A CONCEPTUAL FRAMEWORK FOR BARRIER FREE HOTELS IN SMART CITIES

Partho Pratim Seal[1]
Dr.P.Senthil Kumaran[2]

Abstract

Cities are key for business, Job creation, and the growth of society. The Government of India planned to develop smart cities which are sustainable, inclusive and act as a reference for other aspiring cities. Smart cities in India will work on four principles such as wellbeing of habitants, equity, foresight and efficiency. Existing laws and design principles can act as a hurdle in achieving the four principles laid down. The principles of Universal Design (UD) are user centric, work on the social goals of inclusion, equality and independence. Universal Design India Principle (UDIP) is a set of design principles that focus on a country centric approach which considers culture, caste, poverty, class, and religion. There is an overwhelming need for environmentally sustainable designs for hospitality services. Considering the current requirements, a conceptual framework 'Comprehensive Universal Design (CUD)' has been proposed which includes principles of UD, UDIP and environmental sustainability. Adopting comprehensive universal design principles in the hotels in smart city will help the planners to realise equity, quality of life, social inclusion and environmental sustainability.

Keywords: Universal Design, Smart City, Hotels, India

"Persons with disabilities have a significant positive impact on society, and their contributions can be even greater if we remove barriers to their participation. With more than one billion of persons with disabilities in our world today, this is more important than ever."

Ban Ki-Moon, United Nations Secretary-General

Introduction

City is a word that reflects the evolution of human beings. Cities have a vital role in the social, economic, environmental and anthropological development of mankind (Mori & Christodoulou, 2012). Cities are key for business, the creation of jobs, and growth of society (World Urban Campaign, 2016). Cities are the habitats of people of diversified culture, religion, socio-economic status, and abilities. There is an upsurge of urban growth. It took only 200 years to reach the total population of 7.5 billion, where as it took hundreds of thousand years to reach 1 billion. As per the data, half of the world's population lives in towns and cities and also it is predicted that about 5 billion will live by the year 2030 (UNPF, 2017). Urbanisation is indispensable for socioeconomic growth, creating wealth, development and the prosperity of the community (UN-Habitat, 2016). There is a need for creation of new cities considering the social and economic needs of people (KPMG

---

1   Assistant Professor, Welcomgroup, Graduate School of Hotel Administration, Manipal University, Manipal. Email- partho.seal@manipal.edu
2   Associate Professor, Welcomgroup, Graduate School of Hotel Administration, Manipal University, Manipal. Email- senthil.kumaranp@manipal.edu

International, 2016). Wealth creation, employment generation and expanding housing needs of the urban population will be addressed by formation new cities (New Cities Foundation, 2015).

Cities to be planned that must address the needs of habitants by providing sufficient services and facilities (La Rocca, 2014) (Asian Development Bank, 2009). Cities are the place that witnesses stronger inequalities with in the habitants. Cities, if not well planned could generate more problems which may be difficult to manage due to an undesirable increase in size and complexity. There is a more possibility of negative effects crossing over the positive effects if the cities are not managed properly (Monzon, 2015). There is a phenomenal change in how the cities have formed, shaped and the way it functions. This transformation has been either for better or the worst. So, the emerging cities have to be well planned and designed to manage the urbanisation in future that supports quality of life, environmental sustainability, equity and social inclusion (Liu & Wang, 2013). Equity and equal access to residents and also promoting diversity must be the objective of governance (United Nations, 2009).Transforming from traditional approach to design of the city into smart design is essential to achieve sustainability which ensures economic, social and the environmental aspects that meet the requirement for present and future generations (Bouskela, Bassi, & Luca, 2016).

There is no consensus on the definition of the smart city as each school of thought have a different perspective based on their specialisation. (Monzon, 2015) Observed that there are two different schools of thought in defining smart cities, where one school of thought emphasis more on technology or ecology, mostly monotopic in nature. Another school of thought emphasised on the interconnecting of all urban facets. He noted that all definitions have a central theme of interconnection between infrastructure and technology. (Albino, Berardi, & Dangelico, 2015) Analysed different definitions on the smart city, and found a missing component "people". The people are the protagonist, who shape the smart city by their continuous interaction and creating a relationship amongst each other. A city enabled with advancements in accessibility for all is an inviting development (Popiel, 2014).

Hotels in Smart City

Tourism is a major contributor to the economy of India which helps in employment generation and foreign exchange earnings. It has been estimated that in the year 2017, the tourism industry in India will generate about 13.45 million jobs of which 10.49 million will be in the restaurants, 2.3 million in hotels and 0.66 million in travel and tour operations (Piramanayagam & Seal, 2017). UNWTO Global Code of Ethics for Tourism committed for accessible tourism, since it has been declared as fundamental rights. The accessible environment is a basic right of a traveller, which should not be hampered by the physical design of tourism and hospitality related service infrastructure (Poria, Reichel, & Brandt, 2011). To achieve the goal of accessible tourism, the tourism destination and support service can be made in the way that helps everyone equally regardless of their abilities (UNWTO, 2016).

Hotels are an integral part of the tourism sector in a country as travellers require accommodations. Accommodations have to be made considering the needs of all travellers. A recent report of UNWTO states that approximately 1 billion people, about 15% of the world's population have one or other form of disability. All human at different stages of life will have some form of disability which creates an urge to develop tourism services, products and infrastructure that addresses specific access needs (UNWTO, 2016; Rahim & Samad, 2010) . The tourism industry must design and deliver services that are suitable for all users by

2

removing physical and organisational barriers that may prevent the visitation of the users (Michopoulou, Darcy, Ambrose, & Buhalis, 2015). Across the world there is a need for accessible rooms. The demand for accessible hotel room in London, estimated as 4% in 2010 and is likely to rise to 7.5% by 2030 which presently is quite low at around 2% of the total number of rooms. In Germany, though each states have their own building regulations and codes, states like Berlin should have at least 10% of room in hotels to be 'barrier free. In Netherlands, the mandatory requirement of barrier free in the premises over 500 sqm, 40 per cent of the building (London Development Agency, 2010). The present day hotels around the world have advanced how people have lived in cities. The need of the current guest in hotel is not just sleep but a total experience by design, amenities and comfort. A smart hotel features all this with the help of present day technology and also reduces energy consumption and increase the sustainability. Smart hotels concept is a quiet new and is there is no consensus on it (Janet, 2016). It is predicted that smart hotels will be remote controlled one, by which all the devices in the hotel room could be operated and controlled upon which enables less human interference and ease in operation form a single point by the user (Seal, 2013). The smart room in hotels though technology friendly should also be friendly for all users including differentially abled. Merely emphasising more on technology will not add much value when competing with other hotels. Competitive advantage can be attained based on intellect not by assets and capital. Hotels have to reinvent themselves by giving better personalised service and value for all guests (Olsen & Connolly, 2000).

The hotel industry in India is currently facing many challenges from both domestic and international players. Hotels have to diversify and find new clientele to sustain their operations by adding a new segment 'inclusive tourism'. The tourism market of people with differently abled is approximately valued at \$ 75 billion. People with disabilities, their relatives and guardians is a large pool consumer for tourism and hotel industry (Bernett & Baker, 2001). India, as a tourism destination is not favoured by disabled as it is weak on universal design of hotels and tourism attractions (Khatri, 2014). **Countries like United Arab Emirates, Australia, United States and Singapore have enforced Universal Design in all hospitality related services** (Building and Construction Authority of Singapore, 2006)**;** (Australian Government, 2013)**;** (Rossetti, 2009)**. Singapore government's Build Environment Code on Accessibility, 2013 mandates at least one guest room for every 50 guest room for elderly and additionally a room for every 200 guest rooms for person with differently abled. But it advises and encourages service providers and the hotels owners to have additional rooms over the obligatory minimum number of guest rooms for differently abled. It also mandates to provide at least one table for disabled for each ten tables in a restaurant with fixed seating** (Building and Construction Authority of Singapore, 2014)**.**

Existing guidelines of Hotel and Restaurant Approval and Classification Committee (HRACC), a division under Ministry of Tourism, Government of India, states that a hotel must have at least one room for the disabled that hotels which have been approved after 1st September, 2010. The guidelines of HRACC has inadequately addressed the needs of people with different abilities considering the UD of hotels in developed countries to India. At this juncture, the Government of India (GOI) proposed a model for creating 100 smart cities in the country with the aim of developing new cities which are sustainable, inclusive and act as a reference for other aspiring cities. The GOI postulates that smart cities will provide a sustainable and clean environment that ensure a decent quality of life for its citizens (MOUD, 2017). The charter for smart cities in India is developed considering the four principles, wellbeing, equity, foresight and efficiency. While preparing the charter of smart cities, the GOI has included various core and supportive infrastructure to ensure inclusiveness and

sustainability. The charter emphasis more about older adults, children, women, poor and downtrodden but undermines the need of the people of varied abilities. If, the proposed hotels in smart cities also follow the existing guidelines of HRACC, it will defy the objectives of equity and wellbeing of its citizens in creating smart cities.

Objective of the study

- To propose a conceptual framework that supports designing barrier free hotels in smart cities by which inclusiveness can be achieved**.**

Methodology

To achieve the objective laid down in the research, existing design principles such as Universal Design (UD) and the principles of India specific Universal Design India Principles (UDIP) are analysed for their applicability in hotels. Considering the customisation requirement of hotels, a conceptual frame work named Comprehensive Universal Design, specific to Indian context is been proposed combining the essence of both.

Universal Design of Hotels

Universal Design (UD) is a concept that caters to the requirements of people with varied abilities. United Nations defines Universal Design as "*the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design*". The word "inclusive design", "accessible design", "barrier free design" and "universal design" are used interchangeably. Universal design includes other than people with varied abilities infants, children, elderly, physically injured, expectant mothers and people with temporary disability. The need of UD was conceptualised considering the priorities of user centered design and the social goals of inclusion, equality and independence. UD also defined as a thought process of a barrier free designs that is accessible, and user friendly for all (Rains, 2009). UD is an inclusive approach that intent to serve the total population rather than focusing on a targeted group. The core idea of UD is to remove the barriers to access that ensures equality between citizens and people with different abilities**.** The different barriers that give us disabilities are barriers of movement, access, communication, expression, perception, space and time (Steinfield & Maisel, 2012). Disability Act 2016 states that UD is a design that can be accessed by all people irrespective of their age, size, ability or disability in a composition of the environment (Ministry of Law and Justice, 2016).

A hotel designed with UD augments the tourist destination and business organisations competitiveness. It also adds upon that UD principles can be used in developing tourism environment and services that offer foundations for sustainable community and business. Adopting UD helps the tourism service providers to widen their target market and also to deliver a pleasant experience to customers (Michopoulou, Darcy, Ambrose, & Buhalis, 2015). Research finding suggests that people with mobility related disabilities are loyal to the organisations which support and are aware of their specific requirements (Bernett & Baker, 2001). Guest with disability return to the same establishment as a repeat guest, if they are satisfied and supported with the relevant infrastructure (Tandawy, Kim, & Pyo, 2004). The guest has a positive attitude towards the hotel and intent to revisit the same property which understands and satisfy their need is called true loyalty (Pritchard & Howard, 1997). Guest satisfaction has a direct influence on guest loyalty which has a positive relationship

4

with the profitability, increased patronage, and positive word of mouth (Bowen & Chen.S, 2001) (Dutta, Parsa, Rahul, & Bujisic, 2014).

However, in current scenario a build infrastructure has a substantial influence on the environment. Adopting environmentally sustainable design will reduce operation cost in the future which may compensate the initial additional cost incurred in adapting universal design (DPCD, 2017). Intelligently planned and built infrastructure would provide us with the best anticipated sustainable future which can resist climate change and to prevent environmental degradation (KPMG, 2012). Today guest in of hotel is environmentally conscious, willing to buy the environmentally friendly product and services and willing to pay a premium for it (Kim, Palakuthi, & Hancer, 2012) (Litaa, Suryaa, Maruf, & Syahrul, 2014).

Principles of Universal Design

In the year 1997, a group of American architects, product designers, engineers and environment design researchers led by Late Ronald Mace conceptualised a set of seven principles of UD (Ostroff.E, 2001). The seven principles are made as a standard to evaluate existing designs, guiding new design, educate designers, and the users of the product and the environment. The seven principles of UD are *"Equitable Use (PUD1)", "Flexibility in use (PUD2)", "Simple and intuitive use (PUD 3)", "Perceptible information (PUD 4)", " Tolerance for error(PUD 5)", "Low physical effort(PUD 6)", and "Size and space for approach and use(PUD 7)"*.

The word equitable usage denotes the design must consider all users with varied abilities. The term flexibility in usage means the design accommodates the extensive user preferences and aptitudes. Simple and intuitive use narrate the design that is easy to interpret irrespective of users' knowhow, familiarity and language skill. Perceptible information means that design should include different communication modes such as verbal, tangible and pictorial regardless of users' sensory capability and the ambient condition**.** The term tolerance for error assumes that design diminishes hazard and errors when accidently used or operated upon. Low physical efforts communicate that design is comfortable and efficient that requires minimum physical effort by the user.

The seven principles of UD are followed across the world as a point of reference for barrier free designing to build environment (Raheja & Suryawanshi, 2014). The principles of design which are followed in major developing countries cannot be followed in India considering its economical, socio –cultural and physical nature which are diverse as compared to other countries (UDAD, 2015). In this context, there was a need for UD that address the diversified regional requirements, cultural and socio-economic strata of our country. A group of architects and designers of interdisciplinary in nature developed Universal Design India Principles (UDIP) that is relevant to the Indian context (Mullick, et al., 2011). UDIP focus upon a country centric approach which considers poverty, caste, class, religion, background-both rural and urban. The five principles of UDIP are *"Equitable / Samaan (UDIP1)", "Usable/Sahaj (UDIP2)", "Cultural/ Sanskritik (UDIP3)", "Economic/Sastha (UDIP4)",* and *"Aesthetic /Sundar (UDIP 5).* The first two UDIP principles *'Samaan'* and *'Sahaj'* includes the existing seven principles of UD. The principle 'Sanskritik' denotes the social and traditional qualities which include the past and the contemporary cultural scenario of India. The ideology 'Sastha' emphasis on affordability and diversity in the design. The principle 'Sundar' means the aesthetics and social integration of design that has a universal appeal. Uniting the virtues of both UD and UDIP, a Combined Universal Design has been developed that embraces the extract of UD and the essence of the diversity of the country. The combined universal design model is presented in Figure 1.
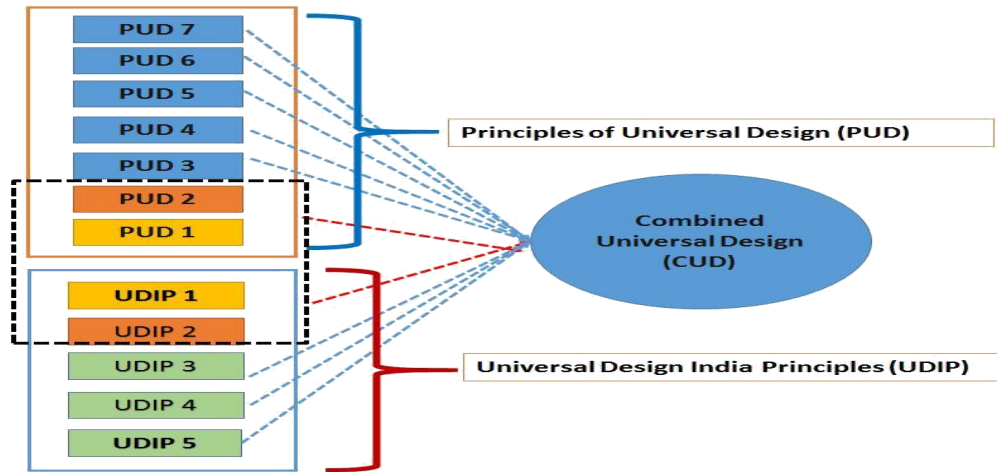
Figure 1. Combined Universal Design

However, sustainability is becoming an important practice which is adopted by hotels to reduce consumption of resources, and its negative impact on environment. The topic of environmental sustainability in hotels gained its prominence during 2014 to 2015 among the researchers (Rosa & Silva, 2017). Hotels are now continuously putting efforts to be sustainable that helps them in controlling cost and being environment friendly (Smith, Choy, Chong, & Verma, 2015). Various drivers that encouraged hotels to focus more on environmental sustainability are fiscal and economic incentives offered by the government, increased regulatory pressures, better marketing / brand image, to provide excellent guest experience, creation of a positive corporate culture and to meet investor requirements. It is essential for hotel industry to embrace sustainable environmental practices to reduce cost, increase efficiency, enrich customer satisfaction, to boost the employee morale and the brand image (Goldstein & Primlani, 2012). Considering the importance environmental sustainability, a new principle on environment sustainability (Sandharan Paryavaran), is included in the combined universal design. This model is named as Comprehensive Universal Design. The conceptualised model is presented in Figure 2.
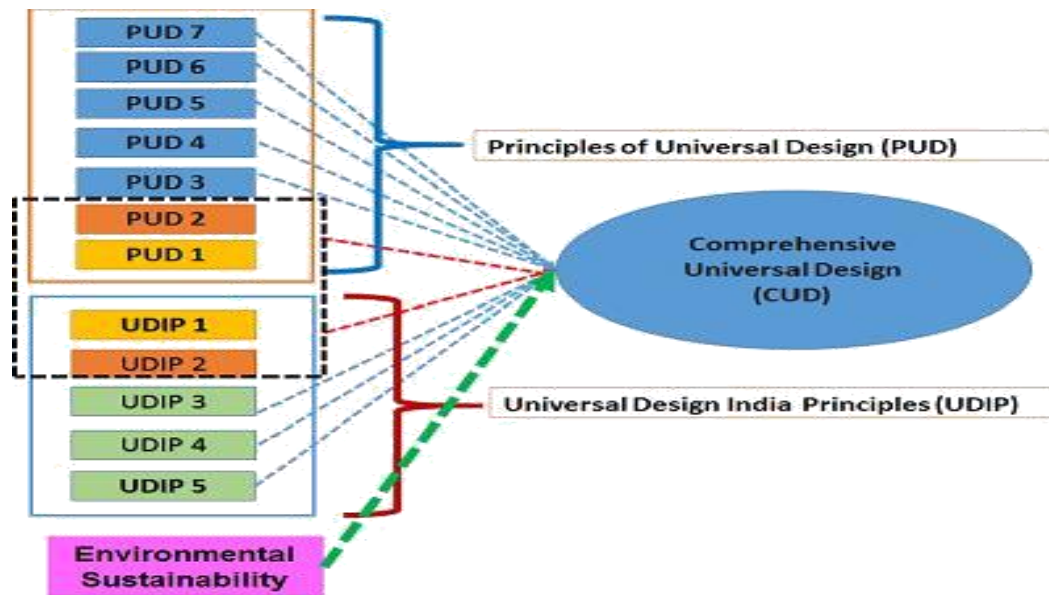
Figure 2. Conceptual Model of Comprehensive Universal Design (CUD)

Discussion and Conclusion

The city should be for all. Diversity should be considered while in designing a smart city. The definition of the smart city rests only in two dimensions: smartness in technology and governance. The missing link in the definition of 'Smart city' is its citizens, who are the primary stakeholders of the smart city. The planners of the newly proposed 'smart city' should also consider the philosophy of 'people first' as they will the core element of the society, diverse in nature with varied needs. The city is a physical location where the tourist needs and the residents' demands meet, so a city should fulfil the different demands by providing appropriate services. A hotel provides accommodation, food and recreational services to the travellers and the residents of the city. The build infrastructure of the hotel should satisfy the needs of all its users by its sensible design. Generally, the hotels are designed focused on a wheel chair, blind and hearing impaired guests. The disabilities of the guest may be varied, a generalisation of disability is to be avoided as each disability has own specific need, which has to be addressed (Poria, Reichel, & Brandt, 2011).Today the disability is widespread that goes beyond just the physical disability: people with overweight, women in pregnancy, aged people, and children are also considered disabled. Mostly the disability arises due to the planners' ignorance on wider needs of the users. UD is the philosophy that guides the planners to build a physical infrastructure of a hotel that considers of extensive needs of its user. UDIP is a culturally sensitive design principles that add values to the UD in terms of economic, socio cultural and aesthetical aspect of the context. CUD is a hybrid concept which combines the totality of UD and the context specificity of UDIP. CUD will help to develop the build infrastructure which accomplishes universal access, culture specificity and environmental sustainability.

By adopting CUD, a 'smart city' could be a model to other aspiring cities. This will help in realising the goals of smart cities which include equity, quality of life, social inclusion and the environmental sustainability. When a hotel throws open its gate for all individuals make their service environment barrier free will lead to increase in its customer base and exponentially expands its' profitability.

7

References

1. Abdulrahim, A., & Samad, N. (2010). Accessible built evironment for the elderly and disabled in Malaysia: Hotels as case studies. *Journal of Construction in Developing Countries, 15*(2), 1-21.

2. Albino, V., Berardi, U., & Dangelico, R. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. *Journal of Urban Technology*, 1-19.

3. Asian Development Bank. (2009). *Investing in sustainable infrastructure: Improving the lives in Asia and the Pacific.* Philippines: Asian Development Bank. Retrieved from https://www.adb.org/sites/default/files/publication/29357/investing-sustainable-infrastructure.pdf

4. Australian Government. (2013). *Accessibility Design Guide:Universal design principles for Australia's aid program.* Canberra: AusAID. Retrieved from http://dfat.gov.au/about-us/publications/documents/accessibility-design-guide.pdf

5. Bernett, J., & Baker, H. (2001). Assessing the travel -related behaviours of the mobility-disabled consumer. *Journal of Travel Research, 4*(1).

6. Bouskela, M. C., Bassi, S., & Luca, S. (2016). *The Road toward Smart Cities: Migrating from traditional city management to the smart city.* Inter-American Development Bank. Retrieved from https://publications.iadb.org/bitstream/handle/11319/7743/The-Road-towards-Smart-Cities-Migrating-from-Traditional-City-Management-to-the-Smart-City.pdf

7. Bowen, J., & Chen.S. (2001). Relationship between customer loyalty and customer satisfaction. *International Journal of Contemporary Hospitality Management, 13*(5), 213-217.

8. Building and Construction Authority of Singapore. (2006). *Universal Design guidlines (Commercial Buildings).* Singapore. Retrieved from https://www.bca.gov.sg/BarrierFree/others/ud_guides.pdf

9. Building and Construction Authority of Singapore. (2014). *Code on accessibility in the build environment, 2013.* Singapore: Buimding and Construction Authority, Singapore.

10. DPCD. (2017). *Environementally sustainable design(ESD) principles.* Retrieved from clearinghouseforsport.gov.au: https://www.clearinghouseforsport.gov.au/__data/assets/pdf_file/0011/531497/Environmentally_Sustainable_Design_Principles_-_Vic_Dept_of_Planning_and_Community_Development.pdf

11. Dutta, K., Parsa, H., Rahul, P., & Bujisic, M. (2014). Change in consumer patronage and willingness to pay at differnt levels of service attributes in restaurants: A study in India. *Journal of Quality Assurance in Hospitlaity and Tourism, 15*(2), 149-174.

12. Goldstein, K., & Primlani, R. (2012). *Current trends and opprtunityies in hotel sustainability.* Gurgaon: HVS India.

13. Janet, N. (2016, April 6). *Exploring the idea of 'Smart hotels'.* Retrieved from healthytravelblog: www.healthytravelblog.com

14. Khatri, N. (2014, November). Designing for inclusion: Universal design- A pre requisite for enchancing tourism. *FHRAI Magazine*, pp. 56-57. Retrieved from http://www.ninafoundation.org/FHRAI%20NOV%202014%20PG%2056-57%20designing%20for%20inclusion.pdf

15. Kim, J., Palakuthi, R., & Hancer, M. (2012). The environmentally friendly programs in hotels and customers' intention to stay: An online survey approach. *International Journal of Hospitality and Tourism Administration, 13*(3), 195-214.

16. KPMG. (2012). *Cities Infrastructure:a report on sustainability.* Amstelveen, Netherlands: KPMG International. Retrieved from https://home.kpmg.com/content/dam/kpmg/pdf/2012/05/Cities-Infrastructure-a-report-on-sustainability.pdf

17. KPMG International. (2016). *The future of cities:Creating a vision.* Retrieved from www.kpmg.com/UK/en/topics/magnet-cities/pages/default.aspx: https://assets.kpmg.com/content/dam/kpmg/pdf/2016/04/the-future-of-cities-creating-a-vision.pdf

18. La Rocca, R. A. (2014). The Role of tourism in planning the smart city. *Tema: Journal of Land Use, Mobility and Environment, 7*(3), 269-283.

19. Litaa, R., Suryaa, S., Maruf, M., & Syahrul, L. (2014). Green attitude and behavior of local tourists towards hotels and restaurants in West Sumatra, Indonesia. *4th International Conference on Sustainable Future for Human Security, SustaiN 2013. 20*, pp. 261-270. Procedia Environmental Sciences.

20. Liu, Y., & Wang, Y. (2013). *City Report on Chongqing UN-Habitat background study for State of the World's Cities Report 2012/2013: Prosperity of Cities.* Nairoabi: UN Habitat.

21. London Development Agency. (2010). *Accessible hotels in London.* London: Grant Thornton.

22. Michopoulou, E., Darcy, S., Ambrose, I., & Buhalis, D. (2015). Accessible tourism futures: the world we dream to live in and the opportunities we hope to have. *Journal of Tourism Futures, 1*(3), 179-188.

23. Ministry of Law and Justice. (2016). *The Rghts of the Person with Disability Act,2016.* Ministry of Law and Justice, The Gazette of India. New Delhi: Government of India.

24. Monzon, A. (2015). Smart cities concept and challenges: Bases for theaAssessment of smart city projects. In M. Helfred, K. Krempels, C. Clein, B. Donnellan, & O. Gusikhin (Ed.), *Smartgreens 2015 and Vehits 2015, CCIS 579* (pp. 17-31). Lisbon: Springer International Publishing, Switzerland.

25. Mori, K., & Christodoulou, A. (2012). Review of Sustainability Indices and Indicators: Towards a New City Sustainability Index (CSI). *Environmental Impact Assessment Review, 32*(1), 94-106.

26. Mosannenzadeh, F., & Vettorato, D. (2014). Defining smart city: A conceptual framework based on keyword analysis. *Journal of Land Use, Mobility and Environment*(Special Issue), 683-694.

27. MOUD. (2017, September). *Smart Cities*. Retrieved from MInistry of Urban Development, Government of India: http://moud.gov.in/cms/smart-cities.php

28. Mullick, A., Agarwal, A., Balaram, S., Chakrabarti, D., Raheja, G., Banerjee, H., . . . Gupta, S. (2011). *Universal Design India Principles*. Ahmedabad: National Institute of Design.

29. New Cities Foundation. (2015). *New Cities and Concepts of Value: Planning, Building and Responding to New Urban Realities*. Retrieved from http://bit.ly/Cityquest2015

30. Olsen, M. D., & Connolly, D. J. (2000). Experience-based Travel. *Cornell Hotel and Restaurant Administration Quarterly, 41*(1), 30-40.

31. Ostroff.E. (2001). Universal design: The New Paradigm. In W. Praiser, & Ostroff.E, *Universal Design Hand Book* (pp. 1.3 -1.12). New York: McGraw-Hill.

32. Piramanayagam, S., & Seal, P. (2017). Risk Management in Adventure Tourism. *Proceedings of WRFER International Conference*, (pp. 34-37). Cochin.

33. Popiel, M. (2014). Paving the way to accessible tourism on the example of Krakow. *European Journal of Tourism, Hospitality and Recreation*(Special Issue), 55-71.

34. Poria, Y., Reichel, A., & Brandt, Y. (2011). Dimensions of hotel experience of people with disabilities: An exploratory study. *International Journal of Contemporary Hospitlaity Management, 23*(5), 571-591.

35. Pritchard, M., & Howard, D. (1997). The loyal traveler: Examining the typology of service patronoage. *Journal of Travel Research, 35*(4), 2-10.

36. Raheja, G., & Suryawanshi, S. (2014). Inclusive informal campus space through universal design India priciples. In H. Caltenco, P.-O. Hedvall, A. Larsson, K. Rassmus-Gröhn, & B. Rydeman, *Universal Design 2014: Three Days of Creativity and Diversity*. Sweden: STM publishing House.

37. Rahim, A., & Samad, N. (2010). Accessible built environment for the elderly and disabled in Malaysia: Hotels as case studies. *Journal of Construction in Developing Countries, 15*(2), 1-21.

38. Rains, S. (2009). *Universal Design: Guide for inclusive tourism.*

39. Rosa, F., & Silva, L. (2017). Environmental sustainability in hotels, theoretical and methodological contribution. *Brazilian Journal of Tourism Research, 11*(1), 39-60.

40. Rossetti, R. (2009). A Universal Design Approach for the Hospitality Industry. *HD 2000 Expo and Conference.*

41. Seal, P. (2013). *Computers in hotels: Concepts and application.* New Delhi: Oxford University Press.

42. Smith, A., Choy, V., Chong, H., & Verma, R. (2015). Environmental sustainability in the hospitality industry: Best ractices, guest participation and customer satisfaction. *Cornell Hospitality Report, 15*(3), 6-16.

43. Steinfield, E., & Maisel, J. (2012). *Universal Design: Designing inclusive environment.* New Jersey: John Wiley and Sons.

44. Tandawy, A., Kim, W., & Pyo, S. (2004). Evaluation of hotels to accommodate disabled visitors. *Journal of Quality Assurance in Hospitlaity and Tourism, 5*(1), 91-101.

45. UDAD. (2015). *Universal Design and Development* . Retrieved from http://udad.djad.in/

46. UN-Habitat. (2016). *Urbanization and Development:Emerging Futures: World Cities Report 2016.* Nairobi: United Nations Human Settlements Programme. Retrieved from http://wcr.unhabitat.org/wp-content/uploads/sites/16/2016/05/WCR-%20Full-Report-2016.pdf

47. United Nations. (2009). *Creating an Inclusive society:Practical strategies to promote social integration.* Ghana: Department of of Economic Affairs and Social Affairs, United Nations.

48. UNPF. (2017). *World population trends.* Retrieved from United Nations Population Fund: http://www.unfpa.org/world-population-trends

49. UNWTO. (2016). *Tourism for All - promoting universal accessibility - Good practices in the accessible tourism supply chain.* Madrid: United Nations World Tourism Organization. Retrieved from http://cf.cdn.unwto.org/sites/all/files/docpdf/goodpracticesintheaccessibletourismsupplychainen20162web.pdf

50. World Urban Campaign. (2016). *The City We Need 2.0: Towards a new urban paradigm.* Prague/Czech Republic.: UN.