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TOWARD SMART SECONDARY CITIES:

How ICT is Improving Public Services
in 12 Indonesian Cities

CfDS

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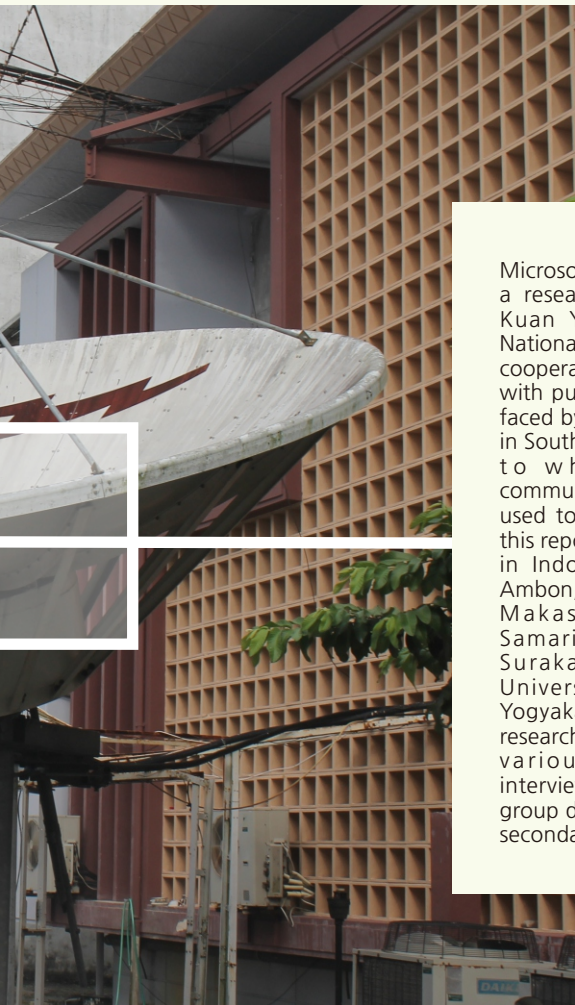
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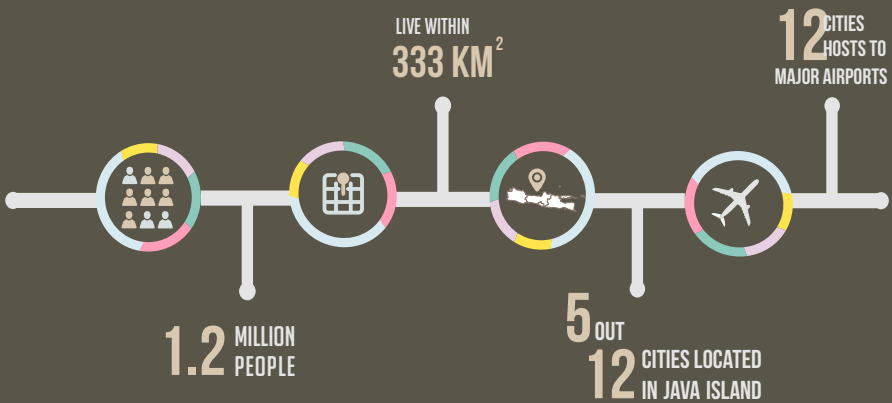
June 2016





Microsoft Smart Secondary City Project is a research project conducted by Lee Kuan Yew School of Public Policy National University of Singapore (NUS) in cooperation with Microsoft Corporation with purpose to understand challenges faced by secondary (medium-size) cities in Southeast Asia better, and the extent to which information and communication technologies (ICT) are used to deal with these challenges. In this report, there are 12 secondary cities in Indonesia under observation i.e. Ambon, Bandung, Denpasar, Jayapura, Makassar, Medan, Palembang, Samarinda, Semarang, Surabaya, Surakarta and Yogyakarta, with Universitas Gadjah Mada (UGM), Yogyakarta, Indonesia, acts as local research partner. This research employs various methods ranging from interviews, perception surveys, focus group discussion (FGD), digital analysis, secondary data, and observation.

CITY PROFILE AND CHALLENGES

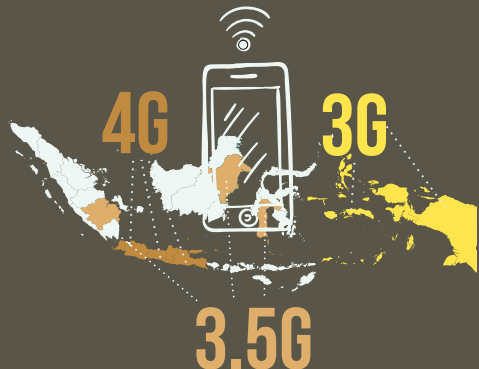


In average, Indonesian secondary cities are inhabited with more than 1.2 million lives with the area of 333 km². Most of the cities possess seaports and all off them are hosts to major airports in the region, marking them as the centrals of economic activities for surrounding cities. 5 out of 12 cities are located in Java Island, while each resides in distinguished

islands except for Medan and Palembang which become parts of Sumatera Island. The issue of unplanned urbanization is perceived as significant issue in all cities which lead to growing number of slump areas and complicating municipal management. The growing population also contribute to traffic problem, which is relatively high to all cities.

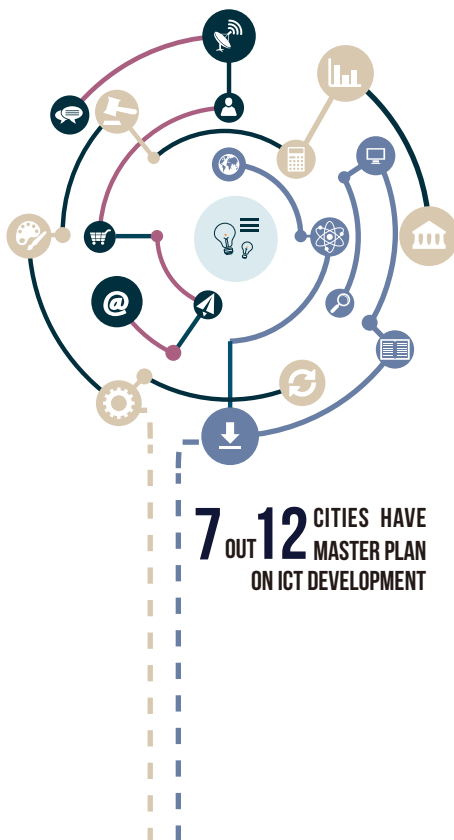
CITY INFRASTRUCTURES

Generally, all cities have connection to 3.5G broadband capacity, except for Ambon and Jayapura whose connection is limited to 3G. Even in Bandung, Yogyakarta, Semarang, Surakarta, and Surabaya, the 4G network is growing, accommodating more internet consumers in broader area. In regards to health infrastructure issue, all cities are equipped with hospitals, even though the number are vary, depending the scales of the cities. Medan has the biggest number of hospitals, while Jayapura the least.



ICT AND CITY GOVERNANCE

Only 7 out of 12 cities have master plans on ICT development in the cities. The availability of the documents may correlate to the performance of ICT development in each city, except for Surabaya which does not have any master plan yet still performs excellent in its ICT development. The presence of ICT Council and City ICT Officers also vary, while only Makassar, Samarinda, and Yogyakarta have both. The degree of ICT usage by mayors in the cities is diverse. The Mayors of Bandung, Jayapura, and Surabaya are accounted as the most attached to ICT in managing the cities, while the rest are accounted as moderate and quite intense users of ICT. Meanwhile, the degree of ICT usage by the city administrators are relatively similar in every cities, which is quite intense, except for Makassar, Medan, and Surabaya which is moderate.



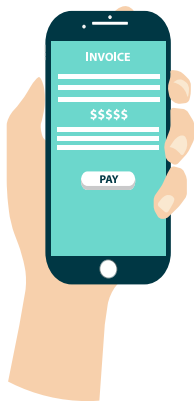
MEDIA COMMUNICATION AND NETWORK MANAGEMENT

All cities have websites as a media to communicate with the citizens. Nevertheless, not all information are well delivered through this canal. In average, most of the cities are providing sufficient information regarding procurement, staff hiring, new regulations, budgeting, investment, city branding, and Small-Medium Enterprises (SME) in their websites. Yet, Jayapura is an exception where its performance in spreading such information is still lacking. Our data reflects that most of the city officials are moderate enough in terms of engagement in social media, except for Bandung and Yogyakarta's city officials whose engagement level is



higher than other cities. Surakarta and Bandung's city officials are marked as the most often to use ICT for building network with other cities/localities. In managing city problems which are environment problem, garbage management, security, and disaster management, ICT usage is not popular, yet. Cities constantly using ICT in such problems management are only Semarang, Surabaya, Surakarta, and Yogyakarta.

ACCOUNTABILITY GOVERNMENT



City governments in general are already utilizing ICT to uphold their accountability. For example, electronic tax payment facilities are already settled or being developed in all cities. Revenue transfer is also done through ICT in all cities, except Ambon. Tax and expenditure recordings are also already digitalized in all cities, again except Ambon. This implies that governments consider the implementation of ICT as an important part in achieving accountability.

ONLINE DATA RECORDS



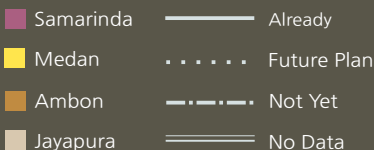
- Surabaya
- Bandung
- Makassar
- Yogyakarta
- Semarang
- Surakarta
- Palembang
- Denpasar

ICT AND ECONOMIC DEVELOPMENT

7 OUT 12
CITIES USE ICT SIGNIFICANTLY
IN ECONOMIC DEVELOPMENT

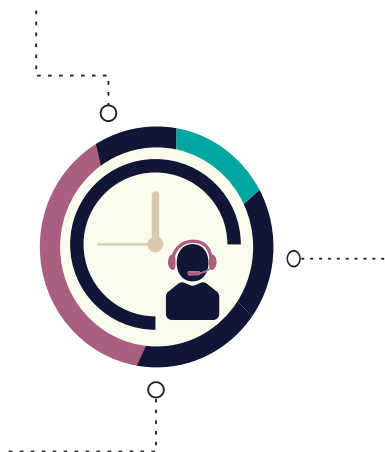


In economic matters, most of the cities are using ICT to support its significant role as an assembly/consolidation center of primary products for onward distribution around the surrounding region and beyond, except for Semarang and Jayapura which commit less at that aspect. The cities are also using ICT in their role as processing/manufacturing centers of primary products originating from the surrounding regions and beyond in relatively high level, except for Ambon, Samarinda, Jayapura, and Yogyakarta. As the industrial base for various nonagricultural manufacturing firms, utilities and construction enterprises, ICT is also important for the cities, yet this hasn't been seen in Ambon, Jayapura, and Samarinda.



PUBLIC SAFETY AND EMERGENCY MANAGEMENT + POPULATION, HEALTH, EDUCATION, AND SOCIAL SERVICES

Most of the cities have big concern in terms of public safety and emergency management system. All cities have already possessed or been developing First Responder Communication Systems using ICT, except Ambon and Jayapura. Yet, the degree of ICT usage is still diverse, where cities in eastern part of Indonesia still show minimum performance. In the issue of population, health, education, and social services, the cities are showing various results. Some reflect improvements take place, where others do not.



ICT CHALLENGES AND ACHIEVEMENT



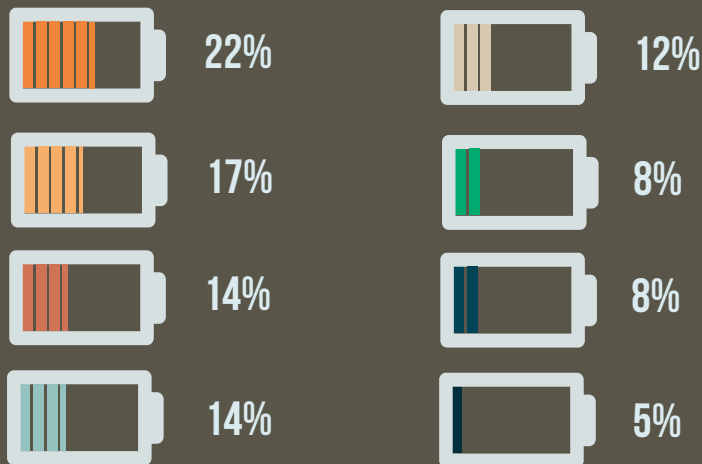
Most of the cities consider 'lack of awareness about ICT implementation for city problems' as the paramount challenge to overcome. The other challenges worth to notice are the 'lack of fund' and 'lack of qualified staffs' which in average ranked 2 and 3 . Meanwhile, the 'legacy of old hardware and

software' is perceived as the least challenge by most of the cities. Some cities are well-known for its national and international reputation. Cities like Bandung, Semarang, and Surabaya often seized international and national awards for their achievements in building environment, ICT, and other aspects.

INFORMATION AND COMMUNICATION TECHNOLOGY

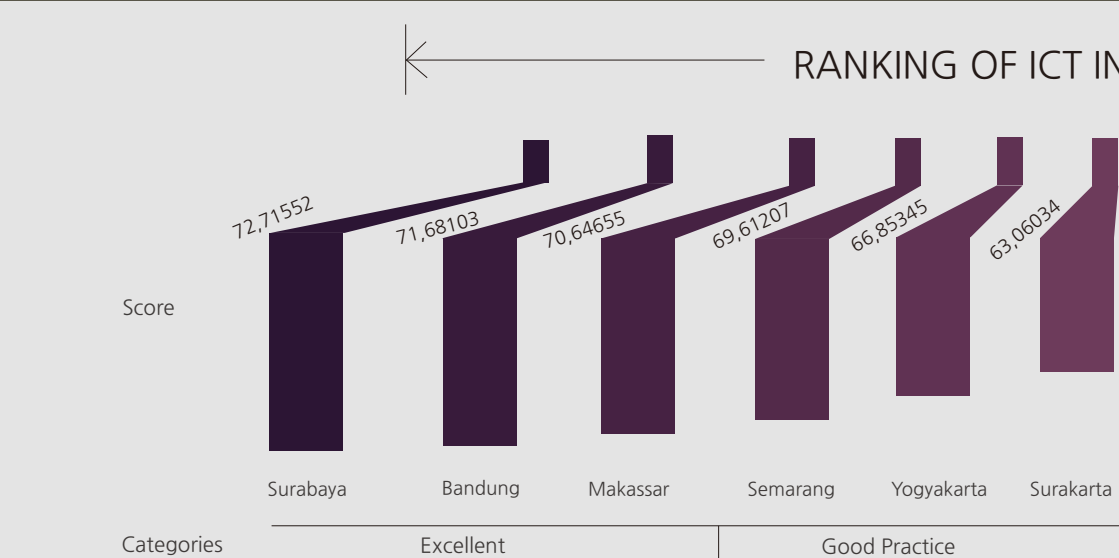
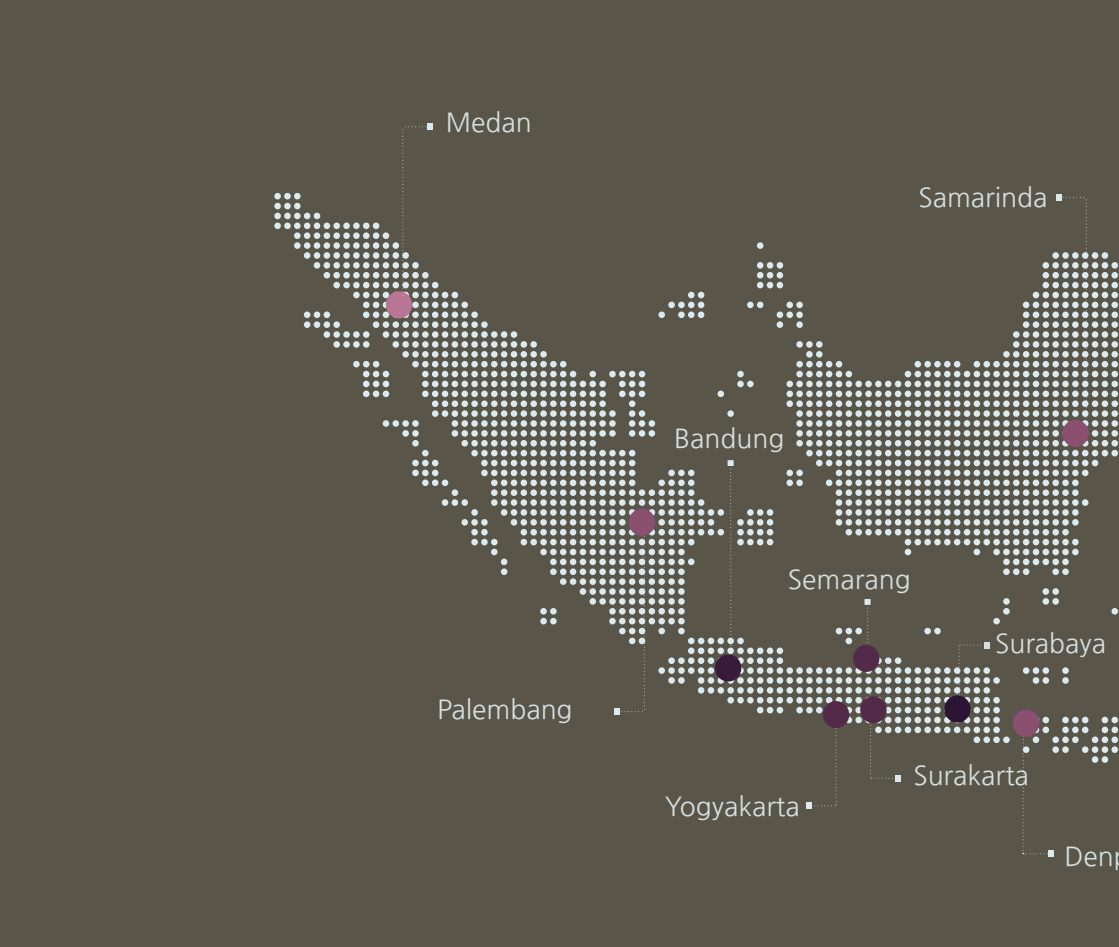
(ICT) CHALLENGE IN CITY:

BASED ON PRIORITY ORDER



Microsoft Project Dataset, May 2016

- Lack of Awareness
- Lack of funding
- Lack of Qualified ICT Staffs
- Prohibitve Cost of Solution
- Lack of Vendors
- Poor Acss to Inet Connection
- No Interest of ICT Solution
- Legacy Old Hardware and Software





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INDEX (INDONESIA)



Palembang

Denpasar

Samarinda

Medan

Ambon

Jayapura

Potential

Emerging

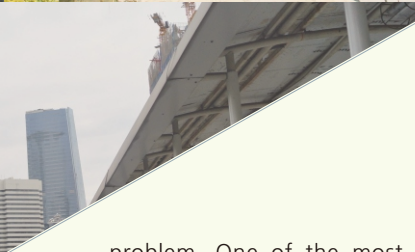
EXCELLENT

Bandung, Makassar, and Surabaya are categorized as excellent example of smart cities due to their outstanding commitment and performance in providing ICT infrastructures and development programs/facilities. The governments are actively using ICT as a mean to solve city problems as well as improving public service. E-government is a feature that appears and progressively being developed in the three cities. Another common feature is the big role of ICT in economic development, both as commodity and capital.



I SURABAYA

Surabaya is the second largest city in Indonesia and a leading smart city in Indonesia. The government already uses online mechanism to make the people easier in paying the tax as well as to promote transparency. In the issue of traffic management, online traffic control system is implemented and accessible through officials' mobile phone in realtime basis. Unfortunately, this step still brings less impact to overcome the city's traffic



problem. One of the most prominent features in Surabaya regarding technology is Broadband Learning Center. Here, there are staffs to teach citizens how to utilize ICT in daily life, such as accessing internet, social media, blogging, making websites, making online promotion, or even online shopping for free. ICT is also used by government officials from sub district level to the mayor, which are gathered in a coordination group in messaging application.

I B A N D U N G

Bandung is the capital city of West Java Province . Bandung has developed sufficient infrastructure to support its economic activities. Physical and broadband connectivity within Bandung are excellent to support its economic activities. Bandung has created an ICT Master Plan with a vision of actualizing “Interactive e-Government Towards Leading Bandung and Smart City”.

Bandung has also created an e-government system called Bandung Integrated Resources Management System (BIRMS) and has encouraged public officials to intensively use this system. Albeit all those strengths, Bandung still need to make sure technology distribution is well addressed, especially for the poor. Moreover, the government also needs to do more socialization and provide more information regarding its ICT facilities, as well as developing more ICT-based emergency management system as Bandung is prone to natural disasters.

I M A K A S S A R

Makassar is the capital city of South Sulawesi province. This city also acknowledges the importance of ICTs to bring easiness in many sectors. The ICT Master Plan is already made but has not been publicized yet since it needs further approval from the mayor. By 2013, the government started to expand the ICTs utilization in 14 districts of Makassar cities. The ICTs plan for districts contained online integrated service system of hospital and health center, smart schools, and digital licensing and archives. However, Makassar is still facing numerous significant challenges as explained above. There is also this problem of low usage of ICTs in city and the less updated websites of all departments and agencies of Makassar city.





I S E M A R A N G

Semarang is the capital of Central Java Province. Semarang has provided a 4G/LTE networks for 2 major providers in the city. Communication towers are rapidly growing in the city, even to the alarming state. The government of Semarang released the Regional Plan for Short-Term Development 2010-2015 which highlights its spirit to implement e-governance. The government recently also announced that e-governance is the next priority. The government also reported that they already developed an Android based application enabling people to directly submit complains to the government. Yet, public engagement through this program is still minimum.

I Y O G Y A K A R T A

Yogyakarta is the capital of Special Region Yogyakarta. Yogyakarta has implemented its e-government master plan since 2007, aimed to develop e-government in order to attain good governance. Website set by city government is hoped to deliver public service. It is also worth noting that 20% city budgeting of Yogyakarta is allocated for infrastructure and only 3% of the budgeting specifically goes to ICT. This is important to note as despite of city government vision to mainstream ICT based services, allocated budget remains

relatively low. Another important thing is the incubation center for SMEs called Jogja Digital Valley, with the mission to boost the growth of creative digital industry in Indonesia. Jogja Digital Valley is more packed with activities from technology start-ups (or communities). With the huge number of students in Yogyakarta, the engagement among technology start-ups is stronger; since many people are interested to take in those activities.

I S U R A K A R T A

Surakarta is a secondary city located in Central Java. To maximize ICT improvement, the government built a master plan for ICT development. The development of e-Government is mainly to create an integrated information management in the government of Surakarta in order to give the best service for society. It is also intended to create an effective and efficient governmental system through a coordinated and integrated planning, implementation, and control. Another sample of ICT development in Surakarta is Taman Cerdas (Smart Park) — a specially designed space for learning, consisting library, PC room connected to WiFi, educational game room, and open theatre. Through its official website, www.surakarta.go.id, people can easily find information regarding procurement, staff hiring, new regulations, budget, investment, city branding, and SMEs.



GOOD
POTENTIAL



Good Potential cities are claiming interest in developing actions towards more advanced usage of ICT in municipal governance and its citizen's life. Implementation of the commitment still hasn't shown considerably positive outcome, although physical facilities and programs are available. Lack of innovation is also an issue for the cities. The governments seem less favorable in fully applying or supporting ICT-based programs. The presence of master plans on ICT development can be found in some, but not all cities. Economic activities supported by ICT can be seen although not dominating. Civil engagement using ICT, especially in terms of government-citizens relation, is also deemed emerging.

I P A L E M B A N G

Palembang is located in South Sumatera. In terms of infrastructure and ICT, Palembang manages progressive urban planning, as we can see from the master plan and novel innovations. This city has contrived e-Government Master Plan in 2013. Through the e-Government Master Plans, Palembang aims to develop e-government in order to attain good governance. Website set by city government is one of the strategies of e-Government implementation. The creation of city website is to provide information and service for society. However, Palembang hasn't yet optimally used ICT installment to accommodate citizen's activities. ICT features like city website and online SMS lacks involvement of society and government.

becomes the domain of all agencies and departments there with comprehensive information; complete records of the city and bank data. However, the city's attention on ICT development is still less prioritized. There have been limited socializations and information regarding the ICT solutions for public services. A limited number of public places providing free internet access also become a big challenge.

I S A M A R I N D A

Samarinda is an eloquent city located in East Borneo Province. ICT development in Samarinda faces certain constraints. The allocation budget for ICT is still small, which reflects minimum concern on the city's huge number of ICT based SMEs, where programmers, application developers, animators, and alike are inhabiting the city. There is no specific tax incentive and allocation specifically targeted for ICT industry, yet. The city has developed neither specific master plan nor blue print on ICT development. Every single government units and authorities are gradually implementing ICT in executing the respective programs, resulting to disintegrated digital systems of information and coordination within the bureaucrats. The government, however, specifically planned on finalizing and releasing a master plan/blue print on ICT development soon.

I D E N P A S A R

Denpasar is located in Bali Island. The demands for services of tourism in Denpasar motivated people to learn about ICT, especially internet and how to provide online tourism services. Subsequently, the government of Denpasar city has been trying to provide ICTs based public services too. Some innovations have been utilized to improve public services such as e-procurement, Pro Denpasar, and Tamiang keyboard made by local citizen. Even more, the city has a website which

EMERGING

Emerging cities accounted for the emerging development of ICT infrastructures and political commitment. The master plans on ICT development cannot be found even though there are visions about it. ICT-related programs and infrastructures are barely found, the quality is far from expectancy, and society's engagement is also minimum. Economic activity is less influenced by the presence of ICT. The most advanced usage of ICT is shown by Medan that already used sky mapping technology for identifying potential land use.

IMEDAN

Medan is the biggest city in Sumatra. Even though the government has provided free internet access for the citizens in many public places and established Pusat Informasi Harga Pangan Strategis (PIHPS, or Centre for Information of Strategic Food Prices), Medan still lacks of notable ICT innovations compared to other big cities in Indonesia. Medan also needs to start putting more attention towards digital start-ups, as apparently Medan has huge potential in this sector. Nevertheless, Medan provides lessons for other city. This city shows how the development of physical infrastructure needs to be balanced with the digital one.





I AMBON

Ambon is the capital of Maluku Province. Technological development in Ambon is still emerging. The 4G/LTE signal is barely to be found in the city. Ambon only has one state-owned internet provider (state-owned) with usable signal quality -- which is not even supportive enough for productive purposes. Ambon also doesn't have any specific master plan on ICT development. Yet, the government of Ambon has a vision to turn Ambon into a "Cyber City" where all people have free access towards internet where it finds an obstacle of funding. ICT usage can actually be found in the government office, such as personal computer and smartphone, but those are mostly limited to internal and/or personal usage. There are major obstacles faced by Ambon, specifically in terms of funding and infrastructures.

I JAYAPURA

Jayapura is the capital of Papua province. In regards to infrastructure development and ICT, geographical location and the far distance to the capital city, Jakarta, make it difficult to develop the infrastructure to be in par with some other areas. In terms of ICT usage in Jayapura, the government seems to have not maximally used it yet, as the government has no ICT master plan. The city website is not very well maintained. However, the use of common telecommunication media such as cellphone, telephone, SMS, and messenger application have been able to bridge the communication between the government and society. The two main challenges faced are how to make ICT more accessible and how to develop the quality of human resources.



| CONCLUSION AND RECOMMENDATION

Some cities are already well equipped with advanced networks harnessing faster people's connectivity. The extensive use of ICT in the city level could be the solution for those challenges facing the cities by creating more efficient public service delivery and enhancing good governance while at the same time increasing competitiveness and boosting economic growth. Each government has also demonstrated commitment, with variation of degree, to integrate ICT solutions: some cities have shown advanced ICT development, while some others show relatively moderate to, unfortunately, moderately low ICT development.

ICT can boost productivity since there is a growing trend of ICT-based industry in those cities. However, it is unfortunate that most of the cities observed have not yet given adequate and proper attention to that ICT-based industry despite its huge potentials. The growth of start-ups is also correlated to the ICT development. The development of ICT has helped business to

grow while at the same time the growth of business in this globalization era demands more ICT development.

There are five main challenges for ICT development that can be concluded from the elaboration above. These challenges come from various aspects, as follows: (1) The lack of awareness from the government on the importance of ICT development; (2) The lack of budget for ICT development; (3) The inexistence of ICT development master plan, in some cities, resulting in the poor management and less purposed ICT development; (4) Less coordination in the city government per se; (5) The lack of awareness of the people in some cities on ICT solutions. As the development of ICTs is varied, so is the degree of these challenges, and thus we need comprehensive strategy and smart approach to further develop ICT in those cities. There is no "one solution for all" in overcoming these challenges instead many lessons can be learned and retrieved as reference from one city for another.

ABOUT CFDS

Center for Digital Society (CfDS) is the research center established by the Faculty of Social and Political Sciences, Universitas Gadjah Mada. The institution is created under the concern over the contemporary dynamics of socio-political condition of the world that is accentuated by the impeccable influence of information technology. The phenomenon triggers the new patterns and complexities in the society, and thus requires new approaches in managing such complexities.

CfDS pledged to delve more on the study of contemporary digital society, including related issues surrounding the topic; such as the issues of smart city and urban development. The emphasis is then put on the utilization of technology to shape the society in becoming digitalized, as well as to bring solvency to social issues.

Vision

Solving Social Problem and Accelerating Prosperity through Indonesia Digital Society

Activities

1. Research and Development
2. Dissemination and Publication
3. Education and Policy Advocacy

Research Scoops

1. Digital Commerce
2. Digital Citizenship
3. Digital Lifestyle

