SMART CITY IMPLEMENTATION AND ITS POLICY IN LOCAL SECTORS

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Abstract. *The development of adequate urban mobility is one of the priorities that many cities have pushed to improve: mobility, in fact, is the basis of human beings, communities, and countries; human beings feel the need to move, to travel, whether for exploring or for work purposes. It is therefore natural to think that high quality transportation (of both goods and people) is necessary for the success of other sectors and as an attractive factor for the citizens. Smart city is the result of harmonizing urban environments with the transformative power of digital technologies, driven by the needs and opportunities presented by the Internet. In a smart city implementation, the infrastructure is the most sector affected by its policy and it is classified into two groups, namely soft (social) and hard (technical). Soft (social), is in the form of social, cultural, and other facilities, while hard (technical) infrastructure, is presented as transportation, telecommunications, water, and energy networks. Technologically, its policy aims to build integrated city information and management combining perception, network, and applications in achieving a measurable and connected future city according to the needs of the community. The policy of a smart city highlights that it is not merely using modern technology, but also a complex ecosystem made up of many stakeholders, including residents, municipal authorities, local and industrial businesses, community, and organizations. The study therefore aims to analyze the implementation of a smart city and what are the sectors affected by its policy.*
Keywords*: infrastructures, mobility, smart city, technologies, transportations.*
JEL*: L91, L98, O18, O38, R42*
UDC*: 338.465.4+352]:004*

Introduction. The growth of the city is largely dependent on its infrastructure, which is essential to both the operation of commercial organizations and the general well-being of the populace. In urban management, infrastructure is classified into two groups, namely soft (social) and hard (technical). Soft (social), is in the form of social, cultural, and other facilities, while hard (technical) infrastructure, is presented as transportation, telecommunications, water, and energy networks. Smart city is the result of harmonizing urban environments with the transformative power of digital technologies, driven by the needs and opportunities presented by the Internet (Sodhro et.al., 2019). Technologically, its policy aims to build integrated city information and management (Neirotti, 2014) combining perception, network, and applications

in achieving a measurable and connected future city according to the needs of the community.
Its conceptual framework can be classified into 3 factors, namely technology, people and institutions. (Nam, 2011). This development is able to drive social capital and information technology infrastructure toward a sustainable growth. The policy of a smart city highlights that it is not merely using modern technology, but also a complex ecosystem made up of many stakeholders, including residents, municipal authorities, local and industrial businesses, community, and organizations (Myeong et.al., 2018).

Literature review. The use of internet technology gave rise to the policy of e-learning, e-books, e-commerce, e-government, and smart city policy. Smart city development needs to be supported by social, economic, environmental conditions, and with participatory government. Several cities in the world have planned to develop well-established infrastructure and implemented smart city initiatives that are priorities for sustainable development. Acceptance/usage of ICT-based smart city service describes several indicators in the acceptance of IT-based smart city technology, including quality of life, innovation policy, personal innovations, city engagement, service quality, perceived privacy, and trust. Smart city policy should be supported by the role of ICT infrastructure, although many research also showed the importance of human capital, education, social capital, and environmental interests as drivers of urban growth. According to C. Harrison (2010), Smart city can respond intelligently to a variety of demands, such as necessities of life, environmental protection, energy security, public safety, municipal services, business, and industrial operations. Author A. Picon, in “Urban infrastructure, imagination and politics” (2019) considers a smart city serves as a source of inspiration, motivating its citizens to develop and flourish in their personal lives, fostering a culture of sharing information, knowledge, and experiences that enriches life and imparts positively.

Research methodology. It is possible to identify what the National Association of Italian Municipalities believes smart mobility should achieve; since smart mobility should solve the problem of moving goods and people without creating traffic congestion or logistical problems, it must be divided into two fields:

- city logistic: "is to be understood as the process that can optimize last-mile logistics and transport activities proper to private companies in urban areas."
- people's mobility: "concerns [...] the development of new environmentally friendly and sustainable mobility systems (pedestrian mobility, bicycle mobility, shared mobility and new solutions for local public transport)".

In both fields, at a transversal level, it is possible to identify "pricing and tolling policies and parking systems, research and effective integration of new alternative energy sources to oil in the specific area of mobility and transport."
To support these activities, technology would be able to ensure the collection of information regarding travel management, transportation tools and modes, and

mobility needs and requirements, through which the smart mobility vision can be improved.

In a mobility model in which infrastructural and technological factors are increasingly linked, it is necessary to create citizen-friendly urbanization plans with the aim of eliminating the negative environmental and health consequences that mobility could bring. "European cities are different from each other, but they face the same challenges and are looking for shared solutions [...] for urban mobility that matches citizens' expectations," inventing a "new culture of urban mobility" (European Commission): therefore, long-term strategies should be designed to achieve common goals (ARUP, 2019):

- reduce consumption of fossil fuels used for infrastructure and vehicles for the benefit of green transport with low greenhouse gas emissions and improved air quality;
- reduce road congestion;
- create a simple, efficient and economically sustainable long-term system that is convenient for both businesses and travelers by reducing the demand for infrastructure construction in urban areas.

The continuous increase in demand for mobility and the need therefore to move toward "smart mobility" has been linked to the mega-trends that characterize our age: urbanization, new demographics, trans-nationalism, acceleration, have triggered critical needs that also include the need for the development of safe, sustainable, and quality mobility for goods, people, and ideas:

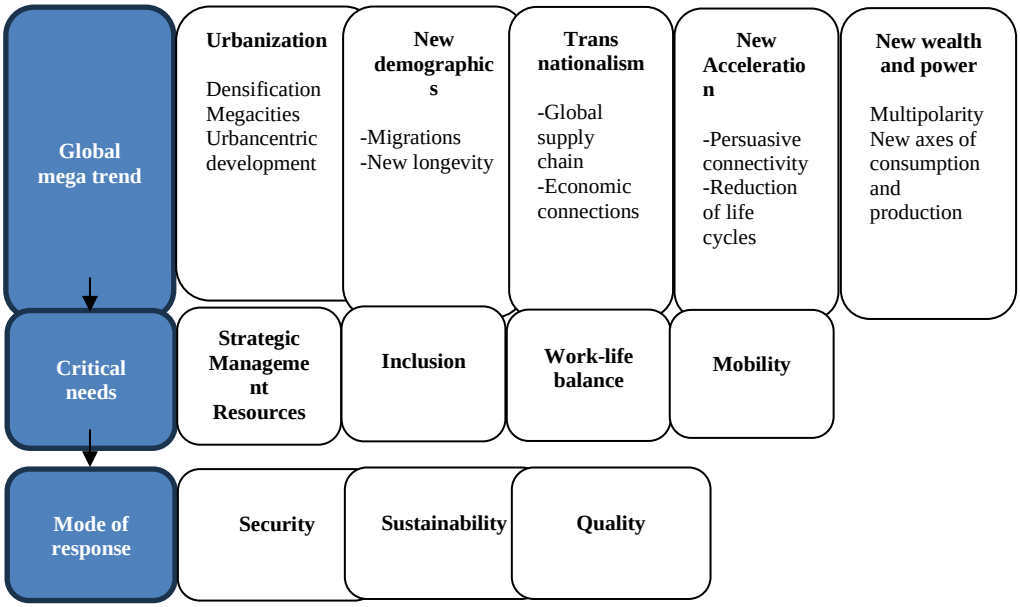

Figure 1. **Global mega trend**

Source: The European House – Ambrosetti (2012), Smart Mobility.

Muoversi meglio per vivere meglio.

Moreover, the development of sustainable mobility is to be linked to areas that indirectly influence it in many ways. They can be mentioned (The European House - Ambrosetti, 2012):

- strategic policy (governance, security, regulation, etc.);
- demography and society (population trends, urbanization, ways of organizing work)
- economics (growth, trade, economic integration, transportation costs, etc.);
- ICT (information communication and technologies)
- energy and environment (availability of energy sources, alternative fuels, climate change, etc.);
- behavior/approach (civic education, safety, etc.).

This list represents just a few areas that can be improved through the development of good urban mobility service. The table below instead shows in details the most affected sectors of a sustainable mobility: infrastructure and telecommunications, sensors, service delivery platform, applications and services with its vision and strategy.

Main results. *B*ased on the findings from case studies and smart city applications on local sectors analysis, rapid urbanisation presents multifaceted challenges like traffic congestion, disaster management, environmental degradation, community engagement, economic disparities, and so on. However, adopting Smart City software applications and aligning with various domains, including data analytics, the Internet of Things (IoT), urban mobility, energy management, and citizen engagement platforms, play pivotal roles in addressing these challenges. Further findings reveal that the benefits of smart city software align with the action areas of smart cities, including Governance, Mobility, Economy, Environment, Living, and People. The research offers practical application of smart city software for Urban designs and planners. It highlights the influence of contextual factors across countries on Smart City effectiveness.

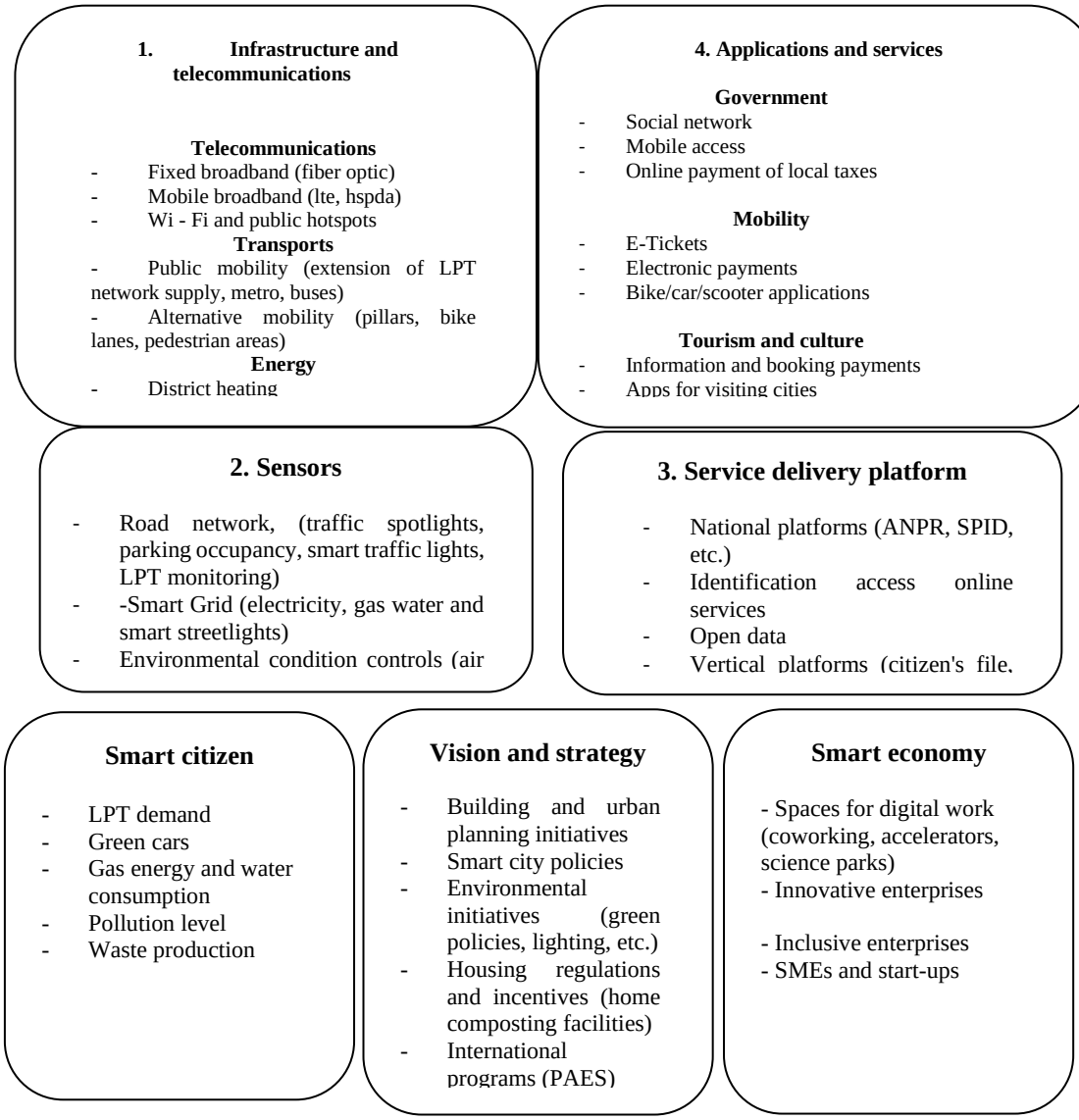

Figure 2**. Smart city local sectors**

*Source**:** Smart cities: l'eccellenza di Milano nel confronto europeo, (2018) Confindustria*

Discussion and conclusions. Smart city creates a foundation for the citizens quality of life, for instance, ICT applications for the management of intelligent transportation systems, natural resources, energy, water monitoring, buildings, as well as online education and ICT applications for urban health and safety care, electronic service delivery, electronic democracy, and participation in the public sector. Based on the results, it is observed that policy implementation plays an important role in smart city local sectors. Therefore, local governments can formulate the necessary regulations and demonstrate leadership capabilities in the context of implementing smart city. So, to reduce digital divide as an inevitable factor influencing the implementation of smart city, there is need for breakthroughs

in terms of providing digital infrastructure, as well as building efforts that can encourage and involve various stakeholders.

When policy implementation of smart city is supported by proper guidance and by efficient management of infrastructures and transports.

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