

## LEARNING FROM A SMART CITY-STATE IN THE AGE OF GLOBALIZATION

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### Abstract

In the age of globalization, there is a fierce competition not only between companies but also between cities, states, economic blocks and regions. They are increasingly competing for talents, technology, investments and markets in a transnational economy. A former little Asian dragon, Singapore achieved a fast industrial transformation and became a modern country in a relatively short period of time. In spite of his backwardness, the latecomer Singapore succeeded in obtaining exceptional economic growth rates and a rapid development. The idea of embedding smartness in all processes and activities carried on in the whole existence of Singapore has been debated in the last decades. The paper aims to briefly define the concept of smart city and to identify the key elements that contributed to the remarkable transformation of Singapore into a smart city-state. The paper employs a quantitative research method and a case study. The information was acquired by desk research, analyzing secondary data that were collected through the deployment of a significant literature review. The story of Singapore illustrates the lesson of a breakout nation that has proved to be capable to continuously reinvent itself in order to become a smart city-state. The paper shows that the making of a smart city-state is possible only by putting together all stakeholders, such as educated, intelligent, disciplined and hard-working citizens, wise and honest politicians, highly competitive companies or responsible institutions, and by using on a large scale the smart technologies.

### Keywords

smart city, Singapore, city-state, globalization, information and communications technology technology

### JEL Classification

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### Introduction

The last decades following the fall of the Berlin Wall have witnessed the emergence and multiplication of numerous debates on globalization and competitiveness. Seen as a “geographic extension of competitive markets” (Panitch and Gindin, 2013, p. 3), a “world society without a world state and without world government” (Beck, 2009, p. 13) and a “dynamic interplay of distinctive competitive advantages” (Quack et al., 2000, pp. xi-xii), globalization has disturbed the social order and generated profound economic and politic transformations all over the world (Scholte, 2005). In the age of globalization, there is a fierce competition not only between companies but also between cities, states, economic

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blocks and regions. They are increasingly competing for talents, technology, investments and markets in a transnational economy (Victor, 2007).

Today's world is dominated by three main poles that appeared especially after the fall of the European communist regimes: South-East Asia, the European Community and the North American Free Trade Agreement. The so-called "Triad powers" (Ohmae, 1985) encompass both many developed countries and big economic powers such as the People's Republic of China, India, Germany, the United Kingdom, the United States of America (USA) or Canada, and smaller economic powers, but highly competitive, such as Switzerland, South Korea, Singapore or Hong Kong.

The global economy at the start of the 21<sup>st</sup> century was inhabited by a few economic superpowers, but mostly by a huge number of medium and small economies. A former little Asian dragon and a "late late developer" (Vogel, 1991), Singapore achieved a fast industrial transformation and became a modern country in a relatively short period of time. In spite of his backwardness, the latecomer Singapore succeeded in obtaining exceptional economic growth rates and a rapid development.

Since the beginning of this century researchers and practitioners worldwide have tried to answer the following question: How was an Asian tiny and underdeveloped state as Singapore able to turn into a high performance and flourishing society in less than half a century? Most of the answers converge towards the idea of embedding smartness in all processes and activities carried on in the whole existence of Singapore (Lee et al., 2016; Fintechnews Singapore, 2017; Van der Zee, 2017). In other words, the successful story of Singapore both as a city and a nation state has an explanation: Singapore has transformed itself into a smart city-state in the age of globalization.

The paper aims to briefly define the concept of smart city and to identify the key elements that contributed to the remarkable transformation of Singapore into a smart city-state. The next section presents the literature review. It is followed by the research methodology. Thereafter, the results of the research are illustrated. The paper ends with conclusions.

### **Literature review**

Since the beginning of the 21<sup>st</sup> century the smart city concept has become a topic of interest for researchers and practitioners all over the world. Therefore, an impressive body of research related to this subject has emerged and developed. Smart city was defined from a variety of perspectives as follows:

- "a city that monitors and integrates conditions of all of its critical infrastructures including roads, bridges, tunnels, rails, subways, airports, sea-ports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximising services to its citizens" (Bowerman et al. 2000, p. 1).
- "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" (Giffinger et al., 2007, p. 11).
- "a city that gives inspiration, shares culture, knowledge, and life, a city that motivates its inhabitants to create and flourish in their own lives" and "an admired city, a vessel to intelligence, but ultimately an incubator of empowered spaces" (Rios, 2008, p. 4).
- a city that is "combining ICT and Web 2.0 technology with other organizational, design and planning efforts to de-materialize and speed up bureaucratic processes and help to identify new, innovative solutions to city management complexity, in order to improve sustainability and "liveability"" (Toppeta, 2010, p. 4).

- “an urban environment which, supported by pervasive ICT systems, is able to offer advanced and innovative services to citizens in order to improve the overall quality of their life”(Piro et al., 2014, p. 169).
- “the utilization of ICT and innovation by cities (new, existing or districts), as a means to sustain in economic, social and environmental terms and to address several challenges dealing with six (6) dimensions (people, economy, governance, mobility, environment and living)” (Anthopolous, 2017, p. 8).

In spite of the fact that smart city has already been a widely used term, it remained a highly fuzzy concept (Nam and Pardo, 2011; Lara et al., 2016) and a clear definition does not exist yet. However, the above mentioned definitions have some important elements in common. First, a smart city represents a complex concept and constitutes a multidisciplinary challenge, bringing together diverse stakeholders (e.g., citizens, companies, city officials, policymakers, academics). Second, it uses intensively and extensively technology, especially information and communications technology (ICT), in order to provide innovative solutions to various problems (e.g., accelerate bureaucratic processes) (Oțoiu, Bere & Silvestru, 2017). Third, a smart city is a well performing and admired city that improves the quality of life of its citizens. Fourth, it creates and develops networks among several types of infrastructure (e.g., digital, physical) in order to optimize the use of its resources. Fifth, a smart city has six characteristics: smart economy, smart mobility, smart environment, smart people, smart living, and smart governance (Giffinger et al., 2007).

### **Research methodology**

The paper employs a quantitative research method and a case study. The information was acquired by desk research, analyzing secondary data that were collected through the deployment of a significant literature review. The sources were journals, books and reports from the fields of economics, urban economics, business, information technology and innovation, and were found in electronic databases and libraries.

### **Results**

Since gaining its independence in 1965, Singapore has achieved an impressive socio-economic development and became a global transport, commercial, financial and technological hub. With a surface of around 720 square kilometers and a population of 5.9 million, the city-state is not only one of the most densely populated nations in the world (Rae, 2014), but also one of the most prosperous countries of the world with a \$90,500 gross domestic product per capita on a purchasing power parity (GDP per capita at PPP) in 2017 (Central Intelligence Agency, 2018). In the age of globalization, Singapore has transformed itself in a smart city-state based on the following elements:

- smart economy. Despite the lack of natural resources Singapore has succeeded in building a trade-oriented and diversified economy (e.g., electronics, chemicals, financial services, petroleum refining, biomedical products, telecommunication equipment etc.) and has become one of the most competitive economies of the world (Table no. 1). Without neglecting the role of the market, the Economic Development Board, a governmental agency, has played an active role in stimulating and enhancing economic growth. As an open economy, Singapore serves as a regional headquarter for more than 3,000 multinational corporations (CountryWatch, 2018). From an export-driven economy Singapore has made major steps towards a research and knowledge driven economy since the beginning of this century (Van der Zee, 2017).

**Table no. 1. The world's most competitive countries according to the Global Competitiveness Index (GCI) in the period 2016-2018**

Country	GCI 2017-2018		GCI 2016-2017	
	Rank	Score	Rank	Score
Switzerland	1	5.86	1	5.81
USA	2	5.85	3	5.70
Singapore	3	5.71	2	5.72
Netherlands	4	5.66	4	5.57
Germany	5	5.65	5	5.57
Hong Kong	6	5.53	9	5.48
Sweden	7	5.52	6	5.53
United Kingdom	8	5.51	7	5.49
Japan	9	5.49	8	5.48
Finland	10	5.49	10	5.44

Sources: Schwab, K. (ed.), 2016.

- smart mobility. The Land Transport Authority and Public Transport Council, within the auspices of the Ministry of Transport, are two of the most important actors involved in developing a sustainable and smart urban transport system. Singapore has built and developed a people-centred transportation system characterized by accessibility, connectivity, affordability, high levels of service, safety and comfort (Rahman, 2011). Due to the land constraint, the tiny island nation has focused its efforts on implementing innovative policies and supporting technologies for satisfying the mobility needs of citizens such as intelligent road studs, intersection surveillance system, integrated public transport fare payment system, speed cameras etc. (Debnath et al., 2011).
- smart environment. The Ministry of Environment is in charge for ensuring a smart environmental protection and sustainable resource management through the implementation of eco-friendly and energy-efficient policies. Environmental concerns have been seriously taken into account especially in recent years as industrial pollution and limited natural freshwater resources are nation's crucial environmental issues. According to the Environmental Performance Index, Singapore occupies the 49<sup>th</sup> place in the world (Yale Center for Environmental Law & Policy, 2018).
- smart people. Singapore enjoys a 97% literacy rate, a high quality digital network with high connectivity and a very competitive education system. Also, it scores at the top of the Program for International Student Assessment's (PISA) and of the Networked Readiness Index.
- smart living. In the age of globalization, Singapore has remained one of the world's most developed countries (Table no. 2). The welfare system of Singapore is "partly insurance-based and partly based on family welfare", and provides "a relatively high level of security regarding social risks, including the risk of poverty" (Bertelsmann Stiftung, 2016, p. 22). The Smart Nation initiative launched by the Prime Minister Lee Hsien Loong in 2014 is transforming Singapore into a hyper-connected country that „uses Internet of Things (IoT) technologies to enhance the quality of life of its people" (Tan, 2015, p. 1).

**Table no. 2. The world’s most developed countries according to the Human Development Index (HDI) in the period 2014-2015**

Country	HDI 2015		HDI 2014	
	Rank	Value	Rank	Value
Norway	1	0.949	1	0.944
Australia	2	0.939	2	0.935
Switzerland	3	0.939	3	0.930
Germany	4	0.926	6	0.916
Denmark	5	0.925	4	0.923
Singapore	6	0.925	11	0.912
Netherlands	7	0.924	5	0.922
Ireland	8	0.923	6	0.916
Iceland	9	0.921	16	0.899
Canada	10	0.920	9	0.913
USA	10	0.920	8	0.915

*Sources: United Nations Development Programme, 2015.*

- smart governance. Since 1965, the the People's Action Party (PAP) has remained the ruling political party. Under the strong political leadership of Lee Kuan Yew, the country’s modern founding father and its first Prime Minister for more than three decades, Singapore turned into a successful developmental state. Lee imposed rather an authoritarian regime dedicated to economic development and “executed the model with strategic brilliance, becoming famous worldwide as a leader to whom neighboring states turned for guidance in moments of crisis” (Sharma, 2012, p. 118). The smartness, honesty, authority and exceptional vision of Lee, the intelligence and astuteness of the government combined with a powerful web of responsible institutions (e.g., the Monetary Authority of Singapore, the Housing Development Board) highly contributed to the establishment of close and trustworthy relationships between the rulers and the citizens. This is why the majority of the residents of Singapore have become cooperative and disciplined in the nation’s interest. Today’s Singaporean state is still strong, maintains state identity, provides all basic public services, ensures political participation, and free and fair elections. In 2005, the government launched the so-called “iN2015 Masterplan” designed to expand the info-comm sector, to enhance the national competitiveness and to improve the quality of life. The rapid spread of the ICT in public services and the e-government strategic programmes have led to greater transparency and less administrative corruption.

Thus, in order to understand the remarkable transformation of Singapore into a smart city-state, one should have a holistic and integrated view that encompasses the critical areas of success and those of deficiency as well. The story of Singapore illustrates the lesson of a breakout nation that has proved to be capable to continuously reinvent itself in order to become a smart city-state.

**Conclusions**

The pace of changes has accelerated in the age of globalization. The unpredictable political, technological, economic and business environments and high pressures from global competition require new ways of thinking and organization both at the macro and micro level. In this respect, the smart city concept has demonstrated its viability in practice in spite of the fact that it is rather a fuzzy notion.

The importance of the paper is given by its two theoretical and practical contributions. First, it provides a better understanding of the smart city concept by emphasizing some of its key characteristics. Second, the paper shows that the making of a smart city-state is possible only by putting together all stakeholders, such as educated, intelligent, disciplined and hard-working citizens, wise and honest politicians, highly competitive companies or responsible institutions, and by using on a large scale the smart technologies.

Further researches might identify new elements that are important in the creation of a smart city-state and expand the analysis to other city-states.

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