INFLUENCE OF SMART CITY ON ENTREPRENEURIAL ACTIVITIES

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Abstract- We live in an increasingly digital world, which is changing the way we experience ourselves and the places we inhabit. But will this change be for the better? One of the biggest challenges faced by digital cities is how to combine competitiveness and sustainable urban development. The UN estimates that more than 50% of the world population lives in big cities, and this percentage is rapidly increasing. To handle this large-scale urbanization, new ways are needed to manage complexity, increase efficiency, and reduce environmental impact. The expression ''smart city'' was originally introduced to describe an urban environment that takes advantage of advanced ICT infrastructure (such as ultra-low power sensors, wireless networks, and web- and mobile-based applications) to improve citizens' quality of life, manage natural resources ,and foster participatory governance. Although there is little agreement on what a smart city is, there is no doubt that technology giants consider it a tremendous business opportunity. Firms such as IBM, Siemens, Microsoft, Intel, and Cisco are developing solutions to address a range of city problems, from water leaks to air pollution to traffic congestion. Making a city "smart" is emerging as a strategy to mitigate the problems generated by the urban population growth and rapid urbanization. In this paper, the author defines the decisive six characteristics of a Smart City. The focus on this topic is justified by a strong influence of the six characteristics of a Smart City on entrepreneurial activities. Based on the exploration of a wide and extensive array of literature from various disciplinary areas we identify eight critical factors of smart city initiatives: management and organization, technology, governance, policy context, people and communities, economy, built infrastructure, and natural environment. These factors form the basis of an integrative framework that can be used to examine how local governments are envisioning smart city initiatives. The framework suggests directions and agendas for smart city research and outlines practical implications.

Keywords: Smart City; entrepreneurship; definitions; small- and medium-sized, enterprise; SME; opportunities

1. INTRODUCTION

More than half of the World's population now lives in urban areas. This shift from a primarily rural to a primarily urban population is projected to continue for the next couple of decades. Such enormous and complex congregations of people inevitably tend to become messy and disordered places. A growing city cannot expect to import wholesale the highly skilled and knowledgeable workers it needs. Cities, megacities, generate new kinds of problems. Difficulty in waste management, scarcity of resources, air pollution, human health concerns, traffic congestions, and inadequate, deteriorating and aging infrastructures are among the more basic technical, physical, and material problems. The city itself must cultivate a smarter citizenry, together with an academic and business population, capable of absorbing and commercializing innovation – creating, in effect, a holistic knowledge and innovation ecosystem. Ensuring livable conditions within the context of such rapid urban population growth worldwide requires a deeper understanding of the smart city concept. The urgency around these challenges is triggering many cities around the world to find smarter ways to manage them.

In addition, information and communication technologies (ICT) have changed the possibilities for cities to organize urban growth .ICT have a "profound transformative effect on people, businesses, and communities" in the present. As a consequence of both urbanisation and the digital revolution, the interest in the Smart City concept has grown immensely within the last two decades. Governments and policymakers design economic policies for their cities that are based on high-tech infrastructures, with the overall goal of establishing a framework for the constantly growing cities of the future. The inhabitants of a city also make an effort in this direction as they seek a high(er) quality of life in the cities of the future.

These cities are increasingly described with the label smart city. One way to conceptualize a smart city is as an icon of a sustainable and livable city. Although there is an increase in frequency of use of the phrase "smart city", there is still not a clear and consistent understanding of the concept among practitioners and academia. Only a limited number of studies investigated and began to systematically consider questions related to this new urban phenomenon of smart cities. Some cities, able over the past few years to improve both knowledge competitiveness and intensity, are already competing successfully for skilled and innovative workers. But a large number of others have experienced significant deterioration in their relative knowledge competitiveness and intensity, indicating that they are in a weaker position to succeed. It is clear, then, that cities will face intensifying competition ,not just for a highly skilled class of citizens, but also for the right and diverse mix of talents necessary for sustained growth. Historically, expertise and innovation capacity – including a thriving academic and creative culture, a critical mass of industry-specific skills and learning, vibrant cultural institutions

and communities, and fluid conduits through which knowledge flows across all these communities – have been built over decades or even centuries.

2. CONCEPTUALIZING A SMART CITY

As discussed above, the concept of a smart city itself is still emerging, and the work of defining and conceptualizing it is in progress .The concept is used all over the world with different nomenclatures, context and meanings. A range of conceptual variants generated by replacing the word smart with adjectives such as digital or intelligent are readily used and reused. Some are recognizing the use of smart city as an urban labeling phenomenon , noting that the label smart city is a concept and is used in ways that are not always consistent. Several working definitions have been put forward and adopted in both practical and academic use.

2.1 Working Definitions of a Smart City

A city well performing in a forward-looking way in economy, people, governance, mobility, environment, and living, built on the smart combination of endowments and activities of self-decisive, independent and aware citizens.

A city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens.

A city "connecting the physical infrastructure, the IT infrastructure, the social infrastructure, and the business infrastructure to leverage the collective intelligence of the city".

A city striving to make itself "smarter" (more efficient, sustainable, equitable, and livable).

A city "combining ICT and Web 2.0 technology with other organizational, design and planning efforts to dematerialize and speed up bureaucratic processes and help to identify new, innovative solutions to city management complexity, in order to improve sustainability and livability."

"The use of Smart Computing technologies to make the critical infrastructure components and services of a city—which include city administration, education, healthcare, public safety, real estate, transportation, and utilities—more intelligent, interconnected, and efficient"

Given the conceptual comprehensiveness of a smart city, it could be thought of as a large organic system connecting many subsystems and components like the ones described above. A smart city can be considered as the organic integration of systems. The interrelationship between a smart city's core systems is taken into account to make the system of systems smarter. No system operates in isolation. While systems in industrial cities were mostly skeleton and skin, postindustrial cities—smart cities—are like organisms that develop an artificial nervous system, which enables them to behave in intelligently coordinated ways. The new intelligence of cities, then, resides in the increasingly effective combination of digital telecommunication networks (the nerves), ubiquitously embedded intelligence(the brains),sensors and tags (the sensory organs), and software (the knowledge and cognitive competence).

3. CHARACTERISTICS OF SMART CITY

The high variety and heterogeneity of approaches and their definitions of a Smart City makes it necessary to create a homogenous basic understanding. In his article 'Will the real Smart city please stand up?', Hollands (2008, p.307) criticised the 'self-congratulatory' label of a Smart City, analyzing various characteristics as an approach towards a more concrete concept (Allwinkle and Cruickshank, 2011).
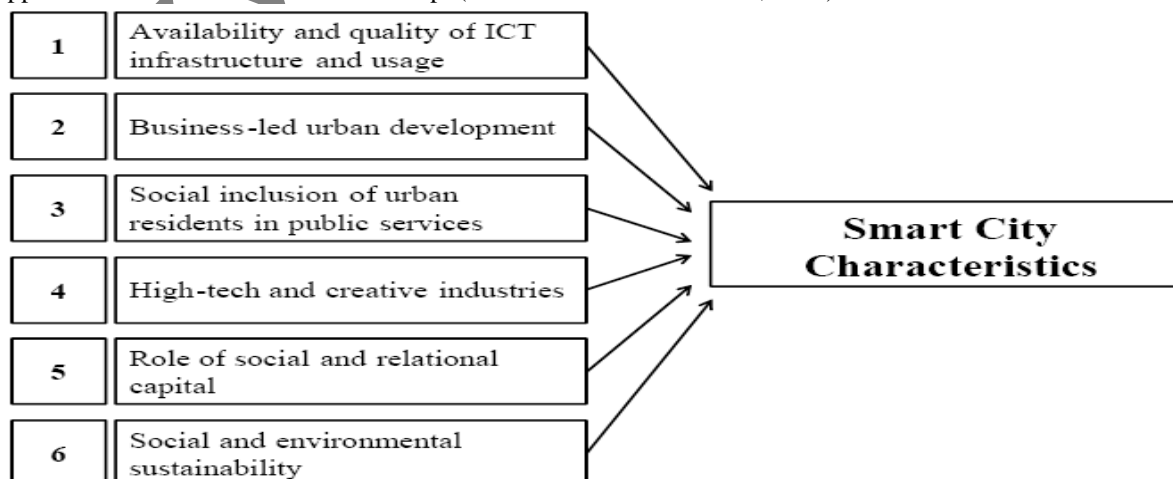

1	Availability and quality of ICT infrastructure and usage
2	Business-led urban development
3	Social inclusion of urban residents in public services
4	High-tech and creative industries
5	Role of social and relational capital
6	Social and environmental sustainability

Fig. 3.1 Six Characteristics at a Glance

3.1 The Availability and Quality of ICT Infrastructure and Usage is Considered to be the Most Basic Characteristic

A Smart City necessarily has to have "a rich environment of broadband networks that support digital applications". In a Smart City, ICT should be inserted to increase the government's and economy's efficiency as well as to contribute to social, cultural and urban growth.ICT infrastructure comprises mobile and landline phones, and internet services (with inter- and intra-city digital networks) and helps to provide services for business (e-commerce), governments (e-governance), lifestyle, housing and leisure Additionally, ICT infrastructure such as smart grids and smart meters are associated with a Smart City. A smart grid is a power and distribution system for sustainable energy, being 'smart' in terms of reliability and eco-friendliness as it supplies citizens with services as well as efficient energy management applications while combining advantages in comparison to existing grids. It is intelligent, efficient, accommodating, reliable, and secure, all while reducing global warming and featuring automatic system maintenance with a consumer focus that aims at energy usage customised towards individual needs. Smart meters will be integrated into smart grids for monitoring the energy consumption of private households and businesses. The data will then be channelled into the information network and smart grid platform. Information is also guided from sensors in the cities into a communal data centre. Necessary adjustments or changes a city may require are inferred from the evaluation of data. Sensors are distributed throughout the cities, and their data evaluation and management is performed by universities.This new form of digitalisation optimises traffic,rubbish disposal, and regional marketing activities thanks to this data stream evaluation. Traffic is controlled with the help of a navigation system – alternative routes are calculated and thus ensure a free flow of traffic. Getting the local population to participate via their mobile applications (e.g., by reporting road damage, overflowing rubbish bins, and broken lights) leads to considerable cost savings for the city. The availability of data can therefore be achieved with different applications resulting from the ICT infrastructure within a Smart City. Cloud services within city-based clouds also contribute to an increasing data availability. "Stable sturdy infrastructures, from optical fibre networks covering the city acting as a backbone to the installation of sensors, are the key for the development of intelligent solutions for cities". There are two primary information sources within an ICT infrastructure and usage: Information flows coming from sensors, elements, and open data (information provided by the public sector) within the city; and information flows from the city's inhabitants in the form of social media or crowd sourcing. So high ICT availability and quality points out the leading idea of a Smart City to generate development, growth and prosperity.

3.2 Business-led Urban Development is Emphasised as a Smart City Characteristic

A slight transformation in the urban governance from a managerial to an entrepreneurial focus can be observed, particularly in Western cities. The influence of corporations in various sizes is rising steadily, and this observation can be applied to Smart Cities. After all, there is a decisive need for businesses in a Smart City: Public investments are often too marginal to be effective for a cost-intensive smart urban growth. Companies representing private capital markets are needed to supply the city with a sufficient amount of money. These companies comprise small- and medium-sized enterprises (SMEs) as well as large corporations. To attract them, the local government has to provide advantageous conditions for businesses. Even though the dependence of the local government on the private sector as well as public-private partnerships can be affected by barriers and disputes, the high influence of business within a Smart City in terms of cooperation is often positively emphasised. The need for constant private capital should make the Smart City attractive for new businesses and what they mean for a smart economy. This is based on the idea of a Smart City offering an innovative spirit, which is particularly

important for entrepreneurship, making a Smart City an entrepreneurial city which provides new business opportunities. The above-mentioned transparent access to data results in many "entrepreneurial activities and a constant flow of new firm creation". These cities "are increasingly functioning as seedbeds for creativeness, innovation [and] entrepreneurship".

These first two characteristics are essential for a city in order to be regarded as smart.

3.3 The social inclusion of urban residents in public services via E-Governance is Essential for a Smart City

Governmental services should be provided to all urban residents, citizens, businesses and employees via ICT. This can be achieved with the integration of ICT in municipal The Smart City as an opportunity for entrepreneurship services, resulting in improved government efficiency that includes citizens in public services, and makes a government's open data accessible. Thanks to the work of Hollands (2008) Southhampton can be considered the first 'real' Smart City in how it created a portal for smart card applications to be applied in public transport, recreation and leisure activities. This smart card software is a prominent example of giving the citizens access to public as well as a few private services. Here, services can be added as well as removed, depending on the user's individual choices. Looking at this example, it becomes clear that the usefulness of an application or e-service is important in achieving a high social inclusion

3.4 The role of High-Tech and Creative Industries Contributing to Urban Growth is Pointed out as Another Characteristic of a Smart City

The focus of this point is on human and social dimensions rather than on the 'hard infrastructure' of business-led urban development. In particular, the 'soft infrastructure' in terms of knowledge networks and the presence of a creative class (in the form of a highly skilled workforce in creative industries) accounts immensely for sustainable economic and urban growth. Thus, a Smart City needs to attract creative and highly skilled human resources in order to be able to achieve this goal. The smart community is closely connected to this rather human dimension of a Smart City. ICT enables people to exchange information rapidly and form closer relationships independent of time and geographical distance. Cities offer important socio-economic and cultural advantages that are far higher than any other settlement pattern". The availability of a highly skilled labour force is high, particularly in a Smart City, and knowledge spillovers are likely to occur. And the geographical agglomeration of knowledge activities increases knowledge transfer and spillover effects. This aspect is increasingly important for the transfer of tacit knowledge. Codified knowledge such as stock prices can easily be transferred from one person or location to another. Tacit knowledge is often bound to one person, and the codification is complex. Here, its spread only occurs via the personal contact of the knowledge providers."Tacit knowledge is transferred through observation, interactive participation, and practice". Put more simply, high availability in a Smart City is highly valued. Additionally, the productivity of knowledge workers rises in these kinds of concentrated environments.

3.5 The Role of Social and Relational Capital as Another Important Smart City Element

The community within a Smart City has to learn,adapt and constantly innovate.Citizens, economies and governments have to be able to use ICT in order to achieve a benefit from its implementation. Whenever social and relational capital is ignored by a city, social polarisation (leading to economic polarisation) can be a negative outcome. Florida (2002) understands these cities as learning regions in which individual and collaborative learning processes take place within networks. These learning processes contribute to urban development because the information exchange of actors within a Smart City is high.

3.6 The Last Characteristic of a Smart City Involves Social and Environmental Sustainability

The economic and urban growth of a Smart City needs to properly take the scarcity of resources into account. With their high concentration of citizens, the use of resources and production of waste is immensely high in Smart Cities. The cautious and renewable use of natural resources limits the dimension of both urban and economic growth. In addition, new business opportunities for modern transport technologies emerge with a focus on increasing the efficiency of urban traffic and the mobility of an urban population. Whatever the case may be, the need for sustainable solutions is high. Innovations like smart grids, smart software or smart traffic systems contribute to the environmental sustainability in a Smart City. In order to achieve this goal of sustainability, it is necessary that local governments "undertake initiatives and strategies that create the physical-digital environment of Smart Cities, actualizing useful applications and e-services".

4. ENTREPRENEURSHIP IN A SMART CITY

"Smart Cities have a high productivity as they have a relatively high share of highly educated people, knowledge-intensive jobs, output-oriented planning systems, creative activities and sustainability oriented initiatives. The six characteristics discussed above will be analysed in terms of how they contribute to entrepreneurship in a Smart City. The six main characteristics discussed above also comprise additional criteria for the Smart City as a centre of entrepreneurship.

The Availability and Quality of ICT Infrastructure and Usage is High in Smart Cities they offer a high quality hard infrastructure and availability of databases. The growing businesses of creative industries and digital media are strongly attracted and fostered by a high quality of ICT infrastructure The data (referred to as 'big data') results in new business opportunities. This data needs to be prepared and the required

information extracted for further use. It can then be provided to companies, institutions or citizens via new applications. Large corporations already seek to exploit these opportunities.

Big data is a new field of science which allows the discovery of knowledge that so far has yet to be fully discovered. These two companies provide the consolidation of data, including the memory (storage) and the basis for future common use (open data. The technical aspect of Smart Cities, the required technologies, and the resulting business opportunities for SMEs could include sensors technologies, mobile phone usage, or grid technology.

The business-led urban development connected with the Smart City being an entrepreneurial city implies the presence of a high amount of entrepreneurs. Therefore, Smart Cities offer a 'socio-technical network' among entrepreneurs with possible knowledge spillovers as a side effect, contributing to the innovative spirit of the city. At the same time, governments depend on the private sector to ensure the "long term sustainability of

Smart Cities through viable business models". Therefore, entrepreneurs and their economic activity are likely to be promoted by the government. Smart Cities are comparable to the classical cluster developments in urban planning. Similarly structured companies attract each other, and industries occur that frequently have a number of aspects in common. It should basically be noted that similar-minded workers look for similar local conditions. In the case of Smart Cities, this is in the form of a proximity to institutions of higher education such as universities and to companies working in the same field. This option of urban growth must be actively managed by cities. Therefore, clusters are often governmentally promoted (through, e.g., tax breaks) as they secure stronger economic power and increased productivity for the region or the city. The cluster development itself intensified by governmental promotion contributes to the

attractiveness of a Smart City for entrepreneurs. Business opportunities for various industries rise as the number of companies located in a Smart City increases. In practice, this point is emphasised by clusters such as those found in Silicon Valley (USA), a global forerunner for entrepreneurial concentration. This accumulation of active participants is described as a 'regional innovation system' which fits into the picture of networking in Smart Cities within urban development. Innovative networks form the core of newly founded Smart Cities. The collective exchange to the specific field of Smart Cities changes the traditional urban planning and development. So-called 'localised knowledge spillovers (LKS)' support the adoption that the accumulation of peers lead to higher work productivity and wages.

The characteristic of social inclusion of urban residents in public services represents a demand and therefore strong business opportunities for new applications to be used for e-governance. Also, the interest of citizen policymakers in "concrete and short-term solutions, benefiting business creation, stimulation of SMEs" emphasises a support of entrepreneurial activity. The important status of local governments within the concept of a Smart City are emphasised, as they work as promoters for entrepreneurship within urban areas by offering public-private partnerships as well as knowledge transfer by the presence of institutions of higher education. The interaction of the four factors 'public-private-people-partnership' underlines the high relevance of public involvement. The interaction between the inhabitants of a Smart City, the city itself, and the associated businesses is characterised by the willingness of changes, own involvement, pride in innovation and a stronger sense of local patriotism. This generates further business opportunities for mobile application and further research, both of which ensure a larger market and an increased use. The involvement of citizens is absolutely essential when it comes to entrepreneurship and social contribution, because public institutions partially (or

fully) lack expertise or resources. Companies as well as entrepreneurs benefit from subsidies and the corresponding infrastructure. So a strong contribution of the social inclusion of residents towards entrepreneurial attractiveness of a Smart City is (putting it mildly) a must.

High-tech and creative industries in the form of highly skilled human resources are an economic factor for new and established businesses. Florida (2002) states that the availability to highly skilled and creative work forces is as important for the economy today as the access to coal and iron was to steel making during the industrial revolution. With the idea of providing citizens of a Smart City a high quality of life in mind, access to highly skilled human resources is above average in Smart Cities. As already seen under characteristic 2, the building of clusters plays a major role. Creative approaches are attracted to each other, which can be seen in the capital of the internet and ICT. Examples like Silicon Valley (USA) or regional start-up cities like Berlin (Germany), London and Cambridge (UK), Helsinki (Finland), Stockholm (Sweden) and Paris (France) underline this point. Tolerance, technology, and talent are the main drivers of economic development. In addition, the 'triple helix approach', which applies the three elements of university, industry and government to a knowledge-based innovation system is regarded as further supporting economic growth in cities. Smart Cities fit in this environment, as high-tech and creative industries are mostly knowledge-intensive. Therefore, innovation systems are likely to occur in a Smart City, which is supported by the classical diffusion theory. Rogers (1962) states that innovators are young, well-educated, open-minded people, being attracted to a location by places such as universities as part of the triple helix approach. With a high concentration of potential innovators, tacit knowledge plays a key role. The concentrated flow of unwritten rules and procedures provides a unique location and attractiveness factor to entrepreneurs in a Smart City. "Knowledge-creating networks depend upon the transmission of ideas and tacit knowledge. This is best done through regular face-to-face contact". Smart Cities are also linked with the term 'living labs', a modern research concept to validate innovations through the four main activities of co-creation, exploration,

experimentation, and evaluation.'Living labs' are also achieved through a concentrated collection of well-educated entrepreneurs in a small regional area. Concrete examples of this include the Amsterdam Living Lab or the Rotterdam Climate Campus (Netherlands), both with the goal of strengthening the position of the Netherlands when it comes to innovation.

The role of social and relational capital is important for the determination of new business opportunities. The demand for new applications is high. Developed applications require the availability of a potential user market to be found in Smart Cities .Aspect 5 is strongly supported by the aspects discussed above. Due to a concentration of new businesses in a certain area, investors are present and the exchange between the stakeholders is supported by spatial and contextual proximity.

With the growing realisation of the scarcity of resources in a population (particularly an urban one), the characteristic of social and environmental sustainability of Smart Cities becomes an increasingly important economic factor,offering economic opportunities for businesses.Pollution is a major threat to cities and urban areas, expanding upon the overall issue of environmental pollution (air and water pollution, global warming, ozone layer depletion, etc. that engages citizens and governments. The so-called 'green movement' is here a very relevant issue which Smart Cities can contribute towards. Applications which monitor the flow of traffic and that regulate traffic lights are an example of solving issues with smart, green ideas created by entrepreneurs. The self-motivation to be part of any kind of sustainable improvement is an issue for business/entrepreneurs in Smart Cities.

After consideration of the six aspects of Smart Cities and their possibilities, concrete approaches, and examples for entrepreneurs, it's clear that Smart Cities need to be much more associated with entrepreneurship. The correlations between these two are intense.There is a need for a new niche in the broad field of entrepreneurship for Smart Cities (and vice versa).Considering the extensive options in Smart Cities for start-ups or SMEs, it is very important, and now possible, to take the next step of expanding upon the existing definition of Smart Cities for entrepreneurship: "A Smart City is an agglomerated area affected by a high concentration of learning, entrepreneurship and innovation as a result of creative citizens and institutions as well as the implementation of a digital infrastructure with the overall objective to achieve economic growth and a high quality of life, all while keeping in mind the scarcity of natural resources".

5. SUCCESS FACTORS OF SMART CITY INITIATIVES

Drawing on the rich, but quite different, conceptual definitions of a smart city presented above, this paper proposes a comprehensive set of factors that are essential to understanding smart city initiatives and projects. The eight clusters of factors include:

- management and organization
- technology
- governance
- policy
- people and communities
- the economy
- built infrastructure
- The natural environment.

5.1 Management and Organization

Managerial and organizational concerns in smart city initiatives need to be discussed in the context of the extensive literature on e-government and IT projects success. Smart city

initiatives might differ from more general egovernment initiatives in the context and in some of the characteristics of specific projects, but there is much in common between those two types of initiatives because most smart city initiatives are also driven by governments and leveraged by the intensive

use of ICTs to better serve citizens.

5.2 Managerial and organizational challenges and strategies

5.2.1 Challenges

- roject size
- Manager's attitudes and Behavior
- Users or organizational diversity
- Lack of alignment of organizational goals and project
- Multiple or conflicting goals
- Resistance to change
- Turf and conflicts

5.2.1 Strategies

- Project team skills and expertise
- Well-skilled and respected IT leader (technical and social skills)
- Clear and realistic goals
- Identification of relevant stakeholders
- End-user involvement
- Planning
- Clear milestones and measurable deliverables
- Good communication
- Previous business process improvement
- Adequate training

➢ Adequate and innovative funding
➢ Current or best practices review

5.2 Technology

A smart city relies, among others, on a collection of smart computing technologies applied to critical infrastructure components and services. Smart computing refers to a "new generation of integrated hardware, software, and network technologies that provide IT systems with real-time awareness of the real world and advanced analytics to help people make more intelligent decisions about alternatives and actions that will optimize business processes and business balance sheet results. ICTs are key drivers of smart city initiatives. The integration of ICT with development projects can change the urban landscape of a city and offer a number of potential opportunities,they can enhance the management and functioning of a city.

5.2.1 Technological Challenges

5.2.1.1 IT Skills

➢ IT training programs
➢ Lack employees with integration skills and culture

5.2.1.2 Organizational

➢ Lack of cross-sectoral cooperation
➢ Lack of inter-departmental coordination
➢ Unclear vision of IT management
➢ Politics
➢ Culture issues

5.3 Governance

Several cities have started transformational projects and initiatives called smart city initiatives to better serve citizens and to improve their quality of life. These projects involve multiple stakeholders. Thus, several cities have felt an increased need for better governance to manage these projects and initiatives. In general, (public) governance has been defined "as regimes of laws, administrative rules, judicial rulings, and practices that constrain, prescribe, and enable government activity, where such activity is broadly defined as the production and delivery of publicly supported goods and services." Governance, hence, involves the implementation of processes with constituents who exchange information according to rules and standards in order to achieve goals and objectives studied challenges of e-government key projects, and found that stakeholders' relations is one of the critical factors to determine success or failure of such projects."Stakeholder relations" refers to four main issues: the ability to cooperate among stakeholders, support of leadership, structure of alliances and working under different jurisdictions. Several cities have benefited from the emergence of ICTs that improve their governance. This ICT-based governance is known as smart governance. It widely represents a collection of technologies, people, policies, practices, resources, social norms and information that interact to support city governing activities. According to Forrester, smart governance is the core of smart cities initiatives. Thus, it represents an important challenge for smart city initiatives. Smart governance is described as an important characteristic of a smart city that is based on citizen participation and private/public partnerships.

5.4 Policy Context

Transformation from an ordinary (non-smart) city to a smart city also entails the interaction of technological components with political and institutional components. Political components represent various political elements (city council, city government, and city major) and external pressures such as policy agendas and politics that may affect the outcomes of IT initiatives. Institutional readiness such as removing legal and regulatory barriers is important for smooth implementation of smart city initiatives. The policy context is critical to the understanding of the use of information systems in appropriate ways. Hence, an innovative government stresses the change in policies, because a government cannot innovate

without a normative drive addressed in policy . Whereas innovation in technology for a smart city can be relatively easily observed and broadly agreed upon, subsequent changes in the policy context are more ambiguous. The policy context characterizes institutional and non-technical urban issues and creates conditions enabling urban development. Smart city initiatives face similar challenges which influence the policy context. Government organizations are created and operated by virtue of a specific formal rule or group of rules. In making any kind of decision in IT projects, public managers need to take into account a large number of restrictive laws and regulations. There are also challenges related to a more general institutional framework and the policy environment, in which government organizations operate . In this context, institutions are not only made up of laws and regulations, but also norms, actions, or behaviors that people accept as good or take for granted .

5.5 People and Communities

Addressing the topic of people and communities as part of smart cities is critical, and traditionally has been neglected on the expense of understanding more technological and policy aspects of smart cities. Projects of smart cities have an impact on the quality of life of citizens and aim to foster more informed, educated, and participatory citizens. Additionally, smart cities initiatives allow members of the city to participate in the governance and management of the city and become active users. If they are key players they may have the opportunity to engage with the initiative to the extent that they can influence the effort to be a success or a failure. It is critical also not to refer to members of the city not only as individuals, but also as communities and groups and their respective wants and needs within cities. People and communities is a component that requires smart cities initiatives to be sensitive in balancing the needs of various communities.

5.5.1 Factors of People and Communities

- ➢ Digital divide(s)
- ➢ Information and community gatekeepers
- ➢ Participation and partnership
- ➢ Communication
- ➢ Education
- ➢ Quality of life
- ➢ Accessibility

5.6 Economy

Economy is the major driver of smart city initiatives, and a city with a high degree of economic competitiveness is thought to have one of properties of a smart city. As well, one of the key indicators to measure growing city competition is the capacity of the city as an economic engine.A smart city framework consists of six main components (smart economy, smart people, smart governance, smart mobility, smart environment, and smart living). Their operational definition of a smart economy includes factors all around economic competitiveness as innovation, entrepreneurship, trademarks, productivity and flexibility of the labor market as well as the integration in the national and global market. A series of studies released by the IBM Institute for Business Value identify business as one of core systems of smarter cities, which comprise city services system, citizens system, business system, transport system, communication system, water system, and energy system. Capacities for smart business systems include ICT use by firms, new smart business processes, and smart technology sectors. The smart city initiatives are designed to develop information technology capacities and establish an agenda for change by industry actions and business development. Creating an environment for industrial development is pivotal to a smart city . The economic outcomes of the smart city initiatives are business creation, job creation, workforce development, and improvement in the productivity.

5.7 Built Infrastructure

The availability and quality of the ICT infrastructure are important for smart cities. Indeed, smart object networks play a crucial role in making smart cities a reality. ICT infrastructure includes wireless infrastructure (fiber optic channels, Wi-Fi networks, wireless hotspots, kiosks), service-oriented information systems. The implementation of an ICT infrastructure is fundamental to a smart city's development and depends on some factors related to its availability and performance. There is a little literature that focuses on ICT infrastructure barriers of smart cities initiatives. As done in the managerial and organizational section, we will refer to e-government technological barriers since smart cities' initiatives are similar to e-government initiatives in their use of ICT.

5.7.1 Factors of Built Infrastructure

5.7.1.1 IT Infrastructure

- ➢ Lack of integration across government systems
- ➢ Existing internal systems have restrictions regarding their integrating capabilities
- ➢ Lack of knowledge regarding interoperability
- ➢ Availability and compatibility of software, systems and applications

5.7.1.2 Security and Privacy

- ➢ Threats from hackers and intruders
- ➢ Threats from viruses, worms and Trojans
- ➢ Privacy of personal data
- ➢ High cost of security applications and solutions accessibility

5.7.1.3 Operational Cost

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- ➢ High cost of IT professionals and consultancies
- ➢ High cost of IT
- ➢ Cost of installation, operation and maintenance of information systems
- ➢ Cost of training

5.8 Natural Environment

Smart city initiatives are forward-looking on the environmental front. Core to the concept of a smart city is the use of technology to increase sustainability and to better manage natural resources. Of particular interest is the protection of natural resources and the related infrastructure such as waterways and sewers and green spaces such as parks.

Together these factors have an impact on the sustainability and livability of a city, so these should be taken into consideration when examining smart city initiatives.

CONCLUSION

The international megatrends of digitalization and urbanisation have led to a growing interest in the Smart City concept in recent years. A Smart City is a place with a high social inclusion of its inhabitants, is attractive to a young and well-educated workforce, and has an intense focus on sustainability. So further studies analyzing the Smart City concept through the lens of social, green and youth entrepreneurship will be necessary. Taking the results of the previous analysis into consideration, a further connection of Smart Cities to the field of entrepreneurial marketing can additionally be identified. The high popularity of the Smart City, referred to as the 'economic image', results in favorable conditions for entrepreneurial marketing because it can be used as a marketing instrument by entrepreneurs. This image represents "an essential ingredient of place (City) promotion to provide knowledge-rich entrepreneurs with living, work and play space". The six characteristics of a Smart City highly contribute to entrepreneurial activity. The success factors of smart city initiatives provide a basis for comparing how cities are envisioning their smart initiatives, implementing shared services, and the related challenges. This set of factors is also presented as a tool to support understanding of the relative success of different smart city initiatives implemented in different contexts and for different purposes. Technology may be considered as a meta-factor in smart city initiatives, since it could heavily influence each of the other seven factors. Due to the fact that many smart city initiatives are intensively using technology, it could be seen as a factor that in some way influences all other success factors. So an idea for future research would be an analysis of the connection between Smart Cities and entrepreneurial activities. As a result, a strong connection between the fields of the Smart City concept and entrepreneurship could be identified. Subsequent to this study, additional need for further research could already be recognized, e.g., the presence of different fields of entrepreneurs (social, green, and youth entrepreneurship) in a Smart City. The favorable conditions offered by a Smart City towards entrepreneurial marketing represent opportunities for additional studies. Furthermore, future studies should consider the influence of Smart Cities on changes, i.e., in population numbers, per capita salary, and the unemployment rate.

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