

Towards a framework for the transformation to smart and resilient cities on the road to recovery from (Covid-19)

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ABSTRACT:

Cities are facing many pressures due to the spread of Corona virus (COVID-19). As a result, cities are focusing on stopping the spread of the virus (COVID-19) and maintaining urban health. So cities have become a double-edged weapon. First, cities are a large part of the problem because cities intensify the spread and transmission of infectious diseases by increasing human contact. Second, Cities can play a central role in mitigating epidemics and their effects by activating effective smart data and information management systems to confrontation challenges in all fields. With the rapid spread of the virus, the growing number of deaths and the emergence of cases that can't be followed within the cities' boundaries, which may be far away from the hotbeds of the known outbreak in most countries of the world. This required cities to adopt a flexible smart framework to confront current and future epidemics. This framework focuses on achieving flexibility and continuity, and this requires new levels of urban digital integration. In this context, the importance of smart cities has emerged, and it has become necessary to transform into cities whose structure and management are based on advanced and sustainable technological solutions to improve the citizens' lives and preserve their health.

The research was based on the construction of a comprehensive theoretical framework through the study of theoretical concepts about epidemics. The development of epidemics spread in cities and its connection to the urbanization process, the theoretical literature of the concept of smart cities, its dimensions and requirements, and identifying the weaknesses of current cities in facing the emerging challenges during the spread of (COVID-19). Moreover, identifying the smart and technical capabilities that can support the current cities to face this epidemic and the upcoming epidemics. By reviewing and analyzing a set of global and regional experiences, in an attempt to devise a framework to build effective and resilient smart cities to manage crises associated with the epidemics spread, infectious diseases and maintain urban health includes the overall results of the search and recommendations.

The study aims to devise a framework for the transformation of smart, resilient cities on the road to recovery from (COVID-19). Where this framework focuses on achieving flexibility and continuity from the beginning of the initial planning at all levels. This framework provides a useful perspective that provides opportunities to accelerate the transformation of smart city on the road to recovery from the epidemic and future epidemics.

Key words:

Epidemics - Smart cities - Resilience - Digital transformation.

Introduction:

The Coronavirus (COVID-19) pandemic crisis is testing the ability of countries to persevere at a time already marked by many inequalities, and with the healthy, social and economic impacts of the epidemic. Preparedness in cities and other urban settlements is an essential part of an effective response to COVID-19 and maintaining urban health at the national, regional and global levels. These regions face unique dynamics that affect effective preparedness, with cities being a large part of the problem and the risk of disease spreading increased by their overcrowding. So, cities can play a central role in mitigating epidemics and their effects by

activating effective smart data and information management systems to confrontation challenges. Whereas, this epidemic has occurred in the time of the huge data and information technology revolution and artificial intelligence. Although the urban planning and urban design studies took a great interest to benefit from the advanced technology. The current conditions of the virus that invaded most urban environments showed the lack of an integrated urban policy to activate the technologies and applications of smart cities to meet the challenges arising from current and future epidemics; This imposes on designers and planners the need to adopt a flexible smart framework that focuses on taking advantage of smart city applications to enhance the sustainability and resilience of cities to meet emerging and future challenges.

In this context, this study discusses the theoretical literature of the concept of epidemics and the evolution spread in cities and the study of smart cities and their dimensions, requirements and applications, and what are the weaknesses of the current cities in facing the challenges arising from the spread of (COVID-19)? Moreover, monitoring the capabilities and smart and digital technologies that support the current cities to prepare to face the epidemic and future epidemics in a better way. Innovative methods related to the development of the smart city model, whose structure and management are based on advanced and sustainable technological solutions. In an attempt to reach a framework to take advantage of the smart city applications in promoting sustainable and resilient cities to cope with epidemics and maintain urban health.

Research problem:

The research problem is summarized in the failure of many cities in dealing with the damage caused by the (COVID-19) pandemic due to the lack of an integrated urban policy to activate the technologies and applications of smart cities and the absence of the local capabilities of cities to enhance the technological infrastructure, and support digital transformation in the management of cities to meet the challenges arising from current and future epidemics.

Search Objective:

The study aims to devise an integrated framework for building flexible smart cities. This framework focuses on achieving flexibility and continuity in consideration, starting with initial planning and at all levels. This framework provides a useful perspective to accelerate the transformation of smart cities on the road to recovery from these epidemic and future epidemics.

Results:

- Global threats to public health have become increasingly frequent during the past two decades, due to many challenges, and urbanization is one of the most important.
- The method adopted by current cities in addressing the challenges arising from the spread of diseases and epidemics is a challenge between community health practices and the intelligent leadership and control pattern for preparedness and flexible action in emergency situations.
- Dealing with epidemics as an urban emergency requires strengthening the search, interpretation and processing of information related to public health, leading to enhanced response and effective adaptation.
- The inclusion of a health perspective is one of the many factors and influences that shape city policies. It constitutes a driving force for effective urban planning and associated strategies. To benefit from using data related to health risks to make informed decisions and set priorities.
- The crisis of the spread of (COVID-19) indicated the need to promote a comprehensive digital revolution in cities. The transformation to cities whose data and management are completely based on advanced technological solutions has become an imperative to improve the lives of citizens and preserve their health.

- Building more efficient smart cities can significantly support a better response to current and future epidemics, which may be critical to maintaining urban quality of life and health.
- Smart cities are resilient cities in dealing with urban challenges, especially challenges arising from the spread of epidemics, through the integration of physical and digital environments.
- Cities need to adopt and formulate a flexible smart framework on the road to recovery from (COVID-19) and future epidemics, as it focuses on achieving flexibility and continuity, as each city has its own political, economic, social and cultural system, and each city has comparative advantages that it employs in determining crisis management capabilities and modalities, and its capabilities when implementing the most appropriate technologies and systems and developing flexible adaptive solutions on the short, medium and long term levels.

Recommendations:

Cities need to adopt a broader vision for the transformation of cities into smart, flexible cities that are safe in health, security, economics, etc., and to achieve their effective role in achieving sustainable development and limiting the spread of risks and epidemics, in accordance with approved international standards, which in turn is reflected in the quality of urban life.

In view of the repercussions of the emerging (COVID-19), which emphasized the importance of addressing the urban problems that most cities suffer from, especially in our Arab world, which contributed to the spread of the epidemic, how can we transform our cities into flexible smart cities? While they suffer from deep planning problems, which require enacting policies and laws, and the development of detailed plans in accordance with a comprehensive strategy for sustainable urban planning, it can be achieved through:

- Creating a balance in the distribution of population densities in urban areas.
- Reducing the phenomenon of urban poverty, and its security, health and social repercussions.
- Supporting climate protection policies, promoting reduced pollution and creating healthy cities and green spaces.
- Enhancing the technological infrastructure, supporting the digital transformation program, and the smart city strategy.
- Establishing a huge national database, which contributes to achieving comprehensive development, smart management of regions, and containing crises.
- Activating artificial intelligence in dealing with crises, and supporting early warning systems.
- Promoting the concept of resilient cities in accordance with internationally approved standards to build the capacity of cities to confront disasters and crises by local authorities to prepare for crises, within an integrated management system for cities.
- Not only to confront the health repercussions of epidemics, but to develop plans and take measures and decisions to confront the other repercussions resulting from the epidemic, such as the economic, educational and social repercussions.
- Involve all state sectors, including government institutions, bodies and sectors, the private sector, non-profit institutions, and individuals, and activate the role of local administrations in times of crisis, allowing them to respond quickly according to the requirements of the local situation.
- Activating the role of neighborhood centers within the urban planning system, which comes within the development projects that contribute to the development of the social environment, strengthening ties between neighborhood residents, and emphasizing the importance of

activating the role of community participation in planning decision-making to ensure the success and sustainability of the strategy.

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