

Singapore Innovation Economy: Present and Future

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Abstract. This paper provides a discussion of Singapore's current development in the field of innovation economy and the driving forces behind its sustained growth in the innovation index. Through an analysis of the internal and external factors contributing to the development of Singapore's innovation economy, the paper aims to reveal how the country has skillfully found room for survival and development amidst the competition of great powers in the context of globalization, and expanding its position as an economic miracle nation. The article summarizes the current situation of Singapore's innovation economy, pointing out the driving forces behind its continuously growing innovation index, including key factors such as government policy support, an efficient legal system, strong intellectual property protection, and attractiveness to foreign investment. Subsequently, the article analyzes the challenges and opportunities faced by Singapore from both the macro and micro levels, covering a wide range of aspects such as technological innovation, talent cultivation, capital investment, and international cooperation. Particularly, in today's accelerated globalization, how Singapore can leverage its geographical and political advantages, as well as its flexible and versatile economic strategies, to remain competitive in the international arena and promote sustained economic growth and social progress. Finally, the paper emphasizes that the success of Singapore's innovation economy is not only based on the optimization of its internal policies and institutional arrangements, but also on its strategic perspective of being able to accurately grasp international trends, effectively respond to global challenges, and ensure the maximization of national interests.

Keywords: Innovation Economy, Government, Market, Entrepreneurship, Leadership.

1. Introduction

Singapore is an island nation with very few natural resources. Historically, as a British colony for a long time, it has been an important port for the Asian shipping trade industry. However, after separating from the Malaysian Federation in 1965, Singapore has evolved to become an international city and even the economic center of Asia. Despite its small size, Singapore has excelled in leadership, regional leadership, innovation and policy making. This is due to the strong leadership of the founding father, Lee Kuan Yew, who built Singapore into a virtually corruption-free government and a highly qualified and disciplined nation. An open-door policy that has continued to attract talented and wealthy businessmen from around the globe, raising per capita incomes from \$500 to \$25,000. In the latest Global Innovation Index 2023, Singapore was ranked 5th out of 132 economies [1]. Singapore's "miracle" performance has been an indispensable point of study in the economic field for countries around the world.

However, Singapore has been ruled by a single party since independence, and the center of power of that party has been around Lee Kuan Yew and his son Lee Hsien Loong. This highly centralized political system has undoubtedly enabled Singapore to demonstrate high efficiency in various public policies and public facilities construction. The leader's emphasis on education and scientific and technological engineering and the large amount of money invested in them [2].

With the changes in the global political economy and the intensification of regional conflicts in the post-pandemic era, the direction of Singapore's development as a small country has been widely scrutinized by the outside world. Problems in its sustainable economic development and structure have also heightened the concerns of the Government and its citizens. Whether Singapore can continue its glorious development in the future.

2. Reason of Singapore's Innovation Index Continuously Improve

From its early days of independence until the present, Singapore has faced several difficult problems, including the long-term supply of potable water, public housing, infrastructure development, and the attraction of talent, etc. In some way, Singapore's innovation activities were initially driven by the need to survive and thrive as a nation [3].

But today, there are three key reasons why Singapore is Asia's most successful innovation economy:

2.1. Cultural Diversity and Inclusiveness

With its large building, fast-paced development, and economic growth that has flourished as much as it has greened, Singapore's bustling metropolis is full of vibrant businesses, markets, and trade. But what really thrives in the city is invisible. The culture of Chinese, Malays, Indians and other different races that make up Singapore is a place where different cultures coexist in a harmonious space. Singapore's colorful festivals also reflect cultural inclusiveness. Singaporeans provide a warm environment to their neighbors, friends and family, regardless of race, language or religion. However different these celebrations may be, they all have something common: reunions, traditional food and good wishes. The fast pace of city life continues to evolve and change with the times, and it is more important than ever to make cultural exchange an intangible part of daily life [4]. To maintain Singapore's cultural essence, various traditional family enterprises that span multiple generations have revamped their branding and modernized their products to attract a younger, social media-aware audience [5].

2.2. Superior Market Environment

In addition to rare corruption, the relationship between workers, unions, government and employers is strong. Singapore has sophisticated infrastructure, including Changi airports, Strait of Malacca and highway. The trade regime is open and competitive. Legislation ensures equal treatment for both domestic and international companies, with virtually all economic sectors accessible for complete foreign ownership. The financial sector stands out for its competitiveness and robustness, with services playing a dominant role in the economy. Singapore is a key player in electronics and chemical manufacturing and boasts one of the globe's most significant ports. Its primary exports are integrated circuits, refined petroleum, and computers.

Singapore's economic liberty is supported by robust protection of property rights and efficient implementation of anti-corruption legislation. Taxation is competitive, and the regulatory framework is clear. A willingness to engage in international trade enhances productivity and fosters the development of a more vibrant and competitive financial industry. That is why Singapore replaces Hong Kong becomes the world's freest economy in the 2023 Global Economic Freedom Index [6].

The impact of the trade competition between China and the United States on Hong Kong, as an important bridge between mainland China and the world economy and a key node for capital flows, trade in goods and information exchange in the Asia-Pacific region and globally, is of particular concern to Hong Kong. The competition has led to global trade volatility and therefore directly affected Hong Kong's export trade and re-export business, increasing the operating costs of Hong Kong enterprises and market instability. Hong Kong's stock and bond markets are also very sensitive to external economic changes, and the trade competition between the United States and China has led to fluctuations in capital liquidity, affecting investor confidence and, in turn, affecting the stability and development of Hong Kong's financial markets [7].

Despite its strengths, Singapore faces its own set of challenges. Known for its exceptionally clean image, ranking fifth in the world on the Corruption Perceptions Index by Transparency International, Singapore has recently experienced a tarnish to its reputation due to scandals. The transport minister was detained in connection with a corruption investigation and later released on bail, while two members of parliament resigned unexpectedly due to a scandal. Additionally, in August, authorities

indicted 10 foreigners on charges of money laundering, seizing assets worth over S\$2.8 billion, including real estate, luxury vehicles, and cash [8].

In the competition to become Asia's premier financial hub, Hong Kong currently holds the advantage, especially from Wall Street's perspective. Hong Kong remains the primary gateway for companies aiming to enter the world's second-largest economy, while Singapore's influence in the smaller Southeast Asian market is less significant. The Southeast Asian region, consisting of 10 countries, has a population of 680 million and an economy valued at \$3 trillion, in contrast to China's 1.4 billion population and \$18 trillion economy. Although Singapore has attracted some Chinese investments, Hong Kong continues to be a magnet for high-net-worth clients for bankers.

In the times of easing strict COVID-19 restrictions, some investment bankers who had relocated to Singapore are gradually returning to Hong Kong. A prominent Wall Street bank has moved nearly half of its staff who had previously left back to Hong Kong, while approximately a third of the two dozen employees from UBS who had moved have also made the return [9].

The comparatively smaller size of Singapore's capital market means it struggles to compete with Hong Kong in terms of dealmaking and equity markets, which are key contributors to Wall Street's revenue in Asia. The market capitalization of companies listed on Hong Kong's stock exchange stands at around \$5 trillion, which is over 12 times larger than Singapore's market cap of \$400 billion. In 2023, less than \$20 million was raised through initial public offerings (IPOs) in Singapore, marking a 95% decrease from the previous year. In contrast, Hong Kong managed to raise \$3 billion from IPOs, despite a 68% reduction from the year before.

The truth is that for international banks, Hong Kong is irreplaceable. However, Singapore is gaining an advantage as companies seek to diversify within the region or establish a hub for wider Asian operations outside of China [10].

2.3. Forward-looking and Executive Government

The forward-looking of the Singapore Government is reflected in its ability to anticipate global trends and challenges and to develop strategies to address them accordingly. For example, it had long recognized the importance of a knowledge-based economy and had invested in education and research and development to nurture talent and drive innovation. This foresight is also reflected in the Singapore government's commitment to sustainable development by pursuing green building and renewable energy programs to reduce environmental impact while ensuring economic growth.

Execution is reflected in the Singapore government's efficient decision-making and quick implementation. The close collaboration between Singaporean government departments ensures that policies are communicated and implemented quickly. For example, in Singapore, information sharing and coordination between departments operates smoothly, which helps the government respond quickly to changes in the economy and act. In addition, the openness of the Singaporean Government to foreign investment and the various incentives it provided had attracted a large amount of FDI, which had contributed significantly to the growth of the Singaporean economy.

On the economic and investment front, the Singapore Government has not only provided favorable tax policies, an efficient business registration process and a stable political environment, but has also provided a wide range of markets for local and foreign enterprises through active participation in international trade negotiations and regional cooperation.

The Singapore government plays an important role in leading initiatives to realize these advantages and in shaping the region's innovation ecosystem. Government agencies share a common vision of a "Smart Nation" and are working together to leverage on technology to create the next generation of infrastructure and businesses. They are actively collaborating with start-ups and academic institutions (NUS, NTU).

3. Impact of External Factors on Singapore's Innovation Economy

3.1. Geopolitics

A world trade report showed that, with the economic shocks and local wars caused by Covid-19, skepticism about the benefits of international trade and multilateral cooperation was growing. It also fueling concerns that globalization was exposing countries to too many risks rather than making them stronger. Singapore, with its high dependence on trade and its role as Asia's financial center in facilitating global trade flows, is also one of the countries most affected by the changing trends of globalization. And some time ago for the growing competitive trade tensions between the United States and China, culminating in the United States imposing an average of 19.3 percent import tariffs on Chinese imports and China imposing an average of 21.1 percent import tariffs on China. Trade patterns and relationships are realigning along geopolitical lines. So, if international trade begins to fragment, Singapore may suffer a greater loss of income than economies that are less dependent on trade.

As the world enters 2024 under the impact of the enduring wars of the Russo-Ukrainian War and the Israeli-Palestinian Conflict, it is a good opportunity for Singaporeans to think about how the geopolitical landscape will affect Singaporean society [11]. In a climate described as "more uncertain and challenging than any we have encountered since gaining independence," Minister for Law Shanmugam emphasized that "the paramount priority is to prioritize Singapore's interests above all and to never hesitate in taking actions that serve our own benefits [12]." For instance, Singapore endorses the economic, military, and security involvement of the United States in the region, appreciating the job opportunities and investments it introduces to Singapore [13]. Regarding China, which stands as Singapore's biggest trade partner, the city-state has participated in a wide array of collaborative and inter-governmental development initiatives with the Asian powerhouse over recent decades. But the baseline is "always act in accordance with Singapore's interests and fundamental principles and practices [14]."

3.2. Climate Change

3.2.1. Effect on public health

Singapore is situated in a region where organisms that transmit diseases are prevalent, with instances of diseases carried by vectors, like dengue fever, typically peaking during the warmer times of the year. Moreover, regular and intense heat waves can result in increased heat stress and discomfort, particularly for the elderly and those who are ill. This situation poses a serious public health challenge and requires effective measures to prevent and respond to related health problems.

As global climate change intensifies, temperatures in Singapore and its region are expected to continue to rise, which may further exacerbate the activities of disease-vectoring organisms, thereby increasing the risk of disease transmission. The Singapore Government is actively pursuing measures to mitigate the impact of high temperatures on susceptible populations. This includes creating more shade and cooling areas, increasing air-conditioning in public places, and promoting improvements in building design to enhance energy efficiency and indoor comfort.

3.2.2. Food security

The threat posed by climate change to global food security through an increase in extreme weather events, such as intense storms, floods and prolonged droughts, has become a growing trend. This challenge is particularly acute for a country like Singapore, which is highly dependent on imported food. With more than 90% of its food needs met through imports, supply volatility and price movements in the global food market have a direct impact on food security and price stability in Singapore [15].

Extreme weather events due to climate change not only affect yields in food-producing countries, but may also affect the stability of transportation routes and supply chains, thereby increasing import costs and food prices. In addition, longer-term climate change trends, such as rising global

temperatures and changes in precipitation patterns, may further affect the geographic distribution and seasonality of global food production, with long-term implications for food supply.

3.3. Technology and Social Change (AI)

Singapore's allure for AI startups extends beyond mere government incentives, with the nation offering too much appealing aspects. In just the initial four months of 2022, this city-state witnessed a substantial surge in venture capital funding, amounting to approximately \$4.27 billion. This year has seen sectors such as financial and insurance services, along with business process and support services, leading in venture capital investments. With its robust base of investors, Singapore is solidifying its status as the premier investment hub in Asia, ensuring significant financial support for emerging startups. [16].

4. Impact of Internal Factors on Sustained Economic Development

4.1. Political System and Public Policies

Singapore's "authoritarian capitalist" model of governance, while providing the foundation for the country's stability and economic development, has also raised concerns about restrictions on freedom of expression and the space for individual innovation. Strict government restrictions on criticism may inhibit public discourse and the free expression of innovative ideas, and undermining the cultivation of an innovative economy.

Second, the Singapore economy is relatively homogeneous in terms of the types of industries it operates in, with an over-reliance on specific sectors (e.g.: financial services, manufacturing, and exports), which makes the economy susceptible to fluctuations in the global market. In the context of globalization and rapid technological change, this homogeneity constitutes a potential point of vulnerability.

In addition, the close links between government and business, while contributing to economic development in some respects, carry the risk of politicization of business. This could lead to the allocation of resources based not on market efficiency but on political considerations, thereby affecting the long-term health of the economy.

The Singaporean government has near-absolute control over all aspects of society, and there are close links between the government, the media and the judiciary. Top leaders of government agencies, such as Ho Ching as CEO of Temasek Holdings and the Government Investment Corporation (GIC), which manages the world's seventh-largest currency reserve, demonstrate the depth of government involvement in economic activity. The fact that the boards of Temasek Holdings and the GIC include top government officials such as Lee Kuan Yew further demonstrates the strong links between government and business.

In the face of these challenges, there is a general sense of crisis in the Singapore government and society, but the government has also demonstrated an openness to innovation and risk-taking. In order to address those issues, further public policy reforms were needed to promote broader innovation and inclusive growth.

In addition, the Government had launched the "Smart Nation" initiative, which aimed to drive economic growth and social development through digital transformation. The plan covers a wide range of areas, including health, transportation and living, and aims to improve the efficiency of city management and the quality of life of residents by leveraging technologies such as big data, the Internet of Things and artificial intelligence.

4.2. Challenge of Business and Talent

4.2.1. Foreign Talent Quota

Modern HR professionals in Singapore face an ongoing struggle to maintain the quality of their workforce while adhering to MOM guidelines on foreign talent versus local Singaporean talent quotas.

The policy ratios are so strict that there is an increasing refusal to grant employment passes to foreign professionals who may have the desired experience or background [17].

4.2.2. Whether outsourcing is a permanent solution

In the contemporary corporate landscape of Singapore, an increasing number of enterprises are gravitating towards Recruitment Process Outsourcing (RPO) solutions as a strategic approach to cultivating robust talent reservoirs, proactively positioning themselves in the competitive market milieu, and consequently streamlining the recruitment process to minimize time-to-hire metrics.

Moreover, the fiscal ramifications of erroneous hiring strategies compounded by the utilization of conventional agencies, particularly during periods of pronounced recruitment volumes—an inherently cost-intensive recourse—cannot be understated. This underscores the significance of RPO frameworks as viable outsourcing paradigms. Notably, within the Singaporean IT sector, this outsourcing paradigm has witnessed pronounced traction in recent years, driven by a corporate imperative to optimize the average cost per hire within their talent acquisition strategies [18].

5. Conclusion

The development of Singapore's innovation economy has been influenced by both internal and external factors. Internally, government policies, the quality of education, and R&D investments have been instrumental in pushing the nation forward. Externally, global economic conditions, international trade environments, and cooperative relationships with other countries and regions have presented both opportunities and challenges. Despite these uncertainties, Singapore has managed to navigate the complexities of the global landscape effectively through active participation in international cooperation and multilateral trade systems.

Looking forward to 2030, Singapore's innovation economy will continue to maintain its global leadership, not just in terms of technological innovations, but also in terms of how these innovations are translated into sustainable development. Below are a few key areas where Singapore will make significant progress: Green technology and sustainability; Digital Economy; Life Sciences and Healthcare; Education and Talent Cultivation.

In short, as move towards 2030, Singapore will be more diverse, sustainable and inclusive. Through continuous exploration and practice, Singapore will not only bring prosperity to itself, but also provide valuable lessons and inspiration to the world.

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