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SUSTAINABLE DEVELOPMENT IN TOURISM DESTINATIONS THROUGH SMART CITIES: A CASE OF URBAN PLANNING IN JAMMU CITY

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ABSTRACT

With the rapid growth of technology, the world is witnessing a change from sustainability valuation towards smart city goals in the 21st century. Cities can play an imperative role in combating and countering climate change by using novel smart technologies, which would help in reducing emission of greenhouse gases and will further enhance the energy proficiency of the cities. The current study aims to understand the perception of the local residents of a tourism destination, Jammu in India, towards the effect of dimensions of the smart city on sustainable development. The hypotheses

proposed in the study were validated by utilizing the SEM (Structural Equation Modelling), with the assistance of Partial Least Squares (PLS). The study found that all three dimensions (namely, smart economy, smart environment, and smart society) are significant predictors of sustainable development. The findings resulted from the data collected with the help of a questionnaire from the local residents of Jammu city, which is being developed as a smart city by the government of India.

KEYWORDS

Sustainable Development; Smart Cities; Local Residents; Tourism Destination.

ECONLIT KEYS

Q01; P25; O44; Z32; Z38

1. INTRODUCTION

These days the word smart is associated with many concepts and products. It is necessary to be smart to survive in any market or industry. Smartness enables us to understand problems and solve them using information technology. It's expected that by 2050 the world urban population is expected to nearly double, making urbanization one of the 21st century's most transformative trends (United Nations, New Urban Agenda, 2016). The continents of Asia and Africa are anticipated to exceed an urban population of 50% by 2020 and 2035, correspondingly. The worldwide urban population is estimated to upsurge by 72% by 2050, fluctuating from 3.6 billion people in 2011 to 6.3 billion in the year 2050 (United Nations, Department of Economic and Social Affairs, 2011). This is one of the key drivers of the development of smart cities across the globe. The smart city is a catchphrase for technologically supported cities in various aspects. The idea behind building smart cities is to establish a city that monitors its infrastructures and can better optimize its resources. There are many definitions of smart cities. Many variants can be generated by replacing "smart" with the term, "intelligent" or "digital". The word "smart city" is utilised in many ways which are not always the same. It might have been initiated out of the Smart Growth Movement (Bollier, 1998).

Recently, many researchers have focused on the smart city and its importance in tourism development. An important aspect is that when a destination pursues to be a smart city, new business opportunities appear, especially in the travel and tourism industry. Hotels, restaurants, tourism-related transportation, and tourism attractions, all

benefit from the increased quality of life of the destination. The smart cities concept has influenced tourism destinations, which aim to become smart tourism destinations. As the smart city movement grows across the globe, it's getting easier for the tourism industry to adopt the smart technologies to monitor and manage tourists and become more sustainable. Moreover, the concept of smart tourism destinations is also derived from smart cities, where smartness is incorporated in mobility, living, people, governance, economy, and environment (Giffinger et al., 2007b). Hence, the tourism industry is an important component and an effective factor in building smart cities. In the past few years, there has been a trend of merging the term smart cities with sustainable development to improve the local resident's standard of living in modern cities. The vision of creating such cities is to understand how such cities can lead the way to an affluent and sustainable future. Though the main purpose of the term smart cities is to develop the resident's quality of life, there is a necessity to focus on sustainability also, because it is a major concern for various cities across the globe. The evolving terminology of smart cities has pondered attention to adapting the sustainable approaches and opportunities offered by the rapid diffusion of new technology for sustainable development (Toppeta, 2010; Nam and Pardo, 2011; Heitmann et al., 2011; Falco, 2019).

It is vital to understand how local residents of the upcoming smart cities perceive the effect of smart cities on sustainable development. Keeping this in mind, the current study aims to understand the perception of the local residents of Jammu city in India, towards the effect of dimensions of the smart city on sustainable development. A quantitative approach has been adopted in this study. A questionnaire based on a five-point Likert Scale was prepared based on a literature review and the responses were taken from the local residents. Further structural equation modeling has been used to analyze the data.

The rest of this paper is organized as follows: In the next section, the paper outlines the available literature research methodology, data analysis, and subsequent results. Having presented the results of this study, findings are discussed before detailing the research implications and drawing a conclusion after that. Finally, in the end, the limitations of the study and the scope of future research are outlined. This study is vital in

the current environment of increasing admiration of smart cities because it's very important to formulate and implement sustainable strategies for smart city developments.

2. LITERATURE REVIEW

Although there are many challenges in maintaining a city, sustainable development has a social purpose for educating stakeholders towards filling the gaps for a sustainable future. Sustainable development is oriented towards maintaining and conserving the resources of the city for coming generations. Sustainable development necessitates the participation of stakeholders and also political leadership. Achieving sustainable development is a process that requires continuous efforts and it requires constant monitoring of the impacts of daily activities on the environment and local residents. The word sustainable development was first used in the year 1980 in the World Conservation Strategy (World Conservation Strategy, 1980). The term sustainable development stands for the advancements that accomplish the requirements of current generations in such a way so that the resources are not affected and reserving them for upcoming generations (WCED, 1987).

“Smart City” is a popular term that is getting a lot of growing attention in urban planning and governance in recent years. There is presently no universally acknowledged definition of a smart city. Definitions vary in accordance with the culture, primacies, and histories of the cities, as shown in the Table 1. The smart cities are integrated with elementary infrastructure that offers an enhanced standard of living for the local residents with help of smart solutions for various problems (Camero & Alba, 2019, Gheisari et. al., 2021). Education, water, electricity supply, sanitation, waste management, well-organized public transportation, internet connectivity, citizen participation, and safety of the citizens are expected qualities of these smart cities. While urbanization is continuously increasing and leading to increased carbon emissions, pollution, and other environmental threats, state governments can take actions to address these issues by developing suitable strategies. Smart cities utilize modern prospects such as innovative technology and information communication technology (Lee, 2013). Holland (2008) passed a remark

on some Smart City initiatives by calling them a celebratory label. Giffinger, et al. (2007b) mentioned that smart cities are efficient cities with a futuristic approach. They also stated that the numerous characteristics of smart cities are smart people, smart mobility, smart governance, smart economy, smart environment, and smart living, established on the amalgamation of independent, aware and participatory citizens. Smart cities integrate Web 2.0 and ICT (information communication technology) technology along with planning and organizational exertions to boost administrative activities and assist to find novel innovations and solutions for the city's problems and challenges to facilitate livability and sustainability (Toppeta, 2010; Joss et. al., 2019; Habib et. al., 2020). Harrison et al., (2010) in the paper "Foundations for Smarter Cities" described that smart cities utilize various infrastructures, such as IT (Information Technology), and social and physical infrastructure to support the shared intelligence of the city. Smart cities are therefore geared towards establishing a stable economy, enhanced services, higher education, skilled workforces, collaborative spaces, innovative strategies, and sustainable ecology, to enable improved quality of life that attracts citizens towards them (Winters, 2010; Nam & Pardo, 2011; Thite, 2011; Kourtit, Nijkamp & Arribas, 2012; Das, 2020; Hoang & Nguyen, 2021). Moreover, The Ministry of Urban Development India (2015) recognizes environment and social sustainability and competitiveness as the key elements of smart cities.

Definitions of "Smart City"	Source
"A city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens." (p. 2290)	Hall (2000)
"City well performing in a forward-looking way in economy, people, governance, mobility, environment, and living, built on the smart combination of endowments and activities of self-decisive, independent and aware citizens." (p. 10)	Giffinger et al. (2007b)
"A city connecting the physical infrastructure, the IT infrastructure, the social infrastructure, and the business	Harrison et al. (2010)

infrastructure to leverage the collective intelligence of the city.” (p. 2)	
“A city is smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance.” (p. 348)	Caragliu et al. (2011)
“Being a smart city means using all available technology and resources in an intelligent and coordinated manner to develop urban centers that are at once integrated, habitable and sustainable.” (p. 50)	Barrionuevo et al. (2012)
“A smart city, according to ICLEI (International Council for Local Environmental Initiatives), is a city that is prepared to provide conditions for a healthy and happy community under the challenging conditions that global, environmental, economic and social trends may bring.” (p. 25)	Guan (2012)
“Smart cities represent a conceptual urban development model on the basis of the utilization of human, collective, and technological capital for the development of urban agglomerations”. (p. 3)	Angelidou (2014)
“For a city to be smart, the integration of city systems is essential, in order to provide flexibility and access to real-time information for the creation and delivery of efficient services.” (p. 1)	Javidroozi et. al. (2014)

Table 1: Definitions of “Smart City”.
Source: Own elaboration.

Due to crowded settlements in urban areas, many social problems arise, such as pollution, wastage, poverty, congestion, and criminality have risen (Jenks et al., 1996; Rotmans & Asselt, 2011). Sustainable development has emerged as a topic of interest both in academia as well as in public and private institutions (Rusandu, 2008; Sachs et. al., 2019, Silvestre & Țîrcă, 2019; Xu et. al., 2020). In 1987, the World Environment and Development Commission, in the Brundtland Report, defined sustainable development as "development that meets the needs of the present without compromising the needs of future generations to meet their own needs." Moreover, there are viewpoints that sustainable development depends on harmony among the necessities of the whole human development and the ecological balance (Lele, 1991). In other words, we can say that the vision of sustainable development must be in accordance with the combined social and economic growth, environmental protection, and laws, to ensure the

sustenance of human growth not just in selective places, but on the entire planet. The indicators of sustainable development in countries like the United Kingdom, the United States, and Finland mentioned similar statements. Various scholars have also expressed that the notion of sustainable development is on the verge of becoming extraneous (Hopwood et al., 2005; Redclift, 2005). Cities are engines for sustainable development. It is where ideas, business, culture, science, and prosperity thrive. Smart cities can offer opportunities to people to prosper economically and socially, but this is only possible in prosperous cities that can accommodate people in decent jobs and where land resources are not overwhelmed by growth. Hence, it's important to understand the effect of the dimensions of smart cities on sustainable development, especially in emerging smart cities.

In reference to urban sustainability, a diverse and multifarious outline is required (Munda, 2004) which will handle the challenges and processes of urbanization in social, environmental, economic (Choguill, 1996; Keirstead & Leach, 2007), technical (Choguill, 1996), ecological (Choguill, 1996; Gibbs, 1997), political (Gibbs, 1997), cultural (W. Mega, 2010), and engineering (Sahely et al., 2005) contexts. According to Munasinghe (1993), sustainable development encompasses “three major points of view namely, “economic, social, and ecological”. These three different approaches to sustainable development are articulated as; the economic which maximizes income while sustaining capital stock, the ecological which pursues to preserve biological and physical systems, and the sociocultural which incorporates equity and participation (Munasinghe, 1993). Considering the present vulnerable environment and depleting natural resources, the objectives of sustainable development must focus on efficient use of resources and maximizing the satisfaction of the population, as shown in Figure 1.

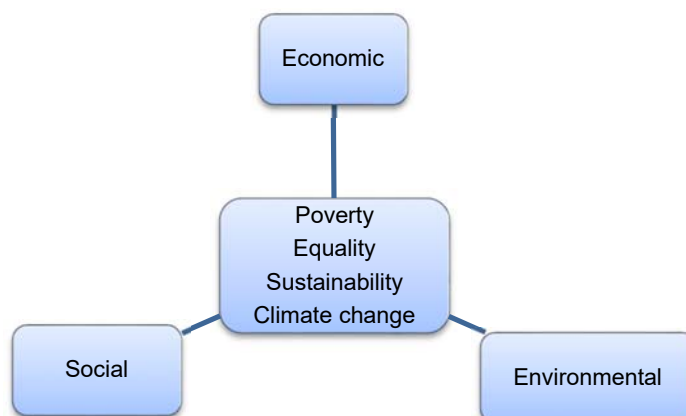


Figure 1. The objectives of sustainable development.
Source: Environmental Economics and Sustainable Development, (Munasinghe, 1993).

Following are the framed research hypotheses:

H1: Smart Economy is positively associated with Smart Development.

H2: Smart Environment is positively associated with Smart Development.

H3: Smart Society is positively associated with Smart Development.

3. METHODOLOGY

3.1) RESEARCH INSTRUMENT AND SAMPLING

Considering the purpose of the current research, a quantitative approach has been adopted. The main objective of this study is to find the influence of smart economy, smart environment, and smart society on the sustainable development of Jammu. For the preparation of the questionnaire, the items of the questionnaire were taken from previous relevant literature. The questionnaire covers the items relating to the four constructs: Environment, Economy, Society, and Sustainable Development. The questionnaire items for the environment dimension were adapted from Munasinghe (1993), Rootes (2007), and Seghezze (2009); the items for the economy dimension were adapted from Reed (2002), Ahmed, M. (2010), and the items for society dimension were adapted from Thin

(2002) and Littig & Griessler (2005). Finally, the questionnaire items for sustainable development were taken from Giddings & O'brien, G. (2002), Ciegis, Ramanauskiene & Martinkus (2009), and Lee (2013). For each variable, people were requested to respond to each statement by using the five-point Likert scale starting from "1-strongly disagree" to "5-strongly agree". The questionnaire included two parts. Part one focused on the smart city dimensions of sustainability. The items in part second focused on demographic information of the respondents (age, gender, education level, etc.). The sampling technique used in the study is random and purposive sampling. According to Black (2010), purposive sampling is a non-probability sampling method and, in this sampling, the selection of the sample is done based on the judgment of the researcher. Before distributing the questionnaire, it was asked the respondents if they know about smart cities, and the respondents with the answer 'Yes' were selected and the respondents with the answer 'No' were discarded. Around 350 questionnaires were circulated in total. According to Lomax and Schumacker (2004), the sample size of 250-500 respondents is adequate for the research. In the end, 295 were obtained back. Additionally, 25 questionnaires were discarded due to missing information and inadequate responses from informants. Lastly, 270 responses from respondents were selected for the analysis part of this study. The sample composition taken for the study can be observed in Table 2 given below, including demographics like gender, age, and employment status (Patten & Newhart, 2017). Jammu city lies in the Himalayan range and is amongst one of the leading tourist destinations in India. Jammu city is also selected to be developed as one of the hundred smart cities of India. This justifies the selection of this tourism destination for this study and therefore, all of the respondents belonged to Jammu city.

	Characteristics	Frequency	Percentage
Gender	Male	147	55.4%
	Female	123	44.6%
Age	Below 20	25	9.2%
	21-35	112	41.5%
	36-50	95	35.2%
	51-65	24	8.9%
	Above 65	14	5.2%
Employment Status	Employed	140	51.9%
	Self-Employed	55	20.3%
	Student	35	12.9%
	Others	40	14.9%

Table 2. Demographic profile of respondents.
Source: Own elaboration.

4. DATA ANALYSIS

Structural equation modelling has been used in this study, which includes a diverse set of mathematical models, algorithms, and statistical methods that fit networks of constructs to data. To validate the hypothesis, structural equation model (SEM) in the Partial least square (PLS) technique in version 3.0 is performed (Ringle et al., 2015). It is a method of structural equation modelling that enables the researcher to estimate complex cause-effect relationship models with latent variables. This is a contemporary technique to calculate path coefficients in structural models, in the last decade (Ali et al., 2015). In addition, it fulfils the requirement of no-normality and less sample size data (Hair et al., 2017). PLS algorithms were performed to assess the factor loadings, path coefficients, and weights. A bootstrapping procedure was run by 5000 iterations.

4.1) MEASUREMENT MODEL

The primary step in the PLS measurement model is examining the discriminant and convergent validity. The convergent validity of the model was assessed through factor loadings, composite reliability and Average Variance Extracted (AVE). As showcased in Table 3, the value of factor loadings are above 0.7 (Fornell & Larcker, 1981). Similarly,

the value of composite reliability is more than 0.7 and the value of AVE is also more than 0.5 (Fornell & Larcker, 1981).

Construct	Scale Item	Loadings	Composite Reliability	AVE	Chronbach Alpha
Smart Economy (SEC)	SEC1	0.902	0.913	0.725	0.874
	SEC2	0.750			
	SEC3	0.804			
	SEC4	0.937			
Smart Environment (SEV)	SEV1	0.915	0.935	0.783	0.907
	SEV2	0.862			
	SEV3	0.769			
	SEV4	0.979			
Smart Society (SS)	SS1	0.907	0.926	0.759	0.893
	SS2	0.756			
	SS3	0.848			
	SS4	0.959			
Sustainable Development (SD)	SD1	0.739	0.859	0.670	0.754
	SD2	0.854			
	SD3	0.858			

Table 3. Item Loadings, Composite Reliability, AVE, Cronbach Alpha Coefficients.
Source: Own elaboration.

In the next step, the discriminant validity was measured as shown in Table 4. Discriminant validity denotes the degree to which the reflection of one variable does not display the reflection of some other variable. This is indicated by low correlations between the measure of interest and the measure of other constructs (Ramayah et al., 2013). The square root of the AVE for each construct is greater than the correlations between them and all other constructs. The values of all constructs met the recommended level, as shown in Table 3.

		Smart Economy	Smart Environment	Smart Society	Smart Development
	SEC	0.851			
	SEV	0.172	0.885		
	SS	-0.026	0.319	0.871	
	SD	0.233	0.461	0.386	0.819

Table 4 Discriminant validity of constructs.
Source: Own elaboration.

4.2 STRUCTURAL MODEL

The proposed hypotheses of this study were tested by the PLS technique in the study and it was calculated by examining the structural paths, and variance explained (the R2 value). To assess the statistical significance and path coefficients a bootstrapping procedure with 5000 was executed. The value of overall goodness-of-fit (GoF) is not generated by PLS, therefore it was calculated by a diagnostic tool to evaluate the model fit (Tenenhaus *et al.* 2005). Following Hoffmann and Birnbrich (2012) -GoF small=0.1; GoF medium=0.25; and GoF large=0.36- to analyse the cut-off value of GoF. GoF value of the model presented in the current study is 0.476, demonstrating an ideal model fit (Table 5).

Constructs	AVE	R2
Smart Economy	0.725	
Smart Environment	0.783	
Smart Society	0.759	
Sustainable Development	0.670	0.308
Average Score	0.734	0.308
AVE *R2		0.226
(GOF =AVE*R2)		0.476

Table 5: Goodness of Fit Indices.
Source: Own elaboration.

The value of R Square represents the explanatory influence of the independent variables on dependent variables. Moreover, the endogenous latent variables are substantial, moderate or weak, based on the R Square values of 0.67, 0.33 or 0.19, respectively for model validity (Chin et al. 2008). All three dimensions of smart cities namely smart environment, smart economy and smart society, explain 30.8 percent of sustainable development ($R^2=0.308$). Accordingly, sustainable development ($R^2=0.308$) can be considered moderate.

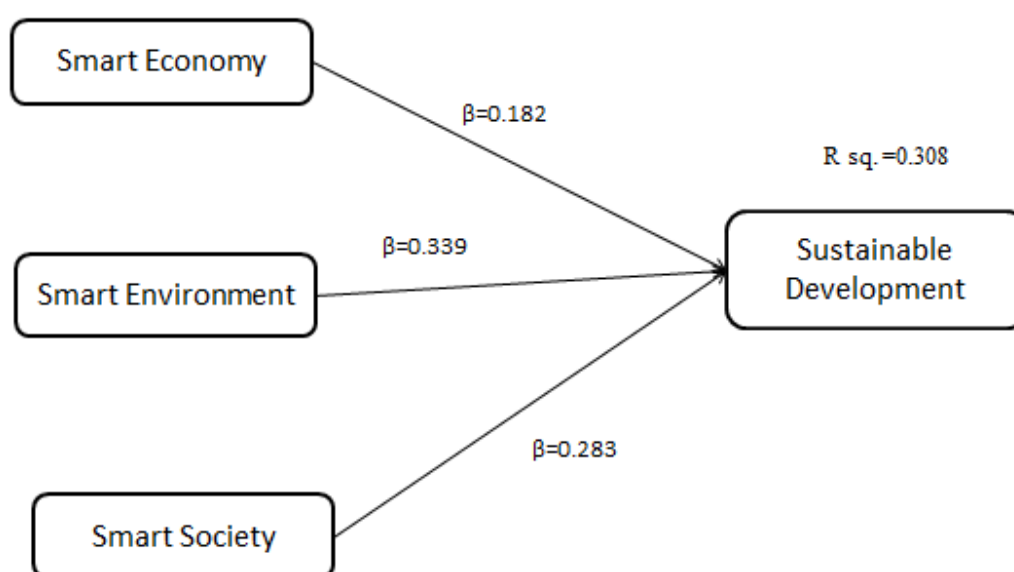


Figure 2: Structural Model.
Source: Own elaboration.

The findings are presented in Figure 2 (above) and Table 6 (below). All the three hypotheses Smart Economy ($\beta = 0.182$, $p<0.05$), Smart Environment ($\beta=0.339$, $p<0.05$), and Smart society ($\beta=0.283$, $p<0.05$) were significant and also explain the 0.308% variance of sustainable development. H1 and H2 of this study are accepted at 99.99% confidence level and H3 is accepted at 95% confidence level.

5. RESULT AND DISCUSSION

Modern cities across the globe showcase a great apprehension regarding issues linked with sustainability as they are moving ahead and attempting to find ways to conserve economic and environmental resources. Previously researchers have discussed and focused on the sustainable development of cities but now researchers and governments are wondering how sustainable development goals can be obtained through “smartness” which has resulted in immense admiration for smart cities.

Hyp.	Path	Standardized Coefficient	P value	Decision	Constructs	R-Squared
H1	Smart Economy-Sustainable Development	0.182	0.000	Supported	Sustainable Development	0.308
H2	Smart Environment-Sustainable Development	0.339	0.000	Supported	Sustainable Development	0.308
H3	Smart Society-Sustainable Development	0.283	0.002	Supported	Sustainable Development	0.308

Table 6: Summary of test results for the structured model.
Source: Own elaboration.

The study aimed to examine the influence of dimensions of smart cities on sustainable development. The majority of the available studies on smart cities emphasized the use of new mobile apps, technologies, and tools to support the basic infrastructure of the cities (Hall, 2000, Lamfus et. al., 2015). This study tries to address this issue and explores the employment of innovation within the public sphere, and the connection between sustainable development and smart cities. The data was collected from 270 residents from Jammu city, India. The results of this study validated the measurement model for the three smart city dimensions (smart economy, smart environment, and smart society or people) and sustainable development. Moreover, findings also indicated that all three dimensions of the smart city were proven to be statistically significant predictors of sustainable development. The H1 hypothesis shows that there is a significant relationship between smart environment and sustainable development. The result was found to be

similar to studies that are conducted by past researchers (Giffinger et al., 2007a; Nam and Pardo, 2011; Lombardi et al., 2012; Barrionuevo et al., 2012; Aletà, Alonso & Ruiz, 2017). The H2 hypotheses shows that there is a significant relationship between smart economy and sustainable development which was also proven in earlier research (Fatimah et al., 2020; Galperina et al., 2016; Kumar & Dhaiya, 2016; Trindade et al., 2017). The H3 hypotheses shows a significant relationship between smart society and sustainable development. The results were shown similarly in past studies (Girish Kumar et al., 2022; Holroyd, 2022; Rodrigues et al., 2022; Trindade et al., 2017).

The role of human capital and new emerging technologies plays a vital role in smart cities through the improvement of social, economic, and environmental sustainability (Neirotti, De Marco, Cagliano, Mangano, & Scorrano, 2014; Giffinger, Fertner, Kramar, Kalasek, Pichler & Meijers, 2007a; Hollands, 2008; Nam & Pardo, 2011, Guan, 2012). According to the Institute of Electrical and Electronics Engineers, smart cities combined bring government, society, and technology on a single platform that enables smart people, smart environment, and smart living. While preparing developmental plans and strategies for urban areas, integrated methods should be utilised to build a systematic assessment framework, in order to obtain better estimation precision (Vu, V. H., Le, X. Q., Pham, N. H., & Hens, L., 2013). In this study, the smart environment dimension was proven to be the strongest predictor of sustainable development which is also in accordance with the available literature (Toppeta, 2010; Nam & Pardo, 2011; Caragliu, Del Bo & Nijkamp, 2011; Heitmann et al., 2011; Hannelle et al., 2016; Ahvenniemi et al., 2017; Yigitcanlar et al., 2019). Hence, in many respects, cities are our best hope for tackling climate change and ensuring sustainable development. For the cities to become both smart and sustainable, environment-friendly, economically affluent, and socially just approaches along with the integration of ICT in the daily lives of the citizens is required. In India the popularity of smart cities is growing. Smart cities act can also act as a ladder for the establishment of smart tourism destinations (Jasrotia & Gangotia, 2018). Smart tourism destinations are those smart cities that employ the latest innovations and information technology to offer pleasurable experiences for the tourists. Further, it is evident that smart tourism is a fundamental part of the smart cities. It is the need of the

hour to make and execute sustainable plans for the development of smart cities, which will ultimately lead the way to smart tourism destinations.

6. RESEARCH IMPLICATIONS, FUTURE RESEARCH AND LIMITATIONS

In the sustainability context, the results contribute to the literature on smart cities. Previous studies for smart cities have been done on smart technologies, smart development but specific study to examine the smart city dimensions as predictors of sustainable development are still at the nascent stage. The results of the study also showcased that a smart environment is the strongest predictor of sustainable development in the city of Jammu, India. Finally, the study adds to the scarce literature on the role of the dimensions of smart cities in achieving sustainable development. Whereas the primary goal of a smart city is to utilise technology to enhance tourist attractions and experience, the secondary goal must be to enhance the sustainable quality of life for city residents. Excessive tourism can put immense pressure and strain on urban cities, which can then affect the life of local residents. Smart city tourism forms an environment that is sustainable in nature. For example, with the upgradation of the public transportation system, the availability of transportation can be adjusted in real-time as per tourist flow, even dispersing of tourists throughout the city. Moreover, improved social policies can enable safety, as well as sustainable development. All of the above-mentioned measures can enhance the quality of life for local residents and minimise the conflicts over resource use between residents and tourists.

This study offers various implications for practitioners. The results prove that while establishing smart cities, decisions regarding the environment, economy, and society are critical and appropriate plans and frameworks need to be developed in advance so that the pillar of smart cities supports sustainable development. This study contributes to knowledge regarding the importance and role of smart cities as a ladder for achieving sustainable development. The smart environment is represented as a prominent indicator of frameworks of the smart city as investigated in this study. Environmental sustainability is also one of the prominent ideas behind setting smart cities (European Commission,

2012; United Nations, 2015). Moreover, keeping in mind the ambitious European (European Commission, 2014) and global energy and greenhouse gas emission minimization objectives, efficient usage of the energy must be considered a key goal for establishing smart cities. In the field of urban planning, the term smartness is taken into account as a normative privilege and as a philosophic dimension, which enables smarter strategic decisions and directions. (Del Saz-Salazar & Menéndez, 2007; Jim, 2013). This study offers empirical evidence that the dimensions of smart cities namely, smart environment, smart economy, and smart society are significant predictors of sustainable development.

This study can be taken as a guiding map for the forthcoming research. First, the proposed model in this study reflects less than half of the variance for sustainable development, which indicates that some important variables might be missing in this study. Thus, it is recommended that upcoming studies can take the effect of some other variables on sustainable development for smart city sustainability. The other variables would include smart mobility, smart governance, and smart technology (Lombardi et al., 2012; Giffinger et al., 2007b; Toppeta, 2010). The first limitation of this study is that it hasn't used any moderation, so future researchers could also inspect the moderating effects of age, gender, etc. on sustainable development. Future studies can also analyse the factors which act as a hindrance to the sustainable development of a smart city. Secondly, the respondents taken for this study are from Jammu city only, therefore the findings of this paper can't be generalised to other cities across the globe. It is possible that the perceptions of locals from other regions and countries may be different regarding the sustainable development of smart cities.

7. CONCLUSION

The concept and policies of smart city development have been different in different countries. Smart cities aim to use the available resources, technological tools, and innovations to enhance the quality of life of the citizens. As the results indicate, the smart environment, smart economy, and smart society dimensions need equal attention for the

foundation of a smart city. Undoubtedly, smart cities can bring a paradigm shift in the city in terms of infrastructure such as road facilities, transportation, banks, ATMs, and technology. Technological innovations in smart cities can be the means to rethink cities for a new economy and society to facilitate residents' benefit. Smart cities can lead toward an inventive economy by focusing on the quality of life that ultimately attracts informed citizens to work and live in smart cities. (Egre, 2009; Thite, 2011; Angelidou, 2014). Urban planning is a technical process concerned with the development and design of land use and the environment, including air and water. The present times require focusing on the smart environment dimension by finding new ways to integrate sustainable practices across various sections and sectors with smart cities as smart cities are about utilizing new tools and technologies (Nam and Pardo, 2011; Guan, 2012). This can be a completely new approach to creating a sustainable city that treats information as a vital tool for making smarter decisions. Alternative smart city paradigms relate technology additionally directly to innovation and human capital development, supported by the construct that technology will provide a city's constituents the ability to introduce, create, participate in society and solve issues put together for the common well.

Local residents are important stakeholders in any city so their participation in decision-making is necessary. Therefore, it is necessary to understand the impact of smart cities on local communities and how they perceive this development in their area. Now, it is up to new smart cities to define for themselves how they can use smart city technologies to meet their sustainable development goals and Minimise carbon emissions locally. The planning of a smart city includes areas like sustainable smart environment, smart education, smart transportation, smart health care, smart industry, smart living, and smart tourism. Smart cities can use smart technology or apps in ways that can help the local economy or business to attract tourists, increase tourist spending and contribute to building a greener and cleaner city. Smart city tourism can use big data and artificial intelligence to provide a range of tourist services. Smart and sustainable tourism is the future as countries across the world launch respective initiatives to gain a competitive edge. Supported by cutting-edge technologies like IoT, big data, artificial intelligence, and augmented and virtual reality, smart tourism solutions make cities more accessible and

discoverable while significantly enhancing tourist experiences. Smart city solutions will always be as diverse as the cities in which they are adopted. Still, urban governments have much to benefit from by promoting a unified vision of smart city deployment that enunciates the specific needs and prospects of the public sector. Hence, it is now vital to recognise the environment, economy, and social sustainability as the key elements of smart cities that can promote employment, quality of life, and investment opportunities.

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Appendix: Questionnaire for the local residents

Background and Disclaimer: This information is being sought as part of primary data collection for the research work titled "SUSTAINABLE DEVELOPMENT IN TOURISM DESTINATIONS THROUGH SMART CITIES: A CASE OF URBAN PLANNING IN JAMMU CITY". The confidentiality of the information provided is assured and your cooperation and time in providing it will be appreciated.

Part A: Basic Information about the Respondent.

Name of the Respondent.

.....

Gender: Male Female

Age: Below 20 21-35 36-50 51-65 Above 65

Employment Status: Employed Self-Employed Student

Others

.....

PART B: For the following questions, please put (✓) under the option that best describes your opinion (in making your ratings, please select ONLY ONE option).

(SA–Strongly Agree, A–Agree, N–Neutral Comments, D–Disagree, SD–Strongly Disagree)

S. No.	Statements	SA	A	N	D	SD
SEC1	Tourism improves the locals standard of living					
SEC2	Tourism creates new job opportunities for locals					
SEC3	Tourism results in an increase in the cost of living					
SEC4	Tourism increases a community's tax revenue					
SEV1	The Environment of the city can handle more tourists resulting from smart city project					
SEV2	More infrastructures will increase the risk of natural disasters					
SEV3	Waste management system is efficient in the city					
SEV4	More infrastructural will lead to pollution in the city					
SS1	There is change in lifestyles of local population due to tourism					
SS2	Tourists engaged in criminal activities (theft and burglary)					
SS3	Tourists have engaged in excessive use of drinking or drug use					
SS4	Tourist visit the destination really trust on local people					
SD1	Smart city development enables Smart Economy at the destination					
SD2	Smart city development improves the Smart Environment at destination					
SD3	Smart city development helps to create a Smart Society					

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