



Advancing Indonesian Local E-government

Challenges, Opportunities,
and Strategic Roadmap



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A close-up, grayscale photograph of a computer keyboard. The keys are visible, with some showing directional arrows. A dark, torn-paper-style graphic overlay covers the left and center portions of the image. A black rounded rectangle is positioned in the upper center of this overlay, containing the text "Executive Summary" in white.

Executive Summary

Executive Summary

Research Objective

This research was designed to investigate the current status of Indonesian local e-government and to suggest strategic planning and roadmap for future Indonesian local e-government. This study was basically based on the analysis of survey and structured interview data collected from Malang, Sragen, and Jakarta. This report is an outcome of the collaboration between the OECD Korea Policy Centre in Seoul and the National Institute of Public Administration in Indonesia.

Local E-government in the District of Malang

Based on information obtained from the exposure assessment by participants and assessors during the assessment of the excavation, assessment results on the overall dimensions of Malang Regency are poor. More specifically, the websites of the Malang District government is in the first stage based on the e-government development model suggested by the UN. In addition, ICT plans, policies, and institutions as well as infrastructure and applications in Malang Regency are needed to be improved. “2020 Roadmap for Malang’s digital prosperity” suggests important functions and projects in such four areas as digital management, digital service, digital participation, and digital infra. In order to improve regional informatization in these areas, it is necessary to have a new unit (department or committee) to initiate, implement, and coordinate regional informatization which has responsibility for establishing common technological standards for system design and application development, governing the standardization issues in the entire district, and monitoring the development and procurement process not to violate the standards.

Local E-government in the District of Sragen

Sragen District is one of the local e-government transformation leaders in Indonesia. In the past decade, Sragen has made notable progress in both back office functions and front office services as well. Sragen’s rich list of e-government services would not be possible without the enduring efforts of the Sragen public officials, especially the former regent, Mr. Untung Wiyono. The district sharply increased the size of IT personnel from three employees in 2003 to 53 in 2011. Sragen also searched for alternative funding sources to overcome the limitation of IT budget. Sragen District has developed and operated many e-government services including wireless network connecting government offices, various administrative applications, online ID card printing services, the One Stop Service Center for businesses, e-voting services, and VoIP for internal communications.

Overall the maturation stage of Sragen’s e-government is moving from the interactive web presence to the transactional web presence. The current impressive achievement should be carried to the next level by overcoming the challenges such as: the lack of detailed analysis of needs and demands from the e-government service users, interoperability issues between idiosyncratic systems, unsophisticated user interfaces and user experiences, creating an executive level of IT manager position, increasing maintenance cost, potential threats to privacy, and more comprehensive IT strategic planning. The future road map and the needs assessment survey results included in this report would be a

useful starting point to envision the future of e-government in Sragen District.

The Special Province of Jakarta

While the implementation of e-government in DKI Jakarta has practically begun from the beginning of 2000, the impact and performance of its e-government is very slow and far from success as stated by Governor of DKI Jakarta Fauzi Bowo. Its performance is less satisfactory and needs to be advanced to improve public services and minimize inefficiency of public sources (Gatra, 2011).

Despite its limited success, DKI Jakarta has promoted the creation of a variety of online system applications in various public service areas including financial system, motor vehicle tax, groundwater tax, personnel system, emission test, and the vehicle population identity. In the course of its e-government implementation, DKI Jakarta has also been faced with some obstacles including lack of integrated information systems and legal framework, digital divide, and bureaucratic resistance. It should be also noted that the master plan for Jakarta e-government has not been prepared.

Strategic Plans for Indonesian Local E-government and Financing

The 2011 local e-government ranking by the Ministry of Communication and Information Technology(MCIT) indicates that only six out of 152 districts and cities are evaluated as good and the rest of local governments are assessed as poor and very poor. This indicates the poor performance of Indonesian local e-government. Indonesian local governments seem to understand the increasing significance and potential impacts of e-government. However, they have not actively promoted both back-office and front-office applications of IT due to the lack of human and financial resources as well as infrastructure. The Indonesian government needs to develop its own strategic plan for local e-government advancement with specific time perspectives including short-term, medium-term, and long-term perspectives.

For the Vision of Smart Local Government, Indonesian local governments need to focus on establishing the foundation for smart government in the short-term by 2015. Then, in the medium term by 2025, local governments should focus on developing advanced applications for efficient and transparent government as well as services to citizens and businessmen. Finally, by 2030, local governments in Indonesia need to enter the smart age. It is challengeable but in this rapid change, local governments should actively promote local e-government as summarized in the following table.

More specifically, the roadmap of local informatization in Indonesia can be categorized into four areas: digital management, digital service, digital democracy, and digital infra. Digital management means electronization of work process to enhance administrative efficiency and service. Digital service includes both e-application, which means a civil affairs system that is related to those affairs that have deadline; and the environment or property and e-service, which means information provision service that is related to cultural activities, health and welfare of citizens. Digital democracy connotes information provision and realization of e-democracy through interactive communication with citizens. Digital infra includes such issues as IT infrastructure (hardware) and manpower (software) as well as legal system.

E-gov Development Stage for Smart Government

	Near Term	Medium Term	Long Term
	2012-2015	2016-2025	2026-2030
Goal	<ul style="list-style-type: none"> • Construction of Basic Database • Establishment of Infrastructure Foundation 	Expansion of E-Government Use	Smart Government
Local Information	<ul style="list-style-type: none"> • Local Basic Information System • Informatization of Local Government Administration 	<ul style="list-style-type: none"> • Construction of E-Government Applications • Laying the Ground work for Linking and Integrating Multiple departments and Agencies 	Utilization of Local Knowledge Resources Integration
Infrastructure	High-speed ICTs Network	High-speed ICTs Network	Broadband Convergence, Wibro, RFID/USN

Main Agenda for Four Areas of Local E-government

Area	Agenda
Digital Public Management (G2G)	<ol style="list-style-type: none"> 1 Establishing electronic procedures 2 Expanding common use of public info. 3 Service oriented BPR
Digital Public Service (G2C, G2B)	<ol style="list-style-type: none"> 4 Enhancement of the civil services 5 Enhancement of business services
Digital Democracy	<ol style="list-style-type: none"> 6 Enhancement of the civil service
Digital Infra	<ol style="list-style-type: none"> 7 Integration/standardization of info. resource 8 Strengthening of information protection system 9 Specialization of the IT manpower and organization

Indonesian local governments should be able to mobilize a large amount of financial resources in order to advance the e-government. Indirect and direct financing strategies need to be simultaneously considered. Indirect financing strategies encompass: 1) providing incentives to the public officials to make more contribution to E-government; 2) assessing the social effects of e-government besides the value of saving administrative costs; 3) assessing the economic returns of e-government investment; 4) enhancing IT management capacities to prevent any failure. Strategies for increasing direct funding include: 1) building capital management capacities to finance capital project for e-government; 2) partnering with domestic and international private organizations; 3) developing business opportunities to prove e-government counseling to other local governments; and 4) charging user fees on e-government services, especially to business users.

Recommendations

Based on the lessons from case studies of Malang, Sragen and Jakarta as well as Korean e-government development, along with CSFs for the development of Indonesian local e-government, several policy recommendations are presented as follows.

1. Prepare vision and strategies of local e-government incorporated into national e-government plan. The vision and strategies should be shaped both by the central government and local governments.
2. Establish a legal framework for local e-government development. The legal framework needs to stipulate specific aspects of e-government development including major actors, financial resources, decision rules, etc.
3. Prioritize local e-government as a local reform agenda and secure strong political and administrative commitments of top local leaders.
4. Prepare local e-government roadmap for both back office and front office applications of information and communication technologies.
5. Prepare a comprehensive e-government architecture including online as well as mobile device applications.
6. Establish effective governance structure (IT governance) which outlines how and by whom e-government-related decisions on enterprise architecture, applications and e-government programs, financing, and inter-governmental collaboration are made.
7. Strengthen the role of central government particularly in the areas of coordinating and providing local e-government platforms as well as financing. Local governments should actively participate in building collaboration with other local governments, identifying unique service needs, and improving local technical capacity.
8. Securing financial resources from various sources including international (*i.e.*, ODA or international development grants), national, local, and private funding.
9. Enhance IT capacity by developing IT training programs for local government officials and develop appropriate IT equipment procurement plan.
10. Build IT infrastructure and human developments in order to enhance the utilization of local e-government services.
11. Conduct local e-government needs assessment and establish an e-government feedback system through citizen participation.

Proposed Future Projects for Indonesian Local E-government

1. Indonesian Local Government CIO Training Program (ILGOCT Program)

Programs

Providing local e-government training programs for local government CIOs, selected local top ranking officials of e-government champion, and central government officials who are in charge of local e-government programs

Background

Local e-government is not a central agenda despite the significance in terms of its potential impact and visibility

Wide variation in IT capacity and lack of collaboration among local governments

Passive roles of CIOs (IT managers) in local governments and lack of network among them

Lack of systematic collaboration between local governments and the Ministry of Information and Communication

Content

Evolution of local e-government

IT governance and leadership in local governments

Local e-government roadmap

Inter-government collaboration

Best local e-government practices

Expected Outcomes

Strengthening IT leadership of local governments and enhancing the collaboration and information sharing among local government CIOs and between central and local governments

2. Technical Support for Best Indonesian Local E-government (BILE Project)

Program

Providing a long-term technical support for one or two selected local governments and help them to become best practices for Indonesian local governments

Background

Lack of specific best practices in local e-government

Lack of systematic and sustainable technical assistance from central government or international organizations

Content

E-readiness and needs assessment

Development of e-government roadmap and action plans

Development of a template for local government portal

Development of strategies for financial mobilization
 Provision of inbound and outbound e-government trainings

Expected Outcomes

Creating best practices to be benchmarked by other local governments
 Diffusing basic templates and platforms for local e-governments
 Motivating local e-government initiatives and enhancing the sense of achievement

3. Local Mobile Government Program (LMG Program)

Program

Developing mobile government platform for Indonesian local governments and various public service applications for mobile phone users

Background

Rapid increase in mobile phone users
 Geographical characteristics of Indonesia and potential utilities of mobile phones
 Emergence of multi-channel public services

Content

Applications of e-government and m-government
 Enterprise architecture for m-government
 Best m-government practices
 Prospects and challenges in m-government

Expected Outcomes

Understanding of potential utility of m-government and strategic planning
 Providing best practice of m-government

4. Digital Divide Program

Program

Paying attention to digital divide issues in Indonesian local governments and developing programs to reduce digital divide

Background

Wide gap between digital capacity among local governments as well as unequal access to Internet
 Lack of programs to deal with digital divide issues in local government
 Emerging issues of digital divide among different socio-economic groups

Content

Developing strategies to deal with digital divide among local governments
 Developing strategies to deal with digital divide among different socio-economic groups
 Enhancing IT capacity for local governments and schools

Technical assistance for digital divide issues

Expected Outcomes

Reducing digital divide between local governments and between socio-economic groups



Introduction

Objectives of the Study

This report is designed to investigate the current status of Indonesian local e-government and to suggest strategic planning and roadmap for future Indonesian e-government based on the survey data and structured interview data collected from the District of Malang, District of Sragen and District of Jakarta. This report is an outcome of the collaboration between the OECD Korea Policy Centre in Seoul and the National Institute of Public Administration in Indonesia.

The Indonesian government has recognized the potential significance of applications of information and communication technologies (ICTs) in improving internal administrative operations (back office applications) as well as providing public services (front office applications). Along with continued efforts for e-government by the central government, Indonesian local governments have been also making great efforts to adopt ICTs in order to make the governments more efficient, more effective, more transparent, and better.

The UN report suggests that Indonesia is ranked at 109 in 2010 in terms of E-government Readiness Index (ERI) and considered to be at the beginning of the 2nd Stage (Interactive Stage) and is in the middle of advancing toward the 2nd and 3rd Stage (Transaction Stage).

While the Indonesian government has made efforts to advance its e-government, the government is still far behind. The local e-government is much farther behind. For example, many local governments are currently at either 1st or 2nd stage of e-government developmental stage. Many simply provide public information such as contact information, location information, and others via their official websites. Only few local governments even have developed their own master plan for e-government. There are only two local governments, such as Sragen and Bali, which have master plans for e-government. Understanding local e-government in Indonesia is still at the initial and primitive stage. This report attempts to offer a master plan for future Indonesian local governments with a general roadmap for mid-term and long-term e-government plan, where the scope, focus, and objectives of specific e-government projects are identified and discussed.

Two Indonesian governments are selected for actual assessment of local e-government capacity. Their developmental stage is also assessed and identified based on interviews and survey data. Based on diagnosis of the current Indonesian local e-government, this report offers a guideline for future Indonesian local e-government master plan.

Background

The OECD Korea Policy Centre agreed to collaborate with the National Institute of Public Administration and reached upon the Letter of Understanding (LOU). One of initial projects that the two partners agreed to achieve was a consultancy project for Indonesian local e-governments. The two institutions considered that the project would provide an opportunity to understand the current stage of Indonesian local governments and to find alternative ways of improving local governments by applying various ICTs.

Scope

As mentioned, while this study particularly focuses on three selected Indonesian local governments such as Malang, Sragen and Jakarta, we attempt to develop strategic planning for Indonesian local governments in general. Malang, with the population of 2.7 million citizens, represents large scale district governments while Sragen represents a small size local government with the population of 900,000. In addition to the consideration of size of local government, Sragen is selected as an exemplary local government case where top local government leadership is interested in the potential impact of IT on local governments and plays a critical role in initiating local e-government in 2002. Jakarta is the capital and largest city of Indonesia. It also has a greater population than any other city in Southeast Asia.

This study also covers various ICT applications in local governments. It includes back office applications such as internal administrative informatization and front office applications including various public services to citizens and businesses. We also discuss the various dimensions of local e-governments including G2G, G2B, and G4C. Various elements of local IT capacity are also examined including IT leadership, IT governance, IT training, financing, and others.

Methodology

This report is prepared based on various pieces of information collected from document analysis, survey, structured interviews, and expert focus group. Public documents are carefully selected and reviewed by participating experts. Public documents on both Indonesian e-government and Korean e-government were used in this report.

Survey questionnaire was developed to diagnose current status of local e-governments. The survey questionnaire was developed as an instrument to conduct a needs assessment tool. The assessment tool was first developed in English then translated into Bahasa (Indonesian local language).

The consulting team also developed a structured interview protocol which was used for interviews with Indonesian local government officials particularly staff of IT Unit. Interviews with IT staff were conducted when consulting team had site visits to Malang and Sragen.

The survey data were collected and statistically analyzed. The data were examined individually and comparatively. The interview information was also carefully reviewed and analyzed to describe the current status, issues, problems, and future directions.

Several Indonesian experts on e-government were also invited for experts meeting in Jakarta to evaluate the current status of local e-government as well as the e-government initiatives promoted by the central government. The views of local experts are also incorporated into this report.

Table 1. Information and Data used for the Study

Information and Data	Activities	Period
Document Analysis	Korean Public Documents Indonesian Public Documents	December 21, 2011 - February 20, 2012
Survey Questionnaire	Needs Assessment Survey	February 7, 2012 (Malang) February 9, 2012 (Sragen)
Structured Interviews	IT Leadership Interviews IT Personnel Interviews	February 7, 2012 (Malang) February 9, 2012 (Sragen)
Case Comparison	Comparing Best Practice	December 21, 2011 - February 20, 2012

Participants

The Consulting Team was composed of three Korean experts including M. Jae Moon of Yonsei University, Seung-Yong Rho of Seoul Women's University, and Hyun Joon Kim of Korea University. Indonesian expert also joined the consulting team. They are Dr. Anwar Sanusi of National Institute of Public Administration (NIPA) and Mr. Aris Karnianwan and Mr. Wijayanto of the Ministry of Communication and Information Technology.

Table 2. Participants

Expert Name	Education	Area of Interest and Roles
M. Jae Moon Yonsei Univ.	Ph.d. Public Administration, Syracuse University	Primary Investigator
Seung-Young Rho Seoul Women's Univ	Ph.d. Public Administration, Rutgers University	Participating Consultant
Hyun Joon Kim Korea Univ.	Ph.d. Public Administration, Syracuse University	Participating Consultant
Anwar Sanusi NIPA of Indonesia	Ph.d. in Public Policy, Japanese Nation Public Policy Institute	Local Consulting Partner



Evolution of National and Local E-government in Indonesia

Background and Historical Development of Indonesian E-government

The key objective of e-government is creating online customers for government services (Indonesia National Portal, 2006). Online customers empowered by E-government can access public services without being intervened by public officials or waiting in a long queue. E-government is also considered as a vehicle to support good governance for enhanced transparency, accountability, and equity. An easy access to public information contributes to reducing corruption as a result of improved transparency and accountability of public institutions. E-government creates new channels for public participation. Citizens can actively participate in making important decisions for public policy. E-government is also expected to improve the productivity and efficiency of bureaucracy in addition to promoting economic growth

E-government in Indonesia has been initiated by Presidential Instruction No. 6/2001 (dated 24 April 2001) on Telecommunication, Media, and Information (“TELEMATIKA”) which states that each government institution should use the technologies of Telematika to support good governance and to accelerate democratic processes. Furthermore, e-government should serve for other important objectives. Public administration is an area where the Internet can be used to provide better access for citizens, to simplify the interactions between the citizens and the government. Presidential Instruction (Inpres) No. 3/2003 on National Policy and Strategic Development of e-government further provides a technical guide for developing e-government, such as portal infrastructure, documentation system, e-government manuals, local government’s website maintenance.

In 2008 the Indonesian lawmakers passed the Law Number 11/2008 on Electronic Transaction and Information that legislates the basic rules for conducting electronic transactions. This law is a legislative response to the increasing public activities that widely use the internet. All these efforts indicate that Indonesia, as a member of the global information community, is making significant contributions to establishing institutional arrangements for information technology development, electronic transactions at the national level, and ultimately cultivating an intellectual life for the entire societal members.

Indonesia is now witnessing e-government initiatives at both the central and local governments. Since 2002, 69 central government agencies and 403 local governments have launched official websites as an early stage development of e-government (Sujarwoto and Nugroho, 2011). Although most of the developments still remain at the level of information delivery, some provincial governments have progressed into the transactional stage so as to increase the local revenue. Despite the support by a legal umbrella from the central government, more efforts and investments are needed for the further implementation of e-government in Indonesia (Donny BU, 2004).

In addition, the share of telecommunication sector in the national budget is quite small. In fiscal year 2012, the Indonesian government spends about IDR 2.2 trillion out of the total annual budget of IDR 1292 trillion. So, the share is still very small. Lack of financial resources for e-government is another barrier to advancing e-government in Indonesia. For instance, the total budget of the Ministry of Information and Communication in fiscal year 2012 is IDR 3.246 trillion. It only constitutes about 1 percent of the total budget that is allocated to a state and ministry agency.

Current Status

E-government development in Indonesian governments has reached mostly the stages of either interactive or web-publication, although some institutions are moving toward the transaction stage. According to a 2002 report on the development of e-government in Indonesia, 369 government offices were operating their websites; however, 24 percent of the websites could not maintain the sustainability of operation time due to insufficient budget. At that time, there were only 85 websites that function with full options (Jakarta Post, 15 January 2003). At present, it can be said that the situation has not significantly changed yet. By using the case of Central Java Province, as a purposive sample for studying e-government implementation, Rokhman (2008) finds:

1. The Central Java Province comprises 30 districts and six cities. Among them, only 24 districts (80%) and five cities (83%) have a website that is accessible to the public. The rest of them can be accessed through the search engines such as Google and Yahoo. Moreover, most districts and municipalities' websites only show general information on local profiles, mostly composed of three types of information: (1) regional profile, (2) public service procedures, and (3) relevant news of local activities. Local news, however, are not collected by the local governments. Instead, they depend on the national media which rarely provide updated local news.
2. Of the 24 districts and five cities of which websites are accessible, only 12 of the district websites (40%) can be categorized into the interaction stage. Whereas, all five cities' websites (100%) have reached the stage of interaction. Typical web applications for interaction include: (1) guest book, (2) forums, (3) chat, (4) the contact link, and (5) poll.

In comparison to the E-government in the European Union countries, Indonesia is still far behind. The European Union is one of the communities that have implemented e-government successfully along with Canada, Singapore, and United States of America which have surpassed the European Union in E-government. European Union itself has possessed a modern official website in which each citizen can access the latest information and policy as well as legal foundation of the government policy. At certain times, citizens even can interact directly with the decision makers via chatting channels (www.europa.eu.int). Through the highly capable web portal, citizens can even apply for jobs and on-the-job-apprentice at the institution. Many other services are provided by EU websites. In order to promote the advancement of e-government in EU member countries, e-Europe awards (www.e-europeawards.org) are operated in order to facilitate sharing experiences and mutual learning among them. Besides, citizens can access their own country's websites as well as other EU member countries' websites. An exemplary practice can be found in the Dutch E-government: custom duties administration is done online so that bribery cases can be controlled and reduced. In the U.K., citizens can apply and renew their passports online. In France, health insurance companies reimburse the customers' medical cost on-line. The regional government of Bonn in Germany provides an online registration service for kindergarten (Indonesia National Portal, 2009).

Indonesian e-government is comparable to other ASEAN countries, yet Indonesia's e-government level is lower than Singapore, Malaysia, Thailand, Philippines and Brunei Darussalam. While Indonesia has improved in the index of e-government readiness, other upper level countries have achieved greater improvement during the same period. Table-3 shows the trend of e-readiness index and rank in the years of 2003, 2008, 2010, and 2012.

Table 3. Electronic government readiness of ASEAN countries

Country	2012 Index	2010 Index	2008 Index	2003 Index	2012 Rank	2010 Rank	2008 Rank	2003 Rank
Singapore	0.8474	0.7476	0.7009	0.8503	10	11	23	7
Malaysia	0.6703	0.6101	0.6063	0.5706	40	32	34	43
Thailand	0.5093	0.4653	0.5031	0.5518	92	76	64	46
Philippines	0.513	0.4637	0.5001	0.5721	88	78	66	41
Brunei Darussalam	0.625	0.4796	0.4667	0.4475	54	68	87	73
Viet Nam	0.5217	0.4454	0.4558	0.364	83	90	91	105
Indonesia	0.4949	0.4026	0.4107	0.3819	97	109	106	96
Cambodia	0.2902	0.2878	0.2989	0.2989	155	140	139	128
Myanmar	0.2703	0.2817	0.2922	0.2959	160	141	144	129
Lao PDR	0.2935	0.2637	0.2383	0.2421	153	151	156	147
Timor-Leste	0.2365	0.2273	0.2462	0.2512	170	162	155	144
Asia	0.4793	0.4424	0.429	0.4388	-	-	-	-
World	0.4882	0.4406	0.4514	0.4267	-	-	-	-

There are some weaknesses in e-government implementation policies of Indonesia. According to the Center for Public Management Studies (2009) National Institute of Public Administration (NIPA), there are four important issues influencing the implementation of E-government. First, e-government services are not supported yet by the effective management systems and work processes. The improper readiness of the rules and procedures and the human resource constraints severely limit the penetration of information technology into the management systems and work processes of government. Second, there is inadequate budget allocation and lack of strategic planning for the development of e-government in each government institution. Third, there is a lack of coordination among the government institutions. In other words, each government institution develops its own standards for information security, authentication, and various basic applications and, as a result, interoperability between websites is hampered. Fourth, the approach taken by individual institution is not strong enough to overcome the gap community's ability to access the Internet network, so that many public services are developed to be limited as well.

An inadequate infrastructure including the lack of public access places is also another challenge. Providing service through e-govt. needs to be backed up by a high level of the Internet penetration from households or public stands or kiosks. In 2001, the internet penetration just reached 1.9 million population or 7.6 percent of the total population in Indonesia. In 2002, there were only with 667,000 internet users and 4,500,000 telephone and computer users. This low penetration rate in Indonesia is another obstacle of e-government (National Portal, 2009). A comparison with European countries clearly shows this problem. For instance, in the Netherlands, Sweden, and Denmark, the percentage of households having Internet access has reached 60%. Even the average Internet access rate of households in 15 EU countries is around 40%. Whilst the Internet penetration as a whole in European Union has reached 40.4% in June 2002 (Source : Euro barometer). There is no doubt that high penetration of the Internet in this region has facilitated the successful implementation of e-government .

Local Autonomy and Local E-government

Indonesia is a sprawling archipelago of over thirteen thousand islands (some mention over seventeen thousand) that stretches three thousand miles from east to west, characterized by significant regional, ethnic, religious, linguistic and cultural diversity. Except for a brief federal constitution at the tail end to its independence struggle with the Dutch in 1949, it has remained a unitary state. The subdivision of Indonesian government system into regional jurisdictions - provinces and local governments (district or municipal) - is anchored in the Amended 1945 Constitution. Regional jurisdictions can be changed - e.g. through the creation of new regions or the consolidation of existing regions - by laws approved by the national parliament (Dewan Perwakilan Rakyat-DPR).

Indonesia embarked on its “Big Bang” decentralization in the context of significant central and local-relation. Since year 2000, Indonesia has drastically changed their administrative system from centralized to decentralized one. The national or central government has only governed five basic provisions, i.e. religion affairs, fiscal and monetary, law, defense and national securities, and international relation. The local government, meanwhile, has authority to manage the rest of public provisions.

Prior to decentralization, provinces were known as level one (Dati I) and local governments as level two (Dati II) in Indonesia. The Dutch introduced the system of provinces on Java in the 1920s, which now encompasses the regencies (*residentien/ regentschappen*, and *districten*). However, the administrative subdivision of the Outer Islands historically lagged behind that of Java. The imposition of Javanese administrative patterns, were often conflicting with traditional forms of local community organization. In many cases, it has been a source of long-standing discontent outside of Java. However, since the enactment of Law Number 22/1999 then revised by the Law 32/2004, regarding Local Autonomy, the local governments have enjoyed greater roles to administer their own areas. Since 2005, furthermore heads of local governments (governors, regents, and mayors) have been directly elected through the popular election not elected by the member of local parliament.

Since the decentralization era, the number of local governments dramatically increased. Until now, Indonesia is divided into 33 provinces--seven of these provinces were created since 2000--, and 497 district and municipalities. In order to clarify job and function of local and central government, the government issued Government Regulation No. 38/2007 on Job Description amongst National, Province and District/Municipalities. Except, the five provisions that are abovementioned, central government has only rule to provide policy, norms and standard. Meanwhile, local government has power to rule and manage most governmental functions, including the telecommunication sector.

A nationwide survey, called as “E-government Ranking in Indonesia (PEGI),” has been conducted to rank the developmental levels of e-government of both national and local governments. This survey provides a map overviewing the current states of utilizing information and communication technologies in Indonesia. The government entities involved in implementing this survey include the Directorate of e-government, the Directorate General of Information Technology Application, the Ministry of Communication and Information Technology (MCIT). PEGI is expected to enhance the development and utilization of ICT in government agencies. Given that the PEGI encompasses all the government agencies at both central and local levels, the results reflect the status of the national ICT development. Thus, this survey can diagnose the strengths and weaknesses of all the governmental institutions and provide useful information for the further development of ICT in Indonesia. There are five aspects used to indicate the level of e-government implementation in government institutions: policy or regulation, institutions, infrastructure, implementation and master plan. This annual survey started in 2008.

Table-4 shows the 2011 PEGI result from the survey of 152 districts and municipalities. There are only six districts marked as “very good”. The rest of the districts are categorized as either “poor” or “very poor.” Even most of these districts belong to the “very poor” category. The six “best” districts include Surabaya City, Malang city, Lamongan District, Pekalongan District, Medan City, and Surakarta City.

Table 4. **PEGI Result for local government 2011**

Government level	Category			
	Very Good (3.60-4.00)	Good (2.60 - 3.59)	Poor (1.60 - 2.59)	Very Poor (1 - 1.59)
District	0	6	60	86
Provinces	0	7	12	7

Source : Ministry of Communication and Information Technology, Indonesia

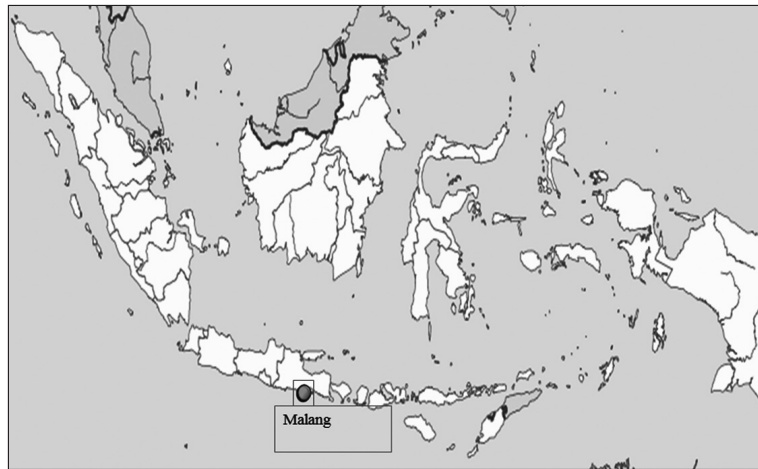


Local E-government in the District of Malang

The District of Malang

Malang Regency is the second largest city in East Java province, Indonesia. It has an ancient history dating back to the Mataram Kingdom. The city population during the 2010 Census was 819,708. Malang has a total area of 252.136 km². The city is famous for its cool air and the surrounding country regions of Tumpang, Batu, Singosari, and Turen. As a result, the main industries of this city are agriculture and forestry. People in East Java sometimes call it “Paris of East Java.” Malang was spared from many of the effects of the Asian financial crisis, and since that time it has been marked by steady economic and population growth with population growth of 9.3% per year.

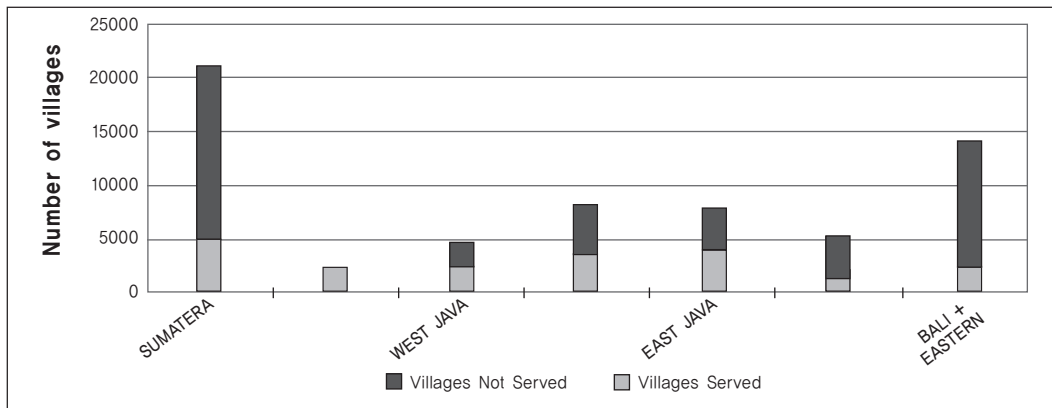
Figure 1. Location of Malang in Indonesia



The Malang Regency shares its borders with Pasuruan Regency (North), Lumajang Regency (East), and Batu City (West). Malang is divided into five subdistricts such as Blimbing, Kedungkandang, Klojen, Lowokwaru, Sukun. Mount Bromo, one of Java’s largest volcanoes and a major tourist attraction, is located just to the east of the city.

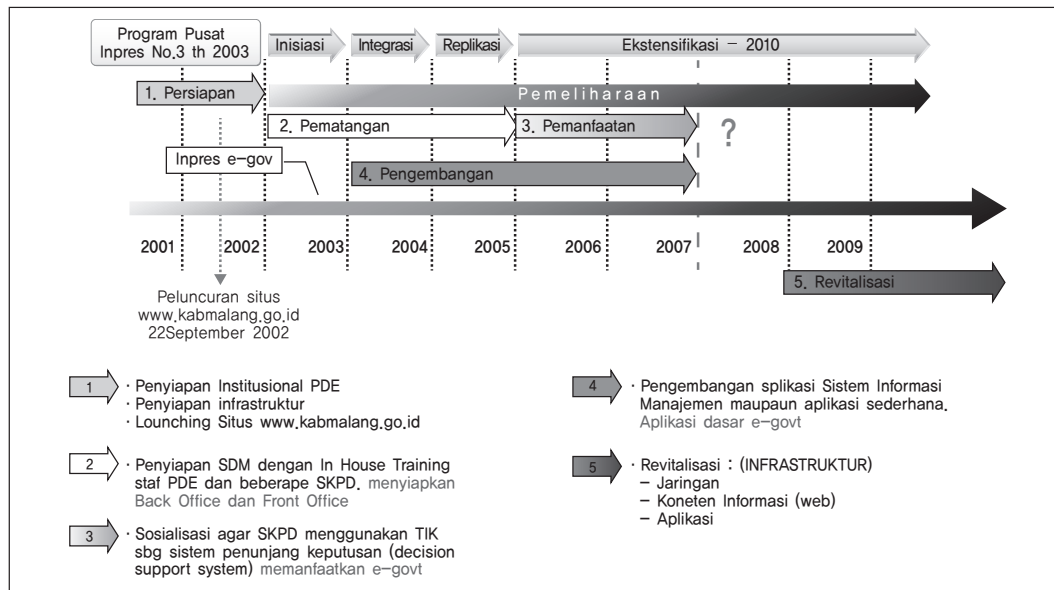
Information and Communication Technologies (ICTs) infrastructure in Malang is not yet advanced for value creation by regional informatization and e-government. As can be seen in Figure-2, telecommunication infrastructure in East Java Province including Malang is relatively poor.

Figure 2. Telecommunication Infrastructure, Indonesia



Source : Road to I-Gov

Figure 3. Telecommunication Infrastructure, Indonesia

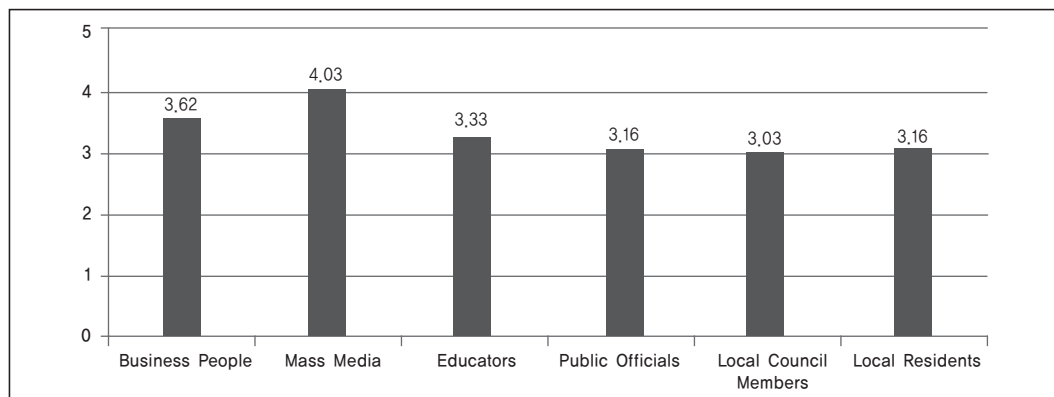


Current Status

Major Players

Major players in regional informatization, in general, are government leaders, public officials, local council members, business people, mass media, and residents. Figure 4 shows the major players' recognition of regional informatization as evaluated by public officials in Malang. Among the six players in Malang, mass media has the highest recognition on regional informatization followed by business people and educators, whereas, local council members have the lowest recognition. In particular, both public officials and residents have a moderate level of recognition on regional informatization, just little higher than local council members. Residents are users and demanders of regional informatization and both public officials and local council members are suppliers of regional informatization. In this sense, the recognition on regional informatization by both suppliers and demanders is little low and it can be one of obstacles to overcome to improve regional informatization because recognition on regional informatization is the starting point in its development.

Figure 4. Major Players' Recognition on Regional Informatization



Based on the interview, the mayor of Malang is interested in developing e-government. He believed that the investment in e-government would contribute to enhancing efficiency of local government as well as enhancing the transparency. He has anticipated that e-government of Malang should be improved, in particular, focusing on the utilization of ICTs in the area of agriculture and tourism.

In e-government practice, the Electronic Data Center (PDE) has played the key role in planning and implementing the e-government of Malang. Such functional units as education, construction, and others have their own ICTs budgets often provided by each of the ministries of the central government for their own functions.

The Local Council of Malang has been also supportive of the development of e-government. As can be seen in Figure-4, public officials in Malang evaluated that local council members have very low recognition on regional informatization and understanding that e-government would play an important role in improving the quality of public services and enhancing the efficiency of local government.

With regard to the ICT companies, there are very few local private ICT companies. When the local government would utilize individual ICT consultants to develop the e-government applications, some ICT companies in Surabaya, the capital of East Java, would occasionally come to Malang to participate in developing the e-government applications. In addition, it is similar situation in the case of universities, as a result, it is rare to utilize local ICT experts in developing the e-government applications. Most of the works in developing the e-government applications, therefore, have been done by the in-house personnel such as PDE.

Finally, the role of central government in initiating and encouraging local informatization is very limited. The high level of local autonomy in Indonesia leads local and regional governments to be responsible for developing their own ICT infrastructure and e-government applications. The Indonesian central government provides blueprints for local e-government with the minimum level of financial and technical supports.

In sum, the government leaders and the in-house ICT public officials, that is PDE, have played a leading role to enhance the e-government in Malang. With minimal supports from the central government, they are struggling to develop regional informatization. One thing they should recognize is that the collaboration among major players such as ICT companies, universities, and citizens in enhancing regional informatization is essential to create the values and enjoy the benefits from it.

IT Personnel

The number of ICT Personnel in the Malang District is relatively high compared with other districts and cities in Indonesia. As of January, 2012, 96 employees have specialization in ICT. Among them, 26 work for the Electronic Data Center and 33 work for other departments.

ICT organization is under the local secretary and the head of ICT personnel is IIIA level, which is relatively low compared with other heads of division. In the information society, the role of Chief Information Officer (CIO) is increasingly important more and more. To coordinate all ICT projects in local government efficiently, it is better to appoint, at least, CIO as IIB.

According to the questionnaire survey, the respondents' evaluation is conflicting. 35.5% of respondents disagree that the Malang District government has enough staff members to work for regional informatization whereas other

35% agree that their government has.

Table 5. **Evaluation of Enough Staff Member to Work for Regional Informatization**

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	9.7%	9.7%	9.7%
Somewhat Disagree	8	25.8%	25.8%	35.5%
Don't Know/ Can't Say	9	29.0%	29.0%	64.5%
Somewhat Agree	8	25.8%	25.8%	90.3%
Strongly Agree	3	9.7%	9.7%	100.0%
Total	31	100.0%	100.0%	

In sum, the Malang District government has relatively enough ICT personnel to work for regional informatization compared with other local governments. The rank of CIO in the Malang District government would be better to be promoted from IIIA to IIB, at least for better initiating and coordinating regional informatization.

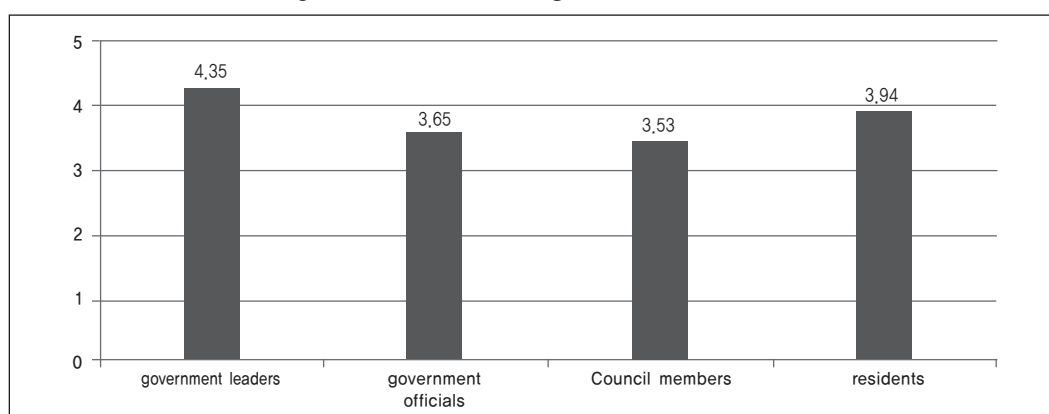
IT Leadership

According to some studies, for instance, Heeks (<http://www.egov4dev.org/success/evaluation/factormodel.shtml#success>) and OECD (<http://www.oecd.org/dataoecd/60/60/2502539.pdf>), the key factor for the success of e-government is internal political desire, that is, leadership and commitment, which is driven by key government officials for reform and for achievement of e-government goals.

Figure-5 shows the level of interests in regional informatization by major players. According to the questionnaire survey, public officials positively evaluate that regional government leaders are very much interested in regional informatization. In addition, the respondents positively evaluated the residents' interests in regional informatization.

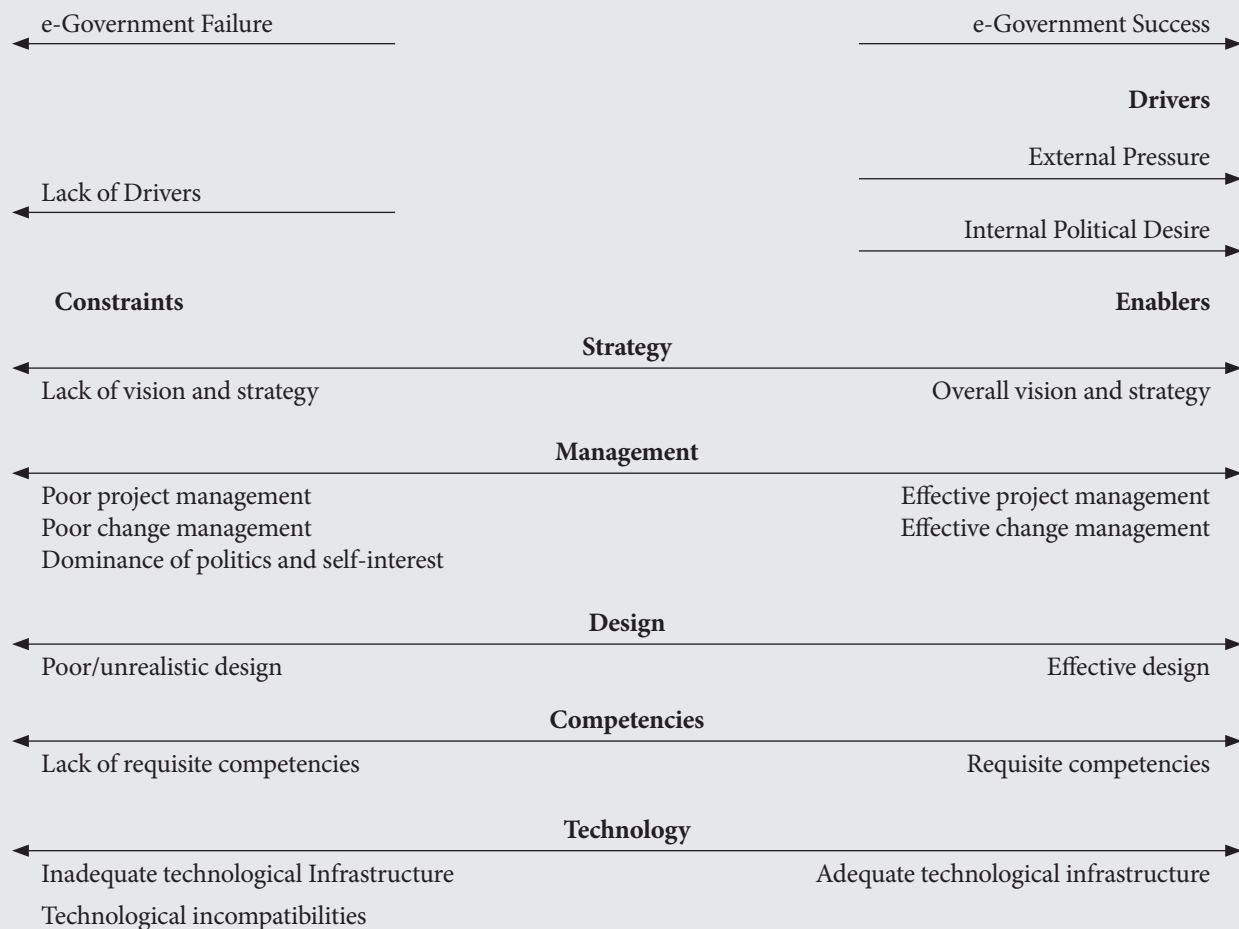
Respondents, however, evaluated government officials interests in regional informatization as relatively low compared to government leaders and residents. Based on the survey, council members' interests in regional informatization is the lowest among four major actors in regional informatization.

Figure 5. **Interests in Regional Informatization**



Box 1. A Factor Model for e-government Success and Failure

This model summarizes the reasons behind success and failure of e-government projects. Left-pointing items encourage failure; right-pointing items encourage success. The factors are explained in more detail in the tables below.

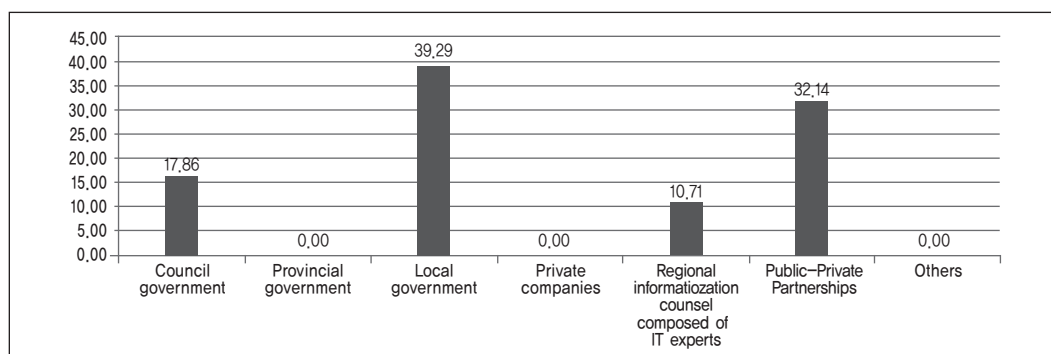


Source : <http://www.egov4dev.org/success/evaluation/factormodel.shtml#success>.

In addition, the respondents indicated that local government should be the main agent for regional informatization. According to the survey, public officials in the Malang District government local government and public-private partnerships should play the leading role in regional informatization followed by central government and regional informatization committee composed of ICT experts.

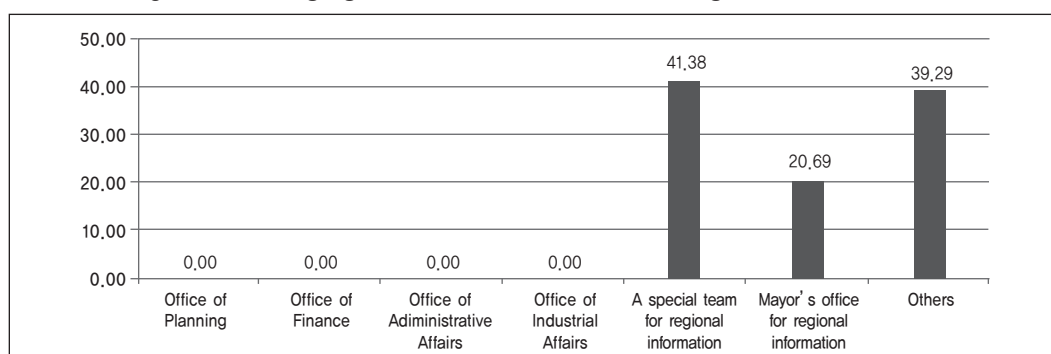
This result shows that successful regional informatization could not be initiated and implemented by the local government itself. That is, the collaboration among main actors is essential for the success of regional informatization. In addition, this result indicates the governance of regional informatization in Indonesia. For the success of regional informatization, the main agent should be the local government but it would need institutional, financial, and technical support from the central government and the special committee for regional informatization composed of ICT experts.

Figure 6. Leading Agents for Regional Information



According to the questionnaire survey, instead of the existing departments or agency, a new organization which has specialty on regional informatization would need to be established. More than 40% of respondents indicated that a special team for regional informatization should play the leading role for regional informatization in the Malang District. Also, about 20% of the respondents argued that regional informatization should be directed by the mayor's office.

Figure 7. Leading Agents in Local Government for Regional Informatization



In sum, based on the interview and the questionnaire survey, interests on the regional informatization by leaders in the Malang District government are quite high, whereas recognition and interests by local council members are relatively low. For the success of regional informatization in the Malang District, a special organization for regional informatization should have initiative under the strong leadership of the district government. In addition, the collaboration among public, private, and citizens is to be achieved for successful regional informatization.

IT Budget

Funding for the e-government and regional informatization promoted by the Malang District government has been mostly supported by its own budget. The portion of ICTs budgets is very little, that is, as of January, 2012, only 0.1% of the total budget in the Malang District government. ICTs department's own budget is about 2.7 billion RP but the total budget is about 2 trillion. In addition, each department and agency also has its budget for ICTs development.

A project-based funding from the central government ministries or international organizations is rare. It is important to secure enough budget for a successful regional informatization. The Malang District government should secure a budget for the regional informatization from the central government and international organizations. In addition, it is essential to seek partnerships with the private companies.

The amount of absolute ICT budget is definitely small but the perception on financial resources is quite different. Whereas about 40% of respondents agree that the Malang District government has enough financial resources for regional informatization, only more than 20% disagree that the government has enough financial resources. Public officials in the Malang District government should have a change of conception reflecting the importance of regional informatization in the information era of rapid change.

Table 6. Evaluation of Enough Financial for Regional Informatization

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	16.1%	16.1%	16.1%
Somewhat Disagree	2	6.5%	6.5%	22.6%
Don't Know/ Can't Say	11	35.5%	35.5%	58.1%
Somewhat Agree	12	38.7%	38.7%	96.8%
Strongly Agree	1	3.2%	3.2%	100.0%
Total	31	100.0%	100.0%	

Major Projects

With the limited financial resources available for the regional informatization, the Malang District government has pursued to establish ICTs infrastructure. Since 2008, the Malang District government has established Wide Area Network(WAN). Under this project, the Malang District government connected 13 points using the mini Base Transceiver Station (BTS). Currently, using speedy Asymmetric Digital Subscriber Line(ADSL) and mini BTS, all districts are connected to Network Operating Center, the Malang District government but gradually all will use mini BTS.

Box 2. Base Transceiver Station(BTS)

A base transceiver station (BTS) or cell site is a piece of equipment that facilitates wireless communication between user equipment (UE) and a network. UEs are devices like mobile phones (handsets), WLL phones, computers with wireless internet connectivity, WiFi and WiMAX gadgets etc. The network can be that of any of the wireless communication technologies like GSM, CDMA, WLL, WAN, WiFi, WiMAX etc.

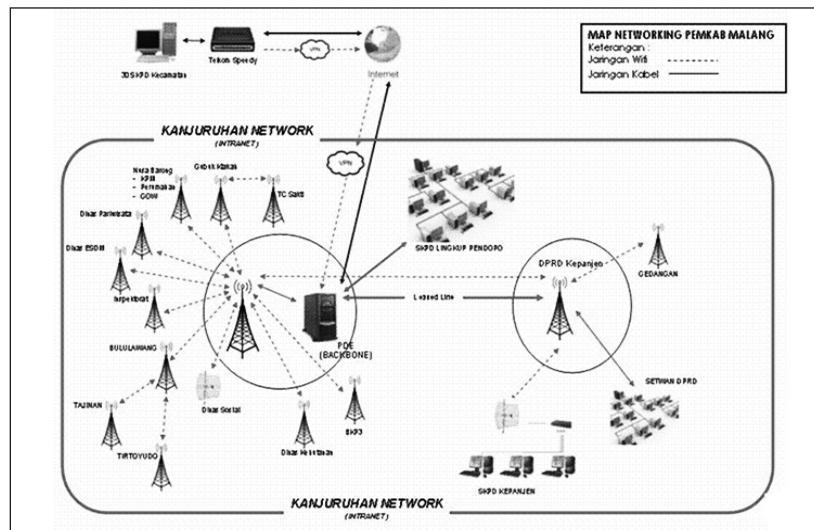
BTS is also referred to as the radio base station (RBS), node B (in 3G Networks) or simply the base station (BS). For discussion of the LTE standard the abbreviation eNB for evolved node B is widely used.

Though the term BTS can be applicable to any of the wireless communication standards, it is generally and commonly associated with mobile communication technologies like GSM and CDMA. In this regard, a BTS forms part of the base station subsystem (BSS) developments for system management. It may also have equipment for encrypting and decrypting communications, spectrum filtering tools (band pass filters) etc. Antennas may also be considered as components of BTS in general sense as they facilitate the functioning of BTS. Typically, a BTS is controlled by a parent base station controller via the base station control function (BCF). The BCF is implemented as a discrete unit or even incorporated in a TRX in compact base stations. The BCF provides an operations and maintenance (O&M) connection to the network management system (NMS), and manages operational states of each TRX, as well as software handling and alarm collection. The basic structure and functions of the BTS remains the same regardless of the wireless technologies.

Source : Wikipedia

Since September 2002 when the Websites of the Malang District government were firstly launched, the government had spent the most of time to prepare information on each agency site creation, human resources, and easy means of access such as figuring by June, 2008.

Figure 8. Networking Map of Malang Regency



Source : Development e-government of Malang Regency

Then, during the next one year, the Malang District government had tried to make the Web site interactive with citizens as well as to make connection among agencies by June, 2009. By the end of 2012, the Malang District government set a goal of stabilization of the Web site which may include the transaction of public services, manufacturing applications, and data interoperability among agencies.

In terms of front-office as well as back-office applications, the Malang District government has not initiated advanced e-government applications. The district's Website provides such information as the government organizations, tourism, policy agendas, public service and contact points, etc. This Website provides only the Bahasa version.

For the successful e-government projects, vision and strategy for e-government is a key. Vision and master plan for e-government should identify “where we want to get to”, consider ICTs as the means not the end, and integrate ICTs with broader reform objectives. In this sense, it is important to review vision and master plan for e-government in the Malang District government. The survey result shows that about 70% of respondents agreed that the Malang District government has established a long term plan for regional information services whereas only about 10% disagreed.

Table 7. Evaluation of a Long Term Plan for Regional information Service

	Frequency	Percent	Valid Percent	Cumulatice Percent
Strongly Disagree	2	6.5%	6.5%	6.5%
Somewhat Disagree	1	3.2%	3.2%	9.7%
Don't Know/ Can't Say	6	19.4%	19.4%	29.0%
Somewhat Agree	12	38.7%	38.7%	67.7%
Strongly Agree	10	32.3%	32.3%	100.0%
Total	31	100.0%	100.0%	

Interestingly, the Malang District government has not yet developed specific vision and master plan for e-government and regional informatization. Once again, there would be the gap between realities and subjective view.

In sum, the Malang District government has not initiated and implemented main e-government projects since the launch of its Websites in September 2002. Due to the financial difficulties as well as vision and master plan being less specified, the Malang District government has not yet established the roadmap for e-government and regional informatization to initiate and implement projects.

Survey Data Analysis

In this section, results of the questionnaire survey will be reviewed for developing the roadmap for regional informatization in the Malang District. Some results of the survey were already introduced in the previous section. Instead of the results reviewed previously, there are such results as effects of regional informatization and fields of regional informatization.

First, Table-8 shows the results on the evaluation on the effects of regional informatization. Based on the results, respondents agreed that regional informatization will 1) enhance the quality of education, 2) improve productivity, 3) improve government efficiency, 4) boost the regional economy, 5) improve the living conditions, and 6) contribute to solving the environmental problems. That is, respondents recognize that the regional informatization could be helpful to solve some problems in the public and private sector. Nevertheless, there are some concerns in that 1) regional informatization in the business sector will make business corporations hire fewer workers and 2) regional informatization will deepen the disparity between the rich region and the poor region, even though they are still positive.

Table 8. Effects of Regional Information

	Average	Standard deviation
Regional Informatization in the business sector will make business corporations hire fewer workers.	2.63	1.30
Regional Informatization in the society will infringe the citizen's privacy.	1.77	0.90
Regional Informatization will reduce the business travelling and hence will mitigate the traffic congestion.	3.80	1.30
Regional Informatization will improve productivity.	4.65	0.55
Regional Informatization will deepen the disparity between the rich region and the poor region.	2.81	1.58
Regional Informatization will improve the living conditions.	4.26	0.77
Regional Informatization will improve government efficiency.	4.58	0.56
Regional Informatization will contribute to solving the environmental problems.	4.13	0.50
Regional Informatization will enhance the quality of education.	4.71	0.46
Regional Informatization will boost the regional economy.	4.58	0.62

Second, the respondents indicated 1) economy, 2) civil service and law, and 3) education as top 3 fields of regional informatization. In addition, science and technology, health and social welfare, and weather forecast and agriculture followed. It shows that respondents expected that regional information could boost regional economy and improve quality, transparency, and efficiency of civil service.

Table 9. The Important Field of Regional Information

Field	1st	2nd	3rd	Total*
Weather forecast and agriculture	12.9%	3.2%	0.0%	15.03%
Economy	38.7%	9.7%	12.9%	49.47%
Civil service and law	22.6%	25.8%	3.2%	40.87%
Science and technology	9.7%	12.9%	9.7%	21.53%
Education	6.5%	29.0%	9.7%	29.07%
Leisure, sports, culture, entertainment	0.0%	0.0%	0.0%	0.00%
Health and social welfare	6.5%	6.5%	12.9%	15.13%
Industry and trade	0.0%	3.2%	22.6%	9.67%
Employment	0.0%	9.7%	9.7%	9.70%
Tourism	3.2%	0.0%	19.4%	9.67%
Others	0.0%	0.0%	0.0%	0.00%

Third, the survey results show that human resources and financial support are key issues to promote ICTs. That is, for the promotion of ICTs, training ICT workforce is the first thing to do and providing ICT industry with financial support is also a main activity. In addition, the investment of ICT equipment and community education are also important activities in promoting ICTs.

Table 10. Important Activities for the Promotion of Information Technology

	1st	2nd	3rd	4th	5th	Total
Training information and communication technology workforce	57.14%	14.29%	21.43%	4.35%	0.00%	83.17%
Increasing the rate of information technology equipment	3.57%	39.29%	39.29%	21.74%	0.00%	67.27%
Providing financial and monetary support of information technology industry	25.00%	35.71%	14.29%	21.74%	0.00%	70.84%
Providing more information and education about regional informatization to the community	14.29%	10.71%	25.00%	43.48%	33.33%	61.92%
Others	0.00%	0.00%	0.00%	8.70%	66.67%	16.81%

Fourth, among the three areas, the respondents indicated regional administrative information system could be the first priority to be developed. Then, regional economic information system could be the second area to be made advanced followed by regional residential life information system.

Table 11. Area to be Developed in Regional Information System

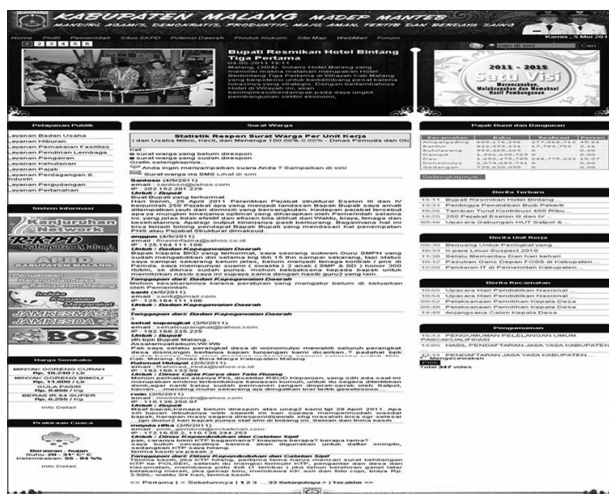
	1st	2nd	3rd	Total
Regional administrative information system	51.72%	12.0%	36.0%	71.72%
Regional residential life information system	27.59%	36.0%	32.0%	62.26%
Regional economic information system	20.69%	52.0%	32.0%	66.02%

In sum, public officials in the Malang District government indicated that regional informatization should be first focused on both local government administration and local economy. To do so, they argued ICT human resources and financial support to ICTs should be improved.

Diagnosis

In order to diagnose the regional informatization in the Malang District, first of all, it is important to review the Website of the Malang District government because it is the contact point between citizens and businessmen and the government. The Websites of the Malang District government is in the first stage based on the e-government development model suggested by the UN. It provides citizens and businessmen with information about the government and some descriptive information on public services.

Figure 9. Websites of the Malang District government



Source : <http://www.malangkab.go.id>.

Since 2007, the Ministry of Communication and Information Technology has regularly conducted thee-government ranking project (PEGI). Based on the 2011 evaluation, the status of the Malang District e-government is summarized.

First, in terms of policy, the grade for the policy dimension is poor. Positive indicator is that the strategic plan has listed several strategic activities undertaken with the use of e-government, especially in public service. Negative indicator, however, is that the application of e-government as the main medium for carrying out the mission of government has not been confirmed in the vision and mission of Malang Regency. As a result, recommendations to the dimensions of policy are that 1) all PDE activity in the management of e-government requires continuity, and continuity of employment and utilization, and 2) it is necessary, as an umbrella policy, that there should be a rule of law sufficient to prevent changes to benefit only from the turn of executive officers and related personnel.

Second, with regard to the institutional dimension, the grade for Malang Regency is poor. This is demonstrated by some of the following indicators. Positive indicator is that PDE activity is a part of the activities of the Regional Secretariat, so that due to the needs of the role of coordination and control activities, service inter-working unit does not become a bottleneck. Also, the PDE is responsible for the operation and maintenance of all facilities and programs, and is not responsible

for the contents of eligibility information. Negative indicator, however, is that SOP does not have an adequate legal basis for necessary endorsement. Recommendations for improvement, therefore, are to complete the SOP as needed and to implement supportive administrative procedures. Also, socialization of SOP has a legal basis which should be observed and implemented.

Third, as to infrastructure, the grade is poor. Positive indicator is that the Malang District has a network to the village level which covers most areas of the district even though the natural conditions and the environment are not easy to implement. Negative indicators, however, are that 1) security processes are physical, and highly dependent on manually implementing supervision, and 2) the government does not have the facilities and emergency contingency plan in the face of disaster. Recommendation for this dimension, therefore, is to re-arrange the placement of facilities based on the level and areas of risk in order to monitor high risks effectively.

Fourth, the grade of applications dimension is poor. Positive indicator is that most of the needs of e-government in the key functional application has been equipped and operated in whole SKPD and reaches down to the village although geographically the area is quite difficult to reach. In addition, the government already implemented e-ID card and an internal e-mail as a medium of communication. Moreover, the government already started to implement the use of shared data between different systems for data accuracy and efficiency of operation of the application. Negative indicators, however, are that 1) the government did not support inventory of all applications by documentation properly, and 2) continuity of care is questionable.

Recommendations in the dimensions of application, therefore, are 1) to complete all the deficiencies that exist, and 2) to formalize the use of data between systems (read only) which is a tangible example of the correct application of information management and efforts to remove the islands of information to enhance the benefits of data between systems, in order to avoid problems that interfere with the continuity of the benefits of a good application in the future, and in order to be an example which can be applied to other similar applications.

Finally, in terms of a plan, the grade of this dimension is poor. Positive indicator is that the government is preparing a plan for the preparation of master plan for e-government in cooperation with BPPT. Negative indicators, however, are that 1) PDE is formally not a working unit that has the authority to be able to support and oversee the feasibility of developing e-government due to the work of planning and budget process and 2) there has been no standard procedure that involves PDE in the work process of making the work plan and the district government. Recommendation in this dimension, therefore, is to complete the planning procedures which PDE has the obligation to complete.

In sum, assessment results in the overall dimensions of Malang Regency are poor. This assessment is based on information obtained from the exposure assessment participants and assessors during the assessment of the excavation. In addition, this assessment also refers to indicators that are available at the time of the assessments are conducted. Herein are the assessments of e-government in the district of Malang in each dimension.

Future Local e-government Roadmap

Based on the interview, the survey questionnaire, and previous researches, this report suggests a roadmap for the regional informatization development in the Malang District government by 2020. So called, “2020 roadmap for Malang’s digital prosperity” can be categorized into such four areas as digital management, digital service, digital participation, and digital infra. In order to improve regional informatization in these areas, it is necessary to have a new unit(department or committee) to initiate, implement, and coordinate regional informatization which has responsibility for establishing common technological standards for system design and application development, governing the standardization issues in the entire district, and monitor the development and procurement process not to violate the standards.

Table 12. 2020 Roadmap for Malang’s Digital Prosperity

Area	2012 - 2014	2015 - 2017	2018 - 2020
Digital Public Management	<ul style="list-style-type: none"> Establishing electronic procedures Paperless administration Service oriented BPR(BRM, process redesign) 	<ul style="list-style-type: none"> Expanding common use of public information Unified administrative information system 	<ul style="list-style-type: none"> Expansion of administration and policy information sharing Mobile applications to the digital public management
Digital Public Service	<ul style="list-style-type: none"> Portal Service for Citizens G2B Service through single point of contact 	<ul style="list-style-type: none"> Enhancement of electronic civil service G2B specialized integrated service (taxation, logistics, etc.) 	<ul style="list-style-type: none"> Activation of Digital Public Service Usage Mobile applications to the digital public service
Digital Public Participation	<ul style="list-style-type: none"> Expanded Public Information Open through Internet 	<ul style="list-style-type: none"> Expanded Digital Participation Channels (E-Forum, E-Polling, etc.) 	<ul style="list-style-type: none"> Service oriented BPR Mobile applications to the digital public participation
Digital Infra	<ul style="list-style-type: none"> Attainment of Specialized Manpower ICTs Organization Development and Application of ITA Enhancement of Information Protection System (thru 2020) Strengthened Response to Information Security Accidents(thru 2020) 	<ul style="list-style-type: none"> Advancement of Regional Informatization Communication Network 	



Local E-government in the District of Sragen

The District of Sragen

Sragen Regency is a district government located in Central Java. This district is composed of 20 sub-districts and 208 villages. Sragen's major industry is agriculture. A half of its 900,554 population work for farming and the 20% of the population serve in the public sector.

Sragen District is one of the local e-government transformation leaders in Indonesia. This district has received numerous awards in recognition for its achievements since its initiation of e-government in 2002. In the past decade, Sragen has made notable progress in both back office functions and front office services as well. According to the e-government advancement ranking assessed by the Ministry of Information and Communication of Indonesia, Sragen is ranked as No. 8 out of 152 local governments in 2011. Now, Sragen District proudly calls itself as "Cyber Regency" by Sragen public officials.

Box 3. Recent E-government Awards List

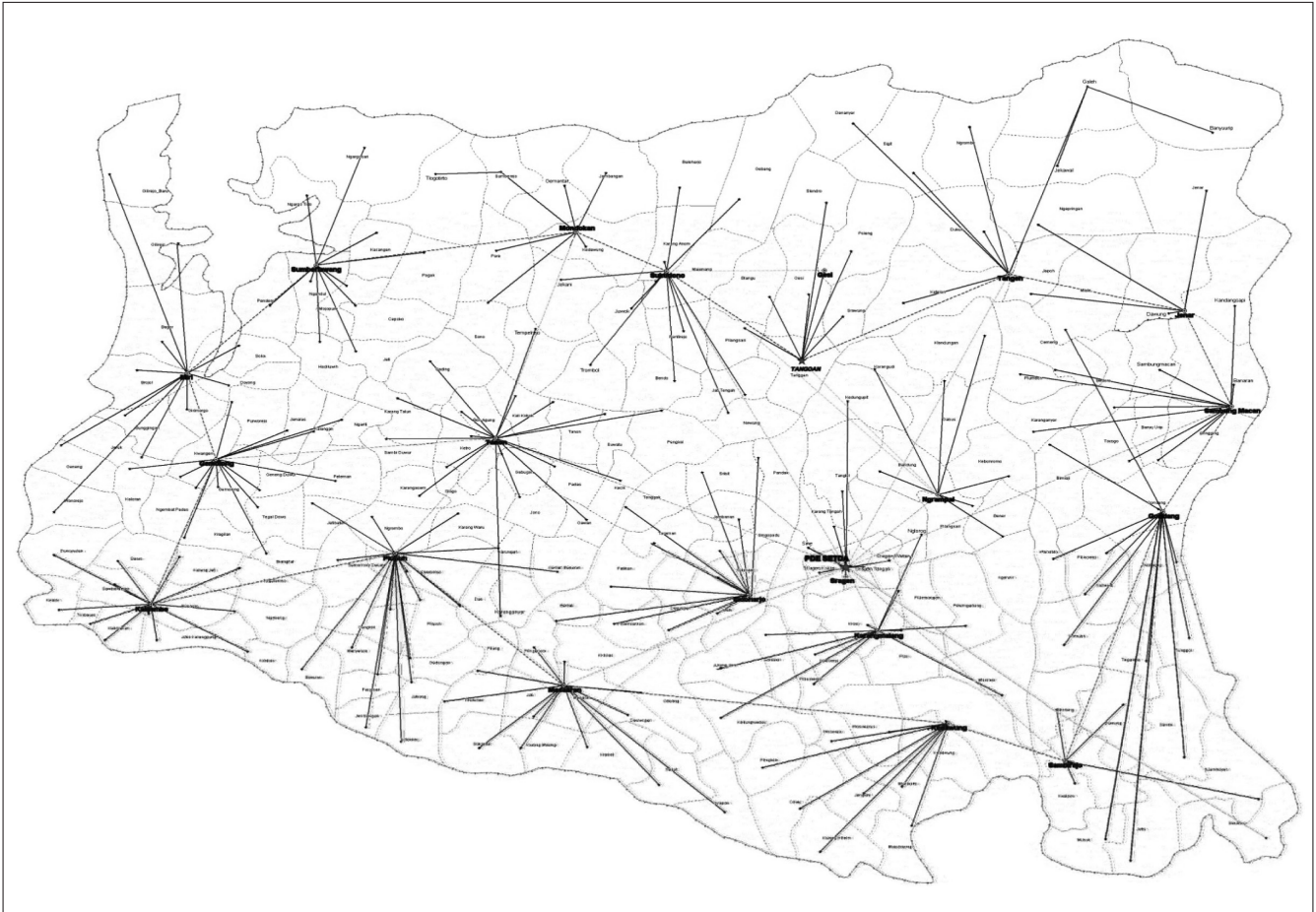
2007 Best of the Best e-Government Award
 2008 No. 2 in the Indonesia Open Source Award (IOSA)
 2010 Regional Research and Technology Award from the Ministry of Research and Technology

In particular, the former regent, Mr. Untung Wiyono, has been praised as the champion who set the vision for e-government, transformed the people's mindset, and mobilized the resources to realize the innovative ideas. The goals of Sragen's E-government are summarized (Sragen Regency, 2012: 2):

- Create transparent and efficient government (G2G)
- Enhance the access to public services (G2C)
- Improve the quality of public services (G2C)
- Develop IT friendly business environment (G2B)

As of 2012, all the government units at the sub-district and the village levels are connected through the wireless network developed and managed by the Electronic Data Center (PDE). Figure-10 shows the connectivity map of Sragen.

Figure 10. Map of Sragen Information Network Infrastructure(Adapted from Sragen Regency, 2012:5)



Current Status

Major Players

Mr. Untung Wiyono, the former regent of Sragen Regency, was the champion who set the path to the e-government of Sragen as we see now. The former businessman with rich experiences in the manufacturing and energy industries brought in his private sector management experiences to the district. He believed that the investment in e-government would contribute to enhancing the transparency of the district government and thereby reduce the unnecessary cost the businesses and the investors were enduring. He anticipated that a business friendly environment with less corruption would bring back more revenues to the district.

The Electronic Data Center (PDE) has played the key role in planning and implementing the e-government of Sragen. Other functional units have their own IT budgets often provided by the central government ministries for their own functions. Another important unit symbolizing the e-government of Sragen is the One Stop Service Center. This unit plays a critical role in coordinating public services across the functional units' boundaries and provide one stop services for residents and businesses.

The District Council of Sragen (the legislature) has been also supportive of the e-government transformation. The Council understands that e-government is vital to improving the quality of public services and making the government more efficient. Even though there are very few local private IT firms, the district occasionally utilizes individual IT consultants to develop the e-government applications. Yet, most of the works are done by the in-house personnel. Vendors are contracted only for building and maintaining the network infrastructure.

A group of local IT experts voluntarily formed an ICT social forum. Although they do not directly participate in the district's e-government transformation, they could be useful resources in the future for the district to acquire IT expertise and communicate with the citizens. The government also provides the local businesses with the trainings for how to conduct e-commerce for Batik (traditional Indonesian textile), handcrafts, etc.

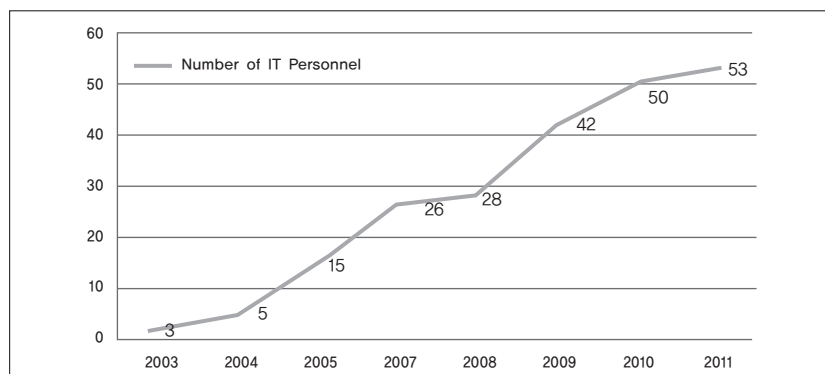
The enactment of the regional autonomy law in 1999 empowers the Indonesian local and regional governments to administer autonomy and therefore local governments including Sragen Regency are responsible for developing their own IT infrastructure and applications. The central government, especially the Ministry of Communication and Information Technology, provides blue prints for local e-government transformation. However, financial and technical supports from the central government to the local and regional governments have been minimal.

So far, the e-government transformation in Sragen has been government-driven rather than citizen-centered. Therefore, citizens have not been considered as major players of e-government. The government leaders and the in-house IT experts have led the e-government transformation and identified the areas that the citizens might enjoy the benefits of e-government. There have been some efforts made by the district to understand the citizens' perception of e-government. Sragen Regency regularly conducts a survey of the service users to evaluate the quality of the e-government services and receive suggestions to improve them (Anwaruddin, 2010).

IT Personnel

In 2002 when Sragen District was starting the e-government transformation, the district had only three IT employees. Yet, the size of IT personnel sharply rose in the past 10 years. As Figure-11 shows, from 2003 to 2011, the number of IT specialists increased by about 6.25 persons per year. As of now, 53 employees have specialties in IT. 28 work for the Electronic Data Center and 25 work for other departments. There was a huge increase in the size of IT personnel from 2008 to 2009. New hiring was made by making a special request to the central government. As an effort to improve the IT capacity of government officials, selected employees are sent to the universities or training programs.

Figure 11. **The Trend of IT Human Resource Increase (Sragen Regency, 2011: p.8)**



In addition to expanding the IT personnel, the district government has also made significant efforts to improve the IT literacy of young public officials and key officials. This group of people receives regular IT trainings to acquire necessary skills to operate computers (Furuholt & Wahid, 2008).

IT Leadership

Effective IT leaders often bring in novel changes to the organizations, not only in the area of IT, but also in every aspect of government affairs. Transforming the organization with IT is not possible by simply applying advanced technologies. Fundamental changes occur only when the organization embraces an innovative culture: sharing new ideas and visions throughout the organization.

None of the interviewees we met failed to mention that the e-government of Sragen would not be possible without the former regent, Mr. Wiyono. He truly championed the inception of the e-government and more importantly he implanted a new mind set to the government officials: transforming what the government does and how it does through e-government is necessary. Mr. Wiyono's reform was not limited to the informatization itself. New ideas were continuously adopted for improving the effectiveness of government and the quality of life in the district. For instance, the district introduced an organic waste recycling system. They created a new incentive system for the residents to recycle the organic wastes. Organic wastes generated from the traditional markets are collected separately and then processed into the organic fertilizer which is then provided to the farmers. This is a win-win strategy. Local vendors maintain a clean environment in the traditional markets and the farmers enjoy the increased income due to selling organic products to the affluent Indonesians and overseas customers (Prasetijo, 2008).

IT Budget

Funding for the e-government in Sragen was mostly supported by its own budget. IT department's own budget is about IDR 1.2 million in 2012. However, other functional units also have their budgets for IT development. If we sum all together, the total IT budget of Sragen amounts to IDR 2 million in 2012. It means the IT department's budget is only 0.12% of the total annual budget and, even when it is summed up with the individual units' IT budgets, the total IT budget is merely 2% of the total annual outlays.

Alternative funding sources are sparse. Project-based funding from the central government ministries or international organizations is irregularly awarded to the district. For example, the Asian Development Bank (ADB) provided financial support for the development of E-office system in collaboration with the Ministry of Home Affairs. The district government also seeks partnerships with the for-profit companies. One instance is the printing service of ID cards. A private printing company provides printing services on behalf of the government and, thus, the government did not need to purchase printing equipment and gave the private company a new business opportunity (Sundari, 2012).

The limitation of IT budget promoted the burgeoning of creative ideas for alternative funding sources or reducing the cost. One example is the installation of network using wireless technology instead of typical fiber-optic cables as an effort to bypass the huge amount of initial investment for the fiber-optic network.

Major Projects

The first stage of e-government development in Sragen District began with building the necessary infrastructure. The limited financial resources available for the district motivated the district to come up with an alternative – to opt for

the wireless network to connect its government units instead of expensive and time-consuming installation of fiber-optic cables.

By 2006, all the sub-districts in Sragen were connected to the Electronic Data Center (PDE) and in the following year, all 208 villages were connected. The entire process of designing the infrastructure and the development of information systems and applications were executed by the PDE employees.

The first initiation of e-government in 2002 was in administrative affairs. It began with enabling paperless communication between government units which is called as “Local Administration System”. Electronic documents are exchanged through the system. This project was completed in two months by the Electronic Data Center personnel. Other applications developed for administrative affairs include: personnel management system, payroll management system, health care information system, if we name a few (Marrany, 2011).

Figure 12. Sragen District Government before informatization



Front-office applications have been developed for the interactions with the residents and the visitors. The district's website (www.sragenkab.go.id) provides information on the government organizations, infrastructure, tourism, investment opportunities, policy agendas, public service and contact points, etc. This website even provides an English version besides the Bahasa version.

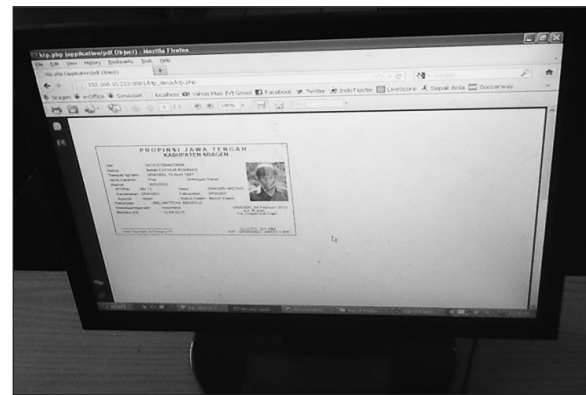
The district also developed the e-government services for citizens, such as on-line applications for driver's licenses and birth certificates, library information system, regional market information service, etc. Up to now, 70 types of licenses are processed on-line.

Sragen District is the first district government in Indonesia providing the on-line service for ID card printing. Interestingly, this project was implemented through a partnership with a private company. The district provides the data already stored in its administrative information system and the company provides the printing services. Hence, the district government was free from the burden of purchasing and maintaining the printing equipment and the private company found a new business opportunity (Anwaruddin, 2010).

Figure 13. Sragen District Portal



Figure 14. ID Card Printing Page View



E-government for business is another object of Sragen's e-government. Probably, one of the most important achievements of the District's e-government transformation is the One Stop Service Center operated by the Integrated Licensing Agency (BPT). This center, established in 2002, is not a part of the Electronic Data center, but the center uses IT heavily. Business users' applications for business licenses are processed at the center.

The change made by the center is huge. For example, in the past, business people had gone through many offices to get business licenses. A typical process of business licensing took a few days. It now takes only a few hours and the whole process is completed in one place, i.e. the One Stop Service Center. Moreover, the applicant can check the status of his or her application by the Internet (Sundari, 2012). The economic impact of the One Stop Service Center is enormous. Although it would not be solely the effect of the center, the business investment to Sragen has increased from 592 billion Rp. in 2002 to 955 billion Rp. in 2005 (Furuholt & Wahid, 2008).

Figure 15. Integrated Licensing Agency Website



Figure 16. One-Stop Service Center



Another achievement for the business sector users is e-procurement. This system was put on-line 3 years ago. Currently, all biddings for procurement are processed electronically through the e-procurement system. The district also utilizes the Internet for providing voting related information. Voting record is calculated and announced through the e-voting website. It is notable that the district adopted VoIP for internal communications. They also set up teleconference and Net-meeting systems to reduce the travel time between government units.

The lessons learned from the e-government transformation do not stay only inside Sragen District. Many other local governments in Indonesia are eager to learn from Sragen. Now the district shares the experiences with other districts and even makes some extra revenues by charging consulting fees.

Survey Data Analysis

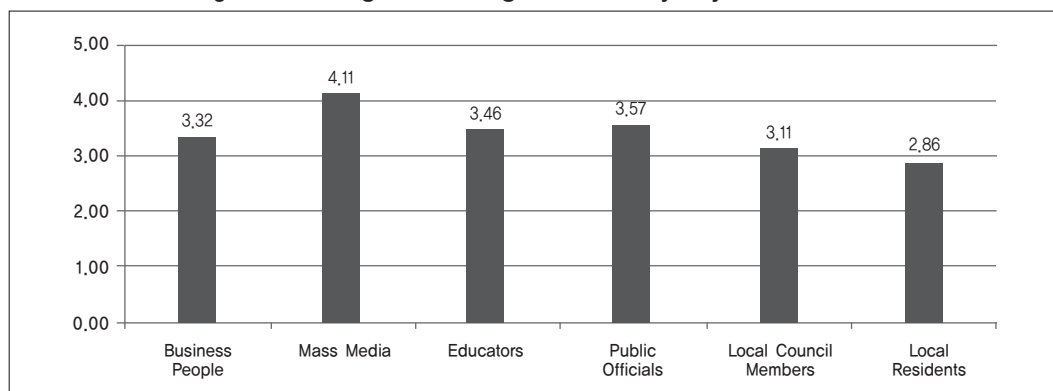
The research team conducted an informatization need assessment survey to the Sragen District's government officials attending the discussion session while the research team was visiting the government. Unfortunately, only eight public officials completed the survey questionnaire and therefore the data collected have very limited information and are potentially biased. Yet, we report the findings from the survey assuming that the participants are the people who have deeper interests and understanding of the e-government in the District of Sragen than the average public officials of the government.

Recognition of E-government

The first set of questions asked to what degree different groups of community members recognize the importance of e-government or informatization. The result shows:

- Mass media are perceived as having the highest level of understanding of e-government.
- More than half of respondents believe that public officials and educators have a fairly high level of recognition of e-government.
- Local business people, local council members and residents are considered as lacking in the understanding of e-government.

Figure 17. **Recognition of E-government by Key Stakeholders**

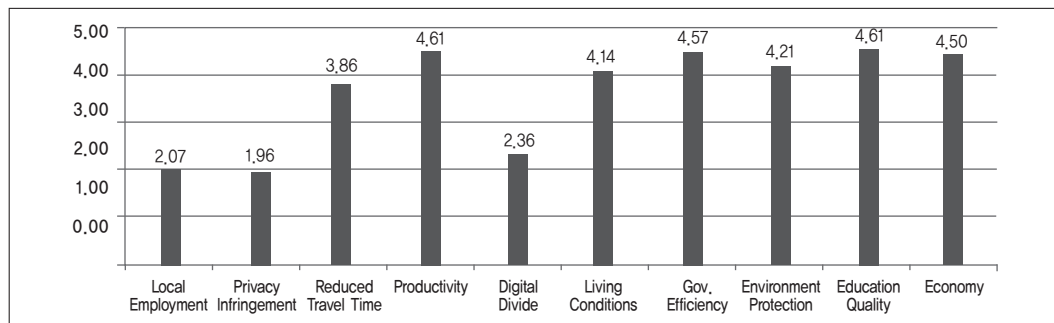


The findings imply that Sragen District needs to increase the activities to provide more information on e-government to local business people, local council members and the residents in various ways. More public relations and educational activities at the community level will be useful.

Expected Effects of E-government

We measured the effects of e-government in the following areas: local employment rate, threat to privacy, reduced traveling time, productivity, disparity between the poor and the rich, the residents' living conditions, government efficiency, solving the environmental problems, quality of education, and the local economy.

Figure 18. Expected Effects of E-government

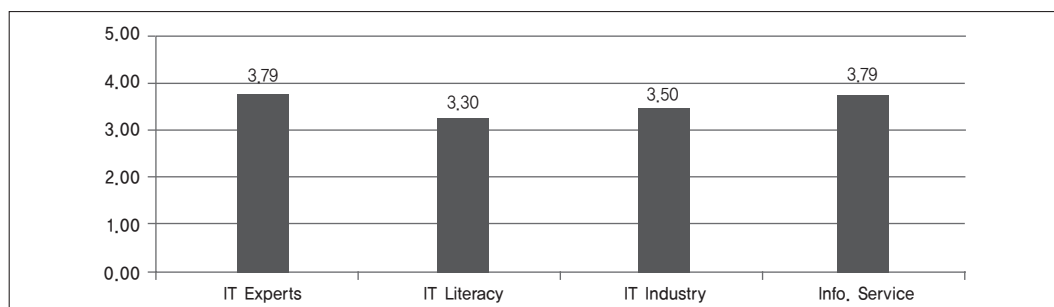


The respondents strongly believe that e-government will produce positive effects in most of the areas. It is very interesting that none of the respondents recognizes that e-government may infringe privacy rights. It may be because Sragen's e-government has not matured to the fully transactional stage. If the district wishes to transit smoothly to the next levels of e-government, they should pay more attention to developing privacy protection measures.

Current Development Level and Capacities

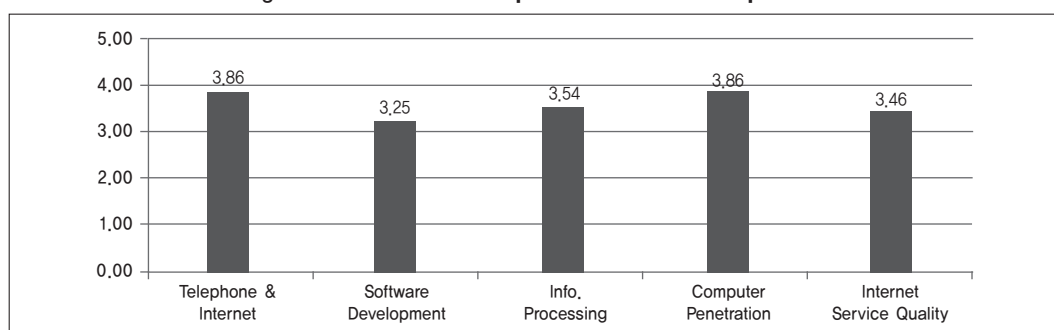
Next questions were designed to measure the development level of information technologies and the capacities of district people.

Figure 19. Current Development Level of IT Resource



The respondents answer that the district suffers from the lack of IT experts and IT industry in the district. However, the Sragen officials believe that the district excels in all the other areas, such as IT literacy, network capacity, software development, computer penetration rate, and the quality and speed of the Internet.

Figure 20. Current Development Level of IT Capacities



Informatization Champion

The district's e-government has been undoubtedly led by the district government. The respondents seem to expect that more diverse actors lead the e-government implementation. While 28.6% of the respondents still believe that the district government should continue to play the leading role, the same number of district officials expect more leadership from the central government.

Public-private partnerships received the 21.4% of the votes. This result clearly indicates that government officials perceive that too much burden has been placed on the district. They expect more participation and support from the central government and the private sector for e-government transformation.

The other set of questions was designed to hear the opinions about the IT governance in the district government. Respondents were asked to pick one government unit in the district government which, in their opinions, should lead e-government transformation. More than 50% of the Sragen officials recommend the special IT unit (i.e. Electronic Data Center or equivalent in the case of Sragen) to take the initiatives for the informatization

Figure 21. Institutional Leaders for E-government

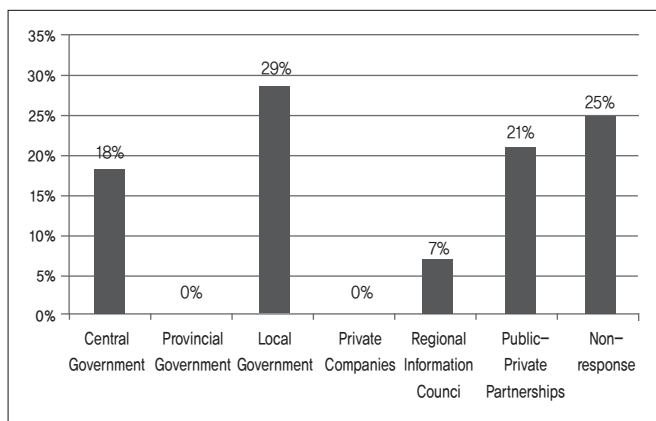
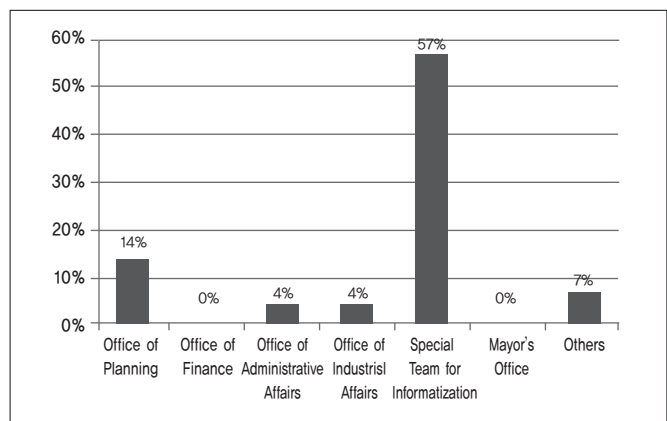


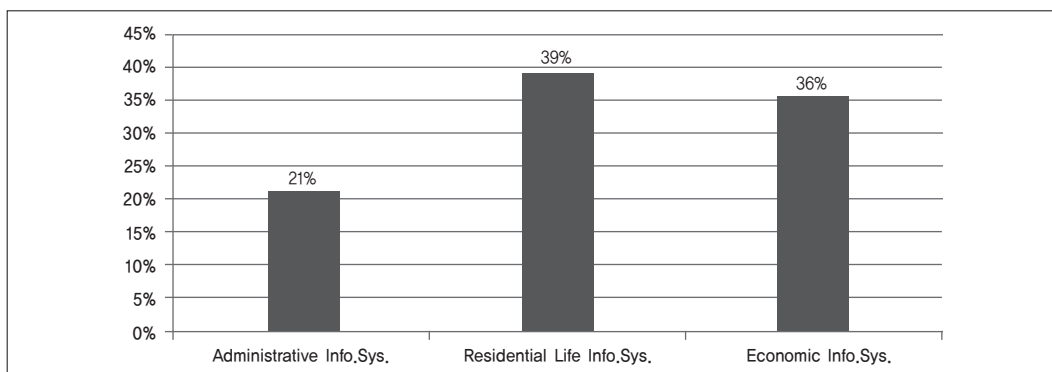
Figure 22. District Government Unit to Lead E-government



Priority

Respondents were asked to prioritize the areas of e-government development considering their relative urgency.

Figure 23. Priority Order for Informatization



39.3% of the respondents suggest that the information systems to serve for the better quality of the residents' life should be on top of the list. Next, informatization for boosting the local economy is regarded as the top priority by 35.7% of the respondents. Relatively small number of respondents (21.4%) feel that the administrative information systems is the top priority.

Diagnosis

First, the former Regent's strong political leadership was the key driver of e-government. Mr. Wiyono did create an innovative culture in the district by clearly visualizing the future of the district. Even though he left the government after two terms of service, the innovative culture is still intact and the district maintains the momentum for the further advancement of e-government.

Second, all the stakeholders in and out of the government have participated in the e-government transformation. Even though the resources acquired from the external environment were limited, the district government has been effective in identifying the areas to which external stakeholders could contribute.

Third, highly capable IT human resources were in place. The district government started the e-government with only three IT specialists. But the initial shortage of IT experts was quickly overcome by hiring more IT specialists. On top of that, regular IT training was provided to non-IT specialist to increase the capacity of operators in functional units and sub-district or village offices.

Overall, the maturation stage of Sragen's e-government is moving from the stage of interactive web presence to the stage of transactional web presence according the UN-PAN e-government stage model. Many civil applications are processed online, yet we have not found any evidence that more complicated monetary transactions can be made through the Internet. For example, monetary transactions, such as paying taxes, fees, and fines, require interconnections between government units and even with banks and credit card companies.

The impressive success of Sragen's e-government will encounter more challenges in the future as the district continues to advance to the next level of e-government.

Box 4. Emerging Challenges for E-government Advancement

The District should

- Assess the e-government users' needs and demands to promote the usage of e-government services;
- Analyze the entire business process because future problems will be more organizational rather than technical;
- Pay attention to the user interface and the user's experience as a way of customer-oriented e-government;
- Establish an executive level position for the strategic use of information technology;
- Devise a new plan for expanding e-commerce for local industries and merchants;
- Develop proper measures to protect privacy and prevent security problems; and
- Continue to improve the IT strategic plan.

First, the e-government in Sragen has been implemented without the detailed analysis of the demands and needs from the e-government service users. The government conducts satisfaction surveys regularly with the existing services, but additional efforts will be needed to understand what the citizens and the businesses want for the e-government. Otherwise, the initial burst of use of e-government may diminish in the future and the new services to be developed in the future may not be actually used by the intended users. It is costly in the beginning but worthwhile in the end to use traditional market research methods to identify the service areas most desired by citizens. The needs assessment results provided in this report could be a useful starting point to delve into the true demands for the e-government.

Second, as the complexity of the organization wide IT system grows, the system will generate more organizational problems besides the technical problems. So far, the district has not paid close attention to the interoperability issues between the idiosyncratic systems. As we often find in the governments practicing advanced e-government services, integrating the multiple systems already developed based upon different technology standards will become a serious barrier to integration. The district should begin to think of developing the enterprise-wide IT architecture to avoid any unnecessary cost of integrating the systems in the future. To do so, the district should analyze the entire business process of the government. Such analysis will provide key information for streamlining the business process and diagnosing the appropriateness of the present organization structure to adopt more advanced information and communication technologies.

Third, the provision of e-government services does not guarantee that the targeted users may fully utilize the functionalities of the services. The district government should consider the effectiveness of the design features of e-government and the experiences of internal users, residents and businesses using the e-government services. As the number of e-government services increases, more diversified users will access the services. It means that one user may have different levels of capabilities of using the information technologies as well as different expectations to the e-government services. Hence, the government should consider applying user interface and user experience assessment methods in designing future e-government services.

Fourth, the district should seriously consider establishing an executive level position for the strategic use of information technology. So far, Sragen District has successfully implemented the e-government initiatives without the executive level Chief Information Officer (CIO). It was possible because the government's main focus was establishing the key infrastructure and developing core administrative systems and applications. If the government pursues the e-government above the early development stages, it is inevitable to have someone aligning the strategies for information technology with the strategies for the entire government enterprise.

Fifth, the district should prepare for the maintenance cost to increase. The achievement in the past will soon become a maintenance burden. This problem occurs because many governments pay less attention to the cost of maintaining the existing information systems, while newly developed e-government services are well recognized. Hence, the government should have a balanced perspective to the budget allocation between the maintenance of existing services and the launch of brand new ones.

Sixth, the current e-government policies of Sragen have not fully considered how to contribute to the local economy. The district should devise a new plan for expanding e-commerce for local industries and merchants. Considering Sragen's natural, historical, and cultural resources, such as prehistoric sites and Batik crafts, the district government may adopt the Information Network Village model which has been successfully implemented in Korea.

Seventh, as the e-government in Indonesian local governments move on to the fully transactional and further fully integrated stages, privacy and security will become increasingly salient issues. Privacy protection is particularly important when multiple entities access and share personal information for the purpose of providing integrated services. Security is especially vulnerable when online financial transactions become popular. The protection measures are available, yet it is costly for one local government to afford.

Finally, Sragen district should continue to improve the IT strategic planning. There is no doubt that the clear vision has guided the last 10 years' E-government transformation in Sragen District. Considering the ever increasing complexity of the e-government advancement in the future, mobilizing and organizing critical resources around the organization's strategy will be crucial for climbing up to the next level of E-government. A good starting point for that endeavor refers to the enterprise information system strategic planning process developed by the Center for Technology in Government at the State University of New York at Albany, U.S.A. (Cresswell & Dawess, 2004).

Table 13. **Considerations for Enterprise Information Architecture Planning Process**

High level conceptualization and plain language description of the enterprise	<ul style="list-style-type: none"> • What are the goals of the enterprise? How can they be measured? • What constitutes progress toward goals and how can progress be measured? • Who are the stakeholders in the enterprise? What are their concerns? • What resources are available to the enterprise? What are their constraints? • What social, economic, political or other constraints shape the enterprise? • What are the fundamental relationships among the entities in the enterprise?
Definition and modeling of core processes	<ul style="list-style-type: none"> • What are the core processes of the enterprise? • What are the information, resource, and work flows of those processes? Who are the individual and organizational participants? • Do adequate process models already exist? • What conflicts exist among the processes and how can they be reconciled?
Mapping of information resources and needs to core processes	<ul style="list-style-type: none"> • Who are the potential users of the information resources associated with different processes? • What are the characteristics of the needed information, in terms of structures and data models, data quality, timeliness, aggregation, precision, cost, and sensitivity? • What gaps in existing data standards and structures at local and state level prevent analysis of performance and outcomes? • What are the purposes, analytical resources, and limitations involved in using information for decision making and operational management? Do they support or conflict with one another? • What data quality and security standards exist and what are needed to complete an adequate enterprise-wide level of quality and security? • What information management strategies would be appropriate?
Mapping of information systems and sources to core processes	<ul style="list-style-type: none"> • Can existing management and operations data systems be adapted to serve core processes and analytical needs? • What are the potential barriers or constraints to access, use, or dissemination of existing information? • What new information sources or systems need to be developed to support important processes?
Operational considerations for the planning process	<ul style="list-style-type: none"> • Who should lead the planning process? • Who should participate and how? • What governance issues would have to be resolved? • What organizational and policy mechanisms exist (or are needed) to develop and implement necessary standards and consensus? • What types of costs would be involved? • What organizational changes would be needed for an enterprise information approach to work?

Future Local E-government Roadmap

The research suggests a roadmap for e-government development in Sragen based on the problems and weaknesses diagnosed from the above analysis and the future opportunities rendered by the emerging technologies. The time horizon of the roadmap is 10 years, from 2012 to 2021 and that whole time period is divided into three stages: 1) Fully Transactional Stage; 2) Early Integrative Stage; and 3) Fully Integrative Stage. Specific objectives and activities are outlined in the following table-14.

Table 14. E-government Roadmap

Functional Areas	1. Fully Transactional Stage	2. Early Integrative Stage	3. Fully Integrative Stage
e-Government Services	<ul style="list-style-type: none"> Analyze the demand for online services for residents, businesses, and government officials. Continue to develop diverse services to meet the demands. Develop online monetary transaction services. 	<ul style="list-style-type: none"> Develop a single sing-on system which allows the users to access multiple services with a single ID. Develop a portal system in which users can customize the interface based upon their personal preferences and needs. 	<ul style="list-style-type: none"> Make all the front-line services available online. Develop and integrate mobile services to the government portal. Develop and integrate e-participation services to enable the citizens.
Interoperable e-Government	<ul style="list-style-type: none"> Create a new unit or empower the IT department to conduct the following functions: <ul style="list-style-type: none"> Establish common technological standards for system design and application development. Govern the standardization issues in the entire district. Monitor the development and procurement process not to violate the standards. 	<ul style="list-style-type: none"> Ensure that the systems' interconnectivity, data integration, and service access are maintained as planned. Develop the standards for mobile applications to be compatible with the existing services. 	<ul style="list-style-type: none"> Conduct a full scale review of the existing standards to be compatible with cross media integration. Integrate the mobile applications to the e-government systems.
User-oriented Service Design	<ul style="list-style-type: none"> Conduct user satisfaction surveys periodically. Conduct focus group meetings to collect the users' opinions. Begin to develop standards for a common interface design. 	<ul style="list-style-type: none"> Conduct usability tests before and after service development. Monitor the user experiences and feedback the result to revising the service interface. 	<ul style="list-style-type: none"> Develop the online tools with which users can create their own services and applications.
Promoting the Local Economy	<ul style="list-style-type: none"> Provide online and offline training programs for the local businesses. Provide technical consulting to the public and private local cultural centers to develop online services. 	<ul style="list-style-type: none"> Integrate the local economic activity oriented websites to the government portal. Implement a pilot project similar to the Korean INVIL. 	<ul style="list-style-type: none"> Develop the online services for local economy that the visitors experience the virtual reality.
Strategic Planning for e-Government	<ul style="list-style-type: none"> Review the current master plans. Draft the strategic plan for Stage II. 	<ul style="list-style-type: none"> Draft the strategic plan for Stage III. 	<ul style="list-style-type: none"> Draft the strategic plan for the next generation.



The Special Province of Jakarta

Current Status and Development

Jakarta Special Capital Region (DKI Jakarta) is a special province with the unique and special status as the capital city of the country, Republic of Indonesia. DKI Jakarta is specifically regulated by the Law 29/2007 on Local Government and Local Election while other local governments are regulated by the Law 32/2004. Governor, as the head of local government of DKI Jakarta by the law, is directly elected by the people for five years with the possibility of reelection. Governor is assisted by six mayors who manage six governmental regions.

Based on the Law 29/2007, the government of DKI Jakarta has autonomous power to govern most of governmental functions except justice, fiscal and monetary, religion, defense and security, and international relations affairs which are often administered by the central government. DKI Jakarta has a special authority in developing and implementing following policies:

1. City planning, natural resources, and environment;
2. Land and housing;
3. Transportation, communication;
4. Trade and industry; and
5. Tourism.

To execute these public affairs, the DKI Jakarta province often delegates some authorities and government affairs to the city administration/administrative districts, sub-districts, and villages.

In 2011, the population of Jakarta is 10,187,595 people. This population is spread across six areas/regions of Jakarta, the Central Jakarta, South Jakarta, West Jakarta, South Jakarta and East Jakarta, and the Thousand Islands District. Meanwhile the number of civil servants in Jakarta is 80,846 and the total local budget is about IDR 35 trillion. Approximately 31% of total budget is allocated to staff salaries, which amount to IDR 8.5 trillion.

The Implementation of E-government in DKI Jakarta

The DKI Jakarta establishes the government organization as regulated by the Local Law No. 10/2008 concerning Organization and Administration of the Government of DKI Jakarta. Its e-government function is handled by the Department of Communication, Information and Public Relations (KIK). The main task of the Department of KIK is to carry out the affairs related to communication, informatics, and public relations. Meanwhile, the functions of this department are as follows:

1. Making preparation and execution of the work plan and budget communications, informatics, and public relations' department;
2. Providing technical implementation of the policy matters of communication, informatics, and public relations;
3. Implementing public relations, management, coaching, and development of information technology;
4. Providing coaching, and communication development;
5. Coaching post and telecommunications;
6. Coaching and development of functional institutions and institutions of public relations computers;
7. Developing public relations work/networking;
8. Making publications, information services and documentation of activities of local government policy;

9. Providing facilitation and coordination of public access to local government;
10. Conducting collection, processing, presenting and clarifying the public attitude towards the implementation of government policy;
11. Supervising the management of print and electronic media;
12. Providing services, development, and control of licensing and/or recommendations postal business, telecommunications and informatics;
13. Collecting, processing, reporting and clarifying people response for local public policy;
14. Supervising and controlling the business organization of the postal, telecommunications and informatics; and
15. Providing technical support to communities and the region.

The implementation of e-government in DKI Jakarta has practically begun from the beginning year 2000. However the impact and performance of this program is very slow as stated by the Governor of DKI Jakarta, Fauzi Bowo. According to him, overall, the performance of e-government in Jakarta is far from success. Its performance is less satisfactory and needs to be advanced to improve public services and minimize inefficiency of public sources (Gatra, 2011). Mr. Bowo's observation represents a general assessment on the Indonesian e-government. It is somehow disappointing that Jakarta, as the capital of the country, has not been able to demonstrate its best performance. The e-procurement is not well organized and implemented. In fact, the Governor himself expressed his dissatisfaction with its e-procurement system. Despite the unsatisfactory level of e-government in Jakarta, the DKI Jakarta has continued to initiate several e-government projects including:

- a. The establishment of data center to serve a variety of applications in the province and municipality;
- b. The availability of internet protocol-based communications network of the province up to the Village; and
- c. The creation of a variety of system applications, among others: the financial system, motor vehicle tax, groundwater tax, personnel system, emission test, and the vehicle population identity.

Despite its initiatives, DKI Jakarta has been also faced with some obstacles to implementing the electronic government. Some of the obstacles are as follows:

1. The development of information system that was built by each SKPD is not fully integrated;
2. The development and construction of information systems has not been based services (which should be integrated);
3. The digital divide that still occurs in the DKI Jakarta's bureaucrat that causes a resistance from them to the emergence of management of change (social engineering is required);
4. The lack of rules and procedures for operating e-government. So, it is needed to impose reengineering rules / procedures to adapt with information technology;
5. The information center on regional level that is not developed yet;
6. The e-government development is not connected yet amongst government unit. The software that is used is also not compatible or fit to other system; and
7. The master plan for the development of ICT in DKI Jakarta does not exist.

In addition, observing the implementation of e-government, the official website of the DKI Jakarta is not even well developed. The website only provides information about the organization and structure, activities, personnel and other irrelevant feature to the society. Ironically, DKI Jakarta does not have the Master Plan of ICT that strongly connected to the Development Planning Medium Term of the DKI Jakarta Province that can be used as guide for ICT development for each local government institution. There is also no road map of ICT development program which contains targets for each year, priority activities, performance indicator and budget. This map is very important to guide the government of DKI Jakarta in achieving the target.

Some Agendas for E-government Development in Jakarta

Considering the above problems and obstacles to the implementation of e-government in DKI Jakarta, as mentioned on the Local Development Plan Medium Term 2007-2012, there are some agendas to improve the ICT capacity of DKI Jakarta:

1. Applying the rules of good governance in the Communications and Information Technology department;
2. Increasing the capacity of Communication and Information units by improving the human capacity that responsible to these affairs;
3. Implementing the communication and Information policies that reflect the aspects comprehensiveness, integrated and viable solution to the problem of the city;
4. Applying information technology to all levels of government (e-government), which begins with the planning process (e-planning);
5. Managing the budgeting (e-budgeting) and the procurement process (e-procurement) as well as supervision;
6. Enhancing the positive image of the Government;
7. Perform the separation of regulatory functions of the operator function in the affairs of Informatics ;
8. Providing development information and internet- based public services;
9. Implementing internet-based licensing services;
10. Improving the capacity and network performance information system to the village level (Wide Area Networks);
11. Enhancing the role of public and professional community in the administration of the affairs of Communications and Information Technology; and
12. Improving the Minimum Service Standards (MSS) that concern to Communications and Information Technology.

Though 2012 is the end of the Local Development Plan, many targets are not accomplished yet. Most critical aspect is on the human and institutional capacity development. There is also lack of public-private partnership on ICT capacity development. Government often relies on private partners without building its own technological capacity. Sometimes it creates over-dependency of government institution on the private partners.



Strategic Plans for Indonesian Local E-government

Promotion Actors and RI Governance Structure

The importance of IT governance has been much discussed both in the academic and practical world. In particular, the idea of IT governance was presented as part or subset of corporate governance in the business world. IT governance often refers to the institutional arrangements through which key decisions on IT or e-government projects are decided including the scope and magnitude of IT-related projects, funding mechanisms, division of labors, decision rules, authorities and responsibilities. The Korean experience confirms that clear division of labors among related agencies and their responsibilities and roles in e-government initiatives along with strong commitment and interest of top leadership were critical to the success of e-government projects. The same principles can be applied to regional informatization and local e-government projects.

Box 5. Various Definitions of IT Governance

The structure, oversight and management processes which ensure that delivery of the expected benefits of IT in a controlled way help enhance the long term sustainable success of the enterprise.

IT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives.

A structure of relationships and processes to direct and control the enterprise in order to achieve the enterprise's goals by adding value while balancing risk versus return over IT and its processes.

Specifying the decision rights and accountability framework to encourage desirable behaviors in the use of IT.

Governance is not about what decisions get made- that is management- but it is about who makes the decisions and how they are made.

IT governance is the term used to describe how those persons entrusted with governance of an entity will consider IT in their supervision, monitoring, control and direction of the entity. How IT is applied will have an immense impact on whether the entity will attain its vision, mission or strategic goals.

Source : Brisebois, Boyd, and Shadid. "What is IT Governance?" http://www.intosaiitaudit.org/intoit_articles/25_p30top35.pdf

According to the study conducted by Weill and Ross in their book published by the Harvard Business Press, there are six major IT governance models including Business Monarchy (CEO model), IT Monarchy (CIO model), Feudal Model, Federal Model, Duopoly Model and Anarchy Model. The study also suggests that there are four major IT-related decisions including IT principles, IT architecture, IT infrastructure strategies, business applications needs, and IT investment. Based on a number of private firm cases, they suggest that a particular IT governance model performs in a particular area better than other models. Figure-24 summarizes their research findings that the Federal Model is a good model for gathering input information for IT principle but a bad model for the decision of IT principles, while the Duopoly Model is good for IT principles and IT investment decisions. Though the private sector study cannot be easily applied to the public sector, the concept of IT governance is still valid in designing the governance structure of regional informatization.

Figure 24. Federal Model

	IT Principles		IT Architecture		IT Infrastructure Strategies		Business Applications Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy										
IT Monarchy										
Feudal								•		
Federal	+	•		•		•	+			•
Duopoly	•	+					•			+
Anarchy										

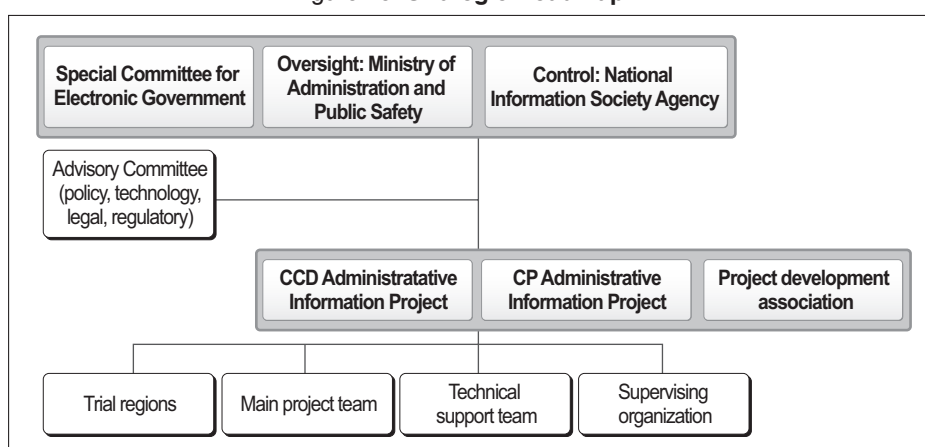
In the course of pursuing the Korean e-government, the Korean government managed e-government projects in an effective way by orchestrating various players of the e-government special committee, informatization promotion committee, relevant ministries, and other related actors including private IT companies, research institutions, and educational institutions at the different stages of planning, coordinating and implementing.

In the case of Korean regional informatization, the central government played a critical role in the course of planning and implementing local e-government projects both as a funder and strategic planner. Though the Korean central government built a great collaborative relationship with local governments, it initiated the regional informatization plan with financial resources within the national informatization plan. Even though every single element of e-government is perfectly ready to implement, orchestration of each element is essential for the success of e-government. The following figure shows the governance structure that applied to the implementation of regional informatization and local e-government projects.

For Indonesian regional informatization and local e-government initiatives, the central government needs to play a more critical role in planning and funding local e-government projects. Currently, most of regional informatization initiatives and local e-government projects are initiated by local governments which often lack financial, human, and technical resources. There is lack of coordination and direction in regional informatization initiatives. Regional informatization does not seem to be fully incorporated into the national e-government plan though the Ministry of Information and Telecommunication began to evaluate e-government performance of local governments.

Based on the initial successful experience of Korean regional informatization projects, the Indonesian central government needs to play a central role in providing strategic roadmap for regional informatization as well as administrative information systems which can be easily applied and customized by different Indonesian local governments.

Figure 25. **Strategic Roadmap**



The central government also needs to play as a coordinator, funder, and trainer to maximize the utility of available resources for local governments by building constructive partnership among central government, local governments, IT companies, international organizations, and donor countries. The central government should design regional informatization project specifically and strategically as a key part of the national informatization plan and prepare specific financial and e-government project roadmaps by year and project (local government administrative information systems, local online service systems, etc.). To facilitate this, the central government should establish a comprehensive local framework for both the national e-government and local e-government and secure financial resources both internally and externally.

Diagnosis of Indonesian Regional Informatization

In order to suggest the roadmap for Indonesian regional informatization, a review of the overall status is needed. Based on the 2011 e-government ranking by the Ministry of Communication and Information Technology, Table-15 shows the results which indicate that 6 of 152 districts and cities are evaluated as good and the rest of them are poor and very poor. It means that the level of e-government in Indonesian local government is relatively very low compared with other advanced local governments around the world.

Table 15. Evaluation of E-government in Districts and Cities, Indonesia

Grade	Rank	District/ City	Dimensions					Average
			Policy	Institutional	Infrastructure	Applications	Planning	
Good	1	Kota Surabaya	3.04	3.47	3.57	3.43	3.2	3.34
	2	Kota Malang	3.21	3.33	3.48	3.17	3.13	3.26
	3	Kabupaten Lamongan	2.71	2.87	2.9	2.83	2.8	2.82
	4	Kota Pekalongan	3	2.87	2.52	2.73	2.93	2.81
	5	Kota Medan	2.81	3	2.64	2.4	2.7	2.71
	6	Kota Surakarta	2.63	2.93	2.33	2.47	2.8	2.63
Poor	7	Kabupaten Demak	2.71	2.8	2.14	2.53	2.73	2.58
	8	Kabupaten Sragen	2.54	2.33	2.43	2.7	2.4	2.48
	9	Kota Balikpapan	2.33	2.47	2.52	2.57	2.4	2.46
	10	Kota Jambi	2.63	2.73	1.9	2.03	2.67	2.39
	11	Kota Banda Aceh	2.38	2.4	2.48	2.43	2.27	2.39
	12	Kabupaten Bojonegoro	2.33	3	2.52	2.47	1.6	2.38
	13	Kabupaten Kebumen	1.71	2.6	2.71	2.23	2.4	2.33
	14	Kabupaten Pekalongan	2.13	2.2	2.29	2.53	2.33	2.3
	15	Kabupaten Tegal	2.42	2.47	2	1.93	2.53	2.27
	16	Kabupaten Magelang	1.88	2.73	2.14	2.3	2.2	2.25
	17	Kota Magelang	2.25	2.33	2.33	2	2.2	2.22
	18	Kabupaten Kudus	1.83	2.47	2.52	2.2	2	2.2
	19	Kota Probolinggo	2.54	1.87	1.76	2.37	2.47	2.2
	20	Kabupaten Sarolangun	2.46	2.2	2.24	1.8	2.27	2.19
	21	Kabupaten Malang	2.25	2.4	2.24	2.33	1.6	2.16
	22	Kota Blitar	2.33	2.13	1.95	2.3	2	2.14
	23	Kabupaten Banyuwangi	2.5	2.07	2.48	2.03	1.53	2.12
	24	Kabupaten Kutai Kartanegara	1.92	2.33	2.33	2.03	1.87	2.1
	25	Kabupaten Kendal	2	2.33	2.05	2.07	2	2.09
	26	Kabupaten Banyuasin	2.13	2.4	2.38	1.63	1.8	2.07
	27	Kota Tegal	1.5	2.2	2.24	2.2	2.2	2.07
	28	Kabupaten Banyumas	1.71	2.2	2.19	2.2	1.87	2.03
	29	Kabupaten Wonogiri	1.42	2.13	2.43	2.47	1.67	2.02
	30	Kabupaten Sidoarjo	1.92	2.2	2.24	2.47	1.27	2.02
	31	Kabupaten Madiun	2.54	2	1.86	2.17	1.47	2.01
	32	Kabupaten Tanjung Jabung Timur	2.13	1.67	2.29	1.8	2	1.98
	33	Kabupaten Pacitan	1.83	2.27	1.81	2.37	1.53	1.96
	34	Kabupaten Gresik	2.13	2	1.71	2.15	1.8	1.96
	35	Kabupaten Jombang	1.92	1.67	2.29	2.07	1.67	1.92
	36	Kabupaten Karanganyar	1.92	2.27	2	2	1.33	1.9
	37	Kabupaten Mojokerto	1.96	2.27	2.1	2.03	1.13	1.9
	38	Kabupaten Batang	2	2.13	2	1.93	1.33	1.88
	39	Kabupaten Prabumulih	1.88	2.2	1.86	1.73	1.73	1.88
	40	Kota Banjarmasin	2.17	1.87	2.19	1.4	1.6	1.84
	41	Kabupaten Blitar	1.71	2.33	1.43	2.27	1.47	1.84
	42	Kabupaten Jepara	1.71	2.2	2.19	1.87	1.2	1.83
	43	Kota Palembang	1.79	2.2	1.9	1.6	1.67	1.83
	44	Kota Pasuruan	1.54	2	1.52	2.2	1.67	1.79
	45	Kabupaten Sumenep	1.42	2.33	1.62	1.87	1.67	1.78
	46	Kabupaten Kubu Raya	1.88	2	1.81	1.67	1.53	1.78
	47	Kabupaten Karo	1.56	2	2	1.6	1.6	1.75

Poor	48	Kabupaten Muara Enim	1.21	2.07	1.9	1.87	1.67	1.74
	49	Kabupaten Purbalingga	1.83	2	1.76	1.9	1.2	1.74
	50	Kabupaten Purworejo	1.21	1.67	2.1	2.5	1.13	1.72
	51	Kabupaten Pemalang	1.96	1.6	1.67	1.8	1.53	1.71
	52	Kabupaten Banjar	1.54	2.07	1.33	2.03	1.53	1.7
	53	Kabupaten Rembang	1.67	1.67	1.71	1.7	1.73	1.7
	54	Kabupaten Banjarnegara	1.46	1.6	2	2.07	1.2	1.67
	55	Kota Madiun	1.38	1.4	2.07	2.45	1	1.66
	56	Kota Mojokerto	1.5	1.8	1.76	1.97	1.27	1.66
	57	Kabupaten Tabalong	1.46	1.87	1.48	1.9	1.53	1.65
	58	Kabupaten Bondowoso	1.5	1.93	1.33	1.8	1.67	1.65
	59	Kabupaten Tanjung Jabung Barat	1.63	2.27	1.86	1.4	1.07	1.64
	60	Kabupaten Cilacap	1.33	2	1.67	2.13	1.07	1.64
	61	Kabupaten Tulungagung	1.54	1.93	1.38	1.87	1.47	1.64
	62	Kabupaten Tapanuli Selatan	1.46	1.33	1.71	1.93	1.73	1.63
	63	Kabupaten Semarang	1.5	1.6	2	1.63	1.4	1.63
	64	Kabupaten Boyolali	1.13	2	1.86	1.87	1.2	1.61
	65	Kabupaten Klaten	1	1.47	2.33	1.87	1.33	1.6
Very Poor	66	Kabupaten Pamekasan	1.54	1.93	1.48	1.7	1.33	1.6
	67	Kabupaten Lhoksumawe	1.46	1.87	1.9	1.7	1	1.59
	68	Kabupaten Batanghari	1.75	2.13	1.48	1.43	1.13	1.59
	69	Kabupaten Musi Banyuasin	1.25	2.07	1.76	1.77	1	1.57
	70	Kota Subulussalam	2.54	1.73	1.33	1.23	1	1.57
	71	Kabupaten Musi Rawas	1.67	2	1.24	1.43	1.4	1.55
	72	Kabupaten Merangin	1.54	1.87	1.43	1.67	1.2	1.54
	73	Kabupaten Kerinci	1.46	1.73	1.33	1.9	1.27	1.54
	74	Kota Binjai	1.46	1.8	1.48	1.67	1.27	1.53
	75	Kota Singkawang	1.58	1.8	1.38	1.57	1.33	1.53
	76	Kota Banjarbaru	1.21	2	1.43	1.77	1.2	1.52
	77	Kabupaten Probolinggo	1.83	1.6	1.19	1.73	1.2	1.51
	78	Kabupaten Deli Serdang	1.46	2	1.1	1.6	1.4	1.51
	79	Kabupaten Muaro Jambi	1.5	1.67	1.29	1.9	1.2	1.51
	80	Kabupaten Ogan Komering Ulu	1.5	1.93	1.14	1.33	1.6	1.5
	81	Kota Batu	1.33	1.67	1.48	1.63	1.4	1.5
	82	Kabupaten Brebes	1.38	1.8	1.1	1.7	1.53	1.5
	83	Kabupaten Berau	1.29	1.6	1.48	1.53	1.6	1.5
	84	Kabupaten Aceh Utara	1	1.8	2.1	1.6	1	1.5
	85	Kota Kediri	1.46	1.53	1.57	1.57	1.33	1.49
	86	Kabupaten Aceh Barat	1.38	1.33	1.9	1.77	1.07	1.49
	87	Kabupaten Magetan	1.29	1.2	1.71	1.77	1.47	1.49
	88	Kabupaten Pagar Alam	1.38	1.73	1.52	1.37	1.4	1.48
	89	Kabupaten Temanggung	1.38	1.67	1.67	1.5	1.13	1.47
	90	Kabupaten Aceh Tengah	1.42	1.67	1.57	1.53	1.07	1.45
	91	Kabupaten Bengkayang	1.47	1.8	1.14	1.43	1.4	1.45
	92	Kabupaten Kediri	1.04	1.93	1.24	1.67	1.33	1.44
	93	Kabupaten Lubuk Linggau	1.13	1.53	1.48	1.63	1.4	1.43
	94	Kabupaten Penajam Paser Utara	1.29	1.4	1.33	2.13	1	1.43
	95	Kabupaten Bangkalan	1.17	1.8	1.38	1.53	1.27	1.43
	96	Kabupaten Tapin	1.13	1.8	1.57	1.6	1	1.42
	97	Kabupaten Dairi	1.38	2.07	1.24	1.1	1.27	1.41
	98	Kabupaten Serdang Bedagai	1.5	1.33	1.29	1.77	1.13	1.4
	99	Kabupaten Wonosobo	1.25	1.4	1.52	1.53	1.27	1.39
	100	Kabupaten Blora	1.21	1.53	1.43	1.53	1.27	1.39
	101	Kabupaten Nganjuk	1.21	1.67	1.43	1.5	1.13	1.39
	102	Kabupaten Aceh Besar	1.17	1.6	1.57	1.37	1.2	1.38
	103	Kabupaten Lumajang	1.33	1.53	1.19	1.6	1.2	1.37
	104	Kabupaten Kutai Timur	1.17	1.53	1.05	1.5	1.6	1.37
	105	Kabupaten Langsa	1	1.6	1.43	1.63	1.13	1.36
	106	Kabupaten Sekadau	1.17	1.53	1.19	1.53	1.33	1.35
	107	Kabupaten Aceh Timur	1.08	1.67	1.48	1.5	1	1.35
	108	Kabupaten Asahan	1.38	1.4	1.24	1.57	1.13	1.34
	109	Kabupaten Tapanuli Tengah	1.25	1.33	1.29	1.63	1.2	1.34

Very Poor	110	Kabupaten Hulu Sungai Tengah	1.17	1.73	1.19	1.6	1	1.34
	111	Kabupaten Hulu Sungai Selatan	1.17	1.6	1.57	1.3	1	1.33
	112	Kabupaten Tapanuli Utara	1.29	1.47	1.24	1.43	1.2	1.33
	113	Kabupaten Pidie Jaya	1	1.47	1.33	1.43	1.33	1.31
	114	Kabupaten Kotabaru	1	1.73	1.29	1.53	1	1.31
	115	Kabupaten Barito Kuala	1.08	1.6	1.14	1.5	1.2	1.31
	116	Kabupaten Sintang	1.08	1.47	1.33	1.57	1.07	1.3
	117	Kota Bontang	1	1.53	1.38	1.6	1	1.3
	118	Kabupaten Nagari Raya	1	1.2	1.76	1.53	1	1.3
	119	Kabupaten Ogan Komering Ilir	1.1	1.52	1.29	1.5	1.04	1.29
	120	Kabupaten Pati	1.33	1.47	1.1	1.43	1.07	1.28
	121	Kabupaten Bungo	1.13	1.47	1.14	1.37	1.2	1.26
	122	Kabupaten Tanah Laut	1	1.8	1	1.3	1.2	1.26
	123	Kabupaten Tuban	1	1.27	1.52	1.3	1.2	1.26
	124	Kabupaten Aceh Tamiang	1	1.47	1.38	1.43	1	1.26
	125	Kabupaten Toba Samosir	1.17	1.53	1	1.23	1.33	1.25
	126	Kota Samarinda	1.08	1.33	1.14	1.63	1.07	1.25
	127	Kabupaten Samosir	1.13	1.47	1	1.37	1.2	1.23
	128	Kabupaten Tebo	1.21	1.53	1.05	1.23	1.07	1.22
	129	Kota Salatiga	1	1.4	1.38	1.27	1	1.21
	130	Kabupaten Balangan	1	1.53	1.05	1.43	1	1.2
	131	Kota Sibolga	1.13	1.4	1.29	1.2	1	1.2
	132	Kabupaten Aceh Selatan	1.04	1.6	1	1.1	1.2	1.19
	133	Kabupaten Sampang	1.04	1.13	1.29	1.43	1	1.18
	134	Kabupaten Hulu Sungai Utara	1.19	1.2	1	1.45	1	1.17
	135	Kabupaten Labuhan Batu Utara	1.25	1.4	1.07	1.1	1	1.16
	136	Kota Gunung Sitoli	1	1.53	1	1.27	1	1.16
	137	Kabupaten Batubara	1	1.33	1.1	1.37	1	1.16
	138	Kabupaten Aceh Singkil	1	1.07	1.33	1.13	1.2	1.15
	139	Kota Sabang	1	1.47	1	1.23	1	1.14
	140	Kabupaten Labuhan Batu	1.04	1.47	1.05	1.13	1	1.14
	141	Kabupaten Gayo Lues	1.08	1.2	1.05	1.33	1	1.13
	142	Kabupaten Tana Tidung	1	1.33	1.05	1.1	1.13	1.12
	143	Kabupaten Lahat	1	1.4	1	1.2	1	1.12
	144	Kabupaten Ogan Komering Ulu timur	1	1.4	1	1.07	1.13	1.12
	145	Kota Tebing Tinggi	1.17	1	1.05	1.2	1.13	1.11
	146	Kabupaten Pidie	1	1.4	1	1.13	1	1.11
	147	Kabupaten Empat Lawang	1	1.27	1	1.23	1	1.1
	148	Kabupaten Bireuen	1	1.4	1	1.03	1	1.09
	149	Kabupaten Labuhan Batu	1.13	1.07	1.05	1.1	1.07	1.08
	150	Kabupaten Bener Meriah	1	1.4	1	1	1	1.08
	151	Kabupaten Ogan Kom Ulu	1	1.27	1	1.07	1	1.07
	152	Kabupaten Tanah Bumbu	1	1.2	1	1.1	1	1.06
Average		1.54	1.83	1.64	1.74	1.45	1.64	

ICTs Environment and the Readiness by the Indonesian Local Governments

The world is rapidly entering into a Smart age going beyond the Digital age. ICT is not just a tool in pursuit of efficiency. ICT, in the Smart age, interacts with people and helps people fully display ingenuity and sensibility. The world has been upgraded once again by utilizing the potential of Smart technologies since the advent of smart phones in 2007. Smart technologies allow services that best serve the need of people. Goods and services applying Smart technologies know what people want and provide what people need. In some cases, smart devices monitor the real world and the current conditions of certain objects in real time, and then automatically respond to any situation. Furthermore, Smart technologies enable people to transcend the limit of time. Unlike in the past when people reacted to what already happened, people now can proactively respond to situations even before something happens.

Smart technologies have enormous potential. If applied properly, Smart technologies could entirely transform giant public spaces like cities, as well as private spaces such as homes and offices, into a space that best serves the need of people. We can find fundamental solutions to a number of critical issues facing every society, including public administration, welfare, industries, environment and energy. In this context, some advanced cities around the world have already prepared aiming to utilize the huge potential of Smart technologies for regional development. In order to improve the competitiveness of local government in Indonesia, it is crucial to adapt to the environmental change. Unfortunately, Indonesian local governments, in general, are not ready to do so.

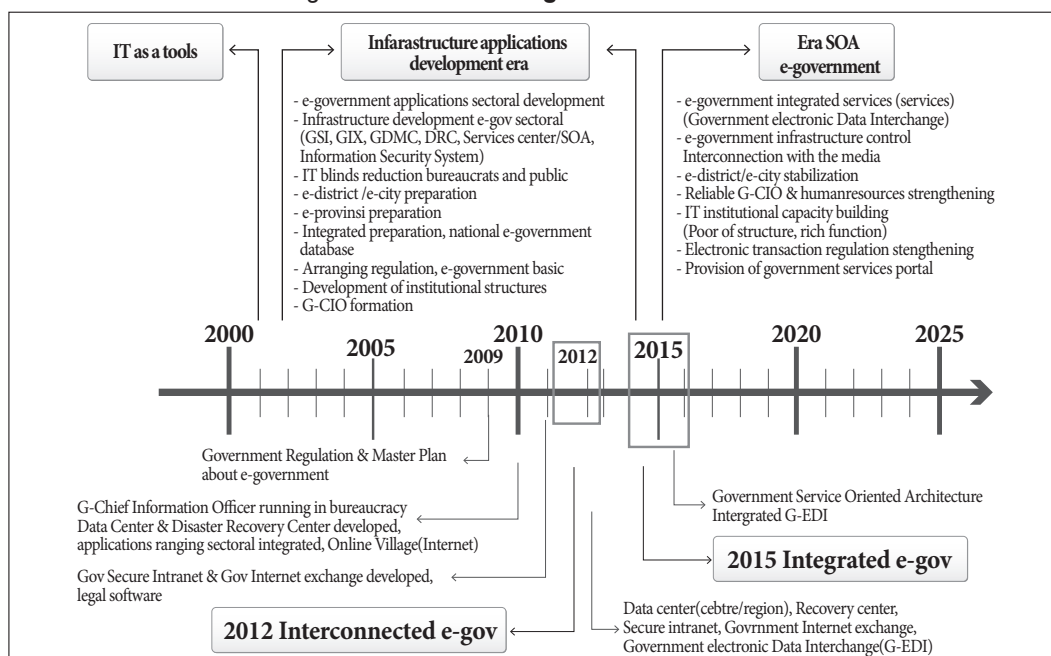
Box 6. Smart Seoul 2015

Seoul has been successful in using broadband internet since late 1990s. Seoul has topped in the UN-supported Rutgers Global e-Governance Survey since 2003. Seoul has the highest internet competitiveness in terms of broadband internet penetration, mobile service usage, level of online services, and other categories. However, the paradigm shift into “Smart” means major internal and external changes in the administrative environment. With other nations and cities catching up with the world best e-Government, there is a growing need for Seoul to take proactive measures under the new circumstances.

Accordingly, “Smart Seoul 2015” pushes forward with the 3-phase plan; first, build up Smart infrastructure (2011-2012) based on the existing ICTs project; second, provide Smart services (2013-2014); and finally, advance Smart services (2015). By 2015, Seoul will become a city that best applies Smart technologies, through which we will make reality our slogan, ‘Seoul, a city of happy citizens and a city beloved by the world!’

As Indonesian e-government milestone can be seen in Figure-26, Indonesian local governments have a plan to provide citizens and businessmen with electronic services through the Internet, not smart technologies. Due to the lack of human and financial resources as well as infrastructure, it is not easy for Indonesian local governments to adapt to the smart environment in the near future. They should, however, keep in mind and develop a roadmap toward the smart regional informatization.

Figure 26. Indonesian E-government Milestone

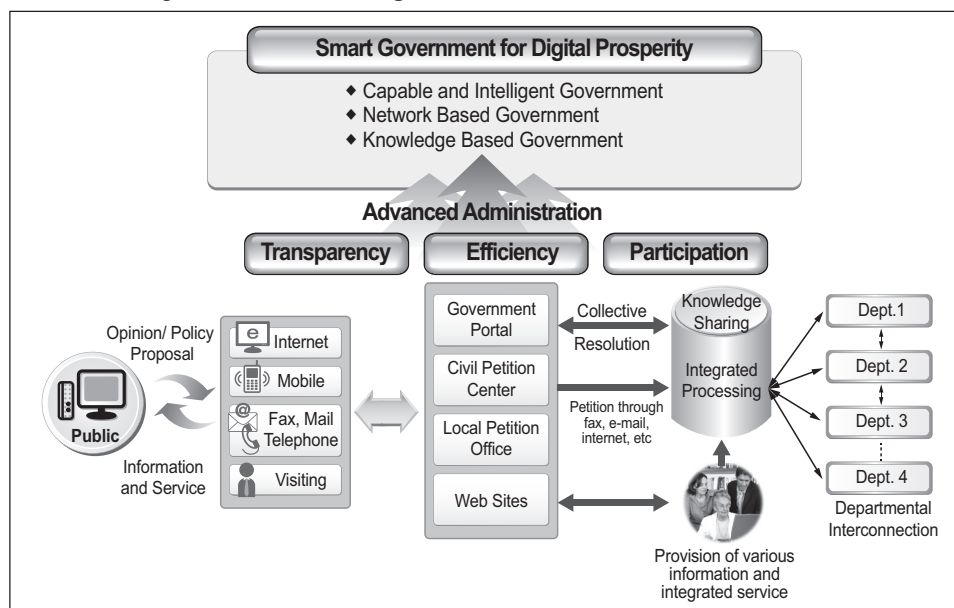


Source : Ministry of Communication and Information Technology, Indonesia

Roadmap for E-government

Figure-27 shows the vision structure of local e-government in Indonesia. The slogan of local e-government in Indonesia is “Smart Government for Digital Prosperity.” It means that local governments use smart technologies for citizens’ and businessmen’ prosperity. It is definitely a long-term vision, not a short-term vision, but it could be the direction of local informatization

Figure 27. Vision for E-government in Indonesian Government



“Smart Government for Digital Prosperity” will be established by facilitating government-wide distribution and utilization of information and knowledge and creating new services via smart technologies. This vision aims to put in practice the object of e-government service, namely, encouraging citizen participation and providing maximized convenience to users. To that end, local governments will create innovation in the working process and enhance quality of life for its citizens. To achieve this vision, policy directions of local informatization in Indonesia are as follows:

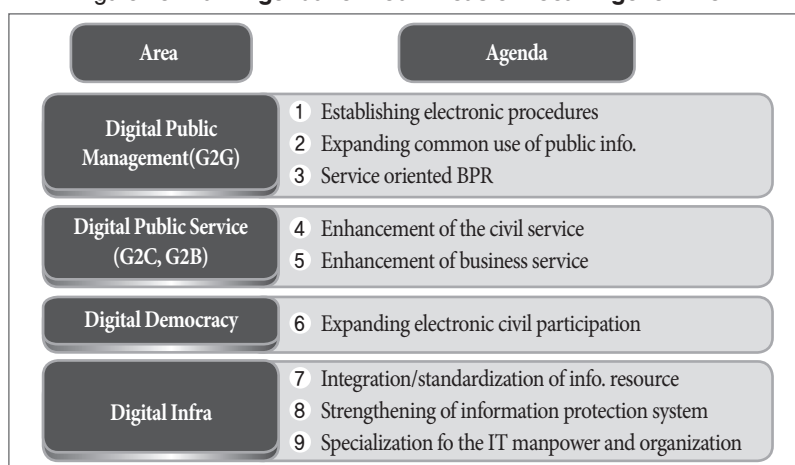
- Provision of a seamless service accessed at any time and from anywhere by using wired or wireless mobile devices.
- Provision of user-tailored services considering user needs, characteristics and preference.
- Provision of transparent administrative services by expanded public information disclosure and information sharing.
- Realizing an electronic democracy through interactive communication between civil servants and between civil servants and citizens.

Table-16 summarizes the goals, local informatization, and infrastructure in each development stage toward smart local government in 2030. In the near term, by 2015, local governments in Indonesia need to focus on establishing the foundation for smart government. Then, in the medium term, by 2025, local governments should focus on developing advanced applications for efficient and transparent government as well as services to citizens and businessmen. Finally, by 2030, local governments in Indonesia need to enter the smart age. It is challengeable but in this rapid change, local governments should be aggressive to survive.

Table 16. **Development Stage toward Smart Local Government**

	Near Term 2012 - 2015	Medium Term 2016 - 2025	Long Term 2026 - 2030
Goal	<ul style="list-style-type: none"> • Construction of Basic Database • Establishment of Infrastructure Foundation 	<ul style="list-style-type: none"> • Expansion of E-Government Use 	<ul style="list-style-type: none"> • Smart Government
Local Informatization	<ul style="list-style-type: none"> • Local Basic Information System • Informatization of Local Government Administration 	<ul style="list-style-type: none"> • Construction of E-Government Application • Laying the Groundwork for Linking and Integrating Multiple Departments and Agencies 	<ul style="list-style-type: none"> • Utilization of Local Knowledge Resources Integration
Infrastructure	<ul style="list-style-type: none"> • High-speed ICTs Network 	<ul style="list-style-type: none"> • High-speed ICTs Network 	<ul style="list-style-type: none"> • Broadband Convergence, Wibro, RFID/USN

More specifically, the roadmap of local informatization in Indonesia can be categorized into such four areas as digital management, digital service, digital democracy, and digital infra. Digital management means electronization of work process to enhance administrative efficiency and service. Digital service includes both e-application which means civil affairs system that is related to those affairs that have deadline, the environment or property and e-service which means information provision service that is related to cultural activities, health and welfare of citizens. Digital democracy means information provision and realization of e-democracy through interactive communication with citizens. Digital infra includes such issues as IT infrastructure (hardware) and manpower (software) as well as the legal system.

Figure 28. **Main Agenda for Four Areas of Local E-government**

Specific local informatization projects in such areas as digital management, digital service, and digital democracy are followed. Those projects could be divided into two time frames such as short-term and long-term period. First, examples of local informatization projects in digital management are as follows:

Short-Term Period

- **Electronic Document Management System:** Digitalizing all produced documents and distributing them to administration in the nation for faster management. Reduces the time and improve efficiency, saving papers and establishing a paper-free-office.
- **Administrative Information Portal:** Integrating diversified working system and establishing a unified working environment. Enhancing the current traditional hand working method to a digital system, providing a more convenient

system for work and improve productivity. This portal consists of a confirmation and permission register management system which includes land register, forest, water supply and drainage, community development, road, finance and tax administration, environment, and physical exercise. In addition, this portal includes information system taking care of the process of civil appeals and re-confirmation issuing service of welfare, environment, legislation, regional industry, inside-administration, female, culture, public promotion, planning, public health fields.

- Knowledge Management: Updating and exchanging work-related knowledge(examples and experiences) by officials to increase efficiency.
- Land Management(information) System: Improving service of land register and real estate, online document issue is feasible in all regions regarding land-related civil appeals. Improving user convenience and effective service management.
- Personal Identification Card Management System: System includes social security number, seal, population movement, election management and etc, a comprehensive population management system.
- Data archive: A database which is composed of collected data from general data room is constructed for more effective data management. Data registering and lending service is possible through the Internet.
- Mobile on-site Administration System: A work supporting system which helps data registering/inquiry/amendment in the field by using PDA and palm top computers.
- e-Banking System: Replacing the old execution of budget system to an online system.
- Spatial Data Warehouse(SDW): It works as a center data storage which stores a common space data of each space data of working system. Providing value added information to the users by combining with general administrative information.
- Comprehensive Tax Affairs System: An office automation system regarding all functions such as imposition, collection, reception, accounting and etc.
- Non-tax Revenue Management System: A management system which performs imposition, reception, and delinquency of property lease, rental fee, commission, business revenue, interest revenue, property sale revenue and etc.
- Aviation Photograph Web-search System: A management system of many construction confirmation and permission business. Civilians can appeal online, and get cyber cooperation from related departments.
- Parking Zone Inspection System: Constructing DB of attached parking zone and related information of field inspection photos. Inspector of illegal structure can check the photos of illegal structures and related documents on the Internet and register the results of inspections. It will improve the efficiency of work and reduce the number of civil appeals.
- Civil Petition System for the Violation of Car Parking & Stop: A system checking traffic offenses and negligence fines on the Internet. Claiming formal objections and statements, paying the fine on the Internet and credit card.
- Wastewater management System: A system which computerizes public sewerage, searching and printing facilities, a comprehensive management of construction register, facilities and records.
- Public Healthcare Information System: A window of health information service for inside-officials.
- Comprehensive Information System for Underground Facilities: A system which has a convenient searching engine and printing system of water supply and drainage, electricity, communication, gas, heating conjunction, underground shopping center, subway stations.

Long-Term Period

- U-Work Environment: Constructing a system which enables the official to solve civil appeals by connecting to inside administration information system outside the office by laptop or PDA
- Comprehensive Administration Portal: Unifying the dualized inner portal system to one and developing a program to replace the current hand-written works of each department to a portal system management environment.
- U-Facility Management: To develop a system based on Geographic Information System (GIS) that could replace the

current hand-written management system of facilities and registers. And prepare government organization for city managements such as waste removal, cleaning, crime prevention, disaster prevention.

- Performance Management System: Provides functions such as outcome aim, index management, result-process management, aimed accomplishment management, result-monitoring, result-assessment management, etc.
- Comprehensive Management of Computation ReSource: Various application S/W mix with current application system to check the load of the current application according to the induction time, measuring the load to virtualize servers and combine servers for green environment information communication center
- Safety Supervision Network: A work-support system comprehensively managing works of safe city. Collecting data effectively, improve work efficiency and help to react more rapid when accidents occur
- Smart Workstation: Building and providing remote-work space
- e-Information Gathering: Automation of simple and repeated work of information gathering in order to improve productivity and efficiency.

In many digital management(G2G) in local government, there are common and shared work process and tasks. In these cases such as human resource management, financial management, and tax, it is better to develop and improve informatization system collaboratively for efficiency. The followings are such common and standard projects for all local governments.

- Integrated Government Administration Innovation System: A system for securing transparency and responsibility by computerizing the entire operation process, and reforming the way government works through the creation of a system focused on customer and performance.
- Real Estate Information Management System: A system for integrated management of land, building, and real estate information of each ministry, and for providing various effective real estate policies.
- National Financial Information System: A scientific financial management system by systemizing overall financial management work of the government including all levels such as national and local.
- Personnel Policy Support System: A system to effectively handle overall HR and payroll operations from hiring to retirement of public employees in both national and local.
- E-Local Government Creation: Parallel connection between national-state-local governments improves work productivity and resident welfare through business process re-engineering.
- Local Government Common Administrative Information System: A system for effective services for residents, automobiles, family, registry, etc.
- Government Integrated Data Center: Government-wide integration and operation of the IT environment built and operated for each institution. (Integration and central operation of departmental Information systems)
- System Management System(SMS): A system for integrated management of various information resources including major administrative information system of all local governments, networks, civil application issuing machines and for speedy recovery from errors.
- Electronic Approval and Document Distribution: A document relay system among electronic documenting systems to enable transmission/receipt, certified mailing, and tracking of public documents.
- Administrative Electronic Signature: The foundation of civil affairs services through the internet by introducing the electronic signature certification system.
- Government Cyber Security Center: Virus and cyber threat is being prevented by 24 hour monitoring. Real time alert and analysis security system is operating in case of outbreak of cyber invasion

Box 7. Best Practices in Digital Public Management in Korea

1. e-Approval and e-Document Exchange

1) Summary of Service

For the improvement of government administration processes and the creation of a government-wide knowledge management database, the e-Approval and e-Document Exchange system has been created.

2) Scope of Service

- a. An e-Document system, which includes sender and recipient data of each e-Document and a route tracing option. The verification of the delivery of government documents across agencies and route tracing of each e-document is built into the e-Document system. Through the use of e-Signatures, the sender of each e-Document can be verified.
- b. After a document is approved, the signed document can be sent to various agencies via the Internet. A document that is approved through the e-Approval method can be sent to various agencies that can be selected from a government agency list. One mouse-click will automatically send the approved e-Document to all the agencies selected from the list.
- c. Network links between the e-Document System and Government Administration Information System. While using the government administration information system, civil servants can access the e-Documents System which is interconnected to other information systems and use the e-Approval feature to get a document approved quickly.

3) Service Procedure

After completing a document to be delivered to another government agency by using the government-issued e-Document System (www.mogoha.go.kr), select the recipient of the document among the list of government agencies appearing in the government directory system. After the selection is made, the document can be sent.

2. e-Signature and e-Seal System

1) Summary of Service

This system protects personal information through use of secure methods for government-wide sharing of information and will build trust in the e-Administration system. The establishment and expansion of the e-Authentication System will be the key factor for expanding e-government services, e-Procurement, e-Commerce and e-Document exchange.

2) Scope of Service

- a. Expanded the Use of Certified e-Signatures among Citizens. Issue authenticated e-Signatures to 10 million citizens which will in turn allow wider access of online government services to the private sector. The expanded use of electronic bidding on public bids, online filing of tax returns and other e-government services will be enabled through e-Signatures.
- b. Expand the use of e-Signatures among Civil Servants for Administration Processes. Issue authenticated e-Signatures to over 1 million civil servants across the nation while ensuring that documents exchanged over the e-Document System for e-Approval are sent in a secure method that allows the recipient to verify the sender's e-Signature.

3) Service Procedure

Visit Certificate Authority ⇒ submit application for authentication service ⇒ complete registration ⇒ receive reference code and confirmation code ⇒ authentication certificate is issued

※ Banks and post offices will issue an authentication certificate for free to customers who sign up for Internet banking services

3. Government-wide Integrated Computer network

The Government-wide Integrated Computer System project, which is one of the e-government initiatives, is a system that will interconnect all the computer systems in each government agency and allow information to be shared across agencies for the purpose of managing government databases more efficiently and this will be achieved by building an integrated administration system through long-term investments in human resources and equipment. The formulation of the Business Process Reengineering (BPR) plan began in June 2002 to promote the efficient operation of all government computer environments and its result were reported in October 2002.

Digital service consists of e-application and e-service. Projects in e-application in local informatization are first introduced and followed by projects in e-service.

■ e-Application

Short-Term Period

- **Ombudsman and One-Click Civil Affairs System:** The system addresses, analyses and examines civil petitions that were submitted via the internet, letter, fax, or phone by examining petitions directly or transferring them to other divisions, offices or local districts.
- **Online Procedure Enhancement for Civil Applications(OPEN) System:** This is a transparent administrative service through which users can refer to the procedure for their time-sensitive petitions, guidelines, and administrative actions.
- **Public-Citizen Collaboration Window:** In the past, civil servants in cities, counties and districts delivered information via documents, fax or through personal visits to manage tasks in cooperation with external facilities or business operators. These work procedures have become data-based so that the information can be entered and delivered via the website.
- **Anti-corruption Center:** The center consists of a Civil Servants Anti-Corruption Center through which both citizens and civil servants can report corruption, and a Clean Center through which civil servants report corruption on the part of co-workers.
- **Transportation-related Civil Petition Management:** Online reference and payment of transportation-related fines such as parking violation fees or bus-only lane violation fees
- **e-Civil Petition Window:** Via the internet, mobile phones, and PDAs, a variety of civil services are provided for various types of time-sensitive civil petitions; submission of civil petitions, and the online issuance service for civil application documents and certification
- **Construction-related Civil Petition:** Online civil petition application service is provided for the approval of construction, residential areas, building books, building and residential building operator, and repair projects. Citizen opinions are collected before the voting of the bill related to construction-related administration policies. Legal information is provided.
- **Application for Leased Capital Loans:** A system by which low-income citizens can apply for lease loans online
- **Unified Messaging System:** The information system is connected to the submission and handling of civil petitions that have more than a two-day management timeframe. Through this process, the results of civil petitions are reported automatically, welfare beneficiaries are selected, welfare benefits are offered, civil defense training is reported, legal seals certificates are issued by proxy, and the results of residential or construction approval applications are reported automatically.
- **System of Appointment of Tax Affairs Consultation:** A system of appointment of tax affairs consultation on district office's web site. Providing services such as cyber tax affairs consultation and reservation for the visit.

Long-Term Period

- **U-Cleaning Administration:** A computerized system for cleaning agencies which take care of variety of living wastes in order to reduce civil appeal calls and increase confidence of cleaning administration
- **Ubiquitous (FAX) Civil Appeal System:** A system connected with G4C system to reduce the current necessary 3 hours of management of civil appeals to 10 minutes, increasing the satisfaction of the civil appealers.
- **U-Construction Management:** A system providing construction information for construction participants, providing information of the field of construction to civil appealers.
- **Receiving Civil Appeals by Mobile:** Receiving civil appeals and large size living wastes by cellular phones.

■ e-Service

Short-Term Period

- Real-estate information portals: A comprehensive real-estate information service through which users can search data on lands or buildings, values of properties, policy moves, and legal information
- Life Learning Center: This center has various high-quality programs and has a well-established network with other life learning centers in a district that enables all residents to participate in learning any time anywhere to enhance their quality of life.
- Cultural Event Reservation System: Through this system, residents can make an online reservation for the cultural event provided by local government
- Enterprise Support Service: This service provides enterprises with tailored support and real-time, up-to-date management information to address their difficulties in business operation.
- Newsletter Service: The system that provides local government's administrative information newsletter to registered email accounts once a month.
- Book Lending System: Residents can search for and borrow the books of libraries in local government
- Healthcare Information Service: This service includes the online reservation of medical check-ups, the reading of medical services records, and healthcare education applications. This service provides health information, enables users to participate in the system, and operates an archive.
- Tax Payment System(e-Tax): Tax payers can pay local taxes at home or the workplace without having to visit financial institutions or a district office personally. The system provides an electronic billing system whereby tax payers can receive bills by email, and operates a window to refund taxes paid mistakenly or in excess.
- Online Lectures: Residents can take cyber lectures for free in various different fields.
- Childcare Portal Services: The system provides information on childcare facilities and makes it more convenient for residents to apply for these facilities.
- Employment Safety Net(Work-Net): Employment related information such as Job offering and seeking, registration and job placement etc.
- Life Guidance Service: Map service locating desired locations using Name, Address
- Local Regulation Information System: Providing regulations of a district office through the Internet
- Bid Information Service: Saving the budget through releasing information regarding supply and purchase of goods, construction contracts of Government agencies, Local governments, Government investment agencies, etc.
- Free Legal Consultation: Applying free legal advice reservations through the Internet.
- Local Resident Support Service: A service requesting for information confirmation, guidance, qualification inquiry through the Internet regarding local resident's welfare, health, employment, residence, physical education, culture, sightseeing, etc, covering all areas related to local resident livelihood.
- e-Market Place: An online marketing for small size business person who works at market places within the district, shopping street, shopping shops. Promoting regional economy by making enterprise promotion, position guidance, searching products more convenient.

Long-Term Period

- Smart Health Care: Registering and discovering chronic patients who are suffering from hypertension or diabetes due to population aging, changing living habit beforehand through the Internet and mobile.
- Safe City Portal Website: Providing ages, environmental safety information, building cyber safety experimental room, consultation corner, making digital safety map, etc.

- U-History Valley: Automatic tour guidance system at districts' tourist attractions.
- Total Parking Management System: Resident priority parking management, real-time supervision of illegal parking and stopping, providing parking space information in order to improve resident and tourist convenience.
- Mobile Lecture and Education Receipt: Education and lecture receipt, inquiry service through cellular phone
- U-Complex Street Light: Forming a complex street light aside at roads composed of wireless Internet, CCTV, and LED light. Estimates dangers through the street light and in case of emergency, cooperates with other organizations to rescue, solve the problems.
- U-In Mother's Arms: Provides information of the position of the children's nurturing institutions when they go and come from back school, easing psychological uneasiness of the parents. Also a system to prevent and solve various types of crimes and accidents.
- U-economy Portal: Internet based information providing service for corporations to increase competitiveness. The aim is to provide a Information system to solve difficulties of the corporation in One-Stop.
- U-Archives (Internet Storage Tube): The first ever 3D based Internet storage tube. Collecting civilian records, history records and personal possessions and constructing web contents.

Box 8. Best Practices in Digital Public Management in Korea

1. e-Approval and e-Document Exchange

1) Summary of Service

For the improvement of government administration processes and the creation of a government-wide knowledge management database, the e-Approval and e-Document Exchange system has been created.

2) Scope of Service

- An e-Document system, which includes sender and recipient data of each e-Document and a route tracing option
The verification of the delivery of government documents across agencies and route tracing of each e-document is built into the e-Document system. Through the use of e-Signatures, the sender of each e-Document can be verified.
- After a document is approved, the signed document can be sent to various agencies via the Internet.
A document that is approved through the e-Approval method can be sent to various agencies that can be selected from a government agency list. One mouse-click will automatically send the approved e-Document to all the agencies selected from the list.
- Network links between the e-Document System and Government Administration Information System
While using the government administration information system, civil servants can access the e-Documents System which is interconnected to other information systems and use the e-Approval feature to get a document approved quickly.

3) Service Procedure

After completing a document to be delivered to another government agency by using the government-issued e-Document System (www.mopas.go.kr), select the recipient of the document among the list of government agencies appearing in the government directory system. After the selection is made, the document can be sent.

2. e-Signature and e-Seal System

1) Summary of Service

This system protects personal information through use of secure methods for government-wide sharing of information and will build trust in the e-Administration system. The establishment and expansion of the e-Authentication system will be the key factor for expanding e-Government services, e-Procurement, e-Commerce and e-Document exchange.

2) Scope of Service

- Expanded the use of certified e-Signatures among citizens

Issue authenticated e-Signatures to 10 million citizens which will in turn allow wider access of online government services to the private sector. The expanded use of electronic bidding on public bids, online filing of tax returns and other e-government services will be enabled through e-Signatures.

b. Expand the use of e-Signatures among civil servants for administration processes

Issue Authenticated e-Signatures to over 1 million civil servants across the nations while ensuring that documents exchanged over the e-Document System for e-Approval are sent in a secure method that allows the recipient to verify the sender's e-Signature.

3) Service Procedure

Visit Certificate Authority → submit application for authentication service → complete registration → receive reference code and confirmation code → authentication certificate is issued.

* Banks and post offices will issue an authentication certificate for free to customers who sign up for Internet banking services.

3. Government-wide Integrated Computer Network

The Government-wide Integrated Computer System project, which is one of the e-Government initiatives, is a system that will interconnect all the computer systems in each government agency and allow information to be shared across agencies for the purpose of managing government databases more efficiently and this will be achieved by building an integrated administration system through long-term investments in human resources and equipment. The formulation of the Business Process Reengineering (BPR) plan began in June 2002 to promote the efficient operation of all government computer environments and its results were reported in October 2002.

Finally, projects in the area of digital democracy in local informatization in Indonesia are as follows:

■ Digital Democracy

Short-Term Period

- Proposing to the Mayor(What we expect from the Mayor): A program to reflect opinions of the local residents. When civil complaints, proposals are registered, after examination, the answers are replied immediately.
- Policy Evaluation Team (housewives, juvenile, parents of students, and others): Monitoring categories of district office's policies and proposing opinions from specific groups of citizens
- Internet Broadcasting: Broadcasting news of the district promptly and in detail. Producing news and service on their own, such as weekly news (which everybody can participate through Participation & UCC, cover board, praiseworthy stories, Cyber classes, etc.
- Hotline for Inconveniences in Civil Services or Daily Live: Receiving civil appeals such as improvement appeals, inconvenience complaints and taking care of them.
- Cyber Policy Discussion Room: Local residents or officials propose a subject related to district office's policy, and debates on the Internet in real-time.
- Public Subscription of Citizen Idea: Collecting ideas of local residents through the Internet, and best ideas are reflected in policies of the district office.
- Internet Broadcasting Public Subscription for Use Generated Content: Inducing local residents to participate in district office policy through collecting instructive UCCs.
- Online/Mobile Survey: Provides customized text message service regarding civil appeal and results, sending alarm messages when a representative requests for social security number, family register, and certificate of seal impression. Also adopts civil opinions and collects local residents' satisfaction level by WAP survey and voice survey.
- Let's Praise: A program which is praising kind officials or experience of the local resident.
- Free Debate Room: An inside public opinion acception place where all officials can freely talk about their thoughts and discuss issues. Important issues, policies are actively updated and discussed in anonymity.

Long-Term Period

- Policy Customer Management System: Collecting and managing comprehensive customer DB through policy customer management consultation to provide customized contents, new subjects for customer information, demands of the customers, developing promotion strategies through
- Mobile Communicative Web Site: Providing service with no limits of time and space through insuring two-way communication with the district residents
- Digital Portal Government of Participation, Opening, Sharing, and Cooperation: To replace the old one-way transom information providing web-site to a realistic individual customized service, constructing a “joyful web site with the resident” under the values of participation, opening, sharing, cooperation of Web 3.0.
- Resident Customized Web Site Service: Providing a customized web site service for residents who uses the web site
- Community RSS and UCC Function: Public subscription of each communities and members’ UCC and providing UCC and RSS functions
- Communicative Blog System: Helping the residents to regionalize information and participate in district’s policy by new district policy, policy promotion blog, individual blog service.

Table-17 summarizes the yearly roadmap by 2015. This period is the building foundations toward “Smart Government for Digital Prosperity.” Basically, during the early stage of this period, each local government in Indonesia should develop each short-term plan by 2015 as well as long-term plan by 2030.

Table 17. Roadmap for “Smart Government for Digital Prosperity” by 2015

Area	2012	2013	2014	2015
Digital Public Management	<ul style="list-style-type: none"> • Establishing electronic procedures 	<ul style="list-style-type: none"> • Paperless administration I 	<ul style="list-style-type: none"> • Paperless administration II • Service oriented BPR II 	<ul style="list-style-type: none"> • Service oriented BPR III (Process Reengineering) • E-Approval and E-Document System • Comprehensive Informatization of Local Government Administration
Digital Public Service	<ul style="list-style-type: none"> • Planning Single Portal Service for Citizens • Planning G2B Service through single point of contact 	<ul style="list-style-type: none"> • Construction of Single Portal Service for citizens • Construction of G2B Service through single point of contact 	<ul style="list-style-type: none"> • Advancing Single Portal Service for Citizens I (Tax, Fine, etc.) • Advancing G2B Service through single point of contact I(e-procurement) 	<ul style="list-style-type: none"> • Advancing Single Portal Service for Citizens II • Advancing G2B Service through single point of contact II
Digital Public Participation	<ul style="list-style-type: none"> • Planning for the Expanded Public Information Open through Internet 	<ul style="list-style-type: none"> • Expanded Public Information Open through Internet 	<ul style="list-style-type: none"> • Expanded Public Information Open through Internet • Digital Forum 	<ul style="list-style-type: none"> • Expanded Public Information Open through Internet • Digital Poll
Digital Infra	<ul style="list-style-type: none"> • Diagnosis and Reorganization of ICTs Organization • Attainment of Specialized Manpower • Development and Application of ITA I 	<ul style="list-style-type: none"> • Development and Application of ITA II • Enhancement of Information Protection System I • Strengthened Response to Information Security Accidents I 	<ul style="list-style-type: none"> • Development and Application of ITA III • Enhancement of Information Protection System II • Strengthened Response to Information Security Accidents II 	<ul style="list-style-type: none"> • Development and Application of ITA III • Enhancement of Information Protection System II • Strengthened Response to Information Security Accidents II

Financing Strategies

E-government is expensive. Similar to other infrastructure development, such as road, water utility, sewage disposal, and electricity generation, e-government development requires a large-scale investment for constructing the networks and purchasing information processing and communication equipment. Unlike other social infrastructures that by and large consist of hardware, e-government does not produce any benefit to the society without proper software development.

Developing software begins with understanding the service needs and demands from the users. In the private sector, e-commerce or any other forms of IT use is typically targeted on the specific groups of customers. Yet, the public sector organizations' customers virtually include every citizen in the society and their demands are more complicated than in the private sector customers. Thus, public sector organizations should address more difficult challenges than the private sector counterparts. The costs of developing e-services in the public sector tend to be greater than in the private sector because the government should more diverse population.

In order to successfully finance the e-government projects, governments should be able to mobilize a large amount of financial resources for a long time period. It would be ideal if the government could use the financial resources in a flexible manner to meet the emerging needs of the e-government service users. Unfortunately, it is hardly the case that public organizations work in such conditions. Budgets are limited and often earmarked for particular purposes. To move on to the next level of e-government, Indonesian local governments should make extra efforts to develop additional funding sources as well as to gain flexibility in expenditure.

The following financing strategies are suggested as possible alternatives. We understand that some of them may not be feasible in the Indonesian context, but Indonesian local governments may find some useful ideas from the suggestions and tailor them into their own government setting.

Indirect Financing Strategies

Spending public money for e-government often receives political criticisms because true impacts of the investment are not readily observable. In fact, the positive financial effects of e-government can be assessed when proper techniques are applied for measuring the results of e-government projects.

For instance, some Indonesian local governments, such as Sragen Regency, have been running e-procurement system. E-procurement system is a good example that e-government service can reduce transaction costs incurring when governments conduct commercial transactions with private entities. E-procurement streamlines the transaction process and thereby reduces the time for bidding, negotiating, and concluding the entire process. In addition, electronic systems prevent possible corruptions often occurring in procurement. Assessing the number of employees or employee hours and the frequency of corruptions could be one way to assessing the cost savings generated from the e-procurement system.

Box 9. Indirect Financing Strategies

Indonesian local governments should

- Provide incentives to the public officials to motivate them to invest more time and energies for e-government;
- Consider the social effects of e-government, such as the residents' increased knowledge on government and recognition of civic duties;
- Assess the effects of e-government in attracting more investments in the private sector as a method justification for e-government expenditure; and
- Enhance the IT management capacities to prevent any possible expensive failure of e-government initiatives.

We often observe one concern from many public officials: savings may result in a budget cut. Under the atmosphere, we cannot expect active participation from the public officials. To prevent such hesitation, government should provide incentives to the government units or individuals to motivate them to invest more time and energies for further advancement of e-government (Gant, Gant, & Johnson, 2008).

Benefits of e-government are mostly assessed by financial gains. On top of that, assessing the social outcomes could be another effective way to justify funding for e-government. Sharing more information within the community through electronic channels and the residents' experiences of being exposed to the new media will increase their knowledge, skill sets, and more over the sense of civic duties as community members.

Advanced e-government will also attract new businesses from outside and consequently create more job opportunities to the community. Such benefits are not immediately materialized, but the expected benefits can be estimated by drawing on similar cases in other regions or other countries.

According to a report from the Standish Group, about 30% of IT projects fail, 45% undergo serious problems, and 25% miss the target (Standish Group, 1995). One way of increasing financial resources for e-government is minimizing the project failures and the ensuing loss of financial resources. The failure rate can be reduced by enhancing the IT management capacities, such as capacities for project management, smart outsourcing, cost-benefit analysis, accurate needs assessment, and so on. The investment for building management capacities should be considered as saving, not extra spending.

Direct Funding Strategies

If Indonesian local governments wish to move upward the phases of e-government advancement, the first change in funding strategies should be treating e-government projects as capital projects (Chen & Thurmaier, 2008; Mimicopoulos, 2004). The study sites we investigated for this research commonly show that most e-government projects in Indonesia have been funded by normal operation budgets. Such scheme might have been workable in the nascent stage of e-government because the scope of projects in that stage is relatively narrow. Typical e-government transformation in early stages is targeted at putting on-line the public information, developing applications for particular business functions, and upgrading some of the IT infrastructure. Governments should expect challenges at a greater scale when it comes to the fully transactional and integrated e-government transformation.

Long-term planning and multi-year financing instruments are prerequisite to the smooth transition to higher e-government stages. A report published by the UNPAN suggests issuing bonds as alternative funding strategies for e-government. According to the report issuing bonds has advantages over bank loans: bonds allows for longer term maturity debt, bonds issuing is not subject to partial repayments during the project period, and bonds may minimize the budget risk and contribute to the financial stability (Mimicopoulos, 2004: 14). To opt for this strategy, Indonesian local governments should first review whether they have capacities to manage the complicated process of issuing bonds and choosing the most feasible option out of numerous types of bonds. Local governments should also be able to persuade the local council and residents to take the financial burdens to pay the bonds in the future.

Box 10. Direct Financing Strategies

Indonesian local governments should

- Assess and build their capital management capacities to finance capital projects for e-government;
- Utilize the domestic and international private sector organizations' financial and technological capacities through public-private partnerships;
- Develop business opportunities to provide e-government consulting services to other less developed Indonesian local governments; and
- Impose user fees or charges on e-government services, especially for business users.

Another alternative funding strategy is utilizing the financial and/or technological capabilities of the private sector. Involving capable private sector organizations in developing e-government is not rare. One well-known example is the case of Access Indiana which is an integrated portal of the State of Indiana, U.S.A. The state has developed and run the Web portal in collaboration with a private company. The company developed the Web portal and the development and operation costs are reimbursed by charging the service fees to the users, especially business users. This type of financing strategy is not rare for the infrastructure development. Private Finance Initiatives (PFI) has been adopted in many countries to overcome the financial deficits and to meet the increasing demands for the more and better public services.

Applying this kind of business model to the Indonesian local governments as it is may not be realistic because it could be difficult to find a local private company which has technical and financial capacities. Another challenge of adopting this approach is that this scheme requires a high level of contract management capacities. Both public and private parties are bounded by a fairly long-term contract of which duration easily exceeds 20 years. Miscalculation of future costs and revenues may incur humongous financial burdens in the future.

One possible modification of the model is attracting foreign companies willing to make investments with a vision to create a new market in Indonesia. Another way of utilizing this model is establishing a public corporation funded by both the public and private sectors. To be financially sustainable, this type of public corporation should provide e-government services beyond one jurisdiction. Any forms of public-private partnerships, however, need to be supported by appropriate institutional arrangements to legalize this form of ownership.

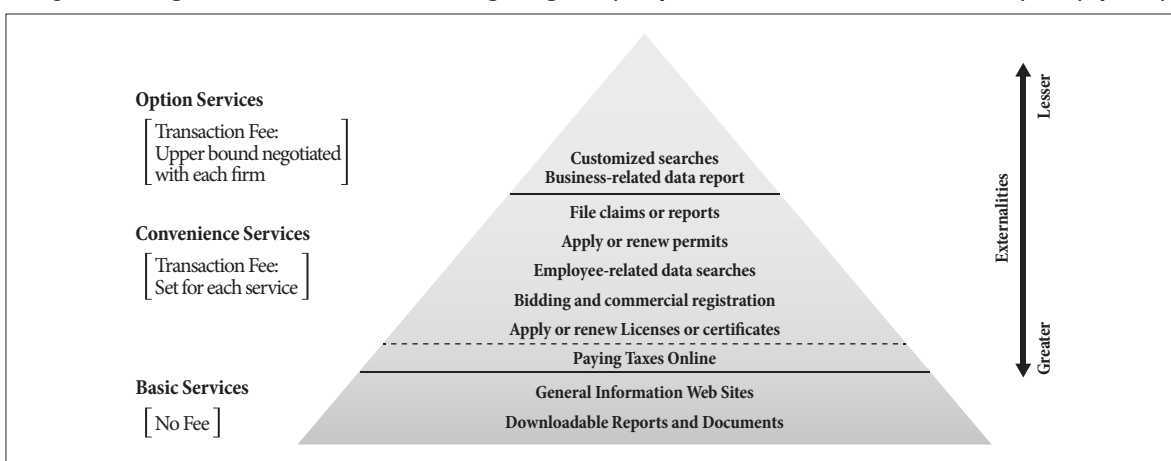
Some local governments advancing in e-government transformation may utilize their experiences and know-hows to create an additional funding stream. For example, Sragen District, which is one of the e-government leaders in Indonesia, has been providing consulting services to other local governments. Leading local governments may form a consortium which provides other local governments with professional consulting and training services and their ready-made e-government systems and applications. Revenues earned from the consulting services will be a useful additional source for the participating local governments' e-government funds.

Service fees and charges on e-government services can be important elements of a self-financing model of e-government. Imposing user fees or charges may not be welcomed by political leaders because it may deliver to the residents an impression that financial burdens are transferred to them. One way of overcoming possible objections to imposing financial charges on e-government services is assessing and advertising the saved opportunity costs and positive externalities generated from e-government service use (Chen & Thurmaier, 2008). For instance, visiting government offices to renew a driver's license is not free. Citizens spend time on traveling to the government building and waiting in line. Moreover, more traffics mean more polluted air. When e-government services are not available, individual citizens and the community as a whole are actually paying the opportunity costs. We can also expect positive externalities from e-government. One good example is e-procurement. Benefits of e-procurement are not limited to reducing the transaction cost, but also it may increase the pool

of potential vendors to bid and, thus, the government can purchase goods and services at a more competitive price or with better quality.

Policy makers face one common question: what services should be charged and should not be charged? And how much should be charged? Chen and Thurmaier (2008) suggest a useful pricing policy framework as shown in the diagram below. This pyramid describes three types of services and pricing methods corresponding to them. When the e-government service serves for the benefits of a specific business firm, the firm will be willing to pay a higher charge for using the service. If the social benefits of a particular e-government service are high, e.g. general information web sites, general government revenue should be used instead of charging for the services (Gant et al., 2002).

Figure 29. **E-government Services Pricing Diagram (adapted from Chen and Thurmaier (2008), p.541)**



Year-by-year financial plan for e-government funding may vary depending on the current development state of each local government. Table-18 describes the key financing strategies appropriate for each e-government development stage based upon the UNPAN-ASPA five stages of E-government model.

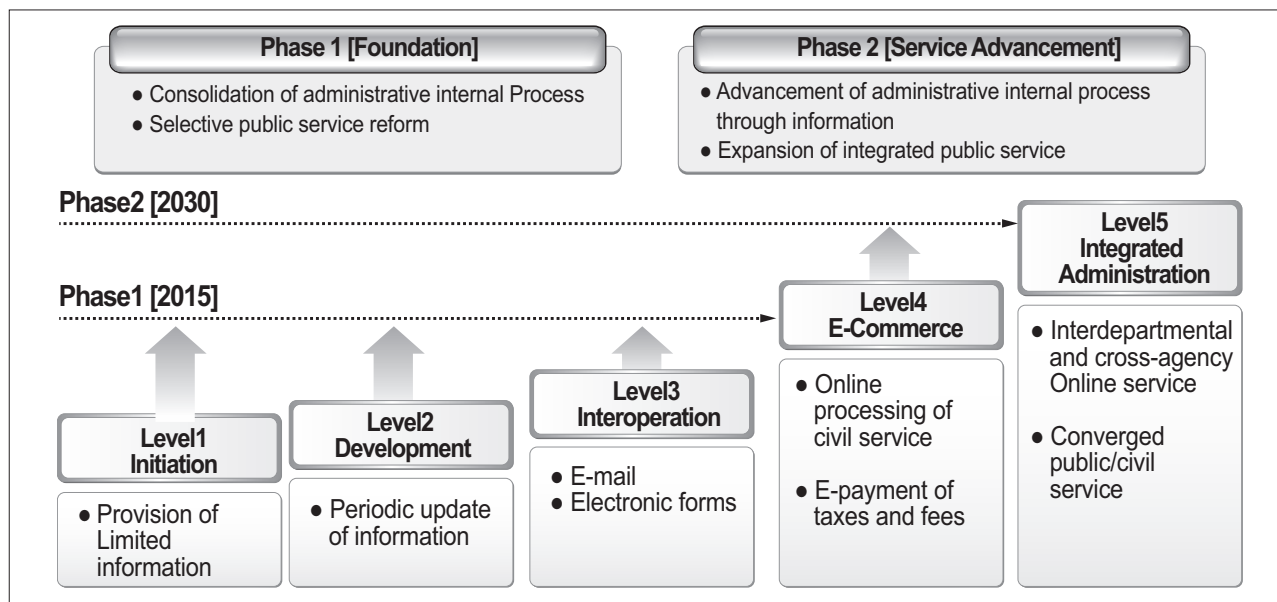
Table 18. **E-government Development Stages and Financing Strategies**

Stage		Direct Financing Strategies	Ongoing Financing Strategies
Stage One	• Emerging Web Presence	• Directing regular operating budget to developing basic E-government services	• Building financial management capacities to support E-government • Enhancing IT management capacities to avoid failures • Creating and maintaining innovative organization culture • Advertising the positive effects of E-government to overcome criticisms against E-government investment
Stage Two	• Enhanced Web Presence	• Increasing regular operation budget for E-government	
Stage Three	• Interactive Web Presence	• Seeking for internal and external capital investments	
Stage Four	• Transactional Web Presence	• Establishing self-financing model • Building partnerships with the private sector • Searching Knowledge sharing opportunities to make extra revenues	
Stage Five	• Fully Integrated Web Presence	• Stabilizing the multifaceted funding strategies	

Major Projects by Year

The vision for e-government in Indonesian local governments is “Smart Government for Digital Prosperity.” To achieve this vision, agenda and specific projects for Indonesian local governments were suggested. The phase of development in Indonesian local informatization can be summarized in Figure-30.

Figure 30. The Phase of Development in Local Informatization



Government-to-Government (G2G)

Based on the vision and the phase of development discussed above, major projects in digital management (G2G) are as follows:

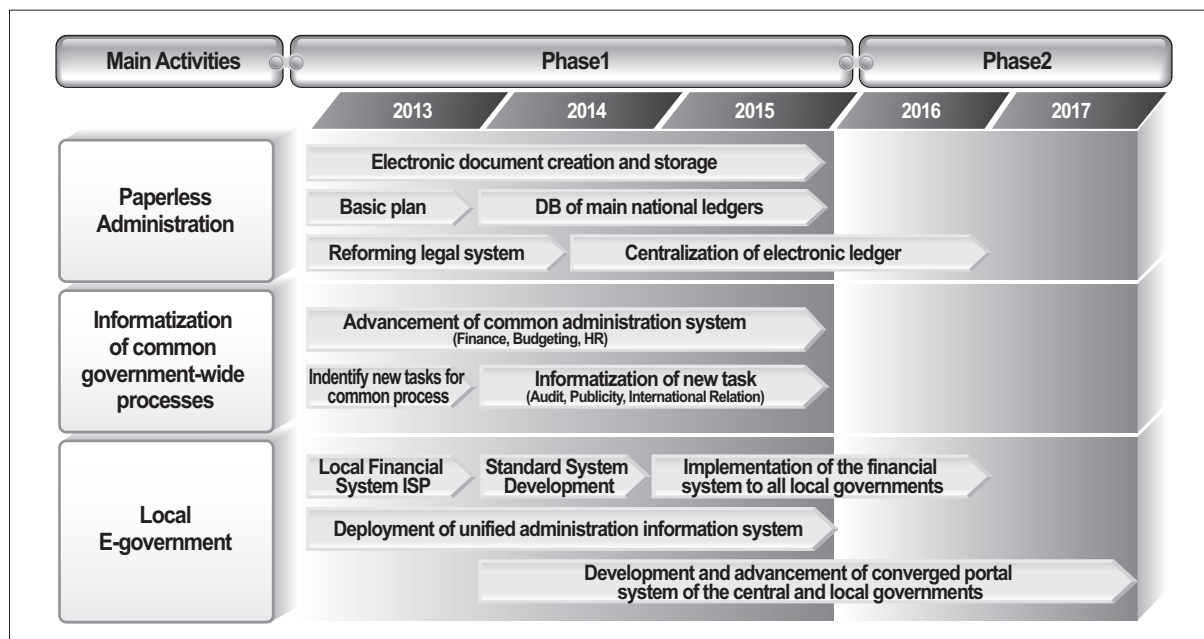
1. Establishing Electronic Procedures
 - Paperless Administration
 - Informatization of Common Government-Wide Process
 - Local E-government
2. Expanding Common Use of Public Information
 - Expansion of Administration Information Sharing
 - Expansion of Policy Information Sharing
3. Service Oriented BPR
 - Government Functions Business Relation Model (BRM)
 - Government Functions Process Redesign
 - Identification of Future Task
4. Integration and Standardization of Information Resources
 - Government-Wide Integrated Information Service
 - Advancement of e-government Communication Network
 - Development and Application of ITA

5. Strengthening of Information Protection System

- Enhancement of Information Protection System
- Strengthened Response to Information Security Accidents.

In terms of the project, “Establishing Electronic Procedures,” which includes Paperless Administration, Informatization of Common Government-Wide Processes, and Local E-government, the details are as follows and specific plans are summarized in Figure-31.

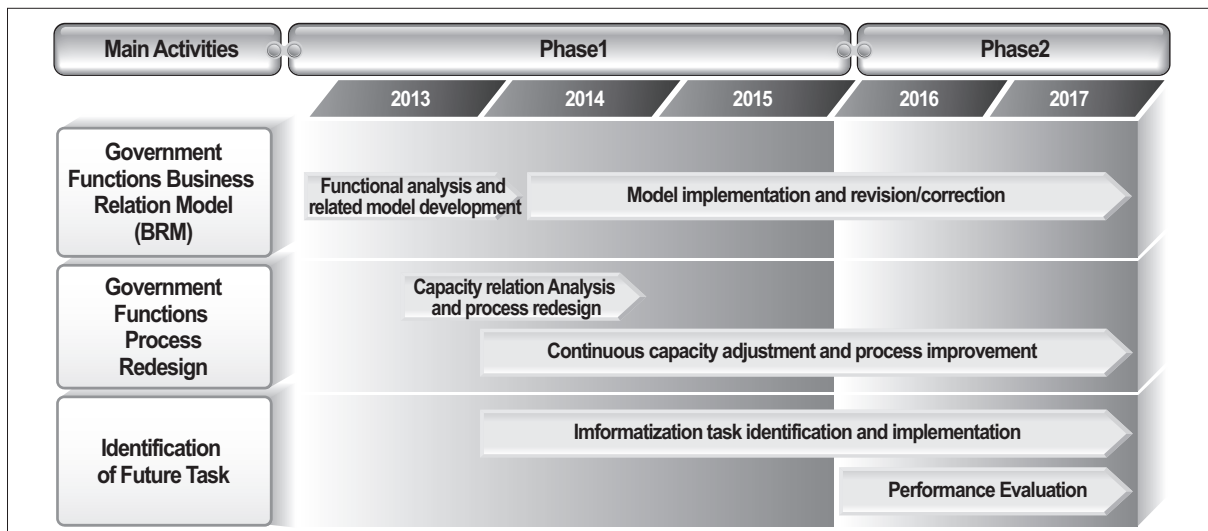
Figure 31. **Project: “Establishing Electronic Procedures” by Year**



1. Expansion and enhancement of electronic document distribution system(EDDS)
 - Expansion of intermediate system to secure credibility and stability
 - Enhancement of ED DS for all central government agencies
 - Convergence of ED DS with administration information system
2. Deployment of public records archiving and management system
 - Deployment after committee's review of the plan
3. Electronic conversion of all document ledger and discontinuance of paper ledgers
4. Deploying a convergent administrative portal of central-city/province-municipality governments
 - Development and expansion of local administrative information system
 - Development of convergent administrative portal of central and local governments
5. Enhancement of local government administrative information system
 - Application of wireless/GIS based state-of-art technology and system enhancement

In terms of the project, “Expanding Common Use of Public Information,” which includes both Expansion of Administration Information Sharing and Expansion of Policy Information Sharing, the details are as follows and specific plans are summarized in Figure-32.

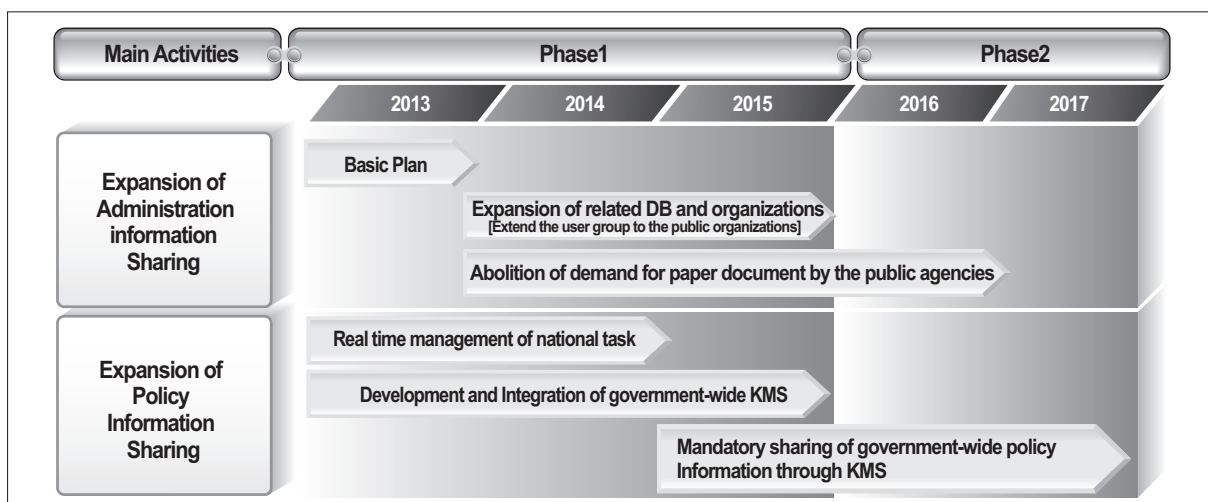
Figure 32. Project: “Expanding Common Use of Public Information” by Year



1. Deployment of public information sharing system expansion
 - Expansion of common DB in the public information shared usage center
 - Expanded integration of departmental administrative information databases
2. Extension of the agencies to use shared administrative information
 - Extension to all public agencies by 2015
 - Extension to the financial institutions starting in 2016

In terms of the project, “Service Oriented BPR,” which includes Government Functions Business Relation Model (BRM), Government Functions Process Redesign, and Identification of Future Task, the details are as follows and specific plans are summarized in Figure-33.

Figure 33. Project: “Service Oriented BPR” by Year



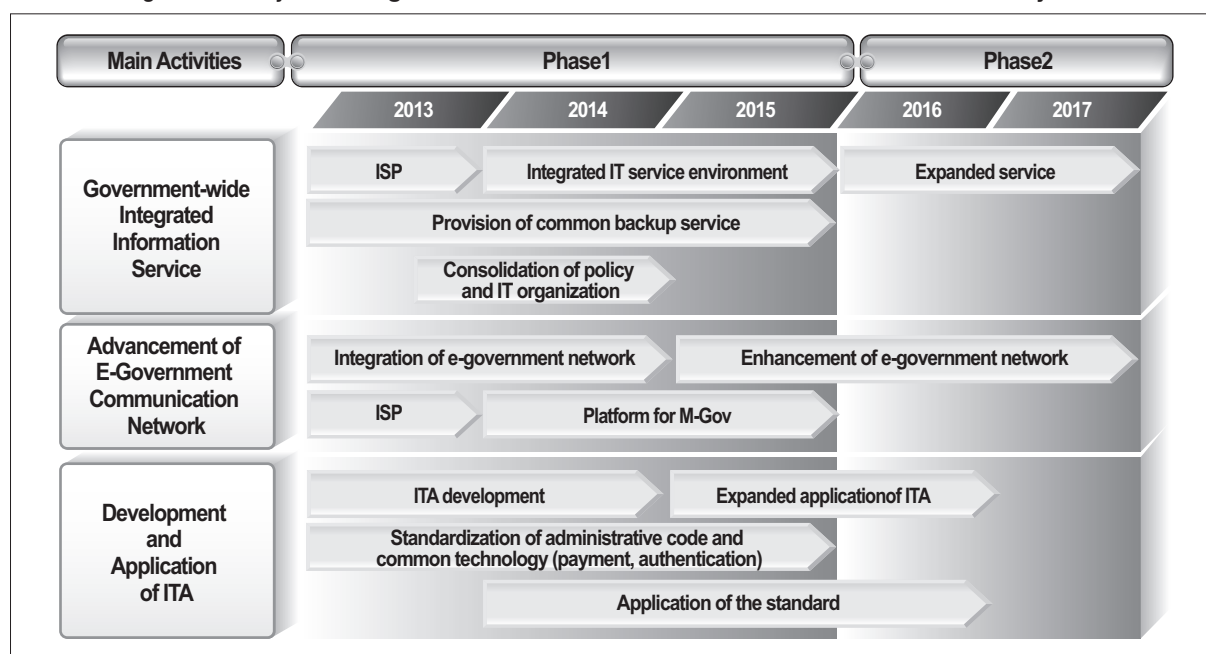
1. Business relation model of the government functions through government function analysis and process improvement
 - Annual modification and adjustment of BRM

2. Informatization of key reform areas based on process improvement results

- IT technology application based on information resource management

In terms of the project, “Integration and Standardization of Information Resources,” which includes Government Functions Business Relation Model(BRM), Government Functions Process Redesign, and Identification of Future Task, the details are as follows and specific plans are summarized in Figure-34.

Figure 34. Project: “Integration and Standardization of Information Resources” by Year



1. Government-Wide Integrated Information Service

- Integration and central operation of departmental information systems
 - ISP and process improvement for the integrated information system
 - Development of integrated information system and system integration
- Expanded service of real time collaborative backup of the main information systems

2. Enhancement of e-government Infrastructure through Integrated e-government network

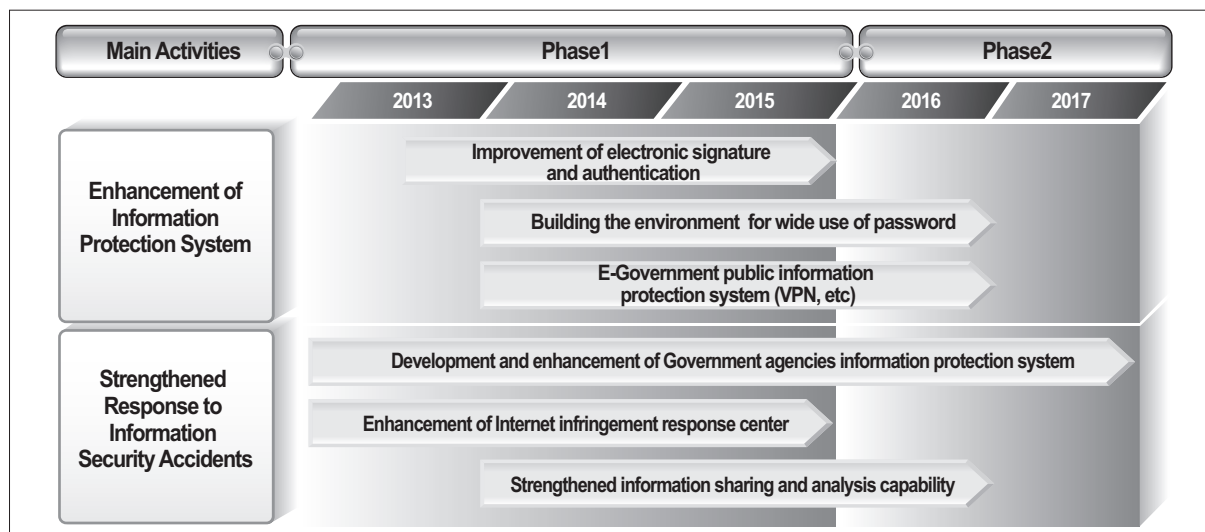
- Investigation of each network status and completion of integrated network ISP
- Physical separation of internal administrative service network and Internet service network
- Phased deployment of e-government dedicated network
- Creation of m-government gateway for mobile service

3. Development and Application of ITA

- Standardization and guide of government-wide ITA
- Application of ITA when building government integrated information center
- Development and expansion of departmental and sectional architecture: Architecture guideline, reference model, ITA management system, etc.
- Standardization and application of administrative code and common services such as electronic signature and e-payment, etc.

In terms of the project, “Strengthening of Information Protection System,” which includes both Enhancement of Information Protection System and Strengthened Response to Information Security Accidents, the details are as follows and specific plans are summarized in Figure 35

Figure 35. Project: “Strengthening of Information Protection System” by Year



1. Platform for secured information circulation through enhancement of authentication system
 - Diversified application of electronic signature and deployment of wireless electronic signature system
 - Deployment of password based system mainly for the classified information
 - Guaranteed security of information circulation by applying VPN to e-government infrastructure
2. Deployment of robust information protection system
 - Deployment of CERT(Computer Emergency Response Team) for each departmental unit
 - Phased strengthening of government information sharing and analysis capability

Government for Citizens

Implementing G4C projects cannot be completely separated from either G2G or G4B projects, because basic infrastructure should be shared across the service areas and G4C advancement depends heavily on the development of administrative information systems. The following lists of G4C projects are introduced only as exemplary G4C projects that Indonesian local governments may consider to move on to the next level of e-government.

In an early stage of e-government development, Indonesia local governments may focus on the following G4C projects:

1. E-approval and e-documentation for civil applications;
2. E-payment; and
3. A single window web portal.

Citizens visit government offices for issuing government documents or government approval for civic affairs. Long waiting time and complicated application procedures have been considered as the major source of complaints against government. Putting online civic applications will promptly improve the images of government. Therefore, e-approval and e-documentation should be considered first.

Next, paying taxes, fines, and fees is another government service that provokes citizens' dissatisfaction with the government because of its coercive nature and complexity. Moreover, financial transaction with government is often considered as most vulnerable to corruption. E-payment will quickly redirect the citizen's perception of government, from cumbersome to convenient, from uncertain to transparent, and from inefficient to efficient. There are various levels of e-payment services. At the lowest level, citizens can check their tax bills or other financial charges on line instead of waiting for the delivery of paper bills. A more advanced e-payment service will be allowing the citizens to send inquiries about their financial charges to the government officials for correction or clarification. For an ultimate level of e-payment services, government should develop an online payment system through which citizens pay their financial charges by using credit cards, bank accounts, or any other 3rd party service agencies. This very last stage requires a high level of technological readiness of the private sector entities (e.g. banks, credit card companies) as well as the government. Therefore, the completely online transaction can only be possible when both public and private sector partners have reached the significant development level of information technologies.

In any case of G4C, all the access to the G4C services should be channeled through one single web portal. It is not desirable that citizens have to search G4C services by visiting multiple government websites. The portal should at the very least provide the links to the individual services. More ideally, all the available G4C services should be integrated and categorized from the citizens' perspectives.

Once the early stage of G4C projects are completed, then the government may pursue the services which create unforeseen ways of interacting with citizens rather than simply replacing the traditional offline channels. One such project will be developing e-civic engagement. E-civic engagement may include the following services:

1. E-announcement;
2. E-polling; and
3. E-voting.

E-civic engagement can be designed in various ways. E-announcement is providing all the policy making and implementation related documents and video/audio materials on line to enable citizens to access the up-to-date policy information. It is typically accompanied by online bulletin board services in which citizens make comments on the policy issues. Another form of e-civic engagement is e-polling. Citizens may make votes on particular policy issues to reveal their preferences. There is no doubt that popular votes and election are two important political representations in a democratic society. Yet, such methods are too expensive and time consuming and hard to represent the real time opinions from the citizens. E-polling can be utilized to collect citizens' opinions in a prompt manner. However, it should be considered complementary to the traditional political representations. E-voting is also a form of e-civic engagement. In some advanced countries, e-voting is partially adopted or being tested. Because of technical and institutional difficulties, e-voting has not been widely accepted.

Expanding the channels from the traditional wired services to wireless services is an irresistible trend. In the case of Indonesia where the population of mobile phone users is dramatically increasing, creating mobile services for all the above-mentioned interactive G4C services would be necessary. Mobile services, if available, will be more frequently used by the citizens because its physical access to network is less constrained compared to the wired services. In the countries like Indonesia where wired networks are limitedly available, skipping the wired service development and jumping to the mobile services could be an efficient way of implementing G4C projects.

Growing M-technologies and M-government

Emerging M-Government

The Government of Indonesia is very much interested in applications of mobile technologies since mobile phones have diffused in a very fast way in the past years. Thanks to the fast diffusion of mobile phones and geographical characteristics of Indonesia where her population are scattered across about 15,000 islands, the concept of m-government has been widely discussed among public officials of Indonesia as a potential paradigm of e-government.

In fact, governments have just begun to pay attention to e-government (online public services, e-procurement, e-budgeting, e-politics, etc.). They perceive e-government to be a compelling mechanism for improving the quality of public services and enhancing the effectiveness of public management. During the early years of e-government adoption, much of the academic research and many of the practical initiatives in this area focused on desktop PCs, Web technologies, and network systems. These measures, however, do not effectively address emerging mobile technologies and their potential applications to e-government, the scope and utility of which have become wider and more critical thanks to the unique mobile characteristics of communication and networking devices such as pagers, cellular phones, remote-access laptops, wireless Internet hook-ups, telematics, etc.

Broadly, m-government is defined as government's efforts to provide information and services to public employees, citizens, businesses, and nonprofit organizations through wireless communication networks and mobile devices such as pagers, PDAs, cellular phones, and their supporting systems. M-government will revolutionize citizen's access to digital services and alter the ways that government employees have traditionally performed essential tasks. Citizens with cell phones can give first responders instant information about traffic accidents. Governments can also provide emergency-related information (about natural disasters, wildfires, homeland security, etc.) to citizens. M-government is a promising alternative particularly when wired Internet has not been well established thanks to paucity of resources. M-government is a great alternative which offers opportunities to the countries where mobile phone population dramatically increases though traditional ICT infrastructure is behind compared to other competing countries.

Table 19. Volume of Wireless Internet Users

Regions	2003	2005	2008	2014
US Internet Users (million)	174	198	234	284
US Wireless Internet Users (million)	12	22	62	179
US Wireless Internet Users Share(%)	7.2	11.2	26.6	62.9
Worldwide Internet Users (million)	827	1,094	1,592	2,517
Worldwide Wireless Internet Users (million)	143	239	616	1,654
Worldwide Wireless Internet Users Share (%)	17.3	21.8	38.7	65.7

Source : eTForecasts (2009).

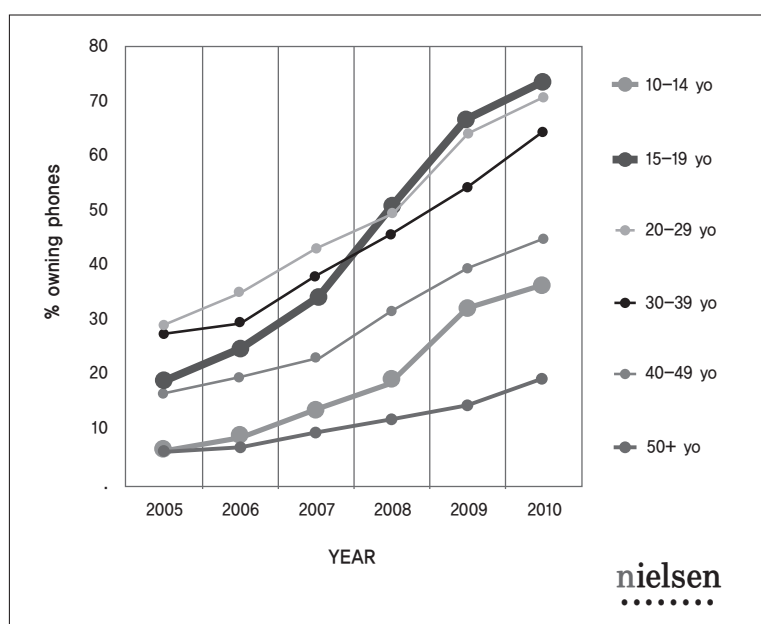
The Internet User Forecast by Country, http://www.etforecasts.com/products/ES_intusersv2.htm

The increase in the use of mobile technologies is projected to be dramatic. Based on the information from Computer Industry Almanac, eTForecasts (2009) projected that about 1,654 million people of the world use wireless access to the

Internet through cell phones or PDAs in 2014. The wireless Internet use is projected to increase from 38.7 percent of the Internet users in 2008 to 65.7 percent in 2014. (eTForecast, 2009). This suggests that internet users continue to grow rapidly and wireless internet users grow even more sharply. As wireless appliances and technologies become more pervasive and as citizens come to demand m-government services via wireless media, government should consider harnessing these technologies to the better delivery of public services.

Figure 36. **Indonesian Mobile Consumers are Getting Younger:**

15- to 19-year olds and more recently 10-14-year olds driving growth



The diffusion of mobile phones in Indonesia is also very dramatic. According to the statistics from Nielsen, the number of mobile phones has increased to 54 percent while that of landlines has dived to 11 percent in 2010. It is worth noting that the dramatic increase in the number of mobile phone ownership has been driven by young populations particular the youth aged between 10-19 and 20-29. This means that Indonesian young generation are much more familiar with mobile phones and would be good target population for future m-government services (More details, see more in Nelson Wirte, Feb. 23, 2012: <http://blog.nielsen.com/nielsenwire/global/mobile-phone-penetration-in-indonesia-triples-in-five-years/>)

While some leading governments such as Korea and U.S. have begun to explore the potential utility and feasibility of m-government, the Indonesian government has not been actively involved in this effort. Though many believe the potential benefits of mobile technologies for enhancing the quality of communication and delivering services to the public, its full capabilities are just beginning to be explored. To pursue an effective m-government, the Indonesian government needs to carefully prepare critical factors for the successful implementation of mobile government, which are: 1) the development of a comprehensive strategic plan (enterprise architecture) for mobile government, 2) financial resources, 3) strong and sustained political leadership, and 4) intergovernmental, interagency, and inter-sectoral collaboration.

A. The development of strategic m-government plans and enterprise architecture A strategic m-government plan should offer a clear vision for m-government and, after comprehensively assessing service needs and operations, provide specific

plans for the procurement, maintenance, and upgrading of various mobile devices and wireless networks. Through the 'Mobile Cab' Project, the Ministry of Communication and Information Technology (MCIT) of the Indonesian government has attempted to offer more accesses to the Internet via the wireless Internet to more residents in local governments. The strategic plan should be practically and comprehensively prepared. It should address the trend of the diffusion of mobile devices in Indonesia and possible financial resources from local governments themselves, the central government, international organizations, ODA funding, etc. It should also include personnel capacities as well as institutional arrangements for intra- and inter-governmental collaborations. The plan should address training programs for public officials who will be assigned to mobile government projects as well as public relations plan to provide related information to ordinary citizens. Without a strategic plan to educate and train employees and citizens in the use of mobile technology, the technology will not be used to its full capacity and employees and citizens will become frustrated. The strategic plan should also address various concerns such as security and interoperability issues that impede the effective implementation of m-government or prevent governments from obtaining the maximum use of technology.

B. Financial resources Many jurisdictions face lack of financial resources (Government Technology 2009) which is a major obstacle to the implementation of m-government projects. Many governments have not allocated enough resources to m-government, though mobile technologies and mobile devices become increasingly diffused. Unless governments provide the funding necessary for m-government initiatives, the benefits of new technology will become further out of reach.

C. Strong, sustained political leadership Political leadership should envision the prospects of m-government and provide continuing support for m-government initiatives. Since m-government requires a strategic long-term plan supported by substantial financial and personnel resources, a strong and sustainable political commitment is a primary factor for the successful implementation of m-government just as needed for the successful promotion of e-government initiatives.

D. Intergovernmental, interagency, and intersectoral collaboration Successful m-government also requires healthy and continuing collaboration among various governments, agencies, and sectors.

Since communication via wireless networks is critical for m-government practices, constructive collaborative relationships among related actors are important to the success of m-government. Mobile technologies will continue to have a positive impact on the provision of public information to the public as well as public services. Although interoperability and security will remain major challenges to widespread adoption, the benefits of mobile-technology use appear to make it a worthwhile investment for central government and local governments. Governments need to prepare for the future of m-government by observing the activities of other governments and incorporating their best practices along with new technological solutions and devices.



Concluding Remarks

There have been a number of factors considered to be critical success factors in the successful implementation of e-government. OECD has summarized the critical success factors to e-government. The critical success factors are still important to the success of the Indonesian e-government and local e-government. Both the Indonesian central and local governments should pay attention to the OECD's checklist for successful e-government.

In particular, four major dimensions including vision and political will, common framework and cooperation, customer focus, and responsibility are key elements thoroughly discussed and checked by government officials in the course of planning and implementing e-government projects. The significance of the four elements has been confirmed in the process of the Korean e-government development. The checklist offers a great tool that assesses and monitors the local e-government development (see Box 11).

Box 11. Checklist for Successful E-government

■ Vision and Political Will

- Leadership and commitment

Do you have the necessary leadership and commitment at the political level in order to develop an e-government vision and guide change over the long term?

Is there leadership and commitment at the administrative level to implement change?

- Integration

Has there been a review of barriers to e-government implementation?

Is e-government integrated into broader policy and service delivery goals and processes?

Is e-government integrated into broader information society activity?

■ Common Frameworks and cooperation

- Inter-agency collaboration

Are agencies working together in customer-focused groupings of agencies?

Are agency managers operating within common frameworks to ensure interoperability, maximize implementation efficiency and avoid duplication?

Are there incentives to help encourage collaboration and seamless service delivery?

- Financing

Can ICT spending, where appropriate, be treated as an investment with consideration of projected streams of returns?

Is there a degree of certainty of future funding in order to provide sustainability to projects (and thus gain maximum benefit from given funding levels and avoid wasting resources)?

Are there programs to help foster innovation and allow for key demonstration projects?

■ Customer Focus

- Access

Is the government pursuing policies to improve access to online services?

Do customers have choice in the method of interacting with government?

Is there a "no wrong door principle" for accessing the administration?

Are services driven by an understanding of customer needs?

- Citizen engagement

Does e-government engage citizens in the policy process?

Are there information quality policies and feedback mechanisms in place to help maximize the usefulness of information provision and strengthen citizen participation?

- Privacy

Are there mechanisms in place to protect individual privacy with regard to e-government?

Do broad standards for privacy protection allow for information sharing between agencies while preventing abuse?

■ Responsibility**• Accountability**

Do accountability arrangements ensure that it is clear who is responsible for shared projects and initiatives?

Does the use of private sector partnerships maintain levels of accountability?

• Monitoring and evaluation

Is there a framework in place to identify the demand costs, benefits, and impact of e-government?

Are e-government implementers able to articulate and demonstrate the benefits of e-government in order to raise support for their projects?

Recommendations

Based on the lessons from case studies of Malang, Sragen, and Jakarta as well as Korean e-government development, along with CSFs for the development of Indonesian local e-government, several policy recommendations are presented as follows.

1. Prepare vision and strategies of local e-government incorporated into national e-government plan. The vision and strategies should be shaped both by the central government and local governments.
2. Establish a legal framework for local e-government development. The legal framework needs to stipulate specific aspects of e-government development including major actors, financial resources, decision rules, etc.
3. Prioritize local e-government as a local reform agenda and secure strong political and administrative commitments of top local leaders.
4. Prepare a local e-government roadmap for both back office and front office applications of information and communication technologies.
5. Prepare a comprehensive e-government architecture including online as well as mobile device applications.
6. Establish effective governance structure (IT governance) which outlines how and by whom e-government-related decisions on enterprise architecture, applications and e-government programs, financing, and inter-governmental collaboration are made.
7. Strengthen the role of central government particularly in the areas of coordinating and providing local e-government platforms as well as financing. Local governments should actively participate in building collaboration with other local governments, identifying unique service needs, and improving local technical capacity.
8. Securing financial resources from various sources including international (i.e., ODA or international development grants), national, local, and private funding.
9. Enhance IT capacity by developing IT training programs for local government officials and develop appropriate IT equipment procurement plan.
10. Build IT infrastructure and human developments in order to enhance the utilization of local e-government services.
11. Conduct local e-government need assessment and establish e-government feedback system through citizen participation.



Proposed Future Projects for Indonesian Local E-government

1. Indonesian Local Government CIO Training Program (ILGOCT Program)

Programs:

Providing local e-government training programs for local government CIOs, selected local top ranking officials of e-government champion, and central government officials who are in charge of local e-government programs

Background:

Local e-government is not a central agenda despite the significance in terms of its potential impact and visibility
Wide variation in IT capacity and lack of collaboration among local governments
Passive roles of CIOs (IT managers) in local governments and lack of network among them
Lack of systematic collaboration between local governments and the Ministry of Information and Communication

Content:

Evolution of local e-government
IT governance and leadership in local governments
Local e-government roadmap
Inter-government collaboration
Best local e-government practices

Expected Outcomes:

Strengthening IT leadership of local governments and enhancing the collaboration and information sharing among local government CIOs and between central and local governments

2. Technical Support for Best Indonesian Local E-government (BILE Project)

Program:

Providing a long-term technical support for one or two selected local governments and help them to become best practices for Indonesian local governments

Background:

Lack of specific best practices for local e-government
Lack of systematic and sustainable technical assistance from central government or international organizations

Content:

E-readiness and needs assessment
Development of e-government roadmap and action plans
Development of a template for local government portal
Development of strategies for financial mobilization
Provision of inbound and outbound e-government trainings

Expected Outcomes:

Creating best practices to be benchmarked by other local governments
Diffusing basic templates and platforms for local e-governments

Motivating local e-government initiatives and enhancing the sense of achievement

3. Local Mobile Government Program (LMG Program)

Program:

Developing mobile government platform for Indonesian local governments and various public service applications for mobile phone users

Background:

Rapid increase in mobile phone users

Geographical characteristics of Indonesia and potential utilities of mobile phones

Emergence of multi-channel public services

Content:

Applications of e-government and m-government

Enterprise architecture for m-government

Best m-government practices

Prospects and challenges in m-government

Expected Outcomes:

Understanding of potential utility of m-government and strategic planning

Providing best practice of m-government

4. Digital Divide Program

Program:

Paying attention to digital divide issues in Indonesian local governments and developing programs to reducing digital divide

Background:

Wide gap between digital capacity among local governments as well as unequal access to Internet

Lack of programs to deal with digital divide issues in local government

Emerging issues of digital divide among different socio-economic groups

Content:

Developing strategies to deal with digital divide among local governments

Developing strategies to deal with digital divide among different socio-economic groups

Enhancing IT capacity for local governments and schools

Technical assistance for digital divide issues

Expected Outcomes:

Reducing digital divide between local governments and between socio-economic groups



Appendix I : Survey Instrument and Survey Data Analysis

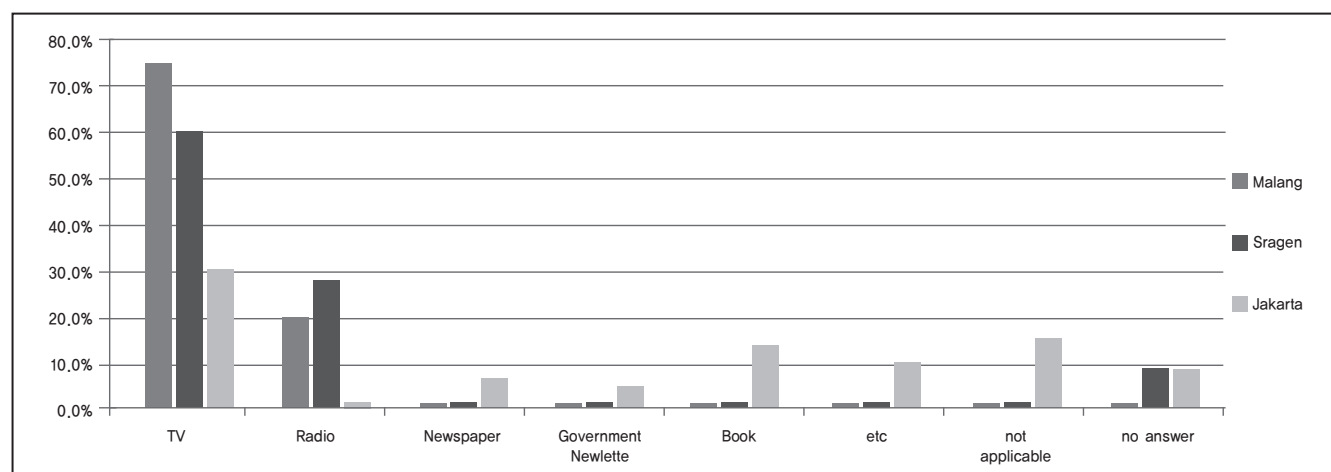


Needs Assessment Survey Tools for Regional Informatization: Malang, Sragen, and Jakarta

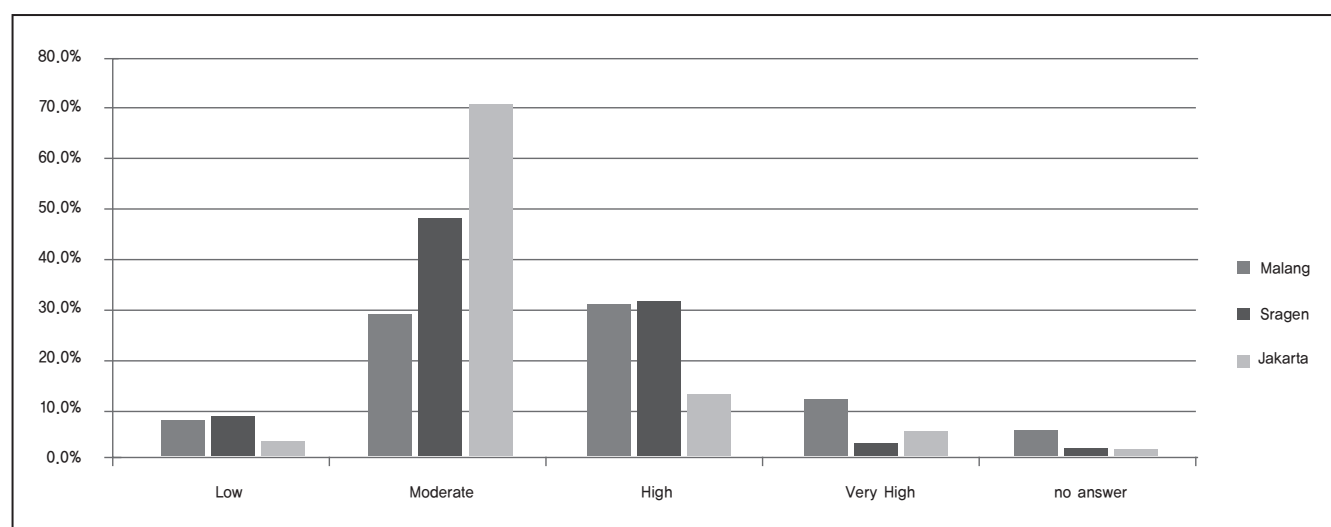
1. Have you heard of Regional Informatization?

		Have you heard of Regional Informatization?		total
		yes	no	
City	Malang	31 (100%)	0 (0%)	31
	Sragen	28 (100%)	0 (0%)	28
	Jakarta	25 (83.3%)	5 (16.7%)	30
total		84	5	89

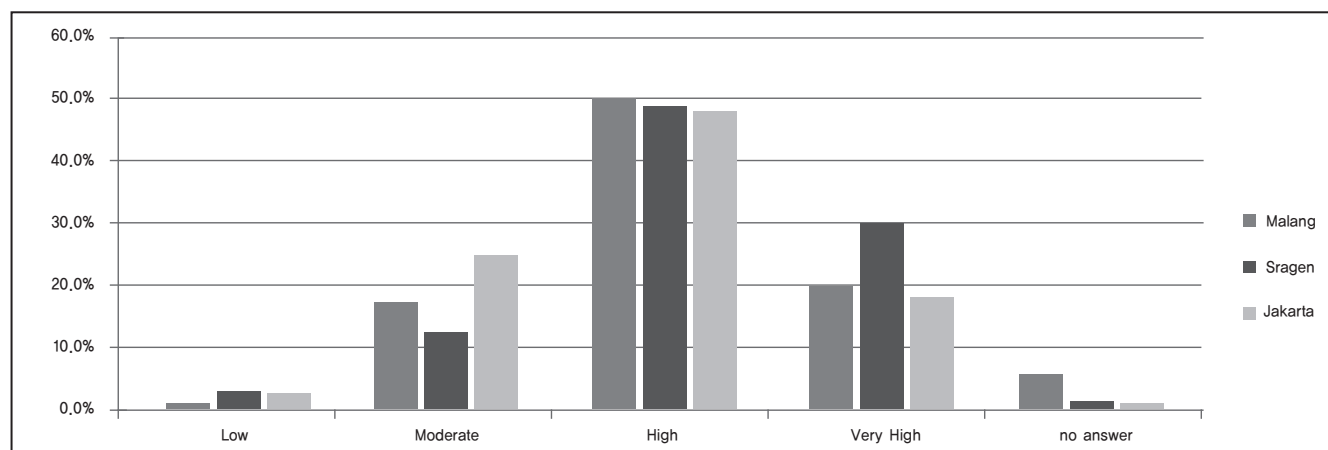
2. Where did you get the information about Regional Informatization?



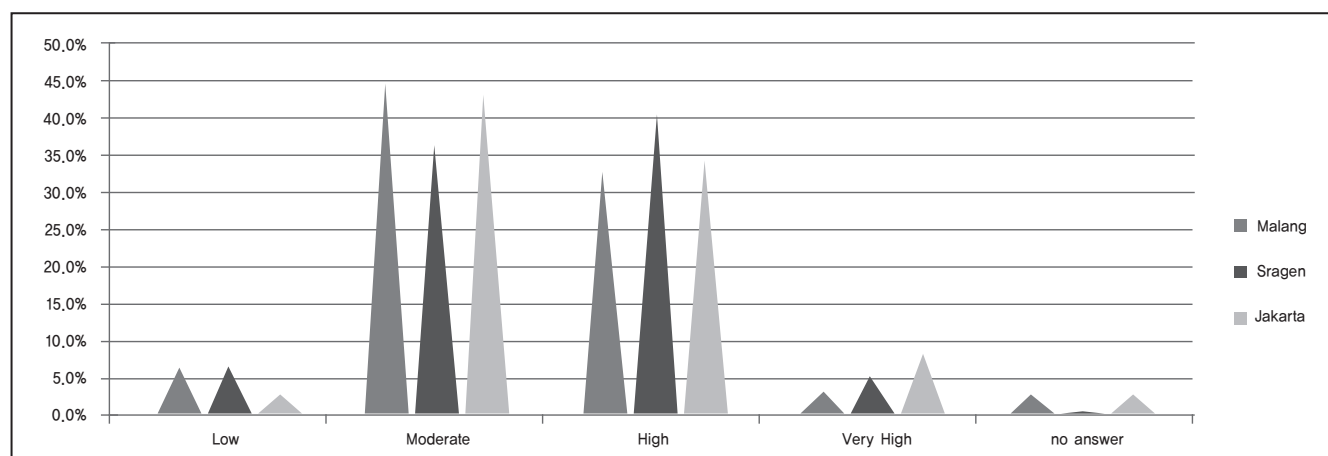
3. Please indicate the extent to which the following people in your region recognize Regional Informatization? Business People



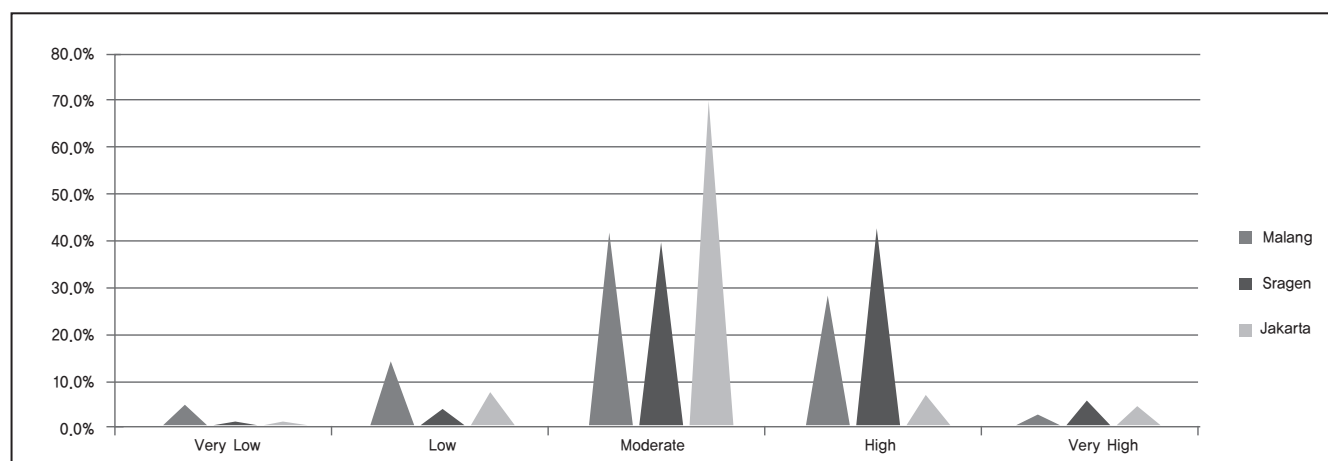
4. Please indicate the extent to which the following people in your region recognize Regional Informatization?
Mass Media



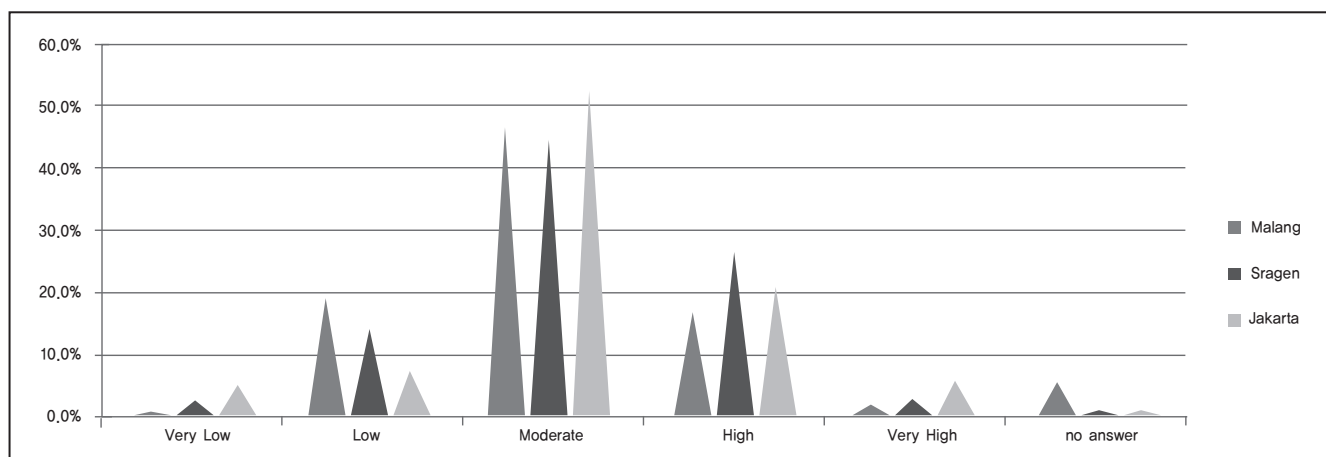
5. Please indicate the extent to which the following people in your region recognize Regional Informatization?
Educators



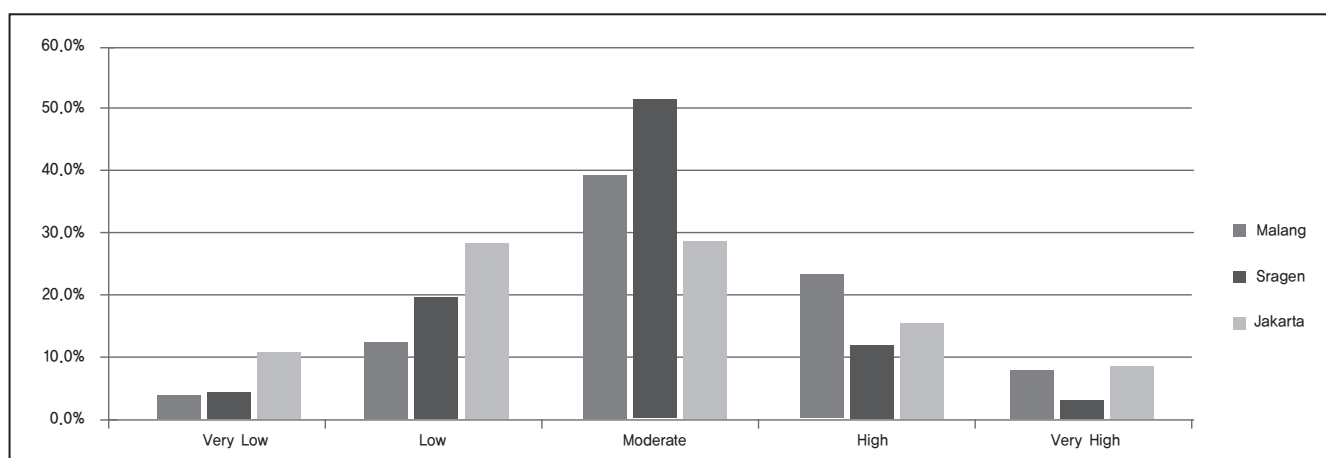
6. Please indicate the extent to which the following people in your region recognize Regional Informatization?
Public Officials



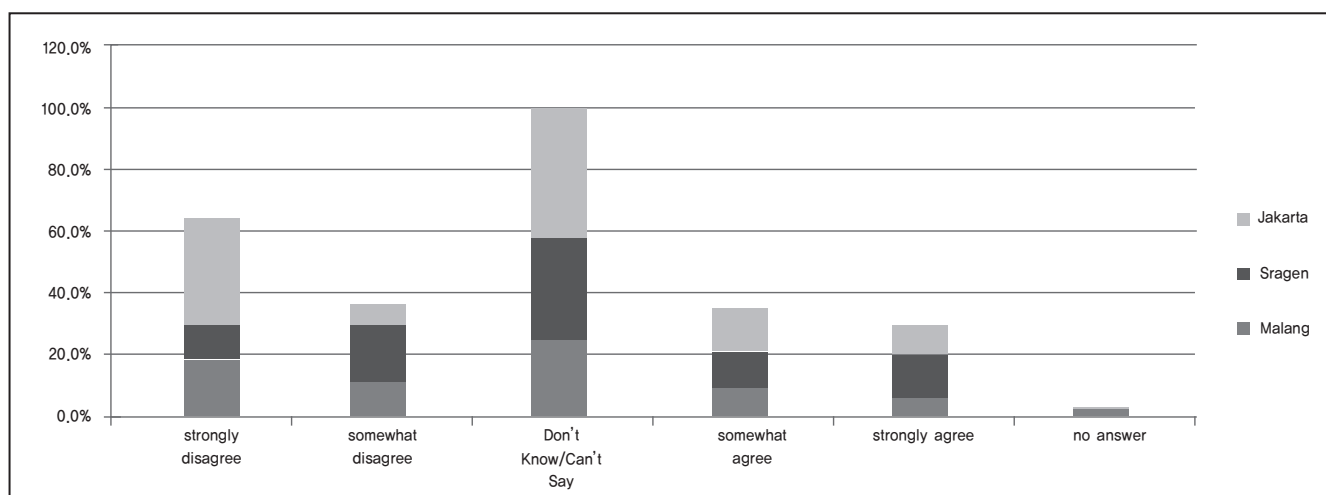
7. Please indicate the extent to which the following people in your region recognize Regional Informatization?
Local Council Members



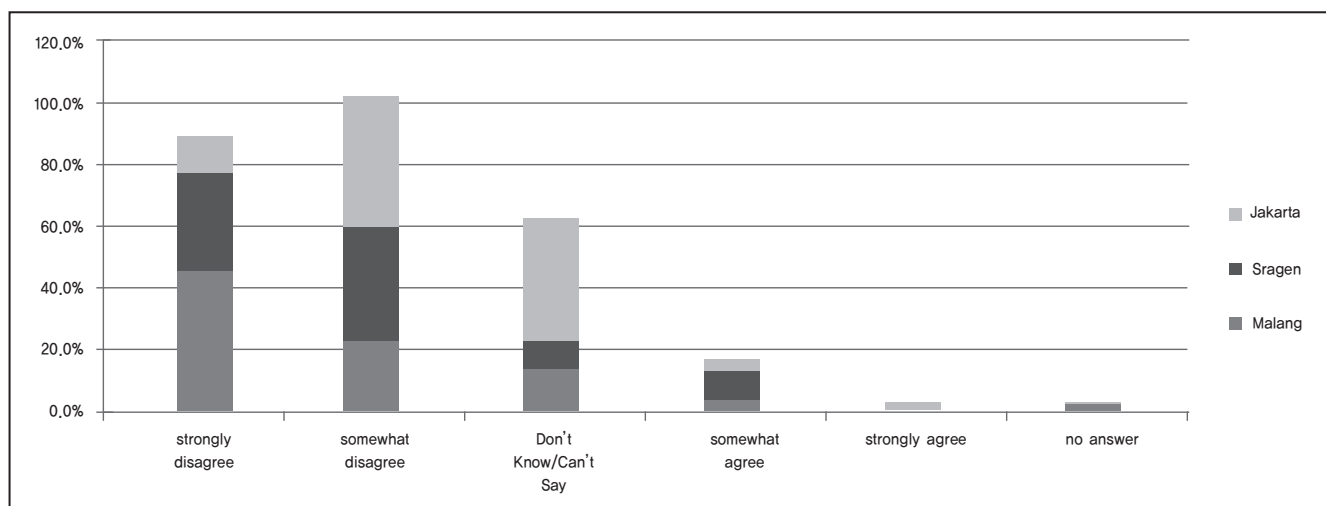
8. Please indicate the extent to which the following people in your region recognize Regional Informatization?
Local Residents



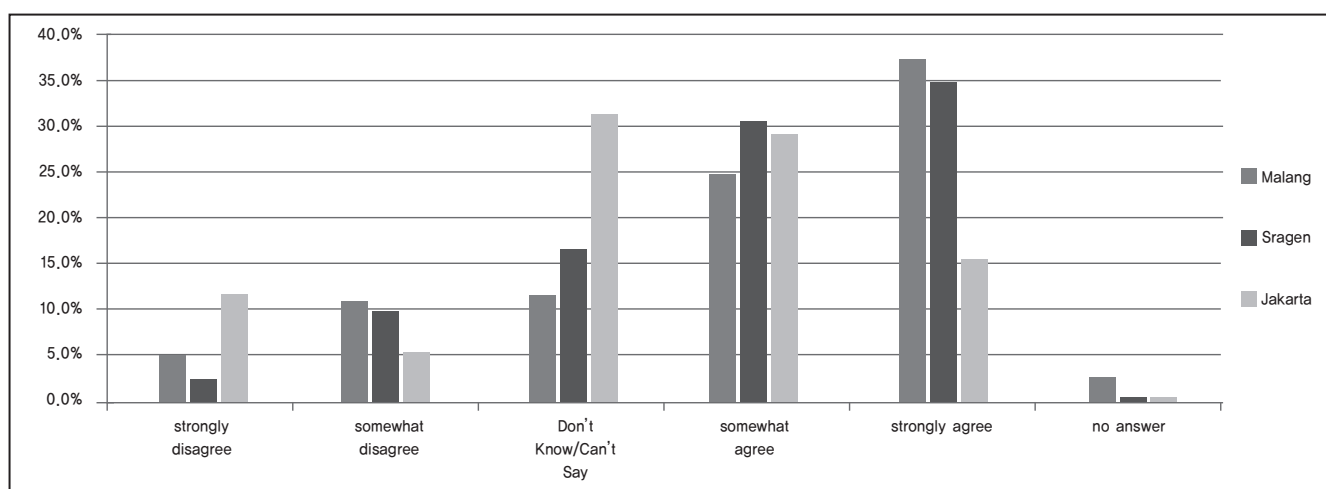
9. Regional Informatization in the business sector will make business corporations hire fewer workers.



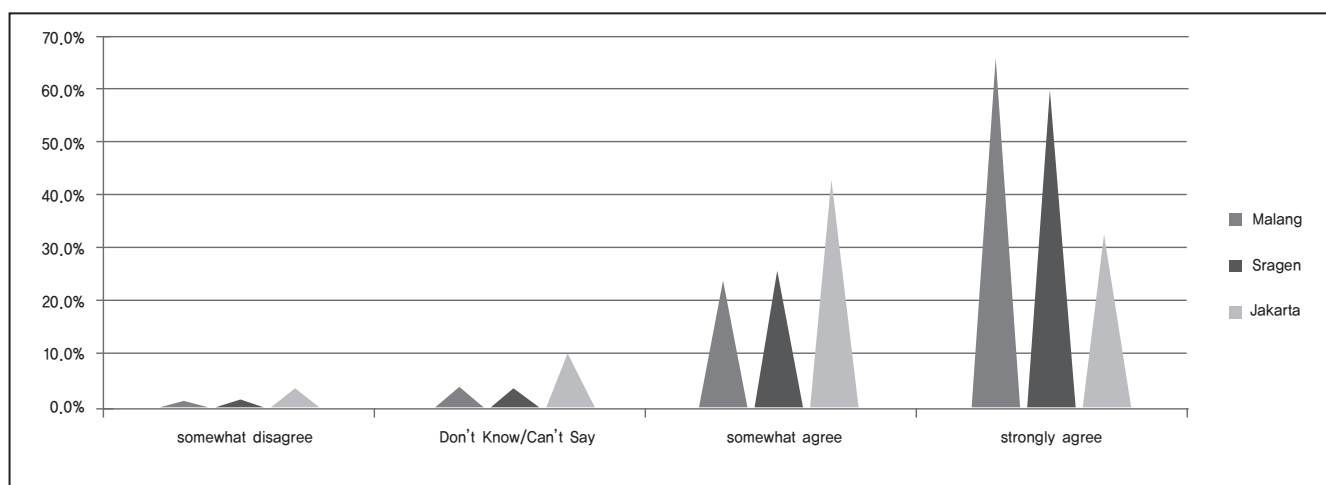
10. Regional Informatization in the society will infringe the citizen's privacy.



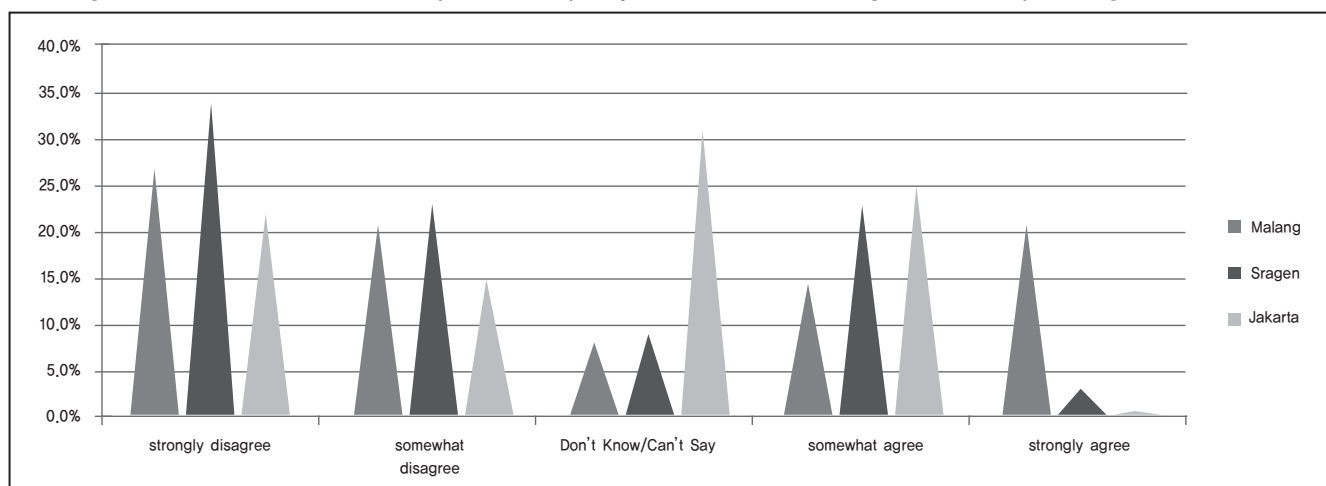
11. Regional Informatization will reduce the business travelling and hence will mitigate the traffic congestion



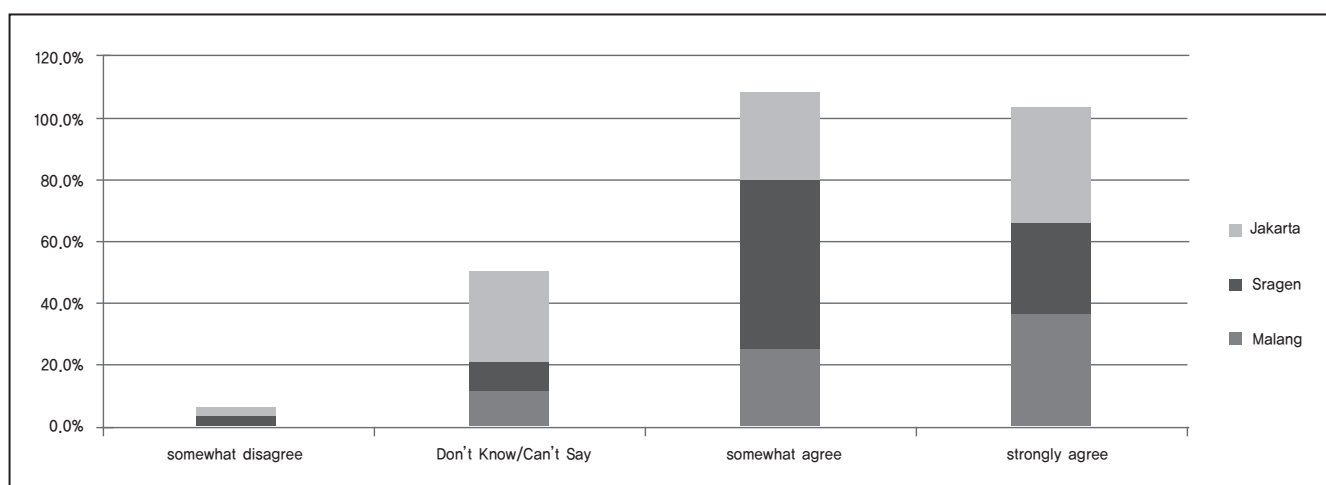
12. Regional Informatization will improve productivity



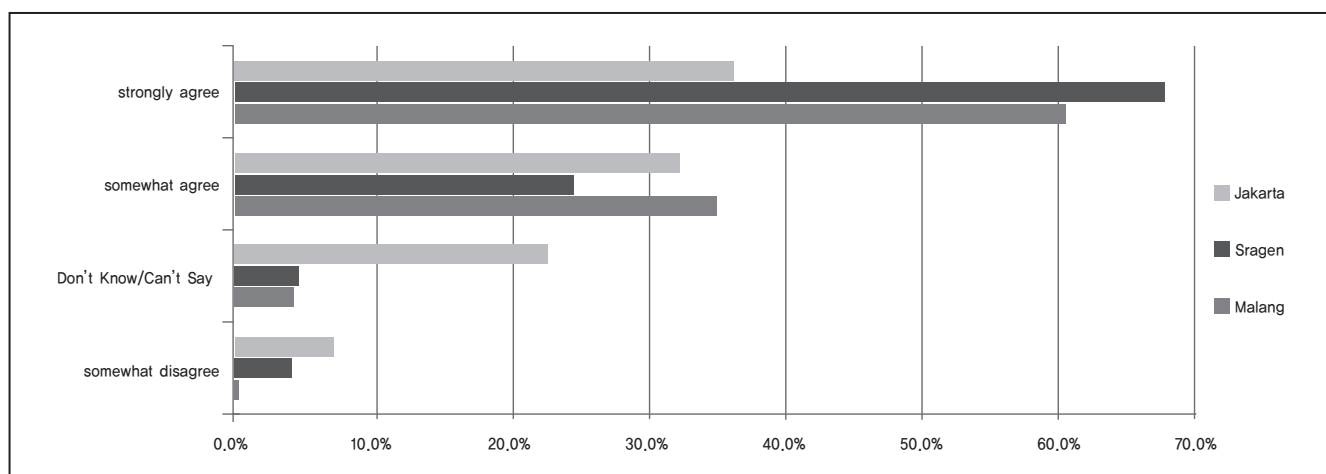
13. Regional Informatization will deepen the disparity between the rich region and the poor region



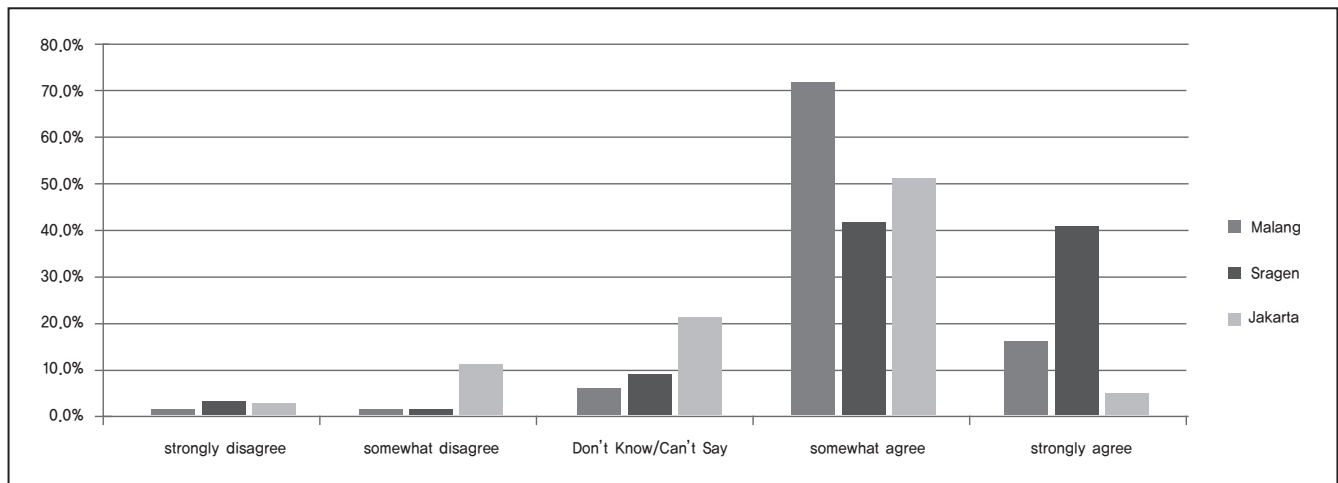
14. Regional Informatization will improve the living conditions.



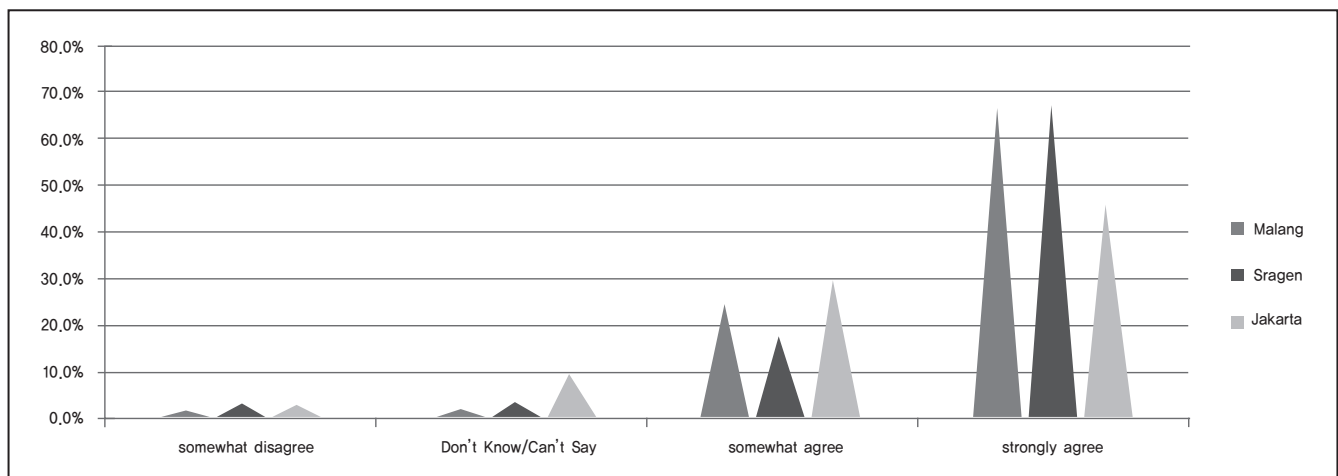
15. Regional Informatization will improve government efficiency.



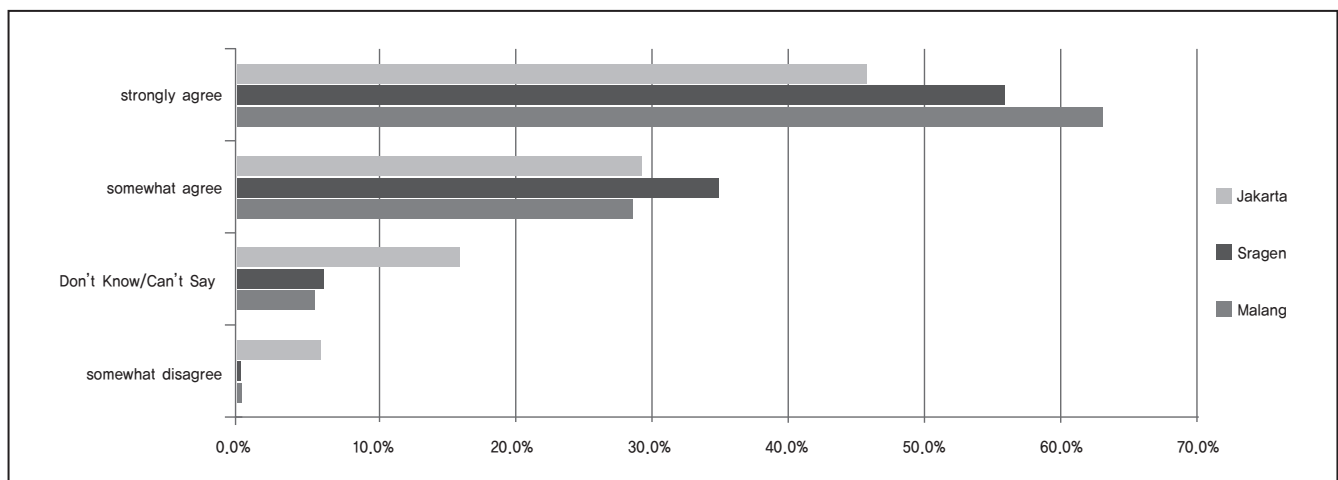
16. Regional Informatization will contribute to solving the environmental problems.



17. Regional Informatization will enhance the quality of education.

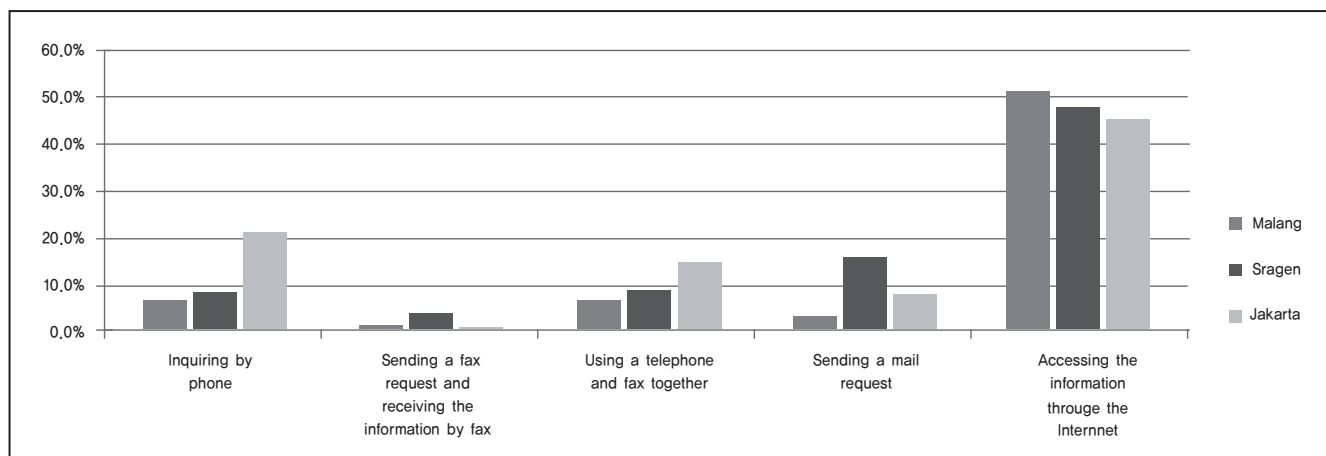


18. Regional Informatization will boost the regional economy.

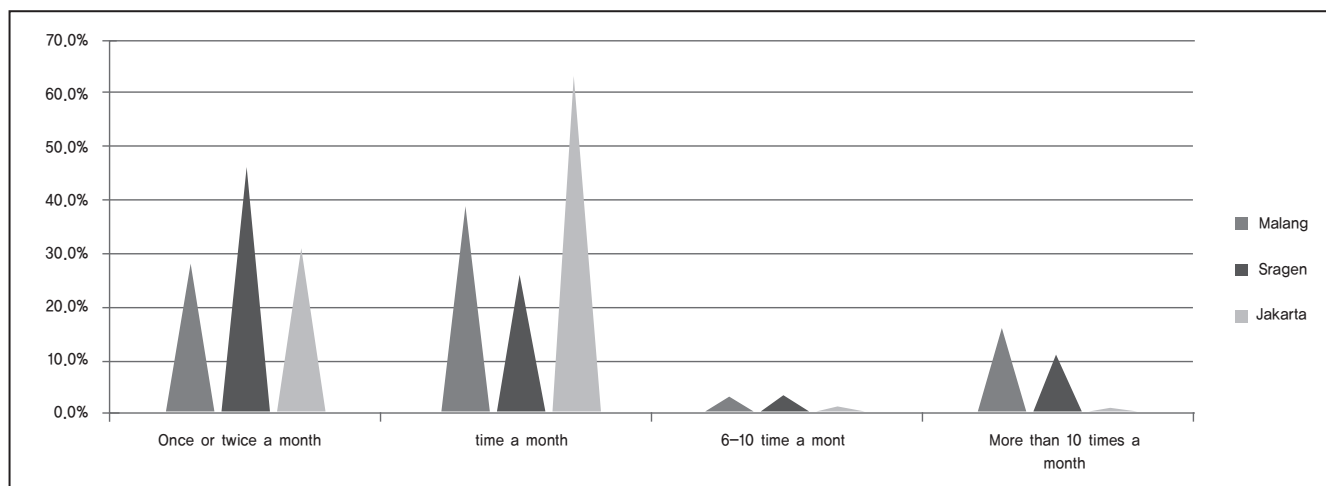


19. What would you do, if you should get the important information which is available about 100km away from your area?

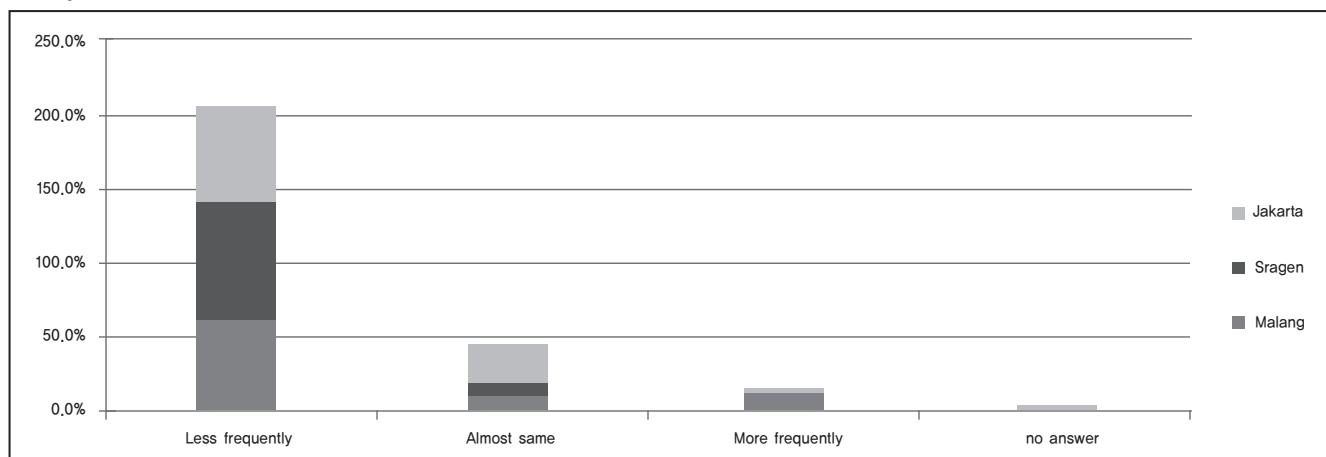
Please choose one option



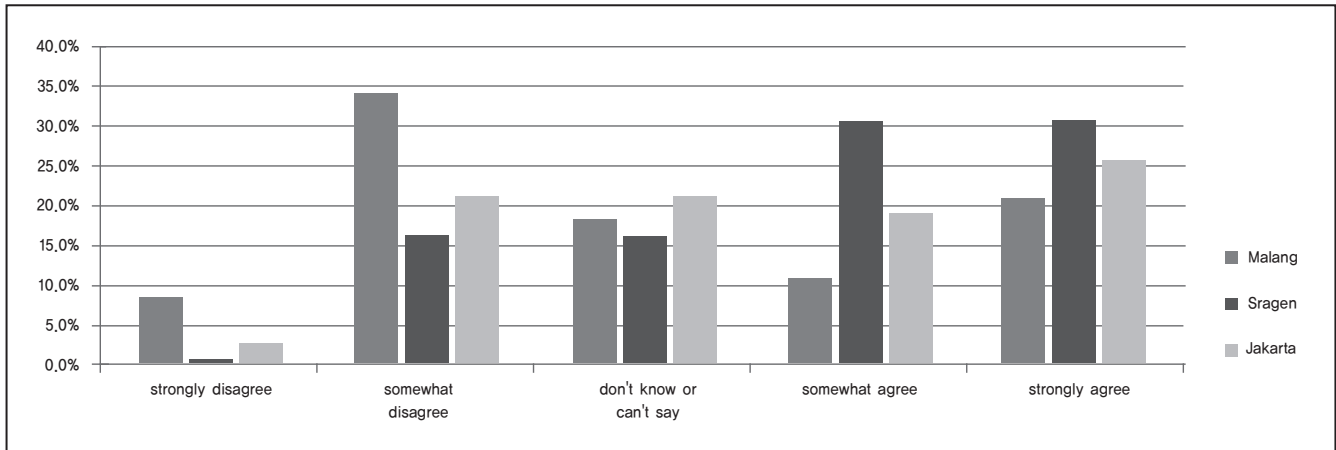
20. How often do you visit other areas to get the important information for your work?



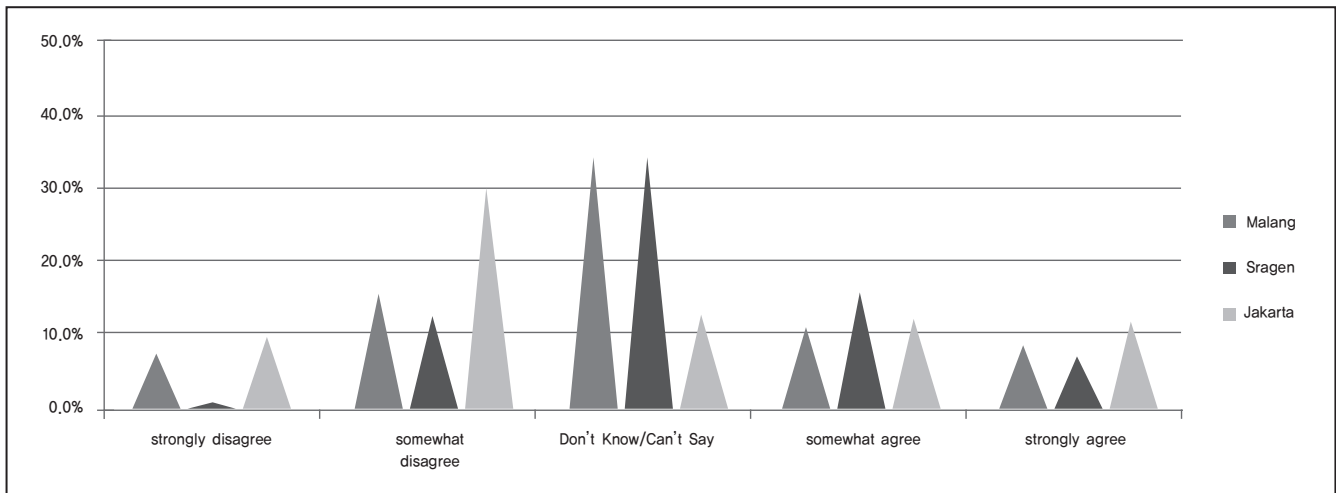
21. Do you think you will visit other areas less frequently, if you can the information through the regional information system?



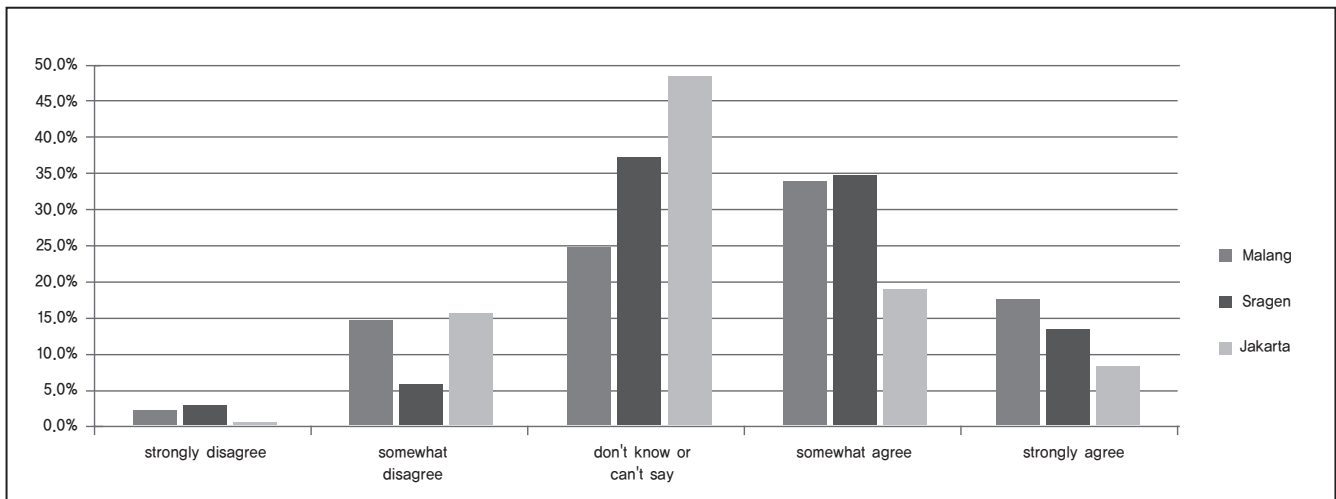
22. Our region has enough IT experts to work for informatization.



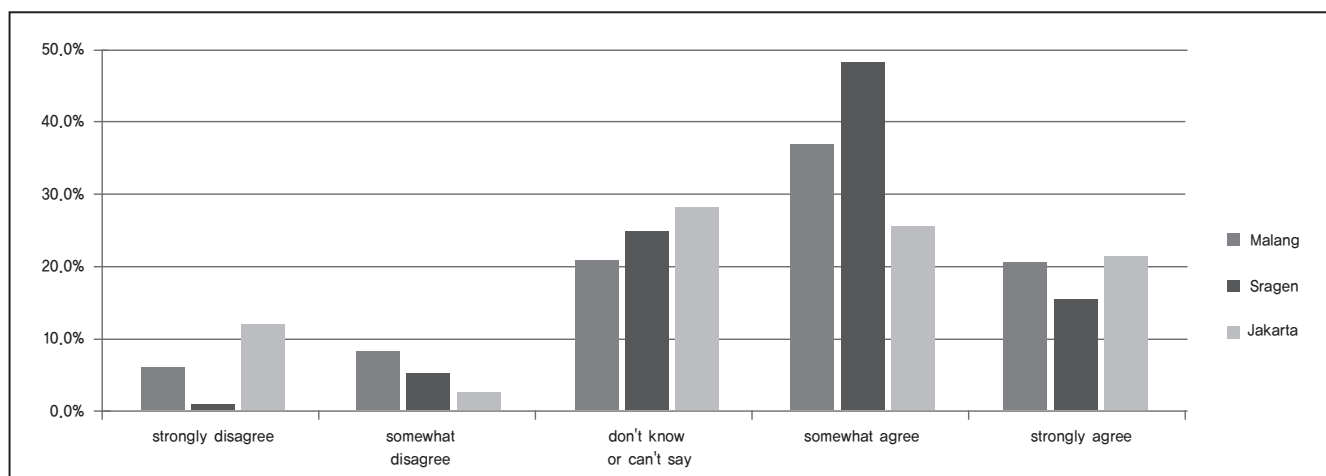
23. The residents in our regions has good understanding of the informatization



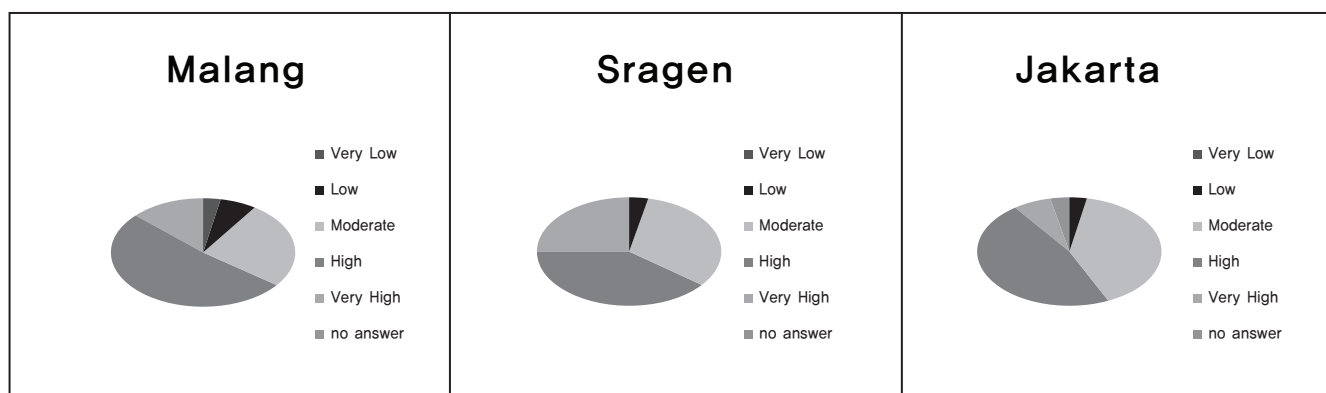
24. IT industry in our region is highly developed.



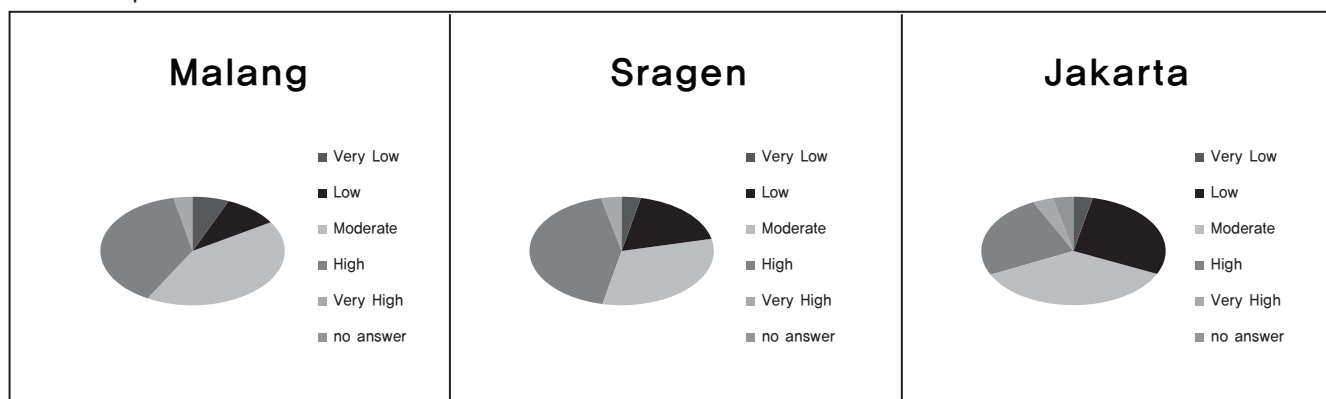
25. High quality telephone and internet service is available in our region.



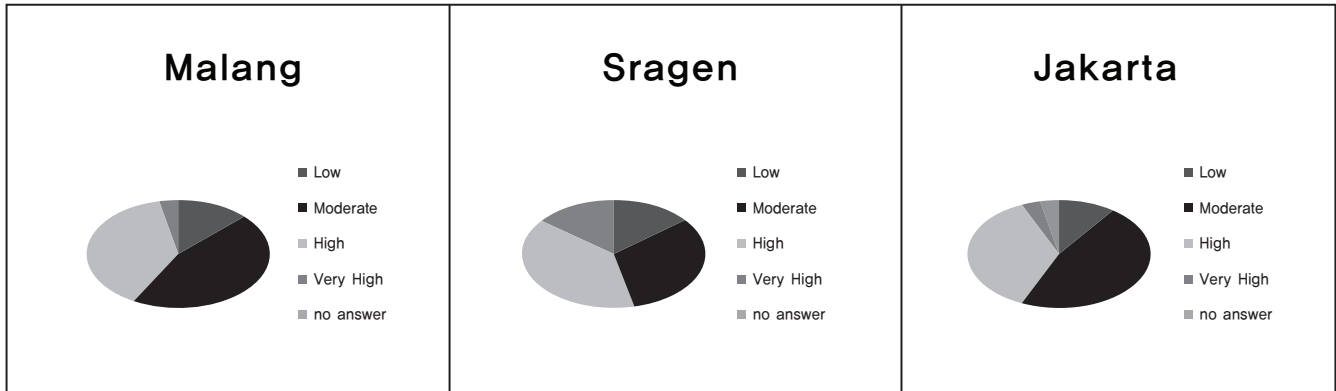
26. Please evaluate the development level of the following information technology areas in your region. Telephone and internet service



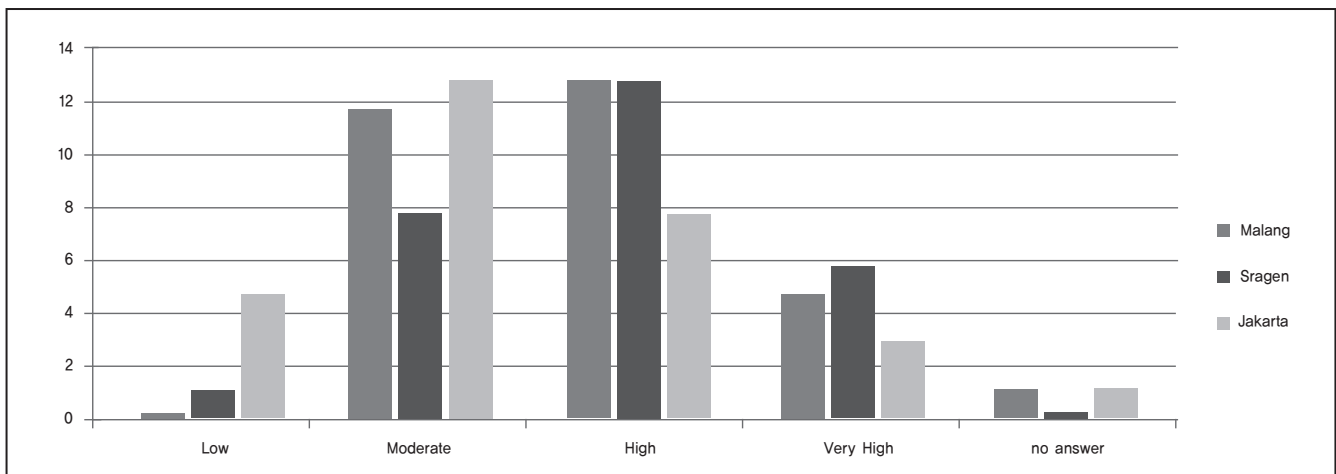
27. Please evaluate the development level of the following information technology areas in your region. Software development



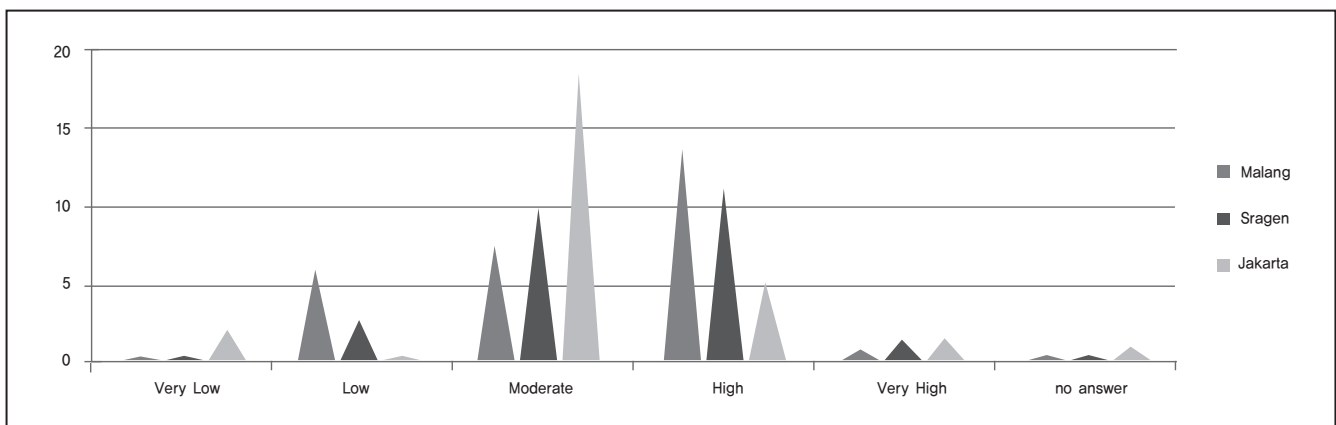
28. Please evaluate the development level of the following information technology areas in your region.
Information processing and provision



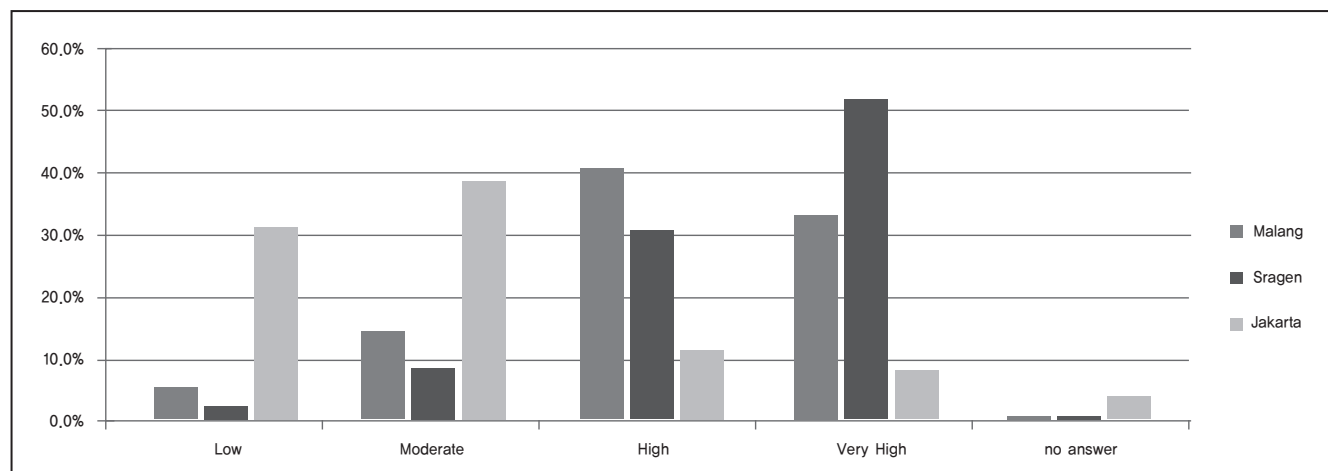
29. Please evaluate the development level of the following information technology areas in your region.
Penetration rate of computing devices (e.g. PC, mobile devices)



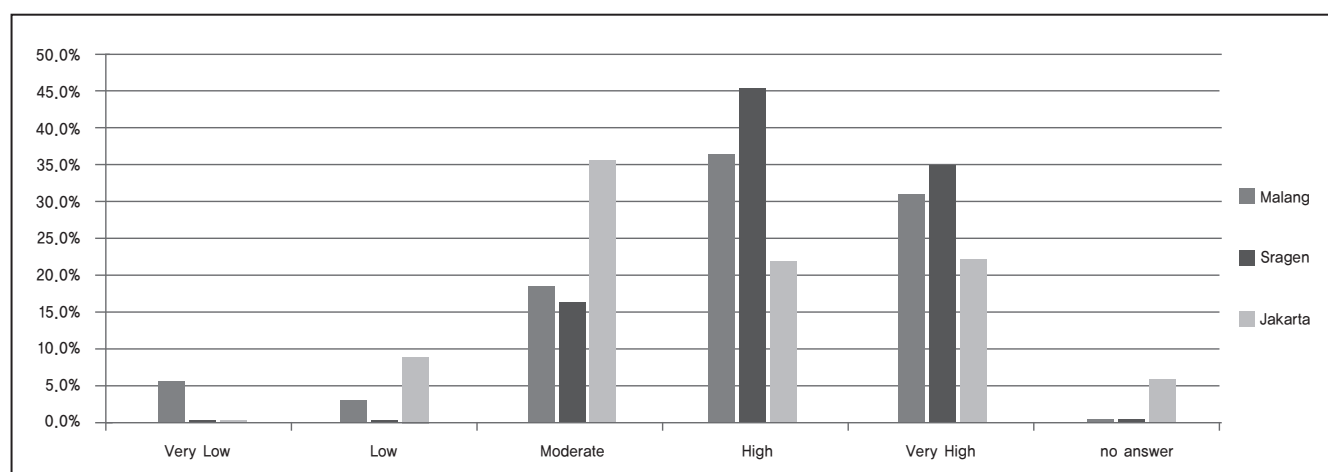
30. Please evaluate the development level of the following information technology areas in your region.
Quality of high speed internet service network



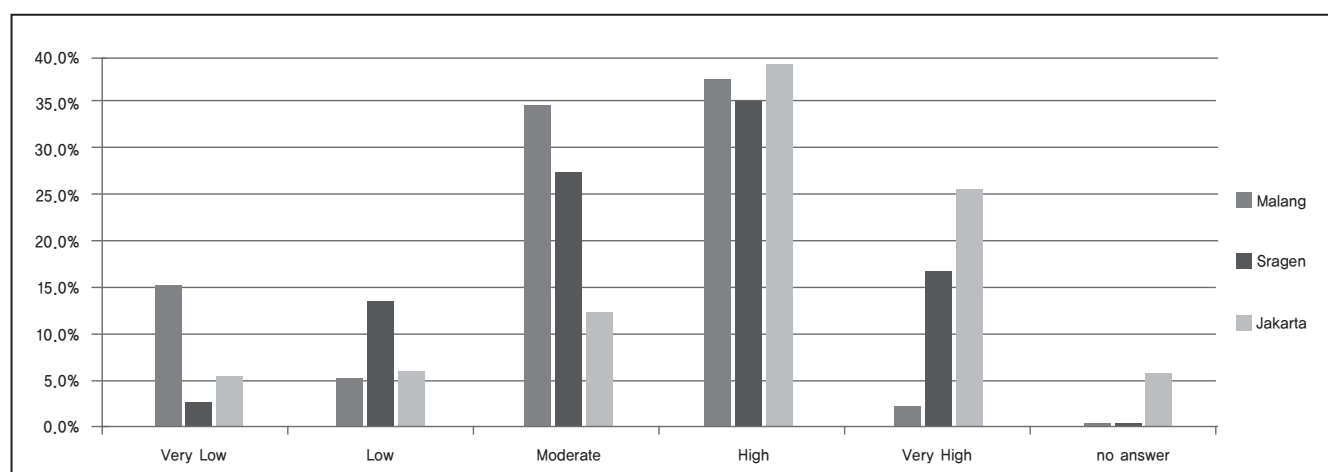
31. Please evaluate the regional informatization currently managed by the regional government. Our regional government manages the web sites effectively for regional informatization.



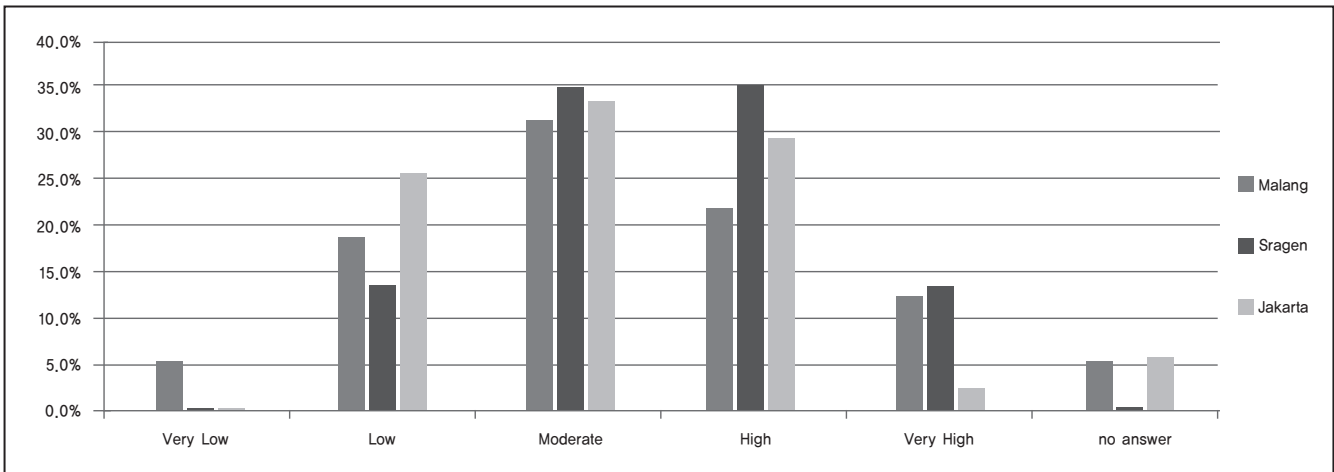
32. Our regional government has established a long term plan for regional information services.



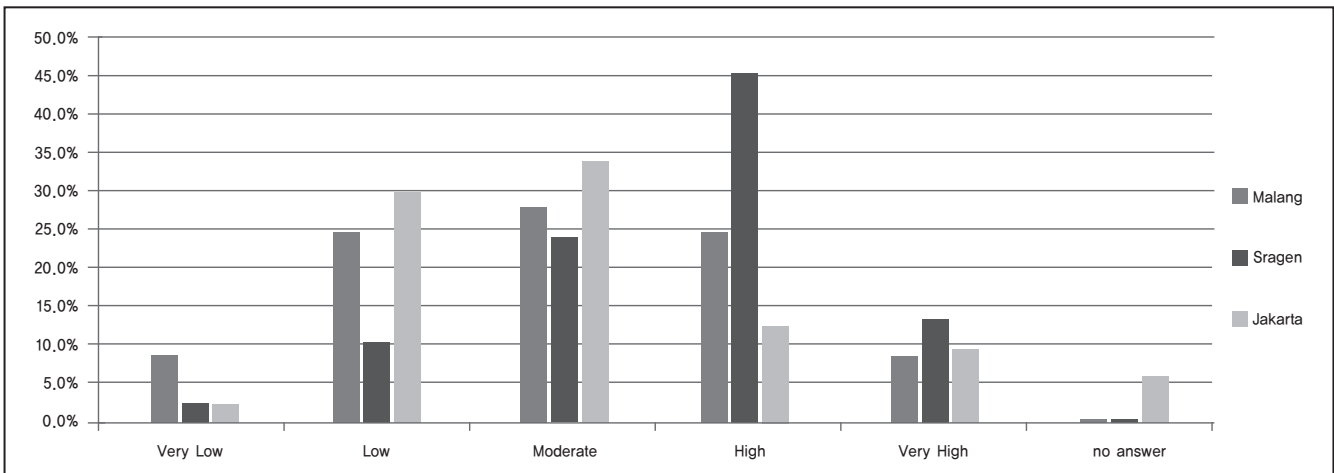
33. Our regional government has enough financial resources for regional informatization



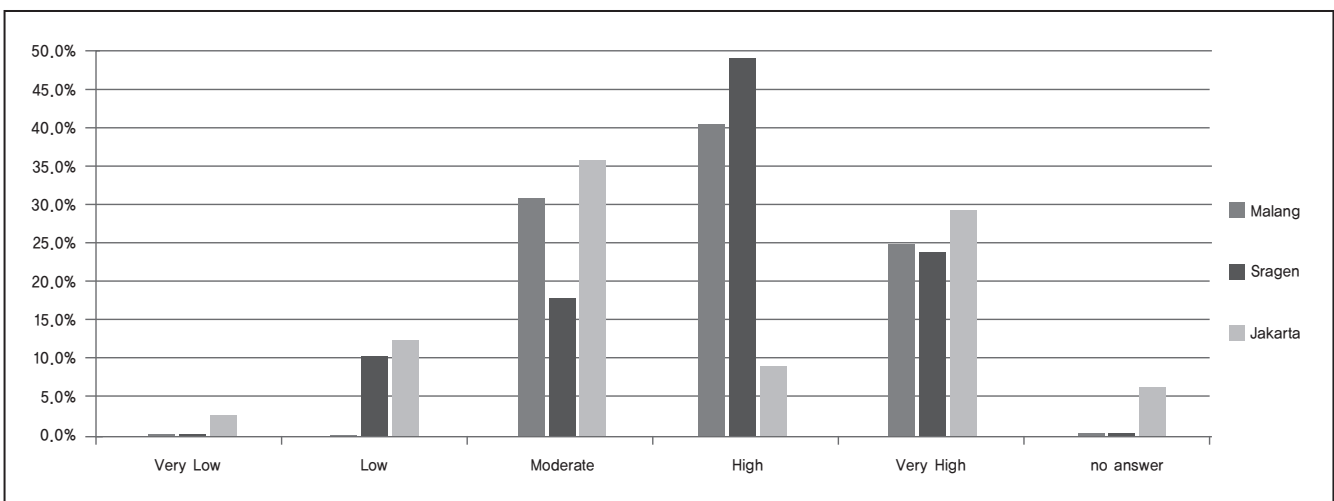
34. Quality of high speed internet service network



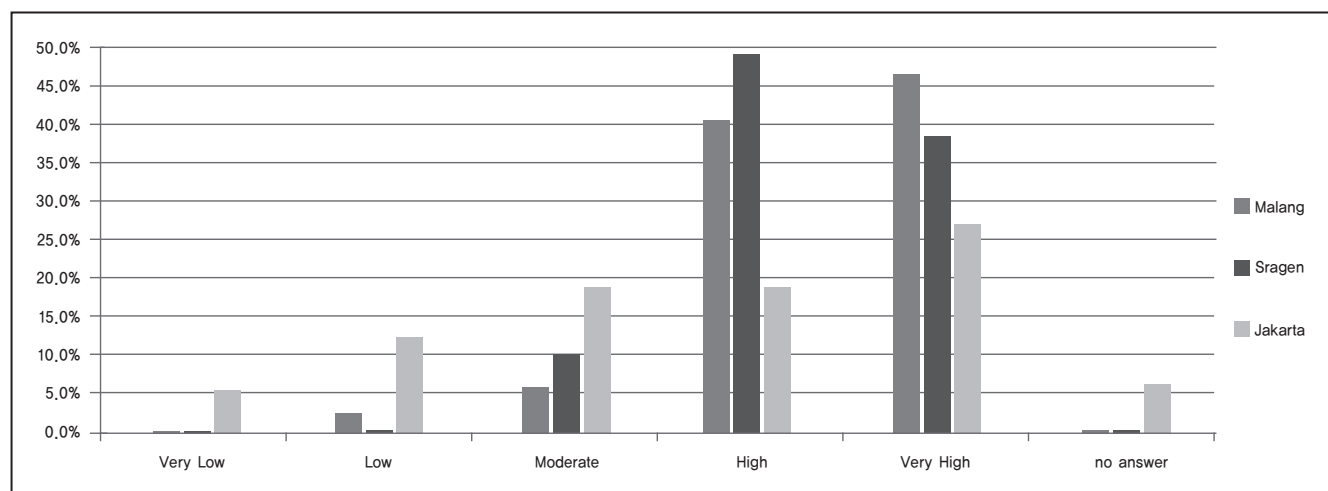
35. Our regional government has enough staff members to work for regional informatization.



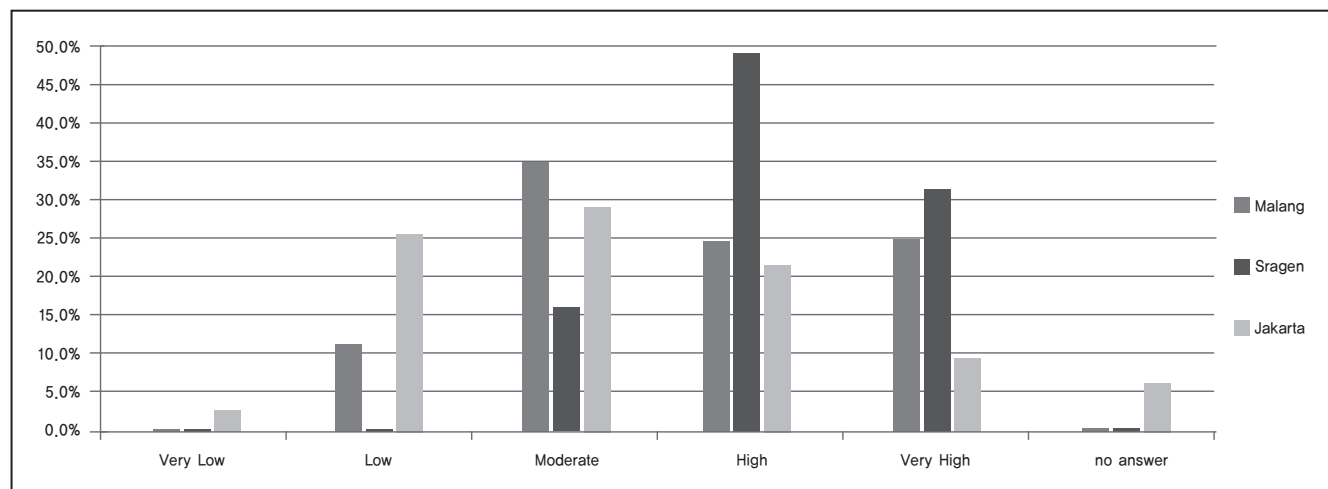
36. Our residents are very much interested in regional informatization.



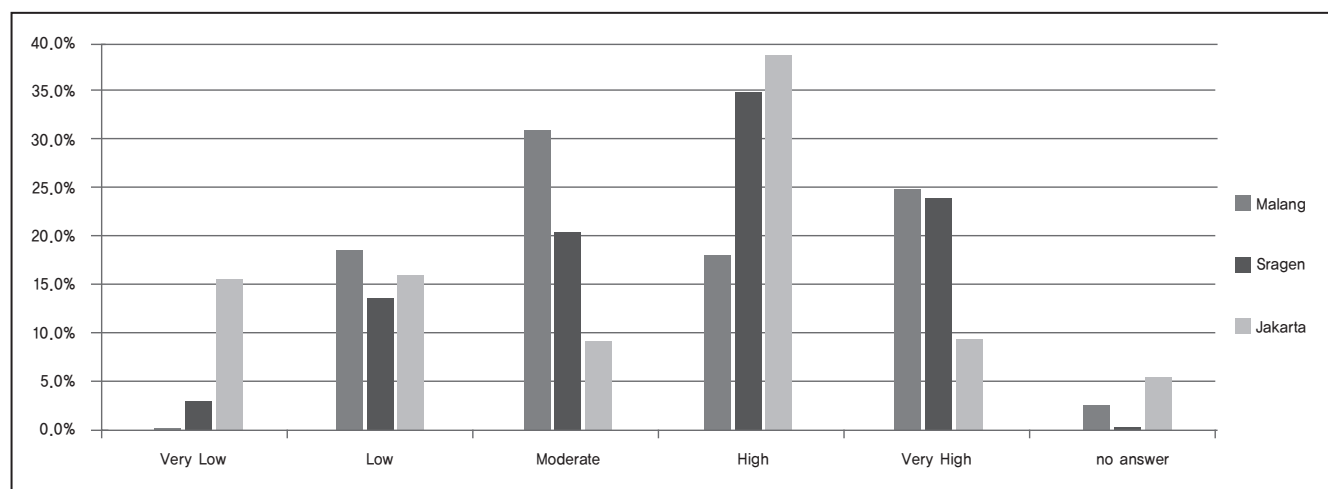
37. Our regional government leaders are very much interested in regional informatization.



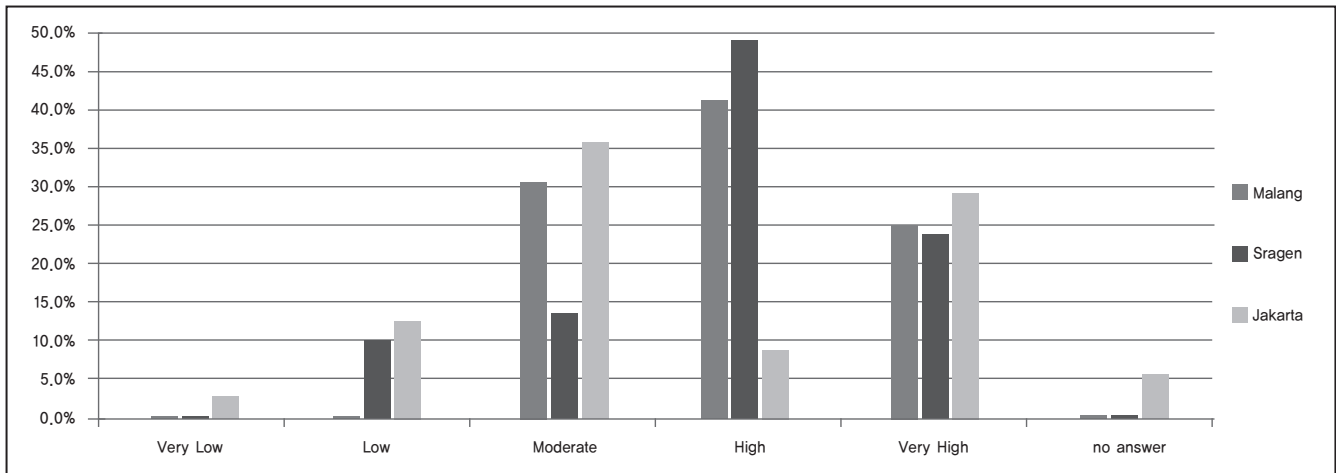
38. Our regional government officials are very much interested in regional informatization.



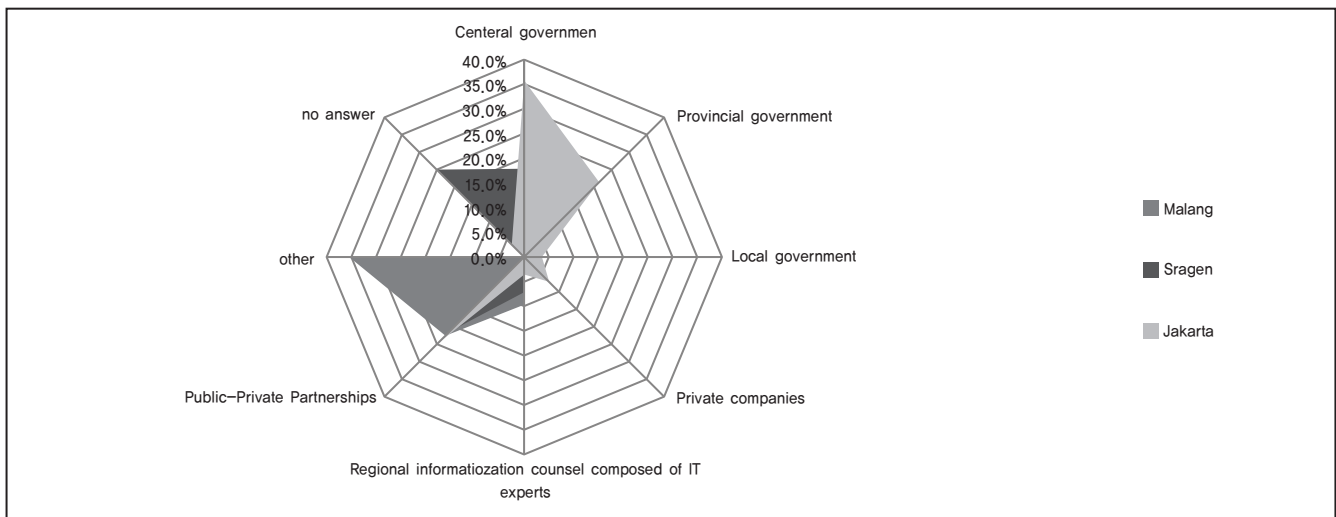
39. Our council members are very much interested in regional informatization.



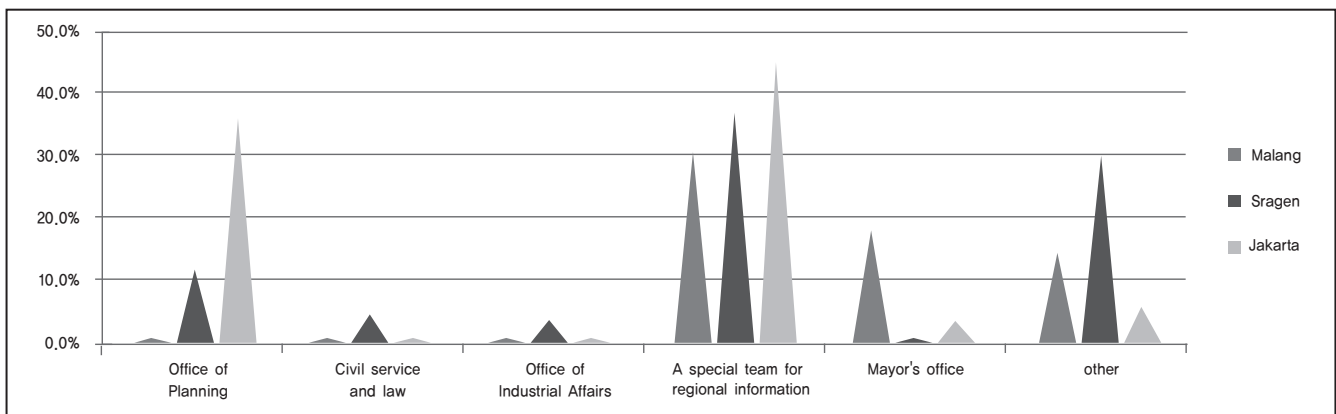
40. Our residents are very much interested in regional informatization.



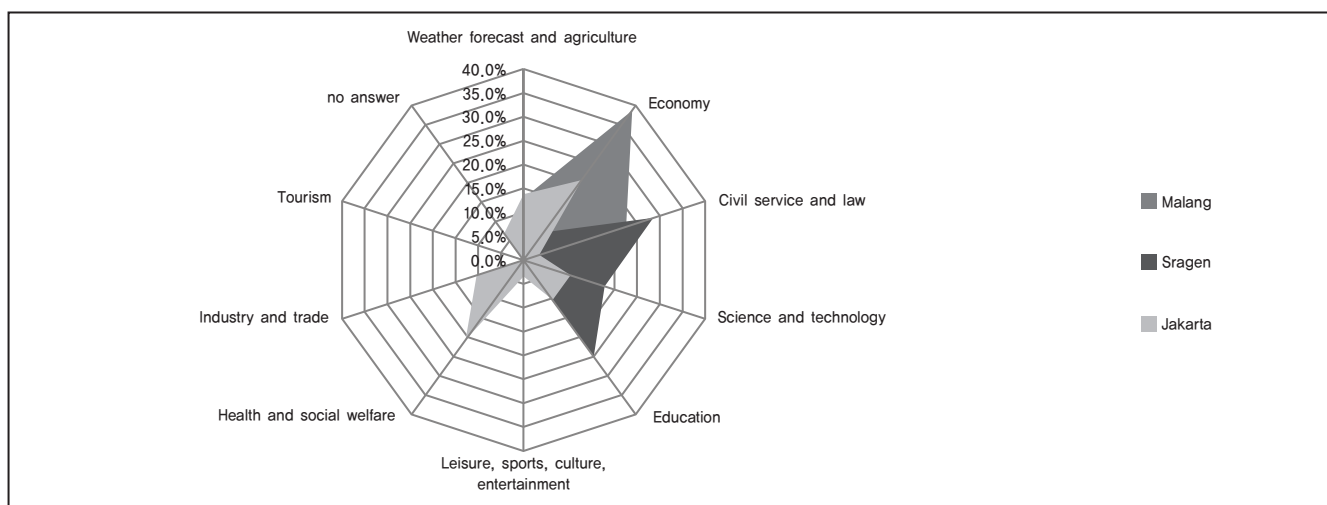
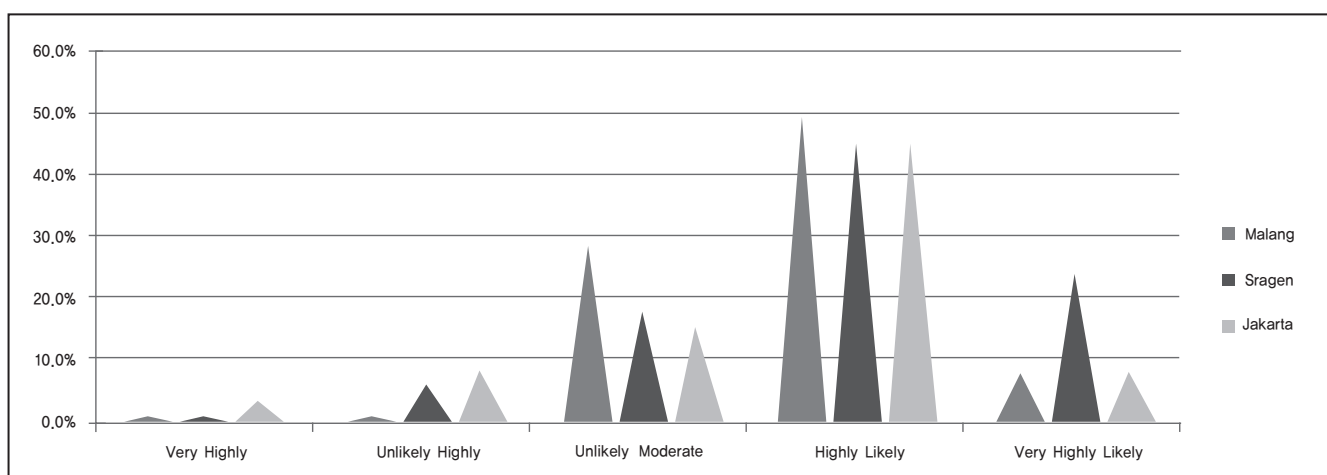
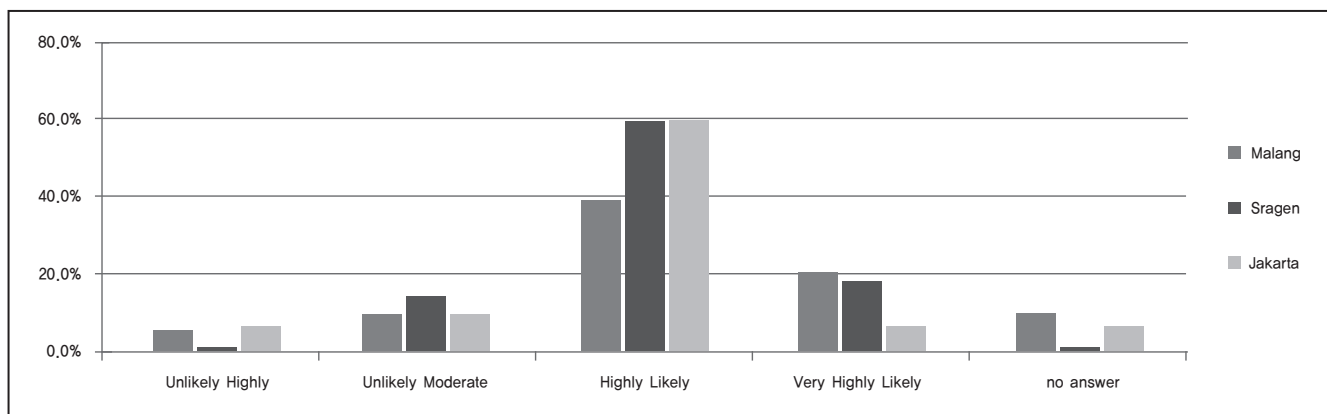
41. In your opinion, which of the following organizations should play the leading role for regional informatization?



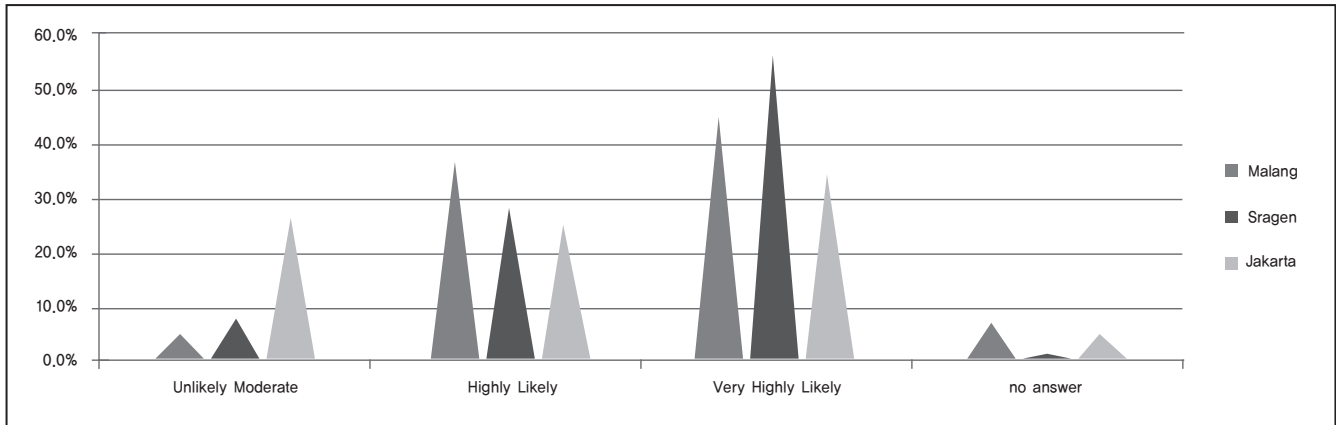
42. Which office or agency in your regional government should play the leading role for regional informatization in your region?



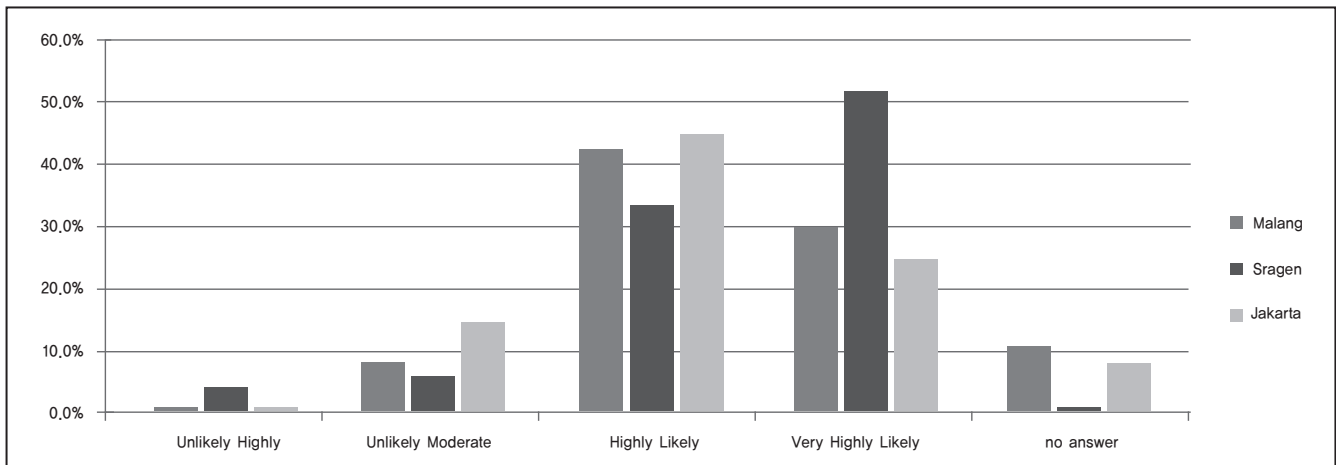
43. What kind of information should be most important in your region?

44. Please indicate the degrees to which the following industries will prosper in your region in the future?
Information equipment manufacturing45. Please indicate the degrees to which the following industries will prosper in your region in the future?
Software development

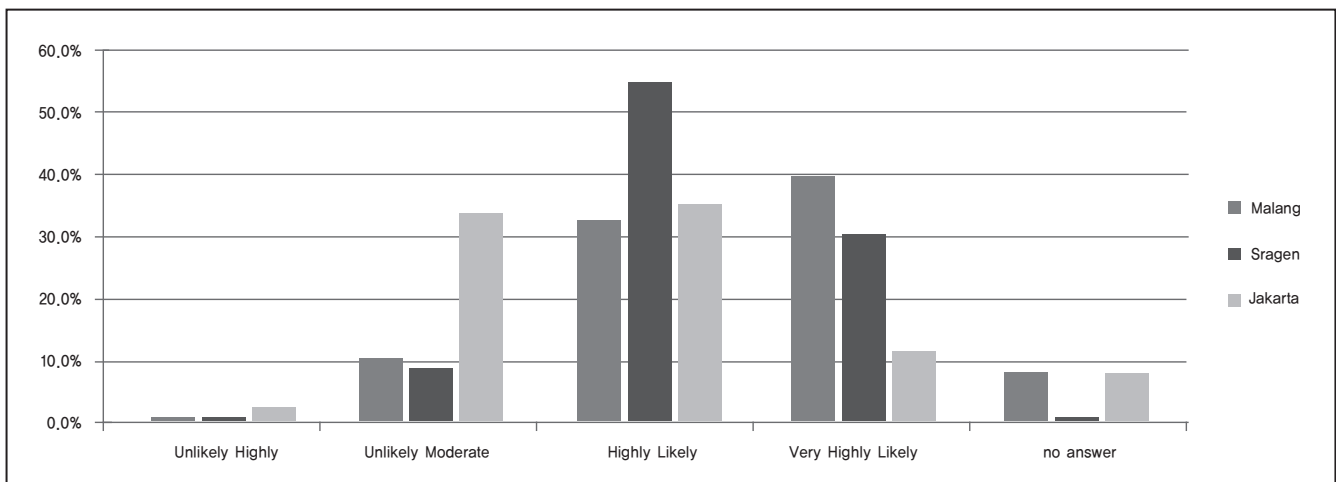
46. Please indicate the degrees to which the following industries will prosper in your region in the future?
Information and communication network service



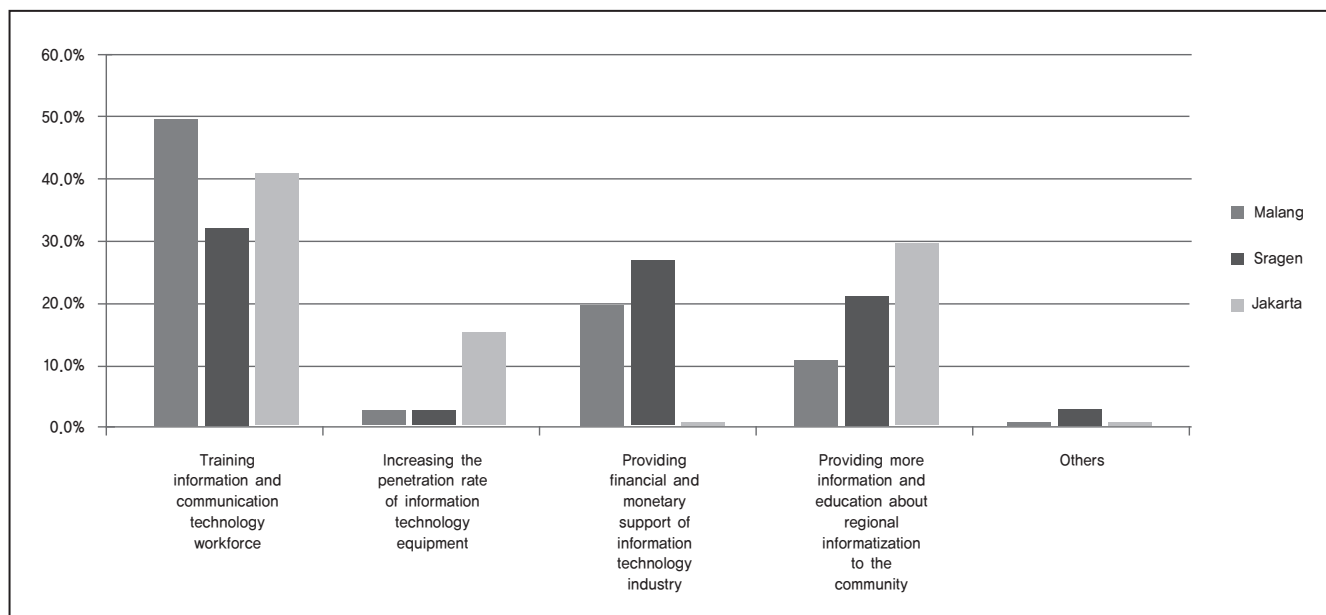
47. Please indicate the degrees to which the following industries will prosper in your region in the future?
Information processing



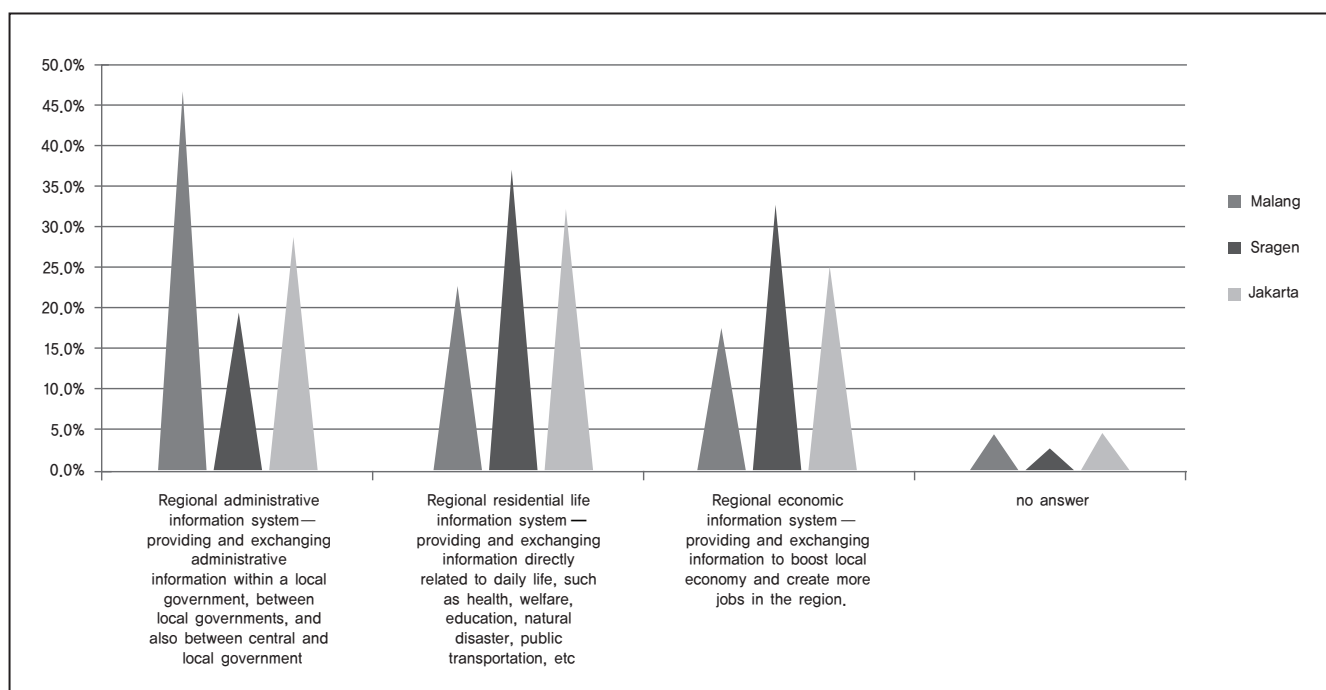
48. Please indicate the degrees to which the following industries will prosper in your region in the future?
Information system consulting



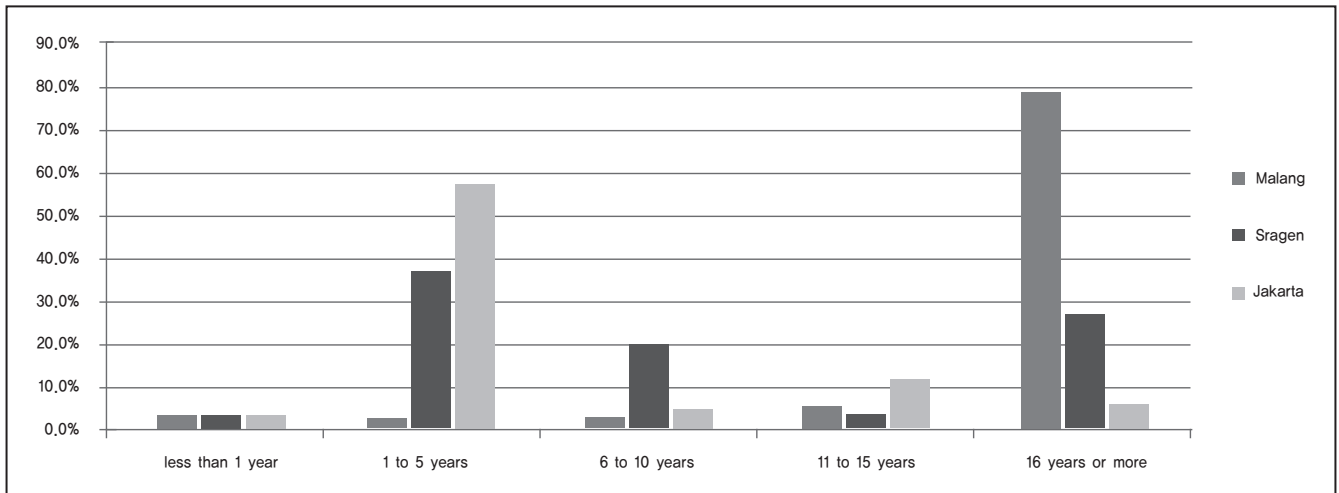
49. Please indicate the order of importance of the following activities to promote the information technology industry in your region?



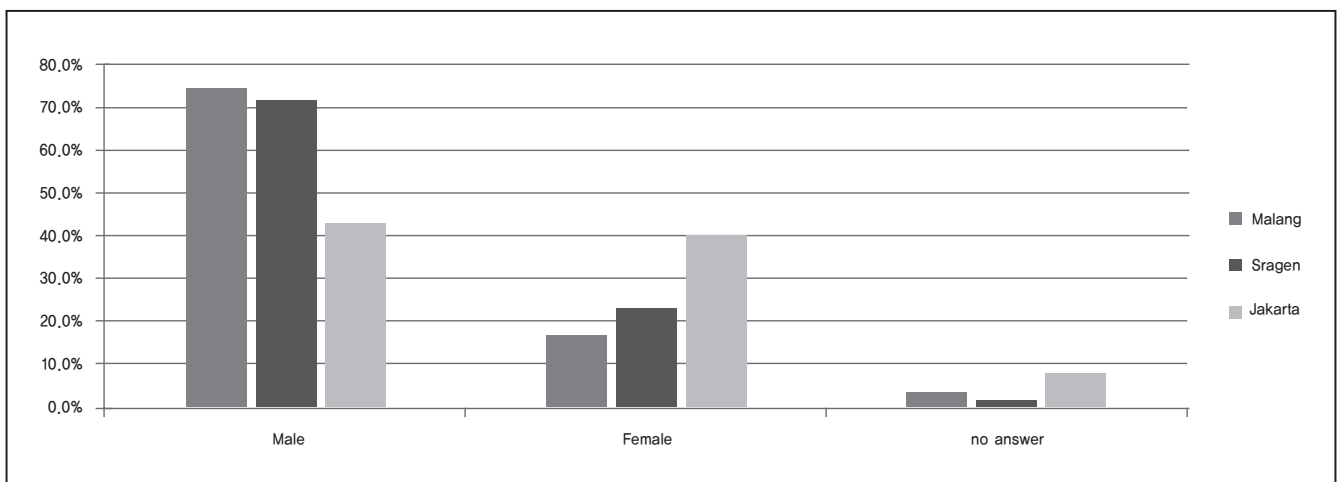
50. Please indicate which of the following regional information system should be developed earlier than the others in your region?



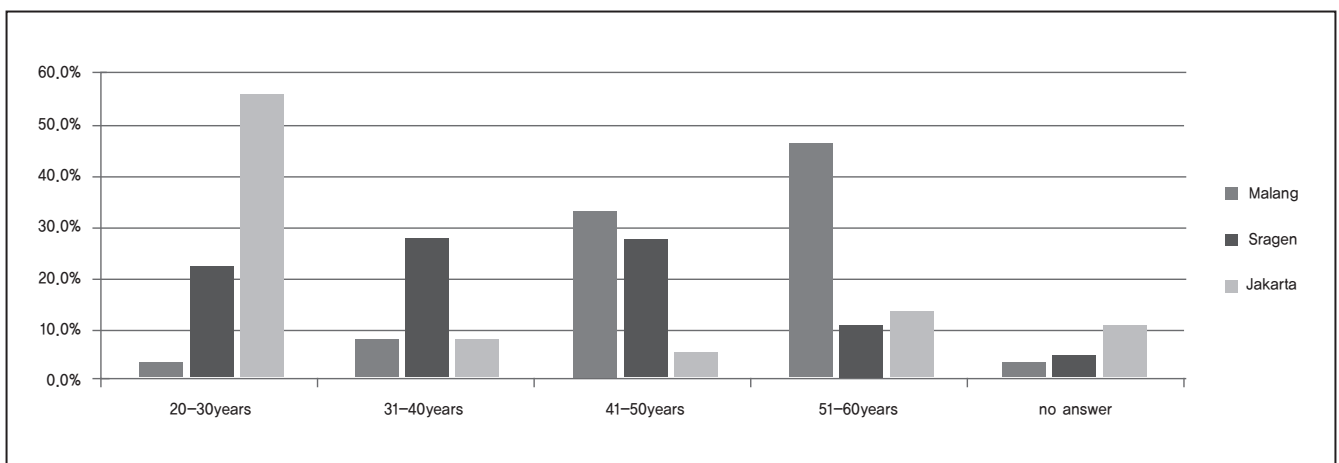
51. How many years have you been in this organization?



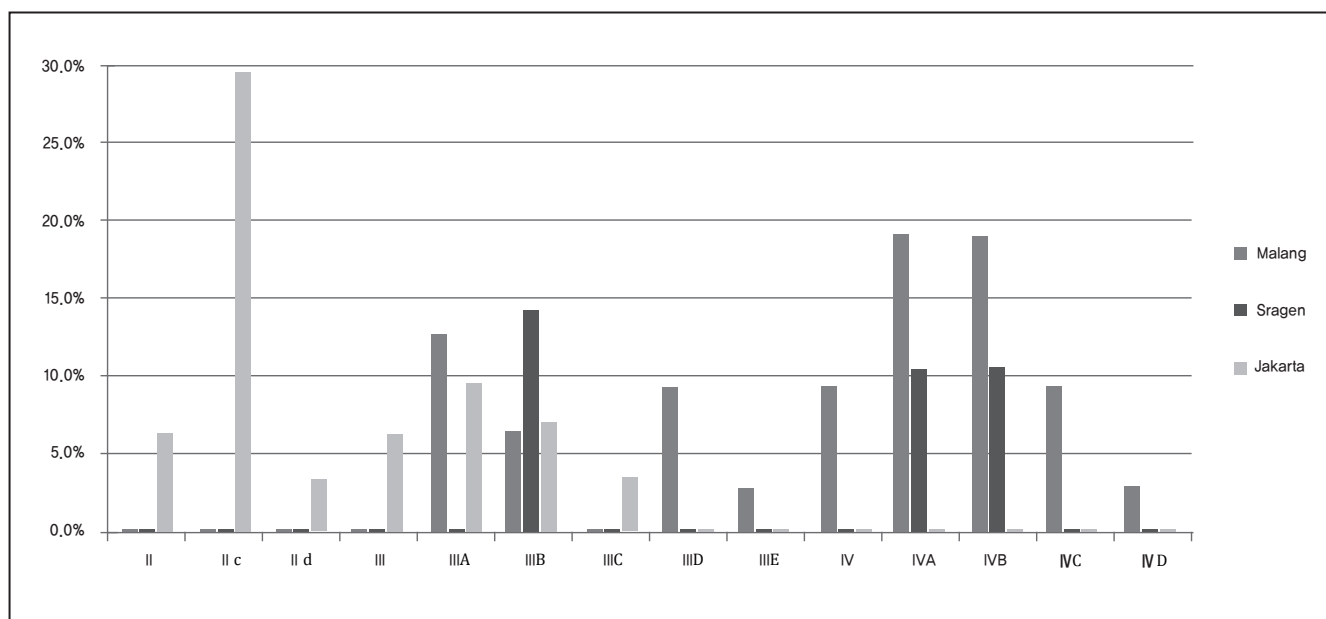
52. Gender



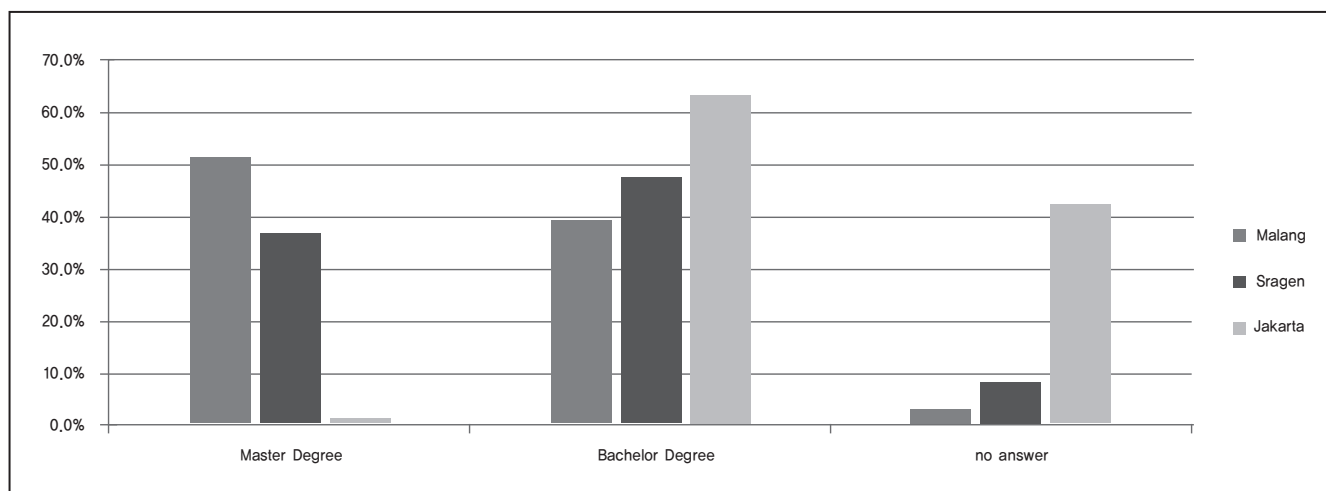
53. What is your birth year?



54. Current job title?



55. Please indicate the education degree you hold:





Appendix II : Interview Protocol



Interview Protocol

Interviewee:

Interviewer:

Place:

Date:

Time:

#1. Introduce the interviewers

#2. Introduce the research

This study is supported by OECD for the regional informatization in your region. We wish to examine the current state of your regional informatization and provide some recommendations for further development of your informatization. We are particularly interested in your vision for regional informatization and your efforts have been devoted for informatization in your region so far. We would like to address such questions related the strategies for informatization, the demand for informatization, and human, organizational, and IT resources and management system vital to the success in implementing regional informatization.

#3. Introduce the interview

This interview is a semi-structured interview. Interview will be about [] hour.

#4. Request permission to use the recorder

We would like to record this interview. Your answers are strictly confidential. The recorded material will be used only for the research and your identity will not be disclosed in any way. Would your permit us to record the interview?

Interview Questions

No.	Main Questions	No.	Follow-up Questions
1	In your opinion, what is regional informatization?	A	Can you describe the most important things emerging in your mind?
		B	What are the main goals and objectives of informatization in your region?
		C	How have the goals evolved?
2	Can you describe briefly the history of informatization in your region?	A	What are some of the major milestones?
3	Please describe the informatization planning process in your region?	A	How did the employees get involved in the informatization process?
		B	How did you get involved in developing the E-government services?
		C	How were citizens involved in developing the E-government services?
4	How do you finance designing and implementing informatization projects and operating information services?		
5	What is your understanding of how technologies related to informatization are managed?		
6	What aspects of information services are outsourced and what are the reasons of such decisions?	A	[If a significant portion of project was outsourced. Can you describe how the outsourcing relationships are governed?
7	How are informatization in your region related to other levels of government (such as central government, provincial government, and any other regional governments), legislature, private companies, and civil organizations?		
8	How has informatization changed the delivery of government services?	A	In what ways has informatization changed the nature of work for government employees?
		B	Has informatization also changed the nature of your work?
9	How do you evaluate the informatization in your region?	A	In what ways have citizens benefited from informatization?
10	What factors have enabled a smooth flow of the E-government projects?		
11	What factors have impaired the smooth flow of the informatization?		
12	In your opinion, what are the critical success factors of the informatization in your region? What are the barriers to the regional informatization?		
13	If you could draft a plan for regional informatization for the next level, what would be your priorities?		
14	Is there any body else we may have to talk about regional informatization?		
15	If there is anything else we should know in addition to what you have described, would you tell us?	a	If there are documents and any other materials important to the informatization in your region, can we have a copy of them?

Indonesian Local E-government Performance Evaluation in 2011

2011 PeGI for the Provinces

NO	PROVINSI	Dimension					Average	Category
		Policy	Institution	Infrastructure	Application	Master Plan		
1	Jawa Barat	2.96	3.4	3.33	2.97	3.2	3.17	Good
2	Jawa Timur	2.96	3.2	3	3	3.33	3.1	Good
3	D.I. Nanggroe Aceh Darussalam	2.96	3.13	2.95	2.87	2.8	2.94	Good
4	DKI Jakarta	3.29	2.73	2.57	2.67	3.2	2.89	Good
5	D.I. Yogyakarta	2.88	2.87	2.76	2.93	2.73	2.83	Good
6	Sumatera Selatan	2.71	2.67	3.05	2.47	3	2.78	Good
7	Jambi	2.63	2.53	2.43	2.47	3	2.61	Good
8	Papua	2.75	2.53	2.81	2.3	2.13	2.51	Poor
9	Kalimantan Barat	2.42	2.53	2.48	2.5	2.2	2.43	Poor
10	Riau	2.17	2.33	2.14	2.23	1.93	2.16	Poor
11	Sumatera Utara	1.88	2.4	2.29	2.13	2.07	2.15	Poor
12	Jawa Tengah	1.71	2.4	2.38	2.33	1.53	2.07	Poor
13	Kalimantan Timur	2	2.13	2.1	2.03	1.8	2.01	Poor
14	Nusa Tenggara Barat	2.54	1.87	1.71	1.73	2	1.97	Poor
15	Kalimantan Tengah	2.17	1.67	1.95	1.83	2.2	1.96	Poor
16	Bali	2.33	2.4	2	1.93	1.13	1.96	Poor
17	Lampung	1.96	2.27	1.67	1.87	1.6	1.87	Poor
18	Kepulauan Bangka Belitung	2.08	2.13	1.29	1.5	2.2	1.84	Poor
19	Bengkulu	1.67	2.07	1.43	1.5	1.33	1.6	Poor
20	Nusa Tenggara Timur	1.67	1.6	1.48	1.7	1.4	1.57	Very Poor
21	Sulawesi Barat	1.04	2	1.62	1.37	1.27	1.46	Very Poor
22	Sumatera Barat	1.33	1.2	1.48	1.83	1	1.37	Very Poor
23	Kepulauan Riau	1.25	1.67	1	1.43	1.4	1.35	Very Poor
24	Sulawesi Tengah	1.08	1.53	1.33	1.03	1	1.2	Very Poor
25	Papua Barat	1	1.2	1	1.17	1.07	1.09	Very Poor
26	Sulawesi Selatan	1.04	1.07	1	1	1	1.02	Very Poor
RATA-RATA		2.09538	2.212692	2.048076923	2.030385	1.9815385	2.0735	Kurang

Source : Ministry of Communication and Information Technology, Indonesia

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