

III. APEC SME Informatization Survey

1. Case Studies
2. Survey Results of Korea

This chapter aims to examine the current status of SME informatization and the catalysts of and barriers to ICT. Generally, SMEs are more likely to pursue informatization when influenced by external entities than making the ICT decision voluntarily. The results of two empirical studies are presented in this chapter - case studies in 10 member economies and a questionnaire survey of the Korean SMEs.

1. Case Studies

1.1. Characteristics of Data Samples

Target Industries and Company Size

This case analysis focused on the manufacturing sector (89 percent), but it also included other industries (food and beverages, and retail) in those member economies where there were no active manufacturing companies available for this case study. Table 3-1 below provides the related statistics.

<Table 3-1> Sample Distribution by Industry and Size

Industry	Frequency	Percentage	Size	Frequency	Percentage
Manufacturing	16	89	≤ 50	10	56
Food/Beverage	1	6	51-70	3	17
Retail	1	6	≥ 71	5	28
Sum	18	100	Sum	18	100

Our study focused on the SMEs that employ fewer than 50 people. However, each member economy had different definitions of what a small-sized company is and the distribution of SMEs in the urban areas where the case samples were collected was different from economy to economy. As a result, in some cases, some companies with more than 50 employees were included in the analysis. In our samples, 56 percent of the companies in our study had fewer than 50 employees, 17 percent had between 51 and 70 employees and 28 percent had more than 71 employees.

Grouping

For the analysis, the NII shown in Chapter I was used to categorize 10 target member economies into low and high tiers. The high tier economies in this case study had an average NII of 82 and the low tier economies an average of 15, which indicates a large gap in the NII between high tier and low tier economies. See Table 3-2 below.

<Table 3-2> Grouping Sample

Description	NII	Member economies
Low tier in NII	15	China, Indonesia, Malaysia, Mexico, Thailand
High tier in NII	82	Australia, Japan, Korea, Chinese Taipei, USA

1.2. Analysis and Discussion of ICT Adoption

The case studies were analyzed and discussed from the perspectives of ICT adoption, ICT awareness and readiness, ICT benefits, and factors affecting ICT adoption.

1.2.1. Levels of Hardware Usage

Purchasing PCs is the first step toward informatization. The number of PCs per employee in small businesses according to our data is 0.5. Further categorization into high tier and low tier small businesses reveals that high tier small businesses have an average 0.66 computers whereas those in the low tier have 0.34 computers per employee. In conclusion, the high tier small businesses have almost double the number of PCs per employee than the low tier small businesses do (See Table 3-3).

< Table 3-3 > Ownership of PCs

Description	PCs per employee
Low tier in NII	0.34
High tier in NII	0.66
Average	0.50

The gap in PC ownership rates results from the different levels of income.¹⁶⁾ Noticeably, the average PC price in some of the low tier member economies is relatively far more expensive than in the high tier member economies, mainly due to high value-added taxes and tariffs on imported computers. The high levels of taxes and tariffs are causing a heavy burden on the low tier economies to purchase PCs. For example, SMEs in the high tier member economies such as Australia and Japan pay the equivalent of three weeks of wages for a PC, whereas SMEs in the low tier member economies such as Indonesia and China would pay six to eight months worth of wages for a computer.

The PC price affects the ICT investment decisions made by SMEs. As long as labor and ICT are substitutes for each other, SMEs will prefer increasing employees to PCs if the computers seem too expensive and if they think the prices of computers are affordable, then they will choose to buy computers over hiring more workers. For this reason, the current informatization gap will continue to widen unless there are efforts to make PCs affordable. SMEs perceive PCs affordable to buy when increasing a PC is more beneficial than increasing other resources.

16) In 21 APEC economies, the price of PCs and GDP per capita has a significant correlation of 0.85 ($p < 0.01$ level). In our sample, the number of PCs per employee and the NII also shows a high correlation of 0.85 ($p < 0.01$). The figures of the GDP per capita came from "The World Bank, World Development Indicators, 2003". PCs per capita came from ITU.

1.2.2. Levels of Software Usage

All the SMEs we studied use application programs for Document Management, and 78 percent of the SMEs surveyed use them for Financial and Accounting Management. Other application programs in use include Inventory Management (72 percent), Sales Management (67 percent), Procurement Management (61 percent), Production Management (56 percent), Customer Management (56 percent), Cost Management (56 percent), Human Resource Management (56 percent), ERP (50 percent) and Supply Chain Management (33 percent) as shown in Table 3-4 on page 27.

SMEs in the low tier in the NII have limited use of application programs in general. In our study, companies from China use application programs for Financial/Accounting Management and Document Management, whereas companies in Indonesia and Thailand used them solely for Document Management. Through interviews with managers and owners of the SMEs, we found that they often have many difficulties in acquiring the appropriate application programs due to the limited options available. Thus, they undergo substantial trial and error in the process of ICT implementation, which often results in wasted financial and non-financial resources.

APMR and Bodibasis of Malaysia are companies that have unique features compared with the SMEs in other member economies. Bodibasis uses a wide range of application programs including MRP, ERP and SCM. APMR has also adopted various application programs except for SCM. The interviewees from these companies stated that their informatization was substantially facilitated by their government's active support policies.

<Table 3-4> Application Programs in Use

Application	Frequency	Percentage
Document Management	18	100
Financial and Accounting Management	14	78
Inventory Management	13	72
Sales Management	12	67
Procurement Management	11	61
Production Management	10	56
Customer Management	10	56
Cost Management	10	56
Human Resource Management	10	56
ERP	9	50
Supply Chain Management	6	33

Cases in China and Mexico are also quite unique. The Chinese government has implemented the system of only accepting tax documents that are processed through computerized programs. Due to such proactive policies for ICT promotion, most SMEs in Shanghai and Beijing cities own PCs for document management and accounting. Considering China's low-tier status in the NII, this is quite a remarkable development for China. Mexico also has a similar policy on B2G transactions in which the government creates a favorable environment for bidders that use ERP systems. Consequently, the SMEs that do business with the government are ones with high levels of ICT use. All these cases show that tax incentives and business transaction policies have a positive impact on promoting SME informatization.

The Challenges of Using Applications in the High Tier Economies

The high tier group uses about eight computer applications, whereas the low tier group uses only one or two applications, showing a large discrepancy between the high and low tier economies. 100 percent of the higher tier SMEs use application programs for Inventory, Sales, Financial/Accounting and Documentation, 86 percent use programs for Procurement and Cost Accounting; and 60 percent for Customer management, Human Resource Management and Production Management. However, a relatively limited number of companies are using ERP (40 percent) and SCM (20 percent).¹⁷⁾

High tier SMEs have seen the potential benefits of ICT for their business management, competitiveness and productivity. These companies continue to adopt more advanced programs to upgrade the existing systems and thus increase ICT benefits. For example, iCanTek in Korea pursues

17) In this analysis, we excluded SMEs that employ more than 100 people.

to become a super efficient company by using Application Service Provider (ASP) services. User companies rent application programs from ASPs on a monthly subscription basis. iCanTek has access to top-notch application programs by using ASP services, which in turn reduces the burden of employing ICT experts, paying expensive license fees and paying for ICT maintenance.

Furthermore, high tier SMEs maintain up-to-date information on alternative technologies and programs. They are also concerned with risks and challenges resulting from the adoption of new technologies and programs. To reduce avoidable costs, these companies study similar cases and practices in the same or other industries in which new and advanced information technologies have been adopted.

1.2.3. Levels of Internet Usage

The degrees of Internet usage are analyzed using the following three criteria: e-mail, Web usage and homepage development. No significant difference is found statistically in the Internet usage between high and lower-tier SMEs. For example, 100 percent of SMEs in both tiers use e-mail and the Web, whereas 60 percent of low tier SMEs and 70 percent of high tier SMEs have their own homepages. However, substantial differences are found in the purpose and style for which two groups use the Internet.

E-mail usage

In the low tier SMEs, ICT staff members usually use e-mail only for business communications with their counterparts, while the staff members of the high-tier SMEs use e-mail for both business and personal purposes.

Web usage

Employees in the high tier SMEs use the Web for a wide range of purposes, whereas only the ICT staff members in the low tier SMEs can have access to the Web. The low tier SMEs have a low awareness of the benefits of the Internet due to the lack of available contents. Language barriers are also found to be one of the main obstacles to developing a variety of contents on the Internet. For example, companies in Indonesia, a non-English-speaking member economy, believe there is not enough information on the Internet, whereas companies in Australia, an English-speaking member economy, enjoy rich contents by visiting Web sites in the United States and the UK in addition to their own economy's sites. The linguistic differences are causing the network externality effect where only English-speaking users can access more contents on the Internet whereby exhibiting further desire in searching for value-added information on the Internet while non-English-speaking users feel the internet is not useful for searching for information. Thus, the different attitudes towards using the Internet widen the digital gap between developed and less-developed APEC member economies.

Homepage usage

There is a substantial difference between low tier and high tier SMEs in terms of the homepage usage. The low tier SMEs are in the initial stages of experimenting with building and using

homepages but without a clear business model. One example is a small business operating its homepage only during business hours. By contrast, the high tier SMEs are running homepages with the clear business objectives of using the internet as a new marketing tool and a new market itself.

1.3. ICT Awareness and Readiness of SMEs

1.3.1. Overall Review

According to the analysis of companies' ICT preparedness (See Table 3-5),¹⁸⁾ ICT awareness ranked the highest (2.72).¹⁹⁾ In our case analysis, most CEOs and employees of SMEs were highly aware of the importance of ICT utilization for their business. Other aspects of ICT preparedness are ranked in the following order: ICT infrastructure (2.33), financial status (2.39), change management (1.61), and standardization (1.89). The average of all was 2.00. Standardization of business processes, a prerequisite for SME informatization, was lacking in SMEs because of their intrinsically limited capacity. For example, the Japanese SMEs do not seem to have high levels of standardization even though this member economy ranks high in the NII. The lack of standardization is much more common in most small companies than in medium-sized and large-sized companies. SMEs also recognize their inability of change management in response to changing regulations, organization and systems management of ICT, among other things. Furthermore, insufficient ICT education and training, ICT staff management, and ICT maintenance are challenges for SMEs to address.

<Table 3-5> ICT Preparedness of SMEs

Description	ICT Infrastructure	Financial Status	Awareness of ICT	Change Management	Standardization
Low Tier in NII	1.8	1.9	2.7	1.5	1.6
High Tier in NII	3	3	2.75	1.75	2.25
Average	2.33	2.39	2.72	1.61	1.89

Note: ICT preparedness was measured on a 3 point scale (3: sufficient, 2: average, 1:insufficient)

1.3.2. Comparative Analysis by Group

The group analysis of ICT preparedness shows a significant difference in ICT infrastructure and financial status²⁰⁾ between the low tier and high tier SMEs. The low tier SMEs are not adequately prepared in terms of the deployment of equipment such as hardware, software and networks due to the unaffordable prices of these products. There is one exceptional case: Bodibasis of Malaysia has increased its productivity and revenues by implementing ICT and reinvesting the profits back into upgrading its ICT equipment. Among the high tier SMEs, small businesses in Japan and Korea continue to enhance their ICT utilization with tax and financial incentives provided by the

18) Please refer to the Appendix for the details of ICT preparedness.

19) Insufficient ICT preparedness is allocated one point, the average two points, and sufficient level three points.

20) *t*-tests demonstrated the significant difference between two groups in terms of ICT infrastructure and financial status ($p < 0.01$), whereas awareness of ICT, change management, and standardization were not significantly different.

government.

The following considerations are suggested for governments to improve the ICT infrastructure and financial status of SMEs:

- For the ICT Infrastructure: Governments of the low tier member economies should upgrade and expand the ICT infrastructure for SMEs; and
- For the support policies and other incentives: Governments should create a business-friendly environment, e.g., ICT-related financial markets and resources.

1.4. ICT Benefits

ICT benefits were examined using the Balanced Scorecard model, which comprehensively analyzes the following categories: the financial perspective, the customer services perspective, the internal business processes perspective, and the learning and growth perspective.²¹⁾

1.4.1. Overall Benefits

The benefits of ICT SMEs perceive to be gaining depend upon the types of ICT implemented(See Table 3-6 on page 32): 100 percent of companies surveyed said they saw the benefits of ICT in the area of learning and growth; 83 percent in internal business processes; 50 percent in customer services; but only 28 percent said they benefited from the financial point of view.

However, the results on the financial benefits of ICT need further interpretation. Most SMEs responded negatively when asked whether they had seen reductions in cost or labor. Nevertheless, they were found to have enhanced business performance without increasing the number of workers. As the company would have had to hire more workers to improve business performance if they had not deployed ICT, it can be said that the adoption of ICT has saved additional labor cost, and thus had financial benefits. In other words, the financial benefits can be seen, considering the opportunity cost of the ICT implementation.

<Table 3-6> ICT Benefits

(Unit : %)

Description	Finance	Customer service	Internal business process	Learning and growth
Low Tier in NII	10	20	70	100
High Tier in NII	50	88	100	100
Average	28	50	83	100

Note: Benefits are measured on a binomial scale (1: experienced benefits, 0: no experience)

In conclusion, the SMEs that see the benefits of ICT adoption are greatly motivated to achieve a higher level of informatization. As SMEs using ICT continue to enhance their ICT levels while

21) ICT benefits were scored on a binomial scale. SMEs that reported to have experienced benefits were credited with one point, whereas companies that did not report any benefit received zero.

SMEs without ICT tools do not see the incentive to do so, the digital divide between the two types of SMEs continue to grow. To narrow the digital divide among SMEs in the low tier economies in the NII in particular, governments should seek help from these early ICT adopters to lead the SME informatization efforts.

1.4.2. ICT Benefits by Category

The primary benefit of ICT adoption for SMEs is in the area of learning and growth. CEOs and employees have come to learn the value of ICT and recognized the potential benefits of ICT in innovating business processes. More specifically, by using the Internet and e-mail, errors were reduced and communications with business partners were facilitated. Furthermore, by establishing databases, reusing documents and reports became possible.

Considering the benefits to the internal business processes, ICT adoption reduces the time and efforts invested in work and improves value-added business processes such as analysis, planning, forecasting, and strategic policy-making. However, some of the low tier SMEs surveyed were not able to gain these benefits, partly because they were in the initial stages in informatization and partly because they were unable to find appropriate application programs to improve their business processes.

As for customer services, small businesses and their customers benefited mostly from the improvement in communications and reduction in customer waiting time. However, there is a wide gap between high tier SMEs (88 percent) and low tier SMEs (20 percent) in terms of the effectiveness of customer services. This results from the fact that the low tier SMEs are at the beginning stages of informatization and mainly focus on internal automation rather than on customer services or business relationships.

The financial benefits ICT offers are gained mostly by the high tier SMEs in the form of reduced labor costs, increased value-added services and sales revenue. iCanTek of Korea is a good example reaping these financial benefits. The company uses application programs through ASP services for which it pays a fixed subscription fee monthly. By using the services ASPs provide, iCanTek does not need to recruit IT experts and thus saves considerable money and time in maintaining up-to-date ICT and upgrading software programs.

1.5. Factors Affecting ICT Adoption

1.5.1. National ICT Infrastructure

The telecommunications infrastructure is a major part of the national ICT infrastructure. In this study, it was found that there was a huge gap in accessibility to telecommunications infrastructure between high and low tier SMEs. 78 percent of SMEs use high-speed broadband and stable Internet lines overall. Specifically, 100 percent of the high-tier SMEs use broadband Internet lines, whereas only 60 percent of the low-tier SMEs use them. In other words, 40 percent of the low-tier SMEs still use the Internet through a slow dial-up modem. Moreover, Internet access cost is substantially higher in the low tier economies. For example, the Indonesian SMEs use e-mail and the Internet through a dial-up modem at a cost of US\$38 per month.²²⁾ Considering the weak financial situations of these

22) Yinping of China spends US\$13 for broadband Internet lines. , and iCanTek of Korea spends US\$25 per month.

economies, the high cost of internet access is a barrier to the informatization efforts. This is a more explicit problem for the member economies with low GDP per capita and large territories. Unless these issues are addressed properly, the current digital disparity between the low and high tier SMEs will continue to widen. Governments should make efforts to lower the cost and increase the speed of Internet access by seeking new alternatives both at the individual economy and APEC levels.

1.5.2. Business Environment

The business environment for informatization was analyzed in terms of the requests from buyers and sellers to utilize ICT, influence from the conglomerates (encouragement, pressure, cooperation, etc) and industry-wide standardization of business processes. The influence of the business environment was evaluated on a scale of 1 to 3: 1 for “low”, 2 for “average” and 3 for “high”. The average score for the low-tier SMEs was 1.1, while the average score for the high-tier SMEs was 2.75. The high-tier SMEs were pressured or encouraged to adopt ICT by business partners such as buyers, vendors or competitors. However, the low tier SMEs had less pressure from business partners to adopt ICT and thus were implementing informatization on a voluntary basis.

Pressure from business partners also influences the types of application programs SMEs adopt. For example, application programs such as Procurement Management have been adopted by 88 percent of the high tier SMEs, whereas only 40 percent of the low tier SMEs have adopted this.²³⁾ Based on this fact, the governments of the low tier in NII are advised to seek new alternatives to facilitate SMEs’ transactions with their business partners, especially with big buyers. The business environment is typically beyond the control of SMEs, thus, APEC governments are advised to take the leading role of facilitating programs in which business partners can conduct transactions more efficiently through computer systems.

1.5.3. Supporting Organizations

As mentioned in Chapter I, supporting organizations include the government and intermediaries. The main role of intermediaries is to develop and provide government services that meet SMEs’ demands for informatization as much as possible. The following reviews the examples of these intermediaries from the standpoint of individual SMEs.

As analyzed in Chapter II, Japan, Korea, Chinese Taipei and the United States have implemented SME-focused ICT policies in which a wide range of supporting programs are offered. SMEs in these member economies are familiar with the government policies and programs for SME informatization and take advantage of them in upgrading their ICT levels. For example, the Korean government launched various ICT support policies including the nurturing of the leading SMEs in informatization, promoting ASP services by introducing tax incentives and low interest financing for investment in ICT. iCanTek is one of the beneficiaries of the Korean government’s proactive ICT-support policy to diffuse ASP services.

Meanwhile, whether in high tier or in low tier, the SMEs in the member economies with only the generic ICT policy in place were found to be unaware of the government policies and programs that were available for them. For example, a company in the high tier economy explored various channels to upgrade its ICT level, but had considerable difficulty in doing so as it could not find a

23) The correlation between the pressures from business partners and the adoption of procurement management application is significant (0.49, $p < 0.05$).

way to communicate effectively with the government agencies in charge. To develop government policies to meet as many as possible the demands of SMEs, the government is advised to increase the effectiveness of their communications with the end users.

It is seen that in some cases, such a dilemma could be overcome most efficiently by utilizing private intermediaries such as business or industry associations. For example, Hong Ya of Chinese Taipei leads the informatization of SMEs with the help of the Franchise Promotion Association. Sanohatsu of Japan implemented SME ICT with the help of Tokyo Fasteners Cooperative Association. As can be seen in these cases, associations could function as a bridge between SMEs and government and between business partners and stakeholders for promoting SME informatization.

In some cases in low tier member economies, it can be seen that even though the policies have no direct focus on SME informatization, they nevertheless influence the informatization of SMEs. For example, the government of China requires SMEs to make tax reports in a computerized standard format that has had a positive impact on SME informatization.

1.6. Gender Issues

This case study also analyzes the gender distribution and its relationship to SME informatization. In terms of the distribution of genders involved in the case study, 56 percent of employees were males and 44 percent females. According to our study, the ICT field is considered more appropriate for women compared to other fields as it requires less physical labor than other types of work. In this respect, an increase in the level of SME informatization will lead to a rise in employment opportunities for women. For example, HengFu, a kitchen manufacture in Shanghai, China, has traditionally employed mostly male workers, mainly because duties include heavy labor. Recently, however, the company has adopted information systems as a part of its business practices. As a result, the number of female employees has grown, and the female workers are mostly in charge of computer design projects. Since adopting ICT, HengFu has hired seven women. Among the seven, five of them are working as technical experts in departments such as computer-aided design and computer-aided manufacturing.

Similar cases can be found in Korea. Because knowledge is the prime concern in the ICT field, less gender discrimination can be seen in this field. iCanTek employed two female experts in ICT and more female workers are expected to be hired in the future.

2. Survey Results of Korea

This section is based on the survey in Korea conducted by KIMI between June and July 2003 with over 334 effective samples. The survey reviewed the informatization of small manufacturing enterprises near Seoul with fewer than 50 employees. This section covers such issues as the current status of ICT implementation, ICT benefits and barriers.

2.1. Status of ICT Implementation

This section reviews the current status of ICT implementation in terms of human resources (ICT staffs, training and education), equipment (SW, NW) and e-commerce facilities.

ICT Staff, and ICT Training and Education: *SMEs lack ICT experts*

It was found that 60.2 percent of SMEs in Korea do not have a separate ICT department in their firms. In other words, the existing employees were found to be handling ICT tasks in addition to other responsibilities (66.3 percent). The average number of ICT employees in Korean SMEs was 2.5, according to the survey. But the respondents said they needed another 2 ICT experts on average to meet their ICT needs. In 2003, only 18.9 percent of SMEs trained employees for the ICT sector, and most of the trainees were either workers handling administration or ICT related tasks.

ICT Equipment: *Basic level of SW has been deployed. NWs are for internal processes.*

The two most popular types of software are Office Automation (OA) applications and homepages (See Table 3-7 below), but many companies were skeptical of increasing future demand of these. Many SMEs were found to be satisfied with using ICT as a stand-alone system and for internal business processes rather than doing B2B transactions with other partners. Internal networks are used for information sharing (30.2 percent), information retrieval about technology and the market (23.7 percent), and raw materials and inventory management (22.4 percent).

External B2B networks were found to be used for product information exchange (28.7 percent), purchasing and sales (24.7 percent), and placing and receiving orders (23.0 percent). See Table 3-8 below.

<Table 3-7> ICT Resources in Korean SMEs

(Unit : % of respondents)

SW Types		In Use	Future need
Office Management	OA	74.3	61.6
	Groupware	18.9	37.9
Transaction Management	EDI (VAN, Web)	19.5	30.5
	e-Commerce	13.0	31.4
	POS	5.9	22.0
Data Management	DW/DSS	9.0	23.4
	KMS	3.1	18.1
Production/Process Management	CIM/MES/POP	4.8	25.7
	CMMS	4.8	27.4
Integration Management	ERP	16.9	42.9
	SCM/PRM	1.7	16.9
	CRM	2.3	17.5
Others	Home-page	54.5	50.8

<Table 3-8> E-Commerce Adoption by Korean SMEs

(Unit : % of respondents)

		Full dependency	Considerable use	Average	Little use	No use
B2C	Order/Sales	2.5	4.7	5.7	8.2	78.9
	Marketing	1.8	4.4	5.1	7.7	81.0
	Services	1.1	4.4	5.2	5.2	84.1
B2B	Purchasing/Sales	4.3	9.0	10.4	11.5	64.7
	Partner Management	2.2	3.0	7.1	5.9	81.8
	Services	2.6	2.2	6.7	5.6	82.8

E-Commerce: More than 65 percent of the Korean SMEs do not conduct e-commerce.

Those companies that did not engage in e-commerce pointed to the unfavorable e-commerce environment for their products (30.2 percent) as the main reason for not conducting e-commerce. Other reasons include inadequate system equipment (10.5 percent), timing (8.8 percent), lack of ICT experts (6.8 percent) and high e-commerce expenses (4 percent).

2.2. Benefits of ICT

As for individuals' work productivity, benefits included decreased workload (66.7 percent), reduced costs and efforts in information search and retrieval (39.8 percent) and increased information sources (39.3 percent).

2.3. Barriers to ICT Adoption

ICT barriers have been studied from the ICT implementation and use perspectives. The barriers to ICT implementation are the lack of financing (57.6 percent), human resources (45.2 percent), and ICT knowledge and capability (34.2 percent).

SMEs in our survey looked to the government to address the first two barriers for them. They mostly wanted help from the government regarding the financial support for ICT costs (28.3 percent) and recruiting technical staff (22.7 percent).

The third barrier can be overcome through ICT education and learning, which SMEs need in the area of system maintenance (66.9 percent), network construction (63 percent), system security (50 percent), home-page construction and e-commerce (45.5 percent), ICT awareness (40 percent), availability of successful SME ICT cases (30 percent) and application software (27 percent).

2.4. Implications of the Survey Results

In summary, the Korean small businesses do not have enough ICT experts or staff members, most of them have only deployed basic SW and are content with conducting internal processes with ICTs rather than doing B2B transactions over the networks. More than half of the SMEs surveyed had their own homepages set up but rarely conduct e-commerce. Many Korean SMEs, however, do recognize the value ICT delivers such as improved work productivity and cost savings. Despite the general consensus, the lack of financial resources, human resources and ICT capabilities are hindering their prompt adoption of ICT . The government is advised to help improve the situation by taking the lead in addressing these challenges.