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Executive Summary

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Innovative technology (IT) is a driving force in worldwide economic development. As society continues to advance, application of IT in life is becoming more common, and of greater importance. For example, the invention of smartphone and electronic payment methods has brought huge change and increased convenience in daily life.

As 'smart' is increasingly replaced by 'advanced' in describing a society's technological level, the term 'Smart City' has been used to describe 'a city that widely applies IT in human life and society' and has become a new development for many world-class cities. Singapore, for example, has launched a project called 'Smart Nation' aiming to stimulate economic development and raise the living standard of citizens[1] via technological reform and digitalization.

Following the global trend, the HKSAR government initiated the development of Hong Kong as a Smart City several years ago. Last year, the Innovation and Technology Bureau published the 'Hong Kong Smart City Blueprint'. Focusing on 'making use of IT to address urban challenges', the Blueprint proposed six area headings[2] in pursuit of 'embracing IT to build a world-famed Smart Hong Kong'.

To popularize the application of IT in daily life and to enable Hong Kong to develop into a Smart City, a thorough understanding and full support of IT is essential amongst its citizens, especially young people who are the major 'users'. Therefore, it is necessary to understand how young people understand and perceive IT and the Smart City and what affects their willingness to apply IT in daily life.

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Main Discussion

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[1] 'Smart Nation is about transforming Singapore through technology. We envision a Smart Nation that is a leading economy powered by digital innovation, and a world-class city with a Government that gives our citizens the best home possible and responds to their different and changing needs'. Smart Nation and Digital Government Office. (2018). 'Why Smart Nation'. Retrieved September 19, 2018 from https://www.smartnation.sg/about/Smart-Nation

[2] Including Smart Mobility, Smart Living, Smart Environment, Smart People, Smart Government and Smart Economy.

1. **Young people's understanding of 'innovative technology' was unclear. Most of their IT use was concentrated in entertainment, social networking and financial management. Also, they were inactive in increasing IT usage in daily life.**

   The survey discovered that young people had an unclear understanding of 'innovative technology'. Among the 20 young people interviewed, different definitions of IT were recorded. Some simply judged IT on its popularity, referring IT to technologies that were not fully popularized in society, whereas some believed that IT should be at a cutting edge high-technology level. This indicates a varied understanding of IT amongst young people.

   According to the survey findings, most of the IT use of young people was concentrated in social networking and communication (91.2%) and entertainment (76.9%). For more advanced IT usage, most of the popular uses were finance-related, including 'financial technology' (68.3%) and 'electronic payment methods' (63.6%).

   Moreover, the participants were shown to be inactive in increasing IT usage in daily life, scoring only 6.28 on a 10-point scale. The major reason was shown to be 'no need to use' (30.2%). One interviewee described technology as not necessary to him, as he believed 'it is not non-survivable without technology'. These examples indicate that young people were inactive towards using more IT in daily life, and had no sense of urgency regarding this.

   Young people are the major 'users' of IT. To popularize the idea of using IT in daily life, it is essential that young people have a thorough understanding and are fully supportive of IT. Therefore, enabling young people to have a full understanding of IT is a crucial stage for government in the foundation of a Smart City.

2. **'Convenience', 'cost' and 'security' were important factors affecting**

young people's willingness to adopt IT.

Most of the survey participants claimed to adopt IT as it 'can bring convenience into life' (92.3%). Whereas 'IT items are costly' (22.9%) and 'worry about personal information being leaked' (16.9%) hindered young people from adopting IT.

By strengthening internet security and providing economic incentives respectively, Estonia and Hangzhou (杭州) have set good examples to show the Hong Kong Government what can be done to build up confidence among citizens for adopting IT.

IT does not only have to be 'new' and 'innovative', but also to suit the needs and expectations of citizens. With a full understanding of its advantages, they will be more motivated to adopt IT in daily life.

Due to the fact that young people are concerned about the cost and security of IT use, the HKSAR Government should strengthen its internet security measures, whilst also expanding its financial support measures to address the concerns of young people.

3. **A lack of proper strategies to help the implementation of IT, outdated ordinance and slow or incomplete data opening work were seen as the major challenges for IT uptake in Hong Kong.**

The experts and scholars interviewed believed that IT is valuable only when its use increases convenience in citizens' lives. One scholar stated that 'IT is only a tool; how to make use of IT is what the matter really is'. He emphasized that without proper application, IT was never meaningful to him.

Based on the research findings, there were several limitations in current governmental measures including: (1) a majority of the support measures for research and development (R&D) were in monetary form, lacking proper strategies to facilitate commercialization of R&D achievements; (2) slow progress in ordinance reform, hindering the implementation of some of the IT applications; (3) slow and incomplete progress in data opening work, for example in uploading repeated data and

unstandardized formats of data. Even if citizens were able to access the data, they would be unable to use it efficiently.

The HKSAR government is an important 'advocator' for promoting IT application in daily life. It should therefore take responsibility to remove the above-mentioned challenges in order to facilitate the popularization of IT usage.

4. **Increased application of IT in the daily life of its citizens is key to Hong Kong becoming a Smart City. However, the majority of young people were not familiar with the concept and measures of the Smart City, which hinders its development.**

    Some experts emphasized that 'Smart City' refers to the status of a city which fully utilizes IT to improve the efficiency of urban operation. In the survey, 70% of participants chose 'citizens widely applying IT in life' as a mandatory element for a Smart City. Therefore, both the experts and young people interviewed agreed that citizens' adoption of IT in life is mandatory for a Smart City.

    However, young people were shown to have limited understanding of a Smart City. One interviewee thought Smart City was a research project of the Hong Kong Science Park, implying that she did not consider Smart City relevant to her daily life. Furthermore, according to the survey findings, only 2.5% and 1.7% respectively of participants knew the content of the government's 'Smart City @ Kowloon East' and 'Hong Kong Smart City Blueprint', and the majority of participants had not heard of the two projects beforehand (74.2% and 72.9% respectively).

    Without comprehensive popular understanding and support, governmental measures would not be able to trigger participation from citizens, thus hindering Hong Kong from becoming a Smart City.

5. **Both the experts and young people interviewed perceived the**

development of Hong Kong as a Smart City to be important and necessary. However, they were concerned as to whether the government could balance out the benefits and drawbacks for different stakeholders during the process.

All the experts, scholars and young people interviewed welcomed the government's vision of developing Hong Kong into a Smart City. One expert claimed that as an advocator of the Smart City, the government bears responsibility in facilitating the process. According to the survey findings, most young people believed that Smart City development could improve the living quality of citizens (86.5%) and raise Hong Kong's competitiveness (72.1%).

However, nearly half of the participants expressed concern as to whether Smart City development might 'marginalize some of the citizens' (49%). One interviewee emphasized that a city could be considered 'smart' only when the majority of citizens were able to use and to benefit from IT.

Moving towards a Smart City is a clear direction for Hong Kong's future development. During the process, the government must actively communicate with different stakeholders, grasping their needs and perceptions in order to draft an all-rounded development plan.

6. **To popularize 'applying IT in life' and to facilitate Hong Kong's Smart City development, the participation and collaboration of its citizens is essential.**

Currently, the government considers industry, academia and the research sector to be important partners in fostering IT[3]. Yet, the core value of IT is for citizens' application. Therefore, their perceptions, needs and expectations with regards to IT should be addressed by the government.

According to the survey findings, most of the participants agreed that 'citizens' full collaboration is essential' (87.7%) for Hong Kong to become

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[3] According to the press release, the major responsibility of the Innovation and Technology Bureau is 'to formulate holistic policies relating to innovation and technology; and strengthen the co-ordination among the Government, industry, academia and research sectors; and expedite the development of innovation, technology and related industries in Hong Kong'. Press Release. (2015). 'Innovation and Technology Bureau established'. Retrieved October 4, 2018 from https://www.info.gov.hk/gia/general/201511/20/P201511200739.htm

a Smart City. One expert interviewed stated that the government should always communicate with citizens before launching any promotion strategies for technological application: 'Otherwise citizens may reject (using more IT) as they are not able to feel the convenience of IT'!

Active interaction and communication between citizens and the government is the key element for improving the application of IT. Only when the citizens and the government join forces together can Hong Kong take forward steps in Smart City development.

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Recommendations

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Based on the above research findings and discussion points, several recommendations are made covering five different areas: common technology education, the Smart City, citizen engagement, ordinance reform and data opening.

1. **Support for non-governmental organizations to offer trans-border exchange activities, facilitating exchange of ideas among young people from different regions.**

    All the interviewed experts and scholars believed that common technology education is crucial to support the popularization of IT in Hong Kong, especially STEM education[4], which can stimulate creativity and develop problem-solving skills for young people. Therefore, as well as implementing the STEM education curriculum in schools, the promotion of STEM in a wider social context should be developed.

    Hong Kong enjoys a locational advantage in organizing trans-border IT exchange activities due to its excellent links to the mainland and international cities. It is recommended that the government make use of this advantage and support NGOs (both operationally and financially) to organize events such as study tours or internship programmes. Such events would stimulate the creativity of young people in Hong Kong, facilitate the exchange of ideas among young people from different regions and encourage an innovative atmosphere in Hong Kong.

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[4] Acronym for science (S), technology (T), engineering (E) and mathematics (M) education

2. **Strengthen common technology education and increase citizens' knowledge of IT-related concepts to help citizens understand the benefits and value of applying IT in daily life.**

   The research findings showed that young people's understanding of IT was unclear, inconclusive and limited. As participants perceived 'carrying out technology education and promotion work to increase citizens' knowledge of IT' to be important (59.2%), the government is recommended to produce a new series of 'Announcements in the Public Interest' (APIs) to help citizens understand the use of IT in daily life in order to improve their current limited understanding.

3. **Set up key performance indicators (KIP) and expected outcomes for each of the proposed measures in the 'Hong Kong Smart City Blueprint'.**

   Currently, no KPIs have been set up for evaluating the government's Smart City measures mentioned in the Blueprint. Therefore, to enable objective judgment of the government's work, it is suggested that KPIs and expected outcomes be set up for each of the six directions of the Smart City development. For example, 'the e-identity's infiltration rate should reach 100% by 2025'. This will also help to define the scope of the government's work clearly and better engage citizens for participation.

4. **Conduct regular surveys to explore citizens' technological needs and expectations to ensure governmental measures are in line with citizens' requirements.**

   The ultimate goal of promoting IT usage is to increase convenience in the daily life of citizens and to share R&D achievements with them. Therefore, it is suggested that the government conduct surveys on the technological needs and expectations of citizens on a regular basis. This will enable citizens to be more motivated to contribute to and adopt IT in daily life, allowing society to work together to achieve the Smart City.

5. **Adopt locally invented IT items in government services to facilitate implementation of IT.**

Despite government perception of R&D as an important discipline of IT development in Hong Kong, most of their supportive strategies are either financial or hardware support, and lack the means to facilitate the 'commercialization' of R&D achievements.

Therefore, it is suggested that the government adopt locally invented IT products. This would provide a testing platform for IT items and could also motivate the IT industry, thereby supporting its continuous development.

6. **Review and reform outdated ordinances to provide more opportunities for testing and implementation of IT in Hong Kong.**

The 'shared economy' has become a popular concept worldwide. For example, there is an increase in shared bicycles in China in recent years, aiming to reduce profligacy and make efficient use of resources. However, the 'shared economy' contradicts some existing ordinances.

To provide greater opportunities for testing and implementation of IT the government should give priority to reforming ordinances related to the 'shared economy'.

7. **Speed up the process of opening geospatial data, ensuring the opened data are of good quality.**

Most IT items involve use of big data such as analysis and integration. To stimulate work in R&D and IT, high-quality data are crucial, especially geospatial data such as transport flow, distribution of population and public facilities, which are closely related to Smart City development.

The government is then recommended to speed up its data opening work in order to fulfil its promise to establish Common Spatial Data Infrastructure (CSDI) before the originally set deadline of 2023. At the same time, it should give priority to organizing and releasing geospatial data for free usage to address the public demand for government data.