

EXPLORING SMART CITY CHARACTERISTICS FOR “TOURISM-FOR-ALL” INITIATIVES IN URBAN DEVELOPMENT: A SYSTEMATIC LITERATURE REVIEW

Hassnah WEE* 

Faculty of Hotel & Tourism Management, Universiti Teknologi MARA (UiTM)
Cawangan Selangor, Kampus Puncak Alam, Malaysia, e-mail: hassnah739@uitm.edu.my

Mohd Saufi ANAS 

Faculty of Hotel & Tourism Management, Universiti Teknologi MARA (UiTM)
Cawangan Selangor, Kampus Puncak Alam, Malaysia, e-mail: saufianas94@gmail.com

Alfian THOMAS 

Faculty of Hotel & Tourism Management, Universiti Teknologi MARA (UiTM)
Cawangan Selangor, Kampus Puncak Alam, Malaysia, e-mail: alfian.thomas@gmail.com

Citation: Wee, H., Anas, M.S., & Thomas, A. (2023). EXPLORING SMART CITY CHARACTERISTICS FOR “TOURISM-FOR-ALL” INITIATIVES IN URBAN DEVELOPMENT: A SYSTEMATIC LITERATURE REVIEW. *GeoJournal of Tourism and Geosites*, 50(4), 1466–1482. <https://doi.org/10.30892/gtg.50427-1145>

Abstract: The study presents a systematic literature review conducted following a rigorous search protocol that identified 7900 articles published in SCOPUS-indexed journals in 2001-2021. These articles were filtered using the PRISMA approach, resulting in the selection of 61 relevant papers. The research outcome offers essential insights into the core characteristics of smart cities in urban development, encompassing five primary dimensions: government, citizens, technology, mobility, and the environment, over the past two decades. The findings of this study benefit smart city stakeholders, recommends using the “Tourism-For-All” destination concept in urban development, and contributes to the emerging “Purple Tourism” framework.

Key words: Systematic Literature Review, Smart City, Tourism-for-All, Urban Development, Purple Tourism

* * * * *

INTRODUCTION

The world population is expected to reach 9.8 billion by 2050 (United Nations, 2018). It is anticipated that more than twice as many people will live in cities (6.7 billion) as in rural areas (3.1 billion). On a global scale, more than 1.3 million people are relocating to urban areas every day, rapidly expanding urbanization. It is estimated that by 2040, more than 65% of the global population will reside in urban communities or cities (Pooja et al., 2022). Rapid urbanization creates new issues and challenges, such as demands for a higher quality of life, infrastructure needs, and people confronted with environmental burdens. The Smart City concept provides opportunities to address these issues, solve urban problems, and provide a better living environment for citizens (Yin et al., 2015). The initiatives are consistent with the Fourth Industrial Revolution, particularly in the development of smart cities and the creation of "Tourism-For-All" (TFA) on a global scale. Hence, it is vital to analyse exactly what kinds of shifts the stakeholders are experiencing and how to ensure that these efforts create benefits for all and revolutionize tourism.

A city, often known as an "urban region," is a place where people live and work since they relocated from the countryside (Winkowska et al., 2019). A metropolitan city requires the attention of numerous parties to continue developing and producing a better life for its citizens. As a result, the smart city concept has emerged as a viable option for residents seeking long-term sustainability. "Smart city" is a concept for constructing a city that leverages technology and the internet (Talari et al., 2017). There is also no denying that this programme is part of a transition process that is currently creating large and major changes in urban development (Hårsman Wahlström et al., 2020). The collection of informational data on everyday activities to enhance municipal management and local activity planning is a general element of smart city development. Nevertheless, there have been numerous definitions proposed for the concept of a smart city. Terminologies also vary by replacing the term “smart” with alternative adjectives such as “intelligent” or “digital”. Some definitions used the term “community” instead of “city”. The term “smart city” can be seen as a vague idea and is not always used consistently (Albino et al., 2015). The British Standards Institute defines a smart city as “the effective integration of physical, digital, and human systems in the built environment to deliver a sustainable, prosperous, and inclusive future for its citizens” (BSI 2014). In general, a smart city is one that leverages information technology in its daily operations and influences the lifestyles of its citizens (Camboim et al., 2019; Sedova and Balakina, 2020). The creation of "smart cities" is currently viewed as a prominent trend. Because the worldwide urban population is predicted to reach 70% by 2050, most locations should follow suit globally (Albino et al., 2015). Incorporating the smart city concept into urban development also

* Corresponding author

helps policymakers and urban planners focus on offering environmentally friendly and cost-effective solutions to urban concerns including energy management, transportation, healthcare, and government (Silva et al., 2018; Anand et al., 2017).

A previous study, however, spanning 20 years (2001–2021), demonstrates a paucity of studies exhibiting the essential characteristics of smart cities that could serve as a reference for future academics. This is because most smart city studies place a strong emphasis on experimental investigations and analysis of the quality of various smart city characteristics. As a result, this issue must be solved in order to help researchers better understand the smart city concept and its modern aspects, as well as to open the door to more diverse smart city research. As a result, this study was developed in order to answer the research question, "What are the features of smart cities based on 20 years of research publications?" A comprehensive literature evaluation was done to answer the research question, with the Scopus database serving as the primary platform for searching for previous studies. Creating TFA structures for individuals with special needs, such as children, the elderly, pregnant women, and people with disabilities, is essential to ensuring their completeness and contentment.

Due to the prospects for citation and spin-off publishing, modern scholars are placing a great deal of emphasis on destination competitiveness challenges, particularly the global development of the smart city concept. The framework is more general for the country's adaptation than for its unique geographical region. As a result, the use of a one-size-fits-all strategy is no longer applicable due to the proliferation of new destinations that offer a variety of products, allowing tourists to choose a location that meets their unique needs and expectations. Examining the environment's compatibility in relation to the Sustainable Development Goals (SDGs) outlined for the United Nation's 2030 Agenda for Sustainable Development (United Nations, 2015), SDGs targets No. 10 (reduce disparities), No. 11 (sustainable cities and communities), and No. 12 (responsible consumption and production) is critical for this nation to maintain its competitive edge.

As a result of the scarcity of comprehensive studies on smart city characteristics, this study intends to synthesize smart city characteristics by undertaking a systematic literature review (SLR) linked to smart city in urban development over the last 20 years (2001-2021). Because of the global trends of rapid urbanization, it is critical to investigate what kind of smart city development research has been concentrated on during the last two decades. These findings could serve as a road map for the "Tourism-For-All" components that contribute to the comprehensive future framework of the new "purple tourism" environment that would meet the demands and aspirations of present urban communities.

LITERATURE REVIEW

Smart City and Urban Development

The term "Smart City" is to-date widely used, but little clarity appears in the definition behind it and particularly on its actual meaning. Smart city is developed not specifically due to the emergence of the digital age but also physical infrastructures and endowment of a city that characterize an urban area and its functions. There are beyond those characteristics but something less 'hard' and not so easy to identify, as the quality of knowledge communication and 'social infrastructure,' or social and intellectual capitals. In such an (urban) environment, mood and attitude, the concept of Smart City arises, as a device or, better, as a framework where 'traditional' urban production factors are coupled with the social, cultural capital, utilizing extensive use of information, communication and technologies (ICTs) (Murgante and Borusso, 2011). Identifying what makes a city smart is related to the different dimensions, which are connected to concepts quite consolidated in references dealing with urban topics. In smart meaning, the technological component is mainly related to ICT features and infrastructures. These play an essential role, in particular, as facilitators of processes of innovation, sharing, and active participation by citizens/users, as well as of the development of elements typical of knowledge economics.

Following some of the most exciting interpretations (Roche et al., 2012), smart cities are cities in which a 'technological layer' is overlaid onto the existing urban structure and fabric. It allows its citizens and users to connect to the net, interact among them, and with other different players such as public administration, suppliers of goods and services, and so forth, actually optimizing a city and its spaces. Since the world population is growing and such growth is expected to be mainly concentrated in cities, technology can play an essential role in limiting soil consumption and enhancing the quality of life (Yigitcanlar et al., 2018). Nevertheless, one of the risks today is that decision-makers, politicians, citizens, enterprises focus just on the fashion of the technological side of "smartness," with little attention to insert it into a process of urban planning and project. In a smart city, the technological infrastructure related to ICT is central, in the same way as in the past, the realization of new buildings, roads, railways, telephone, and energy distribution lines and networks are built. Such infrastructures both supported population needs and influenced how such populations interacted with the urban space. Infrastructures of a smart city should play a similar role, therefore needing focused planning, as their use, must not be limited to the short terms. However, it should persist and persists, having in mind that to-date settings will influence how citizens will interact with the city in the present and future times.

In a smart city, the network metaphor is overlaid onto the urban metaphor; in such sense acting as a new, different infrastructure capable of directing relations and interactions and influence and shape by such interactions. Similarly, to a public transport network developing in an embryonic city to connect and serve places and then evolving and giving birth to 'new' places (Roche et al., 2012; Perveen et al., 2020). The city should, therefore, set as an "enabling platform for the activities that citizens can develop, linking those inherited from the past to those that can be realized in the future, so it is not focused on just applications but on the possibility that citizens realize them" (Schwab, 2016).

Tourism-For-All and Smart City

There is no specific holistic definition of the term "Tourism-For-All" concept. World Tourism Day 2016, however, refers to the term as the concept of promoting universal accessibilities for the tourism supply chain. Federal policymakers also

coined the term for tourism, which can be enjoyed equally by everybody, regardless of one's abilities, in any destination. Moreover, across the globe, urbanization is progressing more rapidly than ever before. The global urbanization rate exceeded 50% in 2007 and is expected to exceed 70% by 2050. The urban population, which was 1.4 billion in 1970, will increase to 6.3 billion by 2050, with 60% of the world's population expected to be concentrated in urban areas (UN World Urbanization Prospect, 2014). Besides, the World Health Organization (WHO) estimated that roughly 1 billion (15%) of the world's population would experience some form of disability soon. Most people will experience some form of obstacle, as they grow older. Thus, this older adult requires specific accessibility needs to enjoy tourism activities, as well as a better-tailored service, product, and infrastructure. For instance, in Europe, about 27% of the population and 12% of the tourism market were reported (EU Study, 2014). These figures include senior travellers, people with disabilities, and families with small children. It is indeed an excellent opportunity for tourism destinations because these market segments frequently travel during the low season.

The provision of facilities for people with disabilities or people with special needs is not only imperative because of human rights, but it also allows businesses an exceptional opportunity. However, a change in mindset and the model of tourism service provision is needed in order to meet this significant market demand. Accessible environments and services contribute to improving the quality of the tourism product and increasing tourism destinations' competitiveness. Thus, it is vital for responsible and sustainable tourism strategies and policies to focus significant attention on accessibility issues. This situation has led to various ongoing discussions about how to solve new urban problems. One of the most sought-after solutions is the development of "smart cities," which employ a strategy for technology, innovation, sustainability, accessibility, and inclusivity along the entire tourism cycle (pre-visit, during, and post-visit) and thus involve residents as well as tourists in the tourism planning process. The specific definition of a smart city differs according to the economic level and city policy of the country. Accordingly, a smart city is a conceptual urban development model said to be a key to the transformation of the tourism sector, which means city development based on information and communication technology (ICT). By incorporating ICT advancements, stakeholders can better predict and regulate tourist flows to manage destinations more efficiently and effectively. Tourism's impact is difficult to measure due to shifts in demographics caused by fluctuations in tourist flows. However, it can be seen as a city that uses ICT and digitalization in the tourism sector to improve city competitiveness, growth, quality of life, and pursue urban sustainable development (Buuse and Kolk, 2019; Chan, 2023). Chan (2023) believes that the growth of tourism destinations involves active engagement among key players and, most importantly, an understanding of the significance and acceptance of sustainable practices and benefits. The TFA destination initiatives are growing rapidly in urban development due to the current challenges in strategizing a sustainable and inclusive citizenship in planning a new "Purple Tourism" tourism concept that will include the preservation of local culture and heritage.

MATERIALS AND METHODS

Conducting Systematic Literature Review

A systematic review of the literature is a study that aims to answer research questions by examining the results of prior, high-quality research. A thorough process has been followed and examined in order to undertake this investigation as indicated in Figure 1: Technical Roadmap of the Systematic Literature Review Research and Figure 2: Data Collection and Selection Flow Diagram based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The objective of a systematic literature review in the field of management studies is to provide transparency, clarity, accessibility, and exhaustive coverage of a particular issue (Thorpe et al., 2006). It has also been described as "a review in which a complete search is conducted for relevant articles on a particular topic and the results are subsequently examined and synthesised according to a predetermined stated procedure" (Klasse et al., 1998).

To produce the findings in this section, a thorough protocol has been developed to produce a good systematic literature review. In addition, all articles that are relevant and in accordance with the criteria of the study will be presented and analysed in the next section. Thus, the structure of this SLR formation can be summarised in seven simple steps, namely:

- 1). Construct research questions
- 2). Selection of appropriate keywords (Identification process)
- 3). Identify appropriate databases as data retrieval platforms. (Identification process)
- 4). Specify search limitations such as timeframes, languages used and some appropriate features. (Screening process)
- 5). Build a review strategy
- 6). Analyse study findings from selected documents. (Eligibility process)
- 7). Present the findings in the form of tables and descriptions.

The flow of the process was presented in PRISMA (2020). It is a flow diagram that provides a framework for researchers to conduct a systematic review. It maps out the number of records identified, included, and excluded from the systematic review. PRISMA is a useful tool for researchers to ensure that their systematic review is conducted in a transparent and reproducible manner (Amin et al., 2022).

Formulation of Research Questions

The research question in this section was created using PICO as presented in Table 1, which is one of the methodologies included in the Research Questions Development Tool (RQDT). PICO is a technique that assists authors in developing unique and relevant research questions to aid in the review process. Okoli (2015) conducted a study that emphasized the importance of developing particular research questions to avoid the occurrence of unnecessary article searches. PICO is made up of three components: population (or issue), interest, and context. As a result, this study takes into account "20 years of research publications" (population), "the characteristic" (interest), and "smart cities" (context), and the study's research question is:

What is the characteristic of a smart city based on 20 years of research publications?

Identification and Screening Process

Scopus database was chosen as the major source for literature searches by the researcher. Furthermore, in order to grasp and analyse the study, the researcher chose a research paper written fully in English. The terms "characteristic" and "smart city" were used as key concepts in this investigation (Table 2). To find as much information about a topic as possible, it is necessary to use synonyms to generate a diverse set of keywords.

The researcher began the literature search using the Scopus database after finding the terms that had been diversified using the synonym search strategy indicated in Table 3. This is a reference to a study conducted by Kraus et al. (2020), who discovered that while many articles can be identified by using various keywords, if the search results are irrelevant to the topic, it is feared that the study will be a bad study for systematic literature review. As a result, the researcher decides to narrow the area of the search while still responding to the research topic.

This study identified a total of 7,900 articles by using the specified search string. The articles are filtered depending on a variety of criteria shown on the database display (Table 4). This selection or screening criterion is based on the research objectives posed by Kitchenham and Charters (2007), who observe that reviewing all 7,900 articles is essentially impractical. Okoli (2015) suggests setting a publication time constraint to aid in the review process. The researcher has established a time limit of 20 years, from 2001 to 2021, based on the database Scopus search results (last search: September 20, 2021).

In order to ensure the quality of the review, only articles with final paper status are chosen (Johnson and Hennessy, 2019). In addition, only English-language articles were chosen to avoid any misunderstandings regarding the study's findings (Linares-Espinos et al., 2018). 545 articles were located using all of these criteria. Because it is essential to obtain data that is truly pertinent to the topic being investigated, the researcher initiated the eligibility process for each article discovered. The exclusion criteria in Table 5 were applied in this research.

Only 61 relevant papers were successfully obtained for the final analysis after this eligibility process was repeated three times to avoid errors. Figure 1 shows the technical road map of the systematic literature review research in the study in three main stages: Research Design (Stage 1), Data Assembly (Stage 2), and Analysis (Stage 3).

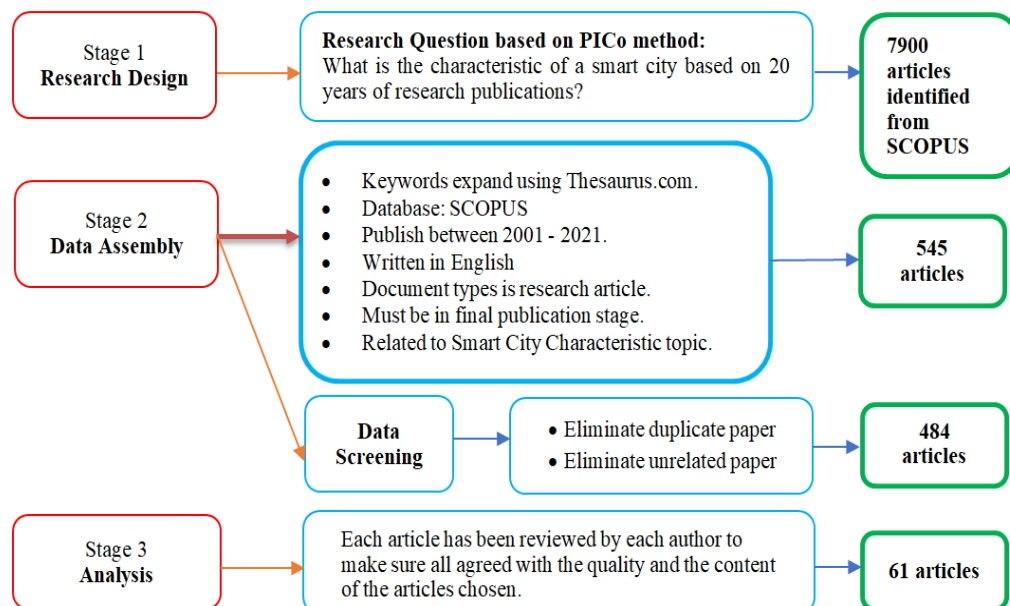


Figure 1. Technical roadmap of the systematic literature review research

Table 1. PICO table

Population or Problem	Interest	Context
20 years Research Publications	The characteristic	Smart City

Table 2. Keywords and expended keywords
(Source: www.thesaurus.com)

Keyword	Expended Keywords
Characteristic	Aspect/attribute/component/characteristic/element
Smart City	Smart city / Smart-city

Table 3. Search string used for data searching

Database	Search String
Scopus	TITLE-ABS-KEY ("aspect*" OR "attribute*" OR "component*" OR "characteristic*" OR "element*") AND ("Smart Cit*" OR "Smart-Cit*")

Table 4. Inclusion criteria for screening stage
Note: Criteria depend on databases' choice

SCOPUS Database	Year: 2001 - 2021
	Subject area: Business, Management & Accounting Social sciences
	Document Types: Article
	Publication stage: Final
	Source Types: Journal
	Language: English

Table 5. Exclusion criteria for screening stage

Exclusion Criteria	Topics not related to Smart City Characteristic.
	Articles that do not have a clear methodology.
	Variables are only mentioned as topics but not the main discussion of the study.
	Article in the form of a review (Systematic Literature Review)

Data Analysis

For this study, an analysis method was carried out in order to answer the predefined research questions. This approach is carried out following the final selection of items relevant to the characteristics of smart cities.

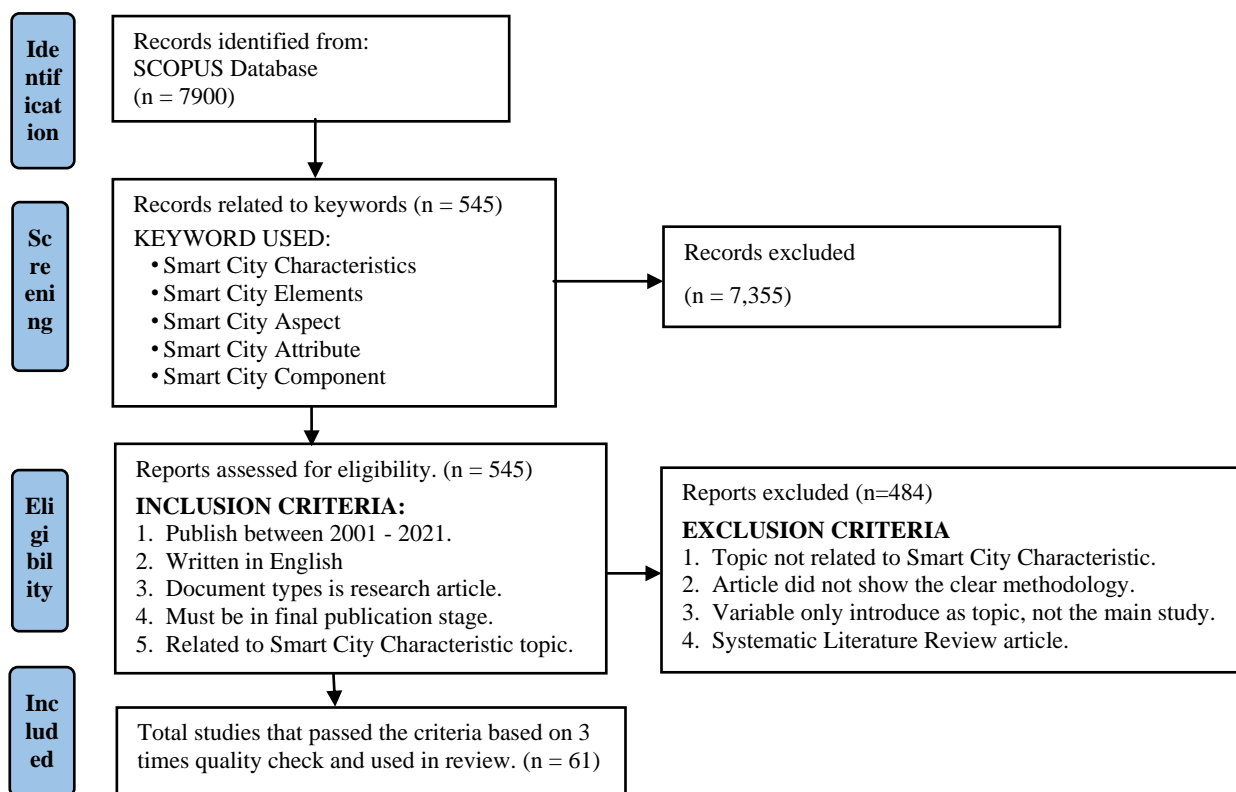


Figure 2. Data collection and selection flow diagram adopted from PRISMA (2020)

To ensure that the final data obtained from the identification, screening, and eligibility processes is transparent and does not have any bias, the researcher has used the PRISMA method. This method is very useful to carry out a transparent analysis for a systematic literature review (Amin et al., 2022). To measure the level of quality in each selected article, the researcher has used three main criteria based on quality assessment (QA) questions, namely:

- QA1: Have the review's inclusion and exclusion criteria for this study been clearly stated and understood by each researcher?
- QA2: Does the literature found include all relevant studies related to the research topic?
- QA3: Are the smart-city characteristics identified in the research paper carefully explained and provide a clear methodology?

For the systematic literature review study related to smart-city characteristics, the researchers did not use any software to identify the level of article quality. However, this study has followed the guidelines provided by PRISMA to ensure that it is conducted in a fair and systematic manner. The researcher has also used the QA questions mentioned above in as many as three studies to verify the quality of the research papers included in this study.

Therefore, by following the criteria that have been set, researchers can evaluate the quality and level of relevance of the studies used in this SLR without using any software.

RESULTS AND DISCUSSIONS

Following completion of the identification, screening, and eligibility processes, 61 relevant articles were identified.

The findings of this study have been classified into five major sections based on what smart cities have in common: government, citizens, technology, mobility, and the environment.

According to the data analysis in Figure 3, the study on smart city characteristics is more likely to emphasize government-related topics, with 28 articles (43%). Following that is research focusing on citizens (13 articles = 20%), technology (13 articles = 20%), mobility (4 articles = 12%), and the environment (3 articles = 5%). The government is the most crucial aspect of the research on smart cities between 2001 and 2021 as indicated in Table 6.

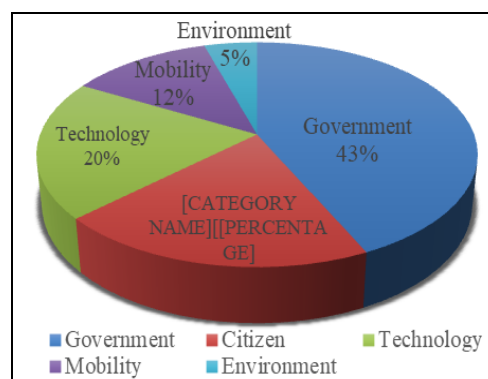


Figure 3. The percentage of topics related to smart city characteristics

Table 6. The percentage of topics related to smart city characteristics (Source: Researcher own analysis)

Characteristics	Articles Founded	Percentage
Government	28	43%
Citizen	13	20%
Technology	13	20%
Mobility	4	12%
Environment	3	5%
Total	61	100%

Table 7. Findings related to government characteristic; Journal Quality and Ranking (Source: Researcher own analysis)

Title of Article (Authors)	Journal of Publication	Findings
Alleviating corporate environmental pollution threats toward public health and safety: The role of smart city and artificial intelligence (Liu et al., 2021)	Safety Science	E-government development has a major restraining influence on corporate environmental pollution because it creates an efficient information exchange platform between government and corporations. Governments have less of an information gap with businesses because they have access to more environmental data, and businesses can tell when environmental regulations are getting stricter because of government work.
One size does not fit all: Framing smart city policy narratives within regional socio-economic contexts in Brussels and Wallonia (Esposito et al., 2021)	Cities	The authors advise policymakers to take a place-based approach to smart city development in order to create and implement smart city initiatives that are well suited to their socioeconomic circumstances. Smart technology should be viewed as a means to an end rather than a goal in itself, they argue.
Investigating smart city development based on green buildings, electrical vehicles and feasible indicators (Razmjoo et al., 2021)	Sustainability	The findings revealed that implementing strategies and embracing change in government policies would assist in accelerating the net-zero energy vision, paying attention to design parameters, improving transportation policies while embracing change, implementing efficient indicators for GBs and EVs, and implementing strategies to reduce the cost of EV production while maintaining high quality. Therefore, governments should put in place the right policies, like investing more in EVs and making GBs more environmentally friendly.
Understanding the Influences of Urban-Specific Contexts for Smart City Development Using Structural Equation Modeling (Nicolas et al., 2021)	Journal of Urban Planning and Development	The findings confirm the significance of the national development level in smart city development perspectives, acknowledge that smart city strategy orientations differ depending on the geographic criteria (for example, focusing on hard infrastructure in Asia and soft infrastructure in Europe), and begin quantifying the potential influences of urban density and city size.
Achieving resilience through smart cities? Evidence from China (Zhou et al., 2021)	Habitat International	Smart cities may increase urban resilience by enhancing their structural effects, technological effects, and distribution effects. Smart city development has a significant positive impact on urban economic and social resilience, but it has a negative impact on urban ecology and infrastructure resilience.
The institutional change from E-Government toward Smarter City; comparative analysis between royal borough of Greenwich, UK, and Seongdong-gu, South Korea (Kim and Kim, 2021)	Journal of Open Innovation: Technology, Market, and Complexity	It revealed that the process of transforming each country's smart city system was influenced not only by the degree of prior e-government, but also by the wider socio-cultural surroundings of each autonomous territory. In this regard, rather than blindly following the success case formula, designing implementation strategies and solutions that take into consideration each location and socio-cultural qualities is required for the growth, expansion, and construction of smarter cities.
The analysis of smart governance scenarios of the urban culture in multicultural cities based on two concepts of “cultural intelligence” and “smart governance.” (Faraji et al., 2021)	GeoJournal	A lack of focus on smart city administration would inhibit the appropriate and efficient management of culture in vast, diverse cities. Both parts of "cultural intelligence" and "intelligent governance" are required to control smart urban culture. Smart governance leads to better quality of life and better management of cities, as well as more effective government in multicultural cities.
City size and functional specialization as factors of smart management: A case of Lviv Oblast, Ukraine (Lozynskyy et al., 2021)	Problems and Perspectives in Management	There is no discernible link between the size of cities and the extent of the deployment of smart technology. The adoption of smart technology is affected by its geographical characteristics, which include a high degree of tourism growth. The peculiarity of culture in the sale of a tourism product contributes to the greatest development of smart-city technologies in tourist destinations. In industrial cities, smart solutions are not being adopted to their full potential.
Information Sharing as a Dimension of Smartness: Understanding Benefits and Challenges in Two Megacities (Gil-Garcia et al., 2021)	Urban Affairs Review	Megacities offer some of the benefits of state governments, such as the availability of financial resources and technological capabilities, as well as the management flexibility and strong leadership that distinguish local administrations. These distinctions and particularities, when combined, create a distinct and dynamic setting for information sharing in megacities.
Ecosystems for smart cities: tracing the evolution of governance structures in a dutch smart city initiative. (Ooms et al., 2020)	International Entrepreneurship and Management Journal	A clear strategy should be present in both the initiation and growth phases of a smart city. For local governments to receive support from other governments, a stimulating regulatory environment for smart city planning and development is essential.
Smart city-ranking of major Australian cities to achieve a smarter future. (Tariq et al., 2020)	Sustainability (Switzerland)	Cities in need of economic growth should prioritize upskilling their citizens in order to attract knowledge-intensive industries. Smaller cities should be encouraged by state governments to pursue smart energy and environmental projects. Dedicated infrastructure, such as in-land rail and private bus lanes, can help relieve traffic congestion on the road network.
Temporal and spatial differences in the resilience of smart cities and their influencing factors: Evidence from non-provincial cities in China (Dong et al., 2020)	Sustainability (Switzerland)	The government should continue to strengthen the development of central systems for big data in smart cities. Additionally, investments in scientific and technological R&D must be enhanced continuously. Both the training of scientific and technological talent and investment in research and development should be increased.
A Hyperconnected Smart City Framework: Digital Resources Using Enhanced Pedagogical Techniques (Naqvi et al., 2020)	Australasian Journal of Information Systems	A security breach can have a significant impact on the operations of the city and the quality-of-service outcomes. It can also result in trust issues among the citizens and the administration. Security and privacy of this data are paramount in the real-time decision-making process.

Participation in e-government services and smart city programs: A case study of Malaysian local authority (Lim et al., 2020)	Planning Malaysia	It should be noted that the culture of authentic participation in Malaysia <i>would be difficult to achieve in the absence of such citizen demands</i> , which will eventually result in tokenism involvement and a loss of public confidence at the grassroots level.
The value of Big Data in government: The case of 'smart cities' (Löfgren and Webster, 2020)	Big Data and Society	Formal national and global regulation is likely in the long run, but it will take many years to build and establish. <i>What is required are some fundamental, agreed-upon minimum self-regulatory principles</i> . These should be based on voluntary agreements between local or city governments and the main commercial actors.
Capturing citizen voice online: Enabling smart participatory local government (Alizadeh et al., 2019)	Cities	A study suggests that citizen involvement is minimal yet significant. So far, just a tiny percentage of the population has taken part in the online discussions. Those who do engage, however, leave valuable insights that have the potential to inform the decision-making process. Hence, it offers the potential of currently available and peer-reviewed data mining and machine learning algorithms to <i>collect citizen voices online and feed them into the decision-making process of local governments</i> .
Towards a smart city concept in small cities (Ruohomaa et al., 2019)	Technology Innovation Management Review	The paper presents three cases of smart city development in small cities in Finland. Each case shows how a city can take remarkable steps toward building a smart city by selecting a specific theme. <i>The examples emphasize the critical role of public sector actors in supporting ecosystem-based development work</i> .
A relational exploratory study of business incubation and smart cities - Findings from Europe (Blanck et al., 2019)	Cities	According to the study, <i>innovation is the primary engine of smart urban development rather than public funding</i> , which is often featured in the mainstream supply-driven innovation model.
Driving elements to make cities smarter: Evidence from European projects (Camboim et al., 2019)	Technological Forecasting and Social Change	To become smarter, <i>cities must upgrade the elements related to their various dimensions, which are techno-economic activity, environ-urban configuration, and socio-institutional structures, in an integrated manner</i> guided by an integrated and comprehensive governance model.
Smart City Planning from an Evolutionary Perspective (Komninos et al., 2019)	Journal of Urban Technology	<i>Cities are driven by innovation and multi-actor decision-making</i> . They also take advantage of initiatives, partnerships, and policy frameworks at regional and national levels. Smart specialization strategies will define a policy mix and actions through a company-driven process of discovery and innovation.
Big Data and government: Evidence of the role of Big Data for smart cities (Hong et al., 2019)	Big Data and Society	<i>Government use of Big Data could reduce the risk of bureaucratic institutions being captured by the elite or those with vested interests</i> , they say. Evidence based policymaking could also provide the government with more accurate information, they argue.
Financial sector development and smart cities: The Indian case (Arora, 2018)	Sustainable Cities and Society	The study highlighted large interstate variations across the smart cities in financial development. <i>Smart cities should have a developed financial system which provides access to financial services and facilitates investment in health, education and businesses and strengthening human capital</i> , according to the World Bank's latest report on the development of 'smart cities'.
Advertising-cities face to smart-cities: The trends of integration policies for information new technologies in Madrid (Jácomo, 2018)	International Journal of E-Planning Research	The Smart City model has emerged as a new reference for the urban management renewal of cities through the development of specific or partial projects, such as the renovation and improvement of infrastructures and public services. <i>ICTs' implementation and extension have an undeniable importance for a better efficiency and rationality of urban functioning, as well as to facilitate citizens' lives</i> .
A roadmap for smart city services to address challenges faced by small businesses in South Africa (Du Plessis and Marnewick, 2017)	South African Journal of Economic and Management Sciences	This research sought to identify which challenges had the greatest impact on small businesses. <i>The lack of government support was found to be the most detrimental</i> .
Exploring the politico-cultural dimensions for development of smart cities in India (Das, 2017)	International Review for Spatial Planning and Sustainable Development	Politico-cultural perspective could provide a platform for the fruitful engagement among the various stakeholders. It could be able to develop a sense of belonging and <i>make all stakeholders part of the development process, which is highly essential for development of smart cities</i> and their long-term sustainability in India.
Implementation of social media concepts for e-Government: Case study of a social media tool for value co-creation and citizen participation (Díaz-Díaz and Pérez-González, 2016)	Journal of Organizational and End User Computing	The determination and involvement of the government is important for the success of a social participation project. Governments can match the topics that are enquired about on the platform with the public administration's policies. <i>This strategy should pursue concrete actions to encourage the implementation of ideas, as well as a protocol to answer enquiries on the platform</i> .
Analysing smartness in European cities: A factor analysis based on resource efficiency, transportation and ICT. (Corsini et al., 2016)	International Journal of Global Environmental Issues	The presence of an open, dynamic business model based on a network of shared relationships seems to be an important requisite to improve city smartness. <i>A specific policy agenda for the development of smart cities has to be based on the homogeneity of strengths and weaknesses in order to foster dialogue between local and regional actors</i> .
Current trends in smart city initiatives: Some stylised facts (Neirotti et al., 2014)	Cities	<i>Policy makers are urged to try to understand these factors (natural resources and energy, transport and mobility, buildings, living, government, as well as economy and people) in order to shape appropriate strategies</i> . This study is in particular based on a framework that could also be applied to make a better selection of investment opportunities.

In fact, it is evident that citizen and technology caught the interest of academics and were the focus of their research throughout that period. A study on smart cities must, without a doubt, be based on research that is focused on technology. Nevertheless, mobility was found to be the increasing focus area of smart city research and followed by current research trend that pay attention to the environmental features.

Government

The analysis starts with the first character, government. A city is a place that emphasizes local development, such as house construction, businesses, and commercial activities (Parr, 2007). A total of 28 publications (43%) associated with the government

were successfully discovered using the systematic literature review methodology technique. Figure 4 indicates journal quality and ranking for the 28 empirical articles that comprise Q1, Q2, and Q2 journal rankings with the respective H-index between 11 and 155 in the SCOPUS database related to government characteristics in smart city development within the years 2001-2021. Findings displayed in Table 7 indicated that a city is a planned development area that requires competent leadership to plan and govern. Based on the summary of findings shown in Table 7, the government is seen as having the highest level of leadership and is crucial in urban development planning. As a result, a government must implement numerous vital policies that will lead to more planned and effective development (Díaz-Díaz and Pérez-González, 2016; Gil-Garcia et al., 2021; Esposito et al., 2021), such as e-government (Liu et al., 2021) and the development of a smart city (Esposito et al., 2021). The phrase "policy" refers to the objective, decision, and planning of a government to handle political, social, and economic matters in one location (Reyeset al., 2014). The policy makers must understand the strategies for making better decisions (Komninos et al., 2019) in investment policy (Neirotti et al., 2014), including smart city development (Corsini et al., 2016; Jácomo, 2018). Issues related to technology (Dong et al., 2020; Camboim et al., 2019; Hong et al., 2019; Jácomo, 2018), transportation (Tariq et al., 2020), financial (Arora, 2018), stakeholder (Das, 2017), and security and privacy of data (Naqvi et al., 2020) should be the essence of smart city development.

Thus, smart specialization strategies will define a policy mix and actions through a company-driven process of discovery and innovation in a smart city model (Komninos et al., 2019; Blanck et al., 2019). Therefore, it is evident that the government plays a critical role in the global growth of smart cities. The government has to propose the policy and strategy for smart city development towards the "Tourism-For-All" destination concept and implementation that align with the United Nations sustainable development goals No. 10 (reduce disparities), No. 11 (sustainable cities and communities), and No. 12 (responsible consumption and production) for this nation to keep its competitive edge.

Citizen

Out of 61 discoveries, the search results of this systematic literature review yielded 13 articles (20%). Figure 5 presents the journal quality and ranking of the articles that comprise Q1, Q2, and Q3 journal rankings with the respective H-index between 9 and 152 in the SCOPUS database related to citizen characteristics of smart cities. Table 8 shows the summary of findings from articles related to citizen participation in a smart city from the particular journal.

The findings in Table 8 indicate that the citizen is the second-most important smart city character. Citizens refer to the residents of the smart city (White et al., 2021). If there is no population, then there is no city. Unquestionably, a city needs an engaged resident or citizen to ensure the seamless operation of all activities and operations (Granier and Kudo, 2016; Macke et al., 2018; Simonofski et al.,

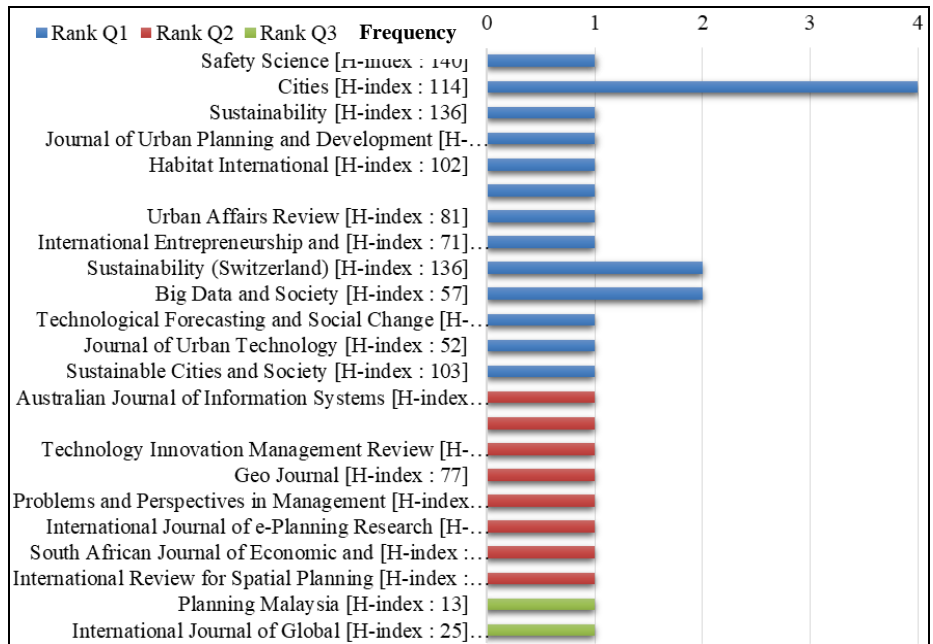


Figure 4. Journal quality and ranking for government characteristic (Source Scimago.com)



Figure 5. Journal quality and ranking for citizen characteristic (Source: Scimago.com)

2021). The city's parameters must depend on the number of residents in the area. According to Winkowska et al. (2019), the city will be created when rural residents migrate and settle in urban areas.

Table 8. Findings related to citizen characteristic (Source: Researcher own analysis)

Title of Article (Authors)	Journal of Publication	Findings
A digital twin smart city for citizen feedback. (White et al., 2021)	Cities	An accurate 3D model of a city can be published online and walked around by the public to view proposed changes in urban planning and policy. Citizens can also engage with components of the plan and report concerns in their neighborhood. <i>This open and public concept enables an extra virtual feedback loop in which residents may participate and provide comment on planned city developments.</i>
Intelligence quotient test for smart cities in the United States. (Liu et al., 2021)	Journal of Urban Planning and Development	According to the findings of the study, there is no substantial relationship between city wealth and a smart city IQ score. Essentially, the following statement is false: the higher the IQ score, the wealthier the city (as measured by GDP). This discovery holds true for both overall IQ and component IQ values. <i>The IQ findings also revealed that the richest city is virtually evenly split from high to low IQ.</i>
Investigating context factors in citizen participation strategies: A comparative analysis of Swedish and Belgian smart cities. (Simonofski et al., 2021)	International Journal of Information Management	Author identified five context factors impacting citizen participation strategies in two smart cities (Namur and Linköping): the smart city consideration, the drivers for participation, the degree of centralization, the legal requirements and the citizens' characteristics. <i>It revealed that similar stakeholders were involved (Administration, University and Businesses) and similar participation methods were applied (direct interaction, living lab, open data and online platform).</i>
Social participation in the definition of budgetary instruments. (Felix Júnior et al., 2020).	Transforming Government: People, Process and Policy	Public managers do not believe the population needs more training to reach a level of social participation. <i>The existence of civic groups that are free of political involvement and public hearings that may have active participation in society is also clear.</i>
Investigating visitors' perception of smart city dimensions for city branding in Hong Kong. (Chan et al., 2019)	International Journal of Tourism Cities	From the perspective of visitors, four aspects determine what a smart city is: <i>energy consumption in an urban environment, smart city administration, and smart city living.</i> The first two characteristics are also determinants of a successful smart city brand in the eyes of tourists. The factor analysis results reveal four elements for evaluating what a smart city is from the standpoint of visitors: energy consumption in an urban environment, smart city government, and smart city living.
Smart sustainable cities evaluation and sense of community. (Macke et al, 2019)	Journal of Cleaner Production	The focus to <i>principles like as social justice, effective resource management, transparency, accessibility, and poverty reduction helps the city achieve excellent results in smart sustainable initiatives.</i> Given these findings, achieving these goals through public policy will boost people' well-being by creating fertile ground for municipal development.
Smart city communication via social media: Analysing residents' and visitors' engagement. (Molinillo et al., 2019)	Cities	Visitors may react more emotionally by sharing information with others and expressing approval or interest through "likes." This is despite the fact that most of these cities had respectable levels of followers and interaction through their official social media sites. <i>Advice also applies to aspects that make cities "smart," such as WiFi connections, integrated transport, public services and online access to these services.</i>
Joining forces for public value creation? Exploring collaborative innovation in smart city initiatives. (Neumann et al., 2019)	Government Information Quarterly	Both types of <i>relationships (agency and stewardship) between a local government and a utility company have been found to contribute to higher levels of innovativeness in the local government or city in general.</i> Utility firms offer benefits over entirely private enterprises, including as tighter relationships and mutual trust with local governments.
Smart city development and residents' well-being. (Lin et al., 2019)	Sustainability (Switzerland)	Smart city <i>development considers not just the general demands of urban populations, but also their specific needs.</i> Also, smart cities need a high level of security and secrecy, and the perception of the network security environment serves as the foundation for enhancing the usefulness, convenience, and SWB experiences.
A study on determinant factors in smart city development: An analytic hierarchy process analysis. (Myeong et al., 2018)	Sustainability (Switzerland)	To begin, <i>increasing public engagement and developing diverse communication channels are critical strategies for building better smart cities.</i> The term "smart city" does not just refer to cities that use cutting-edge technology. The ultimate purpose of smart city development, <i>rather than the development of sophisticated technologies itself, is to improve the quality of life of individuals, families, and local communities through modern ICT.</i> As a result, rather than a top-down policy strategy, a bottom-up policy approach is necessary in the process of establishing a smart city.
Smart city and quality of life: Citizens' perception in a Brazilian case study. (Macke et al., 2018)	Journal of Cleaner Production	Citizens, policymakers, and scholars should all work together to make decisions in a smart city, researchers suggest. <i>The selected smart city idea places a strong emphasis on a citizen-centric approach.</i> It aims to consider citizens' needs in order to preserve and deliver a good quality of life.
Smart city actions to support sustainable city development. (Kankaala et al., 2018)	TECHNE	The cities are not anymore solely enablers but also active actors. <i>They are seen as platforms for innovation and co-creation between citizens, companies, research organizations and public sector.</i> The more active cities are in this, the better they will succeed in capitalizing on the novel role of cities.
How are citizens involved in smart cities? Analysing citizen participation in Japanese "smart Communities." (Granier and Kudo, 2016)	Information Polity	Organization planned several meetings with residents, <i>even going door-to-door at times, and placed a significant focus on "community," which has been highlighted as a vital aspect in public participation, particularly in Japan.</i>

Table 9. Findings related to technology characteristic; Journal quality and ranking for technology characteristic (Source: Researcher own analysis)

Title of Article (Authors)	Journal of Publication	Findings
Characteristics of conceptually related smart cities services from the perspective of sustainability. (Kim and Yang, 2021)	Sustainability (Switzerland)	The sum of frequencies on each CRSCs characteristic and the total number of characteristics in each indication suggest that <i>both SSC and CRSCs place a high value on urban planning, ICT infrastructure, and data indicators. The three important factors are linked in order to achieve sustainability through public engagement.</i>
Smart city model based on systems theory. (Lom and Pribyl, 2021)	International Journal of Information Management	The primary distinction between traditional and smart cities is that in traditional cities, systems communicate exclusively with their surroundings. It indicates that most systems are stand-alone and not compatible with other systems. <i>Systems in smart cities are connected by energy or information relationships, and information management is becoming increasingly crucial.</i>
Access to ICT in Poland and the co-creation of Urban space in the process of modern social participation in a smart city-a case study. (Szarek-Iwaniuk and Senetra, 2020)	Sustainability (Switzerland)	The smart city idea includes participatory planning that depends on information and communication systems. E-participation and Public Participation GIS tools provide up a plethora of possibilities for successful city management. <i>Measures that encourage collaboration between communities and authorities (both local and central) and ICT tools contribute to the establishment of smart cities.</i>
Smart cities and cyber security: Are we there yet? A comparative study on the role of standards, third party risk management and security ownership. (Vitunskaitė et al., 2019)	Computers and Security	The government serves as a policymaker and a coordinator, defining and enforcing technological standards and defining baseline security needs. <i>It demands for a clear description of roles and duties, as well as critical data handling and management processes and procedures. It would result in security being built in from the start and driving excellent security practises in other firms and manufacturers.</i> The implementation of the proposed framework will allow and encourage secure cooperation while not restricting innovation.
Enhancing social networking in smart cities: Privacy and security borderlines. (Moustaka et al., 2019)	Technological Forecasting and Social Change	<i>Individual privacy protection (smart individuals) can lead to global security (smart life) in SC, and vice versa.</i> The chaotic nature of the Internet and OSN, combined with new threats emerging by bypassing previously developed protection tools, expose individuals to privacy and security risks. The use of behavioural patterns in social networking, as well as some appropriate measures and GDPR enforcement, are expected to result in the successful treatment of privacy and security issues.
Implementing citizen centric technology in developing smart cities: A model for predicting the acceptance of urban technologies. (Sepasgozar et al., 2019)	Technological Forecasting and Social Change	For starters, <i>it will guarantee that the technology used is acceptable for local cultural situations.</i> It will also be well-suited to assisting underdeveloped countries in participating in the smart city boom while conserving resources.
To the smart city and beyond? Developing a typology of smart urban innovation. (Nilssen, 2019)	Technological Forecasting and Social Change	This contradiction between rhetoric and actual execution shows that technology is not merely a tool for improving urban circumstances but has strategic value in achieving political agreement. As a result, <i>mere technology advancement is inadequate to assure a city's smartness.</i>
The role of Internet of Things (IoT) in smart cities: Technology roadmap-oriented approaches. (Park et al., 2018)	Sustainability (Switzerland)	Demonstration sites for IoT technology testing inside a smart city infrastructure should be built. <i>This would enable participants to assess the efficiency, economic feasibility, and impacts of new IoT technology and recommended services.</i> Other related technologies in the ICT sector should be explored and developed concurrently in order to promote IoT technologies.
Critical success factors to establish 5G network in smart cities: Inputs for security and privacy. (Chatterjee et al., 2017)	Journal of Global Information Management	It is essential that each network element be developed with the security concerns in mind. <i>Security elements in concepts such as smart cities should be enabling rather than restricting.</i> Every element of such linked devices should be secure in a transparent, effective, and resilient manner.
Impact of the smart city industry on the Korean national economy: Input-output analysis. (Kim et al., 2016)	Sustainability (Switzerland)	The development of the ICT industry is crucial if national and local strategies for sustainable cities are to support smart city implementation. The importance of service industry sectors facilitated by ICT infrastructure is consistent with previous research, which showed that <i>ICT applications resulted in wealth creation through the interconnection of human and social capital via activated knowledge networks.</i>
Main criteria in the development of smart cities determined using analytical method. (Tahir and Malek, 2016)	Planning Malaysia	Smart cities develop not only as an innovative and technological change for future urban life, <i>but also as a vital instrument to overcome poverty and inequality, unemployment, and energy management. Many cities across the globe have begun to use smart urban technology in order to become smart cities.</i> They retain a scientific leadership position to ensure economic competitiveness in the development and modernization of their society.
Towards an effective framework for building smart cities: Lessons from Seoul and San Francisco. (Lee et al., 2014)	Technological Forecasting and Social Change	The extent and depth of civic engagement platforms vary from city to city depending on the city's social and human capital. <i>A strategic balance between open data, which encourages app development, and privacy concerns may need leaders developing a clear direction for each city's public data utilization.</i>
Geomatics for smart cities - concept, key techniques, and applications. (Li et al., 2013)	Geo-Spatial Information Science	<i>Data or information from smart sensor networks may be updated and released through the infrastructure architecture of a digital city, resulting in improved human-machine interaction.</i> Massive volumes of data acquired in real time in a smart city can be rapidly evaluated and processed utilizing cloud computing platforms, which will eventually help urban administration through smart sensor networks.

Thus, the expanding population may aid in the development of infrastructure in that locality (Kankaala et al., 2018), and a bottom-up policy approach is necessary in the process of establishing a smart city (Myeong et al., 2018). In order to illustrate that the practice of democracy and the development of a smart city can be achieved successfully, residents and the government must pay close attention and work together (Neumann et al., 2019; Felix Júnior et al., 2020). Therefore, the role of citizenship in smart city development is essential for the success and sustainable future of the city that is moving towards “Tourism-For-All” implementation. The need to create comprehensive structures for individuals with special needs, such as children, the elderly, pregnant women, and people with disabilities, is essential to ensuring their completeness and contentment.

Technology

The researcher discovered that technology influences 13 articles, or 20% of the total. The results of the systematic literature review search technique are indicated in Tables 9 and Figure 6. Figure 6 exhibits the journal quality and ranking found for the thirteen articles published in Q1, Q2, and Q3 journals with the respective H-index between 13 and 155. Table 9 presents a summary of the key findings related to technology issues in smart cities between the years 2001 and 2021.

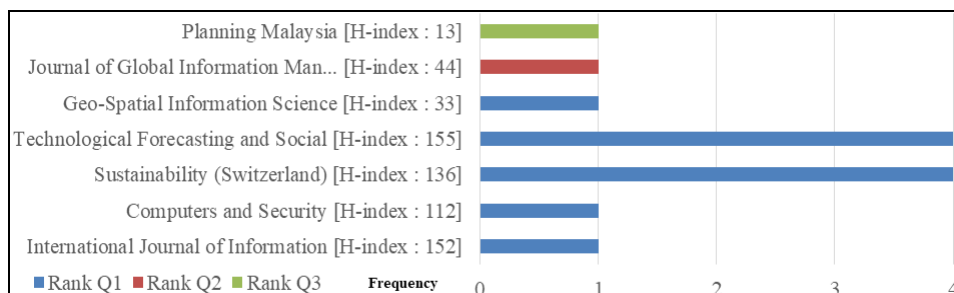


Figure 6. Journal quality and ranking for technology characteristic (Source: Scimago.com)

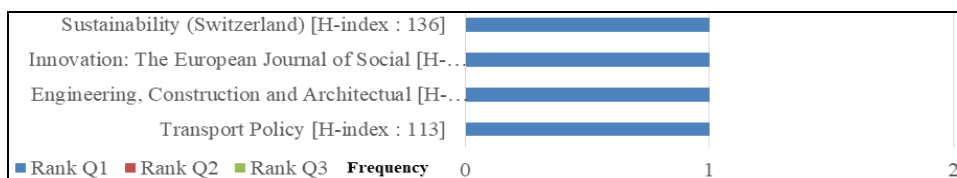


Figure 7. Journal quality and ranking for mobility characteristic (Source: Scimago.com)

The summary of findings indicated in Table 9 makes it evident that technology plays a critical role in the creation of smart cities. The importance of technology has been explained based on the notion of a "smart city", which is a city that uses information and communication technology (ICT) in the planning process and management operations of the city (Li et al., 2013; Lee et al., 2014; Tahir and Malek, 2016; Kim et al., 2016; Park et al., 2018; Nilssen, 2019; Szarek-Iwaniuk and Senetra, 2020; Lom and Pribyl, 2021). According to Bulu (2013), the usage of technology in the city is more focused on infrastructural technology that allows the city to support the rising population. According to the author, using technology in the city allows for more effective and efficient city management while also providing well-being to the urban population. Nevertheless, challenges in maintaining the safety and security of the ICT and its capability (Chatterjee et al., 2017; Moustaka et al., 2019; Sepasgozar et al., 2019; Kim and Yang, 2021) to meet citizen expectations require continuous efforts by the government and related smart city development agencies. Thus, in order to fulfil the "Tourism-For-All" implementation, the authorities and agencies have to strategize the ICT structure to meet the expectations of people with special needs.

Mobility

A database search employing the systematic literature review technique revealed that mobility affects 12% of all papers, or 4 papers in total. Figure 7 exhibits the journal quality and ranking found for the four articles published in Q1 journals with the respective H-index between 41 and 136. Table 10 presents a summary of the key findings related to mobility issues in smart cities between the years 2001 and 2021. Table 10 exhibits mobility characteristics. A summary of key findings proved that transportation is a vital component that cannot be disregarded when considering the expansion of a city. The transportation available in a given location is referred to as mobility. Mobility services, on the other hand, differ fundamentally from traditional forms of travel and are more complex (Calderón and Miller, 2020). Another factor that contributes to urban development is the development of transportation. The mobility system enables the community or people in urban regions to explore and travel to their hearts' content. Even rapid mobility development, such as a public transport system or traffic management system, has the potential to improve city life (Badii et al., 2019).

With today's technologies, the transportation system can be improved to be more efficient (de Wijs et al., 2016). In line with the smart city concept (Kozowski et al., 2021), policymakers are focused on mobility management to support urban growth. Because of the increased number of vehicles in the city centre as a result of migration, authorities are planning to deploy technology to control car movement and parking in urban areas (Zawieska and Pieriegud, 2018; Suresh et al., 2020) so that road conditions do not deteriorate. At the same time, they bring comfort and convenience to residents of smart cities. As a result, the transport and mobility structures in a smart city should be developed to accommodate people with special requirements, in accordance with the "Tourism-For-All" destination concept.

Table 10. Findings related to mobility characteristic (Source: Researcher own analysis)

Title of Article (Authors)	Journal of Publication	Findings
Analysis of the system of controlling paid parking zones (Kozłowski et al., 2021)	Sustainability (Switzerland)	The research presented in this paper focuses on cutting-edge technology used in smart cities, where the parking enforcement issue is a critical component of public transportation policy formulation . The authors' assessment results indicate that the system's operational functionality is appropriate, demonstrating that the desired performance levels were effectively reached.
Developments in the UK road transport from a smart cities' perspective (Suresh et al., 2020)	Engineering, Construction and Architectural Management	A city planner is a major actor in developing a strategy for a cities or countries successful growth. By recruiting firms and customers, smart road transportation transformation can provide a period of financial development .
Smart city as a tool for sustainable mobility and transport decarbonization (Zawieska and Pieriegud, 2018)	Transport Policy	Increased usage of alternative fuels and energy sources has the greatest potential to minimize GHG emissions . In Poland, where energy production is still reliant on the burning of coal, increased demand for electric energy may result in a rise in GHG emissions.
How smart is smart? Theoretical and empirical considerations on implementing smart city objectives – a case study of Dutch railway station areas (de Wijs et al., 2016)	Innovation: The European Journal of Social Science Research	In the city, railway stations are seen as "hubs" for information exchange . Human and social capital components of smart cities are less significant than railway station areas. This might be due to the fact that this smart city attribute is considered as less significant and/or visible than, say, technology and (economic) sustainability.

Environment

The environment is one of the major aspects of a smart city. Natural disasters, such as major floods and landslides caused by rapid development without regard for the environment, endanger the surrounding population and damage city infrastructure, preventing the development of a smart city. Therefore, three (5%) of the 61 examined publications emphasise the environment. Figure 8 exhibits the journal quality and ranking found for the three articles published in Q1 journals with the respective H-index between 103 and 155. A summary of the key findings related to environmental issues in smart cities between the years 2001 and 2021 is reflected in Table 11.

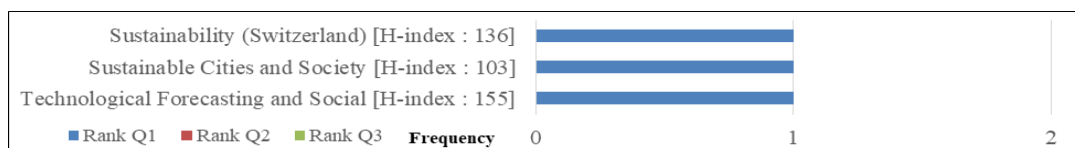


Figure 8. Journal quality and ranking for environment characteristic (Source: Scimago.com)

Table 11. Findings related to environment characteristic

Title of Articles (Authors)	Journal of Publication	Findings
A smart city is a less polluted city (Zhen Chu et al., 2021)	Technological Forecasting and Social Change	The smart city mitigates the negative side effects of urban growth (for example, pollution) while allowing cities to allocate resources more efficiently. The author argues that technological growth driven by innovation promotes the good environmental consequences of smart cities .
Comparative assessments and insights of data openness of 50 smart cities in air quality aspects (Mak and Lam, 2021)	Sustainable Cities and Society	According to the World Health Organization's (WHO) World Urban Development Study 2016-2020 report by the WHO and the UN Environment Programme, future smart city development should depend on big data and machine learning methods, as well as frequent air quality evaluations (UNEP) .
Clustering of European smart cities to understand the cities' sustainability strategies Cantuarias - Villessuzanne et al., 2021)	Sustainability (Switzerland)	Some clusters establish dynamic capacities to address economic, environmental, and social concerns . For the first cluster, these cities have recognised the chance to become smart and are in the process of transforming themselves. Other cluster includes sophisticated smart solutions for dealing with various difficulties. These cities developed their main competencies in response to their unique problems.

According to the findings in Table 11, smart city development should prioritise environmental sustainability. In 2016, the United Nations created an environment programme (UNEP) to assess air quality in 50 smart cities (Mak and Lam, 2021). Among the focused techniques to ensure smart city air quality is well controlled for future nations is the use of technologies such as big data and machine learning. Furthermore, a smart city should continuously minimise the negative consequences of urban development (Chu et al., 2021), so that the use of diverse technological developments in smart city development contributes to environmental care. A sustainable environment has emerged as a major worldwide concern. As a result, the "Tourism-For-All" component must include a sustainable environmental strategy to ensure a high quality of life in the smart city. A smart city is a technologically advanced urban concept that aims to enhance city residents' quality of life. Over the past two decades, specialists have conducted numerous studies on smart cities. The lack of research on the characteristics of smart cities is one of the study's limitations. Therefore, the researchers conducted a systematic literature review to investigate the development of smart city characteristics over the past two decades (2001–2021). Using the approach of identification, screening, and eligibility to search the SCOPUS database, researchers were able to locate

multiple publications that define the characteristics of a smart city. 43% of all findings are attributed to government policy, which is the first characteristic. This demonstrates that for a smart city to prosper rapidly and efficiently, the governing government must create appropriate regulations and promote the city's development. The majority of articles suggested that the strategy should focus on strengthening and enhancing the characteristics of existing smart city development, such as community development, technological development, transportation development, and environmental care.

The researcher then determined that the citizen is a significant figure in a smart city, accounting for 20% of the total findings. This demonstrates that the development of a city should prioritise its occupants' intellectual development and quality of life because the citizen can assume many roles, including participants, hosts, investors, volunteers and community members (Lobo et al., 2023). The government should also invite smart city residents to weigh in on development plans. This would benefit the development strategy.

It is also believed that government and citizen cooperation will accelerate the development of smart cities. Incorporating the concept of TFA and the use of technologies in the creation of a smart city will result in a more interesting, efficient, inclusive, and economically, socially, and environmentally sustainable tourism offer. When residents as well as tourists are involved in the creation of smart cities, feedback (i.e., surveys) will be provided that will continuously and accurately measure, integrate, and provide data for effective decision-making, prioritisation, and anticipation experiences for tourists while managing local resources efficiently. Moreover, creativity and innovation are crucial when designing experiences for increasingly demanding residents and tourists. Therefore, both residents and tourists can assist in ensuring maximal accessibility of offered sites, products, and services, thereby removing mobility barriers. It enables destination managers to examine sustainable tourism management through different lenses.

The advent of digital technology has facilitated enhanced channels of communication between tourists and marketers (Fallah et al., 2023) in urban tourism. Smart cities have an apparent and undeniable dependence on technology. A study percentage of 20% demonstrates the importance of research and technological advancement. Despite this, a number of studies indicate that the development of technology, particularly in ICT, will inevitably raise privacy and security concerns. People who desire to feel safe in a smart city share this concern; consequently, smart city authorities must give this issue top priority. The concept of smart cities is also closely linked to smart tourism, which goes hand in hand with improvements in technology such as Artificial Intelligence (AI), the Internet-of-Things (IoT), Big Data or fifth-generation technology (5G). Each concept has a similar goal: to increase resource management efficiency, competitiveness, and sustainability through the adoption of innovative technology. For example, in a smart city concept, AI could serve as a forecasting tool for destination management. Future planning can be made with historical and contextual data to make better decisions. In the tourism context, it is used to understand the tourist demand of each season and destination in order to design marketing strategies, financial management, human resource allocation, and support facility management. However, a smart destination requires more than technology. A comprehensive modernization process, starting with the city's tourism intelligence plan, is necessary to create a sustainable, innovative, and accessible destination model in economic, socio-cultural, and environmental aspects (Aguirre et al., 2023).

The subsequent characteristic is mobility. This study defines mobility as the smart city's transport management system. This is due to an effective and efficient mobility management system that may enhance the lives of smart city residents and is consistent with the smart city's primary goal. The number of tourists and vehicles can significantly increase when a certain location is promoted as a smart city through marketing campaigns that attract tourists. Both aspects have an impact on traffic, whether through congestion or the difficulty of finding parking. As a result, the study's findings help to remind destination managers to work hand in hand to remedy these challenges and give a better solution and experience for local residents and tourists. As an alternative to becoming a smart city, the city of Malaga, Spain, erected LED street lighting and built multiple kilometres of bicycle lanes, as well as several rental stations. Furthermore, the destination manager has built smart irrigation systems in parks and gardens to save water, as well as a plan to reduce air pollution and noise. Despite the fact that there are overwhelming needs and demands for mobility infrastructure, the smart city's transport management system should strive to improve the quality of life of its local citizens while also generating more sustainable areas.

The final character is the environment, which influences 5% of successfully located articles. Urban officials must prioritise environmental preservation and protection despite the accelerated development of smart cities. The researchers emphasise environmental protection despite the fact that only three studies in the past two decades have examined the characteristics of the smart city. The majority of them emphasise the use of technology to control the environment and provide convenience and well-being for residents. Smart systems for controlling environmental quality, irrigation, garbage, and water supply are some of the solutions that can be utilised to construct a smart city.

The dearth of environmental regulatory studies has made the implementation of sustainable environmental practises in smart cities more difficult. But with the right legislation and policies implemented by the local municipality (Ivancsóné Horváth et al., 2023), the government may overcome these difficulties. In Malaysia, for example, the Ministry of Housing and Local Government (KPKT) has developed an indicator to evaluate the environment in a smart city: the preservation of green areas, the enhancement of trees in public areas, the strengthening of integrated and sustainable solid waste management, the improvement of air quality and water quality, and its monitoring system. In conclusion, the development of a smart city necessitates the collective resolution of numerous obstacles. For instance, the ecosystem will be impacted by the rising number of vehicles. In addition, the city is notorious for its high electricity consumption, making it the biggest obstacle to creating a smart city with lower electricity consumption. Thus, the development of smart cities may assure the stability of the environment for the community and encompass all elements of sustaining and developing the diversity of the environment for future uses.

CONCLUSION

This study employs a systematic literature review based on PRISMA approach to gather information regarding the characteristics of a smart city. However, this investigation is limited to queries using only SCOPUS database. In fact, one of the researcher's requirements is that the selected paper must have a clear methodology, and only research publications are accepted. Among the five essential characteristics of a smart city, the government plays a crucial role in devising policies and strategies for its growth. Citizen participation and technology are secondary characteristics that contribute significantly to the growth of a smart city. Followed by mobility and environmental characteristics, which necessitate more innovative initiatives to develop the smart city comprehensively as a worthy cause for future urban development such as the “Tourism-For-All” (TFA) destination concept.

The smart city characteristics would be fitting well into this TFA structure provided the facilities for individuals with special needs, such as children, the elderly, pregnant women, and people with disability are well-provided to mitigate the disparities issue and creating sustainable cities and communities in the smart city.

The outcomes of this study would benefit the urban development authorities in countries where smart cities are their current development strategy. Researchers advise future researchers to expand their literature searches by utilising additional databases and incorporating the latest trends and features of smart city development beyond 2021. It is envisaged that this study will be expanded by incorporating more pertinent eligibility requirements towards the development of the TFA implementation and comprehensive framework of the new "purple tourism" environment.

Author Contributions: Conceptualization, H.W.; methodology, H.W. and M.S.A.; software, M.S.A.; validation, H.W., M.S.A., and A.T.; formal analysis, M.S.A.; data curation, H.W. and A.T.; writing - original draft preparation, M.S.A and A.T.; writing - review and editing, H.W. and A.T.; visualization, M.S.A.; supervision, H.W.; project administration, H.W. All authors have read and agreed to the published version of the manuscript.

Funding: The authors gratefully acknowledge the support of Universiti Teknologi MARA (UiTM) for funding this research through its Special Research Grant (GPK) (Reference: 600-RMC/GPK5/3 (273/2020) and GIP (Reference: 600-RMC/GIP 5/3 (001/2022)). The authors further express their gratitude for the permission to conduct this research from the university Research Ethics Committee, as indicated in their official correspondence of December 16, 2022 (Reference: 600-TNCPI (5/1/6) REC12/2022 (ST/MR/246)).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgments: The research undertaken was made possible by the equal scientific involvement of all the authors concerned.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

- Albino, V., Berardi, U., & Dangelico, R.M. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. *Journal of Urban Technology*, 22(1), 3–21. <https://doi.org/10.1080/10630732.2014.942092>
- Aguirre, A., Zayas, A., Gomez-Carmona, G., & Lopez Sanchez, J.A. (2023). Smart tourism destinations really make sustainable cities: Benidorm as a case study. *International Journal of Tourism Cities*, 9(1), 51-69. <https://doi.org/10.1108/IJTC-01-2022-0006>
- Alizadeh, T., Sarkar, S., & Burgoyne, S. (2019). Capturing citizen voice online: Enabling smart participatory local government. *Cities*, 95, 102400. <https://doi.org/10.1016/j.cities.2019.102400>
- Amin, Z.M., Anwar, N., Mohd Shoid, M.S., & Samuri, S. (2022). Method for conducting systematic literature review (SLR) for Cyber Risk Assessment. *Environment-Behaviour Proceedings Journal*, 7(SI10), 255–260. <https://doi.org/10.21834/ebpj.v7isi10.4130>
- Anand, A., Winfred Rufuss, D.D., Rajkumar, V., & Suganthi, L. (2017). Evaluation of sustainability indicators in smart cities for India using MCDM approach. *Energy Procedia*, 141, 211–215. <https://doi.org/10.1016/j.egypro.2017.11.094>
- Arora, R.U. (2018). Financial sector development and smart cities: the Indian case. *Sustainable Cities and Society*, 42, 52-58. <https://doi.org/10.1016/j.scs.2018.06.013>
- Badii, C., Bellini, P., Difino, A., & Nesi, P. (2019). Privacy and security aspects on a Smart City IoT Platform. In 2019 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCOM/IOP/SCI), 1371-1376, IEEE. <https://doi.org/10.1109/SmartWorld-UIC-ATC-SCALCOM-IOP-SCI.2019.00250>
- Blanch, M., Ribeiro, J.L.D., & Anzanello, M.J. (2019). A relational exploratory study of business incubation and smart cities-Findings from Europe. *Cities*, 88, 48-58. <https://doi.org/10.1016/j.cities.2018.12.032>
- British Standards Institute. (2014). *Smart city framework. Guide to establishing strategies for smart cities and communities*. PAS 181:2014. BSI, London
- Buuse, D.V.D., & Kolk, A. (2019). An exploration of smart city approaches by international ICT firms. *International Journal of Technological & Social Change*, 142, 220-234. <https://doi.org/10.1016/j.techfore.2018.07.029>
- Calderón, F., & Miller, E.J. (2020). A literature review of mobility services: definitions, modelling state-of-the-art, and key considerations for a conceptual modelling framework. *Transport Reviews*, 40(3), 312-332. <https://doi.org/10.1080/01441647.2019.1704916>
- Camboim, G.F., Zawislak, P.A., & Pufal, N.A. (2019). Driving elements to make cities smarter: Evidences from European projects. *Technological Forecasting and Social Change*, 142, 154–167. <https://doi.org/10.1016/j.techfore.2018.09.014>

- Cantuaris-Villessuzanne, C., Weigel, R., & Blain, J. (2021). Clustering of European Smart Cities to Understand the Cities' Sustainability Strategies. *Sustainability*, 13(2), 513. <https://doi.org/10.3390/su13020513>
- Chan, C.S., Peters, M., & Pikkemaat, B. (2019). Investigating visitors' perception of smart city dimensions for city branding in Hong Kong. *International Journal of Tourism Cities*, 5(4), 620-638. <https://doi.org/10.1108/IJTC-07-2019-0101>
- Chan, J.K. (2023). Sustainable rural tourism practices from the Local Tourism Stakeholders' Perspectives. *Global Business & Finance Review*, 28(3), 136-149. <https://doi.org/10.17549/gbfr.2023.28.3.136%20>
- Chatterjee, S., Kar, A.K., & Gupta, M.P. (2017). Critical success factors to establish 5G network in smart cities: Inputs for security and privacy. *Journal of Global Information Management (JGIM)*, 25(2), 15-37. <https://doi.org/10.4018/JGIM.2017040102>
- Chu, Z., Cheng, M., & Yu, N.N. (2021). A smart city is a less polluted city. *Technological Forecasting and Social Change*, 172, 121037. <https://doi.org/10.1016/j.techfore.2021.121037>
- Corsini, F., Rizzi, F., & Frey, M. (2016). Analysing smartness in European cities: A factor analysis based on resource efficiency, transportation and ICT. *International Journal of Global Environmental Issues*, 15(3), 235-254. <https://doi.org/10.1504/IJGENVI.2016.076957>
- Das, D.K. (2017). Exploring the politico-cultural dimensions for development of smart cities in India. *International Review for Spatial Planning and Sustainable Development*, 5(3), 79-99. http://dx.doi.org/10.14246/irspds.5.3_79
- De Wijs, L., Witte, P., & Geertman, S. (2016). How smart is smart? Theoretical and empirical considerations on implementing smart city objectives—a case study of Dutch railway station areas. *Innovation: The European Journal of Social Science Research*, 29(4), 424-441. <https://doi.org/10.1080/13511610.2016.1201758>
- Díaz-Díaz, R., & Pérez-González, D. (2016). Implementation of social media concepts for e-government: Case study of a social media tool for value co-creation and citizen participation. *Journal of Organizational and End User Computing (JOEUC)*, 28(3), 104-121. <https://doi.org/10.4018/JOEUC.2016070107>
- Dong, X., Shi, T., Zhang, W., & Zhou, Q. (2020). Temporal and spatial differences in the resilience of smart cities and their influencing factors: Evidence from non-provincial cities in China. *Sustainability*, 12(4), 1321. <https://doi.org/10.3390/su12041321>
- du Plessis, H., & Marnewick, A. (2017). A roadmap for smart city services to address challenges faced by small businesses in South Africa. *South African Journal of Economic and Management Sciences*, 20(1), 1-18. <https://hdl.handle.net/10520/EJC-a782d7be3>
- Esposito, G., Clement, J., Mora, L., & Crutzen, N. (2021). One size does not fit all: Framing smart city policy narratives within regional socio-economic contexts in Brussels and Wallonia. *Cities*, 118, 103329. <https://doi.org/10.1016/j.cities.2021.103329>
- EU Study. (2014). Economic Impact and Travel Patterns of Accessible Tourism in Europe. Downloaded 30 May 2021. <https://www.google.com/url?sa=i&rc=j&q=&esrc=s&source=web&cd=&ved=OCAMQw7AJahcKEwjY6cj-INP7AhUAAAAAHQAAAAAQAg&url=https%3A%2F%2Fwww.accessibletourism.org%2Fresources%2Ftoolip%2Fdoc%2F2014%2F07%2F06%2Fstudy-a-economic-impact-and-travel-patterns-of-accessible-tourism-in-europe---fi.pdf&psig=AOvVaw3pEUNPp3LNboQHhMzW35E8&ust=1669811925962860>
- Fallah, M., Karami, T., & Kojouri, K.M. (2023). The Art Of Human Participation Against Artificial Intelligence With Geospatial Information System In The Tourism Industry. *GeoJournal of Tourism and Geosites*, 49(3), 919-933. <https://doi.org/10.30892/gtg.49309-1093>
- Faraji, S.J., Jafari Nozar, M., & Arash, M. (2021). The analysis of smart governance scenarios of the urban culture in multicultural cities based on two concepts of “cultural intelligence” and “smart governance”. *GeoJournal*, 86(1), 357-377. <https://doi.org/10.1007/s10708-019-10074-6>
- Gil-Garcia, J.R., Pardo, T.A., & De Tuya, M. (2021). Information sharing as a dimension of smartness: Understanding benefits and challenges in two megacities. *Urban Affairs Review*, 57(1), 8-34. <https://doi.org/10.1177/1078087419843190>
- Granier, B., & Kudo, H. (2016). How are citizens involved in smart cities? Analysing citizen participation in Japanese “Smart Communities”. *Information Polity*, 21(1), 61-76. <https://doi.org/10.3233/IP-150367>
- Hårsmann Wahlström, M., Kourtit, K., & Nijkamp, P. (2020). Planning Cities4People—A body and soul analysis of urban neighbourhoods. *Public Management Review*, 22(5), 687-700. <https://doi.org/10.1080/14719037.2020.1718190>
- Hong, S., Hyoung Kim, S., Kim, Y., & Park, J. (2019). Big Data and government: Evidence of the role of Big Data for smart cities. *Big Data & Society*, 6(1), 1-11. <https://doi.org/10.1177/2053951719842543>
- Ivancsó Horváth, Z., Kupi, M., & Happ, E. (2023). The Role of Tourism Management For Sustainable Tourism Development in Nature Reserves In Hungary. *GeoJournal of Tourism and Geosites*, 49(3), 893-900. <https://doi.org/10.30892/gtg.49306-1090>
- Jácomo, L. (2018). Advertising-Cities Face to Smart-Cities: The Trends of Integration Policies for Information New Technologies in Madrid. *International Journal of E-Planning Research (IJEPR)*, 7(3), 22-35. <https://doi.org/10.4018/IJEPR.2018070102>
- Johnson, B.T., & Hennessy, E.A. (2019). Systematic reviews and meta-analyses in the health sciences: Best practice methods for research syntheses. *Social Science and Medicine*, 233, 237-251. <https://doi.org/10.1016/j.socscimed.2019.05.035>
- Júnior, L.A.F., da Costa, W.P.L.B., de Almeida Guimarães, L.G., Pereira, G.R.B., & El-Aouar, W.A. (2020). Social participation in the definition of budgetary instruments. *Transforming Government: People, Process and Policy*, 14(5), 737-755. <https://doi.org/10.1108/TG-12-2019-0118>
- Kankaala, K., Vehiläinen, M., Matilainen, P., & Välimäki, P. (2018). Smart city actions to support sustainable city development. *TECHNE-Journal of Technology for Architecture and Environment*, 1, 108-114. <https://doi.org/10.13128/Techne-23569>
- Kim, C., & Kim, K.A. (2021). The institutional change from E-Government toward Smarter City; comparative analysis between royal borough of Greenwich, UK, and Seongdong-gu, South Korea. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 42. <https://doi.org/10.3390/joitmc7010042>
- Kim, K., Jung, J.K., & Choi, J.Y. (2016). Impact of the smart city industry on the Korean national economy: Input-output analysis. *Sustainability*, 8(7), 649. <https://doi.org/10.3390/su8070649>
- Kim, N., & Yang, S. (2021). Characteristics of Conceptually Related Smart Cities (CRSCs) Services from the Perspective of Sustainability. *Sustainability*, 13(6), 3334. <https://doi.org/10.3390/su13063334>
- Kitchenham, B.A., & Charters, S.M. (2007). *Guidelines for performing systematic literature reviews in software engineering*. EBSE Technical Report
- Komninos, N., Kakderi, C., Panori, A., & Tsarchopoulos, P. (2019). Smart city planning from an evolutionary perspective. *Routledge eBooks*, 26(2), 3-19. <https://doi.org/10.1080/10630732.2018.1485368>
- Kozłowski, M., Czerepicki, A., Jaskowski, P., & Aniszewski, K. (2021). Analysis of the System of Controlling Paid Parking Zones. *Sustainability*, 13(8), 4211. <https://doi.org/10.3390/su13084211>
- Kraus, S., Breier, M., & Dasi-Rodriguez, S. (2020). The Art of Crafting a Systematic Literature Review in Entrepreneurship Research. *International Entrepreneurship and Management Journal*, 16, 1023-1042. <https://doi.org/10.1007/s11365-020-00635-4>

- Lee, J.H., Hancock, M.G., & Hu, M.C. (2014). Towards an effective framework for building smart cities: Lessons from Seoul and San Francisco. *Technological Forecasting and Social Change*, 89, 80-99. <https://doi.org/10.1016/j.techfore.2013.08.033>
- Li, D., Shan, J., Shao, Z., Zhou, X., & Yao, Y. (2013). Geomatics for smart cities-concept, key techniques, and applications. *Geo-spatial Information Science*, 16(1), 13-24. <https://doi.org/10.1080/10095020.2013.772803>
- Lim, S.B., Malek, J.A., Hussain, M.Y., & Tahir, Z. (2020). Participation in E-Government Services and Smart City Programs: A Case Study of Malaysian Local Authority. *Planning Malaysia Journal*, 18(3). <https://doi.org/10.21837/pm.v18i13.794>
- Lin, C., Zhao, G., Yu, C., & Wu, Y.J. (2019). Smart city development and residents' well-being. *Sustainability*, 11(3), 676. <https://doi.org/10.3390/su11030676>
- Linares-Espinós, E., Hernández, V., Domínguez-Escrig, J.L., Fernández-Pello, S., Hevia, V., Mayor, J., & Ribal, M.J. (2018). Methodology of a systematic review. *Actas Urológicas Españolas (English Edition)*, 42(8), 499-506. <https://doi.org/10.1016/j.acuroe.2018.07.002>
- Liu, F., Shi, Y., & Chen, Z. (2021). Intelligence quotient test for smart cities in the United States. *Journal of Urban Planning and Development*, 147(1), 04020053. [https://doi.org/10.1061/\(ASCE\)UP.1943-5444.0000637](https://doi.org/10.1061/(ASCE)UP.1943-5444.0000637)
- Liu, W., Xu, Y., Fan, D., Li, Y., Shao, X.F., & Zheng, J. (2021). Alleviating corporate environmental pollution threats toward public health and safety: The role of smart city and artificial intelligence. *Safety Science*, 143, 105433. <https://doi.org/10.1016/j.ssci.2021.105433>
- Lobo, C., Costa, R.A., & Chim-Miki, A.F. (2023). Events image from the host-city residents' perceptions: impacts on the overall city image and visit recommend intention. *International Journal of Tourism Cities*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJTC-10-2022-0242>
- Löfgren, K., & Webster, C.W.R. (2020). The value of Big Data in government: The case of 'smart cities'. *Big Data & Society*, 7(1), 2053951720912775. <https://doi.org/10.1177/2053951720912775>
- Lom, M., & Pribyl, O. (2021). Smart city model based on systems theory. *International Journal of Information Management*, 56, 102092. <https://doi.org/10.1016/j.ijinfomgt.2020.102092>
- Lozynskyy, R., Hrymak, O., Kushnir, L., Terletska, O., & Vovk, M. (2021). City size and functional specialization as factors of smart management: A case of Lviv Oblast, Ukraine. *Problems and Perspectives in Management*, 19(2), 384-397. [http://dx.doi.org/10.21511/ppm.19\(2\).2021.31](http://dx.doi.org/10.21511/ppm.19(2).2021.31)
- Macke, J., Casagrande, R.M., Sarate, J.A.R., & Silva, K.A. (2018). Smart city and quality of life: Citizens' perception in a Brazilian case study. *Journal of Cleaner Production*, 182, 717-726. <https://doi.org/10.1016/j.jclepro.2018.02.078>
- Macke, J., Sarate, J.A.R., & de Atayde Moschen, S. (2019). Smart sustainable cities evaluation and sense of community. *Journal of Cleaner production*, 239, 118103. <https://doi.org/10.1016/j.jclepro.2019.118103>
- Mak, H.W.L., & Lam, Y.F. (2021). Comparative assessments and insights of data openness of 50 smart cities in air quality aspects. *Sustainable Cities and Society*, 69, 102868. <https://doi.org/10.1016/j.scs.2021.102868>
- Molinillo, S., Anaya-Sánchez, R., Morrison, A.M., & Coca-Stefaniak, J.A. (2019). Smart city communication via social media: Analysing residents' and visitors' engagement. *Cities*, 94, 247-255. <https://doi.org/10.1016/j.cities.2019.06.003>
- Moustaka, V., Theodosiou, Z., Vakali, A., Kounoudes, A., & Anthopoulos, L.G. (2019). Enhancing social networking in smart cities: Privacy and security borderlines. *Technological Forecasting and Social Change*, 142, 285-300. <https://doi.org/10.1016/j.techfore.2018.10.026>
- Murgante, B., Borruso, G., & Lapucci, A. (2011). Sustainable Development: concepts and methods for its application in urban and environmental planning. In: Murgante, B., Borruso, G., La-pucci, A. (eds.) *Geocomputation, Sustainability and Environmental Planning*. SCI, 348, 1-15. Springer, Heidelberg https://doi.org/10.1007/978-3-642-19733-8_1
- Myeong, S., Jung, Y., & Lee, E. (2018). A study on determinant factors in smart city development: An analytic hierarchy process analysis. *Sustainability*, 10(8), 2606. <https://doi.org/10.3390/su10082606>
- Naqvi, N., Rehman, S., & Islam, M. (2020). A hyperconnected smart city framework: Digital resources using enhanced pedagogical techniques. *Australasian Journal of Information Systems*, 19(1), 1-42. <https://doi.org/10.3127/ajis.v24i0.2531>
- Neirotti, P., De Marco, A., Cagliano, A.C., Mangano, G., & Scorrano, F. (2014). Current trends in Smart City initiatives: Some stylised facts. *Cities*, 38, 25-36. <https://doi.org/10.1016/j.cities.2013.12.010>
- Neumann, O., Matt, C., Hitz-Gamper, B.S., Schmidhuber, L., & Stürmer, M. (2019). Joining forces for public value creation? Exploring collaborative innovation in smart city initiatives. *Government Information Quarterly*, 36(4), 101411. <https://doi.org/10.1016/j.giq.2019.101411>
- Nicolas, C., Kim, J., & Chi, S. (2021). Understanding the influences of urban-specific contexts for smart city development using structural equation modeling. *Journal of Urban Planning and Development*, 147(2). [https://doi.org/10.1061/\(ASCE\)UP.1943-5444.0000670](https://doi.org/10.1061/(ASCE)UP.1943-5444.0000670)
- Nilssen, M. (2019). To the smart city and beyond? Developing a typology of smart urban innovation. *Technological Forecasting and Social Change*, 142, 98-104. <https://doi.org/10.1016/j.techfore.2018.07.060>
- Okoli, C. (2015). A guide to conducting a standalone systematic literature review. *Communications of the Association for Information Systems*, 37, 879-910. <https://hal.science/hal-01574600/>
- Ooms, W., Caniels, M.C., Roijackers, N., & Cobben, D. (2020). Ecosystems for smart cities: tracing the evolution of governance structures in a dutch smart city initiative. *International Entrepreneurship and Management Journal*, 16(4), 1225-1258. <https://doi.org/10.1007/s11365-020-00640-7>
- Park, E., Del Pobil, A.P., & Kwon, S.J. (2018). The role of Internet of Things (IoT) in smart cities: Technology roadmap-oriented approaches. *Sustainability*, 10(5), 1388. <https://doi.org/10.3390/su10051388>
- Parr, J.B. (2007). Spatial Definitions of the City: Four Perspectives. *Urban Studies*, 44(2), 381-392. <http://www.jstor.org/stable/43084455>
- Perveen, S., Yigitcanlar, T., Kamruzzaman, M., & Agdas, D. (2020). How can transport impacts of urban growth be modelled? An approach to consider spatial and temporal scales. *Sustainable Cities and Society*, 55, [102031]. <https://doi.org/10.1016/j.scs.2020.102031>
- Pooja, G., Sundar, R., Harshini, R., Arjuna, S., & Ram Kumar, C. (2022). Recent Trends and Challenges in Smart Cities. *EAI Endorsed Trans Smart Cities*, 6(3), p. e4. <https://doi.org/10.4108/eetsc.v6i3.2273>
- PRISMA. (2020). Prisma. <http://www.prisma-statement.org/PRISMAStatement/>
- Razmjoo, A., Nezhad, M.M., Kaigutha, L.G., Marzband, M., Mirjalili, S., Pазhооhesh, M., & Piras, G. (2021). Investigating smart city development based on green buildings, electrical vehicles and feasible indicators. *Sustainability*, 13(14), 7808. <https://doi.org/10.3390/su13147808>
- Roche, S., Nabian, N., Kloeckl, K., & Ratti, C. (2012). Are 'Smart Cities' Smart Enough? In: Global Geospatial Conference 2012. Global Spatial Data Infrastructure Association. Available online: <https://gisandscience.com/2012/05/17/are-smart-cities-smart-enough/>
- Ruohomaa, H., Salminen, V., & Kunttu, I. (2019). Towards a Smart City Concept in Small Cities. *Technology Innovation Management Review*, 9(9): 5-14. <http://doi.org/10.22215/timreview/1264>

- Sarki, Z., & Saad, G.A.M. (2018). Preparedness and Challenges of Police in Using Forensic Science: A Review of Some Related Literature. *Journal of Social Sciences and Humanities*, 2, 14-24. *ESTEEM Journal of Social Sciences and Humanities*, 2, 14-24e-ISSN 2600-2774
- Sedova, A., & Balakina, A. (2020). Reinventing cities towards being smarter. In *IOP Conference Series: Materials Science and Engineering*, 869. <https://doi.org/10.1088/1757-899X/869/2/022023>
- Sepasgozar, S.M., Hawken, S., Sargolzaei, S., & Foroozanza, M. (2019). Implementing citizen centric technology in developing smart cities: A model for predicting the acceptance of urban technologies. *Technological Forecasting and Social Change*, 142, 105-116. <https://doi.org/10.1016/j.techfore.2018.09.012>
- Silva, B.N., Khan, M., & Han, K. (2018). Towards sustainable smart cities: A review of trends, architectures, components, and open challenges in smart cities. *Sustainable Cities and Society*, 38, 697-713. <https://doi.org/10.1016/j.scs.2018.01.053>
- Simonofski, A., Vallé, T., Serral, E., & Wautelet, Y. (2021). Investigating context factors in citizen participation strategies: A comparative analysis of Swedish and Belgian smart cities. *International Journal of Information Management*, 56, 102011. <https://doi.org/10.1016/j.ijinfomgt.2019.09.007>
- Suresh, S., Renukappa, S., Abdul-Aziz, A.R., Paloo, Y., & Jallow, H. (2020). Developments in the UK road transport from a Smart Cities perspective. *Engineering, Construction and Architectural Management*, 28(4), 845-862. <https://doi.org/10.1108/ECAM-12-2019-0687>
- Szarek-Iwaniuk, P., & Senetra, A. (2020). Access to ICT in Poland and the co-creation of urban space in the process of modern social participation in a smart city—A Case Study. *Sustainability*, 12(5), 2136. <https://doi.org/10.3390/su12052136>
- Tahir, Z., & Malek, J.A. (2016). Main criteria in the development of smart cities determined using analytical method. *Planning Malaysia*, 14(5). <https://doi.org/10.21837/pm.v14i5.179>
- Talari, S., Shafie-khah, M., Siano, P., Loia, V., Tommasetti, A., & Catalão, J.P. (2017). A Review of Smart Cities Based on the Internet of Things Concept. *Energies*, 10, 421. <https://doi.org/10.3390/en10040421>
- Tariq, M.A.U.R., Faumatu, A., Hussein, M., Shahid, M.L.U.R., & Mutil, N. (2020). Smart city-ranking of major Australian cities to achieve a smarter future. *Sustainability*, 12(7), 2797. <https://doi.org/10.3390/su12072797>
- Thorpe, R., Holt, R., Macpherson, A., & Pittaway, L. (2005). Using knowledge within small and medium-sized firms: a systematic review of the evidence. *International Journal of Management Reviews*, 7(4), 257-281. <https://doi.org/10.1111/j.1468-2370.2005.00116.x>
- United Nations. (2018). World Urbanization Prospects: The 2018 Revision. Available online: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Jan/un_2018_worldcities_databooklet.pdf
- United Nations. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. <https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981>
- United Nations. (2014). World Urbanization Prospects: The 2014 Revision. Available online: <https://www.un.org/en/development/desa/publications/2014-revision-world-urbanization-prospects.html>
- Vitunskaitė, M., He, Y., Brandstetter, T., & Janicke, H. (2019). Smart cities and cyber security: Are we there yet? A comparative study on the role of standards, third party risk management and security ownership. *Computers & Security*, 83, 313-331. <https://doi.org/10.1016/j.cose.2019.02.009>
- White, G., Zink, A., Codecá, L., & Clarke, S. (2021). A digital twin smart city for citizen feedback. *Cities*, 110, 103064. <https://doi.org/10.1016/j.cities.2020.103064>
- Winkowska, J., Szpilko, D., & Pejić, S. (2019). Smart City Concept in The Light of The Literature Review. *Engineering Management in Production and Services*, 11(2), 70-86. <https://doi.org/10.2478/emj-2019-0012>
- Yigitcanlar, T., Kamruzzaman, M., Buys, L., Ioppolo, G., Sabatini-Marques, J., Costa, E., & Yun, J. (2018). Understanding 'smart cities': Intertwining development drivers with desired outcomes in a multidimensional framework. *Cities*, 81, 145-160. <https://doi.org/10.1016/j.cities.2018.04.003>
- Yin, C., Xiong, Z., Chen, H., Wang, J., Cooper, D., & David, B. (2015). A literature survey on smart cities. *Science China Information Sciences*, 58(10), 1-8. <https://doi.org/10.1007/s11432-015-5397-4>
- Zawieska, J., & Pieriegud, J. (2018). Smart city as a tool for sustainable mobility and transport decarbonisation. *Transport Policy*, 63, 39-50. <https://doi.org/10.1016/j.tranpol.2017.11.004>
- Zhou, Q., Zhu, M., Qiao, Y., Zhang, X., & Chen, J. (2021). Achieving resilience through smart cities? Evidence from China. *Habitat International*, 111, 102348. <https://doi.org/10.1016/j.habitatint.2021.102348>