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Original Research Article

Conceptualizing sustainable Smart Country: Understanding the role of different sectors in building its structure

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ABSTRACT: The objective of this paper is to theorize the concept of a Smart Country; for that, we will discuss the footsteps that any country in the world can follow and become a Smart Country. We will define how a Smart Country will have processes and governance structures that are fully equipped with all the necessary technological advancements. These prerequisites will not only help in laying the foundation of Smart Country. Still, they will also provide a long-term solution that will ensure the sustainability of Smart Country, which will have the capacity to not only face the challenges of the future but also synchronize with the forthcoming computational development. Through a comprehensive literature review and research analysis, we have argued in this article that a sustainable Smart Country is a holistic concept, so in order to make it practical, we have to consider political, security, social, economic, and finally, the environmental aspects of the country, and according to each aspect, we will be providing solutions to the challenges countries are going to be facing in the near future. With these aspects mentioned, we will be explaining the three interdependent actors, which are Smart Government, Smart Citizens, and smart technology. These three actors will become the pillars of a Smart Country, and the collaboration between them will play a vital role in the success of this initiative. The first pillar, Smart Government, will play a role in creating sustainable Smart Country practices. The second pillar, a Smart Citizen, will play a role in adopting sustainable Smart Country practices. Lastly, smart technology will be the catalyst that will make it possible to create a sustainable, Smart Country. The research in this article will contribute by providing a framework for conceptualizing a sustainable Smart Country, which will help policymakers and researchers develop future strategies.

KEYWORDS: smart country; smart citizen; smart government; smart social; smart economy

1. Introduction

1.1. Background

Since the beginning of the world, humans have always strived and struggled to live a better life for themselves and their families, to create a sustainable living environment that not only helps them survive the hardships of the world but also improves their quality of life with time[1]. In order to achieve this goal, humans have thought of every possible plan and then tried their best to implement it, which in any way

can convert their dreams of sustainable living into a reality[2]. Sometimes they get successful and get what they always wanted, and sometimes things don't work out the way they wanted; however, still, they were successful in achieving their goals, or they failed miserably to get what they wished for in either way. Humans learned a lot about the strategy and approach toward the goal of sustainable living. Until then, humans were still very self-centric, or, in a way, selfish; that is why all their thinking and planning was limited to themselves and their family members. So, whether they were hunting animals for food resources, exploring new habitats to live comfortably, or even surviving in the extreme wilderness, it is all done by humans at individual levels[3]. Because surviving on its own is considered a symbol of strength and courage, and not being able to help oneself and support your family is termed a sign of weakness, which eventually leads a person towards extinction. That is why people prefer to live and work on their own. Also, the trust deficit was very much present among humans at the time. They were very secure and, in other words, afraid that if I engaged with other humans, they might hurt me and take away my resources, which could create an issue for my own survival; therefore, they always remained hesitant and avoided any interaction with each other. But, with time and with every decision taken, humans learn a lot. Then they made them realize that being dependent on themselves will not be valid in every case, and in different circumstances and situations, they have to work accordingly and change their strategy to work collectively and get support from others and, in return, also give support to others in times of need. They have understood that in some conditions, you have to get help and rely on the skills and resources of others to survive, whether it is about sharing knowledge, skill set, or resources[4]. So, humans are primarily responsible for themselves, but they have to rely on others' help in order to succeed in extreme conditions. This realization really opened the door for the development of a society where people started to live as a community and share resources with each other[5]. This living as a community has given people so many benefits. Like having protection, so living together in society helped people to join forces and protect themselves from external threats of wild animals or natural disasters. Then, division of labor increased, so as people in the societies increased, people started to specialize in their work strengths, making people more productive and efficient. Finally, social interaction, so living as a society also allowed people to form social connections and relationships outside their families. Through this, they can learn from each other's experiences and wisdom[6]. And many more benefits they have attained by living together as a society, and they have achieved things that would have been impossible for people if they acted alone. However, as societies grew more prominent in numbers, it became more complex and challenging to maintain social order and resolve the conflicts among the people. In such a situation, people again worked together to understand what could be the possible solution to the problem they are facing right now[7]. At that time, they felt that we needed to have a social contract that would be a central law that should be acceptable to all people, and it would run the society[8] according to the principle that we all agree collectively. This social contract will ensure public safety, maintain law and order, and provide services to the society; people also were convinced that without a social contract, people on their own would lead the society towards chaos, anarchy, and instability, which can harm the existence of the society. So, this provided stability to the society. Social Contract[9] refers to the system, processes, and structure through which a society will be organized, managed, and controlled. But the evolution of that, what is the best way to run a society, always remains a complex subject throughout history, and people here also slowly practiced different methods and learned from their mistakes[10]. Here below is an overview of the significant stages of evolution. Firstly, Early Notions of Social Contract, in its initial stages, the concept of the social contract served as a theoretical framework designed to elucidate the shift from a primitive state of nature to a structured and organized community. According to the perspective of philosophers such as Thomas Hobbes, it was postulated that individuals in a state of nature were

primarily motivated by their self-interest, leading to a condition of existence characterized by unpleasantness, brutality, and brevity. Hobbes posited that individuals engaged in a social contract as a means of extricating themselves from a state of disorder and uncertainty, willingly relinquishing a portion of their personal autonomy to a ruling body in return for the assurance of safety and societal organization[11]. Then comes Lockean liberalism, which has exerted significant influence in defining contemporary comprehension of the social compact, owing to the essential role played by John Locke's theories. Locke posited the notion that persons 15 existing in a hypothetical state of nature inherently possessed fundamental rights about their lives, personal freedom, and ownership of property. The author suggested that individuals establish communities and governing bodies to safeguard these rights. Significantly, Locke's theory introduced the concept that governments obtain their authority from the agreement of the governed, highlighting the significance of citizen involvement in constructing the social compact[12]. Then comes Rousseau's Concept of Communal Ideal, so Jean-Jacques Rousseau presented an alternative viewpoint about the concept of the social compact[13]. The individual believed that the contractual agreement should accurately represent the collective desires and interests of the populace to advance the welfare of society as a whole. Rousseau posited that attaining genuine freedom necessitated individuals' voluntary subjugation to communal volition. This concept established the fundamental foundations of democracy and the notion of citizenship as an engaged involvement in molding the fabric of society[14]. After it, Modern Democracies and Social Contracts Comes, so the theories put forth by Enlightenment thinkers exerted a significant impact on the evolution of contemporary democratic systems[15]. During the 18th and 19th centuries, several conceptions emerged, such as individual rights, the rule of law, and representative government[16]. The concept of the social contract has transformed over time, placing increased emphasis on safeguarding the rights of individuals and their active participation in governance through the election of representatives. The current era presents many complex issues and obstacles that require careful analysis and strategic solutions[17]. Finally, contemporary challenges come; during the 20th and 21st centuries, the social contract encountered novel problems. Topics such as civil rights, gender equality, environmental sustainability, and the 16 societal implications of technology have engendered continuous discourse over the essence of the social compact. Moreover, the phenomenon of globalization has prompted inquiries into the limitations of national social agreements within an interdependent global context[18]. Similarly, the way the society governs the citizens also evolved through the following phases; it started with prehistoric governance, so governance was informal, and the decision-making process was based on consensus and guidance of the society elders[19]. Then, ancient governance came, Governance became more formalized, and a centralized authority controlled the system of governance. King exercised absolute power, developed the system of law and justice, and established bureaucracies to manage country affairs[20]. After it, modern governance came; the modern period brought the rise of nation-based countries, and the age of reason challenged the traditional notion of the king's authority and legitimacy, which eventually led to the development of a democratic form of Governance[21]. Soon after its contemporary governance came, this period interconnected people worldwide, and globalization was introduced, which led to the formation of international organizations so countries could fight the challenges and help each other[22]. Finally, electronic governance started. With the rise of technology, different sectors of the country were revolutionized, and governance is also one of them[23]. In the E-government era, every service and process of the government is automated to provide ease and facility to the citizens. The use of technology in governance really shaped the country in a way to attain its goals in a much faster way[24]. So, throughout history, as we have seen, the way people will live in a country under a government system has been influenced by different factors like economics, social, cultural, environmental, and technological, and

right now, the most crucial factor in the present is technology. That is why countries need to evolve for the future with the help of Technology[25] and adapt and mold their governance practices according to technological advancement and how it should be done. We will discuss this in the next section.

1.2. Formulation of the problem

As we have mentioned at the end of our last section that how, in the present and also in the future most probably, the way countries are run by the government to provide facilities to the citizens is highly influenced by the technology, and we have already seen so much advancement in the governance with the help of Technology[26]. However, the involvement of technology in governance is started in the second half of the 19th Century, and it really accelerated with the innovation of the Internet in 1990 by Tim Berners-Lee; it helped a lot to citizens from all around the world from different countries[27]. Through the Internet, people connected with each other and became able to share or access information that benefitted them. Similarly, it changed the way countries were run by the government, and slowly, they started to move towards the Technology powered governance. This resulted for the first time around 1992–1993, the term E-government was introduced, and many countries adopted it and promoted it by using information technology to pursue a change in the way government operated the various aspects of the country[28]. Furthermore, the E-government was not only about the digitization of the country, but it also extended to a movement of social reforms in the country which will aim to satisfy the citizen of their countries and bring transparency in the governance by decreasing the manual interventions in the processes[29]. The Clinton Administration in the 90s introduced the first E-government policy framework, and the impact we see now that laying the cornerstone of E-government adoption by the United States of America accelerated its development of it in the 20th[30]. Therefore, by seeing the progress of the United States and its success in E-government, many other countries followed in their footsteps and moved started to go in the direction of E-government and shifted from the Traditional way of government. So, till now, countries have been trying to implement the E-government initiative, and the United Nations (UN) to track the E-government impact on the countries introduced the E-government Development Index (EGDI), and every year UN collects the data against the dimensions of EGDI[31] and publish on their websites, in order for countries check their progress and work on the improvements. However, still, so many countries worldwide, especially the 3rd world countries, are still facing challenges and problems in the successful implementation of the E-government initiative; it is due to the mentality that governments in such countries still believe that governance and Technology are two separate things[32]. The reason for their thinking comes from their ignorance and stubbiness that they perceive the addition of Technology as an optional thing. Its absence does not bring any problem to the quality of governance. They believe that with the traditional way of governance, they can be able to grow and compete with the E-government equipped countries in this modern era[33]. Due to their unawareness caused a great number of issues in their countries, and people suffered to survive[34]. Another reason behind it of countries not adapting to E-governance practices is comes from their dishonesty; that they are not stupid and are fully aware of the benefits of e-governance but still not adopting it because they know that how e-governance will bring transparency and openness in the country and citizens can critically analyze the governance of their government which makes them afraid that their incompetence and corruption can come in light and it can become difficult for them continue their bad governance that is why they are deliberately stopping and causing delays in the implementation of E-government. This is the problem with countries not doing well with E-government[35], and even countries that are doing good in this are also now stuck and unclear about the future of E-government that, what is next, and how they are going to adapt their digitized countries according to the future requirements. Different researchers now coined the idea of a Smart

government[36] which is taught to be the future of fully digitized countries to become a Smart Country. Still, currently, no standard process or guideline about it is presented right now, like E-government implementation, which any country can understand and easily follow to achieve the next level. Therefore, it's important that for both categories of countries, either low-performer E-governments or high-performer E-governments[37] it is important that a clear future path should be present so that countries that are mistakenly or deliberately not digitizing should be aware of what they will lose in the future if they continue like this, and countries which are doing great as a digital nation should have the understanding and proactively prepared for what's coming in the future and how they will adapt accordingly. Because we believe that we may be neglecting the technology use or stopping the innovations by thinking it's the end of it that can help them survive for now[38]. Still, in the future, their survival will be difficult if they continue to think like this, and countries that will continue to progress will be influencing the politics of the future world.

1.3. Research purposes and benefits

Based on the discussion we have done in the previous section regarding the problem formulation, we will be focusing on the objective of describing the future of the countries which will be to become smart countries. So, a Smart Country will be designed to enhance the quality of citizens and the government through the use of innovative technologies[39]. The focus of our article will be more on the use of technology in different aspects and sectors of the country for development and sustainable growth, with also the discussion on the role of Smart Government and Smart Citizens in order to achieve this goal. Smart Government and Smart Citizens will be the next step for them to get after becoming E-government and digitally equipped citizens. In response to technological advancements, the Smart Country, which is backed by the Smart Government and Smart Citizens, will be the answer to it. The Smart Country will seek to integrate citizen engagement and government effectiveness to create a sustainable future for the Smart Country[40]. So, Smart Government will use technology to enhance governance and public services. At the same time, Smart Citizens on the other end will actively take part in the usage of these services and will utilize them for their own benefit. Both of them will join and sync together to play their respective role in different aspects or sectors to create a Smart Country. This is our vision for a Smart Country that will be technologically advanced, sustainably growing, and environmentally friendly and that leverages technical expertise to improve the quality of their country's development. We have to understand also that a Smart Country will only be created with the balance of technological advancement in different aspects like politics, social, economy, and environment, etc., of the countries there has to be balanced development in each aspect, and Smart Government and citizens should play their part in each area to make the concept of Smart Country possible because the creation of Smart Country is not only technology-driven but also socially inclusive that is why it requires the adoption of technology by society as a whole. Therefore, it's essential that the Smart Government of a Smart Country should have the ability to engage Smart Citizens of a Smart Country in the initiative because Smart Citizens' feedback will be valuable for the betterment of service quality. In summary, this article will present the concept of a Smart Country and its purpose in order to be proactively aware of digitally equipped countries running under E-government about the future way of running countries that will give them an edge over other countries[41]. To give a detailed understanding, we will be step by step discussing the different aspects of the countries, from the political to the social sector, and how and what changes or innovations will be introduced in it to transform the country into a Smart Country, which will be made possible through the support of Smart Citizens and Government of the Smart Country they will become the foundation of its sustainability. Through this research, I will be contributing to the literature

on Smart Cities, Smart Government, sustainable growth, and eco-friendly development; by providing insights into the role of Smart Citizens and Smart Government. The findings of this research article will be helpful for policymakers, urban planners, and other stakeholders who are interested in developing a sustainable Smart Country. In the end, our objective will be to address research gaps areas like how Smart Government and Smart citizen participation will contribute to the development of a sustainable Smart Country, what opportunities this initiative will create that will help to solve many challenges countries face, and finally, what are the implication and future directions for researchers and practitioner in this area of research. To address these all questions, we will cover and analyze as much relevant literature as possible.

2. Literature review

A sustainable Smart Country still needs a proper definition. Many publications have done on it, and it is still limited to the idea of a Smart City. Although several studies that were written and disseminated in publications have examined the idea of a sustainable Smart Country[42]. So, overall, according to the current study, a framework for creating a sustainable Smart Country that takes into account social, economic, and environmental factors is presented in one such study. The authors contend that in order to accomplish sustainable growth in Smart Cities, a comprehensive approach is required. Another article by Baldi et al.[43] explores how technology might support sustainable urban development. The authors contend that technology can support social inclusion, resource efficiency improvements, and carbon emission reductions[44]. However, they advise that using technology alone is insufficient and that policies that support sustainable development must be added as a supplement. The authors of a study by Blasi et al.[45] concentrate on applying transportation systems to support sustainable urban development. In order to lessen traffic congestion and enhance air quality, a smart transportation system has been put in place in Seoul, South Korea, which is the subject of the study. The authors come to the conclusion that fostering sustainable urban growth can be greatly aided by smart transportation systems. Chen and Chan[46] investigate how renewable energy might support sustainable urban development. The authors contend that renewable energy can aid in lowering carbon emissions and fostering long-term economic expansion. They also emphasize the significance of legislative frameworks that promote the use of renewable energy sources. In summary, the journal papers that follow offer insightful analysis of the idea of a sustainable Smart Country[47]. These articles emphasize the value of a comprehensive strategy that takes into account social, economic, and environmental variables. They also stress how important technology and legal frameworks are for advancing sustainable development. Policymakers and urban planners can improve the lives of individuals while also assuring a sustainable future for future generations by utilizing these ideas. Similar to this, Sustainable Smart Government (SSG) refers to the application of Information and Communication Technologies (ICTs) to improve the effectiveness, efficiency, and sustainability of government services and operations[48]. To ensure that the advantages of smart technologies are egalitarian, environmentally benign, and commercially viable for future generations, the sustainable element requires taking into account social, economic, and environmental aspects. Due to the mounting demand to address issues like climate change, poverty, and inequality, this strategy has attracted attention recently. This essay will examine some recent SSG research, stressing its promise, difficulties, and implications for governance and public policy[49]. SSG has the ability to encourage citizen engagement and participation in governance, which is one of its main advantages. According to Oh[50], SSG can make use of social media, mobile applications, or online platforms to promote interaction and cooperation between citizens and public officials. In turn, this can improve accountability, openness, and trust while assisting in addressing social and environmental issues that have an impact on nearby communities. For

example, discuss a case study in which smart technologies were utilized to monitor the quality of the air in a city, allowing residents to access real-time data and participate in decision-making[51]. This strategy has been shown to raise citizens' awareness of environmental challenges and promote a sense of civic ownership and responsibility. SSG has the potential to improve public service delivery's effectiveness and efficiency, which is another advantage[52]. Automating repetitive processes, allocating resources efficiently, and enhancing communication and coordination between government agencies are all possible with the help of smart technologies like artificial intelligence, blockchain, or the Internet of Things. According to Hsu et al.[53], SSG can enable personalized, adaptive, and responsive E-government services that cater to citizen needs, hence improving the user experience and satisfaction. For instance, a study by Ptak[54] studied the impact of smart metering on water use in Korea and discovered that it resulted in a considerable decrease in wastage and better cost-effectiveness. To ensure SSG's sustainability and ethical implications, however, a number of issues and restrictions must be resolved. Ensuring inclusiveness and fair access to smart technologies in governance is one of the major problems[55]. The digital divide continues to be a significant impediment to the adoption of SSG, particularly in poor nations or underprivileged areas, as observed by Amékalová and Kučera[56]. This can hinder the ability of SSG to support sustainable development by increasing inequities and causing an uneven distribution of benefits. Keeping data secure and private when using SSG presents another difficulty. Smart technologies produce a lot of data, which might be prone to hacking, manipulation, or misuse, as mentioned by Ninčević Pašalić et al.[57]. This may damage citizens' faith in and confidence in SSG by jeopardizing the confidentiality and integrity of sensitive information. To secure the viability and moral implications of SSG, strong data protection and 25 cybersecurity frameworks are necessary. SSG is, in short, a promising strategy that makes use of the potential of smart technologies to advance sustainable development and improve the efficiency of government[58]. But SSG must take into account social, economic, and environmental factors, deal with the digital divide, data privacy, and security, and promote citizen engagement and collaboration in order to assure its sustainability. To create and implement SSG policies and strategies that are both ethical and egalitarian, government authorities, civil society, and the corporate sector must work together[59]. Also, about the idea of a "Smart Citizen", it was created in reaction to the growing urbanization trend and the expanding usage of technology in urban areas. In order to promote social and environmental change, it refers to people who actively use technology to participate in the governance and management of their communities. Smart Citizens are "empowered individuals who use technology in creative ways to improve the quality of their lives and the lives of others in their society," according to research by Sideridis[60]. These people use technology to obtain information, communicate with others, and work with government agencies to co-create inclusive and sustainable urban settings. A number of studies have looked into how technology can help Smart Citizens. For instance, Kézai et al.[61] examined how Smart Citizens used social media to encourage environmental engagement. They discovered that social media sites like Facebook and Line enabled Smart Citizens to organize collective action, magnify their voices in public discourse, and mobilize their communities. Similar to this, research by Gutub and AlKhodaidi[62] examined how Smart Citizens used urban sensing devices. They discovered that in order to inform policy-making and enhance local quality of life, Smart Citizens used sensors to gather and evaluate data on air quality, noise pollution, and other urban indicators. 26 In general, the idea of the "Smart Citizen" emphasizes how technology has the ability to support citizen-led innovation and collaboration as well as to advance more democratic and participatory urban governance. It also calls into question how much technology can actually do to empower disadvantaged groups and advance equitable development[63]. To ensure that the Smart Citizen concept promotes more equitable and sustainable cities for all, further research is required to examine the

social and political consequences of it.

The **Figure 1** displayed is a line graph that portrays the quantity of published materials focusing on the subject matter of "Smart City" within the time frame of 2000 to 2025. On the y-axis, the number of publications is represented, while the x-axis corresponds to the years. The graph effectively demonstrates a significant surge in the number of publications on the topic of "Smart City" throughout the mentioned period. Several noteworthy observations can be made regarding the graph. Firstly, the number of publications concerning the subject matter of "Smart City" escalated from a mere 2 in 2000 to an impressive 206,197 in 2025. Furthermore, it is evident that the number of publications experienced a consistent increase from 2000 to 2010, followed by a more rapid surge from 2010 to 2025. The graph can be analyzed through various plausible explanations for the increase in publications regarding the topic of "Smart City". One potential explanation is the growing interest in Smart City technologies as a means to combat urban challenges such as traffic congestion, pollution, and energy consumption. Another possible reason could be attributed to the advancement of new Smart City technologies, which have facilitated researchers in publishing their work within this domain. Overall, the graph undeniably establishes that the subject of "Smart City" serves as a blossoming research field. This implies an extensive level of interest in employing Smart City technologies to enhance the lives of urban dwellers.

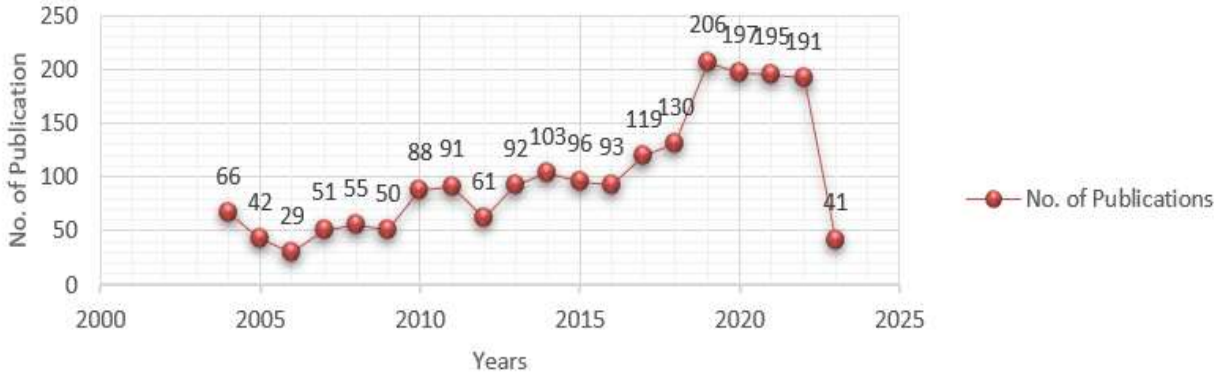

Figure 1. Number of publications done per year—Source Scopus database.

Figure 2 is an illustrative diagram that exhibits the quantity of scholarly articles categorized by country. The horizontal axis denotes the specific country, while the vertical axis represents the quantity of publications. The United States exhibits the highest number of publications, surpassing 350. The United Kingdom secures the second position with a count exceeding 300. Indonesia claims the third spot with over 250 publications. **Figure 2** also includes several other countries, namely Spain, Malaysia, Norway, Belgium, Finland, Jordan, Hungary, the United Arab Emirates, Slovenia, Hong Kong, Ukraine, Viet Nam, Macao, Iraq, Azerbaijan, Israel, Sri Lanka, Lebanon, Albania, Kenya, Afghanistan, Burkina Faso, Honduras, Malta, Niger, and Somalia. It is imperative to acknowledge that this graph merely portrays the number of publications from a restricted sample of countries. Numerous other countries conduct research and publish articles; however, they are not displayed in this graph. Furthermore, the graph fails to indicate the caliber of the research published in each country. Some countries may produce a substantial amount of research, but the quality may not be commendable. Conversely, other countries may have a lower publication count, but the quality of their research could be significantly superior.

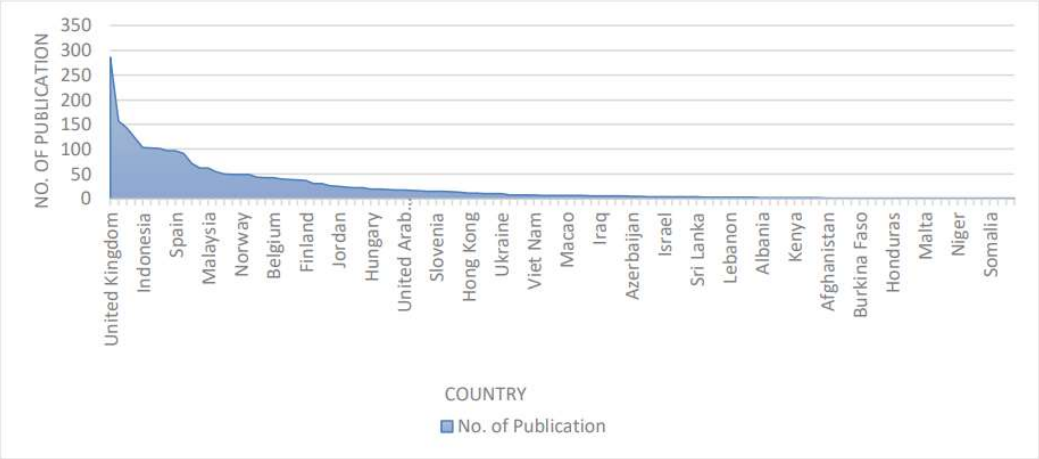

Figure 2. Number of publications done in each country—Source Scopus database.

2.1. Operational framework

The operational framework of this article is mentioned in **Table 1**. as follows.

Table 1. Operational framework.

Variables	Indicator	References
Smart economical structure	- Combination of capitalism and socialism - Smart payment - E-commerce to Q-commerce - Smart digital marketing - Company ownership sharing in Smart Country	[64] [65] [66]
Smart environmental structure	- Green transportation logistics - Green energy - Green credit points - Smart water management - Tree plantation initiative - Smart water assignment	[67] [68]
Smart security structure	- Cyber security policy - Cyber defense strategy - Cyber insurance - One-time only information - Citizen data tracking - Blockchain data security - Smart digital nervous system	[34] [41] [50] [52]
Smart political structure	- Smart voter - Smart candidate - Smart election - Smart trackable votes - Smart polling booth/station - Smart rating system - Smart protest	[14] [45] [50] [52]
Smart social structure	- Smart government - Smart citizen - People, policy and technology approach - Smart one-window platform - Metaverse public services - Smart referendum - Smart census - Smart justice court - Smart journalism - Smart task assignment system	[10] [15] [33] [27]

2.2. Theoretical framework

As shown in the **Figure 3**. Below is the Proposed Hypothesis.

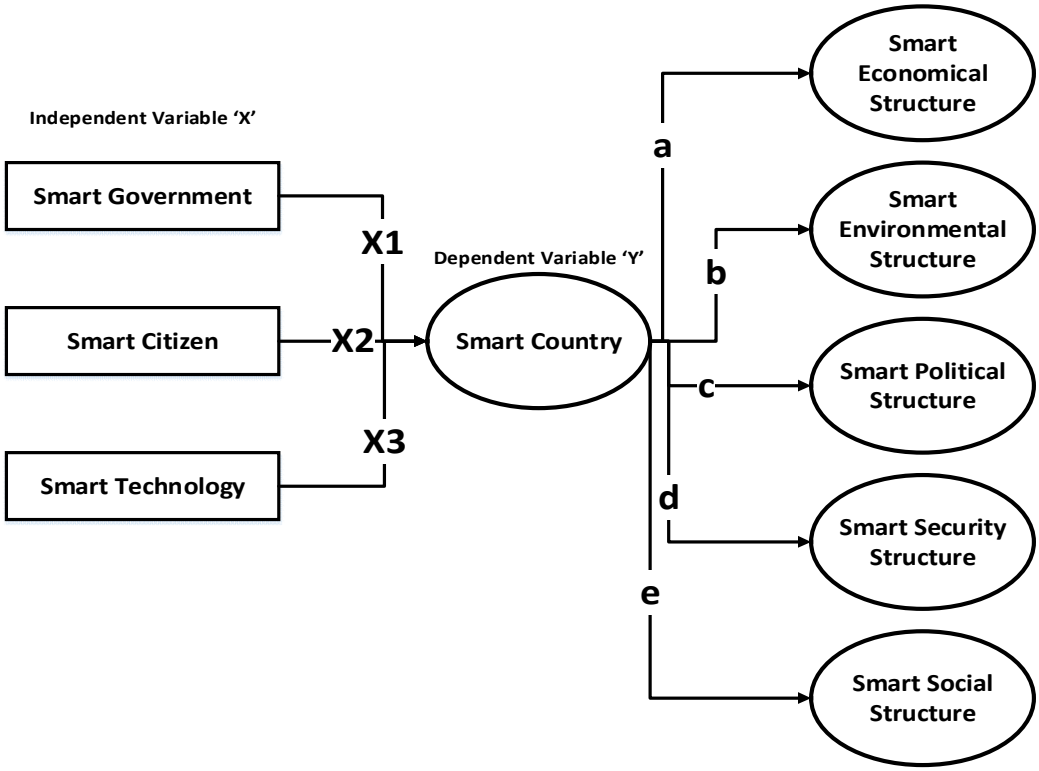

Figure 3. Framework of article[18].

2.3. Hypothesis

a) Putting in place a smart economic structure in a Smart Country can have positive effects, including higher production, better efficiency, lower costs, and more effective resource allocation. As a result, the economy may increase, living standards may rise, and the country's economy may be strengthened.

b) Smart Environmental Structures can decrease energy use, enhance resource management, and contribute to a cleaner, healthier environment. This can enhance a Smart Country's overall sustainability and resilience while also improving the quality of life for its 52 people.

c) By encouraging effective decision-making, fostering innovation and sustainability, and ensuring equitable distribution of resources and opportunities for all citizens, a smart political structure that prioritizes transparency, accountability, and citizen participation can have a positive impact on a Smart Country.

d) A smart security system has various advantages for a Smart Country. By utilizing technologies like video surveillance, access control, and incident management systems, it can increase overall safety and security. Also, by automating procedures and fostering a more fluid exchange of information between departments, it can improve government efficiency.

e) Smart social structures can benefit a Smart Country by boosting productivity, lowering environmental impact, promoting social inclusion, and fostering a more peaceful society. Examples include effective public transit, sustainable urban design, and community-based activities. Also, it may result in improved resource allocation and management, thus raising inhabitants' quality of life as a whole.

X1 To build a Smart Country, Smart Government is a prerequisite. Governmental operations, services, and communication with citizens can all benefit from the application of technology and data-driven decision-making. Healthcare, education, transportation, and public safety are just a few of the areas where a Smart Government may improve the lives of its residents via the innovative use of technology.

X2 Making a country "smart" involves more than just installing new pieces of equipment. The success of every Smart City initiative depends on the participation of its citizens, who play a crucial role in its development. A "Smart Citizen" is necessary in this situation. In order to improve urban services, "Smart Citizens" leverage technology and data to take part in civic activities, offer input, and work together with local government and other stakeholders.

X3 Greater efficiency, effectiveness, and innovation across all sectors of the economy are made possible by smart technology, making it important for the development of smart countries. Smart countries may raise living standards, boost economies, and guarantee future generations' prosperity by making use of cutting-edge technologies.

3. Research methods

3.1. Types of research

In this article, the aim is to understand the concept of creating a sustainable Smart Country and what will be critical factors that will make it possible, so we find the "qualitative research" method appropriate for this type of research topic because, through the "qualitative research" method, we can gain a deep understanding of the complex social phenomenon and also it allows an in-depth exploration of the theme, which includes objective perspectives and experiences. The data collection and analysis process for this study would involve a variety of research methods like literature review, thematic analysis, document analysis, etc.; as researchers, we would be analyzing articles, journals, reports, books, and any academic literature related to Smart Country. This activity will help us to provide a broader understanding of the topic and give us a detailed insight into its practical implications. Once this activity is done, we go through different analysis techniques in order to identify key themes and patterns in the data. To systematically identify and analyze textual data, we will be using the inductive approach because it takes less time as compared to the deductive approach. Also, there is no such standard theory present on the successful creation of a Smart Country; that is why we will be presenting our concept of the Smart Country based on our observation and analysis. This inductive approach will help us to develop a conceptual framework. We will also be applying the principle of "The Nudge Theory" in our article. And the concept of "Nudge Theory" is about shaping the concept or idea, which is also called choice architecture, in a way that it can influence or convince people to choose one specific option over another. In our article, we will be doing that exactly; we will be presenting our concept of a Smart Country in a way that people will understand and become convinced that a Smart Country is the future for countries in order to progress and sustain. To implement the "Nudge Theory", we will be identifying the research gap that countries are still struggling with, and then we will aim to provide a solution that will solve this specific problem. Therefore, overall usage of the "Nudge Theory" will provide valuable understanding in order to encourage policymakers and government officials of the countries, which is crucial for the development of a sustainable Smart Country. With the help of "Nudge Theory", designing a concept will take countries towards sustainable behaviors of Smart Citizens in their engagement with the Smart Government that will meet the needs and aspirations of becoming a Smart Country. Finally, we will also be taking inspiration from the case studies of different countries and cities that tried to implement the plan of

creating Smart Cities, and we will also take knowledge from some countries that just thought of a blueprint for creating Smart Cities for now. These all-case studies will be so valuable for our article because they will be closest to the reality or practicality of formulating the Smart Country Concept, which will encourage this concept to be adapted in the future.

3.2. Research sites

The sources of our article research range from academic journals to government reports, think tank analyses, news articles, and online blogs. But based on our analysis, academic journals have become our excellent source of data and information, and they provide in-depth analysis of research done by experts. We got academic journals related to data from different online database sources like Scopus, Google Scholar, JSTOR, Sage, Dimension AI, Springer, Web of Science, etc., and these data were peer-reviewed, which ensures the accuracy and reliability of it. We also got information from different government reports and whitepapers of countries like Estonia, Singapore, etc. Different Think Tank organization research data added so much value because they have brought together experts from around the world to provide insights, and their study was very compact. Finally, various news articles and blogs written online enrich our research work by providing current, up-to-date perspectives on our research topic. Still, we also understand these resources are only sometimes accurate and reliable, which is why we have done detailed cross-checking on the resources, which will be influencing our article research.

3.3. Research data collection techniques

Different data collection techniques are used by researchers in this article to obtain data related to our research topic. It is essential to put in place the proper techniques so we can get valuable and relevant information, and it is dependent on the research topic and research data type, which is why we have carefully chosen the data collection techniques for our article research. Therefore, several data collection techniques that we have utilized for our study are as follows.

Literature study

As a researcher, literature study or review is always an essential part of research data gathering to capture the right type and amount of data to present it correctly for further analysis on it. That is the reason we have done our data collection through a literature study, and it really helped us to gather the existing knowledge on Smart Country. Based on the collected data, we were able to understand the data successfully. We found the critical insights for our brainstorming as well, and we were able to find the research gaps and areas in which we could focus on our article. In order to do a literature study, the first step for us was to define the scope of our study; in this case, it was to find as much as we could on academic and scholarly publications on the topic of our 71 articles. The search for resources was mainly done on prominent databases like Scopus, Web of Science, etc.; the keywords we used to search the data related to the article theme include "Smart Country", "sustainable Smart Country", "Smart Government", "Smart Citizen", "future innovations", "technology-based policy", "innovative public policy", "E-government" etc. We also narrowed down our search to include publications within last ten years. After an initial search, we have skimmed through the abstracts of the gathered articles to ensure they are relevant to our article. Our aim was simply to get data that in any way highlights key points on it related to Smart Country, like definitions, concepts, challenges, opportunities, case studies, best practices, etc.; after stressing all the possible material from it, we have then given priority to finding information related to Smart Country in blogs, white papers, reports, news articles, etc., to add further value to our article. Overall, the literature study provided us with a solid foundation for the development of concepts and hypotheses for visualizing the concept of a sustainable Smart Country for our article.

Figure 4 showcases a word cloud pertaining to intelligent urban areas. The preeminent terms encompass "intelligent urban area", "inhabitants", "sustainability", "services", and "environment". This signifies that the illustration concentrates on the advantages of intelligent urban areas for inhabitants, the environment, and sustainability.

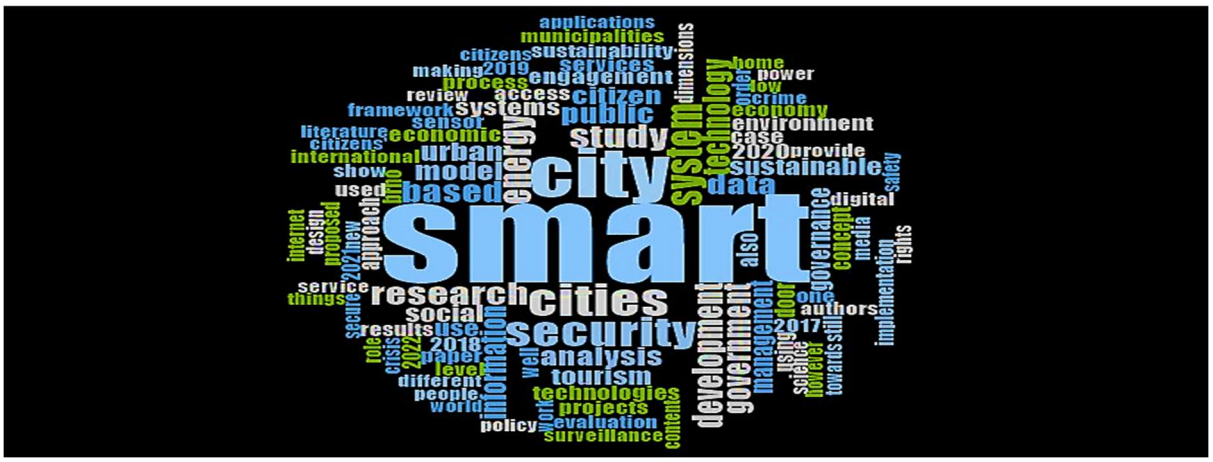

Figure 4. Main themes regarding Smart Country—Source created by author.

The following are some of the additional terms that manifest within the illustration:

Government: This implies that intelligent urban areas acquire support from government initiatives. Economy: This implies that intelligent urban areas hold the capacity to enhance the economy. Technology: This implies that intelligent urban areas rely on technology to operate. Data: This implies that intelligent urban areas gather and employ data to augment efficiency and services. Security: This implies that intelligent urban areas prioritize security. Tourism: This implies that intelligent urban areas have the potential to appeal to tourists.

On the whole, **Figure 4** portrays a positive portrayal of intelligent urban areas as being advantageous for inhabitants, the environment, and the economy. Nonetheless, it is vital to acknowledge that there are also potential drawbacks associated with intelligent urban areas, such as concerns regarding privacy and surveillance.

3.4. Research data analysis techniques

After successfully gathering all the relevant data related to our research, we moved towards the next step, which is the data analysis technique, in which we did analytical activities by examining all available collected data through different research instruments, software, etc. So numerous data analysis techniques that we have utilized for our study are as follows:

NVIVO analysis techniques

NVIVO is a qualitative data analysis software used to organize and analyze unstructured text, images, and videos. To conduct a literature review, research articles and data are imported into NVIVO in various formats. A node structure is created to classify the data into sub-topics. The data is coded to organize into meaningful categories and themes. NVIVO analysis tools, such as Framework Matrix, Words Frequency Analysis, Crosstab Analysis, and Sentiment Analysis, are used to identify key insights.

Figure 5 exhibits a grid composed of variously colored and sized squares. The arrangement of squares generates a perception of organization and balance. The colors employed in **Figure 5** encompass blue, green, yellow, and orange. The squares are inscribed with text pertaining to the realm of intelligent

urban areas and eco-friendly power sources. There exist specific particulars regarding the illustration. The squares positioned in the top left section of the illustration manifest hues of blue and green. These squares bear text associated with the concept of Smart Cities, including terms like "city", "sustainable", "energy", "analysis", and "smart". In the top right corner, the squares are yellow and orange. These squares contain text that is interconnected with sustainable energy, encompassing words like "energy", "development", "environment", and "analysis". The squares in the bottom left corner of the illustration are adorned with blue and green colors. They display text denoting security, featuring terms like "security", "public", "social", "governance", and "citizen". Finally, the squares in the bottom right corner are yellow and orange. They exhibit text associated with technology, incorporating words like "technologies", "research", "study", "information", and "system". It is plausible that **Figure 5** portrays a conceptual model of a Smart City powered by sustainable energy. The squares' diverse colors and sizes potentially symbolize distinct facets of the city, including its infrastructure, transportation, and energy systems. The inscriptions on the squares may signify the various technologies and procedures entailed in the realization of an intelligent and sustainable city.

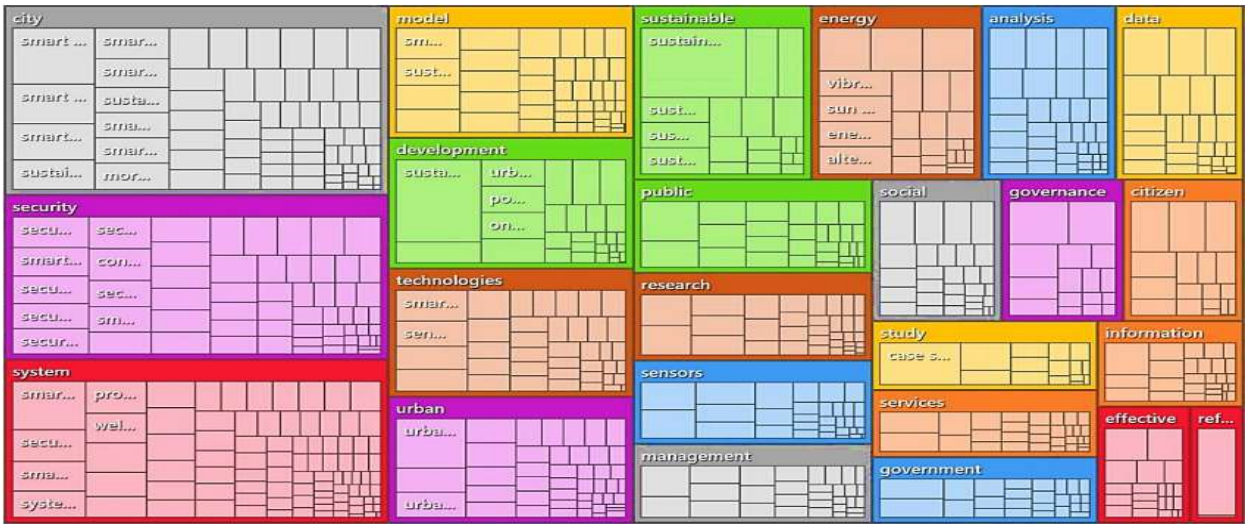

Figure 5. Main Theme regarding Smart Country with NVivo—Source created by author.

4. Conclusion

Based on our results and findings, we are concluding our article that the concept of a sustainable Smart Country is a complex and dynamic phenomenon that requires an in-depth understanding of the different aspects of the country, like politics, security, economics, etc., and also awareness about how citizens with the government can become smart enough to play their vital role in the success of this initiative. We have shed light on our article in detail about how an interdependent relationship between Smart Citizens and the Smart Government will play their respective parts in different aspects of the country and, finally, collectively, can contribute to building a sustainable Smart Country. We also highlighted in the article that, through our analysis of existing data and case studies, it has been clear without a doubt that Smart Government will be the key to the development of sustainable smart countries by providing the necessary policy framework and making sure that the country infrastructure should be in place that enables the easy adoption of innovative processes and practices that are powered by smart technologies for the citizens, which makes their transition towards becoming Smart Citizens easy. With Smart Government providing the base, it will furthermore make the Smart Citizens key participant, which will drive this initiative, become the co-creators of the technological solution with their active

engagement. We also clearly stated in our article that implementation of the Smart Country initiative will have a significant challenge because of the constant need for a collaborative and inclusive approach, which requires the 160 attention of the stakeholders from all aspects of the country so that they can have consensus and clarity to address concerns like privacy, ethics, security, etc., especially collection and use of data. In summary, we have to understand that a sustainable Smart Country is not just a futuristic concept but also a necessary step towards achieving sustainable economic development; that is why this initiative needs to cover all aspects of the country. Smart Citizens, and Smart Government will play their role in each aspect according to the requirement, so a shared vision of a better future for the country should be achieved.

5. Suggestions

The integration of technology, public policy, and social innovation plays a vital role in creating a sustainable and efficient Smart Country. It is clear that the success of a Smart Country relies totally on a comprehensive approach that encompasses social, political, economic, and environmental aspects. That is why it is crucial to understand that the creation of a sustainable, Smart Country is a continuous process that requires ongoing effort and collaboration. So, in order to make it possible, the government and citizens have to work hand in hand in every aspect of the country to implement initiatives, promote technological usage, adopt sustainable practices, and support efficient behaviors. Therefore, Smart Government should provide the necessary guidance and support; on the other end, Smart Citizens will be willing to participate actively in the process. It is only through this approach that we can achieve this vision. So, with the help of this article, we have tried our best to provide a starting point for scholars, researchers, policymakers, and practitioners to explore further and develop this concept, which we have discussed in detail here, and ultimately, the conceptualizing of a sustainable Smart Country will provide exciting opportunities and make countries well prepared to cope with the advancement of the future and create a better future for all. We are 161 hopefuls for the success of this initiative, but a lot is dependent on the countries themselves; their preparedness, planning, and execution of the plan are critical. Also, each country might have its own type of challenges and limitations, but we are optimistic that with the right intent and planning, any country can pass through any hurdles and achieve greatness.

Author contributions

MY: conceptualization; methodology; software; validation; writing—original draft preparation; writing—review and editing; visualization. AN: formal analysis; investigation; resources; data curation; supervision; project administration. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

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