SMART CITIES AND THE INTELLIGENT USE OF INFORMATION TECHNOLOGY

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ABSTRACT
This research examines how money and technology are used to create a smarter, more efficient, and long-lasting urban environment. Two of the most significant worldwide trends now at work are the growth of urban areas and the development of information and communication technology; both will undoubtedly have a significant and long-lasting impact on urbanization. Many people believe that within a few decades, the urban world will be highly digitized and computerized, and that ICT, as an enabling, integrative, and constitutive technology of the twenty-first century, will play a crucial role in solving many of the mysteries, issues, and challenges brought about by urbanization.

KEYWORDS: *smart city, information technology, sustainability*

1. INTRODUCTION

Strategically, it is important to start directing the use of emerging ICT toward understanding and proactively mitigating the potential effects of urbanization in order to address the many intractable and wicked problems involved in urban operational functioning, management, planning, and development, especially in the context of sustainability, which is another macro-shift at play (Sarbu et al., 2021). Because of resource depletion, environmental degradation, high electricity consumption, pollution of air and water toxic waste disposal, pervasive traffic jams, ineffective decision-making processes, and inefficient planning, rapid and anticipated urbanization around the world poses significant and unprecedented sustainability challenges (Profirioiu et al, 2020a). Therefore, the effectiveness of government services and the quality of life for its residents both suffer. Multiple negative effects of unsustainable urban growth on existing and future cities are projected to be magnified as a result of urbanization. Urbanization poses a danger to city futures (Burlacu et al., 2020). As a result, ICT has risen to prominence as a means of mitigating urbanization's unfavorable effects and resolving environmental issues (Bran et al., 2018).
Since computers are now so ubiquitous, new computing advances are continually being created, and their technological applications are being put to use in a broad range of urban systems and disciplines, ICT is becoming a subject of discourse. In reality, state-of-the-art machinery and cutting-edge, unique, complex procedures are more crucial than ever in addressing and resolving the issues plaguing contemporary and future metropolitan centers. This relates to the administration, structure, and preparation of such cities, as well as the outcomes of these endeavors, with the expectation of maximizing and sustaining their contribution to sustainable development objectives. It is widely acknowledged that one answer to urban sustainability concerns is the enormous, untapped potential of developing and future ICT to promote and strengthen sustainable development processes (Radulescu et al., 2020). Different types of urban planning stress the role of ICT in achieving sustainable development objectives (Burlacu et al., 2020). Using ICT to decouple a city's health and

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its citizens' quality of life from the energy and material consumption and related environmental hazards of urban operations, activities, services, designs, and regulations is an efficient way, as stated by Bibri (2016, 2018, 2019). (Bran et al., 2020).

2. ULTIMATE GOAL OF THE 21ST CENTURY SMART CITIES: SUSTAINABILITY

Recent studies have begun to focus on how to include sustainability into the smart city concept and strategy in response to the rapid development of ICT and other types of ubiquitous computing (Profiroiu, et al., 2020b). As information and communication technology (ICT) becomes more widespread in urban areas, i.e. as data sensing, data processing, cloud hosting, and wireless connectivity networking become more integrated with infrastructure, architecture, ecosystem services, human services, and even citizens' bodies, smart cities will become smarter and better equipped to solve environmental problems (Bodislav et al., 2020a). So-called "smarter cities," a collection of cities that are envisioned as smart cities of the future, are where most of the opportunities and prospects lie. These cities are characterized by an ever-increasing absorption and penetration of ICT into the city's basic structure (Burlacu et al., 2019).

Cities that are always connected to the internet are examples of omnipresent, sentient, ambient, real-time, and real-city environments. Big data analytics is being used to reimagine many parts of these cities' ecologies. This concerns the conceptualization, implementation, and preparation for sustainability (Negescu Oancea et al., 2020).

The greatest benefit of big data is the opportunity it presents for improving the quality of life in "smart" or "smarter" cities of the future. Academics, scientists, practitioners, and politicians in cities have come around to the idea of using big data analytics to promote sustainable urban development. As a new paradigm in computing, big data is influencing and even driving decision-making across a variety of urban domains, including those concerned with optimizing resources, mitigating environmental problems, responding to socioeconomic demands, and enhancing residents' quality of life and sense of well-being. Smart and smarter cities, which use cutting-edge ICT in their day-to-day operations, administrative tasks, and long-term planning and development, reveal this paradigm to be penetrating all facets of urban life. To store, manage, process, analyze, and disseminate massive amounts of urban data in order to extract useful insights in the form of applied intelligence functions and silos, "smart" and "smarter" cities are increasingly relying on big data analytics' fundamental enabling technologies.

It is generally agreed that big data is the most scalable and synergistic asset and resource for smart and smarter cities to improve their performance across the board. To promote the development of urban areas that are sustainable, efficient, resilient, egalitarian, and high-quality of life, governments throughout the world are increasingly using urban data and its numerous benefits (Bodislav et al., 2020b). However, substantial investments in the foundational core technologies that enable big data analytics and guarantee the appropriate deployment of related apps and services are necessary to accomplish this aim.

A recent literature review found that despite their effect on many elements of human existence, "smart" and "smarter" cities are still associated with ambiguity and inadequacy when it comes to attaining sustainable development goals. Although it is generally agreed that information and communication technology aids in the sustainability of contemporary cities, the connection between smart goals and sustainability objectives is still shaky. To that purpose, I'd want to draw attention to the wide open possibilities for smart city growth as well as the legal and technological fragmentation that is characteristic of smart city and sustainable city settings. Lastly, smart city and smarter city policies provide a number of novel obstacles and serious environmental concerns.

The untapped potential of big data applications has been largely ignored or barely explored in recent research on smart and smarter cities, which has instead focused on improving economic growth (management, efficiency, innovation, productivity, etc.) and quality of life (in terms of service efficiency and improvement). However, many of the cutting-edge "smart" technologies being

developed today really contribute very little to environmental protection. Installing big data applications that aid in achieving sustainable urban development should, therefore, be a top priority for smart and smarter cities.

3. SMART CITY – PREREQUISITES

This paper provides a comprehensive and up-to-date review and synthesis of the field of intelligent and smarter cities with regards to sustainability and connected big data analytics, as well as their application in terms of essentiality and assumptions, research issues and discussions, possibilities and benefits, technological developments, emerging trends, future practices, challenges, and key challenges. The review analyzes, synthesizes, and critically evaluates a large body of recent articles, making it thorough, complete, timely, and able to contribute in the form of new insights. The primary goal of this piece is to pique readers' curiosity in the potential advantages of big data analytics in the context of cutting-edge smart cities, especially in terms of urban sustainability.

The potential for "smart cities" to promote social well-being, create more just, fair, and equitable societies, reduce resource consumption and waste creation, mitigate environmental repercussions, and cut carbon emissions is often discussed, although there is no evidence to support these assertions. Having a "smart city" in the twenty-first century is like having a guarantee that urban life would be ideal. The concept of "smart cities" has fast gained traction in corporate, governmental, and municipal urban planning discourses, with estimations placing the worldwide smart city market at $1.56 trillion by 2020. Smart city building is considered as a tool to accomplish both urban sustainability and economic growth in the European Union, and digital innovations are the key source of financing for urban sustainability in this region.

Investments in digital innovation research and development are being made by national governments, municipal governments, and private companies across Africa, South Asia, North America, and the Far East in an effort to improve community outreach in ways that are more fair, reasonable, and just, and to resolve a variety of sustainability issues.

There are three primary ways in which the "smart city" idea stands out from previous utopian urban conceptions. To begin, in contrast to the nineteenth century's utopian settlements, which were by definition countercultural and limited to the model towns of progressive colonial movements and industrial benefactors, today's smart cities dominate mainstream policies and concepts. Second, in order to implement the smart city idea, public and private organizations need to collaborate closely.

The Corbuserian notion of towers in the countryside served as inspiration for much of the postwar growth in the East and West of the twentieth century, with government support rather than private enterprise driving most of this development. These government-led projects mirrored the emergence of the welfare state, but the ideas underpinning today's smart cities are underpinned by the pursuit of profit. Unlike past utopian ideals of the city, smart cities place a premium on economic development as the primary driver of further urban progress.

These variations are crucial when evaluating the efficacy of digital technologies in greening urban areas. The use of digital technology to build smart and sustainable cities has enormous potential for facilitating resource conservation, improving air quality, lowering greenhouse gas emissions, and streamlining the delivery of infrastructure services in response to user preferences. Although the smart city plan prioritizes digital innovation, digitalization, and urban growth, it is still unclear whether or not smart technology will really provide social and environmental sustainability.

4. CONCLUSIONS

In the twenty-first century, which has been dubbed the "urban century," it was expected that "smartness" would play a significant role in creating urban answers to global challenges. Over the last several years, researchers have poured a great deal of time and effort into answering the "why, how, for whom, and with what repercussions" of the smart city paradigm's emergence in various

urban regions. Both the smart and green narratives have been criticized for putting too much emphasis on economic growth at the cost of other, more urgent issues, such as those of the environment and society. Those who advocate for the "smart-sustainable city" typically provide a "limited and technical image that reduces sustainability to a series of technological and financial fixes," while ignoring the political ramifications of this approach.

One of the most far-reaching potential results of the smart-sustainable city is its impact on urban growth via information politics. An economically oriented (e.g. austerity-driven) pursuit of innovation is eroding established forms of governance, such as the mindless reification of efficiency and optimization on the one hand, and the focus on demonstration, testing, and co-production on the other. The structure and makeup of local governments may need to change as a result of this. Sensors, digital infrastructures, deep learning, urban dashboards, digital platforms, and smartphone applications are all altering our perspectives on urban areas. This may have far-reaching implications for how cities evolve in the future. Instead of merely signaling a neoliberal "takeover" of public management through the digital transformation of networked infrastructures, the current surge of "smart urbanism" may represent a post-networked form of urban system of government, prompted by the confluence of material, social, and political forms of regional autonomy with implications that may both close and open up the city.

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