Learning From A Smart Asian State: Singapore

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Abstract: *Rarely in the course of world history has the pace of socio-economic and political transformation been so fast as in the case of Singapore since the mid-1960s. In spite of its lack of natural resources, the tiny Asian state achieved an impressive economic development and a high living standard in a short period of time. The successful story of Singapore shows clearly why the Asian city-state needed to be smart in the sense of being strategically oriented towards building a welfare society with a pronounced technological footprint. Visionary and strong political leadership, economic pragmatism, developmental policies, technological sophistication, and exceptional living conditions are among the key features of Singapore. The aims of the paper are to present the concept of smart state and briefly analyse its implementation in Singapore. The methodological approach is based on a quantitative method and a case study. The paper shows that the appearance and development of smart state can be considered as the outcome of the spread of the knowledge society worldwide. Also, it briefly analyses the case of Singapore, a smart Asian state, and identifies some of his main features.*

Keywords*:* smart state, Singapore, knowledge, economic development, government.

JEL Classification: F00, O1, O53

1. Introduction

Located in Southeast Asia, the Republic of Singapore is a sovereign state-city, an island nation separated from Malaysia by the Johor Strait and from Indonesia by the Singapore Strait. Derived from the word "Singapura" ("Lion City"), the name Singapore is connected with Merlion, a mythical creature that symbolizes the mixture between an upper half lion and a lower half fish (Hayward, 2012).

Along with Taiwan, South Korea, and Hong Kong, Singapore became one of the so-called "Four Asian Tigers" and one of the most prosperous country in the world. These Asian nations heavily invested in industrialization and showed their economic performance in successfully competing with other countries in markets around the world (Lee and McNulty, 2003). Various approaches attributed their economic rise to a variety of elements such as the geographic position, the political-institutional factors, the socio-cultural pattern, the geopolitical context, the authoritarian capitalism, the capital accumulation or the economic policies (Young, 1995; Kim, 1998; Holzer, 2000; Park, 2002).

It is said that "the island's unique location at the southern end of the Straits of Malacca and midway between the Indian Ocean and South China Sea has made it a crucial site for contestations, negotiations and adaptations among a number of European and Asian powers" (Aljunied and Heng, 2011, p. 14). The history of modern Singapore began in 1819 when Sir Stamford Raffles established a trading post there (Hahn, 1946). The island remained under the British sphere of influence until 1942 when it was invaded by the Japanese army (Walton, 2018). At the end of the Second World War the British military administration took over. Under the political leadership of Lee Kuan Yew, a Cambridge-educated lawyer, Singapore experienced a long period of sustainable economic development after obtaining its independence from Britain in 1963 and from the Federation of Malaysia in 1965.

Rarely in the course of world history has the pace of socio-economic and political transformation been so fast as in the case of Singapore since the mid-1960s. In spite of its lack of natural resources, the tiny Asian state achieved an impressive economic development and a high living standard in a short period of time. Its political leaders understood the need to use the few resources Singapore has: "a strategic position at a global crossroads of trade and a hardworking citizenry" (Abshire, 2011, p. 11).

The successful story of Singapore shows clearly why the Asian city-state needed to be smart in the sense of being strategically oriented towards building a welfare society with a pronounced technological footprint. The smartness of the Singaporean state explains why the country is currently occupying high positions on most of the global rankings such as the Global Competitiveness Index 4.0, the Human Development Index, the Corruption Perceptions Index or the Waseda University International e-Government Ranking.

The aims of the paper are to present the concept of smart state and briefly analyse its implementation in Singapore. The article consists of four parts. The next section reviews the literature. The research methodology is presented in the third section. The fourth section deals with results and discussion. Paper ends with conclusions.

2. Literature review

Within the academic literature, the term "smart" has been mostly developed from a technological point of view. Technologists consider smart as the intersection of five domains: social, analytics, mobile, the Internet of Things (IoT), and cloud (FreeBalance, 2017). In fact, more and more things have become smart in the last decades such as smart devices, smart homes, smart factories, smart cities or smart states.

In spite of the fact that there is no consensus in the academic world about what smart means, the concept is related to the use of technology, especially of advanced information and communications technology (ICT), in all domains. In other words, smart characterizes products, services, systems, etc. in which ICT plays a key role.

Based on digital technology and a citizen-centric approach (e.g., citizen's control of his public services), a smart state is a "more flexible, responsive and agile state" (Dupont, 2018, p. 5) in which "citizenship is active and institutions are "open by default" " (Noveck, 2015, p. xvi) and is about "using knowledge, creativity and innovation to maintain prosperity and quality of life" (Queensland Government, 2012, p. 5). Becoming a smart state means not only implementing ICT on a large scale, but also "improved processes, governance, and above all, improved customer service" in order to enhance "liveability, workability and sustainability" (Smart Cities Council Australia New Zealand, 2017, p. 7) through investments in knowledge, education and smart industries (Queensland Government, 2012).

According to P. D. Beattie, the former premier of Queensland, the smart state vision is to make the state "a place where ideas and innovation flourish, education is of the highest quality, the economy thrives and jobs are rewarding" (Queensland Government, 2012, p. 2). There are several characteristics of a smart state as follows (Queensland Government, 2005):

- investments in research and development (R&D),
- technology diffusion,
- commercialisation and entrepreneurship,
- collaboration,
- connectivity,
- networks and alliances,
- expanding knowledge and skills,
- a diverse, dynamic and creative culture, etc.

Therefore, the smart state represents a multidimensional concept that encompasses a multitude of elements such as knowledge, ICT and citizenship. Also, it is a dynamic concept that adapts to the continuous technological changes.

3. Research methodology

In order to reach the objectives of the paper the author used a quantitative method and a study case. The quantitative method deals with measurable data and is based on gathering, processing and summarizing information from various secondary sources of data. In this respect, the author collected information from books, academic journals and reports. The literature review was carried on at the Central University Library Carol I of Bucharest and at the British Council Bucharest.

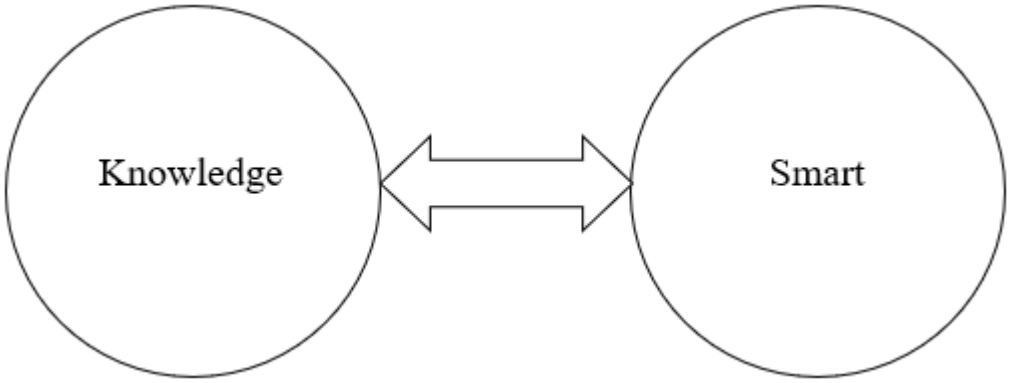
The case study method is defined as „an empirical inquiry that investigates a contemporary phenomenon within its real-life

context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (Yin, 1984, p. 23). It allowed the examination of data related to a specific context, namely Singapore.

4. Results

Starting from the literature review the author asserts that there is a clear and strong relationship between two concepts: knowledge and smart. First, both concepts have evolved during the time as follows: the use of the knowledge concept in the literature has gradually expanded from knowledge worker and knowledge organization to knowledge economy and knowledge society. The same happened for the smart concept: from smart device and smart city to smart nation and smart state. Second, the knowledge concept leads to the emergence of the smart concept whereas the smart concept contributes to the development of the knowledge concept (Figure no. 1). Through the acquisition of new knowledge people become smarter. On the other hand, smarter people produce new knowledge.

Figure no. 1. The relationship between the concepts of knowledge and smart



Thus, the emergence and development of smart state can be seen as the result of the expansion of the knowledge society all over the world. Singapore constitutes a valuable example of a smart state. The smartness of the Singaporean state has been proved by several main elements such as:

• The state has succeeded in designing and implementing one of the most competitive education systems in the world. In 2015, Singapore held the first position and, in 2018, the second position at PISA (Program for International Student Assessment) test, an Organization for Economic Cooperation and Development (OECD)'s program that measures 15-year-olds' ability to use their reading, mathematics and science knowledge (OECD, 2015; OECD, 2018). The quality of vocational training placed Singapore on the 6th position in the world in 2019 (Schwab, 2019). As universities in Singapore gained growing recognition worldwide, the National University of Singapore was ranked 11th and the Nanyang Technological

University 12th in the QS World University Rankings in 2018 (Quacquarelli Symonds, 2018). Therefore, the Singaporean higher education system occupied the 28th place in the world in 2018 (Quacquarelli Symonds, 2018). According to the World University Rankings 2020, the National University of Singapore ranked 25th in the world (Bothwell, 2019).

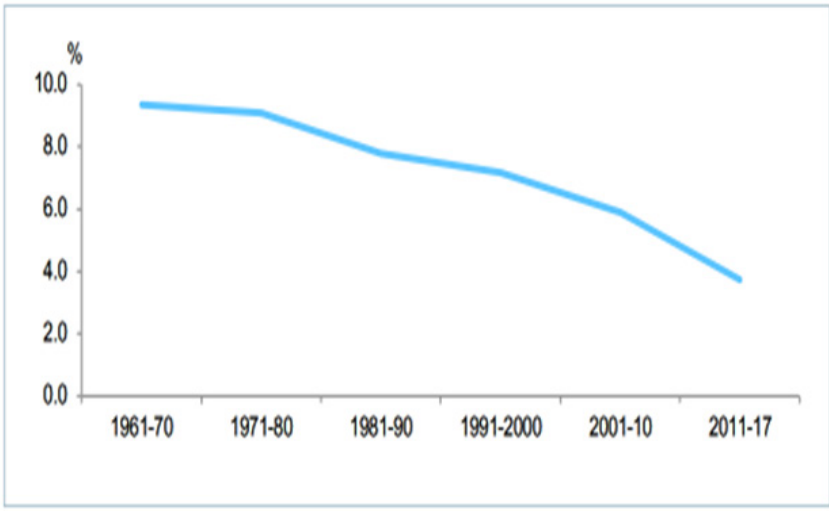
• The state created a proper environment for the flourishing of innovation. In this respect, Singapore was ranked 7th in the world in 2015, 6th in 2016, 7th in 2017, 5th in 2018, and 8th in 2019 (Cornell University et al., 2019). Also, the R&D expenditures as a percentage of GDP placed Singapore on the 14th position in the world in 2019 (Schwab, 2019).

• The state has successfully initiated and performed the Smart Nation Program in order to allow the country to become one of the world's best destination for digital capabilities and achievements. As a whole-of-nation huge effort, the program is based on three pillars: digital government, digital economy, and digital society (Khern, 2019). The strong digital foundations of Singapore are given by the digital infrastructure, the high mobile penetration rate and the digital literation of the most citizens (Balakrishnan, 2019). By transforming Singapore through technology, the Smart Nation Program aims to achieve digitization in five main domains: health, education, transport, urban solutions, and finance (Smart Nation and Digital Government Office, 2018). After being nine consecutive years in the first place in the world, Singapore held the second place in digital government activities in 2018 (Obi, 2018).

• The state has fully understood the need to create and develop a wealthy and prosperous society in Singapore. As a former British colony, Singapore aggressively promoted economic development and sustained extraordinary rates of economic growth after the 1960s. The capitalist developmental state succeeded in putting in practice successful developmental policies (Toma, 2019). For decades, the average of economic growth surpassed 6% yearly (Figure no. 2) through the achievement of a sustainable growth (Toma and Grădinaru, 2007). The gross domestic product (GDP) of Singapore was 338.406 US$ billion in 2017 and 364.157 US$ billion in 2018 (World Bank, 2019a). Also, the GDP per capita in current US$ was 60,297.794 in 2017 and 64,581.944 in 2018 (World Bank, 2019b). As the GDP per capita at the purchasing power parity attained US$ 101,352.577 in 2018 (World Bank, 2019c), Singapore was ranked among the top ten countries of the world (Central Intelligence Agency, 2019). The unemployment rate is rather low: only 3.8% in 2019 (Schwab, 2019). Cooperation in labour-employer relations and the close relationship between wages and productivity are other strengths of Singapore (Schwab, 2019).

• The governments of Singapore have built a highly competitive knowledge-based economy since the 1960s. According to the Global Competitiveness Index 4.0, Singapore held the first position in the world, one place higher than in 2018 (Schwab, 2019). The index measures the performance in four domains organized into 12 main pillars, as follows: enabling environment (institutions, infrastructure, ICT adoption, macroeconomic stability), human capital (health, skills), markets (product market, labour market, financial system, market size), and innovation ecosystem (business dynamism, innovation capability). Singapore ranked first in three pillars and second in other three pillars and should improve its innovation ecosystem (Table no. 1).

Figure no. 2. Singapore's long-term GDP growth



Source: Bhaskaran, 2018, p. 4

Table no. 1. Singapore' s performance according to the Global Competitiveness Index 4.0 in 2019

Domain	Pillar	Place in the world
Enabling environment	Institutions	2
	Infrastructure	1
	ICT adoption	5
	Macroeconomic stability	38
Human capital	Health	1
	Skills	19
Markets	Product market	2
	Labour market	1
	Financial system	2
	Market size	27
Innovation ecosystem	Business dynamism	14
	Innovation capability	13

Source: Schwab, 2019

As the most open economy in 2017, Singapore held the first position in the world from an economic globalisation point of view (KOF Swiss Economic Institute, 2019).

• The governments of Singapore designed and implemented policies that led to a high quality of life for their citizens, mainly in the domains of education, health, security, and housing. According to the Human Development Index, Singapore held the 9th place in the world in 2017 and 2018 (UNDP, 2019), being considered as a country with a very high human development level. In 2019, Singapore ranked first in health, homicide rate per 100.000 citizens, and terrorism incidence (Schwab, 2019). The Singapore's

public housing policy is characterized by quality and affordability. This is why the Housing and Development Board and the Central Provident Fund have highly contributed to the development of a unique housing system that provided a homeownership rate of 90% in Singapore, one of the highest in the world (Phang and Helble, 2016).

All of these high performances represent valuable lessons for any state of the world. They could not have been achieved without the existence of a solid democratic foundation of the Singaporean state. It is worth to mention that Singapore ranked third in the world in 2018 according to the Corruption Perceptions Index (Transparency International, 2019).

In essence, visionary and strong political leadership, economic pragmatism, developmental policies, technological sophistication, and exceptional living conditions are among the key features of Singapore, a smart Asian state.

Conclusions

Much attention has been paid to the term "smart" both in theory and practice in the last decades. On the one hand, the emergence and development of the concept as a topic of interest in the academic literature has led to the appearance of numerous studies and researches. The lack of consensus about the meaning of the concept has been overcome by the recognition of the crucial role the ICT plays in everything is smart. On the other hand, policymakers, entrepreneurs, and businessmen around the world have already implemented smart solutions in their lives and activities.

The paper shows that the appearance and development of smart state can be considered as the outcome of the spread of the knowledge society worldwide. Also, it briefly analyses the case of Singapore, a smart Asian state, and identifies some of his main features.

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