages of technology in the hotel industry for customers would not be as bad as the employee, but it wouldn't be great.

People like to interact that is a reason why we travel and go different places and do not just hang out in our house all the time.

Imagine you are on vacation and when you go to check-in you:

- Are greeted by a computer as you walk in
- Put all your information in
- Get a key
- Walk to your room

Now how fun does that sound? That is why we still need employees and can not just go all to machines.

Technology is great, until it is not.

What if the hotels:

- Homepage stops working
- The pictures don't work
- Or customers don't have a way to access the internet

That is where technology would fail for customers.

Just like the employees there needs to be that balance for technology and no technology.

Conclusion

My aim with this research was to introduce the major impacts of the digital world from the hotel industry point of view.

The goal was not to present all the trends and technological products what existed or recently

exist because trends could be temporary fads that are going to sink into oblivion within

months. However there are few of the achievements what seem to be more than fads and

slowly but surely becoming accepted tools of everyday life. Technology-Based Self-Service

kiosks show a permanent trend in the hotel industry, they make the check-in process simple

and timesaving.

Today's customer demand is a) being self-sufficient which is easily manageable via technology and b) employees should be available in the case it is needed. Hotel guests expect "home experience" far away from their home in a hotel room equipped with Interactive Mobile – and Guest Empowerment Technologies, thus customers are enable to gratify their independency and playfulness. But we should not forget that these are just objects which are easily available for everyone, but creating a sustainable competitive advantage is not possible as gradually all the organization will purchase the particular devices. *"What you can win is you and your personnel".*

Social media is one of the accompanied elements of the Internet and within a short timeframe

it made a significant impact on the society in general as well as became a powerful tool in the

business.

According to Skyscanner the 'Big Friendly Data' will contains all the personal information which have been gathered during the years via social media and other Internet sites and going to be utilized to create tailor-made offers; the system will know everything, there will be no secrets to hide…Wearable technologies will belong to the everyday life – constantly being connected to the Internet and these devices will understand our individual preferences based on the previous online experiences.

I also find important the observation of the digital world as digital technology and trends are

constantly changing and being up-do-date is an essential element of the business life. While each property may have different technology objectives, good information will help them make informed decisions.

In today's world, it is important that hotels keep up with the evolution of changing technology as the hospitality industry is, and always has been, a competitive business. As guests are more often exposed to new cutting-edge technology, they will slowly start to have different needs and expectations of what an everyday hotel should consist of.

I think that this paper gives an overall picture about what the digital technology have caused and could cause in the future.

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1.8 IMPACT OF MOBILE APP ON HOSPITALITY SERVICES

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ABSTRACT:

In Today's age the use of technology is increases in almost every sector of different businesses for growing their business. Hotel industry is also come in his effects. Increasing the users of internet on mobile phones local and international hotel establishments working overtime to knock into the power of internet. After analyzing the data of internet users and mobile app downloader's and customer relations it is prove that how mobile app are playing a key role in development of hotel-customer connectivity in hotel industry today. Smart Phones are playing the major role to grow the business of hotels. India is the second largest country in the worlds who use internet and mobile services.

Mobile apps are used extensively by hotel managers and their assistants to preparing bills, reservations, room allotment, meetings, and special events. In addition, Mobile apps are used to order food, soft drinks and supplies, as well as to prepare reports for hotel owners and top-level managers. Nowadays hotel without a Mobile app is like a shop without manager each automated hotel has its own mobile app. Customer can find the nearest hotel with the help of these app within a second. Customer can also get booking of hotel for the specific function or ceremony, customer can individually book the table for food services, He can cancel or change the booking as per his covenants. Customer can also enjoy services like special discounts for accessing the

services on the smart phones app. With Smart phones becoming the primary platform for online travel search, hotel apps not only for the basic reservation facilities but also for the customer services

like creating and possible guests, help of the destination searching, pickup services, real-time services and offers. The hotel Service provides information about its mobile app through internet and social media platforms, In India there are more than 220 millions smartphone usres in 2016, Indians downloaded 6.2 billion apps through Google Play, up from 3.6 billion in 2015, according to a recent report by App Annie. Online hotel booking is increasing through mobile app with the help Internet access. It is likely to more than double to $1.8 billion by 2016 with over eight million Indians booking their hotel on Internet, said a new Google Inc. report on 2016.

In India mobile app users are increases day by day Small metro cities like Nagpur, Vadodara citizens downloaded over 6 billion apps in 2016, up from 3.5 billion in 2015. 75% peoples are use their mobiles phones for the hotel bookings. Likewise every year new users are connected with the hotel industry through mobile apps.

INTRODUCTION:

In Today's world the fastest communication media is Internet, Hotel industry also came in its effect. With local and international hotel establishments working overtime to tap into the power of internet, in order to influences their sales and to improve customer relations, it is only evident how internet is playing a key role in development of customer relationship. Now a days the Smartphone is a popular device for accessing the internet. Hotel industry point out this and provide the mobile app for connecting with the people. The progressively growing sales numbers of smart phones and tablets are the best proof. The number of mobile internet users in India is estimated to reach around 420 million by June 2017 with the rural India growing at a much higher rate than urban India says a published by Internet and Mobile Association of India (IAMAI) & market research firm IMRB. According to a report titled Mobile Internet in India 2016, there were 389 million mobile internet users in India as on December 2016.
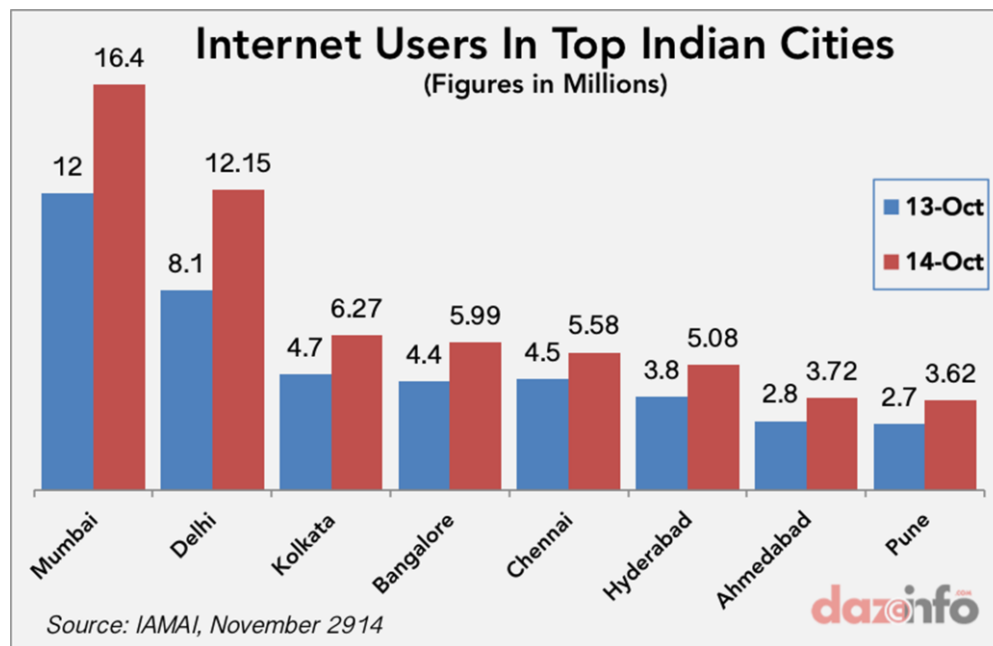
The five top cities among the smaller metros with a population above one million with the highest number of internet users are Surat, Jaipur, Lucknow, Vadodara and Nagpur. Overall, the twelve smaller metros (cities with a population exceeding one billion) have 18.67 million web users, accounting for 11% of total users in India. Nagpur has scoring the 5th position in the list.
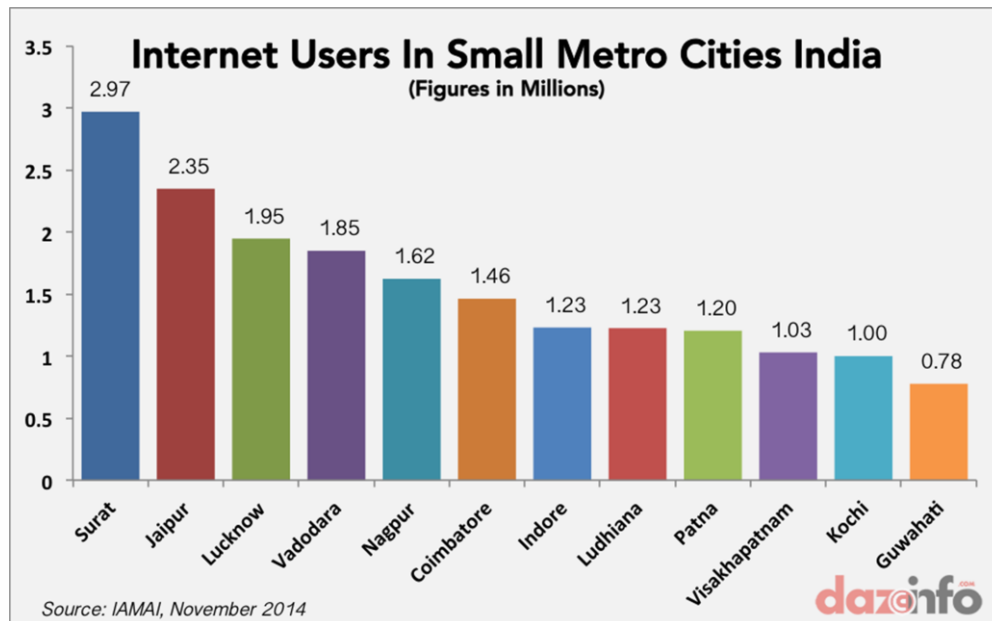
A mobile app allows hotels to accessing the whole process of room booking and getting other services, making it easier and faster for hotel guests to request hotel services. The popularity of mobile devices has led to the emergence of the so-called mobile commerce, also known as *m-commerce*. The increasing usage of mobile devices has changed the needs and expectations of customers. As more and more people are using mobile devices to get information about product and services, the mobile market has become a very effective and profitable new sales channel. With their own app, hotels can easily reach out to their guests and inform them about special promotion offers.

Hotel apps also allow integration of different communication channels, such as a direct social media connection or push notifications. This way, the hotel can keep hotel guests updated and provide them with relevant information about the property. Also, using the hotel app, guests have various possibilities to contact the hotel, and the hotel in turn can immediately react to questions or requests by guests. A hotel app is not limited to a single channel, but offers numerous channels for an improved guest-hotel communication and experience. A survey by travel company Expedia shows that 75% of Indians use their smart phone or tablet to book a hotel stay using a mobile app. This is the highest among the countries surveyed by the company, which released the findings in 2016-17. The survey was conducted online from August 25 to September 17 across North America, Europe, South America and Asia-Pacific region.

In last five years the hotel business in India grow continuously including small cities like Nagpur, jaipur, patna ext citizens can communicate with the hotel business using smart phones app. In Nagpur city there are different hotels Like Redisson Blu, Hotel Vrundavan, Hotel Pride,Airport Centre Point, Hotel Tuli International ext. book hotels with mobile app. In Maharashtra there are 11 core internet users access internet on mobile and personal computer. Mumbai is highest internet users in India.

Aiming to attract customers for the mobile apps and user-friendly mobile sites have become extremely important for hotels and restaurants. In fact, many claim that mobile apps are opening up a whole new field by enabling bookings at the press of a button, especially for same-day stays. Such apps are an easy way for customers to book a stay, get directions using GPS navigation, check hotel facilities and can even be used to promote special offers using push notifications. With smart phone dispersion reaching 10 million last year and Indian research company, IMRB suggesting that one out of three urban Indian internet user has access from a mobile phone application, the hospitality sector is eager to cash in on these latest technologies.

Jumping onto the mobile app game is Marriott International, which launched its free mobile app for iPhone and Android devices and an 'app-like' mobile website in December 2011. The mobile app gives access to its 3,900 hotels across 13 brands in 71 countries. The company currently has 16 hotels in India and four more are coming up by the end of the year. "The primary objective behind launching these new mobile tools is providing good services and customer connectivity, portability in a simple manner,"

ITC Hotels joined the list with the release of mobile application for ITC Grand Chola. Available for both iPhone and Android devices, the ITC Grand Chola, Chennai, app also provides information about places of interest around the hotel and integrates social media forums like Facebook, Twitter and YouTube. Aiming to attract customers on-the-go, smart phone apps and user-friendly mobile sites have become extremely important for hotels and restaurants. The new Marriott mobile tools enable travellers to find nearby hotels, make or cancel bookings, check-in, join Marriott's customer reward programme and even find out what's happening in the local area. With the help of Marriott mobile app some guests can book hotel at last minute because they have not any not planed in advance on the movement they decided to book hotel so it is convenient to have an app that enables bookings at the last minute. As a business traveller, most of my visits are decided at the moment and cannot be planned in advance.

InterContinental Hotels Group (IHG) has launched seven iPhone apps one for each of its sister brands. In 2010, it released a Priority Club Rewards app, to supply to its loyal users. These mobile apps are help to generate maximum revenues. According to the company data, in just over a year, the hotel group has seen nearly 1,000 per cent increase in night bookings from mobile devices. IHG hopes to raise more than $130 million in revenue from mobile bookings. The Marriott mobile web and mobile apps are bringing in 3.1 million visitors a month from across North America, Europe and the rest of the world. "Through the new initiative, we did $25 million in property-level revenue a month globally, and India gets about three per cent of that."

Users are also taking to apps that bring deals from different hotels. The Expedia Hotels mobile app for the iOS operating system has been the top travel app in more than 40 countries on the iTunes App Store. "Traveling basically a mobile experience. As more consumers use mobile devices, Expedia.com will become a personalized travel assistant that is always with you whenever you want to plan, book or enjoy travelling," says president, Expedia Worldwide, in an official release.Developed by US-based start-up, apps like HotelTonight connect guests with nearby boutique hotels. The app helps hoteliers to sell yesterday's empty hotel room to today's travellers, giving them a chance to push out a last-minute discount on rooms that would otherwise earn no money.

Hotel Tonight offers travellers three hotel options per night, starting at 12 pm and closes at 2 am, to book the room and secure the deal. Since its launch in January 2011, the app has already seen a million downloads. HotelTonight, which recognizes user's location by using the GPS feature, recommends relevant hotels as per user's location. In another two years, handsets will become the primary touch point for all major hotel chains. WinIT Software, a mobile application strategy and development company has developed a web-based platform that enables users to generate a customer connectivity for hotels and restaurants within five minutes. Users can check room availability, events and meetings and access picture galleries.

Hyderabad-based Mojostreet.com, a location-based mobile game company, has developed hospitality apps for smartphones like BlackBerry, Nokia, iPhone and Android. It has launched a free-to-download real world game that doubles up as a friend finder, city guide for hotel booking, social network and loyalty rewards app and is expecting 1,00,000 downloads by the end of this month.One stop mobile apps like TripAdvisor, Hotels.com, iXigo.com, Kayak, etc that provide deals from various hotels and resorts, are emerging as a popular option among young travelers.

For frequent travelers in different marketing company, like iXigo.com, TripAdvisor and Kayak says that these mobile apps are the most helpful apps. "These have full-featured flights and hotels search applications. Since we have a defined budget while travelling, the most useful feature for them is the ability to compare fares across multiple airlines and hotels. Travel websites like Expedia and Kayak, too, have rolled out hotel reservation apps that are expected to be the cornerstone of their broader push into mobile.

When the Ritz-Carlton hotel, mumbai launched a mobile app recently, it included a new 'travel poster' feature for selfie lovers to allow them to create their own images with special filters, titles and stamps to create retro posters of their memories and share them on social media. The chain is working on enhancing the app by the end of the year with features such as facility to place orders for food and beverages besides real-time requests through mobile phone.

A survey by travel company Expedia shows that 75% of Indians use their smartphone or tablet to book a hotel stay using a mobile app. This is the highest among the countries surveyed by the company. With mobile phones becoming the primary platform for online travel search, hotel apps no longer provide just the basic reservation facilities but are increasingly geared for growing requirements of potential guests, complete with details on destination exploration, real-time services and offers.

Travelers on the go trust on their smartphones to book last minute hotel stays, according to both travel suppliers, such as airline brands, and online travel agencies (OTAs), such as travel aggregator sites. 60% of hotel bookings made off of an OTA website with less than 24 hours between the booking and check in are conducted on a smartphone, according to the study. 7% are made via tablet and 33% desktop. For hotel suppliers, 30% of their last-minute bookings on the site are made via smartphone, 11% tablet and 59% desktop. 15% of hotel bookings off of an OTA mobile site are made via smartphone when check-in is more than 12 weeks away, 17% when it's four

four to 12 weeks away, 23% one to four weeks, 29% two to seven days, 39% for 24 to 48 hours, and 60% for when check-in is less than 24 hours away. For hotel bookings off of a supplier's mobile site, 6% are made via smartphone when check-in is more than 12 weeks away, 7% via smartphone for both four to 12 weeks way and one to four weeks away, 11% via smartphone two to seven days, 13% for 24-48 hours, bumping up to 30% for less than 24 hours away.

In general, consumers use mobile to book via an OTA more than via a supplier. Of all bookings made via a mobile site for online travel agencies in the U.S. in 2016, 32% were made via a smartphone and 8% via tablet, for a total of 40% of mobile bookings. For suppliers, mobile accounts for 18% of online bookings, 11% smartphone and 7% tablet. For all mobile travel bookings, 57% were made in app and 43% via mobile web in 2016, according to the study. Broken down by hotel vs. flight, 81% of mobile hotel bookings on an OTA mobile site are made via smartphone and 19% are made via tablet. 53% of flight bookings on an OTA mobile site are made via smartphone and 47% are made via tablet. While travel sales booked via mobile are smaller, at $52.08 billion this year, the segment will continue to eat away at desktop's share. Mobile will represent 31.0% of digital travel sales this year. That number will climb to 46.0% by 2019.Americans are also increasingly researching trips on their mobile devices. This year, 62.6% of Americans who research their travel options digitally will use a mobile device to do so, up 25.9% over last year. By 2016, 73.0% will use a mobile device to research a trip. Again, the smartphone is the device of choice. This year, 91.0% of those who research travel options on mobile devices will use a smartphone to do so, compared with 69.3% who will use a tablet.

CONCLUSION:

This article reviews that the mobile apps are increases usage in the tourism and hospitality industries in the last few years. It enables readers in general, tourism and hospitality managers in particular, to better understand the use of mobile apps for the better communication and create the good relationship within the customer and hotel industry, mobile apps are the latest tools for service providing and location finding tool, all the statistics in these research paper says that the internet users in India and global countries are increases day by day. Mobile phones are the best tools for the connectivity of the people, by accessing the mobile apps services the user can connect with the hotel services and use that services at the point of their location. By the using mobile app user can eliminate the limitations of geographical bindings, limitation of time, no need of personal involvement for booking of hotels, no need of any documentation process, so it's very hassle free tool for building the customer relationship within the hotel services and the customers.

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1.9 TO STUDY ON KEYLESS ROOM ENTRY SYSTEM IN HOTELS

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Tuli College of Hotel Management

Abstract

This study discusses the complete and realistic preparation that was delivered to the researcher in the college. The report presents how the researcher used his training on study. The researcher was trained on performing some of the major test methods. He was also exposed to exercises which involved him presenting samples. The researcher successfully applied the training and was able to not only get feedback on the specific topic since appropriate statistical analysis was applied for the methods.

The smartphone-based keys use Bluetooth technology inside the handsets to unlock the doors, and require the user to open the app and put their phone next to the panel of the door. If the user doesn't have the app or the phone, he/she can get a traditional key card from the front desk, which might come in handy if her phone is out of juice. Hotels like the smartphone "keys" because they increase guest satisfaction and the likelihood of a customer booking a room through the hotel's apps or site instead of through an online travel site such as Expedia.

Aside from the new smartphone "keys" the digital check-in also helps hotels manage their inventory because customers can tell the hotel when they are arriving, which then helps the managers schedule cleanings and figure out where to place guests. By enticing users to use the mobile app for booking, hotels get more revenue, but ensuring that they continue

using the app throughout their check-in and stay the hotel is also gathering data about the guest that helps the hotel understand usage and traffic patterns that can dictate cleaning, build guest preferences and eventually the best time to stock the mini bar. That means a better experience for the guest and more business opportunities for the hotels (Geraldine Calpin 2017).

Mobile devices have become a focus for the hospitality industry, and figuring out exactly how they are best incorporated into the hotel/guest relationship is a major topic of discussion among hoteliers.

One aspect of mobile technology that is receiving significant buzz as of late is the use of mobile devices as a replacement for traditional key cards to unlock guestroom doors. Industry research recently revealed that 64% of guests expressed a desire to use their smartphone as a room key.(innovation, smartphone)

Introduction

An **electronic lock** (or **electric lock**) is a locking device which operates by means of electric current. Electric locks are sometimes stand-alone with an electronic control assembly mounted directly to the lock. Electric locks may be connected to an access control system, the advantages of which include: key control, where keys can be added and removed without re-keying the lock cylinder; fine access control, where time and place are factors; and transaction logging, where activity is recorded. Electronic locks can also be remotely monitored and controlled, both to lock and unlock (wikipedia 2017).

Digital Key is a convenient option for hotel guests.

Digital Key is a small USB device that facilitates the launching of your website on a computer when plugged in.

It is designed to link a physical branded marketing product directly to web content by opening a URL website address.

Digital Key therefore is a tool for clients to facilitate communication with customers, and since the operation is automatic, it reduces the risk of incorrect web addresses being typed in or forgotten. Digital Key will work on virtually all computers with a USB port including PCs, Macs, Net books, Laptops and PC / Android tablets.

Digital Key delivers a memorable one-to-one interaction capable of generating powerful results and ongoing relationships. Research has shown that Digital Keys have the power to increase the response rates of targeted direct mail campaigns to over 60% (compared to typical results of 2% for standard direct mail).

Digital Keys use patented technology and are MacAfee Secure. When inserted into the computer, they take the user directly to a website without the user needing to do anything more than plugs it in. Each key has a unique ID which making every one unique (honor 2014).

This means you can track and analyses the response & behavior of users in real time. It is also possible to pre-program the end-user journey so when each web key is plugged in the landing page is personalized. You can also update the landing page for continued communication and a fresh content experience..

The product variety and customizable features means there is a Digital Key format to suit every budget. The printed card options can be personalised as can the URL landing page, making a highly tailored and targeted solution. This is what makes Digital Keys such a successful format (wikipedia, degital key 2017) (wikipedia, degital key as a tool to open door 2017).

AIM: To study on Digital Key (Mobile Device) in Hospitality Industry

OBJECTIVES

1   To know the new technology in front office department

2   To measure the acceptability of these technology.

Limitations:

1   Time, Energy, and Money, were the major constraints.

2   Study was limited to Nagpur city only.

REVIEW OF LITERATURE

WHAT IS DIGITAL KEY?

Digital Key is an option for Hilton guests to use their smartphone to open any door that would regularly be opened with a key card. Through the Hilton Honors application, guests can check-in before arrival and skip the front desk altogether.

HOW DOES IT WORK?

The option is available for every guest and is free and easy to use. Through the [app](), guests can check-in through the app and even choose a room before arriving. Where available, guests then have the option to choose a Digital Key.

On the day of arrival, the Digital Key will be available once the room is ready. When the smartphone is in range of the selected room, a signal is sent through Bluetooth to unlock the room. The registered guest then clicks on the button in the app to unlock the room. No need to stop at the front desk, just head straight to relaxation!

Digital Key offers guests an additional option to the standard key. Guests may also request a standard key at any time during their stay. Digital Key should be available at 2,500 Hilton hotels by the end of 2017, so check through the Hilton Honors app to see if you can take advantage of this option for your next stay (h. honor 2017).

DIGITAL CHECK-IN AND ROOM SELECTION

➢ **How does the room selection process work?**

At 6 a.m. the day before a booked stay, you can sign-in to your Hotel account via your mobile device, tablet or computer to check-in and choose your preferred room via floor plan maps or lists populated from the hotel's available inventory. Rooms offered through the digital check-in process are on a first come, first-served basis. Check-in time is not dictated by Hotel tier.

➢ **Which Hotel (properties) can I use digital check-in with mobile room selection?**

You can use these features at U.S. properties of all 11 Hilton brands. By the end of 2014, room selection, either from digital floor plans or lists, will be available globally for over 650,000 rooms at more than 4,000 hotels across Hilton's portfolio of 11 brands.

➢ **Which apps can I access digital room selection on?**

Digital check-in with room selection is currently available to guests using the Hilton Honors app on Apple IOS 8, Apple IOS 9, Android and Windows. We are working to expand this feature to select individual property apps, Regardless of your digital platform, you can still select a room through digital check-in directly on our website or mobile website.

➢ **When I select a room, will I receive a confirmation of that room number? What happens if I need to cancel a reservation?**

Once you have completed your reservation with room selection, you will receive a confirmation notification. The hotel's inventory is then updated in real time to reflect that your room is no longer available. Should you need to cancel a reservation, please call the hotel directly. We plan to enable in-app cancellation in the near future.

➢ **If I use mobile check-in, where do I pick up my room key?**

When you arrive on property, you simply need to go the front desk for an express check-in where your room key will be waiting for you.

➢ **Will I still get Hotel upgrades if I use the room selection feature?**

Yes – the app will grant the standard Hilton Honors upgrades we offer our Gold and Diamond members. On the day of arrival, complimentary room upgrades are based on availability at the time of check-in. Availability is dynamic and always changing, so hotels take this fluidity into account when determining if they are able to offer a complimentary room upgrade. Hotels do their best to upgrade guests as often as possible. Additionally, there are several ways to guarantee an upgraded room type prior to arrival such as redeeming Hilton Honors Points via Premium Room Rewards or Room Upgrade Rewards.

➢ **Are there plans for future digital amenities?**

Yes – in 2015, Hilton will introduce technology that enables smartphones to be used as room keys, allowing you to bypass the front desk completely. All U.S. hotels across four Hilton brands will have this capability by the end next year, and by the end of 2016, the majority of our rooms system-wide will be equipped with this functionality.

➢ **Will my data be secure using room selection or straight to room?**

All of Hilton's proprietary systems undergo rigorous testing and validation. Guest-facing systems have proven to be reliable and secure. Additionally, before new technology is deployed to our hotels, more rigorous internal testing is supplemented with certification by external security experts.

Hotel keyless room entry is arguably the most talked in hotel technology

It's a game changer. Mobile access at hotels empowers guests with the ability to bypass the usual hotel check-in process. They skip traditional procedures and can head to their room more quickly to unlock their guestroom door through contactless mobile technology.

It has the potential to improve the guest experience substantially. Today's guests, particularly those who fall within the Millennial demographic, have shown appreciation for being able to use their mobile device during travel and hotel stays, even prioritizing packing a Smartphone over a toothbrush, deodorant or even a driver's license. Research even shows that 1 in 8 people are addicted to smart phones and spend an average of almost four hours a day using them.

A major component of keyless room entry at hotels is radio-frequency identification (RFID) technology. RFID technology has become a key component in the Internet of Things (IoT) as a means of tagging, or identifying, physical objects on the IoT network. Early projections predicted that 9.2 billion tags would be sold in 2015, up 2 billion from the year before.

The smart phone-based keys use Bluetooth technology inside the handsets to unlock the doors, and require the user to open the app and put their phone next to the panel of the door. If the user doesn't have the app or the phone, she can get a traditional key card from the front desk, which might come in handy if her phone is out of juice. Hotels like the smartphone "keys" because they increase guest satisfaction and the likelihood of a customer booking a room through the

hotel's apps or site instead of through an online travel site such as Expedia.

Aside from the new smartphone "keys" the digital check-in also helps hotels manage their inventory because customers can tell the hotel when they are arriving, which then helps the managers schedule cleanings and figure out where to place guests. By enticing users to use the mobile app for booking, hotels get more revenue, but ensuring that they continue using the app throughout their check-in and stay the hotel is also gathering data about the guest that helps the hotel understand usage and traffic patterns that can dictate cleaning, build guest preferences and eventually the best time to stock the mini bar. That means a better experience for the guest and more business opportunities for the hotels.

Mobile guestroom access is also appealing because guests can use their own devices rather than the property having to provide additional hardware that guests might not be familiar with. This keeps the cost to upgrade to this technology lower for hoteliers and allows guests to get acclimated to it much quicker and easier

Things required to Access the digital key in the hotel

Necessary Technical Components

How will you present mobile card to Guest

Educate staff and management on Technology

Introduce your guest to mobile technology key

Security overview on taken resopsible precaution
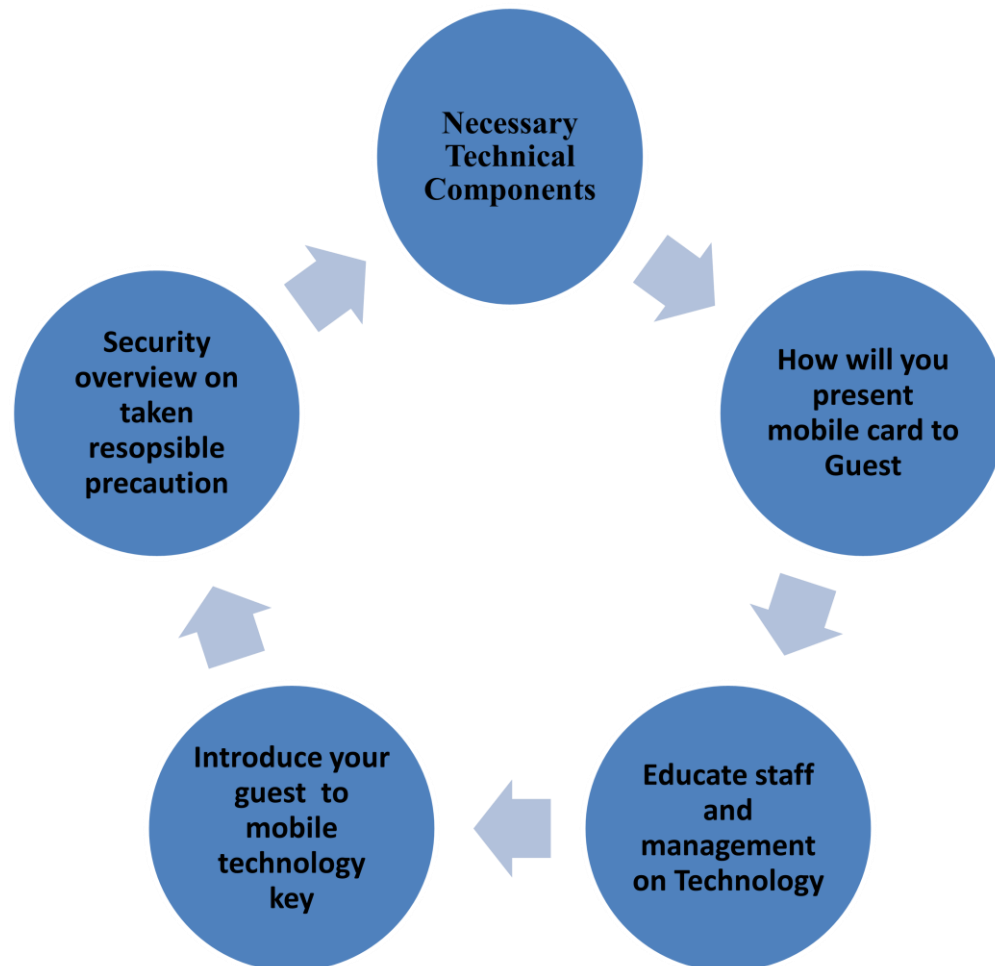
Suggestions and Recommendations

Your Digital Key opens any door you'd normally access with a regular key. This could include your room, elevators, side doors, the fitness center and even the parking garage. Open the app, and when you're within a few feet of a door, simply push the button to unlock. Of course, to use the Digital Key, you have to request access by opting in through the Hilton Honors app first.

Once your room is ready on the day of your arrival, you'll receive a push notification to your smart phone that the key has been delivered. It will then be available in your Hilton Honors app until you check out. Just make sure you've already used our digital check-in.

Of course! You're welcome to stop by the front desk at any time to pick up a regular plastic key to use with (or instead of) your Digital Key.

When you're within range of an equipped lock, a Bluetooth signal is sent between it and your smartphone. They communicate, and the door unlocks with the tap of a button. It's super secure, too.

Our technology is new, so bear with us. Right now, we can only have one Digital Key per room. If you have guests staying with you, they can access the room with a standard key

If your smartphone is missing, let the front desk know so they can take steps to ensure your Digital Key cannot be used. Your room number is hidden after you've accessed it for the first time, so if someone else finds your smartphone, they won't be able to identify the room number associated with your key. That said, we always recommend that our guests password-protect their smartphones using their device's native security features.

Your Digital Key will arrive when your room is ready. If you need to arrive sooner, we'll do our best to accommodate you. Contact the front desk and they'll assist you further.Great! We're happy to have you. Just let us know you're extending your stay and we'll send you an updated Digital Key for the additional days.

You must have iPhone 4S or later that is running iOS8 or later or Android 4.3 or later (Bluetooth Low Energy enabled phones only), have the ability to connect to the Internet and have the most recent version

Yes, but the device you use to check-in is the device you will use as your room key. So if you check-in on your iPad, you will need to use your iPad as your room key. If you would prefer to use your smart phone as your room key, be sure to use that device to check-in.

If you're having trouble using your Digital Key. We're really sorry for the inconvenience. For Digital Keys: Most new digital key users will need to stop at the front desk upon arrival to activate their digital key. Must have iPhone 4s or newer running iOS 8 and higher or an Android phone running version 4.3 or higher with Bluetooth Low Energy enabled phones.

Summary and Conclusion

"I love airline mobile boarding passes and the idea of being able to use my phone to unlock my room without having to carry a key as well" (Denielson 2016),

However, reports of keyless entry have been less than great. Keyless system works via Bluetooth. In addition to technological fails, what happens if your phone runs out of battery? You have to go back down to the front desk to get a key, and may not have your ID on hand then."

"One thing is for sure. Keyless entry avoids the issue of having my room key stop working at some point, so I'll definitely give the new keyless entry a try. However, I hope it doesn't become like the automatic lanes at the supermarket. You know, where so much money is put into the technology of self-serve lanes that staff numbers are cut and then when you want face-to-face interaction the lines are twice as long."

At least the worst that could happen seems to be that if the technology does not work, I can still go to the front desk and check in the traditional way as I always have — with which I rarely have had issues such as a long line.

Would you be interested in using Digital Key? What are your thoughts?

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1.10 EMPLOYEES ON THE "CLOUD" HIGH

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Abstract

Hospitality!! The word itself brings into mind a happy, presentable and pleasant face. A personality that is ready to serve and on the toes. Many says Hospitality is a glamorous field, yes it is! It is glamorous for the Guests and laborious for the employees. Employees who serve in hotels and run for that extra mile to serve their client and make them happier than ever before are the back bones of the hotel management system. This study focuses on the support and ease that technology is extending towards an extremely labour oriented hotel industry.

Key Words ; Hospitality, Attrition, Cloud Computing, Technology.

Introduction

The traditional practices are still a part of the industry but, have turned out to be more customer-centric. Earlier the employees used to be busy with all the technical do's and don'ts and procedures for serving the guests in more formal manner, but with time it looked more mechanical and made up. This working type didn't allow the employee explore much of the customers but made the employees be more engaged and busy doing the work related formalities. This acted as a barrier for the industry as it didn't allow the employee to be more efficient and guest friendly. This cumbersome working made an impact on employee turnover for which the industry have to invest from time and over again. The retention of employee was and still a major challenge that the industry is facing.

According to sources, attrition in the industry currently hovers at 25-30 per cent — across different levels. To check attrition, hotel companies announced considerable salary hikes in the last six months, resulting in up to 30 per cent growth in employee cost.

Being a service industry, where talent redeems the brand promise, employee cost on an average would be 20 per cent. In the last one year, that has gone up to 30-35 per cent, denting the profitability of the company in many cases.

Hotel industry only relies upon the manpower at different levels and since the industry is employee intensive, it has to take a complete responsibility to keep their employees happy and satisfied. Happy employees make a happy & engaged workplace. Studies show that employee engagement plays a vital role in business development & growth. Employees in such workplaces tend to push themselves a level up and in fact are more productive and innovative. A happy employee makes happy customers and creates goodwill too.

The introduction of technology into the industry marked a remarkable change and made the working of hoteliers much easier than earlier times. The latest Apps, Order Taking Systems, BMS (Building Management System), CMS (Complaint Management Systems), CRS (Centralized Reservation System), etc. made the working go a level high.

In the early days when businesses wanted to choose automation as a means to achieve greater productivity, they had to invest millions of dollars in complex ERP and CRM systems. These systems required complex licensing and infrastructure requirements and would often take years to roll out.

The new-age cloud-based software crushed the barriers caused by the traditional on-prem software applications. Now, what does the term cloud actually mean? It essentially means the entire Internet – A global network connecting millions of computers. So, cloud computing would refer to

internet-based computing, where different services are delivered to an organization through the internet.

Aim : To Study the role of cloud computing on employee retention in hotel industry.

Objectives :

1. To study the basic working of cloud computing.
2. To study the benefits of cloud technology at workplace.
3. To study the role of cloud technology on employee productivity.
4. To study the role of cloud technology in employee retention

Limitations :

Time constraints

Review of Literature

The hotel industry in India is reeling under a severe manpower shortage.

Currently, there are a little over a few lakh quality rooms available in the country.

Industry sources say there are over 400 projects under various stages of development with over 70,000 rooms in the next couple of years across the country.

With more and more hotel projects being announced and the room inventory expected to almost double in the next five years, the demand for trained manpower will shoot up. More than getting skilled manpower, employee retention has become a bigger challenge now.

People are prepared to hop to another hotel just for a couple of thousands of rupees more, without considering their career growth prospects and opportunities the current employer offers in the long run. Manpower shortage and attrition is the single largest problem the hospitality industry is trying to address today.

ATTRITION WOES

According to sources, attrition in the industry currently hovers at 25-30 per cent — across different levels. To check attrition, hotel companies announced considerable salary hikes in the last six months, resulting in up to 30 per cent growth in employee cost.

Being a service industry, where talent redeems the brand promise, employee cost on an average would be 20 per cent. In the last one year, that has gone up to 30-35 per cent, denting the profitability of the company in many cases.

Industry biggies such as Indian Hotels Company (that owns the Taj brand of hotels), EIH Ltd (part of the Oberoi group) and Hotel Leela Venture have reported 17 to 29 per cent increase in employee cost during calendar of past decades.

While India's government-run and private sector hotel management schools turn out a little over 10,000 graduates a year, the yearly requirement is at least three times this number.

To top it all, IT-service, retail and aviation industries too nibble at the available talent pool, leaving only a fraction of this for the hotel industry.

Mushrooming stand-alone restaurants too poach trained hands from hotels, leading to attrition.

RISING EMPLOYEE COST

Industry biggies such as Indian Hotels Company (that owns the Taj brand of hotels), EIH Ltd (part of the Oberoi group) and Hotel Leela Venture have reported 17 to 29 per cent increase in employee cost during calendar 2010. For example, the employee cost for Indian Hotels moved up to Rs. 113.37 crore for the quarter ended December 31, 2010 from Rs. 88 crore in the comparable quarter of the previous year, rising by a third. Other expenses such as raw materials, power and fuel, on the other hand, grew on an average by 12 and 15 per cent respectively

While India's government-run and private sector hotel management schools turn out a little over 10,000 graduates a year, the yearly requirement is at least three times this number.

"To top it all, IT-service, retail and aviation industries too nibble at the available talent pool, leaving only a fraction of this for the hotel industry," says Mr Menon of Marriott.

Mushrooming stand-alone restaurants too poach trained hands from hotels, leading to attrition, says Mr Natarajan.

IN-HOUSE TRAINING

To ensure availability of enough talent, ITC Hotels, for example, has increased the number of candidates for management training three times to sixty, from this year. "The idea is to have enough number of people in pipeline to meet our future requirement as we are expanding fast," says Mr Virendar Razdan, General Manager, Sheraton Park, Chennai.

Unless hotel companies have in-house training and development programmes, it will be difficult to staff their properties well, says Mr Ajay K. Bakaya, Executive Director, Sarover Hotels and Resorts. Of course, Sarover too has been experiencing attrition issues, but manages to keep the numbers low, "as we recruit people at lower level and put them through our training and development programmes and then promote them as executives. The loyalty factor works," says Mr Bakaya.

"This is not enough," says Mr Menon adding, "The industry must come together to create enough talent and groom them to be industry-ready, preferably through public private par.

Why people leave

Most employees leave their work for reasons other than money- and your organization can correct these reasons. Most leaving employees seek opportunities that allow them to use and develop their skills. Leaving employees want more meaning in their work ... they often indicate that they want to use their qualities and skills in challenging teamwork led by capable leaders.• Hourly employees notice whether they are treated with respect, have capable management and interesting work• Clerical employees voice concerns such as "type of work," "use of skills and abilities" and "opportunities to learn"• Professional employees cite concerns about "supervisory coaching and counseling," "company direction" and interesting work• Managerial staff cite "career growth" and "leadership" as the major factors that influence their decisions to stay or leave, together with "opportunities for management" "ability of top management" "use of skills and abilities" and "work/family balance" Right candidate for the right job. One important aspect of hiring is in defining the job responsibilities of the new-hire.• Do the hiring managers give adequate details on the job requirement? Are the line managers involved in the short-listing and interview process. Are the job-descriptions consistent and available to all people in the hiring process. Without well-defined job-descriptions that are available to all people in the recruitment process, it may be difficult to identify the right candidates. Most attrition happens because we try to fit a round peg in a square hole.

Primary Causes of Employee Attrition

To deal with the employee attrition it is important to be known about the primary causes of Employee Attrition.

Mismatch of Job of the person.
Lack of investment on the individual in terms of training and resources related to the Software or Tech skills.
Lack of the communication with the employee and improper add value feedback to the employee.
Better recognition or payment for the same job at a different firm.
The person is less likely to leave if the organization values the employee a lot and shows the appreciation and places one in the appropriate area of talent with proper recognition.

The first 3 points are easily controllable in comparison to the last point. The assessment based training and assessment tools are of great value to the Corporate as well as the individual's part of it.

How to Keep the Keepers and Maintain Optimal Turnover Levels

For many of the world's most admired companies, the ability to attract and retain talented employees was the single-most reliable predictor of excellence, according to Fortune magazine. And it may be the single-most important challenge of this decade.
Why care about retention? Retention is a business issue and losing one or two key people can have a significant impact on your longevity or profitability.
In the following white paper, we outline how managers can determine whom to keep, how to treat those who leave and what to do to retain those necessary to the organization.

These lessons are worth learning because:

Most organizations don't know who is valuable and who isn't
Organizations lack processes and tools to effectively restructure or downsize
It is extremely challenging to retain and motivate the survivors
Decisions must be made quickly
Processes must be humane, but risk must be mitigated as well
Resources are limited

Retention really begins in the hiring process. You hire not only for knowledge, skills and abilities, but for core values and motivation, which is often just as important as competence.

Use of Information Technology

Creating a work environment in which employees are productive is essential to increased employee productivity, their satisfaction as well as profits for any organization, corporation or small business. There is no shortage of information on ways to motivate employees, but more and more companies are realizing that there is a strong correlation between flexibility in the workplace and employee satisfaction and productivity. The concept of telecommuting is certainly not new. However, recent advances in cloud computing and collaboration software make telecommuting programs easier to implement from a technological standpoint. Concerns about cost, security, features and reliability have all been laid to rest with the introduction of hosted, Software as a Service applications. With an Internet connected computer, employees can securely access centralized data, collaborate with remote team members and host interactive web meetings and presentations. The rise of cloud computing technology and Wi-Fi availability has enabled access to remote servers via a combination of portable hardware and software. Telecommuting offers benefits to communities, employers, and employees.

How Cloud Computing Can Boost Employee Productivity

Out of all the benefits of working in the cloud, one of the biggest, increased productivity, is also one of the hardest to quantify.

A large part of that is because both the time and money saved can be more easily measured while productivity is a trickier metric to pin down.

That said, there are some very real ways that the cloud can boost employee productivity and, if you're mulling over whether to move your small business into the cloud or not, the points listed below might just tip the scale to the "yes migrate" side.

Ways the Cloud Can Boost Employee Productivity

Productivity in the workplace primarily translates to efficiency and working in the cloud can be super efficient thanks to six cloud productivity benefits.

Automation

Automation can make your employees super-efficient.

For example, if one of your employees is producing a piece of content for a client, they can use an online system to streamline the process. Here's how that might look:

1. Employee uploads the content for the client to review;

2. Client reviews and comments on the content;

3. Employee makes any needed changes and re-uploads the new version; and

4. Client reviews and approves the content.

The automation comes in between each of these steps. When your employee initially uploads the content, an email, text, or in-system notification is sent to the client. Then, once the client marks the content as reviewed, a notification is sent to the employee. And so on until the end.

In addition, if a deadline is approaching or passed, notifications can be sent so no one drops the ball.

The key efficiency gain here is focus. Working in a collaborative space in the cloud enables your employees to focus on a process or task only when they need to be involved. Otherwise, they can work on other things.

Now, you may not see much of a difference between this process and using back-and-forth email, but the next productivity benefit works together with this one to boost productivity even further.

Process Management

Many of the tools available in the cloud come equipped with features to manage your processes.

Take the content process discussed above for example. By working in the cloud, all of the content approvals are happening in the same place. By using the solution's dashboard, your employees can get an at-a-glance view of where each piece of content is in the process.

In addition, many solutions include versioning and change tracking features which help both parties know that they are working on the latest version of content. If you've ever used back-and-forth emails as your content approval process, you know how easy it can be to confuse versions and lose time doing unnecessary work and trying to figure out where everything went wrong.

The key efficiency gains here are process standardization and centralization. Every time a process is started, it follows the same steps because it's all being done within the same tool. By adding a centralized place for the work to happen, oversight is improved and bottlenecks can be quickly located and cleared.

Workplace Flexibility

If the first productivity benefit, automation, was about focusing on a process or task only when employees needed to be involved, workplace flexibility is about

enabling your employees to participate in a process or complete a task no matter where they are.

Because the cloud can run on any device with a browser, each employee can receive, and act on, notifications even while out of the office. While this is not meant to be a recommendation for "24/7 work weeks", it can help processes move forward when they need to, say during a crunch period or when an employee is traveling for work.

The key efficiency gain here is timeliness. Work can be completed from anywhere so important work does not get held up when key players are absent or on the road.

Asynchronous Collaboration

Don't be scared by the "techie-sounding" term. Asynchronous means that things happen at different times.

For example, the content approval process described above is a great example of asynchronous collaboration. Both your employee and your client are collaborating, but they don't have to be in the same room or even working at the same time to do so.

The key efficiency gain here is — again — timeliness. Once again, one party does not need to wait upon the other to participate in the process yet true collaboration, and the [benefits therein](#), is taking place.

Faster Learning Curve

Online solutions typically take less time to learn. That's because of a practice called, "web usability" which is where online solution vendors follow online standards (links, drop-down menus, page layouts, etc.) with which anyone who uses a web browser is familiar.

Offline software vendors have no such constraints and thus the design and layout of their solutions can be totally unique to their software. This leads to a steeper learning curve which means it will take longer to learn to use their solutions.

The key efficiency gain here is speed. On boarding new employees and clients to your online systems becomes both easier and faster.

Integration

With the connectivity that the cloud provides via its many pipes and networks, your online solutions can communicate with other businesses and solutions online.

This enables a whole lot of integration to take place and, with the following tools, it has become easier than ever to automate huge parts of your processes; The key efficiency gain here is task reduction. The more you can automate, the fewer tedious, repetitive tasks your employees have to do and the faster they happen.

How Can Cloud Technology Help You Improve Room Sales?

1. Simpler Management

Cloud computing has enabled the development of powerful tools capable of enhancing all-round management within a hotel, such as the [Property Management System](#) (PMS). A powerful management tool that was once only accessible to the larger companies, the PMS achieves this primarily through automation. By automating a number of repetitive tasks that used to be carried out daily by the employees, a PMS can improve the hotel's workflow while freeing up the staff to spend more time with guests. The system also allows the front-desk personnel to interact with and update the rest of the hotel's staff in real-time, so managers can prepare for any last-minute reservations without the usual hassle. This kind of improved management allows the hotel to properly optimize its resources and keep occupancy at its highest, also providing better returns for investors in the long run.

2. Fewer Errors:

Human errors, while unavoidable, have always caused hotels great distress. While it's decidedly acceptable to make mistakes, guests are not likely to dismiss any flaw in their vacation and in today's social media era, a single unhappy visitor can attract a lot of unwanted attention. The only choice the management is left with in such a scenario is to dip into the day's profits to cover the cost of upgrading the unhappy customer's level of service – a solution that can become very expensive. By automating a number of tasks and assisting the staff by providing them with useful updates on their devices, a cloud based PMS increases productivity while also lowering the odds of encountering human errors. It does this by creating an environment supplemented by highly standardized routines that put less pressure on the staff – improving the guest experience and encouraging loyalty. Over time, this enables the hotel to keep more rooms full.

3. Improved Integration:

Cloud has provided hoteliers with a variety of modern tools at an affordable cost. Hoteliers can now equip their property with distribution systems, revenue management systems, and other powerful software to gain an advantage over competitors. Cloud based software has allowed independent hotels to gain global visibility and sell more rooms by eliminating geographical boundaries. With thousands of Online Travel Agencies (OTAs) spending billions of dollars annually in marketing and promotion, tens of millions of bookings are made online every year. In addition, Cloud based systems allows hoteliers to grow with the technology – for instance, the recent onset of mobile technology could be easily implemented by a large number hotels because their service providers began incorporating these new technologies into their systems. Smartphones are now becoming an increasingly larger source of bookings and hoteliers using cloud based systems have benefitted from the increased sales.

The value of migrating to the Cloud has been gaining widespread prominence over the past few years as more and more hoteliers are coming to see it's potential. Every few months, hospitality witnesses new breakthroughs in digital technology that are further enhancing the management capabilities of systems like the [PMS](#), propelling Cloud computing to even greater heights.

By making the most of these advanced software platforms and the new-age infrastructure powering them, hoteliers around the world have been able to gain global visibility and enjoy streamlined management – privileges that were once beyond the reach of independent properties.

How migrating to cloud can help boost your Employee Morale

Happy employees make a happy & engaged workplace. Studies show that employee engagement plays a vital role in business development & growth. Employees in such workplaces tend to push themselves a level up and in fact are more productive and innovative.

The companies with a well-established cloud computing strategy are more likely to have enhanced levels of employee satisfaction than those still working on legacy systems. The employee satisfaction levels would be really high if they do not have to worry about saving multiple variations of a single file, have better access to information, are allowed to work anytime, anywhere and using any device.

We have been in this business for more than a decade now. Our clients have reported a sudden enhancement in the overall satisfaction level of their employees after their organization moved to cloud. Initially, companies do not realize that migration to the cloud and creating better accessibility and storage options will boost the morale of their employees. Here are a few things that can invariably boost employee morale:

- **Improved flexibility & better Accessibility:**

Cloud Computing allows companies to offer their employees remote working opportunities where they can work from any location, using any device and anytime. The accessibility of all the documents becomes very easy when you are using G Suite, it eliminates the need to continuously save the document (as everything's is in cloud so it gets saved automatically) and also maintains single copy of any document/sheet, which again leads to saving a lot of time sorting the most recent version of a document. This increased flexibility results in higher levels of productivity and promotes greater employee satisfaction.

- **Single Sign On:**

Single sign-on is one of the many advantages of the cloud. Organizations running on cloud usually sets this option for their employees, which provides easy accessibility to all the data and services while logging in from any device. An SSO solution can greatly reduce the number of passwords a user has to remember, which might encourage the user to choose a much stronger password. An SSO solution literally means the user has to sign on just one single time to access multiple services. It improves an administrator's ability to manage users and user configurations to all associated systems. It reduces administrative overhead in resetting forgotten passwords over multiple platforms and applications. It also provides users with the convenience of having to remember only a single set of credentials.

- **More Robust Security & Backups:**

After migrating to the cloud, the organizational data stays protected by the

best cyber security solutions along with the security your service provider offers. Everything is automatically synced and backed up, which reduces the burden of IT department as all the vital information is safe. There is no need to email files back and forth and also no struggle to find the most recent version of the document.

Experienced professionals know employee satisfaction is of key importance to keep employees engaged & committed to their roles. Migrating the business to cloud awards greater flexibility, connectivity, and accessibility to employees & in turn augment to their morale. Cloud computing comes along with enormous benefits for companies, it protects your data better by allowing various methods of storage. However, it is highly recommended that you should first consult a proven cloud service provider like Searce to determine how cloud computing can best help your company.

Data Collection

The data was collected through secondary data collection method from journals, magazines, newspapers, websites, etc. due to time constraints.

Data Analysis

From the data collected it was observed that the cloud computing is a server that gives employees a space to work with ease and comfort and indulge more with the guests rather than doing the manual work and keeping oneself busy in their own work. It gives speed to work in this busy work life and helps maintain the "Work Life Balance".

Suggestions & Recommendations

The researcher suggests that the hotel industry by large is not utilizing the scope of cloud computing and the industry should. Many small hotels don't rely and

install technologies as it include expenses but they should also bear in mind that it will only take installing the server and cut down the cost of employee turnover again and again. Also the need of setting up a separate IT department will no more be the issue.

Conclusion

Technology is generally perceived as a job destroyer. Too much of process automation through technology might also eliminate current job roles at different levels. Technology will only alter the scope of jobs and also how they are done. Right balance of technology and job skills will ensure that scope of roles change over a period of time, but they will not be done away with. Cloud computing have gone mainstream, along with the open talent economy. Companies can no longer consider their workforce to be only the employees on their balance sheet, but must include freelancers, "gig economy" workers, and crowds. These on- and off- balance-sheet workers are being augmented with machines and software. Together, these trends will result in the redesign of almost every job, as well as a new way of thinking about workforce planning and the nature of work.

Cloud has provided hoteliers with a variety of modern tools at an affordable cost. Hoteliers can now equip their property with distribution systems, revenue management systems, and other powerful software to gain an advantage over competitors. Cloud based software has allowed independent hotels to gain global visibility and sell more rooms by eliminating geographical boundaries.

Human errors, while unavoidable, have always caused hotels great distress. The only choice the management is left with in such a scenario is to dip into the day's profits to cover the cost of upgrading the unhappy customer's level of service – a solution that can become very expensive. By automating a number of tasks and assisting the staff by providing them with useful updates on their devices, a cloud

based PMS increases productivity while also lowering the odds of encountering human errors.

This kind of improved management allows the hotel to properly optimize its resources and keep occupancy at its highest, also providing better returns for investors in the long run.

The study found, **"companies that embrace the cloud are seeing above average employee engagement, workplace satisfaction, and even business growth."** "Above average" is an understatement. Using industry standards of evaluating workplace satisfaction, almost 75 percent of employees who use cloud apps claimed they're happy at work, and that happiness percentage only increased with the number of apps available to employees.

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1.11 INVOLVING DIGITAL TOKEN SYSTEM FOR CUSTOMER'S IN QUICK SERVICE RESTAURANT

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Abstract

This article presents a recent and inclusive review of the use token system in various sectors. Digital and manual research was carried using the following database Google scholar and used knowledge. The criteria for inclusion were studies that implements token system setting where academics were assessed. The paper token extensively implemented and evaluated all time. The purpose of this literature review is ease in work and no disturbance for customer while they are in restaurant or any other place.

INTRODUCTION

India has one of the fastest developing economies in the world and is also home to more than one billion people. The population density in India is the highest in the world and is expected to rise over the coming years. 70% of India's population lives in rural areas. Almost all of them depend on the public services offered by the government. Time is a quantity that is non-renewable as well as continuous. Any process that saves time and space is considered vital in many applications.

Time has to be efficiently managed. Wastage of time in a queue is always time consuming and hence the present queue management system finds its importance. The idea of the system starts with a simple thought "How could time be smartly utilized?" The proposed system discussed here employs the token number mechanism in which customers are given a token number and an LCD display is utilized to display the token number of customer to be served. This smart queue management system will take out the burden of waiting in a long queue until one gets attended.

Token display system are ideal for banks, Airports, Public dealing office, Hospitals, Restaurants, and other such places where people have to wait in line for their turn. This system allow customer to wait without having to stand in line, once there number is displayed then only they have to get in line for their turn. All models are easy to operate and maintain. Now token number display also available with automatic calling counter number. The customer had their token copy with them while they have to wait for their turn. The customer token also should like that so that if they are busy with their companion. If the customers turn are there automatic customers token should be blink, so that customer come to know that order is ready to take away. No need to customer stands in que, waiting for their order or not disturb in their personal work.

Just distribute digital tokens while order placed and when customers order is done they can return that digital token on counter and take their order back on table.

Aim: To study about Involving digital token system for customers in quick service restaurant

Objectives:

- To study about elements required for system
- To study about working of digital token
- To study about related work of token

Limitations:

- Time Constraint
- Study was limited only for Nagpur city only

- **Review Of Literature**

- ELEMENTS

- The system presented here considers the long wait of account holders in a queue for any sort of bank transactions.

- It comprises of four major elements:

- 1) A GSM (Global System for Mobile) modem.

- 2) A personal computer, which will act as a server, controlling the complete operation.

- 3) DTMF keypad.

- 4) A microcontroller (ARM7) for display and controlling the system.

- The system has been lately proposed by the IEEE to exclude a few disadvantages in the old Electricity Board system. This system enables the transfer of the EB details through the power lines in each house. In this manner, the Electricity Board office employee's observes and marks the readings in the user's house and transmits the details to the Electricity Board office in any way. The details are displayed in the customer's house by the data received from the power lines. Smart Token Bank System

RELATED WORK

Based on previous research many systems have been proposed for efficient management of queue. For example the PIC microcontroller based electronic queue control system can handle four counters and a total of 100 customers. But the customers have to continuously keep a track on the four counter displays which becomes tiring. If we had to pass some information to the customers who are waiting and selectively call any token number in case of emergencies, then there is no provision. A Novel Intelligent System For Efficient Queue Management. It is described as once the customer enters the premises of the public service centre, he receives a token number, this number is usually distributed in the form of a small plastic chip or paper. Then the customer can sit and wait for his turn to come. There can be more than two counters or even two minimum counters where a service personnel is available who operates a push button to call a customer. A sound is also produced for a short duration to intimate about the change in token number. Smart Queue Management System using GSM Technology. The flow of this system takes place on three different platforms, Server PC, Microcontroller and the GSM modem. In the entire system, the GSM modem is the hardware link. A special purpose designed VB6 code controls the overall working. The operation of the microcontroller is controlled and monitored by an embedded C code which is compiled with the Keil compiler. The microcontroller observes the room power automation and the display unit at the server end. To control the queue of the users and also to be made sure that there is truly a provision of improved service, this queue control system is used. This system is required to be allocated.

PROPOSED WORK

To develop an efficient microcontroller based Portable Queue Management System which is portable to be moved among places and is small in size is the main objective of this project.

Explanation:

1) Here, the main hardware used is ARM7.

2) There are other hardwares used such as Power Supply, DTMF keypad, Crystal oscillator, RS232, GSM module, LCD display, Personal Computer.

3) Now, for the customer to take a Smart Token by giving order for food by himself in the restaurant.

4) The GSM modem works as an interfacing element between the server machines (Restaurant) and the User (Customer).

The complete communication is carried out through SMS (Short Message Service) technology.

5) From the different end users, the system accepts SMS and alerts the user by SMS. This particular software is made and designed.

6) Then a particular time is allotted for the user. All the controlling is done. When the customer food is ready in restaurant, customers token is blinked so they can see the number given to him which is the token number and the time allotted to them on the LCD display situated in that restaurant.

METHODOLOGY

Data collection:

The researcher used the survey method for collection of data. The method used in the study in divided into two parts.

PRIMARY DATA- It include data collection from interviews

SECONDARY DATA- It includes data collection from books, other journal, websites and magzines.

CONCLUSION

This proposed system is a small step towards easing out the life. The whole pain n problem of waiting for ones turn to come in a long queue could be easily overcome by this project. Mobile phones have given a new dimension to the remote access mode of communication system. Therefore establishing a strong reliable communication link between the server and the user. This project, hence guarantees a very thorough synchronization between machine and the man. A GPRS could be connected to this system, so as to trace the exact location of the user and also calculate the distance between the server and the customer can be considered as the future scope of thus proposed system.

SUGGESTIONS AND RECOMANDATIONS

Decrease customer wait time, improve service efficiency, and increase revenue.

This token is used for corporate market like banks, hospitals, service centers

This system will offers customers freedom to move about in lobby, read advertising brochures or simply take a seat, while waiting for their turn to be served

This system offers mangers detailed efficiency report that allow him to optimize resource allocation, respond to staff work loads and provide better service to his customers

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1.12 HOTEL ACCOMMODTIONS OF THE FUTURE- TO STUDY THE IMPACT OF HI TECH ACCOMMODATIONS ON HOSPITALITY WITH RESPECT TO PRESENT & FUTURE SCENARIO

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INTRODUCTION

What is Hospitality? People serving you food and beverage at entertainment outlets whether indoors or outdoors whether alone or in a group, when you entered a theater, or Water Park, or a concierge in a five - star hotel and the museum tour guide have in common? They all work in serving which is under the house of hospitality industry. Hospitality industry is the largest industry throughout the world. It is the major source of income for majority of the countries. Hospitality is not just about a simply serving, but it involves in showing respect for one's guests, provide for their needs and wants, and treating each other as equals. Hospitality industry provides comfort to guests & has a very wide scope because nowadays guest's expectation is high. Quality is perhaps the most variable feature in hospitality industry.The field of hospitality encompasses travel, tourism, restaurants, and recreation. There are some advantages and disadvantages for every business and staff. Same is the case with hospitality industry. Hospitality industry has a very wide scope and tourism is an intricate part of it.

Tourism is a social, cultural and economic phenomenon which involves movement of people to countries or places out from their usual environment. The purpose of their movement might be personal or Business/professional. These people can be tourists, excursionists, residents or non-residents, known as visitors and tourism have to do with their activities they produce. Some of the activities they involve in imply tourism expenditure, for example, accommodation they use or food. In their travel, accommodation provides the

therefore, travelling will be incomplete in absence of accommodation. All different forms of accommodation services offer different levels of facilities and services. Due to the versatility of its services provided different forms of accommodation are assessed in different ways.

AIM

To study the impact of hi tech accomodations on hospitality with respect present & future scenario

OBJECTIVES

- This study focuses on the accommodation facilities in the tourism industry and the impact of technologies in the present scene of accommodation.

- This study focuses on the accommodation facilities in the tourism industry and use of technologies in the present scene of accommodation.

- To find out how the technology is directly or indirectly influencing accomodation.

- To find out how luxuries in accommodation sector are responsible for a sustainable accomodation development globally.

LIMITATIONS

- Time constrains

REVIEW OF LITERATURE

The Yotel, New York

A robot concierge waiting politely to take your luggage, personalized mood-lighting at the swipe of an i-Pad and virtual postcards. This is just a taster of what's on offer at the world's most hi-tech hotels.

Novotel München Messe, Munich

Here, guests are not only welcomed by a real concierge, but also a virtual one. There are impressively large touch screens distributed around the hotel, offering accessible information on local attractions, weather and flight information. Guests can even send a virtual postcard at the tap of a button.

Yotel, New York

Self-service kiosks greet guests at this New York Hotel. In the mean time an automated robot, known to the staff as amicable YOBOT, will help you with your luggage and stow away your valuables in a safe deposit. Bedrooms come equipped with techno walls that have the ability to stream audio, super strength Wi-Fi and air conditioning is activated by motion sensors.

Eccleston Square, London

While the exterior of Eccleston Square emanates history, technology is at the heart of this hotel and is reflected in the extensive list of techno-amenities. Rooms are equipped with touch sensitive keypads to control music and lighting, an in-room iPad which doubles as your personal concierge, shower walls that turn from clear to frosted at the touch of a button and flat screen televisions concealed within bathroom mirrors.

W Taipei, Taipei

W Taipei is located in the hub of cosmopolitan life, right in the centre of the vibrant Xinyi district. It boasts state-of-the-art technology with large LCD flat screen televisions, modern sound systems as well as some of the suites offering video projectors.

Blow Up Hall 5050, Poznan

An enormous digital art installation captures guests entering this hotel and then projects the image back in a series of stylised surveillance shots. Instead of room keys guests are handed iPhones upon check-in that use digital recognition to navigate users to the correct room and unlock the door.

Each of the rooms in this Hamburg hotel has a hi-tech music lamp that allows guests to listen to music via Bluetooth, recharge mobile phones or make phone calls as well as a flat screen television. Business travellers may also benefit from the Work & Surf Station and the digital newspaper kiosk.

Abadía Retuerta Le Domaine, Spain

This hotel, 120 miles north of Madrid, is the first hotel in Europe to offer Google Glass – free – to guests. Annie Bennett who visited Abadía Retuerta Le Domaine earlier this year, was surprised at how easily she could take photos and make videos.

If you haven't come across it yet, Google Glass is a spectacles frame without lenses but with a clear plastic, rectangular prism mounted on the right-hand side. This prism forms a virtual screen on which you can access the internet, just like on a smartphone or tablet, only with a roll of your eye rather than the stroke of a fingertip.

Hotel 1000, Seattle

Built-in infrared detectors alert housekeeping staff as to when a room is occupied, thus avoiding any unwanted post-shower encounters. Hotel 1000 also has a fully converged IP infrastructure that allows guests to choose their own room temperature, artwork and music.

The Peninsula Hotel, Tokyo

No hi-tech hotels list would be incomplete without a representative from Japan. Guests at The Peninsula have access to an electronics service department if they run into difficulties with gadgets that include a nail polish dryer, unlimited internet radio with over 3,000 stations, a mood lighting pad and wireless phones with Skype capability. Also, the hotel is currently offering children who stay a digitally-interactive Pokemon treasure hunt, brought to life by augmented reality.

Citizen M, Amsterdam

Check-in is also automated here at Citizen M, with everything done through a self-serve computer. Each of the rooms comes equipped with its own 'Mood Pad' allowing guests to navigate the lighting, temperature, curtains and television to create the perfect ambiance.

Mama Shelter, Paris

As well as being very chic, each of the rooms in this hotel is fitted with an iMac entertainment system. This allows guests to watch television, free movies on demand, listen to the radio, connect to the internet and use Airplay and Skype.

A recent HRS 'Hotel of the Future' survey revealed that smartphones, tablets and corresponding apps are becoming increasingly important when planning a holiday.

Hospitality products such as guest rooms, beds and meals; service is also crucial. Regardless of their role in the operation, all employees must do their part to ensure that each guest's needs, preferences, and expectations are met and satisfied.

The accommodation sector, and the hotel sector in particular, encompasses mult
The accommodation sector provides much more than tangible business models
caters to hundreds of thousands of tourists. A smaller but important segment,
major step of revolution in incorporating the technology to influence the guest
take the pleasure of hi tech accommodations so as to boost up the creative and
imaginations to use up the existing technologies and bring or device up the
ones as we all know that technology is an ever evolving segment all over the
world.

As broader societal trends continue and morph, they will continue to impact
the accommodations marketplace and consumer. Owners and operators must
stay abreast of these trends, continually altering their business models and
services to remain relevant and competitive.

METHODOLOGY

The researcher used the survey method for collection of data.The method
study is divided into two parts.

PRIMARY DATA - It included data collection from interview method.

SECONDARY DATA – It includes data collection from books related to the
topic, websites tec.

INTERPRETATION

The findings showed that 42 per cent of guests from the UK would rather
operate their hotel room's lighting, air conditioning and television via a
display instead of using a separate remote control or switch.

Jon West, managing director for HRS UK and Ireland, said: "As the fast-
paced high-tech world finds its way into hotels with tablets instead of guest
folders, smartphones instead of room keys, and apps instead of remote
controls, the findings show that the hotel industry quickly needs to adapt to

the new user behavior of many of their guests or risk falling behind."

Premier Inn has unveiled a new room concept which allows guests to control lighting and entertainment using a mobile phone app 'the rooms' – aimed at those who value "location, price and design" over size – will be the most "space-efficient and digitally savvy" in the country. Each will feature an en-suite bathroom, wardrobe, desk, bed, free Wi-Fi and a 40" smart screen television, all contained within 11.4 square metres.

Guests will be able to control lighting and room temperature using a mobile phone app. They will also be able to pre-order breakfast, and even change the television channel so their favorite programme is on when they arrive.

Check-in will also be done online, limiting contact between guests and staff.

SUMMARY & CONCLUSION

A professional hospitality industry must always keep updating according to the needs and wants of the societies. Success in the hotel industry always relies on catering to the needs of the targeted clientele. Besides, providing a wide variety of services and pleasantness desirable atmosphere will always drive the hospitality industry into a large, multi - faceted and diverse industry. The main component in hospitality industry is all about dealing with customers and lead to the satisfaction of the customers in every service provided since the yore days.

Majority of lodging facilities in the world extend from tiny bed and breakfast meal to the latest development, to megaresorts.

Essence of a successful set of business operations means the successful exchange of products or services for value. In a set of business, it's a chain of supply with demand. Luxury hotels are selling their suite and other kind of facilities in the hotel to the guests which provide their demand. Supply and demand is the point where profits are earned in a business. Product and

services in a service industry like lodging, is a holistic concept. It consist of tangibles like hotel type and physical amenities and intangibilities like services provided by the lodging staff. Customer wants and needs are always changing and varied. As customer are becoming increasingly demanding, hotels must be designed and created to be more responsive and effective in order to achieve different travelers needs and wants.

A failure management will just slow down the running process in a hotel daily example luxurious accommodation establishments place emphasis on their serv provided and the image of facility in order to secure business

SUGGESTIONS

Suggestions on how to increase productivity

- Have a dependable channel of communication for employees and management. For example, Whats App and e- media can help both small and large hotels become more efficient by creating message groups for each hotel or department. Hotel employees can then relay guest needs and actionable items to all staff within moments, saving time and improving guest services while keeping management informed

- Use Hoot suite to schedule social media posts ahead of time. Although social media is best done "live," this pre-scheduling tool will help you maintain a consistent presence during the times when you're too busy to post

- Move property management to the cloud. Platforms like Base7 are intuitive to use and operate from the cloud, making them accessible from wherever you are and from any mobile or desktop device.
- Cut out the junk. Unsubscribe from email clutter and subscribe to only the most informative hospitality news websites for the latest

- news, analyses, and tools that will help you grow your business.

- Outsource if and when possible. A hospitality professional can't be expected to also be a professional accountant, marketer, website designer, photographer, and maintenance person as well. Save time and hire an expert. This is often the most affordable option in the long run, too.

RECOMMENDATIONS

- Get inspired every day by doing something you love. Is it a morning swim? Maybe it's listening to music, or browsing design hotels online for décor ideas. Whatever it is, when you're enjoying yourself, your productivity level rises.

- Invest in a high-speed Internet connection to avoid long loading times when you're online working with your hotel images, processing bookings, or monitoring bookings. Your guests will also be thankful for the high-quality connection.

- Find your time of day for getting office work done. Instead of just sticking to conventional office hours, identify what time of day you work best and schedule your main to-do's, such as updating your online hotel profiles, then.

- Have an in-room "cheat-sheet" or "A to Z" book that answers your travellers' most common questions before they come to the front desk to ask them. Include Wi-Fi connectivity details and breakfast information. Have a pool? Include the hours of accessibility. Want to go the extra mile? Let guests know what is nearby in terms of food, drink, and unique attractions.

- Encourage guest reviews via in-room and in-lobby signage. This will save you time, as you'll no longer have to send individual emails to see an increase in feedback online. If you're good at what you do, this will help you <u>improve your hotel's online reputation</u> and encourage more bookings, as seeing recent reviews helps travellers feel confident about their hotel choice.

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'Hotel of the Future'

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1.13 SOCIAL MEDIA MARKETING - THE CURRENT AND FUTURE TRENDS IN HOSPITALITY AND TOURISM

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Introduction

With the increase in the number of internet users the use of social media has grown over the past decade. And the usage has progressively grown from individuals to businesses. Many organizations today proactively use social media as a vehicle to reach out to millions of prospective and repeat customers. Businesses in the service industry, such as hospitality, that engage in constant communication with guests are drastically changing their marketing strategies by choosing this new age interactive media over traditional practices of marketing and public relations. This paper will take into account the effects of social media on hospitality marketing strategies from the perspective of a consumer. Traditional internet sources of marketing information were compared to web sources that included customer blogs. Blogging is one of the most important social networking tools, and the Travel and Tourism Industry today has discovered that blogs have not only positive impacts but also negative ones if not managed properly. As blogs become more and more popular as a social media tool, knowing how the blogs can influence consumer decisions can definitely help the hotel managers make competent decisions regarding the use of social media in their marketing strategy. Even though social media is a relatively new media, its worldwide popularity is undeniable. According to com Score (2008, 2009a, 2009b), social media reached a penetration of 70.2%, 74.6%, and 60.6% in the United States, Europe, and Asia-Pacific respectively. Today, it is not a good idea to rely only on traditional media for marketing, nor is it acceptable for companies to just move offline sales materials to online. Companies should

and create an online distribution channel (Chan &Guillet, 2011).

Statement of objective

The intent of this study is not to quantify how many hospitality businesses actively use social media, rather it is to explore the areas and functions these businesses use social media for, and understand how consumers perceive these new vehicles of communication. The study will bring out a consumer's perspective of the advantages of social media and future trends in it.

Constraints

The main limitation of this study is that it is only from the perspective of a consumer and from secondary data analysis of the literature review. Since no primary data is collected from any of the hospitality businesses, this study may not be able to indicate any quantifiable or tangible gains that they enjoy from choosing social media over traditional marketing methods.

Review of Literature

The World Before the Internet – The Past

Milestones of Technology

This is a world where we are wilfing and keep us tweeting busy. We upload selfies on an everyday basis, create blogs but sometimes it is too long; didn't read. (Oxford 2013.) Technology and Internet have changed language, dictionary and lifestyle. Now it shapes the way we live, work or think. But there has been a world existed before the Internet emerged and today's life is a result of a very long journey that started centuries ago. The first technological achievement – the first milestone in the history – was Gutenberg's work on the printing press (1450). It made information available for a wide segment of the population and also made it spread quickly and easily. It became the achievement of preservation of knowledge; it introduced the "information revolution" like Internet today. (Kreis 2000.) We

are all grateful to I. Manzetti, A. Meucci, J. P. Reiss, E. Gray, A. G. Bell and T. Edison for their precious work on the forerunner of the telephone (1876) and then to the Hungarian inventor, TivadarPuskás for inventing the actual telephone (Kante 2014). The emerge of the telephone had an effect on the communication as well as the society. It became a useful tool in homes, business life and in the education. The invention of the telephone helped develop city centres and office buildings. It replaced the position of the messenger boys, telegraphers and operators. It made the world smaller and helped to keep family bonds together. (Kang 2013.) As an interesting fact: the word "computer" was used first in 1613, although it meant something else like today. It described a human who completed calculations and computations (Computer Hope). However the product what we call computer recently was invented in 1950. It was able to store information and run a program from memory. Afterwards, the computer technology speeded up and developed constantly. New word added to Oxford Dictionary in 2013, abbrev. Means" too long; didn't read". According to Kante (2014) CompuServe was the first commercial Internet provider in 1969. The first email was sent in 1971 and the World Wide Web was provided to the world twenty-two years later. These data was collected from United States; Internet itself became a known phenomenon in Hungary in 1995 (26 years later) for instance (Social Daily, 2010) and became popular in education in 1998. However there are still countries around the world where the Internet is restricted or imposed prison penalties for anti-government manifestations (e.g. Turkmenistan, Vietnam, Tunisia or Cuba) and all the Gmail and Yahoo sites are constantly monitored. (Lilkty 2010.)

Technological Improvements in the Hospitality Industry –

Long Ago An article from 1995 (Hansen & Owen) predicts that technology achievements are going to be used in future hotels. They write about smart cards what the customer could use as a hotel room key and also mention future kiosks that will make possible the easy and timesaving check-ins in hotel lobbies. Database marketing (segmenting customers and making further

profile improvements of frequent clients etc.) was a future trend twenty years ago and now these are all standard tools in the day-to-day operation in hotels. These are not just facts but also great proofs that the future is predictable. All these "new" achievements had the same goals twenty years ago: reducing the general and administrative expenses as well as staff requirements. The importance of the Electronic Distribution became significant already in the 1960`s. The opportunity was given, so hotels started to follow the airlines' system and already in 1970's travel agents, airlines and hotels were electronically connected. (Riesselman 2011.) Eight years later the first computerized bulletin board appeared which was the forerunner of Facebook and LinkedIn. However, doubts have arisen regarding technological changes: travel agents were not sure that computer is a more efficient communication channel than the telephone but gradually it became more popular in the hospitality industry. Afterwards all hotel wanted distribution systems but on a different way, thus it caused a massive inconsistence. This is the reason why HEDNA (Hotel Electronic Distribution Network Association) was founded in 1991, which is one of the most popular global forums by now. HEDNA improves and expand hospitality distribution through co-operation and knowledge sharing (HEDNA). Electronic Distribution is still developing and direct connects have a remarkable role thanks for the social media and mobile devices. Technology has changed everything – said Michael Murphy ("a hotel industry veteran") in an interview with Jeff Higley (2013): "Guys that would apply for franchises might sit in their cars all night counting cars at their competition to see if there was a need for another hotel." Today we have computers and apps, which easily give us the answers by saving time, money and energy.

Mobile Device & Social Media Growth

Globally, the number of mobile device subscriptions has seen exponential growth over the past decade. At the end of 2016, there were 4.8 billion unique mobile subscribers—65% of the world's population. By 2020, it is estimated that there will be 5.7 billion mobile subscribers, representing a

mobile phone penetration rate of 73%. The growth in mobile device usage has transformed the travel and tourism industry; travel bookings are increasingly occurring through mobile devices. Consumer engagement has begun to shift towards mobile platforms, and rightfully so; the vast reach and worldwide interconnectivity of mobile devices make them a suitable platform for commerce. As mobile device penetration rates strengthen globally, consumer engagement through this platform is only expected to strengthen.

Today, digital consumers are spending more time on social networks and messaging platforms than ever before. It is thus important for hotels to have a brand presence and a marketing effort on social media channels, especially since social media marketing has been proven to be more effective than traditional marketing (when utilized correctly).

Popular social media networks—Facebook, Instagram, Twitter, and Snapchat—are steadily growing on a global scale. The following chart shows the number of active users over time on each of these social media networks.With the rapid growth in these social media channels, the pool of potential consumersis directly accessible through marketing on these channels.
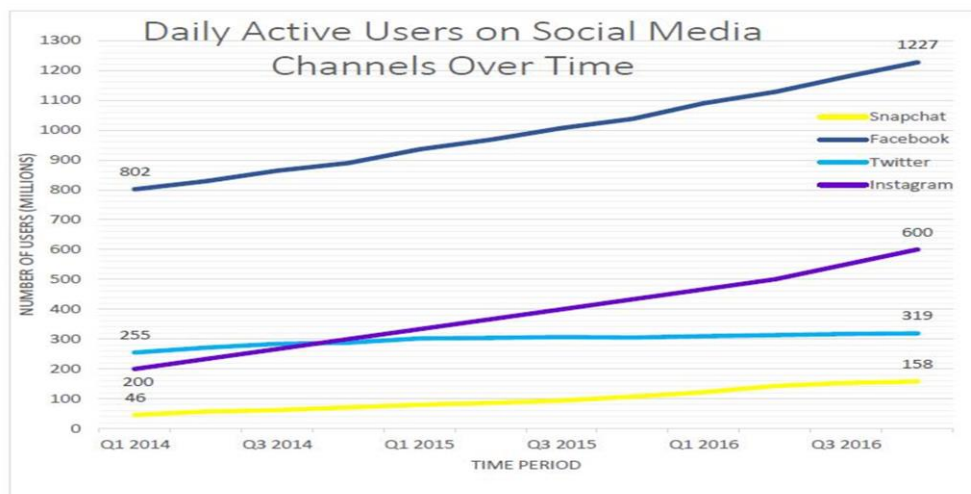
(Source: Facebook Inc., Instagram Inc., Twitter Inc., Snap Inc., 2017)

New Opportunities from the Rise of Consumer Sharing

Digital media is ever moving towards greater consumer empowerment and content creation given the ease with which digital media (particularly photos and videos) can be transmitted through mobile platforms and the internet. As part of sharing their own content and experiences through pictures and videos, users are also spreading digital word-of-mouth about a brand, a product, or an experience to their personal networks, which can reach a substantial audience. Geo-locational tags and brand hashtags allow user posts to be found via metadata searches, thereby increasing the reach of such posts. Hotels can capitalize on this trend by motivating consumers to use branded hashtags or specific hashtags that are relevant to a current promotion or event. For example, Starwood hotels launched a campaign in 2016 to encourage the #SPGLife branded hashtag on Instagram. Posts with this hashtag feed into the Starwood website's guest gallery of user-generated content, where visitors can also book a hotel room directly via a link. A simple hashtag is effective because it allows users to easily discover related content through a search filter.

Opportunities for Personalization

Personalization through the mobile phone ecosystem and social media platforms is constantly evolving. Personalization can occur on a broad level, such as an interaction between a brand's social media channel and a consumer account, or on a more granular level, such as communication between a hotel guest and the hotel's guest services team through a messaging application. From an advertising standpoint, several social media platforms have launched dynamic advertising whereby a consumer's recent travel searches will trigger personalized advertisements, which present a touchpoint for possible consumer conversion (by a direct hotel booking, for example). This represents a critical opportunity for hotel companies, particularly since the use of online travel agents (OTAs) diminishes the

profitability of a hotel.According to the American Marketing Association, the average consumer is exposed to up to 10 000 brand messages each day.

Premier Hotels & Resorts' group marketing manager Christa Badenhorst shares five forecasts for the year ahead:

Personalization – using customer data to analyze, segment and target marketing efforts - is key to cutting through this clutter. A number of hotels have taken this one step further by personalizing aspects of the guest experience to set themselves apart from their competitors.

Video is the way to go

With the Digital Marketing Institute revealing that 51.9% of marketing professionals worldwide pin point video as the type of content with the best return on investment (ROI), in addition to 43% of global internet users wanting to see more video content from marketers in the future, it's not surprising that this tool will be increasingly used in 2018.

Video marketing offers a powerful way to tell a brand's story, unpack its value proposition and form relationships with potential and existing customers. There is also a myriad of video marketing options to choose from such as pre-roll ads on YouTube and explainer ads on a brand's own website.

Messaging apps on the up

Globally, the number of people using mobile messaging apps is expected to increase from 1.82 billion in 2017, to 2.01 billion in 2018.

With more and more people using apps like Facebook Messenger, WhatsApp and Snapchat, marketers are following suit to raise brand awareness, distribute content, advertise, generate leads, drive sales and conduct customer service.

Embracing artificial intelligence

Artificial intelligence (AI) enables marketers to use user web-browsing behaviour information in their marketing efforts.

Now that AI tools have become more affordable and accessible, more businesses will be utilising them to enhance pay-per-click ad campaigns, suggest social media content for better engagement, provide a highly personalised experience to website visitors and enable customer support via chatbots - to name but a few capabilities.

Marketing gurus say brands that delay using AI-powered solutions in their content marketing will be left behind.

New social media marketing stars

Instagram and LinkedIn are set to be the go-to social media marketing platforms in 2018.

With a report by marketing software companyTrackMaven revealing that brands tend to see better engagement on Instagram than on any other social media platform, many marketers will be moving their social media spend over.

In addition, LinkedIn's site-wide revamp that refreshed the user interface and improved its ad functionality - together with marketers moving away from Twitter due to lack of user growth and issues with its ad platform - will make it the top option for B2B marketing

Conclusion

For hoteliers to remain relevant in this dynamic field, it is essential to understand the pulse of current technology trends within the hotel industry, and be prepared for changes in consumer behavior. These are just trends. They may just be developing and becoming more common or they may

completely cease to exist altogether. The final results may vary depending on a lot of significant factors, but barring a major, history-altering event, organizations that employ a proactive approach relative to these trends are in a better position to become more competitive in the hospitality industry.The mass market is inexorably moving towards the adoption of digital payment; its anticipated convergence with social media and messaging platforms will generate new opportunities for personalization, engagement, and conversion.

Social media is so powerful it can it can bring down governments and political careers it's silly to think it can't topple a hotel chain. If a hotel guest is dissatisfied, he or she can easily complain on Facebook, Twitter, Yelp or TripAdvisior. One bad tweet and you can say good bye to millions of dollars in profit, if not the entire brand.

On the other hand, social media done right and well can turn your brand into a more profitable one. Many hotels are capitalizing on popular guests' (not necessarily showbiz personalities, but those with a substantial number of followers) reviews and tweets on their websites and Instagram photos and Snaps.

A study said that in 2014, 70% of users who travelled were influenced to a degree by travel content on Twitter. Furthermore, an astounding 60 million tweets are said to have mentioned hotels. In perspective, only 21 million tweets mentioned holidays.

Social media is also a good avenue to reach out to customers and earn their loyalty and trust. Engaging with customers and responding to their needs through these public forums help maintain positive guest relations and drive future bookings.

Today, there are maybe six or seven really good social media channels for self-promotion. Soon, there'll be more, and you have to take advantage of every single one. Once word gets out that your hotel's social media account is helpful and prompt, you're as good as fully-booked.

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1.14 COOKING WITH SOLAR ENERGY AT SHIRDI MEGA KITCHEN

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Abstract

Energy has become the utmost necessity of our life. It is required from dawn to dusk to fuel the world. Energy is scattered everywhere around the Earth. Man has always desired to capture it and use it for mankind. One of the most important sources of energy is solar energy. Several methods of capturing solar energy and its usage are practised. The intensity of solar rays is immense and ways are still being discovered to harness the full potential of the rays. Focussing the rays to a point will cause generation of heat. Transferring the energy towards cooking is one such method. Usually a solar cooker is a device that is placed in the open ground under direct sunlight. This causes inconvenience to the users. Recent developments are in progress to make it possible to cook under shelter harnessing energy from the solar rays.

There is extensive potential in the solar rays yet to be harnessed. The existing methods, apart from being inefficient in transferring energy, it fails to store the heat effectively. Introduction of Phase Change Materials (PCM) has done the trick of harnessing sun's energy to cook. By doing so the heat energy storing efficiency is increased and thereby effectively increases the process of cooking. With prices of LPG elevating, using this method proves to be cost effective and energy conserving. Unlike induction stoves, the residential solar cooker uses energy from the solar rays and is cost effective. In the absence of sunlight, the PCM setup still increases the efficiency of heating the utensils.

This paper presents a short review on different types of solar cookers. Several attempts have been made to introduce solar cookers in different countries and have achieved asymmetrical successes. There are still critical issues so far to be resolved in order to make the technology acceptable for wider propagation. They include getting the most appropriate types of solar cookers for specific locations, optimum size/capacity, types of materials to be used, optimal design and affordable cost. In an attempt to resolve these issues, a comprehensive study involving theoretical review, development work, experimental testing and evaluation of solar cookers was conducted for several years on different types of solar cookers. This paper throws light on features, limitations and feasible applications of different solar cookers. This helps the consumer in selecting most effective and appropriate solar cooker.

INTRODUCTION

Solar cooker is a device that cooks food using only sun energy in the form of solar radiation. The solar cooking saves a significant amount of conventional fuels. The solar cooking is the simplest, safest, clean, environment friendly, and most convenient way to cook food without consuming fuels or heating up the kitchen.

A major concern of today is the rapidly depleting natural resources. So it is the urgent need of time to reduce the dependency on non-renewable sources, judiciously using the remaining sources and at the same time switching to new and better alternatives and renewable source of energy.

In most parts of India, solar energy is available almost throughout the year and can be used as alternate input to meet out energy needs. Solar energy is the cheapest, inexhaustible and can be used for various domestic and agricultural requirements including cooking, drying, dehydration, heating, cooling and solar power generation .

Solar cookers have a long history dating back almost 18th century when Nicholas-de-Saussure built first ever Solar Box Cooker. Today there are about 60 major designs and more than 100 of however the solar cooking has

not caught the imagination of peoples, except in places where shortage of conventional fuel like fire wood and the like is acute.

Aims and Objectives

1. Implementation of solar powered kitchens in residential / Mega kitchen buildings

2. Preparation for increasing energy efficiency and renewable energy supply in the Urban city.

3. Incorporating Solar Tracking technology to facilitate mirror orientation thus maximizing solar energy capture to setting-up institutional arrangements.

4. Comparative Analysis of Environmental Pollution Safety thus reducing Green House effect causing global warming.

Review And Methodology

Cooking Energy Scenario in India

URBAN SECTOR RURAL SECTOR

• LPG (47.96%) - Firewood (64.10%)

• Firewood (22.74%) - Other sources of biomass –crop residue (13.10%)

• Kerosene (19.16%) - Cow-dung (12.80%)

• Other fuels(10.14) - LPG (5.67%) is now Increasing in importance.

Solar cookers have attracted the attention of many researchers so far. Different types of solar cookers have been developed and tested all over the world. Today, there is challenge to manufacturing and evaluation of efficient and cheap solar cookers. There has been a considerable interest recently in the design, development and testing of various types of solar cookers.

The present day solar cooking promises in our expense. It could promise future technology when it comes user friendly. the usage of solar cooker is

not predominantly found everywhere because of its seasonal changes.

The intensity of the solar rays is unpredictable and often plays truant during rainy and winter seasons. The harnessed energy is transferred and poorly stored. This reduces the overall efficiency of the device. The time required to cook the food is increased because of lacking in heat storage.

To overcome these major problems, a new design has been devised to heat efficiently using the sunny days and as well as the other dusky situations. This device not only transfers energy efficiently and stores it for continuous usage. The PCM material layered around the vessel stores heat effectively and heats up the vessel. This helps in reducing the fuel consumption to a greater extent during non-sunny days. The harnessed energy is not liberated thus assuring fast heating process.

EXISTING SYSTEMS

A. Box Cookers

Box cookers are the most common type made for personal use. They consist of an enclosed inner box covered with clear glass or plastic, a reflector, and insulation. There is a wide variety of patterns and plans that can be adapted to work with available materials. While they do not heat quickly, they provide slow, even cooking. Box cookers are very easy and safe to use, and fairly easy to construct.

B. Panel Cookers

Panel cookers are flat reflective panels which focus the sunlight on a cooking vessel without the inner box common in box cookers. Panel cookers are the easiest and least costly to make, requiring just four reflective panels and a cooking vessel, but they are unstable in high winds and do not retain as much heat when the sun is hidden behind clouds.

C. Parabolic Cookers:

Parabolic cookers reach higher temperatures and cook more quickly than solar box cookers, but are harder to make and use. Parabolic cookers require more precision to focus the sunlight on the cooking vessel. If the sunlight is not focused exactly on the cooking vessel, the food will not cook. When the parabolic oven is used, the temperature must be watched so the vessel does not overheat, burning the food. The risk of burns and eye injury is greater with homemade parabolic designs. While they provide excellent results when used correctly, they are not easy to build at home and require great care to use.

DESCRIPTION

Cooking is vital and it has to be done in all places. Energy required for this operation is only from either LPG or electricity. Troubles will be faced in the production of both LPG and electricity. The effective cooking is also done by the alternative resources like solar energy which is explained below. The intact unit consists of vacuum tubes, phase change materials, cooker surrounded by the jacket, small tank, insulated tubes and parabolic collector. The system is designed with the assumptions of 5 persons in a domestic house. Vacuum cube is taken and copper tubing's is done inside it. The intent for choosing PCM is that it has superior latent heat storage. The volume of phase change material is calculated. According to the pondered volume, phase change materials are crammed into insulated cubical box. The cubical box is chosen as it has lower value of surface area to volume (SA/V) ratio compared to other standard shapes. Hence heat loss will be minimum at the night time. The copper tubes are placed inside the vacuum tube which is bent for greater surface contact and to enhance the better heat transfer and water is promulgated inside the copper tube. This entire setup is positioned in the point focus of the parabolic collector.
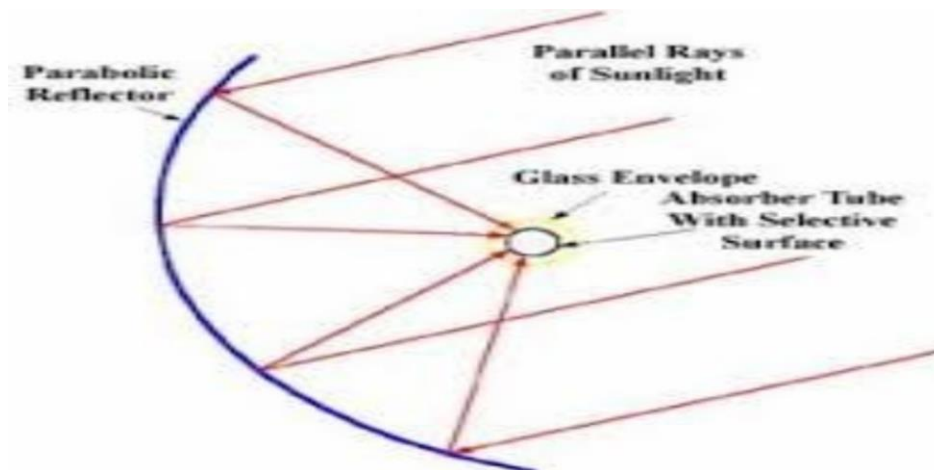
WORKING

The entire arrangement works by utilizing heat from the solar irradiation and the efficiency relies upon the effective ways which harness the full potential of the sun. The parabolic collector is selected for the rationale of obtaining point focus in it. The parabolic collector reflects sun rays and converge it into a point where the vacuum tube packed with phase change material is positioned. Copper tubes are mounted inside the phase change material.

The water as a working substance is circulated inside the copper tube which absorbs the heat extracted by the vacuum tube. In between the vacuum tube, cube of PCM is located which is well insulated from the surroundings which also plays effective role in heat transfer. Hot water is transferred to the cooker by insulated pipes to eliminate transmission heat loss. Due to the solar irradiation, water gets heated up in step by step process. since preheating is done in the first parabolic point solar collector,its is passed through non radiating pipes towards the second parabolic point collector to acquire required temperature as shown in layout Figure[3]. This hot water is made circulated through the jacket in the cooker. The small tank is sited next to the cooker for the condensation of the wet mixture of water vapour. A pump is used to drive the system of fluids. A valve is fitted for the adjusting of mass flow rate of water. This mass flow rate will controls the cooking temperature. If the mass flow rate is higher, it obtains lower cooking temperature and vice

versa. This system surely meets the demand of LPG and power consumption and it also reduces pollution.

CALCULATION

ASSUMPTIONS:

1) It is assumed that 7L cooker is suited for 5 people in a house

2) The cooking food is considered to be water

3) The location for cooking is chosen to be Madurai, Tamilnadu, India

4) It is assumed that maximum final temperature of the food is 130-150C

5) Parabolic collector to be designed for PCM to attain maximum temperature of 160C

6) Optimum melting point of PCM is 120C

7) Time required to cook food during night time is assumed to be 1½ hours

SHIRDI MEGAKITCHEN

Shirdi is located in Ahmednagar district of Maharashtra state under Rahata taluka. It is situated at latitude of 19º 45' and Longitude of 74º 25' and is a religious town. Shirdi has a dry climate, which is typical of most areas of the Deccan Plateau. Extreme temperature fluctuations are 45ºC in the month of May and a minimum of 10ºC. The region does not receive very heavy rainfall and the highest recorded was 690 mm in the year 2000. The town has gained recognition for being the abode of Shri Sai Baba who lived in Shirdi from 1872 to 1918. The number of devotees visiting Shirdi has increased over the years and the small hamlet has metamorphosed into an urban town to cater to the needs of the visitors. Shirdi is a Class 'C' Municipal town.

Asia's largest kitchen serves free food to 40K people every day. Ever since the dining hall or the prasadalaya was built in 2009, the place has been serving over 40,000 devotees on a daily basis.

The iconic Saibaba temple in Shirdi stands tall in its grace of being the holy place, quite literally. With digital signboards reading, What you have in your platter is not mere food. It's Prasada of Shri Saibaba. Please don't waste it and the tables being occupied at the drop of an hat and the hot meal being served to the devotees, this is a view that is worth being a part off.

The 11,550 sqmt dinning hall in the temple premises has started serving free meals to devotees since January 1. Earlier there was a nominal fee of Rs 1o. This has fetched the temple the tag of being the Asia's largest kitchen providing free food to all, as opposed to Asia's largest solar-energy driven kitchen

The Sai Prasadalaya, a community kitchen of Shri Saibaba Sansthan Shirdi has bagged the coveted Concentrated Solar Thermal (CST) and Solar Cooker Excellence Awards- 2016 by the ministry of new and renewable energy (MNRE).

Shirdi Sai temple, which draws thousands of devotees every day, has one of world's largest Solar System Projects for community cooking installed in 2014. With 73 solar dishes each of 16 sq meter size, the total steam generation capacity of this project is 4200 kg/day. Food is cooked for more than 25000 individuals every day in the Kitchen. More than 2 tonnes of rice

is cooked through this plant every day, saving cooking gas of up to Rs 20,000. Till date, the plant has saved Rs 60 lakh for the trust.

"It was a proud moment to receive the award of excellence for the solar thermal cooking system project. Sri Sai Baba Sansthan is saving 1 lakh kg of LPG, estimated to cost Rs 20,00,000 every year through this project," said Bajirao Shinde, CEO of the temple who received the award in New Delhi at the hands of Piyush Goyal, minister of state for Power, Coal and New & Renewable Energy. Apart from Shirdi Trust, 102 institutions, companies and agencies from across the country were felicitated for their achievement in high-temperature solar process heat and cooking.
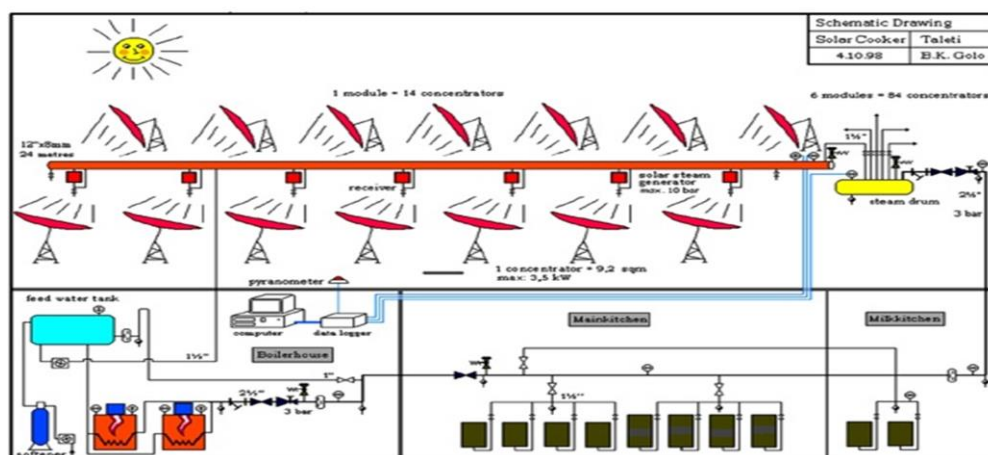
The Solar cookers are needed due to

1. High cost or Unavailability of commercial fuels – Kerosene, Coal, cooking gas and Electricity.

2. Deforestation caused by increasing firewood consumption.

3. Use of dung and agricultural waste as fuels instead of for soil enrichment.

4. Diversion of human resources for fuel collection.

Advantages of solar cooking

1. No attention is needed during cooking as in other devices.

2. No smoke evolution, thus clean.

3. No pollution, thus environment friendly.

4. Vitamins of food are not destroyed; therefore, solar cooked food is with natural taste, aroma and healthier.

5. No soot accumulation on pots.

6. Available every day, thus renewable.

7. Solar Energy does not contribute to global warming, acid rain or smog.

8. Solar Energy systems are maintenance free and long lasting.

Disadvantages of a Solar Cooker

1. Many solar powered cookers are large and bulky to carry.

2. More time is required for cooking process.

3. Initial cost of efficient solar cooking system is high.

4. Solar energy concentration is influenced by the presence of clouds or pollution in the air.

5. Food cannot be cooked at night

This concept is entirely inspired from the mega kitchen referred to as the Shri Sai Parsadalaya Kitchen in Maharashtra, India. Our motive is to build a small scale project in Pakistan and then go for the large scale project. The method is quite simple which requires enormous amount of quality water and availability of sunlight in abundance. The sunlight is used to heat the water at elevated temperatures of about 550oC to 600oC which generates the quality steam used for the cooking purpose via steam cookers.
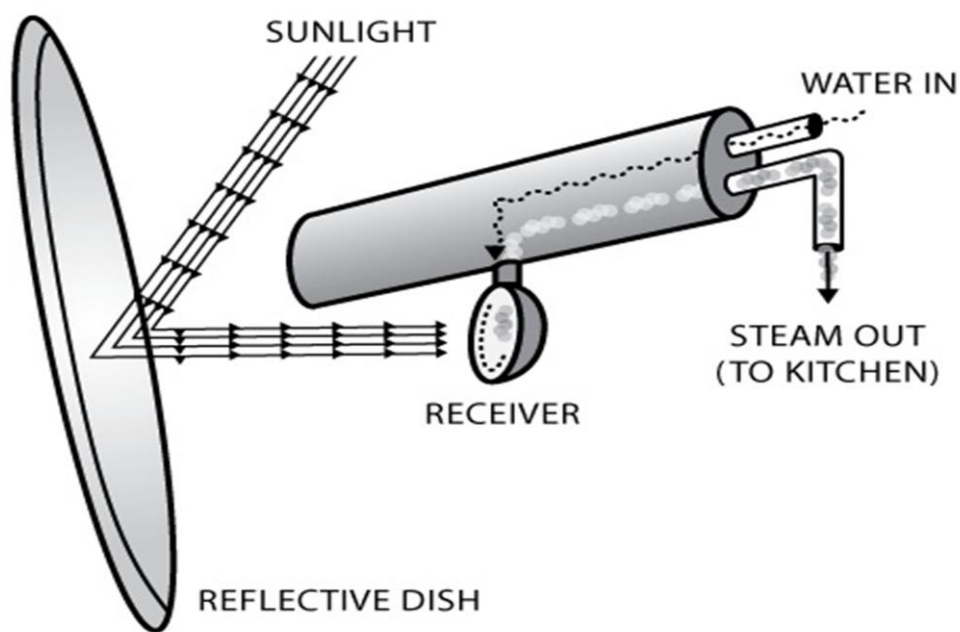
As shown in the above figure given, one end of the insulated pipe is connected to the water entering point where the undue amount of quality water is going through it and due to the gravity effect water falls down in to the receiver on which the high radiation of sun light is reflected through the curved reflective dish at the temperature of approximately 600oC. This heats the water and converts it in to steam which moves upward due to its low density. This steam then directly undergoes steam cookers into the kitchen. The quantity of heat required is directly proportional to the number of meals to be prepared per day. This technique can be extremely beneficial as it reduces the effect of greenhouse gases, environmental pollution last but not

the least; it is the primary source of replacing the usage of natural gas in the burner to cook food. It may be noted that the saved natural gas could be used for LNG export, increasing power generation potential and industrial development. Major Ingredients of Solar Cooking (Small Scale) Elements that should highly be considered while planning for the Solar Powered Kitchen

- 16 m2 dish with 40 plates/dishes 500 kg weight of each plate

- 300 mirrors total weight approximately 40000 pounds

- 120oC sun following onto the receiver

- 550oC focus sunlight to generate steam

- 3500 kilograms steam on a single sunny day

- 50 kilos of vegetables can be cooked

- 300 kilos of floor per day

Note: All the dishes are divided into four sections in rows, each of them converging solar energy to the receiver. The water source lies just above it. Latitude plays an important role to acquire the sun rays fully. During night when there is no accessibility of sunlight; then Liquid Petroleum Gas (LPG) may be utilized as a backup source. LPG saved per day is sufficient to keep a small family kitchen running for over a year

Solar Tracking Technology

Solar trackers are used to obtain maximum benefit from the sun's heat by capturing solar radiation at regular intervals via effective mirror orientation. The mirrors are operated with electromechanical mechanism accompanied with sensor technology to receive sunlight throughout the day.

A. Types of Solar Trackers

i. Single Axis Trackers: move on a single axis to and fro unidirectional. There are different types of single axis trackers based on several geometrical

positions such as horizontal trackers, vertical trackers, tilted trackers and polarized aligned trackers

ii. Dual Axis Trackers: move bidirectional and capture sunlight intermittently. There are also diverse groups of dual axis trackers such as tip-tilt and azimuth altitude.

These are employed in directing a mirror with regards to the presence of sunlight.

B. Solar Tracker Drivers

There are various techniques used to drive solar trackers. Passive trackers rotate in accordance to a solid gas fluid moved from one side to another. Electrical motors and mechanical gears are used to drive active solar trackers via control mechanism that is responsible to sun's orientation.

C. How to Select a Solar Tracker?

The following factors must be taken into account while selecting solar trackers:

i. Size of the system

ii. Electric Tariff

iii. Land restriction

iv. Government Policy

v. Latitude

vi. Weather

Why Solar Cooking?

• The energy from sunlight is absolutely free

• Its pollution content is negligible and is inexhaustible

• It does not at all take into consideration any of the natural resources such as hydrocarbon energy, natural gas and petroleum that have greater applications

in other fields of engineering and technology for power generation, industry and process engineering

It proves environment friendly i.e. no greenhouse effect leading to global warming and acid rains

• It proves to be a more salubrious way of cooking food on the contrary to smoke and fire

• Solar cooking is extremely cost effective/economical especially in areas where there is no availability of natural gas. Its implementation in times of natural calamities power blackouts is indispensable. Therefore its usage in emergency cannot be ignored.

CONCLUSION

The calculation is performed for above all assumptions and the total system is designed for the domestic house. From the graph, it is found that the average day temperature of Madurai is 35degree celcius. hence it meet the cooking requirements by adopting the above design. The drawbacks in this system will be little more investment than other systems. But the payback period will be few years which total cost of cooking will be only the maintenance cost of the system. By improving the design of vacuum tubes, PCM selection, tracking mechanism collector shapes etc., will have a great scope in market. As our demand for LPG and electrical energy are escalating day by day, the amount of fossil fuel will become scarce on one day. By implementing this system, it eradicate for cooking in night time. the overall system will work only during the daytime then it will not be compact and there will be cooker in each and every house will replace LPG and electric stove. Installation of this system in India reduces more than millions of temperature can be greatly reduced in the future.to this hectic world. The effects of thermo physical properties of PCM, installation methodology, location of pcm are scope of future work.

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2.1 TOWARDS MISSION 100 GW SOLAR EXPLOITATION OF SOLAR ENERGY IN THE HOSPITALITY SECTOR OF MAHARASHTRA

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ABSTRACT:

Ministry of Power, Government of India has set an ambitious target of installing 175 GW Renewable Energy Sources by 2022, which includes the target of 100 GW through solar energy segment. Though some of the Maharashtra industry experts have apprehensions about 10 GW share of Solar Energy target, one should not forget that Eastern Maharashtra ranks the third in the country as regards, solar radiation potential. In order to promote the wider uptake of solar energy and move closer towards the target envisioned, there is a need to address the challenges, due to Renewable Energy Sources in Power sector.

Solar technologies have been proven over decades in the field, and are becoming increasingly efficient, reliable, and affordable. Going solar is not only great for the environment, but it is also a clean business. In this paper we have discussed various issues regarding barriers to Solar PV in Hospitality sector. These include need of large capital for Renewable Energy projects. In addition, there are many physical constraints: Finance for the installation of Solar PV Generation in the Hospitality sector, Third Party Ownership, Power Purchase Agreement, Stakeholder Engagement in Hospitality Sector and different management structures.

Paper also covers power policies and principles in power economics, with pricing related to changing face of Hospitality sector in Maharashtra for achieving target of 10 GW solar.

The liberalization of the solar power sector, by allowing Renewable Open Access is vital for healthy competition in the Power distribution segment. In this paper critical analysis is done to ensure the steps need to be taken to promote Renewable Open Access in Hospitality Sector, adequately addressing the concerns of the DISCOMS and Open Access consumers.

Keywords:

SERCs, DISCOMS, LTOA, MTOA, GW, RE, PV, MERC, LT, HT, DL, ToD, RPO, REC, UTs, DAM, PF, ED, AD

INTRODUCTION:

Total global solar PV installed capacity surpassed 300 GW (1GW=1 billion Watts) by the end of 2016. 77 GW was added in 2016, a year-on-year growth rate of 34%. China led with 34.5 GW, followed by the USA (14.5 GW), Japan (10.2 GW) and India (5 GW) in fourth place. In 2017, about 79 GW capacities is expected to be added globally, registering marginal growth over 2016. The stagnation is mainly due to policy pullbacks across major markets including China, Japan, the USA and most parts of Europe. Meanwhile, India is expected to continue its rapid growth. With 8.8 GW of projected capacity addition (growth of 76% over 2016), it is set to become the third largest PV market in 2017, overtaking Japan. About 12.4 GW of projects have completed auctions and are in execution stages right now. 7 developers have built up project portfolios exceeding 1 GW mark. Recently Ministry of Power declared achievement of 16.5 GW Solar installed capacity in winter session of Rajya Sabha Dec. 2017.

India has a renewable energy potential of around 900GW. The capacity of high powered sources of renewable energy has been augmented from present 57.26 GW to 175 GW in 2021-22 and 275 GW in 2025-26.It is aimed to increase power production from wind energy sources and other power generation sources from 6.47 per cent in 2017 to 34 per cent in 2030. It is also

planned to increase

production of solar energy from present 18 billion in 2017 to 614 billion in 2030 and wind energy from present 59 billion to 488 billion.

Maharashtra government is set to give a major push to green energy with a target of an additional 11,110 megawatts of renewable energy by 2019, over 180 per cent more than the state's current installed capacity. Sixty-seven per cent (or 7,500 MW) of the ambitious target will be met through solar power, while wind energy is projected to contribute another 2,000 MW. Co-generation sugar plants are expected to contribute 1,000 MW while hydel projects, power from agricultural residues and industrial waste would contribute 200 MW each

Solar capacity development as of Dec 31, 2017.

10%, 1,265 MW
Public sector developers

44%, 5,414 MW
Indian corporates

31%, 3,847 MW
Private equity backed IPPs

15%, 1,855 MW
International developers
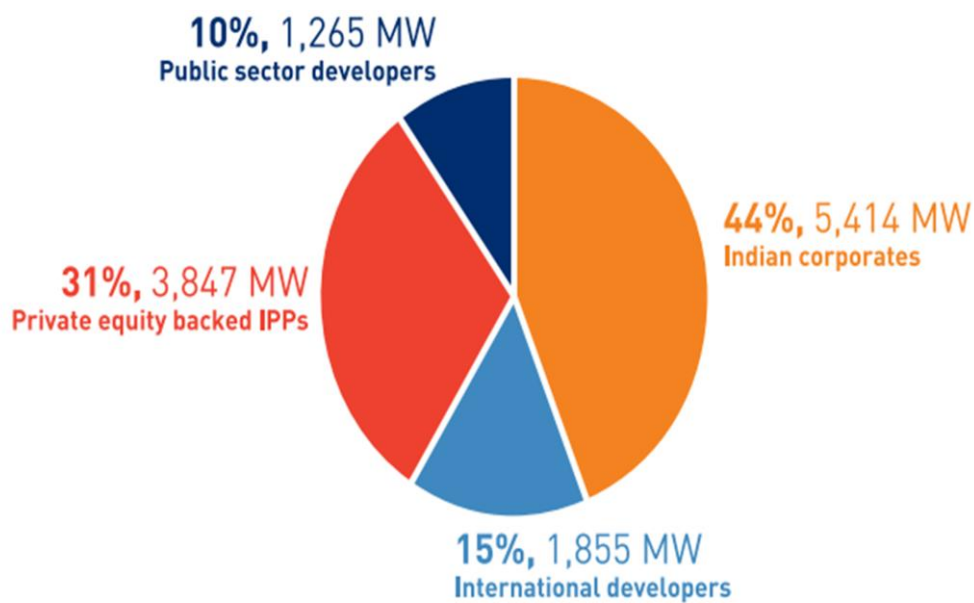
Working of On-grid Solar Rooftop System & what is Net metering?

For electric customers who generate their own electricity, net metering allows for the flow of electricity both to and from the customer – typically through a single, bi-directional meter. When a customer's generation exceeds the customer's use, electricity from the customer flows back to the grid, offsetting electricity consumed by the customer at a different time during the same billing cycle. In effect, the customer uses excess generation to offset electricity that the customer otherwise would have to purchase at the utility's full retail rate. Net metering is required by law in most U.S. states, but state policies vary widely.

On-grid system does not content batteries.

Output is connected to load through inverter.

System takes power from solar and balance , if needed, from grid.

This system operates till it receives solar radiation and power from the grid.

It does not function if grid fails.

For this system, whole DISCOM grid acts as a storage system.

Due to absence of batteries, this system is less bulky, easy to maintain and offers long service life of about 20 years.

Capital investment and payback period is less.

 In case, load is less and power generation is high, the power is fed to the grid. Under new policy of two-way or net metering the consumer gets credit for this excess energy pumped to the grid . So, in the night time when there is no sunshine, these credits could be utilized and client's electricity is reduced substantially.

 This system is recommended where grid failures are less frequent and grid stability is good.

Net-Metering Roof-top Policy of Maharashtra State

Declared by MERC (Maharashtra Electricity Regulatory Commission) in September, 2015.

Talks about agreement between – Eligible consumer & Distribution Licensee (like MSEDCL, Reliance Power, Tata Power, etc.)

Adopted for implementation by MSEDCL from January, 2016.

For roof-top PV system of less than 1 MW.

Consumer can own & operate or third party can lease it to a consumer.

Roof-top should be in consumer's premise, either on roof or on ground.

Priority for consumers who have already installed it before this policy.

PV plant capacity limit - Consumer Side: Contract Demand or Sanctioned load. MSEB Side: 40% of rated capacity of distribution transformer of DL.

Grid AC Voltage connectivity level for PV plant – For less than 8 kW 230/240 V, Single Φ. 8 to 150 kW (for Municipal Corp area) / 80 kW (other areas) 400/415V, 3 Φ, more than this 11kV and above.

HT consumer allowed to connect solar system to LT side, but net meter should on HT side only.

Roof-top can be with battery back-up (or DG back-up), but automatic & manual isolation switch is the must to prevent current to flow to grid in absence of grid supply.

Cost of Net meter & its installation to MSEDCL. For ToD (time of day) tariff consumer, ToD type net meter.

O&M Responsibility – PV plant up to net meter – Consumer, Net meter and beyond – MSEDCL.

Net metering agreement – between consumer and MSEDCL would be in force for 25 years.

Energy Accounting and Settlement: Bill to show units exported, imported and net quantity and units carried over to next billing. If export more then would be carry forward to next billing. If import exceeds then consumer to pay only for that excess.

Unadjusted net credited units at FY end, would be purchased by MSEDCL at MERC approved rate. The amount payable would be shown as credit amount in the next billing cycles.

Unadjusted surplus units purchased by MSEDCL shall qualify for meeting MSEB's RPO.

Documentation: Application, Fees – Rs. 500/- for < 5kW system and Rs. 1000/- for more. Tech. Specs. On installation - Statutory approval from Electrical Inspector or concern Municipal authorities or equivalent authorities. Net metering connection agreement between consumer and MSEDCL.

Time line – Application acknowledgement 3 days, Feasibility report by MSEDCL 15 days, Approval on feasibility 7 days, Validity of approval 180 days, Testing and Commissioning of plant 10 days, Net meter installation and grid synchronization 10 days. Total max time from MSEDCL side about 41 days (excluding time taken by owner)

POLICY UPDATE

Net metering: 29 states and 7 union territories have notified grid connectivity regulations with provision for net/gross metering but on-the-ground implementation remains patchy.

Subsidy for residential, institutional and government consumers: Ministry of New and Renewable Energy has sanctioned M 50 billion ($ 750 million) funding for 30% capital subsidy for rooftop solar for residential and institutional consumer segments. In addition, up to 30% subsidy is also available for government projects.

Boost in government demand: Government is expected to become a major demand source for rooftop solar in the coming years. All building facilities under different central government departments are being urged to adopt rooftop solar and a potential of 6 GW capacity has been identified so far. SECI has already announced 500 MW of tenders for such buildings.

Concessional debt financing: The Government of India, with assistance from multilateral financial institutions such as Asian Development Bank, The World Bank and New Development Bank, has earmarked US $ 1,470 million of concessional credit lines for the rooftop solar market.

Building bye-laws: The Government of India has recommended mandatory rooftop solar installations for buildings exceeding specified size and/or power consumption thresholds under the model Building Bye Laws. Four states and union territories - Uttar Pradesh, Haryana, Chandigarh and Chhattisgarh - have adopted these regulations so far.

Accelerated Depreciation Tool for Solar Promotion

Technical Definition:

- Section 32 of Income Tax Act provides Accelerated Depreciation of 80% of the invested capital into Solar PV Projects to professional companies with tax liability. Investors can set off their tax liability on the taxable income to the tune of 80% in the 1st year, and subsequently 20% in the 2nd year.
- Effect: Reducing the cost of the project to the extent of 26% and the cost of solar electricity generation by about Rs. 2/- per unit.
- The only pre-condition to claim AD is that the organization claiming it should have Profits (and hence, the tax liability) to be able to offset the higher depreciation.

- Accelerated depreciation rates came down from the current 80 percent to 40 percent starting April 1, 2017 and the 10-year income tax holiday under section 80-IA was not reinstated .

Procedure Followed for Release of HT Roof Top Solar Net meter

(10Imp. Steps)

1) Consumer Application

2) Forwarding of Application: Circle -Div -Sub Div.- Section

3) Submission of Tech. Estimate/ Feasibility: Section - Sub Div. - Div. - Circle

4) Approval for Solar Roof Top by Circle

5) E l permission of SLD and Installation (Inverter details) by consumer.

6) Consumer work completion report at circle and Circle letter to Testing Div. for Inspection.

7) Detail Testing Div. Report regarding Grid Connectivity / Joint Inspection

8) Release of Grid Connectivity (Joint Inspection cum release by circle)

9) Compliance report by consumer regarding joint inspection / Test report / EI permission / Tax Invoices /CT / Net meter Testing reports (fees receipts) /SLD interlocking /SLD DG-solar-Grid

10) Final actual release.

Regulatory and Institutional Setup for Solar sector
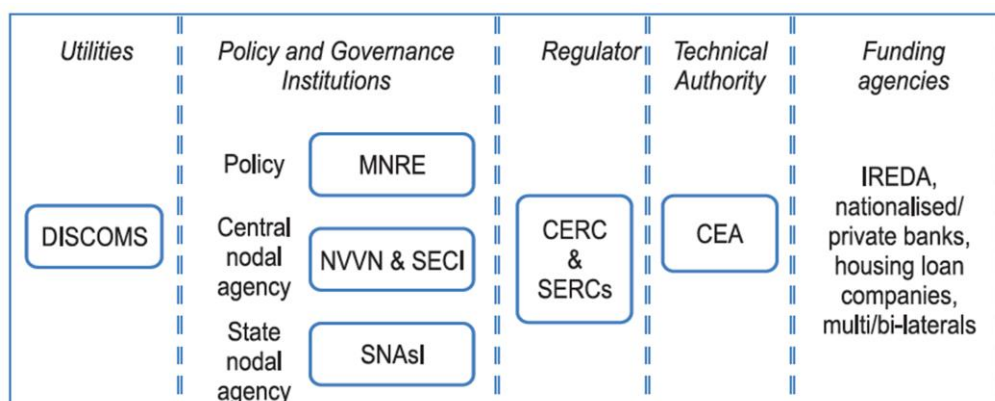
CEA – Central Electricity Authority, **CERC** – Central Electricity Regulatory Commission, **DISCOMS** – Distribution Companies, **IREDA** – Indian Renewable Energy Development Agency, **MNRE** – Ministry of New and Renewable Energy, **SECI** – Solar Energy Corporation of India, **SERCs** – State Electricity Regulatory Commissions, **SNA** – State Nodal Agencies for Renewable Energy Development

MNRE – Ministry of New and Renewable Energy

Recently MNRE Announces $3.7B in Financial Assistance to DISCOMs to Boost Rooftop Solar in India. MNRE proposal would make the distribution companies (DISCOMs) responsible for deploying rooftop solar and provide them with financial assistance based on performance. The Ministry of New and Renewable Energy (MNRE) has released a new proposal to overhaul the existing rooftop solar implementation mechanism by making it the responsibility of distribution companies (DISCOMs). Under the proposal, DISCOMs would be eligible to receive financial assistance to the tune of rs.234.5 billion (~$3.66 billion) based on their performance in facilitating rooftop solar deployment. In the new policy proposal, MNRE notes that so far rooftop installations have been lagging well behind the installation goal of reaching 40 GW by 2022. The reasons cited for the slow progress include having too many agencies involved in rooftop implementation, tender delays and cancellations, reluctance by DISCOMs to promote rooftop solar due to

potential revenue losses, and a lack of policies and implementation by states. MNRE also recently said that it is working alongside states to announce the tenders needed to reach 20 GW of ground-mounted capacity in solar parks in the 2017-18 fiscal year, followed by 30 GW in 2018-19, and another 30 GW to follow in 2019-20.

Installed Capacity(MW) of Power Utilities in Maharashtra as 0n NOV-2017							
Mode-wise break up							
	Coal	**Gas**	**Nuclear**	**Hydro**	**Non - Hydro Renewable**	**Total**	**% Contribution**
State	10170	672	_	2850	208	13900	**33%**
Private	12456	568	_	481	7501	21006	**49%**
Central	4219	2,513	690	_	_	7422	**18%**
Total	**26845**	**3753**	**690**	**3331**	**7709**	**42328**	
% Contribution	**63%**	**9%**	**2%**	**8%**	**18%**		**100%**

YEAR			
	SOLAR %	NON SOLAR % (OTHER RE)	TOTAL %
2016-17	1.00	10.00	11.00
2017-18	2.00	10.50	12.50
2018-19	2.75	11.00	13.75
2019-20	3.50	11.50	15.00

{MERC RPO REGULATION 2016 (DT 30.3.2016) **RPO TARGET**}

RPO & REC Mechanism in India with Economics and Tariff Trajectory

With six years left for India to achieve its goal of generating 100 GW of electricity from solar projects, 25 states have fallen short of adding capacity by some 2,000 MW so far in 2016-17. Considering the actual renewable purchase obligation level specified by the state electricity regulatory commissions for the year 2016-17, it is estimated that 25 states/UTs require over 2,030 MW solar power capacities to fulfill the solar purchase obligation. It is estimated that 22 states and UTs require over 9,080 MW of non-solar power capacity to fulfill their obligations to purchase energy from other renewable sources. Promotion of renewable generation sources has now been added as an objective of the new tariff policy. The policy has provisions such as 8% solar purchase obligations by 2022 and renewable energy generation obligation on new coal/lignite-based thermal plants. Fully depreciated power plants whose purchase obligations have expired can now bundle their output with renewable energy. Renewable energy has also been exempted from inter-state transmission charges.

What is OPEN ACCESS?

The act defines OPEN ACCESS as "Non–Discriminatory provision for the use of transmission lines or distribution systems, or associated facilities, by any licensee or consumer or a person engaged in generation.'' This system allows generators to sell power to the highest bidders. Consumers can, therefore, source their needs from the most economic seller. The idea is that customers should be able to choose from a large number of competing power companies instead of being forced to buy electricity from their local electric utility.

Duration of Open Access:

Open Access type	Duration
Long-term Open Access (LTOA)	Exceeding twelve years but not exceeding twenty-five years
Medium-term Open Access (MTOA)	Exceeding three months but not exceeding three years
Short-term Open Access (STOA)	Not exceeding one month

TYPES OF TRANSACTIONS

- "Bilateral transaction" means a transaction for exchange of energy (MWh) between a specified buyer and a specified seller, directly or through a trading licensee, from a specified point of injection to a specified point of drawal for a fixed or varying quantum of power (MW) for any time period during a month.

"Collective transaction" means a set of transactions discovered in power exchange through anonymous, simultaneous competitive bidding by buyers and sellers

MERC Distribution Open Access Regulation, 2016:

Eligibility to seek Open Access is Contract Demand >=1 MW has been allowed. *DAM through power Exchange is allowed.* Multiple Sources are allowed. Contract Demand is to be revised & Banking of Energy is permitted.

Analysis Work Sheet for HT Industrial Consumer from MSEDCL (Yr.16-17)

Sr. No.	Paisa / Unit	Charges
	713	Base Energy Charge (Tariff) for HT Industry
Bifurcation for the Landed cost to consumer after Billing		
1	+ 55	Demand Charge 235 Rs. (Amt Per KVA)
2	-40	TOD Charge (Amt/Unit) (AVG. TOD)
3	-20	FAC subsidy (Amt/Unit) FAC : Nil
4	+60	ED (If applicable) / (Exemption for SEZ)
5	+ 8	Tax on Sale
6	-45	PF Incentive
7	-10	Eff. Incentive ,(Range 0 to 5 %) , (EHV Rebate)(3%) : Nil
8	-6	Prompt Payment (1 %)
9	-	Load Factor Incentive (10 %)
10	715	Final Landed Cost to Consumers of MSEDCL

Remark: Considering ED exemption (60ps)/ night rebate slot (150ps)/ Max. Eff. (20%)(25ps) & if possible LF Incentive (10ps.) than Final Landed cost of MSEDCL vary from 715ps to 530 ps. which is most economical than open market rates. Also day by day due to Multi Year power tariff in Maharashtra, rates of specifically commercial category will be increasing due to cross subsidy aspect. Hence to explore business growth in Hospitality sector concepts like Third party Open Access for economically power tariff with clean energy ideas are came forwarded. Some of Power Economics statistics of solar project and case studies are discussed below. Summary :

HT Category –33 kV			
HT I(A): HT - Industry (General)	Rs. / kVA/Month	235	7.13
HT I(B): HT - Industry (Seasonal)	Rs. / kVA/Month	235	7.83
HT II: HT - Commercial	Rs. / kVA/Month	235	11.35
HT III: HT - Railways/Metro/Monorail	Rs. / kVA/Month	235	6.51
HT IV: HT - Public Water Works (PWW)	Rs. / kVA/Month	235	5.60
HT V(A): HT - Agricultural - Pumpsets	Rs. / kVA/Month	35	3.15

Cost Benefit Analysis for Industrial Non- Conventional (short term)
CASE NO.1

Sr No	Particulars	Rs/kwh At 33kV
1	Base Price	5.25
2	Regional Losses (2.04%)	-
3	Trans Losses (3.92%)	0.20
4	Wheeling Losses (6%)	0.41
5	ED	0.60
6	Maha. Trans Charges	0.28
7	Wheeling Charges	0.09
8	Transaction Fees	0.13
9	Operating Charges (SLDC, NLDC)	0.10
10	Cross Subsidy Surcharge(25%) +Additional surcharge (Gen)	0.41
11	Trading Margin	0.13
Total Cost		**7.60**

Target of Solar power 100 GW.(Rooftop 40GW)

SECTOR TARGETED	TARGET CAPACITY ADDITION	FRAMEWORK/INCENTIVE
Residential	**Rooftop Solar PV 40 GW**	Net- metering, Feed-in Tariff, Capital Subsidy, Interest Subvention, Accelerated Depreciation
Commercial	**Solar Parks 20 GW**	Feed-in Tariff, Accelerated Depreciation, Viability Gap Funding, Bundling of Power
Industrial	**Entrepreneurial & Unemployed Graduates 20 GW**	Feed-in Tariff, Capital subsidy, Interest Subvention, Accelerated Depreciation
Institutional	**Others Canal tops, CPSU, SPSUs 20 GW**	

Solar Key Market Players

Solar Power Generators

RE Certificates from Market

Non-Renewable Energy Sources

DISCOM

(Includes Rooftop solar PV)

Customers with captive Solar plants

Customers without captive RE Plants

Other RE obligated Consumers

Renewable Energy Certificate

Renewable Power Plant → Renewable Power → Renewable Attribute / Electricity

REC - Mechanism of trade by which green attributes could be sold in market.

Obligated entities can buy REC instead of buying renewable power in order to fulfill RPO targets

Aimed at addressing mismatch between availability of RE resources and requirement of the obligated entities to meet the RPO.

1 REC Equals... Renewable Energy attribute associated with 1 MWh of renewable power

Fast, Flexible and Transparent trade

Trade across geographic boundaries

No physical transfer of power

Obligated Entities
- Distribution Companies
- Open Access Consumers
- Industries consuming Captive Power

Incentives available for rooftop solar installations in Maharashtra

Incentives	Industrial & Commercial Sector	Residential Sector
Capital Subsidies	NIL	Available
Accelerated Depreciation	Available	Not Applicable
Net metering Incentives	Available	Available
Renewable Energy Certificates - RECs	Not available for Consumer	Not available for Consumer
Solar Renewable Purchase Obligation - RPO	Available if Consumer is an Obligated Entity	Not Applicable

(Solar OFF Grid Policy) 25.1.2016 (GOM)

500 MW SAVING FOR NEXT 5 YEAR AND 2682 CR.SUBSIDY PROVISION

1	Solar roof top			
	A (Govt.)(1 to 50kw)	100%	1600CR.	30MW /Year
	B (Pvt.)(5 to20kw)	20%		10MW /Year
2	Solar Pump(PWW)	100%	500CR.	2000 NO.PUMPS /Year
3	Solar steam cooking panel			
	A (Govt.)	100%	300CR.	30000Sq. m /Year
	B (Pvt.)	15%	20CR.	
4	Solar water heater			
	A (Govt.)	100%	200CR.	1.40CR.LITER/DAY
	B (Pvt.)	20%	40CR.	
	C (BPL/SC/ST)	50%	4CR.	3CR .LITER/DAY
5	Biomass	16%-26%	16CR.	200 PROJECT
6	Microgrid	-	2CR.	2 VILLAGES

Financials of Roof-top PV Plant of 10 kW

1	Power Plant Size	**10**	kW
2	Shadow-free area required for installation	1100	sq.ft.
3	Annual power units generation this solar system	15000	kWh
4	Average Energy Tariff paid by the client per unit (Rs./kWh) - assumed	₹ 9.00	Rs./kWh
5	Value of Electricity generated by this solar PV System in one year	₹ 1,35,000	
6	Per kW Cost of the solar power plant quoted by the developer	₹ 75,000	Rs./kW
7	Total capital cost of this solar Roof-top PV Plant	₹ 7,50,000	
8	Direct break-even period - without considering AD (accelerated depreciation) benefit	5.6	years
9	AD can be claimed in the first year up to @ 80% *[Existing profit making companies can avail this benefit and divert their profits into solar and save income tax]*	₹ 6,00,000	
10	Income Tax saving benefit due to this AD, considering 35% tax rate	₹ 2,10,000	
11	So effective capital cost of solar plant after considering AD benefit	₹ 5,40,000	
12	So per kW capital cost of the Roof-top solar plant after AD benefits	₹ 54,000	Rs./kW
13	Effective Break-even period of the plant	4.0	years
14	Minimum working life of the PV Power Plant	20	years
15	Annual maintenance cost of the plant *[considering replacement parts needed in its lifetime.]*	₹ 9,375	per year
16	Total value of the electricity generated in the lifetime of the plant at today's electricity tariff rate	₹ 22,42,500	
17	Effective average energy cost per unit of electricity generated throughout life of the plant at today's rates	₹ 3.47	Rs./kWh

Recommendations:

– Awareness and Education

– Set up Energy Clubs, Save Energy Committees & Policy Education in Technological Curriculum

– Economic Incentives

  o Concessions to renewable energy technology providers, duties and other tax exemptions

  o Tax exempt or tax-free bonds for funding

  o Provisions in budgets to fund RES and conservation projects

  o EMI based loans coupled with utility bills for RES

  o Dual electricity tariffs – a lesser rate for small users and more for large users of electricity.

  o Insistence on designing sustainable housing plans.

  o Municipal building occupation certificate rules should be modified suitably

  o Significant penalties on contractors and builders failing to meet performance standards

  o Rooftop solar panels should be permitted in building architectures to utilize more surface area for solar energy collection.

  o Mandatory Regular auditing of RES and conservation devices

Seven pillars of growth for attaining Solar rooftop PV targets in India
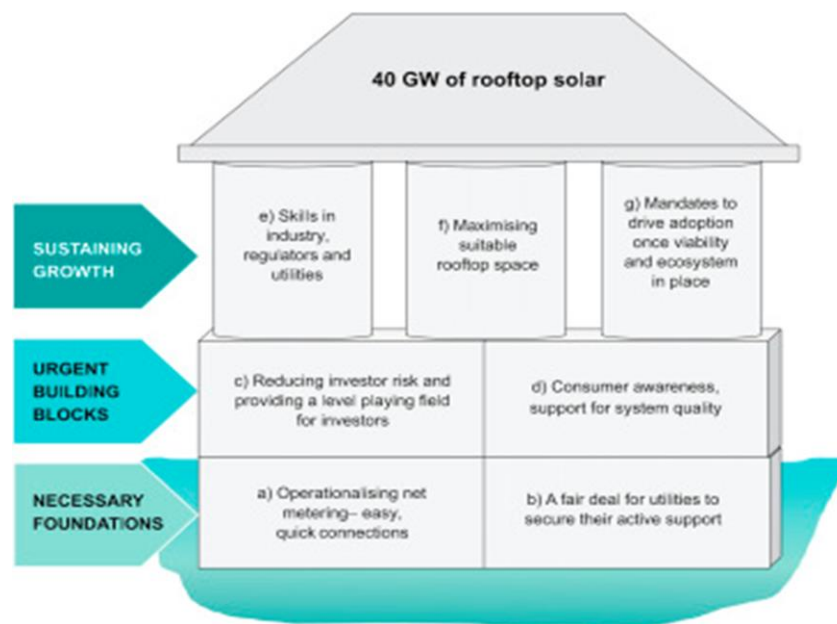
Conclusion

Regarding solar propagation it is unclear how things will play out. Many of these top-down solar proposals over the years have looked good on paper. But effective execution, coordination, and communication with all the agencies involved and reacting to realities on the ground are where the challenges lie. The massive rooftop solar potential in India is still untapped and a convergence of right policies, execution at the right price point can really propel it to the next level. SERCs needs to introduce differential Cross Subsidy Surcharge for peak, normal and off peak hours based on the TOD tariff adequately addressing the concerns of the DISCOMS and Open Access consumers. There is a need to preparation of a well-defined R&D vision and policy document clearly highlighting the R&D plan for the next decade. Thus paper covers horizontal aspects of exploiting solar market development in hospitality sector with an attempt to approach towards 100GW solar target in the interest of National economy.

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3.1 STUDY ON USE OF TECHNOLOGY IN AGRICULTURAL PRACTICES TO BOOST

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ABSTRACT

Agritourism, also known as farm tourism is a form of tourism where the tourist visits areas used mainly for agricultural purpose. The study has been undertaken by the researcher to boost agritourism in and around Nagpur city. As the study contributes to boost the farmers to create alternative employment and income opportunities. Agritourism helps people to get a better understanding of social and cultural values and helps to create better life and better society. However as comparison to Haryana, Punjab, uttar Pradesh. The agriculture practices followed are not very updated that becomes the reason for not so good picture of agri farms thus poor states is a hindrance to develop as agritourism destination. The researcher has studied the Techno survey practices used in other states, which has developed agritourism. Thus lack of use of technological use reflects on the poor state of agriculture and hence, the researcher has analysed the findings to show how technological use can boost agriculture and agritourism. The researcher concluded that the whole lot of related articles goes on vain, if the agri production is not up to the mark. Other than oranges, which is a seasonal farming. The other agri products needs to be used
for attract tourist.

Keywords: Agritourism, Technology, Tourist.

3.2 ECO RESORTS - A GREEN REVOLUTION IN TOURISM INDUSTRY

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To study the role of technology in eco - resorts and how it is used for the betterment of resorts in tourism industry.

OBJECTIVES

To understand the role of eco friendly techniques used in resorts and how it helps in the growth of destination.

To know about the modern techniques used in eco friendly resorts.

To find out the use of technology for promotion of destination.

To study the difference between past and modern methods in addition to the technologies.

SOURCES OF DATA

The secondary data collected through Government offices and internet.

INTRODUCTION

Eco resorts is a hotel or accommodation that has made important environmental improvements to its structure in order to minimize its impact on the environment. The basic definition of a resort is an environmentally responsible lodging that follows the practices of green living. These resorts have to be certified green by an independent third-party or by the state they are located in. Traditionally, these resorts were mostly presented as Eco Lodges because of their location, often in jungles, and their design inspired by the use of traditional building methods applied by skilled local craftsmen in areas, such as and India.

An eco hotel must usually meet the following criteria [1]:

Dependence on the natural environment

Ecological sustainability

Proven contribution to conservation

Provision of environmental training programs

Incorporation of cultural considerations

Provision of an economic return to the local community

ECO TOURISM

The Nature Conservancy adopts the definition articulated by the World Conservation Union (IUCN):

"Environmentally responsible travel to natural areas, in order to enjoy and appreciate nature (and accompanying cultural features, both past and present) that promote conservation, have a low visitor impact and provide for beneficially active socio-economic involvement of local peoples."

Most tourism in natural areas today is not ecotourism and is not, therefore, sustainable. Ecotourism is distinguished by its emphasis on conservation, education, traveler responsibility and active community participation. Specifically, ecotourism possesses the following characteristics:

Conscientious, low-impact visitor behaviour

Sensitivity towards, and appreciation of local cultures and biodiversity

Support for local conservation efforts

Sustainable benefits to local communities

Local participation in decision-making

Educational components for both the traveller and local communities

- Ecotourism can provide much-needed revenues for the protection of national parks and other natural areas -- revenues that might not be available from other sources.

- Additionally, ecotourism can provide a viable economic development alternative for local communities with few other income-generating options. It can increase the level of education and activism among travellers, making them more enthusiastic and effective agents of conservation.

- **ECOTOURISM IN INDIA**

- India, the land of varied geography offers several tourist destinations that not just de-stress but also rejuvenate you. There are several ways to enjoy Mother Nature in most pristine way. The few places like the Himalayan Region, Kerala, the northeast India, Andaman & Nicobar Islands and the Lakshadweep islands are some of the places where you can enjoy the treasured wealth of the Mother Nature. Thenmala in Kerala is the first planned ecotourism destination in India created to cater to the Eco-tourists and nature lovers.

The India topography boasts an abundant source of flora & fauna. India has numerous rare and endangered species in its surroundings. The declaration of several wildlife areas and national parks has encouraged the growth of the wildlife resource, which reduced due to the wildlife hunt by several kings in the past. Today, India has many wildlife sanctuaries and protection laws. Currently, there are about 80 national parks and 441 sanctuaries in India, which works for the protection and conservation of wildlife resource in India.

There are numerous Botanical and Zoological Gardens in India, which are working towards the enhancement of the Ecosystem. Poaching has stopped to large extent. There are severe punishments for poachers, hunters and illegal traders of animals and trees. Tree plantations are taking place in several places. There are several animal & plant rights organisation, who fight for the rights of the animals and plants. Numerous organisations and NGOs are coming forward to provide environmental education to the common people at the grass root level.

Eco regions in India

The diverse geographical structure of the country brings great delight for eco travellers. Unlike other regions of the world, India with its thousands years old historical and cultural significance is full of eco places, amongst some are believed to be the best eco places of the world.

Eco regions of India are result of integration of different geographical structure and its varied topography. Like other regions in possession of single or less diverse geographical feature, India divides itself in many eco regions, each having their own climate and physical structure.

Whether it is Western Ghats, North-Eastern regions, Western Himalayas, Gangetic plains or Eastern Himalayas, each of the eco regions are different from one other. With their significant differences in their state and characteristic of natural resources, vegetation and wildlife inhabiting, the eco regions of India conceal in its lap great wonder to be viewed and offer to eco traveller what only few regions on the earth have to show off. Every part of the country is hoarded by heaps of eco regions full of natural sightseeing locations. The great Himalaya alone is home to many of world famous eco sites and let tourists avail eco excursion like trekking, wildlife viewing, orchid viewing, glacier viewing, birding, mountain-biking, nature walk and etc.

ECO FRIENDLY TECHNOLOGY USED IN RESORTS

(To save the nature)

The popularity of eco-friendly practices like meetings continue to increase, it's important for meeting and event planners to continually expand their own knowledge of sustainability, particularly as it relates to the venues, vendors, and the work of other event services professionals. One such topic is that of eco-friendly or "green" hotel initiatives. Many hotels, from the more budget-friendly to the more luxurious, are taking steps to make their practices and business more sustainable.

1. Hotel Energy Conservation

From central operations such as boilers to lighting systems, kitchen equipment, and automated energy management systems, hotels globally are working to reduce energy use while sustaining – and whenever possible enhancing – the guest experience.

2. Hotel Water Conservation

Within guest rooms, laundries, kitchens, pools and spas, hotels continue to phase inefficiencies that reduce water and, in many cases, chemicals that are used to treat water systems and clean facilities. Efforts include the linen and towel reuse programs that are now an industry standard to the installation of low-flow faucets, showerheads, and other fixtures.

3. Hotel Recycling and Waste Reduction

With the limited exception for domestic hotels, recycling programs for the basics such as newspapers and beverage containers are becoming a basic expectation. In combination with the recycling efforts, hotels are looking for opportunities to reduce the use of paper and other disposables. Hotels and resorts that can go beyond to implement food waste composting programs can demonstrate waste diverted from the landfill upwards of 40-50%.

Paper Reduction

Plastic Reduction

4. Hotel Bath Amenities

Many hotels are making a statement by offering guests custom formulated amenities. Resort companies such as RockResorts have taken it one step further with an all-natural, essential oil-based custom formulated product made without preservatives and artificial ingredients that is packaged in recyclable containers. Other midrange hotel brands are experimenting with bulk dispenser presentations.

5. Hotel Room Keys

Contemporary plastic key cards are made from PVC (polyvinyl chloride) based plastic which is part of a highly toxic manufacturing process. Many hotel companies are shifting to card options made from paper, wood, and bioplastic that are better for the environment but equally as durable.

6. Hotel Cleaning Products

Recognizing the importance of safer products for guests and employees as well as the natural environment, many hotels have shifted to cleaning products that are made with bio-based oils and other natural cleaners.

By making the switch, they are reducing the use of products with chlorine bleach and petrochemical derivatives. These more natural products have demonstrated performance and are less irritating to guests, employees, and the environment.

7. Hotel Food Preparation

Integrating local products and using fresh, seasonal produce and other ingredients is emerging as a significant focus of hotel food and beverage programs. A shift to more sustainable and healthier cuisine offers travelers unique opportunities to experience a greater connection to the locations they are visiting in a more sustainable way.

8. Hotel Bottled Water Alternatives

In support of waste reduction and a higher quality experience, many hotels are moving away from bottled water as the standard and offering unique hydration options for meeting attendees and independent travelers.

Look for conveniently located filtered water dispensers, complimentary refillable bottles, and other options designed to offer guests convenient and palatable alternatives to water in plastic bottles.

9. Hotel Menu Selection

Hotels and resorts are integrating more and more selections in menus of all types that integrate organic produce, hormone free meats and dairy, and other natural products that offer guests healthier food selections.

10. Hotel Spas

A growing trend with all types of spas is the integration of treatments that feature local and indigenous ingredients as well as natural and organic products. Similarly, unique brand and resort signature treatments are emerging to truly offer guests a special connection to the destination.

11.Energy Related Technology/techniques

Solar energy is radiant light and heat from the Sun that is harnessed using a range of ever-evolving technologies such as solar heating, solar thermal energy. **Biogas** typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of oxygen.

12. Water conservation techniques

Rain water harvesting (RWH) is a technique of collection and **storage** of **rainwater** into natural reservoirs or tanks, or the infiltration of surface water into subsurface aquifers (before it is lost as surface runoff). **Wastewater treatment** is a process used to convert wastewater into an effluent (outflowing of water to a receiving body of water) that can be returned to the water cycle with minimal impact on the environment or directly reused.

The Implementation of inroom touchscreen tablets

The concept of eco-friendly tourism is growing in India. Don't think that eco resorts in India aren't luxurious -- they are. And how! Not only do these places offer a refreshing approach to tourism, they're situated in some of the most picturesque parts of India. Many of them also offer unique local activities that you won't find elsewhere. It's a fabulous way of experiencing India at its natural best!

ECO RESORTS IN INDIA

Banasura Hill Resort, Wayanad, Kerala

Asia's largest "Earth" resort, Banasura is predominantly constructed from mud known as rammed earth. Its 31 rooms are nestled on a 35 acre eco-friendly farm in Vellamunda, in <u>Kerala's lush Wayanad district</u>. Guests can enjoy hiking through the countryside to visit waterfalls, caves, and a tribal village. The resort also has a rejuvenating Ayurvedic spa.

Price: Rates start from 8,000 rupees per night for a double, including breakfast.

Eco Features: Constructed from mud and recycled wood. Maximum use of natural light. CFL lamps minimize energy consumption. A bio-gas plant recycles organic waste and fires the resort's kitchens.

2. Orange County, Kabini, Karnataka

One of India's best wildlife and jungle lodges, Orange County Kabini has the distinction of being named one of the 25 World's Best Eco Lodges by National Geographic Traveler. It sits on the edge of Nagahole National Park, surrounded by the Kabini River. The philosophy is simple: provide an exquisite vacation and wildlife experience while preserving the nature and culture of the land. Guests are accommodated in 28 spacious huts, with the design inspired by local tribal villages. All have either a private plunge pool or private outdoor Jacuzzi. Activities include safaris, boat rides, nature walks, and night trails. The Ayurvedic spa provides massages and therapeutic treatments.

Price: Expect to pay 33,000 rupees upwards per night, including tax, all meals and some activities. Discounts are available for stays of two nights or more.

Eco Features: Reverse osmosis water filtering in every room to eliminate reliance on plastic bottled water.

3. Kanha Earth Lodge,Madhya Pradesh

Another award-winning eco lodge, Kanha Earth Lodge is situated near Kanha National Park, on 16 acres of forest in a small tribal hamlet bordering the buffer zone. Without any neighboring properties and being away from major roads, it offers a wilderness experience quite unlike any other. The isolated setting is ideal for nature walks, birding and cycling trips. Of course, jeep safaris into the national park are offered too, and they're carried out by Pugdundee Safaris who also manages the property. Guests are accommodated in 12 luxury cottages with large porches, made in local Gond tribal style. There's also a dreamy infinity swimming pool that's set under the mahua trees and merges into the forest.

Price: 18,000 rupees per night, including tax and all meals. Packages including safaris and activities are offered.

Eco Features: All construction has been carried out using locally available materials such as stone and recycled waste wood.

4. The Tamara, Coorg, Karnataka

The Tamara (Tamil for "lotus") is one of the best resorts in Coorg for nature lovers. This remote, scenic hideaway opened in 2012 and is spread over a 170 acre estate that produces coffee, cardamom, pepper, and honey. The resort has 30 luxury cottages made almost entirely out of wood. They're all elevated on stilts (to minimize cutting of trees), and offer expansive views of the plantation and waterfalls. The focus is on championing a sustainable form of luxurious living, through everything from ecological awareness to wholesome food. Guests can go on guided plantation walks and treks, take yoga and meditation classes, and get massages at the Ayurvedic spa. Intimate dining experiences, such as candlelit dinners by the waterfall, are also offered. Perfect for romance! (Do note that the resort is not child-friendly and children under 12 years of age aren't permitted).

Price: From 21,000 rupees per night, including tax and all meals. Substantial discounts are offered .

5 . Wildernest Nature Resort,Goa

Wildernest is a delightfully serene eco resort, set on over 450 acres of forest land at Chorla Ghat near the Goa, Maharashtra and Karnataka state borders. Tranquility is in abundance there. The property has 16 eco-friendly cottages (with either a forest or valley view), built in simple rustic style with wood paneling and tiled floors inside. Guests can enjoy nature walks, bonfires, folk dances, and village excursions. Or, simply relax by the infinity swimming pool overlooking the mountains. Read review.

Price: Rates start from 5,500 rupees per night in the summer and monsoon seasons. All meals and activities are included.

Eco Features: Constructed out of eco-friendly materials, eco-friendly washing and hair products, no plastic, operates conservation programs.

6. The Dune Eco Beach Resort and Spa, Pondicherry

The funky Dune is a very interesting concept indeed. One of the best places to stay near the beach in Pondicherry, it's situated on a sprawling 35 acre beachfront property just north of town. The resort has 30 villas and 20 rooms, all with a unique designs by various artists and architects from around the world. It's quite amazing. Creative types will love it! The Dune is home to an Artists in Residence program as well. The property's Paradise Spa offers Ayurvedic treatments, yoga and meditation, and other alternative therapies. Free bicycles are provided to ride around the property.

Price: Rates start from 5,500 rupees per night.

Eco Features: Commitment to environmental issues and organic food are among the core values of the Dune group. Solar heated water, reclaimed timbers, wastewater treatment plant, and an organic farm all make the resort as green and as healthy as possible.

COCONUT LAGOON – KUMARAKUM, KERALA

One of the top resorts on the Kerala backwaters in Kumarakom, Coconut Lagoon is a CGH Earth property. This hotel group is renowned for the importance it places on the environment, nature, heritage conservation, and local communities. Water and history are the defining elements at Coconut Lagoon. The beauty of the property that it's only accessible by boat, making it a rare escape from the world. The stately resort beautifully captures the Kerala of old, with traditional wood buildings that have been transported and restored. Guests can enjoy sunset cruises, backwater cruises, and an Ayurvedic spa. CGH Earth also has another outstanding eco resort in

Thekkady, near Periyar National Park, called Spice Village.

Price: Expect to pay 15,000 rupees upwards per night for a double. Substantial discounts are possible during the monsoon season.

Eco Features:

Conversion of waste into fuel, chemical free zone, use of vermiculture and composting, organic farming, and use of cows to eat the grass .

Paper Reduction:

No newspapers delivered directly to rooms – common reading material is available only in congregation areas Reusable cloth bags used as bin liners in guest rooms, eliminating the need to use plastic bags.

Plastic Reduction:

Use of plastic packaging for supplies coming into the property by supply chain ven-dors is prohibited . Vendors are required to package material in reused and returned containers/jarsBottled water suppliers are asked to take back empty PET bottles.Shampoo and soap containers provided as guest amenities are made from china clay/terracotta. Annually, 2,350 china bottles used avoid 50,400 plastic bottles of 35 ml Use of plastic stirrers for beverage service is avoided by using bamboo stalks.

Other Material Reduction:

Conventional cement, clay brick, wood and steel construction materials use re-duced by incorporating local building ma-terials – annually 4,000 pairs of thatching leaf procured from local markets for roof construction and maintenance

Use of lemongrass and other aromatic oils used as substitutes for phenyl-based for floor cleaning products

Organic paddy cultivation eliminates use offertilizer, pesticides and reduces water use. 10,500 kg of local rice species: Njavara and Aryan cultivated .Annual consumption of 2,800 kg of composted manure, 400 kg of bone meal, 250 kg of neem cake, and 300 kg of lime shell used for cultivation avoid the use of corresponding quantities of NPK mix, Urea etc.

Energy Efficiency

Lighting

Lighting energy efficiency is implemented through CFL bulbs in the gardens, and LED as well as energy saving T5, T8 tube light fix-tures with electronic ballasts as opposed to T12 tube lights with electromagnetic bal-lasts.

F&B

Reduced food refrigeration, through a deliberate practice of ensuring a high degree of fresh foods, is practiced. Consequently, the artificial refrigeration volume required to serve the total number of staff and guest meals is lower than the volume required if business-as-usual F&B service practices were adopted.

Equipment

All exposed piping for distributing hot water across the property is insulated by using CPVC or other insulated piping systems

Rain Water Harvesting

Leveraging natural water reserves (backwaters) around the property and the practice of rainwater harvesting ensures complete water self-sufficiency of Coconut Lagoon's operation throughout the monsoon. Additional water, 2,700 kilolitres, required is sourced from tankers only during the summer months of March – June.

Coconut Lagoon makes use of energy de-rived from waste-to-energy technologies (bi-ogas plant), solar thermal water heating and solar electric systems.

Solar Thermal

A solar thermal network comprising insulated hot water storage tanks and136 solar flat-plate collectors of 2 sq.m each supply-daily hot water requirements (13,000 litres per day)for 50 guest rooms and the kitchen.

Biogas Plant

The biogas plant produces methane with a calorific value equivalent to 17kgs LPG everyday. The biogas run cooker can cook 80kgs of rice everyday. Excess Methane from the biogas plant and EGSB reactors, not used for cooking purposes, is used to power street lamps which would have a combined load of 500 watts under business-as-usual conditions. In addition, used oil from the Ayurveda centre is used in oil lamps for table lighting in the restaurant area.

REASONS FOR THIS TOPIC

There is not a single reason behind researching this topic but the most important is the observe the mechanism and methods of Resorts specially with the help of modern technological and advance machines.

RESOURCES FOR THE MATERIAL USE IN RESEARCH

www.tripsavvy.com

www.homeguides.sfgate.com

www.thebalance.com

www.nativeplanet.com

www.ecoindia.com

Coconut Lagoon Ecolabelling Report, Jose Dominic, 2013

3.3 SAGARMALA PROJECT - " A BLUE REVOLUTION. "

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ABSTRACT - Our country, India is bounded by the Indian Ocean on three sides and covers 7,516 kms of coastline area and is centrally located in the Indian Ocean. The vast area and its central location provide an opportunity to trade with the Africa, East-Asian and European Nations. To develop the trade with other countries, India needs to develop the sea ports in eastern and western coasts. India suffers from poor linkages and poor performance of existing port infrastructure. Insufficient transport connectivity increases the logistics and exports cost. Therefore, the present government is developing the model cities, new sea ports, transportation and other facilities near the coastal area.

KEYWORDS- Sagarmala, Establishment, Holistic, Logistics hub, Infrastructure, Supervision.

INTRODUCTION:-

The transportation sector is vital to the success of the country. Worldwide, transportation value is vital to migrate from one place to another location. Transportation in India is most important. India has the great revolution by the transport, and it is entirely the dependent system of India. "Transport" (British English) or "Transportation" (American English) is the movement of people and goods from one place to another. The term is derived from the Latin word:-

trans ("across") and

portare ("to carry").

Transport in India consists of transport by land, air and water. In remote villages, forest and hilly areas pathways are still an important amongst the different modes of transport. Transportation is classified as under:

Road Transport: Primary mode of transport for most citizens

(Cars, Trucks, Buses, Auto rickshaws, Bullock Carts, etc.)

Air Transport: Most modern and the quickest mode of transportation.

(Airplanes, helicopters, rockets, etc.)

Water Transport: One of the cheapest modes, with an extensive network of inland waterways and seaports.

(Ships, boats, Ferries etc.)

Water transportation is the intentional movement of water over large distances. Travel by water is as old as civilization itself. With its long coastline, India offers great potential for developing offshore renewable energy and government has accorded due priority to attract investment in this area. The power generated will feed the coastal activity and also contribute to the national grid. So, in a view to increase the shipping tourism in India, sagarmala project has been launched.

I'm quoting Mr. shri Narendra Modi - Hon'ble Prime Minister of India- " Maritime Sector has a vital role in India's progress and Government is strengthening the sector through innovative initiatives." And, " Shipping is not just ferrying of goods and Passengers. It is all about the growth of the Nation as it promotes trade."

TABLE NO.1 : VIEW OF SAGARMALA PROJECT:

STATUS: Currently Active.

OVERVIEW OF SAGARMALA PROJECT:

It is a project to modernize India's ports so that port-led development can be augmented and coastlines can be contributed to India's growth. The project aims to harness India's 7,500-km long coastline and 14,500 km of potentially navigable waterways.

India's coastal contours resemble a necklace and the symbolic name – **Project Sagar Mala (meaning Ocean's Necklace)** is no doubt apt not only by shape but also by asset value since it aims to accelerate economic development by harnessing the potential of its coastline. The National Sagarmala Apex Committee (NSAC) first meeting was held in 05 October 2015 under the supervision of shipping and road transport and highway Union minister Mr. Nitin Gadkari. It was decided in the meeting that 70,000 crore Rs. will be invested in this project which will be coming in the next few years.

According to the National Perspective plan, six new green field ports are developed under this ambitious project. They are: Sagar (West Bengal),

PRIME MINISTER	SHREE NARENDRA MODI
MINISTRY	MINISTRY OF SHIPPING
KEY PEOPLE	SHRI NITIN GADKARI
ESTABLISHMENT	31 JULY, 2015
WEBSITE	Sagarmala.gov.in

Paradeep in Odisha, Enayam in Tamil Nadu, Machilipatnam in Andhra Pradesh, Vizhinjam in Kerala and Vadhawan (Near Dahanu) in Maharash

PICTURE SHOWING LOGO OF SAGARMALA.

BLUE REVOLUTION:

- This would be an Umbrella programme.

- The outlay is of rupees 3,000 crore.

- It envisages the integrated development and management of fisheries.

- It covers inland fisheries, aquaculture, marine fisheries including deep sea fishing, Mari-culture and all activities undertaken by the National Fisheries Development Board (NFDB) towards realizing "Blue revolution".

SIGNIFICANCE OF THE PROJECT:-

- India is located along key international trade routes in the Indian Ocean and has a long coastline of over 7,000 km. Yet, capacity constraints and lack of modern facilities at Indian ports tremendously elongates the time taken to ship goods in and out of the country and has held back India's share in world trade.

Upgrading the maritime infrastructure will have the dual benefit of will generating jobs and creating ports that meet international standards. It can also attract business away from leading ports such as Singapore and Dubai.

- It reduces the cost and time for transporting goods, thus enabling better margins for both domestic and export/import trade.

- Implementation of the project will result in a holistic economic development of riverine and coastal area- raising the standard of living and giving alternative career opportunities to traditional fishermen.

- It provides a competitive economic alternative to railways, roads and flights- which either take too long or are expensive.

In India, the coastal and riverine area's economic development was stunted by the lack of adequate transport facilities. The Sagarmala project aims to remove these inefficiencies, and help in making India economically competitive globally.

AIMS:-

The programme aims:

- Changing way logistics evacuation happenings in India.

- Save logistics costs nationwide for cargo handled and evacuated through seaports.

- Boost overall economic development through ports

- Empower coastal communities and

- Enhance Maritime Tourism.

OBJECTIVES:-

The objectives are as follows:

- To optimize logistics (rails, roads and inland waterways).

- To identify capacity additions (more ports wherever viable).

- To modernize India's Ports so that port-led development can be augmented.

- To create awareness amongst the local public, tourists and the tourism related persons.

- To augment operational efficiency of ports (more terminals for loading and unloading cargo)

- To create awareness of untapped potential of the sector.

THE SAGARMALA PROJECT STAND ON THREE PILLARS OF FOCUS:-

1. Modernizing Port Infrastructure:-

Transforming the existing port into world class port through infrastructure modernization and streaming system.

2. Efficient Evacuation System:-

Developing integrated transport   infrastructure (efficient rail, road and coastal network) for connecting the coast to the hinterland and, as well promote coastal shipping for the movement of cargo.

3. <u>Coastal Economic Development:-</u>

Promote coastal economic zones,   promote tourism and through promoting industries near the coastal area.

THE CURRENT INFRASTRUCTURE SCENARIO:-

Unfortunately, the country has not focused on developing the coastal and port infrastructure in an integrated manner that would have realized its full potential. Today, most ports lack adequate cargo handling infrastructure. The ship time is poor compared to most other developed ports in China, Japan, Korea, Dubai, Netherlands, etc. The loading-unloading processes are cumbersome. The rail and road connectivity to the hinterland is inadequate. Industrial centers' near port locations that can offer value addition are also lacking.

INTEGRATED DEVELOPMENT AT THE CORE OF SAGARMALA PROJECT:-

Under the project, 12 smart cities will be developed near ports with an investment of Rs 50,000 crore. These will be integrated townships that will have affordable housing and implement green initiatives for sustainable living. The government has identified 1,208 islands for development along with 189 lighthouses. This is likely to boost both domestic and international tourism significantly. Giving boost to economic activity near coastal locations, Coastal Economic Zones (CEZs) will be established. These CEZs will be planned with modern support infrastructure and adequate fiscal incentives to attract investment. Kandla Port in Gujarat, for instance, has around two lakh acres of land in its possession and has been identified as a potential CEZ.The project

will undertake redevelopment of existing port infrastructure through upgrade in port handling equipment and extensive use of IT in improving monitoring and operations of port activity. Jawaharlal Nehru Port Trust, which is one of the 12 major ports in India, will receive Rs 4,000 crore to develop its CEZ. The project will identify suitable port locations with deep drafts to enhance shipping and port handling capacity. Specialized ports with focus on handling coal, energy, chemicals, commodities, etc., will be developed. Development and linking of short-sea shipping, coastal shipping and inland waterways transportation will get the due attention. Further development of shipbuilding, ship repair and ship recycling industry will also be a priority. Enhanced development of offshore drilling and storage platforms is another objective of the project. It also aims at developing logistics parks and warehousing near coastal locations to support port activity.

OPPORTUNITIES FROM SAGARMALA PROJECT:-

Port modernization.

Hinterland connectivity and multi-modal logistics.

Inland waterways.

International shipping.

Shipbuilding, ship repair and ship recycling.

New port development.

Coastal shipping.

Port led industrialization.

Green initiatives in ports.

Cruise shipping and lighthouse tourism.

SAGARMALA- LINKING PORTS AND INDUSTRIALIZATION:

Rivers were Lifeline of Indian Economy and Ports were the Gateways. Slowly, the means of transportation by Waterways has reduced and is totally nil in some ports of India currently. Projecting SAGARMALA for the Robust growth in Economy and poised to take full advantage of lower logistics cost by water routes. It also Relieves Congestion on Roads and Railways. Also, Increasing role of India in Modern Global Trade – Exports to grow through MAKE IN INDIA project of Sagarmala. Four Ports currently under Development are: Ganga, Brahmaputra, Mahanadi and Buckingham Canal. National Waterway 1 is Already in use for Coal Transport from Haldia to Farraka. The cost for Coastal Shipping is 0.15 to 0.20 Paisa Per Tonne km compared to INR 1.5 for Railways and INR 2.5 for Road. Coal, Cement, Steel and Fertilizers are the Key Commodities with Significant Growth Potential. Potential to Lower the Logistics Cost in the Economy by, 21,000 to 27,000 Cr by 2025.

LIST OF COASTAL ECONOMIC ZONES (CEZ):-

Total 14 CEZs are planned to be developed in phases across coastal India.

1. Kachch CEZ:-

-Linked to Kandla Deen Dayal port and Mundra Port.

-Across Kachch district in Gujarat.

2. Saurashtra CEZ:-

-Linked to Port Pipavav and Sikka port.

-Stretched across Junagarh, Amreli and Bhavnagar to Ahmedabad districts in Gujrat.

3. Suryapur CEZ:-

-Linked to Dahej port and Hazira Port

-Stretched from Bharuch, Surat and Navsari to Valsad districts in Gujarat

4. North Konkan CEZ:-

-Linked to Jawaharlal Nehru Port and Mumbai Port Trust.

-Stretched from Nashik, Thane, Mumbai and Pune to Raigad districts in Maharashtra.

5. South Konkan CEZ:-

-Linked to Dighi, Jaigarh and Mormugao port.

-Stretched from Ratnagiri, Sindhudurg and North Goa to South Goa districts in Maharashtra and Goa.

6. Dakshin Kanara CEZ:-

-Linked to New Mangalore Port.

-Stretched from Udupi, Dakshina Kannada and Kodagu to Mysore districts in Karnataka.

7. Malabar CEZ:-

-Linked to Cochin Port.

-Stretched from Ernakulam, Alappuzha and Kollam to Thiruvananthapuram

 districts in Kerala.

8. Mannar CEZ:-

-Linked to VOCPT port.

-Stretched from Kanyakumari and Tirunelveli to Thoothukudi (Tuticorin) districts in Tamil Nadu.

9. Poompuhar CEZ:-

-Linked to Cuddalore port.

-Stretched from Cuddalore, Perambalur, Ariyalur, Tiruchirappalli, Thanjavur and Thiruvarur to Nagapattinam districts in Tamil Nadu.

10. VCIC South CEZ:-

-Linked to Chennai Port, Kamarajar Port and Kattupalli Shipyard.

-Stretched from Thiruvallur and Chennai to Kancheepuram districts in Tamil Nadu.

11. VCIC Central CEZ:-

-Linked to Krishnapatnam Port.

-Stretched from Chittoor to Nellore districts in Andhra Pradesh.

12. VCIC North CEZ:-

-Linked to Visakhapatnam Port and Kakinada Port.

-Stretched from Guntur, Krishna, West Godavari, East Godavari, Visakhapatnam, Vizianagaram to Srikakulam districts in Andhra Pradesh.

13. Kalinga CEZ:-

-Linked to Paradip Port and Dhamara Port.

-Stretched   from Puri, Jagatsinghapur, Cuttack, Kendrapara, Jajapur to
 Bhadrak districts in Odisha.

14. Gaud CEZ:-

-Linked to Port of Kolkata and Haldia Port.

-Stretched from Purba Medinipur to South 24 Parganas districts in West Bengal.

SAGARMALA DEVELOPMENT COMPANY LIMITED:-

Implementation of the projects identified under the Sagarmala Programme will be taken up by the relevant Ports, State Governments / Maritime Boards, Central Ministries, mainly through private or PPP mode.

The Sagarmala Development Company Limited (SDCL) has been incorporated (on 31st August 2016) under the Companies Act, 2013, after obtaining approval of the Union Cabinet on 20th July 2016. SDCL has been set up under the administrative control of Ministry of Shipping with an initial Authorized Share Capital of Rs. 1,000 Crore and a Subscribed Share Capital of Rs. 90 Crore. SDCL will provide equity support for the project Special Purpose Vehicles (SPVs) set up by the Ports / State / Central Ministries and funding window and /or implement only those residual projects which cannot be funded by any other means / mode.

OBJECTIVES OF SAGARMALA DEVELOPMENT COMPANY LIMITED:-

Develop & formulate projects emanating from the National Perspective Plan (NPP).

Assist project SPVs set up by Central Line Ministries / State Governments/State Maritime Boards/Ports etc. for projects in alignment with Sagarmala objectives.

Provide funding window for residual projects that cannot be funded by any other means/mode.

Prepare the Detailed Master Plans for the Coastal Economic Zones (CEZs) identified as part of the National Perspective Plan.

Raise funds from multi-lateral and bilateral agencies as debt/equity (as long term capital), as per the project requirements.

INDIA TO TRAIN 1.3 MILLION PEOPLE ACROSS 21 COASTAL DISTRICTS:-

As many as 1.3 million people are to be trained across India's 21 coastal districts in trades such as fishing, logistics, manufacturing and tourism as part of the government's Sagarmala programme.

Sagarmala is the government's coastal and port city development plan, which includes preparing the manpower needed for Chinese-style coastal economic zones, where manufacturing units will be set up to generate jobs.

The offer of skills training comes in the backdrop of concerns being expressed on the negative impact of the Rs8,40,000 crore Sagarmala programme on the fishing community.

The ministry of ports and shipping has conducted a survey in 21 coastal districts across 13 states and union territories to roll out the training programme. The project will be executed in two phases. The first phase will cover 21 districts in Kerala, Gujarat, Andhra Pradesh, Karnataka, Odisha, West Bengal, Tamil Nadu, Goa, Puducherry, Andaman and Nicobar island and Lakshadweep.

BENEFITS OF SAGARMALA PROJECT:-

Around some 3 or 4 Coastal Tourist Circuits promoting Coastal Tourism in India on a very Prominent Position.

Totally integrated Coastlines through Inland and Mega Waterway Channels by River and the Coastal Port.

 Around some 3 or 4 Modernized Ports of some 200 Metric tons Capacity to carry the goods and the Passengers.

Maritime Education, Training and Skill development.

Revenue Increase through increase in Economic Activity due to the improvised development of the Coastal Cities.

Significantly, it will result in the Employment Creation in the Shipping Industry, In the Ports, and the whole of the Ecosystem.

CHALLENGES OF THE SAGARMALA PROJECT:-

Financial Constraint: - A Sound Budget must be allocated only to the Infrastructure and Development of the Major Ports.

Unavailability Of Modern Technology: - India is still Unable to Create Effective and Efficient Ports. Use of Non – Indigenous Technology Advancements.

The Success of this Project depends upon also the Inter – Connectivity between the Railways, Roads and the Inland Water Body Services.

The Non- Governmental Organization's must also be agreed upon the decisions of the Government.

The Fisherman's and the Local Coastal Communities living near the Coastal areas should give a nod to the Project as; their overall Occupation that is 'Fishing' would be greatly affected by it.

In all, the Sagarmala Project's Initiative would also strive in ensuring the Sustainable Development of the Population residing in the Coastal Economic Zone (CEZ).

TABLE NO. 2: SIX MEGA-PORTS ARE DEVELOPED UNDER SAGARMALA PROJECT:-

STATE	PLACE	PORT
Kerala	Vizhinjam	Vizhinjam International Seaport
Tamil Nadu	Colachel	Colachel Seaport
Maharashtra	Vadhavan(near Dahanu)	Vadhavan Port
Karnataka	Tadadi	Tadadi Port
Andhra Pradesh	Machilipatnam	Machilipatnam Port
West Bengal	Sagar Island	Sagar Island Port

'Sagarmala' – Linking Ports and Industrialization

S teel and Cement

A dvanced industries, e.g., semi-conductors, high-tech manufacturing

G as based petchem plants

A pparel

R efinery and petrochemical clusters

M arine clusters (ship-building, marine services)

A gro-processing and fisheries

L ight manufacturing
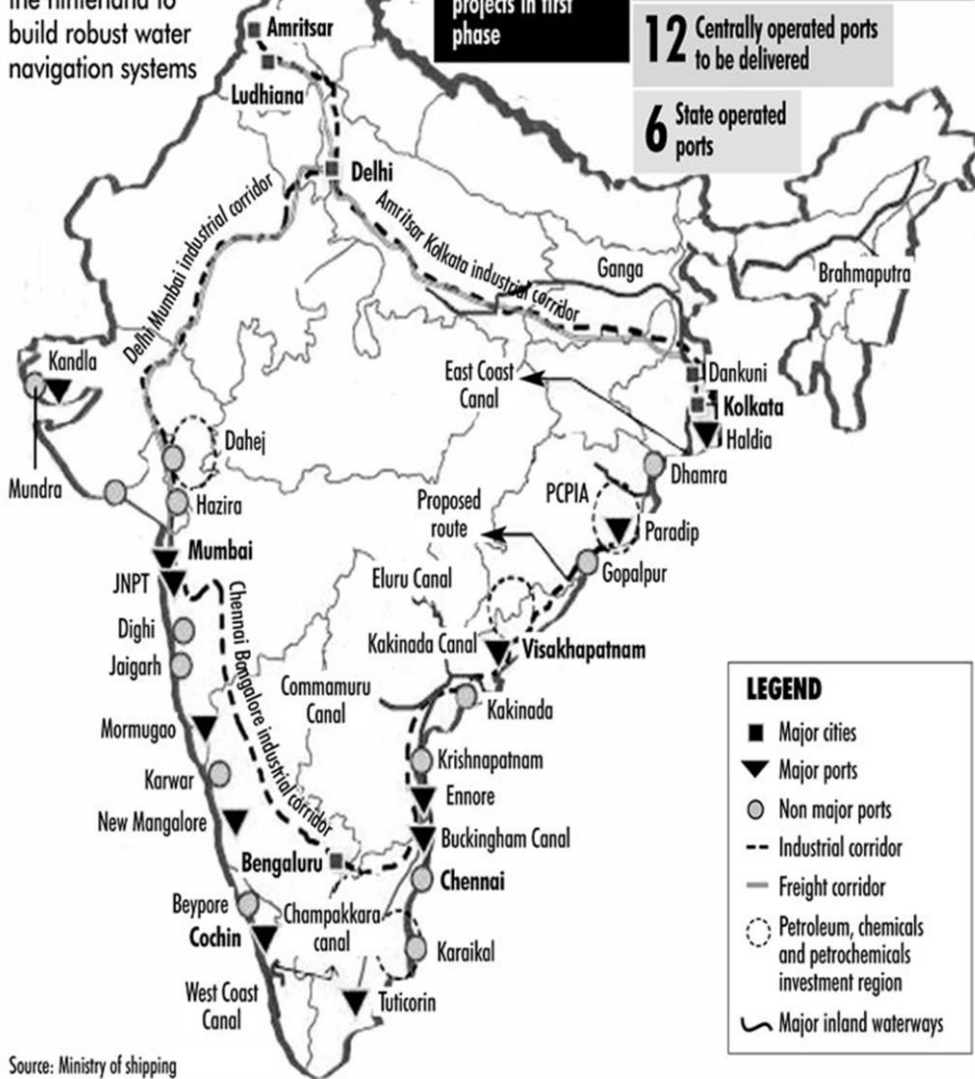
A utomotive and assembly

11

SAGARMALA

The plan proposes to link 12 major and 180 minor ports in India with the hinterland to build robust water navigation systems

₹692 Crore
Funds required in 2016-18 for implementation of projects in first phase

₹500 Crore
Capital from special purpose vehicle, initial subscribed share capital of 100 crore funded by 12 major ports and RVNL

12 Centrally operated ports to be delivered

6 State operated ports

Amritsar
Ludhiana
Delhi
Ganga
Brahmaputra

Delhi Mumbai industrial corridor
Amritsar Kolkata industrial corridor

Kandla
Mundra
Dahej
Hazira
Mumbai
JNPT
Dighi
Jaigarh
Mormugao
Karwar
New Mangalore
Bengaluru
Beypore
Cochin
West Coast Canal

Chennai Bengalore industrial corridor

Eluru Canal
Commamuru Canal
Kakinada Canal
Champakkara canal

East Coast Canal
Proposed route
PCPIA
Dankuni
Kolkata
Haldia
Dhamra
Paradip
Gopalpur
Visakhapatnam
Kakinada
Krishnapatnam
Ennore
Buckingham Canal
Chennai
Karaikal
Tuticorin

LEGEND

■ Major cities
▼ Major ports
○ Non major ports
-- Industrial corridor
— Freight corridor
◌ Petroleum, chemicals and petrochemicals investment region
〜 Major inland waterways

Source: Ministry of shipping

CONCLUSION:-

The Main Aim of Sagarmala Project is Holistic Port Development Infrastructure in the coastal regions connecting the eastern and the western coast of India. In its view, it broadens its nature to Modernize, Mechanize and as well computerizes the New Ports and Port City Regions under Coastal Areas. The Government is hoping to increase the Cargo Traffic Three-fold in the next five years. In all, 11 states and 6 Union Territories are attached with the Indian Ocean. The Kandla Port in Gujarat and the Paradeep Port in Odisha are being developed as under Green Smart City Project during the next coming years. If inland waterways programme is included in it will benefit at least 55 per cent of all population. In all, it would be a Great Benefit to Our Country as a whole as well as, it would raise the GDP of Our Country by 2%, merely by the Sagarmala Project. At Navi Mumbai Special Economic Zone, government is investing 4,000 crore rupees which will provide employment to 1.5 lakh youth. An Overall innovation, a new Revolution and Systemized Waterways would add up to the increased inflow of Tourists as well to our Motherland. The Jianxi Navigation project in China is an example of how a landlocked rural area can be transformed with the help of an advanced inland water navigation system.

In India, the coastal and riverine area's economic development was stunted by the lack of adequate transport facilities. The Sagarmala project aims to remove these inefficiencies, and help in making India economically competitive globally.

Therefore, there would be Four Major Impacts Of the Sagarmala Project. Those are Listed as Follows:

Economic Impact: - It will be Improving India's ranking in Major Index (Ease of Doing Business- 130th Rank) And Improve It's Credibility as Global Economy.

Social Impact: - New Employment Opportunities will Save Coastal Communities from Over- Reliance on Fisheries. Modernizations of Ports by Digital Setup will Check Corruption.

Political Impact: - Sagarmala Project will Strengthen Economy and will Enhance its Credibility at Global Summit like, BRICS, G-20. It would Help India to Provide Aid to Other Developing Nations.

Environmental Impact: - The Faster Movement of Goods To and Fro from Ports will Reduce Ship Waiting Time and as well Reduce the Wastage of the Fuel.

Therefore, Sagarmala Project Will Not Only Provide Economic Advantages And Gains to India But, Social, Political And Environmental And Developmental Benefits As Well.

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3.4 MELGHAT- TIGERTECH

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AIMS

To study the wildlife tourism and the role of technology to promote and increase the tourism at Melghat Tiger Reserve.

OBJECTIVES

- ➢ To study the use of technology for counting and tracking animals.
- ➢ To find out the use of technology for promotion of destination.
- ➢ To study the difference between past and modern methods in addition to the technologies.
- ➢ To observe the technology used by the government and private organizations at the place.

INTRODUCTION

India is a very vast country. It has varieties of landforms like hills/ mountains, desert, forest, rivers, lakes, etc.. Near about 15% of biodiversity of the world available in it. And for protecting this large biodiversity Indian Government made many laws and authorities/ organizations. These organizations used many technics for fulfilling the aim. Here we study about one of the authority i.e. The Forest Department of India. The illegal trade of animal is now third largest illegal trade in the world after narcotics and weapon. For protection of wildlife the Forest Department regulates many work in all over India. From these all here we concentrate on one of the oldest Tiger Reserve Wildlife Sanctuary i.e. Melghat.

Melghat, a tiger reserve sanctuary is located in the Amravati district of Maharashtra. It is 225km towards west of Nagpur. The Melghat area was declared a Tiger Reserve in 1974. Presently, the total area of reserve is around 1677km2. The main fauna found here are Bengal Tiger, Indian leopard, Sloth bear, Sambar , Barking deer, Nilgai, Python, etc. by the Forest Department of Melghat. Near about 772 types of species of plant are found here according to the research made by Botanical Survey of India Western Region Pune.

A common justification for developing wildlife tourism is that they help to secure the long term conservation of wildlife and wildlife habitats. As human race or human society is growing, the wild animal are in danger. But as per nature's rule, every living creature on this earth is important and has important ecosystem. Also we get some medicines and useful drugs from some animal. We have already realized this, so in every country we see that there are wildlife animal reserves and national parks where these animals can live freely in forest and in jungle however these are monitored by human beings. Also now days these wildlife national parks have become popular tourist places. Many endangered species or rare species are available or preserved here. For example white tiger, panda and many other animals. But these animals also undergo some disease or there can be some situations where human being attention is required for these animals like vaccination of these animals. If they met with some accident or are hurt then we have to cure their wounds, in such cases we need to catch those animals and do the required treatments. Main problem in such situations is that in large wildlife sanctuaries these animals are really hard to locate. Due to this many times we have to search the entire area.

In 2012—a year in which poachers killed at least 745 rhinos and 22,000 elephants in Africa alone—Google.org presented WWF with a $5 million Global Impact Award to "harness technological innovation to stop conservation crime." This visionary investment launched the WCTP, through which WWF and our partners seek solutions to end the global wildlife poaching epidemic. *This scourge is taking a dangerous toll on rangers, threatening the livelihoods of communities, damaging ecosystems, and emptying them of wildlife—all to feed an illegal wildlife trade valued at more than an estimated $10 billion each year.*

We set out to create an umbrella of technology tools to support rangers in their anti-poaching efforts, with an initial focus on piloting the use and integration of three specific technologies in Namibia: unmanned aerial vehicles (UAVs, or drones), wildlife tracking tags, and SMART (Spatial Monitoring and Reporting Tool), a ranger patrol analysis software program. Following the conclusion of Phase 1 (October 2012-June 2014), it became clear that we needed to adapt our approach, since governments across Africa were banning the use of UAVs; cell coverage for tracking tags was poor in many of the continent's poaching hotspots; and governments were resistant to adopting the SMART software system. We realized that we needed to rapidly pivot from a top-down technology-driven approach to a bottom-up problem-driven approach if we were to make a meaningful impact on the poaching crises.

Building on the learning from Phase 1, we embraced Google's spirit of innovation and turned our focus to identifying technological solutions to several key challenges. First, because most poaching occurs at night, systems need to function in darkness. Second, since connectivity and real-time sharing of information and data was critical to success, we needed to explore other types of networks for our communications backbone. Third, harsh field conditions necessitated that we look beyond "off-the-shelf" technology, instead creating our own adapted solutions.

In 2014, Phase 2 began with a range of investments responding to the identified challenges. We explored using radar to detect the metal snares that entrap wildlife and acoustic sensors to detect gunshots. The WCTP funded the development of advanced prototypes such as virtual radar fences to detect the movement of poachers or other illegal intruders. And we tested and improved existing technologies, including UAVs, thermal cameras, wildlife tracking tags, and a software program called 'SMART' that allows rangers and protected areas managers to report timely and accurate information about poaching and other threats to biodiversity.
Since the new millennium, technology has advanced at a rate never before seen in the history of humankind. Yet so far we have only made relatively small steps when it comes to applying these new advances to the most pressing issue of all: the health of our planet.

Today we teeter at a critical tipping point, pushing the limits of the safe operating space of humanity. But as our population increases so do our technological capabilities, and the possibilities for tech to help create a sustainable future. Here are 5 new technologies that are starting off that process, saving animals and protecting our natural world.

Many of us have experienced that sinking feeling following the telltale thud of one of our favourite garden birds meeting its demise against our patio door. It's not nice and no matter how hard we try to employ our layman veterinary skills many of the birds don't pull through. You'll be shocked to hear that an estimated 100 million birds collide with glass windows in the UK each year, and a third of these are fatal. That figure dwarfs the death tolls from oil spills and pesticides, yet the problem has been largely overlooked, until now.

It is the reflective and transparent properties of glass that leads to these fatalities—the bird is either heading for the area behind the glass or for the reflected environment they see in it. In recent years scientists have managed to gain a better understanding of bird vision and with more people caring about the wildlife around them, a small market has opened up for bird-friendly glass. This new glass works because it has a UV reflective coating which is visible to birds but invisible to the human eye.

The battle against the illegal trade in rhino horn seems to be never-ending and the situation today is as heated as it has ever been, but a biotechnology company in San Francisco thinks they have a solution.

Pembient intends to replace the illegal wildlife trade (the fourth largest black-market after drugs, arms and human trafficking) with sustainable commerce. Using keratin and rhino DNA, and 3D printing technology, they produce replicas of rhino horns that are actually more pure than the real thing. They plan to sell the horns at a fraction of the price of real horns, undercutting poachers, and forcing them out of the market. A potentially ingenious solution, if it works. Some of the large rhino conservation organisations are doubtful; concerned that it may increase demand and reinforce the false idea that rhino horn has some medicinal value.

Cetaceans are marine mammals like whales and dolphins and their numbers have declined dramatically worldwide over the last century. One of the biggest threats they face is from entanglement in commercial fishing nets (bycatch) but changes in legislation over recent years has provoked a period of innovation in fishing gear. Pingers are now used all over the world with results showing significant reductions in cetacean bycatch. They are attached to fishing nets and emit a sonic pulse which stimulates cetaceans to echolocate and thus detect the presence of the nets which they can then avoid.

Drones or unmanned aerial vehicles (UAV's) have many applications, most famously in military warfare, but more recently and arguably more usefully, in wildlife conservation. They are being used around the globe for tasks such as habitat mapping and wildlife surveys, but in Africa they have proved critical in anti-poaching efforts.

In Kenya, drones have been deployed to complement teams of sniffer dogs and armed patrols and with their thermal imaging cameras and silent flight are proving highly successful. They can be operated from two laptops in a national park office—one screen showing a map and the other showing the live video from the high-definition camera. Recent trials have seen drones significantly reduce poaching and now the Kenyan government has announced it will deploy drones to all fifty-two National Parks.

Chilli pepper plants, guard dogs, fires, electric fences, capsicum powder, bangers, beehives—and the list goes on. All sorts of techniques have been trialled but most have failed to prevent elephant crop raids in the farmlands of villages across Africa. However, since 2008 a new technique which involves installing a SIM card in the radio-collars of problem-elephants has proved quite successful.

The SIM card sends a text to wildlife rangers once the elephant approaches a pre-programmed geo-referenced boundary, usually the edge of a National Park. This enables trained rangers in 4×4 vehicles to reach the elephant quickly and scare it back into the bush. The rangers and local communities have noticed these problem-elephants are reducing their crop-raiding behaviour and as elephants live in a hierarchical social structure it is anticipated that the avoidance behaviour will rub-off onto other elephants too.

TECHNIQUES USED IN MELGHAT FOR TRACKING AND COUNTING

Country's historic and oldest tiger reserve Melghat in Amravati district has recorded a presence of 41 tigers in 2017 as per the result of Phase IV monitoring exercise conducted in around 2,000 sq km.The tiger number in Melghat is virtually stable with the figures not increasing but going down by two as compared to 2016, when 43 tigers were recorded.The number of sub-adult cubs has also gone down from 13 to 10 this year. Generally, cubs are not considered in estimation."The camera trapping study was carried out between December 11, 2016, and February 10, 2017. In all, 830 camera traps were set with 49,800 trap nights within the reserve and over 1,000 photographs were obtained," said chief conservator of forests (CCF)

& field director MS Reddy, who took over recently.With huge inviolate area of over 2,000 sq km, Melghat has high hopes when it comes to increasing tiger numbers but the population is almost stagnant between 30-40 over the years.Wildlife expert and president of Satpuda Foundation Kishor Rithe said, "In the backdrop of at least 14 villages being relocated in the last 15 years from the tiger reserve by spending crores of rupees, the figure of 41 tigers is not encouraging. The officials need to introspect."

HISTORICAL NUMBERS OF CAMERA TRACKING SPECIALLY IN VIDARBHA, INDIA

* Tadoba reserves has 75 to 80 tigers.
* Tiger population in the country is estimated to be around 2,226, a rise of over 30% since the last count in 2010 when the figure was 1,706.
* The total number of tigers in Maharashtra was estimated to be around 190, a rise of just 12% from its 2010 figure of 169.
* According to rough estimates, out of 190 tigers in Maharashtra about 170-175 exist in the landscape of Tadoba, Pench, Melghat, Navegaon, Nagzira and Sahayadri tiger reserves. The number of tigers is estimated around 75 to 80 at Tadoba reserves in Chandrapur.
* The National Tiger Conservation Authority (NTCA) rated Tadoba, Melghat and Pench tiger projects from good to very good for protection, conservation and effective management of wildlife there while Sahyadri is from fair to good.
* The Melghat tiger reserves has been awarded first prize among all tiger reserves in the country for village relocation from core area. The award was given to the field director of Melghat Dinesh Tyagi by Union minister of state for forests Prakash Jawdekar.

From the above information we get that the Melghat Forest department uses camera tracking devices.

NEW TECHNOLOGIES IN FOREST

There are 3 types of Radio tracking system used for wildlife animal tracking are popular now in those days. The description of about them is as follows-
Radio tracking

1. VHF Radio tracking- Scientists have been using VHF radio tracking since 1963.in order to use VHF radio tracking, a radio transmitter is placed on the animal. Usually, the animal is first sedated .While the animal is asleep, the scientists gather information about the health and condition of the animal.

2. Satellite tracking- It is similar to VHF radio tracking, but instead of radio signal being sent to a satellite. With satellite tracking, scientists don't have to be near the animal to pick up its signal.

3. GPS tracking- It is the newest technology being used to track wildlife. In GPS tracking, a radio receiver, not a transmitter, is placed on the animal. The radio receiver picks up signals from special satellites. The receiver has a computer that then calculates the location and movement of the animal. The data gathered by the receiver is then sent to another set of satellites. The second set of satellites then sends the data to the scientists.

Recently, Wednesday January 17, 2018, The Hitavada newspaper published an article on "All India Tiger Estimation Exercise". In it they have given the growing population of tigers. Since last five years, 25% of tiger population has been increased.

Growing tiger population attracts the tourist and we have collected the data of last 8 years from forest office of Melghat.

Year	No. Of Visitors
2010-11	39,128
2011-12	22,410
2012-13	14,664
2013-14	33,419
2014-15	32,927
2015-16	35,024
2016-17	39,561
2017-18	41,552

Due to increase in the no. of tourist at Melghat the economy has been increased. By our own interpretation, annual income of Rs. 60 Crore approximately has been generated through tourism.

ADVANTAGES OF GPS ANIMAL TRACKING

1) This method is fast and convenient as compared to other system.

2) This does not require human attention as this is completely self-independent and automated system.

DISADVANTAGES OF GPS ANIMAL TRACKING

Although wildlife researchers made fruitful use of GPS devices for tracking animals, the technology has some disadvantages. The high cost of

equipment puts a strain on research budgets. Technical restrictions make it impractical for studying smaller species and limit the time scientists can spend tracking animals.

1)Data Retrieval- Many GPS collars use the Global System for Mobile Communications, also used by cell phones, as a way to retrieve data from the device. This protocol allows a researcher to collect information about an animal's movements without the need to recapture it. In order for GSM to work, the scientist must conduct her research in an area that gets cellular phone service. Non-GSM collars use Ultra High Frequency radio signals to transmit data. Although these do not require local cell towers, the scientist must know the animal's location to within a few hundred yards in order to collect data from the collar.

2)Battery Life- Being completely mobile devices, GPS tracking collars rely on battery power to function. The battery powers the GPS unit itself along with related electronic components which store data. Under ideal conditions, a battery in a typical GPS collar lasts about a year; for longer studies, researchers must recapture tagged animals and replace the battery. If the terrain is unfavourable to GPS signals, the unit takes longer to establish a location, leading to shorter battery life. Longer-lasting batteries would necessarily weigh more, adding cost and weight to the unit.

3)Cost- At the time of publication, a GPS package for tracking an animal costs about $10,000. This includes the collar, receiver, software for collecting data and accessories, such as a spare battery and a drop-off mechanism which automatically releases the collar from the animal. A goal of scientific research is to obtain as much information as possible; the more data that supports a theory, the more supported the research. According to the United States Geological Survey, the high cost of equipment tends to restrict the numbers of animals tracked, leaving the scientist with less data.

4)Weight- A complete GPS tracking collar weighs about a pound. Scientists don't want equipment to impede an animal's movements or affect its behavior, as these encumbrances cause stress and interfere with the research. Although advances in technology have reduced the size and weight of many electronic components, some items, such as batteries and antennas, remain relatively bulky. GPS collars are best suited for animals larger than a medium-sized dog.

PROMOTIONAL ACTIVITIES THROUGH TECHNOLOGY

The forest department of Melghat gave the information about the promotional activities used by them recently. They send E-brochures and related information to the travel agencies through e-mails. They also promote destination on social networking sites like Facebook. The Internet has had a major impact on tourism both for providers and consumers. This article classifies and analyzes the wealth of research published in major tourism journals over the past 10 years to identify major areas of focus and gaps in the research landscape related to the Internet in tourism. Research articles have substantially increased in number over the past 5 years of the 10-year period under analysis. The research can be categorized into seven areas with information search, website analysis, and Internet marketing being the three most common research topics. Although Internet-related issues in tourism are commonly researched, the article calls for more case study research to be conducted that takes an e-business and organizational perspective so that other organizations can learn from the mistakes made and also from best practice.

REASONS FOR THIS TOPIC

There is not a single reason behind researching this topic but the most important is the observe the mechanism and methods of government to protection of wildlife specially with the help of modern technological and advance machines.

RESOURCES FOR THE MATERIAL USE IN RESEARCH

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3.5 AUTOMATIC SMOKE FILTER

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Abstract

Statistics reveal that inhalation of smoked, gases and vapours is responsible

for the majority of fire death. Many new materials are much more toxic than

traditional materials. These toxics product usually occur together at fire and it is difficult to distinguish the contribution of each. Smoke consist of very solid particles and vapours, and it is most visible. Gas is product of combustion that remains in the gases state even when cooled, when but vapours revert back to a solid are liquid state at normal temperatures and therefore gradually condenses on cool surface as they migrate from the fire.

In this work a novel method for the development of the system that can filter the smoke that is made by the fire in the building by extracting it and filtering it. Ti9o develop a smoke and gas filtration system to reduce the toxicity in surrounding at the place of fire in a closed system.

1. Introduction

Smoke is the airborne solid and liquid particles and gases evolved when a material undergoes combustion or pyrolysis, together with the quantity of air that entrained or otherwise mixed into the mass. The smoke and normal atmosphere are indistinguishable and mainly constituent nitrogen, oxygen, carbon dioxide and other traces gases in varying proportion. The quantity of smoke produced in a fire depends on the nature of burning material whereas air entrained in smoky plumes depends exposed surface and ventilation conditions.

Butcher and Parnell (1979) developed a correlation based on the size fire perimeter and vertical distance of smoke layer. They provide the following equation for calculating the rate of smoke production:

Equation: 1

Where, M = rate of smoke production (kg/s)

Pf = perimeter of the fire (m)

Y = distance from floor to bottom of smoke layer (m)

$\rho\infty$ = density of the atmosphere (kg/m3)

g = acceleration due to gravity (m/s2)

$T\infty$ = ambient air temperature (K)
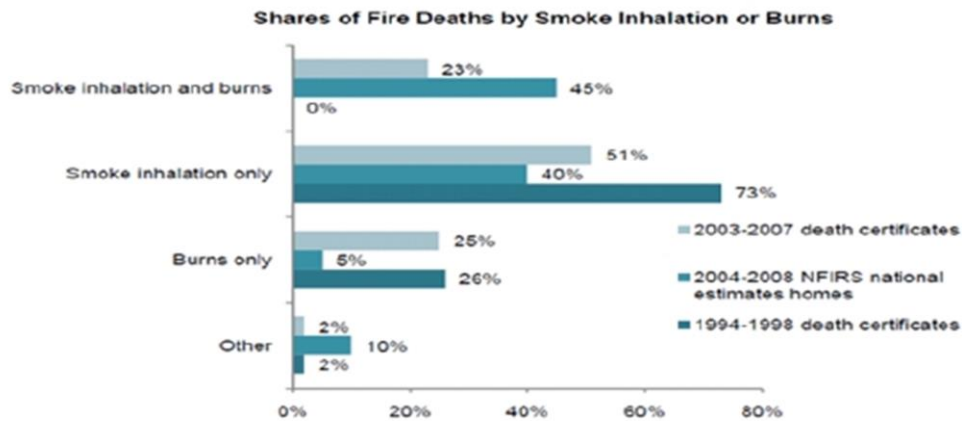
Tf = ambient room temperature (K)

2. Literature Review

Fig 1: Share of fire death by smoke inhalation or burns

When oxygen levels are at...	...a person experiences:
21 percent	Normal outside air
17 percent	Impaired judgment and coordination
12 percent	Headache, dizziness, nausea, fatigue
9 percent	Unconsciousness
6 percent	Respiratory arrest, cardiac arrest, death

Fig 2: Effect of oxygen percentage in air on a person

The NFPA explains another problem is the synthetic materials used so commonlyin home construction and furnishings today. When burning, they produce extremely dangerous substances that are released into the air. These toxic gases may replace the oxygen and be inhaled by victims struggling to find their way out of the burning structure. Carbon monoxide is one well known substance that can be very deadly even in small amounts. When plastics such as PVC pipes burn, the hydrogen cyanide released can interfere with cellular respiration. Another product, phosgene, is formed when household products, including those containing vinyl,

burn. Low levels of phosgene may result in itchy eyes and cause a sore throat while higher levels can cause death. Symptoms of smoke inhalation range from coughing and vomiting to nausea, sleepiness and confusion.

Inhalation of toxic smoke is the primary cause of death from fires. It is a major cause of fire fighter death. Smoke inhalation causes acute life-threatening injuries and results in long-term lung and neurological damage. Many toxic products are released during a typical room-and-contents fire. A multitude of variables make it difficult to predict what toxins will be produced. As a result, most information is from animal and autopsy studies. Unfortunately, some toxins, like cyanide, are very difficult to measure. Cyanide's role in smoke inhalation toxicity is just beginning to be understood.

Autopsy and experimental data show that serious injury and death result from exposure to contact irritants, primarily hydrogen chloride, and the central systemic poisons, carbon monoxide (CO) and cyanide. Contact irritants cause cellular damage and death. In response to irritants, cells release fluids, causing massive edema. Additional inflammatory responses cause cells to lose integrity and die.
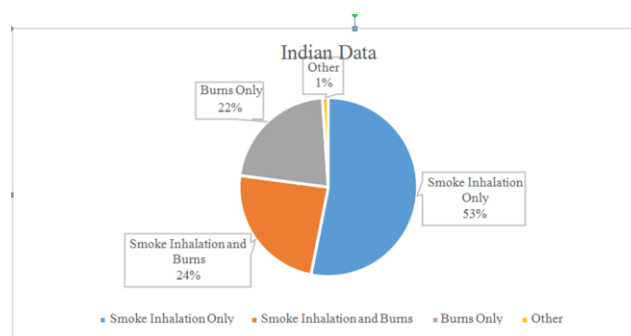

Fig 3: Indian Data on deaths due to different reasons

Paper Review:
What Kills People in a Fire, Heat or Smoke?
Author: Abdulaziz A Alarifi, Herodotos N Phylaktou and Gordon E Andrews

Presented on: 13-14 Feb 2016

This paper reviews the main causes of casualties in fires, investigates the composition of the smoke in typical compartment fire and assesses the contribution of each component to the overall potency of the smoke. The main cause of the casualties in fire are found out with the help of case study of fire incident at Riyadh, Saudi Arabia, Manchester, England, Las Vegas, US. After carrying out the study of these incidents the author found out that people were not that affected by fire and might have survived but since they were trapped they died due to smoke inhalation. Furthermore the author also provided statistical review for causes and injuries in domestic fire. In that statistical review author showed recent official statistics released by the fire and rescue service in the United Kingdom in January 2015 (DCLG, 2015) that showed the major cause of death and injury in 2013/14 fires in the UK was being overcome by toxic smoke. 41% of the fatalities died from smoke inhalation and 46% of injuries (excluding first aid and precautionary checkups) were caused by smoke inhalation. So the author concluded that the roots for the problemwere explored and approaches of tackling the issue were identified. Applications of fire toxicity research were demonstrated showing the toxic potency in full size fire experiment.

Fan Selection Based On Fan Application

The following design is based on Grainger Company Guidelines "Ventilation Fundamentals".

Based on the application, four parameters need to be determined.

They are:

1. Fan Model

2. CFM (Cubic foot per Minute)

3. Static Pressure (SP)

4. Loudness Limit (Sones)

Fan Model:

Sidewall propeller fan, Direct Drive.

CFM

- Cubic feet per minute

- CFM is calculated with help of the following formulae:

$$CFM = \frac{Room\ Volume}{Min/Change}$$

Considering Room size = 50cm X 50cm X 50cm

For min per Change there is a table given

Considering Restaurants: Min/change = 6

$$CFM = \frac{4.414}{6}$$
$$= 0.735\ CFM$$

Suggested Air Changes for Proper Ventilation

$$CFM = \frac{Room\ Volume}{Min./Chg.} \qquad Room\ Volume = L \times W \times H$$

Area	Min./Chg.	Area	Min./Chg.	Area	Min./Chg.
Assembly Hall	3-10	Dance Hall	3-7	Mill	3-8
Attic	2-4	Dining Room	4-8	Office	2-8
Auditorium	3-10	Dormitories	5-8	Packing House	2-5
Bakery	2-3	Dry Cleaner	2-5	Plating Room	1-5
Bar	2-4	Engine Room	1-3	Printing Plant	3-8
Barn	12-18	Factory	2-7	Projection Room	1-2
Beauty Parlor	2-5	Foundry	1-5	Recreation Room	2-8
Boiler Room	1-3	Garage	2-10	Residence	2-6
Bowling Alley	3-7	Generator Room	2-5	Restaurant	5-10
Cafeteria	3-5	Gymnasium	3-8	Restroom	5-7
Church	4-10	Kitchen	1-5	Store	3-7
Classroom	4-6	Laboratory	2-5	Transfer Room	1-5
Club Room	3-7	Laundry	2-4	Warehouse	3-10
Corridors/Halls	6-20	Machine Shop	3-6		
Dairies	2-5	Meeting Room	3-10		

Fig 4: Suggested Air Changes for Proper Ventilation

Static Pressure

According to the guidelines provided in the manual static pressure in the ducted venting is in the range of 0.2"-0.4" per 100 feet of duct.

for our model: $\frac{0.2" \times 0.0984}{100ft}$

$= 0.00$

STATIC PRESSURE GUIDELINES	
Non-Ducted:	0.05" to 0.20"
Ducted:	0.2" to 0.40" per 100 feet of duct (assuming duct air velocity falls within 1,000–1,800 feet per minute)
Fittings:	0.08" per fitting (elbow, register, grill, damper, etc.)
Kitchen Hood Exhaust:	0.625" to 1.50"

Important: Static pressure requirements are significantly affected by the amount of make-up air supplied to an area. Insufficient make-up air will increase static pressure and reduce the amount of air that will be exhausted. Remember, for each cubic foot of air exhausted, one cubic foot of air must be supplied.

Fig 5: Static Pressure Guidelines

Loudness limit:

In practical terms, the loudness of one sone is equivalent to the sound of a quiet refrigerator heard from five feet away in an acoustically average room. According to the chart provided in the manual, for restaurants the loudness levels

are:

Sones : 4.0

Db : 48.0

Suggested Limits for Room Loudness

Sones	DBA	
1.3-4.0	32-48	Private homes (rural and suburban)
1.7-5.0	36-51	Conference rooms
2.0-6.0	38-54	Hotel rooms, libraries, movie theatres, executive offices
2.5-8.0	41-58	Schools and classrooms, hospital wards, and operating rooms
3.0-9.0	44-60	Court rooms, museums, apartments, private homes
4.0-12.0	48-64	Restaurants, lobbies, general open offices, banks
5.0-15.0	51-67	Corridors and halls, cocktail lounges, washrooms and toilets
7.0-21.0	56-72	Hotel kitchens and laundries, supermarkets
12.0-36	64-80	Light machinery, assembly lines
15.0-50	67-84	Machine shops
25-60	74-87	Heavy machinery

From AMCA Publication 302 (Application of Sone Ratings for Non-Ducted Air Moving Devices with Room-Sone-dBA correlations).

Fig 6: Suggested Limit for Room Loudness

According to the four parameter discussed above the horsepower required is 0.25hp.

☐ Size: 10 cm Diameter

☐ Voltage: 12 V

Based on the abovementioned findings the room size is decided.

Room size: 50×50×50cm

3. Methodology:

1. Study of research papers for understanding recent techniques and process.

2. Study of components used in the system.

3. Fitting of the components in the system.

4. Testing of the various characteristics for the designed system of smoke filtration.
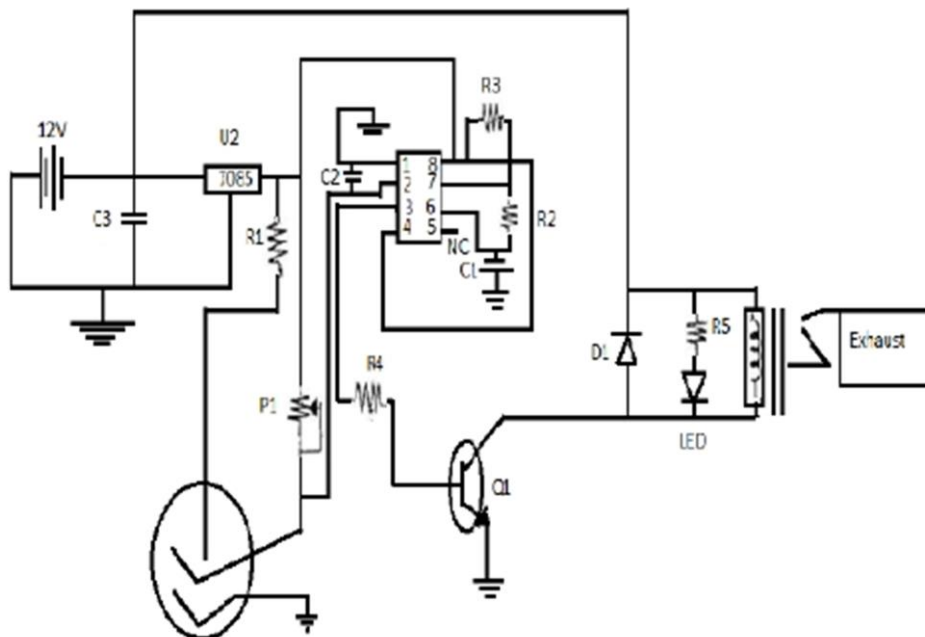
5. Results and conclusions.

Fig 7: Circuit Diagram

Note: Resistors: R1, R2, R3, R4, R5, P1.

Capacitor: C1, C2, C3.

Semiconductor: D1- D5, Q1, U1, U2, LED1, MQ-6 smoke detector.

Accessories: Relay. IC Base, PCB Board.s

Working Principle: The circuit described here is very useful in smoke detection.

The main part of circuit is sensor which when biased with 5V supply from 7805 IC through R1 resister, the sensor senses the smoke and develops the trigger signal

which is filtered by C2 and fed to pin no2 of 555IC. The output of the IC 555 is received on pin no3. There is LED indication for on and off of relay. At the last output is fed to relay RL1. The battery provides the constant voltage of 12V. This 12V is then supplied to IC 7805.IC 7805 converts the 12V to 5V that is required to operate smoke sensor other components. The input that we provide to the circuit is the smoke that the sensor is fed with. As soon as the sensor sense the smoke, it generates an electrical signal that is fed to the timer circuit. Timer circuit contains IC 555 timer, resistor, capacitor and intensity controllers. The resistors are used for controlled and constant supply of the voltage and capacitors are used to provide charge whenever necessary. Intensity controller regulates the flow of current, and hence regulates for what input to provide the output. The main component of the timer circuit is the IC 555 timer. As explained in the previous sections, IC 555 have 8 pins, out of which input is provided to pin 2. After receiving the signal 555 timer produce the trigger in pin 3 which is further provided to the relay switch. Relay switch as described in previous section works on principle of electro-magnetization.

Due to the electric and magnetic fields present there the switch is turned on and the voltage is further provided to the exhaust. These exhaust draws the smoke in the room, which is passed through and filtered by the activated carbon filter that is connected to the exhaust.
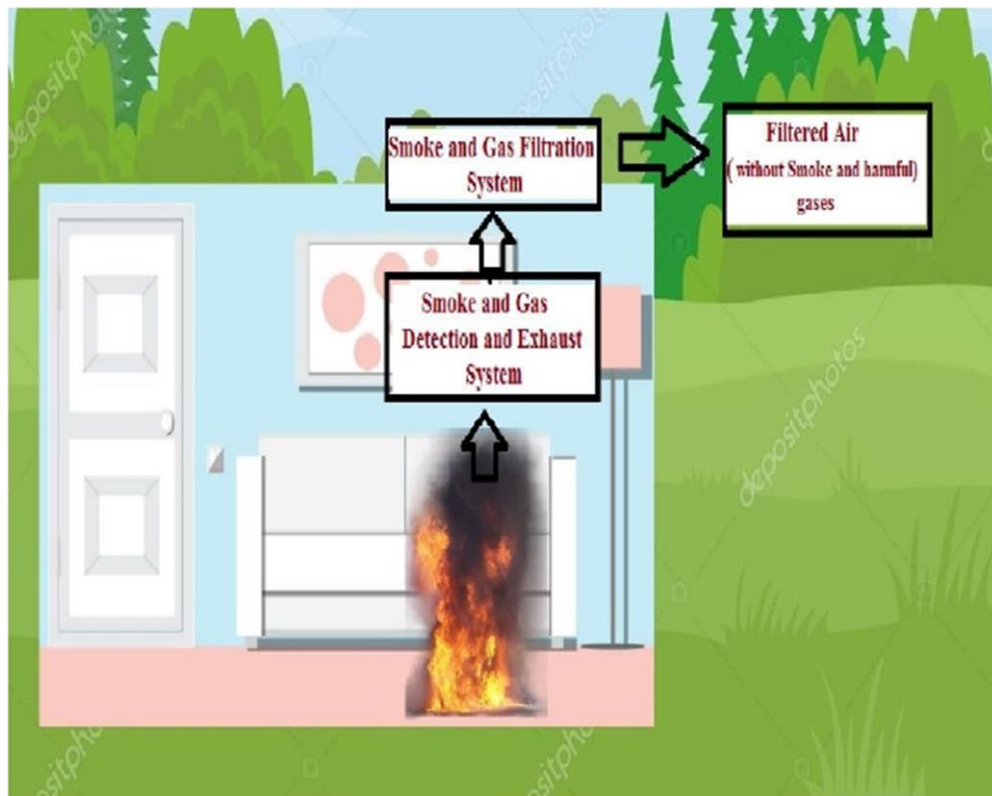
Fig 8: Overview of the complete model

As shown above, the author plans to exhaust the filtered smoke and gases with the help of circuit described earlier. So in case of fire the smoke and gases will activates the smoke and gas detection which in turn activates the smoke and gas filtration system, the smoke and gases which earlier had potential to damage humans health as well as environment now will not be able to do the same.

4. Experimentation

For the purpose of experimentation, the author produced smoke and gases by burning coal in the room. As soon as the circuit detects the smoke it will turn the exhaust on. The smoke and gases will pass through the filtration system and exhaust to environment. This was done several times with coal, wood, paper, and fabrics.

5. Result

After successfully building the model we have observed the following

observations:

The filtration system that we used for the purpose of filtration on our model was

found to be turned blackish. This indicates that the filtration system was filtering the

smoke. Further observation was found out that smoke that was produced after

filtering turned colorless. After using the filtration system it was observed that the

working hours of the filtration system is 58hour after its activation.

6. Discussion

The filtration system was observed to turn blackish. By virtue of the property of the filtration system, the black color indicates that the grime that was present in the smoke and gases before is now accumulated on the filtration system. Also some gases are filtered by virtue of the property of filtration system. So the smoke and gas that comes out of the filtration system does not contain any grime. The limitation for now is that the filtration system is limited to micro filtration. The author are currently doing work on nano-filtration which will be included in this work.

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3.6 ROBOTS EMPLOYED AND HUMANS

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AIM: To study of unemployment in industries because of automation technology and artificial intelligence (ROBOT).

❖ **Objectives**:

1. To study the reasons of unemployment in industries due to robotic technology.
2. To analyze how robotic technology can make jobs unsecure in hotel field.
3. How the technology making students dependent.

❖ **Limitations**: Time and money constraint.

❖ **Introduction**: We are approaching the time when machines will be able to outperform humans at almost any task. Society needs to confront this question before it is upon us: if machines are capable of doing almost any work humans can do, what will humans do?

The future is supposed to be a glorious place where robot butlers cater to our every need and the four-hour work day is a reality. But the true picture could be much bleaker.

Thinking of hotel run by robots is creepy? What sounds like a fantasy movie is reality in Japan. Instead of human employees, a local hotel is in the hands of robots. Even though this is an extreme example, innovative robot technologies are used in various areas of the hotel industry.

❖ **Review of literature**:

Do you want to be welcomed to a hotel by robots?

With the growth in robotic innovations, robots are finding their way into the hospitality industry. In 2015, the Henn-na Hotel in Japan was the first and only hotel that is almost entirely operated by robots. In March 2017, the Henn-na Hotel celebrated opening of its second location in Tokyo and plans to expand domestically as well as internationally within the next five years by addition of 100 more properties. In June 2015, the Ghent Marriott Hotel in Belgium introduced its new concierge staff member "Mario", a humanoid robot. "Mario" can speak 19 languages, answers guest's questions, and entertains with dance moves. Marriott International has also incorporated room service delivery robots in multiple locations of its other brands. Hilton McLean Hotel in Virginia adopted "Connie" powered by IBM's human mimicking Watson computer (Hilton and IBM Pilot). Implementation of robots takes away so much from the guest's "experience" due to the lack of human interaction and the robot's inability to understand emotions.

Some hotels believe robots would enhance efficiency, security, and performance; however, implementation of robots would be the most unwise decision a hotel can make as it would kill what hospitality is about, decrease efficiency, and security.

Robotic Technology Disadvantages

- **Robots Kill What Hospitality Is About:**

Words hospitality and service are used interchangeably and thought of as complimentary or interlinked by mistake there is a fine line between hospitality and service. Hospitality is about looking out and making an effort to understand others rather than looking in. The ability to make people feel welcomed, valued, expected, and included is hospitality. Service is what you do for someone such as serving a meal; however, hospitality is how your behavior makes the guest feel after you served the meal. In order for hotel staff to be considered hospitable they need to demonstrate caring for the guest's happiness and quality of experience. A combination of hospitality and service impacts the guest's experience; however, a great service is never recognizable without the hospitality aspect as that is what brings emotional connection, valued by humans, to the experience. A facial expression as simple as a smile can make a difference in the guest's experience and satisfaction level. Robots can efficiently perform the service portion by checking guest in/out, answering questions, and delivering room service but they can never interact hospitably with the guests due to their lack of emotion.

A welcoming mindset is essential and demonstrative of what is expected of a hospitable behavior. The welcoming mindset elements are openness (willingness to deal with challenges and come up with an efficient alternative in a limited time), curiosity (interaction with the guest to build a relationship and make relative recommendations), being non-judgmental, humility (demonstrate the extent a guest is being valued), respect,

presence, and dialogue (developing a conversation to understand the guest's needs and emotions). In hospitality, everything evolves around how well emotions are interpreted and responded to. Robots fall short on demonstrating the welcoming mindset, as they are only highly sophisticated computer programs yet unable to make emotional connections on human level.

Implementation of robots at hotels would not only kill what hospitality is about but also diminish service efficiency and security. This is an undesired outcome for both the guests and hotels that decide to implement robots in their operations.

- Robots Decrease Service Efficiency and Security:

How do you feel when the hotel's ATM machine does not work and you are late to your tour bus?

We have all experienced malfunctions with electronic devices, ATMs, vending machines and etc. Usually, the issue gets resolved by asking a specialist for assistance. In fully robotic operated hotels, guests do not have access to any staff member. A malfunction in any of the robots will turn into a frustration and hassle for guests that ultimately affect their "experience". The inconvenience guests have to experience due to robots malfunction as well as the unavailability of staff for assistance would negatively affect service efficiency.

Guests should be able to order room service based on their preferences, however, cannot make special orders with robots due to lack of comprehension. No matter how high-tech a robot is, its intelligence is still bounded with limited programming; however, humans are capable to intelligently understand one another requests and respond accordingly. Limitations in programming describes the fact that robots operate based on what they are programmed and nothing more; that exhibits why robots fall short in service efficiency.

Reiterating on the fact that hospitality is the ability to understand other's emotions and respond accordingly; hotel staff are responsible to constantly monitor guest's emotions, body language, and behaviors. The hotel staff report suspicious behaviors and activities to prevent violence, crimes, and terrorist attacks. During emergencies, the hotel staffs are the initial point of contact for the guests. Also, when emergencies arise, since hotel staff are trained they will direct people to safety and seek medical attention if necessary. Robots do not have the ability to comprehend suspicious activities and cannot be a source of help to provide direction during emergencies. For example, when an emergency occurs a hotel staff calls 911 to report and meanwhile assists to make the guests calm; however, in a fully robotic operated hotel there is no staff to report emergencies that leaves guests responsible for their own safety. Considering the horrifying Las Vegas attack, the guests inside the Mandalay Bay were directed with safety procedures by the hotel staffs and the police. At times of emergencies people need to be able to communicate with a human to find out about the situation and get emotional support. A robot cannot satisfy that need because it does not have the human-level comprehension. A fully robotic operated hotel decreases security and allows more room for violence, crime, and terrorist attacks.

- ➢ **Mario in Belgium**

Since 2015, guests at the Ghent Marriott hotel in Belgium are welcomed by the hotel's humanoid Mario. **Today, the robot has achieved cult status and became the local social media star.** The robot is an all-rounder and supports the guests at all locations in the hotel. Guests can meet the 56-centimeter humanoid during check-in and can inquire about events and bus schedules in the lobby. Moreover, they can ask questions about the breakfast buffet and much more. It is also helpful that Mario can speak and understand 19 languages.

- ➢ **Luggage Storage Robot**

If you need to temporarily store your luggage at the Yotel hotel in New York, the futuristic Luggage Storage Robot in the lobby will take care of it. The robot puts the luggage safely behind the safety glass in one of the 133 storage lockers. And how does one get his suitcase back? When you use this service, you receive a barcode, which you only have to scan when returning for your luggage.

This and much more may be the future and present of the hotel industry sooner than many of us think. **Many innovations are still just planned and developed, but some are already fully used in the most modern hotels around the world.** With such tendencies, a robot-only hotel industry is supposedly just a matter of time and finances.

- ❖ **Research Methodology: All information is collected from secondary data (Techno Time Magazine, Internet, News articles).**

- ❖ **Suggestions:**

  - To effectively restructure our entire system we must give people a minimum a survivable income.

  - Hospitality is about how your behavior makes the guest feel special while you attend to the guest so keep the hospitality alive.

  - As robots cannot work outside of what they were programmed for so humans are always a better options.

  - Robots, with them replacing jobs, can lead to severe unemployment, unless if humans can fix the unemployment with jobs AI can't do or severally change the government to communism.

- ❖ Conclusion: Use of robots is the worst decision a hotel can make as it takes away emotion and human interaction both of which are essential to creation of a memorable hospitality experience. What brings guests back to a hotel is not solely the services but rather the "experience" they had at a hotel. The "experience" is how the guest felt during their stay based on the behavior he/she encountered of the staff. Implementation of robots simply cannot create that "experience" for the guests as they lack emotions and are unable to interact on a human-level. Robots can be interesting for guests the first time; but as guests try to interact with the robot and face the lack of comprehension it changes people's perception of robots.

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3.7 TECHNOLOGY IN THE HOSPITALITY INDUSTRY - EXPLORING THE VERY LATEST TRENDS IN FRONT OFFICE DEPARTMENT

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Technology is advancing at a faster pace than ever before, and this is changing both the expectations of patrons as well as the way in which the hospitality industry conducts its business. Some of the trends in industry are leading to great improvements and savings for hospitality industry companies; while some are changing how hotel developers plan their buildings, infrastructure, management structure and staffing requirements.

WI-FI INFRASTRUCTURE OVERHAULS

Nowadays, hotel guests who travel with devices such as phones, tablets and computers no longer see Wi-Fi as a perk, but as a must-have when they check in at a hotel.

Hotel guests expect to be able to connect to the internet seamlessly and without too many interruptions, leading hotels to invest in better, faster Wi-Fi infrastructure so that people can do business and use their technology devices

Hotels are also starting to move away from user pay models. In the past, hotels could charge exorbitant rates and guests knew they would have to pay if they wanted to go online. Installing and maintaining a hotel-wide wireless network may be coupled with costs, but many leading hotel groups have started to install high density Wi-Fi and started to offer in-building mobile phone coverage as guests have come to expect these services during their stay (not only for themselves, but also for their guests if they are hosting a conference or function at the hotel). It might not yet be financially feasible for hotels to completely abandon the user pay model, but many of them are re-thinking their current infrastructure and pricing models.

DIGITAL CONFERENCE FACILITIES

Besides being able to offer high density Wi-Fi for conferences and meetings, hotels also need to be able to offer access to audio-visual (AV) and digital facilities for conferences. While the amount of AV and digital equipment that goes into a typical conference room is fairly minimal, staging companies are often hired for various projects in order to equip the facility as required.

A key component in designing effective conference facilities that can accommodate this type of technology is creating easily accessible, concealed pathways in ceilings and flooring where adequate power and data connectivity can be facilitated. If a hotel has extensive conference facilities, network design becomes critical to ensure indoor mobile phone coverage, Wi-Fi connectivity, VoIP, real time location services (RTLS) and internet protocol television (IPTV) as well as all the accompanying AV and digital equipment.

MOBILE COMMUNICATION AND AUTOMATION

In many airports, it's no longer necessary to stand in a queue to check in and people are expecting the same kind of easy, technology-driven check-ins at hotels. Guests want to be able to do everything from checking in at a venue's automated kiosk to ordering room service with a digital device instead of standing in queues and moving around the hotel premises to order food.

Thanks to digital innovation and social media, guests also expect digital interactions with the hotel to be personalized. When investing in digital apps for check-ins, room service and other customer-oriented digital interactions, hotel operators are investing in systems and technologies that can personalize the experience for guests, including a guest's name being displayed on the welcome desk at a digital check-in station; their food preferences or past purchases being displayed in a digital room-service order system; and similar.

In addition, the 'concierge in your pocket' concept is fast gaining popularity due to its ability to allow operators to include useful information such as surrounding entertainment venues; medical facilities; and similar services.

Like many of the other technology trends in the hospitality industry, investing in a check-in/concierge app requires a small initial investment and can lead to greater efficiency and savings as hotel staff are able to focus on customer service and property developers don't have to create large static reception desks at each entrance and hotel location.

MOBILE DEVICE AS DOOR KEY

It's fascinating that a function as simple as a door key could undergo so much evolution. But the tool that once started as a carefully shaped piece of metal quickly turned into electronic key cards, and is set to shed its physical form altogether. The next evolution of the hotel key transforms it into data on a guest's mobile device. Some hotels have already starting using implementing this, whether it involves NFC technology or visually scanning a code like many airports now do with plane tickets

ARTIFICIAL INTELLIGENCE AND INFRARED SCANNERS.

Some hotels are already offering more futuristic experiences, with robots delivering any items ordered through room service to a guest's door. A boutique hotel that is nestled between Apple's headquarters and other tech companies, called Aloft Cupertino, has a robot butler called Bolt that is able to move between the various floors of the hotel in order to take items such as toothbrushes, chargers and snacks to guests. These types of digital systems not only make it easy for hotel staff to deliver items to guests, but it also offers a forward-facing digital experience to people who stay at the hotel.

Infrared scanners are now also used to minimize disruptions relating to housekeeping (which is a common complaint from customers). Instead of hanging a 'Do Not Disturb' sign on doors or having cleaning staff wake up traveling guests with knocks and phone calls, hotel staff can take a more

innovative approach by using infrared scanners that will detect body heat within a room and tell cleaning staff that they should rather come back later if the room is currently occupied. Not only is the initial capital investment lower than IT infrastructure and servers, but it gives hotels the flexibility to expand and adjust their IT needs along with business growth, invest in upgrades without causing a complete IT system overhaul and it removes the administrative burden of managing an IT system in-house. Cloud computing is becoming the norm and we will continue to see hotel groups replacing their legacy IT infrastructure with cloud solutions.

NFC TECHNOLOGY

Near field communication (NFC) technology is the next-generation short-range high frequency wireless communication technology that gives users the ability to exchange data between devices. Communication between NFC devices can transfer data at up to 424 Kbits/second and the communication is enabled when two devices touch each other, which makes mobile payments (by touching the smart phone to a credit card) an instant, secure process. This technology is also ideal for self-check-ins by guests at hotels as well as the next trend in this article: smart room keys.

Besides payments and an easier way to gain entry to hotel rooms, NFC technology can also be used to personalize a guest's experience at a hotel or resort. For example, advertising can be targeted based on gender and age (so if a child walks by a digital sign in the lobby, the advertisement can change to promote a local theme park or the hotel's kids club) and this technology could also be used to track loyalty points from a guest's use of the conference

facilities or room service. This opens many doors for hotels who want to offer a more personalized experience at their establishment.

FEEDBACK ON SOCIAL MEDIA

Technology has infiltrated almost every aspect of our lives and hotel developers need to realize that almost any person checking in at a hotel, resort, spa or lodge, will have a smartphone in their pockets.

Many companies in the hospitality industry are already using social media to their advantage as guests check-in on location-based social media apps, tweet about their experience on Twitter and share their holiday photos with friends and followers on Instagram and Facebook. This trend will continue and hotels can expect to see even more social media engagement from guests who use these platforms to give feedback about their experience, complain and give compliments about their stay. Hotel staffs are also expected to provide feedback and address and complaints or queries from guests in real-time.

From an online, reputation management perspective, this is a trend that marketers and hotel management need to manage proactively. Consumers don't make decisions about where they're going to travel to or book a stay in a vacuum – they turn to community-developed content and rating systems such as Trip Advisor and social media to make decisions about holiday destinations, hotels and leisure. This shift has led to many hotel and leisure groups developing active social media monitoring and communication strategies in order to stay on top of what's being said about them online and making sure that both marketing and operational staff address feedback that has been given online.

An additional way in which operator can take full advantage of technology in this space is using it to communicate how well they are doing (in real time) with respect to their various environmental initiatives (such as real time electricity/water usage reporting, etc.)

CONVERGED LANS TO SUPPORT MULTIPLE SERVICES

Converged local area networks (LANs) will also help hotels to create more intelligent buildings. A variety of computer-based building services can be automated in order to control lighting, refrigeration, air-conditioning and heating. Besides reducing energy consumption, converged LANs can also be set up to provide a smarter, more personal experience. If a guest is known to prefer his or her room temperature at 18°C with the lights dimmed to 65%, for example, this can be programmed before the guest checks in at the hotel.

ENTERTAINMENT ON TAP & CLOUD SERVICES

According to a Smith Micro Software trend report entitled *The Future of Hotel In-Room Entertainment;* people are increasingly plugging in their own devices for in-room entertainment. The hotel room's television, radio and clock are taking a backseat as travellers use their own technology to keep themselves

entertained. An earlier survey by Smith Micro Software showed that 81% of respondents wanted access to mobile video content at hotels and 55% said that mobile content availability at a hotel would influence where they choose to stay.

Being able to provide entertainment on tap and mobile content has led to the trend of hotels investing in cloud services. While hotels want to be able to offer digital content, they don't necessarily want to invest in IT infrastructure and IT staff, making cloud computing the ideal solution.

INTEGRATED, SEAMLESS EXPERIENCES

Technology doesn't mean that customer experience can only happen online and through devices, check-ins and online comments. All of these experiences need to be part of an integrated, dynamic system so that the guests' experiences are at the forefront of the marketing and

Operational team's mind. If a guest leaves a comment about their stay when they check-out of the hotel, for example, the right people need to reply and acknowledge this type of communication. If a guest leaves a complaint about not being able to stream mobile content during their stay, then processes should be put in place to ensure the right person follows up by communicating with the guest and solving the problem at the hotel.

3.7 Near Field Communication

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Abstract: Among the different hi-tech content domains, the telecommunications industry is one of the most relevant, in particular for the Italian economy. Moreover, Near Field Communication (NFC) represents an example of innovative production and a technological introduction in the telecommunications context. It has a threefold function: *card emulator*, *peer-to-peer communication* and *digital content access*, and it could be pervasively integrated in many different domains, especially in the mobile payment one. The increasing attention on NFC technology from the academic community has improved an analysis on the changes and the development perspective about mobile payments. It has considered the work done by the GSMA (Global System for Mobile Communications Association) and the NFC Forum in recent years. This study starts from an analysis of the scientific contributions to Near Field Communication and how the main researches on this topic were conceived. Our focus is on the diffusion rates, the adoption rates and the technology life cycle. After that, we analyze the technical-economical elements of NFC. Finally, this work presents the state of art of the improvements to this technology with a deeper focus on NFC technologies applied to the tourism industry. In this way, we have done a case analysis that shows some of the NFC existent applications linked to each stage of the tourism value chain.

Keywords: NFC—Near Field Communication; market trends; mobile payment;

tourism applications; technological innovation

Introduction

The telecommunication field is one of the most innovative sectors, of which Near Field Communication (NFC) is one of the main examples.

The NFC standard was issued in 2003 [1]. It is a data transmission technology that uses short-range radio waves at the specific frequency of 13.56 MHz, by which it is possible to read tags that are a kind of passive circuit [2]. This technology, among the different sectors in which it is applied, is also integrated in smartphones. It originates from the evolution of studies and researches in the RFID field, or Radio Frequency Identification [3]. It ranks among the technologies of automatic identification of people, animals and objects, proving to be very important in areas such as logistics, distribution and services [4]. The two technologies, NFC and RFID, have much in common, but one of the main differences between them is demonstrated by the antenna design [5]. Moreover, that the arrangement for the data exchange is no longer a card reader or a typical RFID but a smartphone, is another outstanding element. The NFC Forum (a no-profit organization founded in 2004 by Philips, Nokia and Sony) developed a highly stable framework for the development of applications, interoperable seamless solutions and safe transactions. The NFC Forum has also coordinated the work of dozens of organizations through the creation of committees and working groups [6]. Near Field Communication has the core RFID technology, and it is able to leverage the existing ecosystem related to payments and contactless ticketing, which involves millions of users [1]. The aim of this work is to provide a comprehensive review oriented to the analysis of the scientific contributions related to NCFs technology, to deepen them through an analysis of its analyze the technical-economical elements. In addition, we show NFC applications in the tourism industry.

- The **purpose** of this paper is to examine how NFC technology, as one of the possible innovative "standard keepers", can enhance customer satisfaction and increase growth and productivity of the Croatian hotel industry

- The main **objective** of this paper is to propose a model for enhancing hotel service quality and customer experience by using several simple and highly secure solutions offered by NFC technology

- mobile phones have become an integral part of travelers' baggage

- the number of smartphone users worldwide will surpass 2 billion in 2016 (eMarketer, 2014)

- the possibilities of mobile phones in the hotel industry are endless.

- the number of NFC-enabled phones has grown to 275+ models worldwide which leads us to number of 1 billion+ NFC phones in the market in 2015 (NFC Forum, 2015)

- Near Field Communication (NFC) is a short-range high frequency wireless technology;

- NFC technology enables simple and safe two-way interactions between electronic devices;

- NFC is an extension of RFID technology;

NFC device can operate in three different modes: card emulation mode, read/writer mode and peer-to-peer

Literature Review: Technology Analysis

This literature review is the result of research of NFC related articles, reports and studies. It takes place from the research conducted using search engines Scopus, ISI Web Knowledge, Google Scholar and Google Chrome.

According to Haselsteiner and Breitfuß [7], Near Field Communication is an efficient technology for communications within short ranges, which offers an intuitive and simple way to transfer data between electronic devices. NFC is based on existing contactless technologies, it has an ecosystem that involves many stakeholders (Figure 1, [8]) and it is compatible with the RFID infrastructures around the world due to the standards mentioned above.

NFC devices can receive and transmit data at the same time [9]. Those NFC devices have many functions: they can operate, for example, as a smart contactless card, as a passive RFID tag and as a medium to exchange data between various devices. NFC devices can also be used to exchange data as text, images and URLs simply by holding the device near various smart tags. Hence, NFC has a wide applicability across a wide spectrum of enterprises.

NFC Technology used in hospitality industry
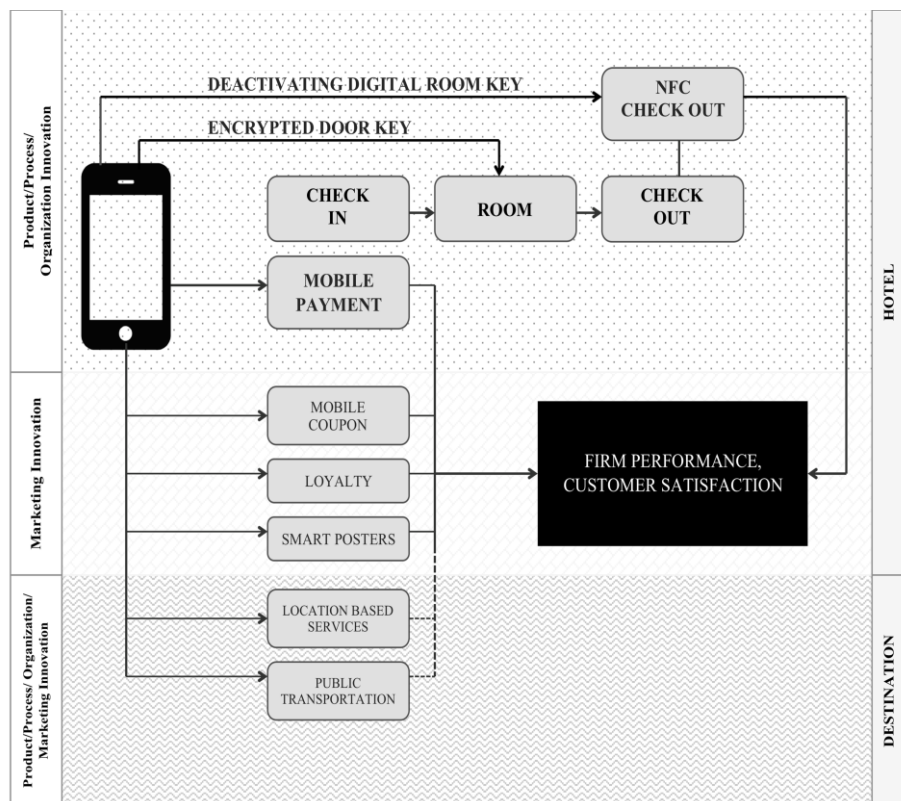
METHODOLOGY

- the interviews were carried out with managers of four and five-star category hotels with more than 100 rooms on the Opatija Riviera.

- the sample includes eight hotels (two five-star and six four-star hotels)

- the purpose of face-to-face interview was to ensure high response rate and to explore explanations and understandings of each manager

- one or two-star hotels are lagging behind in introducing ICT compared with higher-star hotels which have higher innovation rates

- managers and owners of four- and five-star hotels regard customer orientation as more important for the financial success of a hotel than do managers of one- to three-star hotels

RESULTS

- 100% of managers reported a new or significantly improved product (goods or service), a new process, a new marketing method or a new organisational method in past three years

- all interviewed managers consider implementation of NFC innovative technology possible especially taking into account the existing RFID technology implemented in hotels

- one hundred per cent of managers agree that NFC innovative technology can enhance profitability, productivity and overall future hotel performance

CONCLUSION

- the interviews which they conducted were very significant for our qualitative research, providing **"practical confirmation"** from hotel managers

- the literature review pertaining to each segment of the proposed NFC model **confirms a positive effect** to firm performance and customer satisfaction

- additional services could **enhance value in the tourist experience**.

- with NFC innovative technology, managers could develop a powerful management tool:

  - **for measuring customer satisfaction and service quality;**

  - **for creating a platform for fostering further innovations**.

4.1 STUDY GUEST SATISFACTION OF HOTEL APPS

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Abstract:

Technology cannot be separated from the operations of Hotel. Increasing development in technology has brought changes in hotel apps (applications) providing various services to the clients. A hotel app is not limited to a single channel, but offers numerous channels for an improved guest-hotel communication and experience. The study is to understand satisfaction of guests with the hotel apps.The app provides access to easy travel planning tools in today's busy life. The study also tries to understand the "User-friendly" aspect and personalized and customized aspects of hotel apps. The data was collected by random sampling using interview technique. Though the study revealed that most clients had positive response a substantial figure are expecting improvement. The study also shows that opinions differ with gender of the clients. The study is limited to Nagpur city.

Key words: Hotel-apps, Personalization, Customization, User-friendly App

4.2 STUDY HANDLING CUSTOMER COMPLAINTS IN HOSPITALITY INDUSTRY THROUGH INFORMATION COMMUNICATION TECHNOLOGIES

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Abstract

Drawing on associated literature and research this paper examines the engagement and expertise of hotels in handling customer complaints. The study explores hotel management attitudes and practises towards handling customer complaints within in the hospitality industry in Nagpur. In this paper, the authors analyse case study interviews with four and five star hotel managers in Nagpur. The findings reveals that encouraging customer complaints and feedback should be seen as a way in which to develop better relation with and retain customers. The results also confirm the importance of having employee training in the area of customer complaint recommending that employees handle complaint themselves. Further most, the study suggests that other hotel must be well equipped for logging processing and analysing complaints.

Keywords : Handling complaints, Technology

4.3 STUDY ON USE OF TECHNOLOGY IN AGRICULTURAL PRACTICES TO BOOST AGRITOURISM.

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ABSTRACT

Agritourism, also known as farm tourism is a form of tourism where the tourist visits areas used mainly for agricultural purpose. The study has been undertaken by the researcher to boost agritourism in and around Nagpur city. As the study contributes to boost the farmers to create alternative employment and income opportunities. Agritourism helps people to get a better understanding of social and cultural values and helps to create better life and better society. However as comparison to Haryana, Punjab, uttar Pradesh. The agriculture practices followed are not very updated that becomes the reason for not so good picture of agri farms thus poor states is a hindrance to develop as agritourism destination. The researcher has studied the Techno survey practices used in other states, which has developed agritourism. Thus lack of use of technological use reflects on the poor state of agriculture and hence, the researcher has analysed the findings to show how technological use can boost agriculture and agritourism. The researcher concluded that the whole lot of related articles goes on vain, if the agri production is not up to the mark. Other than oranges, which is a seasonal farming. The other agri products needs to be used for attract tourist.

Keywords: Agritourism, Technology, Tourist.

4.4 TECHNOLOGICAL ADVANCEMENTS DURING THE DECADE IN THE HOTEL INDUSTRY

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advent of technology. Keeping this ever growing hotels and their services which demands for updating the technological uses in mind, the researcher has taken up the topic for study. This extensive literature survey intends to get an in-depth step wise progression that has taken place in hospitality industry. It was found from various studies that the researcher has analyzed that 95% of the hotelier's agree that it reduces workload (study done on the employees of Hyatt Regency, Mumbai and Sheraton Grand, Pune in 2017). 275 Hilton properties have switched to smart keys (ref. Deanna Ting Skift, work published in 2016). 6000 hotels around the world use PMS (Property Management System) software to manage their hotels. Some of the most widely used software are Opera PMS and Fortune. Many of the procedures have been digitalized such as C- forms, Centralized Reservation System, Guest feedback and Point of Sale software have also brought convenience to the cashiers. It can be suggested that every hotel consisting of more than 50 rooms must digitalize most of their procedures for more efficiency and for gaining better customer satisfaction without letting go the personal touch to the services.

Key Words: Technology, Management, Software.

4.5 STUDY ON E- MODES USED FOR ACCOMMODATION/BOOKING USED BY TOURISTS AT WILDLIFE TOURIST DESTINATION

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ABSTRACT

The region of Vidarbha in Maharashtra is bestowed with natural wildlife resources. This blessing of nature has given lot of opportunity to develop Vidarbha as a wildlife tourist destination. However it's unfortunate that these wildlife destinations have not been fully explored to its maximum potential. The reasons are many which needs to be paid attention on. In this study researcher has identified booking as one of the hindrance. This problem being especially applicable to the newly upcoming wildlife parks. With the advent of electronic media being used for booking, this issue has been addressed to a certain extent. In this study the researcher has tried to find out various demographic features of tourist as associated with the pattern of use of E- media. This study was carried out in the wildlife sanctuaries in and around Vidarbha. A detailed survey was carried out to get an insight into various aspects. This particular research work has analyzed the pattern of E-modes by applying statistical test to the same. It has been found that the E-modes have been very useful in bookings be it only to visit or stay. This also reveals the perception of tourist wants as they depict the other facilities and activities requested for at the time of booking. The choice of data will help enabling the stakeholders to further upgrade the booking system giving other options while doing so.

Keywords: E-modes, Wildlife Sanctuaries, Booking

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