CZECH UNIVERSITY OF LIFE SCIENCES, PRAGUE

Faculty of Economics & Management

DIPLOMA THESIS

E-government challenges and opportunities in Cambodia

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DIPLOMA THESIS ASSIGNMENT

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Informatics

Thesis title

E-government challenges and opportunities in Cambodia

Objectives of thesis

The thesis is categorically focused on the challenges and opportunities of e-government in Cambodia. The main goal is to analyze the usage of electronic online service recently in Cambodia. The partial goals of thesis are:
- to make a literature review,
- to analyze current state of e-government in Cambodia, and
- to analyze barriers and opportunities in Cambodia from the point of citizens and public officials.

Methodology

Methodology of the thesis is based on the study and analysis of information resources. The practical part is focused on the analysis of challenges and opportunities of e-government in Cambodia. The data will be gathered through questionnaire survey and statistically evaluated. The conclusion will be formulated based on the theoretical knowledge and the result of author's own works.

The proposed extent of the thesis

60-80 pages

Keywords

Local area network, Wired equivalent privacy, Authentication, Security threats, Addressing security threats, Extensible authentication protocol

Recommended information sources

KING, David, Jae LEE, Merrill WARLEMTIN,H. Michael CHUNG: Electronic Commerce.2nd edition.USA:2002. ISBN 0-13-065301-2

Report: The Follow e-Government Service Deployment Plan for Royal Government of Cambodia October 2009 by Nida and JICA, Cambodia.

UNPAN. United Nations E-government Survey 2014 [online]. Available at: www.unpan.org. ISBN 978-92-1-123198-4.

Worldbank. E-government [online]. Available at: www.worldbank.org

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Prague on 30. 03. 2015

DECLARATION

I hereby declare that this thesis is based on the results found by the author. The relevant materials of work found by other researchers are mentioned by reference and citing.

In Prague, 31-03-2013

.....

Keo Lyvann

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SUMMARY

E-government provides better service to citizens to conduct their affairs with government and to simply retrieve important information they need and businesses to reduce the cost to the Commonwealth, and can make the Commonwealth a more attractive place to live. E-Government can both increase efficiency and increase the status and relevance of the government in the businesses and eyes of the citizens. Benefits of E-Government include citizens and businesses.

The thesis was done to explore the challenges and opportunities of E-government in Cambodia with a major targets on the students of IT department in the universities, IT companies, and public ministries. The ESPOT analysis would be used to understudy the ongoing barriers in Cambodia as some of these factors (barriers) might likely have either a direct or indirect impact(s) on the success or failure of the E-Government in Cambodia.

The paper begins by introducing the general geography of Cambodia, the use of information technology as E-government in Cambodia to study on its challenges and opportunities. Then analyzing them to find reasonable solutions in order to suggest the Cambodian government. Finally, this paper ends with the conclusion and suggestion for the E-government in better solutions.

KEYWORDS

E-government, information technology-management, computer networks, infrastructure, ICT ESPOT analysis.

SOUHRN

E-government poskytuje lepší služby občanům k řešení jejich potřeb se státem, dále umožňuje občanům získat důležité informace, firmám ušetřit náklady a učinit společenství více atraktivním místem k životu. E-Government má schopnost zvýšit účinnost a zvýšit status a relevanci státu z pohledu občanů a firem. Přínosy e-governmentu se dotýkají občanů, firem a vlády.

Diplomová práce prozkoumává výzvy a příležitosti e-governmentu v Kambodži s hlavním zaměřením na IT oddělení univerzit, počítačových společností, veřejných orgánů a ministerstev. Byla využita analýza ESPOT ke studiu bariér v Kambodži, které mohou mít přímý nebo nepřímý vliv na úspěch nebo neúspěch implementace e-governmentu v Kambodži.

Práce nejprve představuje základní popis Kambodži, úroveň využití informačních technologií a e-governmentu jako vstup pro studium výzev a příležitostí. Další částí je analýza možností řešení pro kambodžskou vládu za účelem technického zlepšení systému v praxi. Práce je zakončena závěry a návrhy lepšího řešení e-governmentu.

KLÍČOVÁ SLOVA

E-government, řízení informačních technologií, počítačové sítě, infrastruktura, ICT, ESPOT analýza.

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LIST OF ABBREVIATIONS

EGA: the Electronic Government Agency (Public Organization)

UN: the United Nation

G2G: government-to-government

G2B: government-to-business

G2C: government-to-citizen

JICA: Japan International Cooperation Agency

ICT: information communication technology

EGDI: E-Government Development Index

NIDA: The National Information Communications Technology Development Agency

GAIS: Government Administrative Information System

GIN: Government Information Network

GNS: Government Nervous System

1. INTRODUCTION

Cambodia is located at South-east Asia, bordering Vietnam, Laos, Thailand and the Gulf of Thailand. It covers a total area of 181,035 km^2 with the population is about 15 million people (2013 est.) in central Indochina and is situated in its entirety inside the tropical ecozone with the tropical monsoon climate - both climates with a 6 months of wet and a 6 months of dry season. Cambodia depends on the 3 important fields such as agriculture, business and hospitality and tourism, import and export trading. The government, nowadays, plays an essential roles to develop the country through strengthening education, health, public infrastructure, trading and agriculture. Beside them, information technology is also improved to promote democracy, to prevent from internet hacker, to ease the business transaction between demanders and suppliers, to communicate the public services from government to people is called E-government, according to Geography of Cambodia 2010.

E-government is the use of information technology in general to provide citizens and organizations with more convenient access to government information and services; and to provide delivery of public services to citizens, business partners and suppliers, and those working in the public sector. It is also an effective and efficient way of conducting business transactions with citizens and other businesses and within the government themselves, David Jae, Merrill, & H. Michael 2002, p.451 wrote.

E-government is defined as "federal, state, and local government application that elicit payment or documentation submission over the net" Jefferey & Bernard 2002, p.612.
E-government is an opportunity to improve the efficiency and effectiveness of the executive functions of government including the delivery of public services. It also enables governments to be more transparent to citizens and businesses by providing access to more of the information generated by government according to David et al 2002, p.451 wrote.

In the thesis we will describe about the opportunities and challenges of E-government in Cambodia. Then we take consideration of the better solutions to E-government for Cambodia.

2. OBJECTIVES & METHODOLOGY

2.1 OBJECTIVES

The main objectives of the thesis were focused on the opportunities and challenges of E-government in Cambodia as following:

First, is to analyze the usage of electronic online service recently in Cambodia,

Secondly, is to analyze current state of e-government in Cambodia and

Thirdly, is to analyze barriers and opportunities in Cambodia from the point of citizens and public officials.

2.2 METHODOLOGY

The thesis would be conducted using relevant secondary data from reliable sources as well as primary data. Relevant information was elicited from 40 respondents, 5 professional IT teachers as well as some key stakeholders using a semi-structured questionnaire.

The ESPOT analysis would be based on qualitative data as well as author's own interactions with Cambodian. The results of the findings on the adoption challenges, barrier and opportunities of E-government in Cambodia basing on the both author's own data as well as secondary data from reliable sources.

The conclusion is drawn based on the theoretical knowledge of author's own work and the result from sample survey as well as drawing inspiration from the works of other authors who have equally contributed immensely to related research works.

3. LITERATURE REVIEW

3.1 Cambodia's telecom sector and regulation

Cambodia's efforts to expand and upgrade its telecom infrastructure have been bearing fruit. There was very little infrastructure remaining from before the tumultuous Khmer Rouge regime. Cambodia largely by-passed rebuilding the fixed-line market and quickly launched into alternative technologies, jump-starting its telecommunications infrastructure with digital technology. Not surprisingly, mobile services completely overwhelmed the market, at least initially. Faced with growing concerns about the country's regulatory regime, the government finally moved on the long awaited establishment of an autonomous industry regulator. The Ministry of Posts & Telecommunications (MPTC) officially launched the Telecommunications Regulator of Cambodia (TRC) in September 2012, (Cambodia - Telecoms, Mobile 2015).

The expansion of the internet in Cambodia has been largely overshadowed by the strong focus on mobile services. Internet take-up rates remained disconcertingly low for many years, with the country claiming one of the lowest internet penetrations in the region, (Cambodia - Telecoms, Mobile 2015).

Market highlights:

- Mobile penetration had reached 134% by end-2013;
- The crowded mobile market had started to see some rationalization, the number of mobile operators falling from nine in 2011 to just three major players by 2014;
- Mfone was declared bankrupt and forced to exit the market;
- Hello Axiata and Smart Mobile merged to form a refreshed Smart Mobile, presenting a serious challenger to Viettel's Metfone;
- Smart Axiata launched Cambodia's first 4G/LTE network in early 2014;
- After a decade of growth, the fixed line numbers dropped sharply in 2013;
- By early 2014 a teledensity of just 3% was reported;
- The internet segment had also been struggling for some time;

- The rapid expansion of mobile broadband access, however, breathed life into this market segment;
- There were around 1.5 million mobile broadband subscribers by early 2014;
- The government launched the Telecommunications Regulator of Cambodia (TRC) in 2012;
- A draft National Broadband Policy had been prepared by the MPTC;
- A proposed submarine cable is to connect Cambodia and Malaysia.

Cambodia - key telecom parameters – 2011 - 2014

Category	2012	2013	2014 (e)
Fixed-line services:			
Total No. of subscribers	584,000	420,900	450,000
Internet services:			
Total No. of fixed broadband subscribers	30,000	32,600	40,000
Mobile services:			
Total No. of subscribers	19.1 million	20.3 million	21.3 million

Table 3.1.1 Cambodia-Key telecom parameters 2011-2012 (Source: BuddeComm)

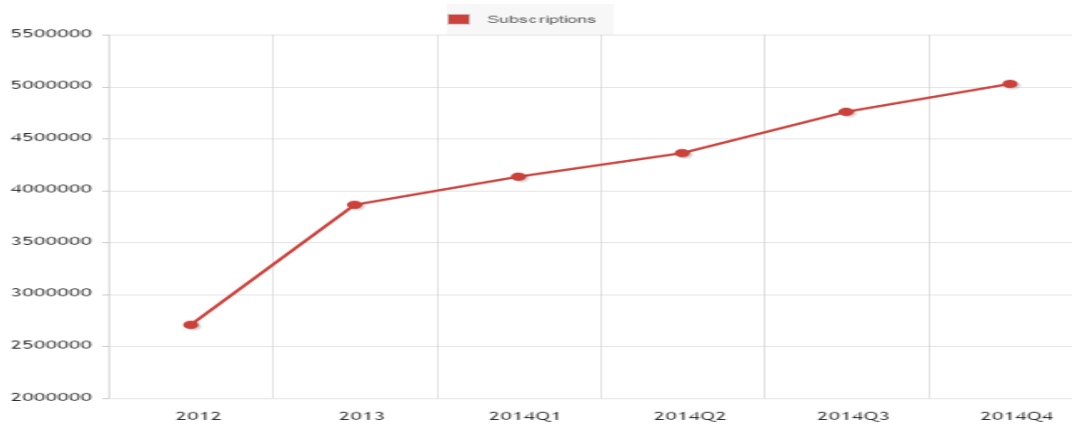


Figure3.1.2 Internet subscriptions in Cambodia (Source: TRC 2015)

3.2 Internet user in Cambodia

Internet users are people with access to the worldwide network (World Bank definition). According to the World Bank, Cambodia Internet users, per 100 people, provides data for Cambodia from 1997 to 2013. The average value for Cambodia during that period was 1.09 percent with a minumum of 0.01 percent in 1997 and a maximum of 6 percent in 2013, (Cambodia Economic 2015).

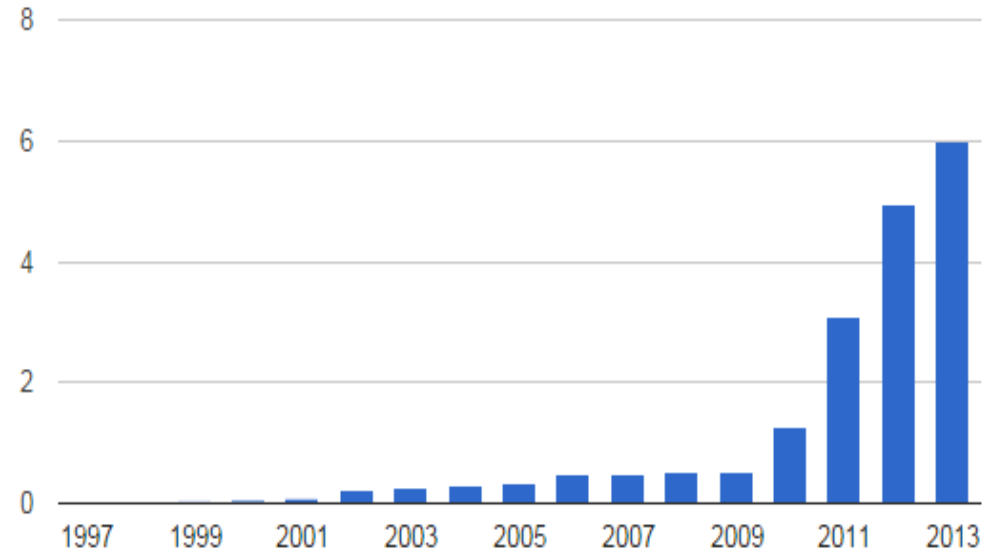


Figure 3.2.1 Cambodia Internet Users from 1997-2013 (Source: World Bank)

The internet users in Cambodia is presented as the percent of people who have access to the internet either at home, at work, or in public spaces. Internet users rankings around the world. Figure 3.2.2 shows the charts for Cambodia Internet users and other indicators with the country comparator.

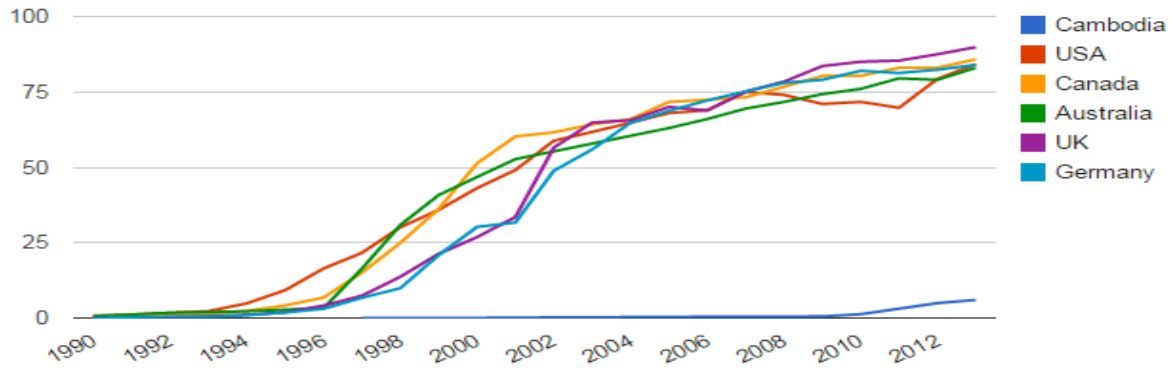


Figure 3.2.2 Cambodia Internet User with other countries (Source: World Bank)

Present time, Cambodia is being growth with its high advance technologies and equipment imported from abroad like USA, Singapore, Russia, Japan, and China etc. Regardless the e-governance and e-commerce, e-government is so notably used. Here, we will partially describe about the chances and challenges in Cambodia.

3.3 E-Government

Owing to the World Bank's E-Government website, “E-Government” refers to the use by government agencies of information technologies (such as the internet, wide Area Networks, and mobile computing) that have the ability to transform relations with business, citizens, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, revenue growth, increased transparency, greater convenience and cost reductions. Government services are provided through a variety of channels including retailers, banks and government’s offices. It is that the

technology solutions which sit on top of an E-Government infrastructure are within the reach of all citizens.

The successful E-government should be able to: attract citizens who are already connected online; move people online who are not already there; and enable the transformation to E-government at three levels: government-to-government (G2G), government-to-business (G2B), and government-to-citizen (G2C). These user groups include nationals as well as investors, foreigners, and others with interest in Cambodia. E-Government will, among other things, contribute to improving:

- Governments' open, effectiveness and efficiency in serving citizens and businesses, as well as governmental efforts related to financial reforms and skill development for public sector employees.
- Citizens' opportunities for social developments.
- Businesses' ability to innovate, invest and grow in an environment that is transparent, less costly to do business and less bureaucratic, (Chiva 2007).

3.4 E-Government in Cambodia

According to, (Makara 2009), the agency behind the nationwide e-government rollout released long awaited guidelines at the end of last week detailing what ministries and other government departments needed to do to take their services online. The National Information Communications Technology Development Agency (NIDA) also released Thursday information security to ensure government information was kept secure and protected from system intruders. The guidelines were based on a needs analysis conducted at all relevant ministries in 2007 with technical assistance from the Japan International Cooperation Agency (JICA). They identify areas in which E-government can be used to build the public service competency of government institutions, provide guidelines for collecting data and help establish a blueprint for expanding government services.

The E-Government Service Deployment Plan was important for building information communication technology (ICT) capacity in government and also for tracking progress and what remained to be done (Makara 2009).

The Provincial Administration Information System Project, the E-government project has a budget of US$15 million to connect offices within each province to one another, and another $20 million to connect each province to the government in Phnom Penh. Three data centers - in Phnom Penh, Siem Reap and Sihanoukville - will act as hubs for surrounding provinces, (Makara 2009).

3.5 E-Government Development Index

The E-Government Development Index presents the state of E-Government Development of the United Nations Member States with an assessment of the website development patterns in a country, the E-Government Development index incorporates the access characteristics, such as the infrastructure and educational levels, to reflect how a country is using information technologies to promote access and inclusion of its people. The EGDI is a composite measure of three important dimensions of e-government: online services, telecommunication connectivity and human capacity (Unpan3 2015).

Cambodia is located in south-eastern Asia with the population about 14 million. The people's income is low income, $880 GNI per capita in 2014. Among 193 countries in the world, Cambodia ranks 139th. There are 37 companies but 16 companies are in operation to provide the internet service (Sithy 2011). The number of internet subscriptions in Cambodia increases from 3.86 million at the end 2013 to over 5 million at the end of 2014. The below chart illustrates on the growth figures, (TRC 2015).

It is difficult to determine the exact number of people actually using the internet as each subscription usually has multiple users. Yet the increase in subscriptions, thanks to lower industry costs generally, indicated that more Cambodians were now online.

As Internet subscriptions are on the rise, mobile phone subscriptions are beginning to plateau and fixed line subscriptions have started to decline. There were 20.45 million mobile phone subscribers at the end of 2014 up from 20.26 million in 2013, (B2b-Cambodia 2015).

Telecommunication services, nowadays, are very important not only to businesses but also essential to everyday life at around the world, and Cambodia is not excluded. Recently moreover, the growth of this sector in Cambodia is very significant, especially in relation to the mobile telecommunication, compared to last decade. The business opportunities on telecommunication service are arising from low levels of market penetration because of its political stability, liberal investment and economic policies. Despite the country's status as one of the least developed nations in the world and whilst it remains one of the poorer countries in Southeast Asia, Cambodia's efforts to expand and upgrade its telecom infrastructure have certainly been bearing fruit. There was very little infrastructure remaining from before the bitter Khmer Rouge Regime. As a result, the growth of telecom sector is remarkable; however, the number of fixed-line phone users is still limited compared to mobile phone users although the operators came late nearly 10 years (in early 1990s). Moreover, the expansion of internet services has also been overshadowed by the mobile phenomenon (PPS 2010)

Human capital is driven by the age structure, education level and technical skills acquisition of the labor force, technical and vocational education and training (TVET), continuing education and training (CET), and educational policy and institutions. Industrial structure and structural changes are important for economic performance and labor market efficiency. However, lack of human capital and indigenous technology could impede the structural changes industry needs to make in order to shift activities to higher value-added outputs. In an open economy, Cambodia will have to rely more on foreign skilled workers and foreign technology in the form of investments from multinational corporations (MNCs) to strike a balance between human resource development and industrial competitiveness as the basis for sustained innovation-led growth, (UNDP 2014).

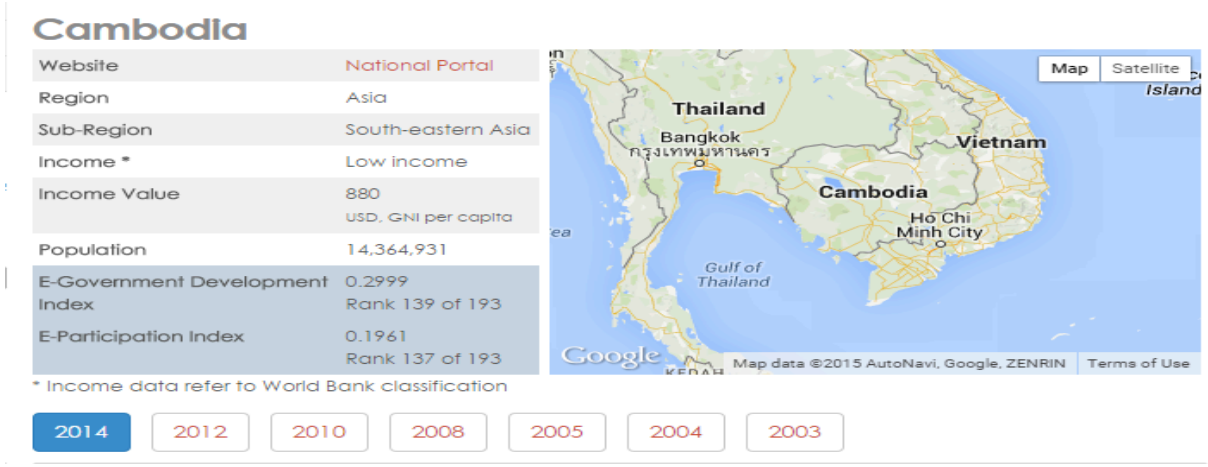
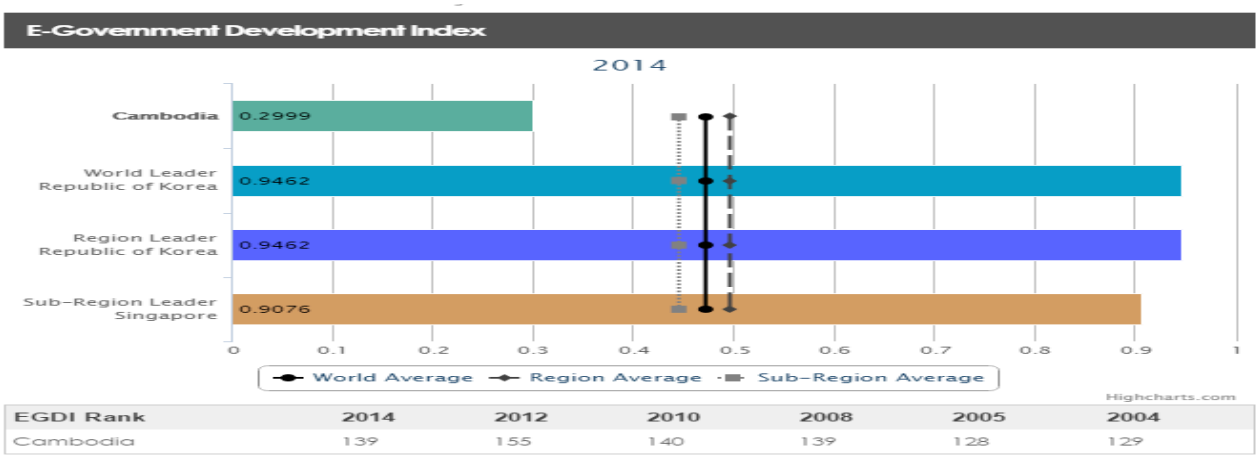


Figure 3.5.1: E-Government Development Index overview of Cambodia



EGDI Rank	2014	2012	2010	2008	2005	2004
Cambodia	139	155	140	139	128	129

Figure 3.5.2: E-Government Development Index Rank of Cambodia

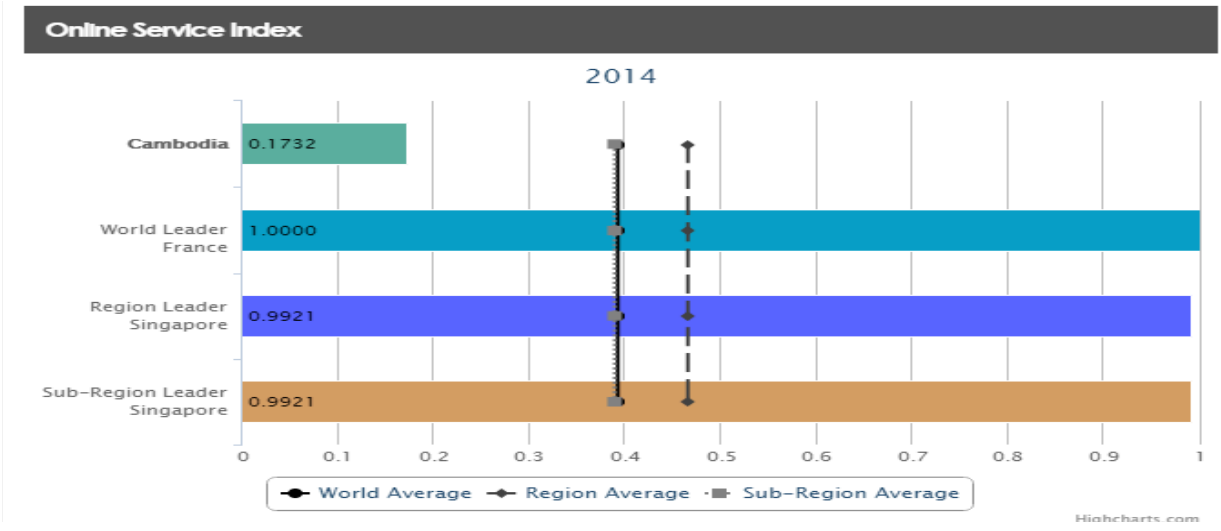


Figure 3.5.3 Online Service Index

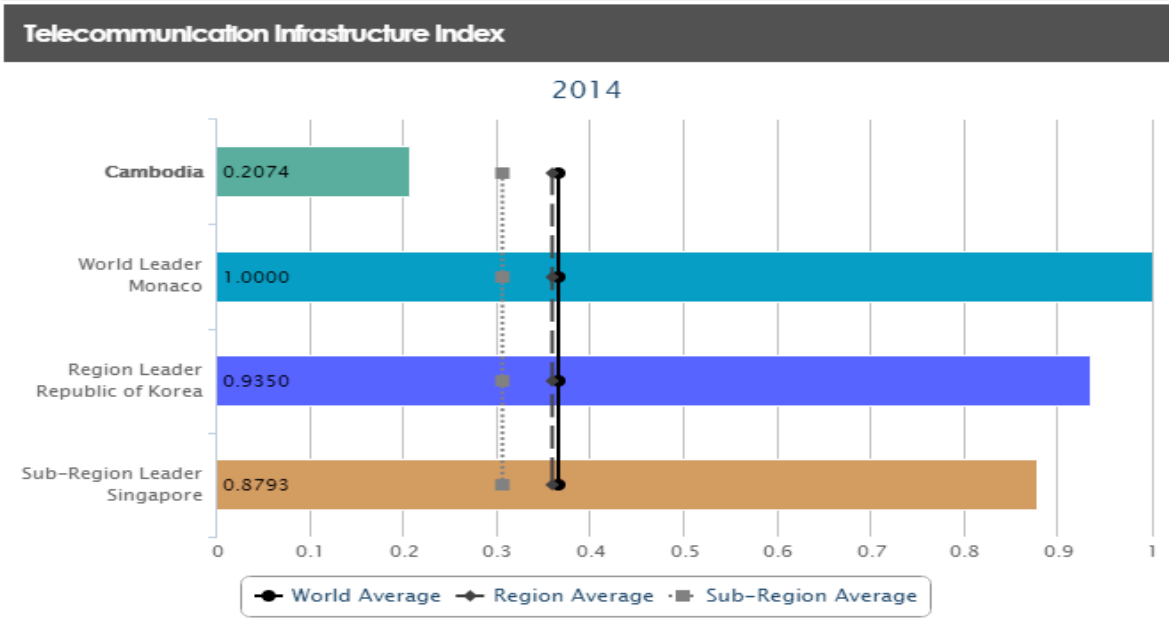


Figure 3.5.4 Telecommunication Infrastructure Index of Cambodia

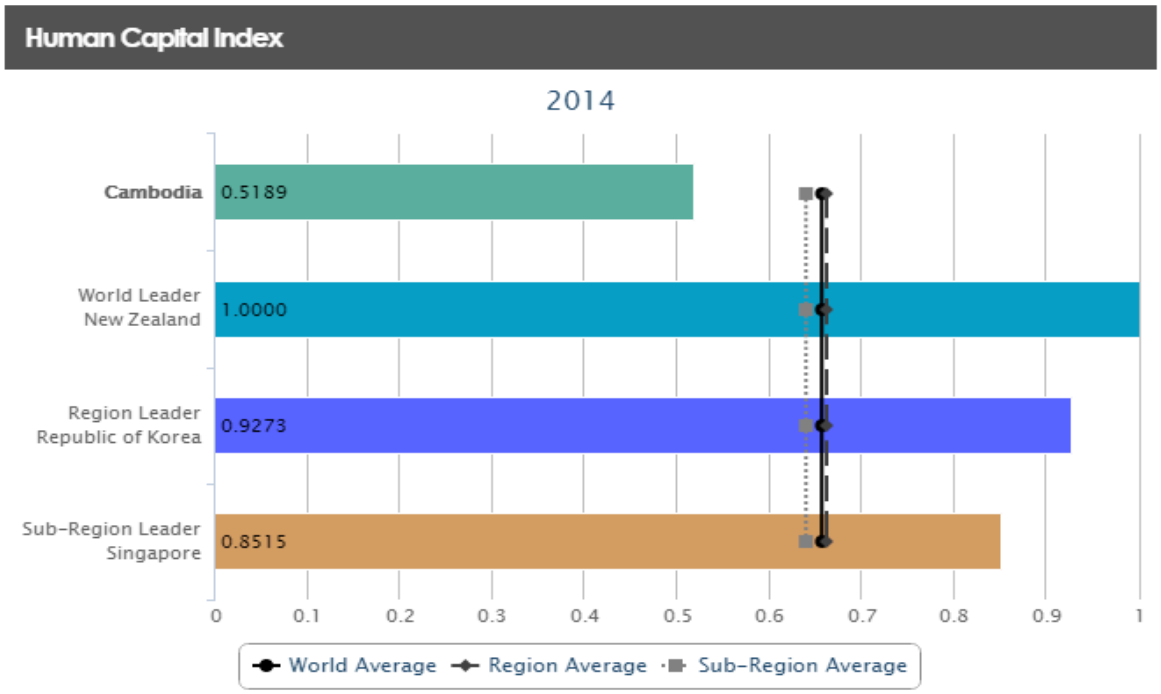


Figure 3.5.5 Human Capital Index of Cambodia

3.6 The challenges of E-Government in Cambodia

The challenges of E-government in the country faces in developing, and using, a robust information network, (Makara 2009, the key obstacle in the path of the e-government rollout is the connection of all 24 provinces to the central government's information-sharing system via a fibre-optic backbone. The problem we are facing is the lack of infrastructure.

The digitalization of government offices in the countryside would streamline work between rural and Phnom Penh government officials. This will narrow the gap between provincial offices and Phnom Penh so we can send and receive reports on time.

There is no internet connection to send documents. Only fax to be used to send those currently. "If we can have a digital system, it would be a big break because then we can get information from anywhere and our work will become easier, (Makara 2009).

3.7 The opportunities of E-government in Cambodia

Meanwhile, Cambodia the some challenges to implement E-government, the opportunities was essentially seen. E-government will be deployed and developed around the city and the whole country. Although people did not have literacy with computers, computer training will be provided to them and the staffs working at the ministry, (Makara 2009). The network connection in the department is needed to access internet once the ministry has enough computers importing from abroad about 1000 Pc. After the formation of the National Information and Communication Technology Development Authority, NIDA, in 2000 IT development was implement. In 2001, Government Administrative Information System (GAIS) was implemented.

People can get that information system about the government online. This information was not readily available in 1993. Now, the information about each ministry and their contact numbers was published through the online. But it's true more must be done by ministries in the future to put more information online. There is also a system that includes vehicle and real estate registration for revenue collection purposes. Before there was no way to track stolen vehicles.

But now police on the street can radio a plate number back to an office to get information on who is the owner. There also have been problems with fraud of land titles. Once all that information is logged into a computer, it will solve a lot of problems

Nowadays younger people can get information from around the globe at their fingertips because the penetration of the internet is really affecting their lives. It is changing education by offering education services online. In terms of information, youth are updated on world news,

(Bredan Brady 2009).

The additional assistance from South Korea was asked for by deputy prime minister as he launched a long-awaited e-government network that connects 10 of the country's 24 provinces.

The Provincial Administration Information System (PAIS), which was being built with assistance from South Korea, was intended to connect the entire country to allow the government to automate its systems.

According to Phnom Penh Post News, 2009, the technology can be installed the satellite using Israeli technology will offer high-speed internet access in Cambodian areas previously off-limits to the world wide web. Gateway Communications, which uses Gilat Satellite Networks technology from Israel, launched its service in Cambodia last week at the Banking Cambodia conference. It offers compact satellite link-ups for high-speed internet, teleconferencing and video conferencing anywhere in the country, (Horhab 2009).

Many of Cambodia's rural government offices are equipped with unreliable landline service, making communication with Phnom Penh difficult and slow.

Industry leaders have long pressed for an upgrade of the government's technology.

"The government is the key engine to drive growth in this sector, but ICT is not widely used in administration, and less than 20 percent of private enterprises are using ICT", (Horhab 2009).

The government has appointed a 200-strong task force to connect government offices through a central network system and is training 2,000 public servants in IT skills for its part.

Satellite Technology can make Cambodia jump ahead without waiting for the landline network to be connected. It's cheaper and quicker to deploy. The technology can be installed everywhere - even in remote areas because it consumes less than 20 watts, which can be used with solar power. The device is called a Very Small Aperture Terminal, or VSAT, and it is ideally suited for governments in developing countries. Training courses would also be offered to ministries (Horhab 2009).

3.8 The E-Government in Thailand

Thailand 's 514,000 square kilometers lie in the middle of mainland Southeast Asia. The nation's axial position influenced many aspects of Thailand's society and culture—it controls the only land route from Asia to Malaysia and Singapore, (Geography of Thailand 2015).

The Electronic Government Agency (Public Organization) or EGA is the key organization with responsibilities of promoting and supporting the development of E-Government services. Established in 2011. In 2012, EGA continued to run the projects and initiated various projects to support e-Government development progress. Significant milestones in the fiscal year 2011-2012 are as follows:

1. Government Information Network (GIN): The concept is to eliminate redundancy in the public sector by encouraging government organizations to use the central network in order to move towards the Government Intranet system. Common services provided by different government agencies were integrated and offered on GIN. At present, eight systems are running on GIN, including GFMIS, CABNET of the Secretariat of the Cabinet, National Single Window by the Customs Department and GSMS of the Office of Public Sector Development Commission. Government Web Conference system was deployed to increase convenience and efficiency of teleconference on GIN.

The system was installed at the Southern Border Provinces Administration Centre in every district in the three southern border provinces and border patrol police.

2. Government Cloud Services: the main objective is to eliminate budget redundancy while increasing return on investment and optimizing the shared IT resources.

Launched since 1 May 2012, the system currently serves 33 government organizations (as of 30 September 2012) covering 58 systems, such as rice mortgage information tracking and integration, women development fund management, and strategic water resource management plan.

3. MailGoThai – electronic mail system for communications in the public sector: aimingat encouraging government officials and employees to use e-mail on the secure system based in Thailand. The project also enhances IT infrastructure and increase security of information.

At present, 360 domains are running on MailGoThai system, including 183,586 e-mail accounts.

4. Government Monitoring System: being responsible for monitoring the IT security for e-Government. Continuous monitoring will enable government organizations to have immediate report and warning in case of irregularities and network attack.

5. Government e-Portal: being a central system for easy access to information and e-services provided by the government in the single sign-on system. At present 25 systems are linked to the portal, including bankruptcy information verification by the Department of Legal Execution, legal information query by the Office of the Attorney General, and the tax inquiry system by the Revenue Department.

6. e-Saraban – the government information exchange system: 27 government organizations have already been linked with the e-Saraban system, including the Office of Permanent Secretary of all ministries, various organizations under the Ministry of Information and Communications Technology.

7. Architecture and Standards: the government website standards have already been completed after a public hearing. The standards will set the framework for system deployment. Such information has been distributed to all government organizations.

8. Government Nervous System (GNS): this provides the government with an efficient tool to monitor the development and progress of the national e-Government system. At present, seven areas of information are integrated into GNS, namely e-Government Ranking, e-Services, Internet connection, Back Office utilization, Government Information Network (GIN), MailGoThai e-mail system, and e-Saraban for integrated information.

9. ICT Training: With an aim to promote understanding on e-Government to government officials, promote vision and skills related to IT management to high-ranked IT managers.

10. Public-Private Partnership to promote e-Government system: aiming at building close cooperation between the public and private sectors as well as general public in driving forward the implementation of e-Government.

11. The Smart Citizen Info: this project creates a mechanism for information integration of government units that use the 13-digit ID number system to provide services to the general public. This allows anyone to use own ID card in verifying and checking information on personal information or other benefits given by the public sector, such as benefits in healthcare, education, agriculture, transport and labor. The agency's experts participated in various events by delivering speech and lecture on topics related to e-Government development. The EGA also signed MOU for cooperation and support for various meetings, which boosts the organization reputation in e-Government development. EGA is also actively involved in many committees related to e-Government service development and plan.

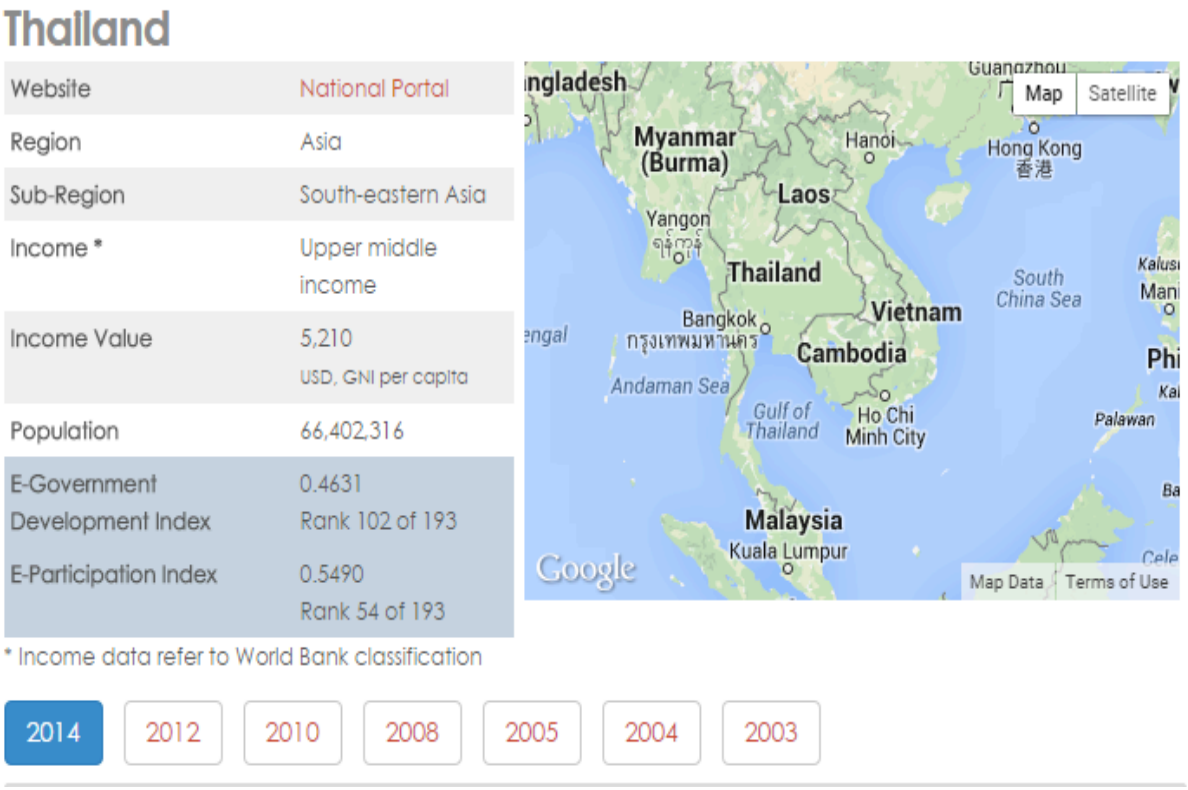
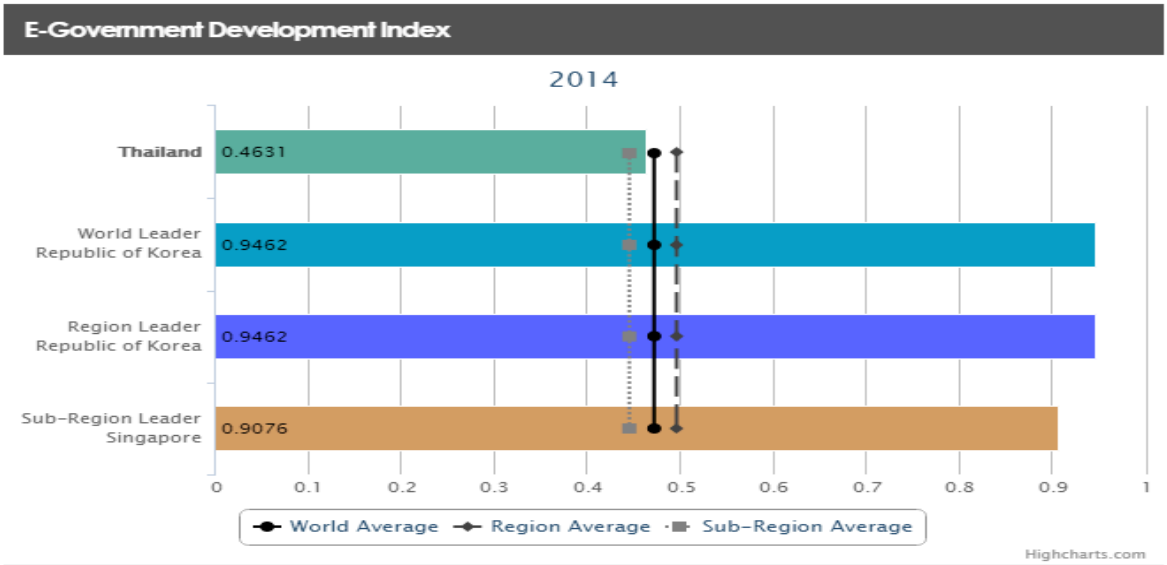


Figure 3.8.1: E-Government Development Overview in Thailand



EGDI Rank	2014	2012	2010	2008	2005	2004
Thailand	102	92	76	64	46	50

Figures 3.8.2: E-Government Development Index Rank of Thailand

3.9 The challenges of E-Government in Thailand

According to (Asanee Kawtrakul et al.2011), The challenges of information exchange among government agencies can be summarized as followed:

-Information Management

-Lack of national data standards

-Absence of standardization guideline

-Lack of data quality: completeness, accuracy, timeliness

-Lack of data standard governance

-Lack of best practices and knowledge sharing in E-Government implementation

-People

-Insufficient IT personnel

-Data ownership and data sharing mindset problems

-Lack of awareness about the necessity of data integration

-Lack of clear understanding about data standardization processes

-Policy and Laws

-Frequent change of political agenda affecting E-Government projects

-No clear rules about hosting for cross

-ministry projects

-Lack of laws and regulations in data sharing

-Insufficient budget for activities such as data collecting, data standardization, data cleansing and data sharing projects

-Data privacy issues

-Technologies

-Lack of data mapping and conversion tools

-Lack of research innovation for E-Government services

-Lack of enterprise service architecture

3.10 E-Government in Vietnam

Vietnam is located on the eastern margin of the Indochinese peninsula and occupies about 331,211.6 square kilometers, of which about 25% was under cultivation in 1987. It borders the Gulf of Thailand, Gulf of Tonkin, and South China Sea, alongside China, Laos, and Cambodia. The S-shaped country has a north-to-south distance of 1,650 kilometers and is about 50 kilometers wide at the narrowest point. With a coastline of 3,260 kilometers, excluding islands, Vietnam claims 12 nautical miles (22.2 km; 13.8 mi) as the limit of its territorial waters, an additional 12 nautical miles (22.2 km; 13.8 mi) as a contiguous customs and security zone, and 200 nautical miles (370.4 km; 230.2 mi) as an exclusive economic zone (Geography of Vietnam 2015).

Viet Nam

Website	National Portal
Region	Asia
Sub-Region	South-eastern Asia
Income *	Lower middle income
Income Value	1,550 USD, GNI per capita
Population	89,047,397
E-Government Development Index	0.4705 Rank 99 of 193
E-Participation Index	0.4902 Rank 65 of 193

* Income data refer to World Bank classification

Figure 3.10.1 E-Government Development Index of Vietnam

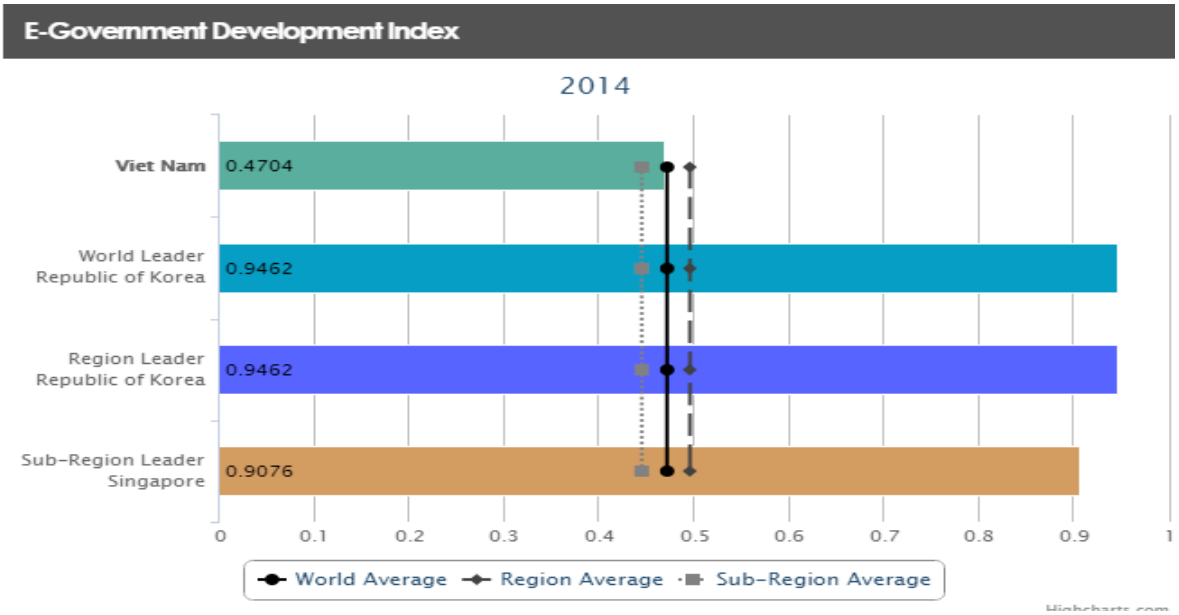


Figure 3.10.2: E-Government Development Index Rank of Vietnam

3.11 The challenges of E-government in Vietnam

According to NGUYEN Tuyen Thanh, it was the most difficult for farmers to access to the Internet, therefore, to e-government services.

The challenges of E-government in Vietnam are found as following:

-Many farmers did not use internet, cable TV etc.

-The nonusers weakness were not resemble to everybody but varied by profession.

-The cost of ICTs

-The gap in infrastructure availability between urban and rural areas

-The students at secondary or high schools were not taught computer because there was no computer lab.

-Lower income.

-The limited of ICT education, English and business skill prohibited them to use the Internet.

-The surfing of Internet in net-shops in communes.

-The old age, timidity and the availability of e-government services and telecom network.

3-12 E-Government in Laos

Laos is a landlocked nation in Southeast Asia, northeast of Thailand, west of Vietnam, that covers 236,800 square kilometers in the center of the Southeast Asian peninsula, is surrounded by Burma (Myanmar), Cambodia, the People's Republic of China, Thailand, and Vietnam.

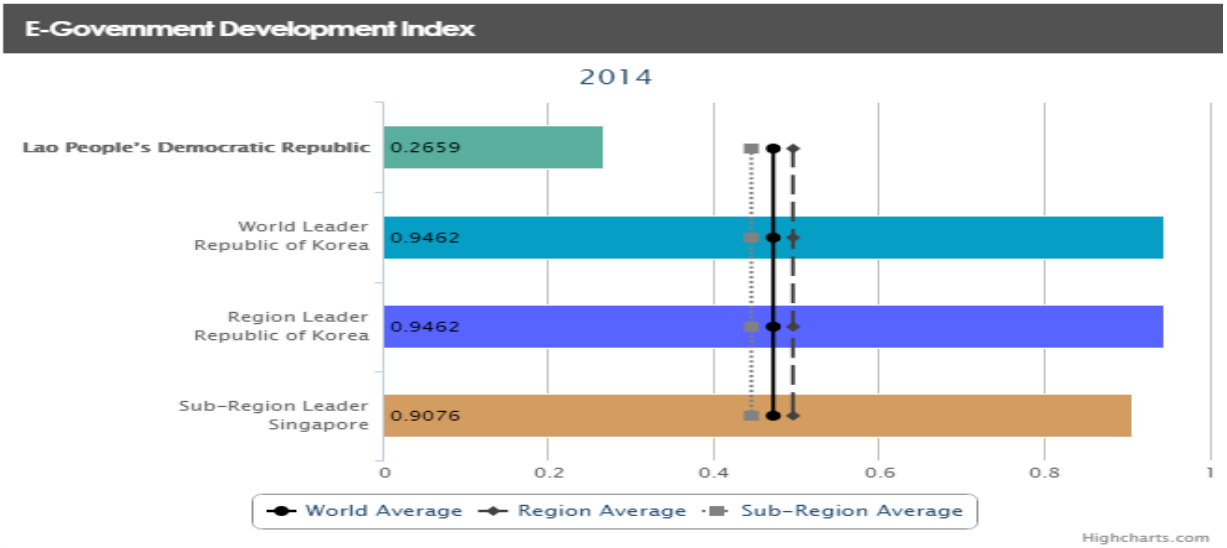
Its location has often made it a buffer between more powerful neighboring states, as well as a crossroads for trade and communication. Migration and international conflict have contributed to the present ethnic composition of the country and to the geographic distribution of its ethnic groups (Geography of Laos 2014)

Lao People's Democratic Republic

Website	National Portal
Region	Asia
Sub-Region	South-eastern Asia
Income *	Lower middle income
Income Value	1,270 USD, GNI per capita
Population	6,395,713
E-Government Development Index	0.2659 Rank 152 of 193
E-Participation Index	0.1961 Rank 137 of 193

* Income data refer to World Bank classification

Figure 3.12.1 E-Government Development Index of Laos



EGDI Rank	2014	2012	2010	2008	2005	2004
Lao People's Democratic Republic	152	153	151	156	147	144

Figure 3.12.2 E-Government Development Index Rank of Laos

3.13 Challenge of E-Government in Laos

According to (Charuda LUANGLATH 2010), the Science Technology and Environment Agency (STEA), Yearly Report of " E-Government Projects in Laos" and Ministry of Communication , Transport ,Post and Construction Department of Post and Telecommunication showed the challenges of E-government in Laos as following:

-Inappropriate definition of the scope. e.g., To install IT equipments and network connection to all districts and 1200 villages in Vientiane capital face with the lack of telecom infrastructure and electricity.

-A gap exists for all e-government projects between the design assumptions, requirements and the reality of the design assumptions, requirements and the reality of the client public agency.

-Partial automation (back-end not computerized).

-Lack of motivation in middle level management and operational staff of Government.

-Lack of IT skills in the district and village level and provincial level.

4. PRACTICAL PART

4.1 E-Government of Cambodia today

The analysis is based partly on literature review and partly on information provided from interviews. The interviewees are denoted in further text with acronyms I1, I2, etc. The complete list of interviewed persons is presented in the Appendix D."

The ESPOT analysis which is an acronym for Education, Social, Political, Organizational and Technological factors, is a strategic tool that is useful in analyzing the E-Government. The ESPOT analysis would be used to understudy the ongoing barriers in Cambodia as some of these factors (barriers) might likely have either a direct or indirect impact(s) on the success or failure of the E-Government in Cambodia. Figure 19 shows a framework of ESPOT Analysis of the E-Government in Cambodia.

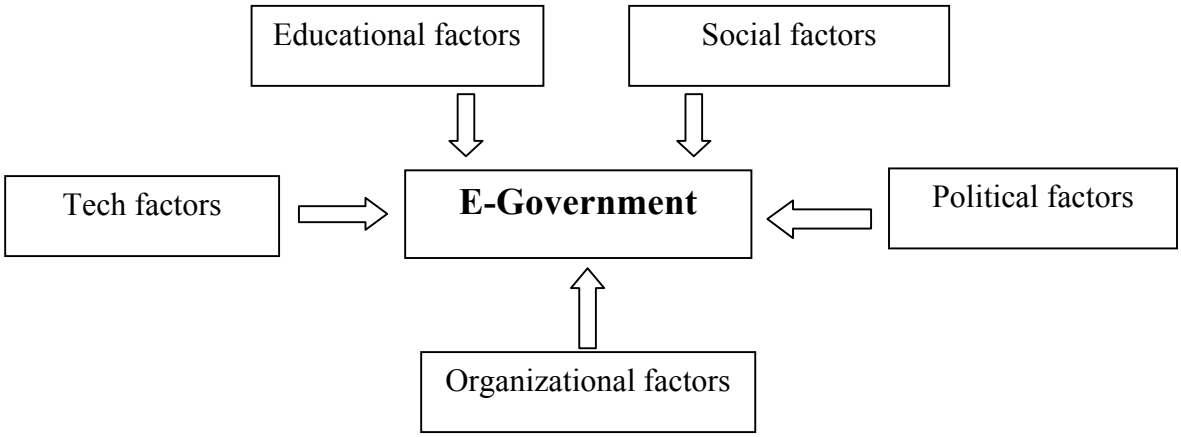


Figure 4.1.1 shows a framework of ESPOT Analysis of the E-Government in Cambodia.
(Source: Author's own work)

4.1.1 Educational factors

Education is the primary important sector that can promote the development of human resource in Cambodia. The royal government of Cambodia has set its strategies to improve this sector through increasing the salary for teacher to 20% in 2014 to reduce the poverty, (Raksa 2012). The poverty pushed people to make corruption for living and inefficient Government bureaucracy causing failure to develop the country. It is effected to education. Students in public from primary to high school and the university are lack of general knowledge and skills.

Teachers give up their career to be businessman or change the workplace from public to private school. It causes the shortage of teacher though every year, the government struggles to recruit enough instructors to keep pace with enrolment rates and replace those who have retired, left teaching or passed away. The standards Cambodia ranks 116th out of 148 nations measured by UNESCO (2011) - a few positions lower than neighboring Laos. Earlier UNESCO estimated that around 2.8% of tertiary aged Cambodians are enrolled in tertiary education. This situation is changing, quite rapidly since 2005, but Cambodia has some catching up to do. So there is no teacher to train students and people about how to access the internet and its usage. It is the education system is weak brings the weak students.

4.1.2 Social factors

Social issues are concerned with the usability by a large variety of people, this implies that the interface should be usable by people with special needs, elderly people, low literacy or non-native language people, etc. The general population, government and business sectors currently have a very limited idea about what E-government is and how to benefit from it. This could be a big barrier for Cambodia to move ahead in building a successful model of E-government according to I1. ICT related skills are important not just for ICT production and service industries, but for the economy as a whole. ICT skills have become a new general skill, like literacy or numeracy, and governments have to implement a range of policies to promote the acquisition of basic and advanced needs skills, I2. The digital divide is an important barrier to E-government, in that people who do not have access to the Internet will be unable to

benefit from online services. Many developing countries suffer from the digital divide, and they are not able to deploy the appropriate ICT infrastructure for e Government deployment, I2.

4.1.3 Political factors

The challenge for the development of E-government is information technology, government, management, and funds. The general vision is important to E-government as a means to co-ordinate and engage agencies The E-government initiatives and processes are highly dependent on government's role and support by ensuring a proper legal framework for their operation. The introduction of E-government processes and service will remain minimal without a legal equivalence between handout processes and digital. It also serves to engage political leaders and to impress upon them the benefits of E-government. A specific vision is not a goal in itself, but a means to achieve priorities of policy, I1. The application of E-Government not only requires the deep commitment of top management but also requires huge capital investment and operational expenditures. The top leader shows enthusiasm and initiatives in the implementation of E-Government due to external availability of funds but gradually they lose their interest due to lack of available financial resources. Public sectors organizations generally show resistance in the huge financial investment to initiate E-Government. The government delayed project because of bureaucratic procedures, corruption and financial limitation. It is necessary that all paths of E-government is involved with the top leaders in implementation, I3.

4.1.4 Organizational factors

The organizational challenges is facing with the E-government implementation that could be briefly abridged for having the supportive and suitable of management structure. The lack of training will be a significant challenge. In the future, we will need the flexible strategy to meet the evolving needs of people and it should be planned to ensure the E-government's sustainability. So we should have the training for employees to be successful in the implementation of E-government, I4.

4.1.5 Technological factors

The main challenges for E-government is technology; ICT infrastructure is required to enable sharing information through the new channels for communicating and delivering the new services, I1. It is general for different government agencies to have different software and hardware that allow the network, interoperate and integrate mutually. This can make E-government difficult to implement. It also requires the participation of government agencies to share their data to serve people or E-government system.

Therefore, IT standards are needed to avoid any hardware and system barriers that would hinder the implementation of E-government systems, I5. One of the most significant challenges for implementing E-government initiatives is computer security. For E-government activities, service continuity is critical not only for building the people confidence and trust but also for the availability and delivery of services. Nevertheless, the risks of fraud and misuse of sensitive data are worries too to share information between agencies. Privacy shows a challenge to the acceptance and implementation of e-government initiatives, I4.

4.2 The barriers and the opportunities of E-Government in Cambodia

The analysis of this section is based on stakeholders' perspectives bearing in mind that adoption barriers and challenges and opportunities of E-Government in Cambodia. The author of this thesis would like to present the major factors would be highlighted and briefly discussed according to the survey.

4.2.1 Financial budget

Cambodia is a developing country which is living with the aids from World Bank, ADB and European communities, I5. To develop the country, the royal government always announce to the powerful countries such as china, USA, or other alliances to ask for supporting and funds to build the infrastructure likes roads, bridge and general affair of public ministries. E-government is a part among them and is under the plan to create for the new election 2018 to

increase transparency, reduce corruption and fraud the vote. Cambodia faces the shortage of finance to develop the country. When those donors cute the aid, the government gets stuck for economic and trade activities. Some officials from the public ministry conduct corruption and there is no any actions to crack down this legal offensive. The ministry of finance is criticized to corruption and stealing the national budget for family and the party, (I8). A few views on trust as expressed by respondents based on the author's survey are itemized below:

Respondent A- "The government has not enough budget to build E-government"

Respondent B-"It is unbelievable the E-government is established by top leader because they are facing budget problem"

Respondent C-"E-government cannot process if there is problem with the financial budget. Actually the national assembly has approved the budget but the officials make corruption. So it is just a dream"

Respondent D-"Financial budget is the first important point that government has no ability to collect as he announced. It is needed to increase the budget first and be ready to add more expense for maintenance."

4.2.2 Unaffordable cost of ICT

The unaffordable cost of ICTs is a forbidding barrier to poor people. In the 3 provinces such as Kompong Speu, Kandal, Kompong Chhning, the income from farming was too low, about 40,000 Riel per month ($10) compared with Internet installation fee from 200,000 Riel ($50) to 400, 000 Riel ($100). (The survey 10 Feb 2015 by author). There are only rich people can connect and install the internet for home use because they can buy computer, laptop about 4 Million Riel ($1,000), I6. Many households are very poor or live in slum. Some of the deep concerns about the cost expressed by respondents from the author's survey as following:

Respondent A-"People wants to use ICT but no money to support because the income is low"

Respondent B-"Internet connection is expensive. The poor people cannot spend too much money to pay for the fee. Those save money for daily life"

Respondent C-"The cost for internet is higher than the income. It is about 48,000 Riel ($12) per month and our income is only 20,000 Riel but we keep it for food"

Respondent D-“We save money for life not for internet. But we want to know the news from the internet so we share money with neighbors to connect it.”

4.2.3 The infrastructure gap and shortage

Actually, E-government can connect from the city to the province because there have the existing poles but the internet cannot be reached for the rural area, I7. The gap in infrastructure availability between city and rural areas became larger. Meanwhile the telecommunication infrastructure, including Internet, telephone, cable TV, quickly developed and became more available in the city, in communes like Oral village, Kompong speu province , Internet service is not available. The nearest Internet shop to Kompong Speu Market for example, was 30km away. Students at high or secondary schools were not taught computer because there was no computer school there. Inadequate communications infrastructure with poor quality of service (QoS) delivery by Ministry has not equally helped matters. Likewise, service downtimes by operators which could be due to power cuts or technology failures are quite common in the country. Incessant power outages are very rampart in Cambodia. For firms to avoid service interruptions, they have to purchase power from VN and Laos to keep their businesses running. Even some villages in Cambodia are yet to be connected to the national grid and these villages live in darkness. Even where there are existing road networks in place, most of these road networks are begging for rehabilitation since the roads have turned into death traps. Bad roads and inadequate power supply have cut off so many local communities from a beehive of economic activities in Cambodia, the same can be truly said the company will be bankrupted due to the infrastructure shortage. To corroborate the author’s assertions, listed below are some of the views as expressed by respondents (Author’s Survey):

Respondent A- “infrastructural problems (power supply and internet connectivity) need to be firstly resolved”

Respondent B-“technology issues (Unavailability of network in some rural areas.”

Respondent C-“resolving all networks and infrastructural challenges”

Respondent D-“network fluctuations and failure, Infrastructural challenges”

Respondent E- “support infrastructure must be in place”

4.2.4 Education (IT literacy)

The high literacy level is a big gold for any meaningful development in any nation given that we live in a globalized knowledge-based community. Many literate Cambodian still find it difficult to adapt themselves to modern technology though this trend seems to be changing amongst the young generation. They lacks the basic IT skills. Despite the fact that so many rural dwellers have access to the mobile phones, they hardly could use it on their own without the help from others. This attitude is risky when it comes to E-government communication. Likewise, a majority of the poor who are uneducated see no value why they should save their money for IT study. Some of the views as expressed by respondents in the author's survey are listed below:

Respondent A-"IT illiteracy level is still very high."

Respondent B–"high illiteracy rate is one of the E-government development challenges in Cambodia"

Respondent C-"low literacy level (Potential users need to be more enlightened)"

Respondent D-"low level of literacy i.e. high illiteracy especially in the 3 provinces"

Respondent E -"educating the people on the benefits of E-government"

4.3 The opportunities of E-Government in Cambodia

According to the questionnaires survey on the opportunities by the author, the outcome shows that the most of respondents have willingness to learn new thing, IT as well as E-government though it is still under planned. They want to get the training for ICT. There have only 2 or 3 respondents are not interested because they are elder and low education of IT. Actually they can access internet for chatting through facebook via the smart phone and computer and they can impress their feeling and opinions against government and its opposite party. Citizens know the funds worth about $28 million (2009) from abroad to support and promote information technology in Cambodia. Those funds are under control by the ministry of economic and finance. Nowadays the funds are increasing about $40 Million (2015) for IT field. At the end of 2015, Cambodia will be integrated with ASEAN community urges younger people to improve their IT skill and foreign languages for communicating, running business,

trading and researching. Potential countries with IT experts and professional will come to invest in Cambodia and bring the new advance technology. Cambodia will spread out those information to the whole. Therefore, E-government will reduce the corruption, faster communication and transparency.

5. RESEARCH FINDINGS AND DISCUSSION

A total of 18 questionnaires was received from the sample survey. The respondents were randomly selected from the 40 IT students, 5 IT professional teachers, and 2 officials to make up the sample survey. There is about 10 percent of the questionnaire was based on hand-delivery to respondents while about 90 percent constituted online delivery. 3 of the 18 questionnaires were semi-structured interview questions form E-government.

The collected data was analyzed using statistical software (SPSS) in a bid to come up with descriptive statistics, and which would be readily used to summarize the outcome of the survey data. Inferences were drawn from the survey data statistics. **5.1 Demographic profile of survey data**

From the survey data, 87.50 percent (35) of the respondents were male while 12.50 percent (5) constituted the female gender, and this is as depicted in figure 5.1.1.

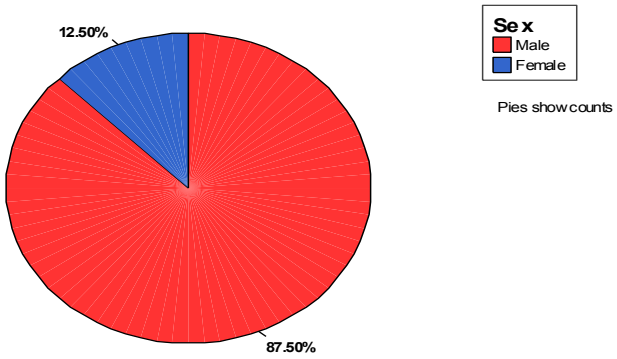


Figure 5.1.1 Gender Distribution (source: Author survey)

The age distribution of respondents is as shown in figure 5.1.2. A higher proportion 67 percent of the respondents was found to belong to those whose ages were between 19-25 years. This in

a way is evident of the youthful population in Cambodia. About 21 percent of respondents were aged 26-30 years, 5 of the respondents were aged 31-40.

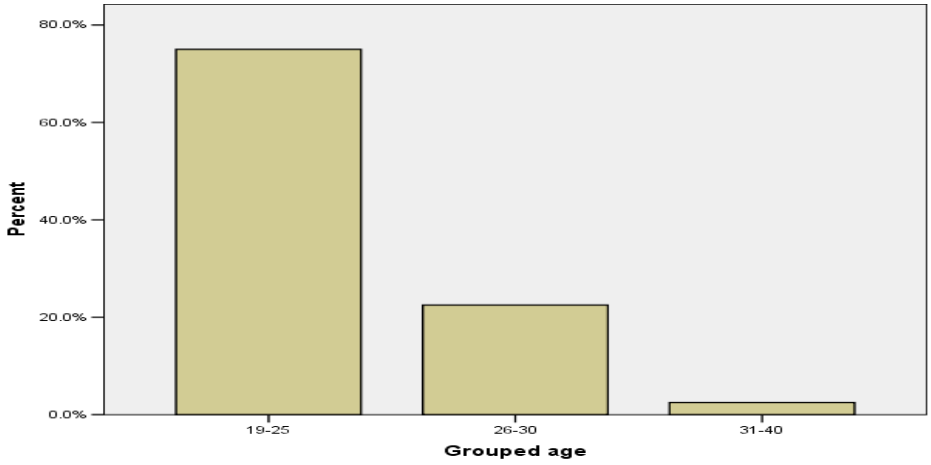


Figure 5.1.2 Grouped age distribution (source: author survey)

The occupational status of respondents is as shown in figure 5.1.3. A higher proportion (60 percent) of the respondents are working for private company while 37.50 percent is student and 2.50 percent is public sector. The survey data did reflect the fact that most working class citizens of Cambodia work within the private company.

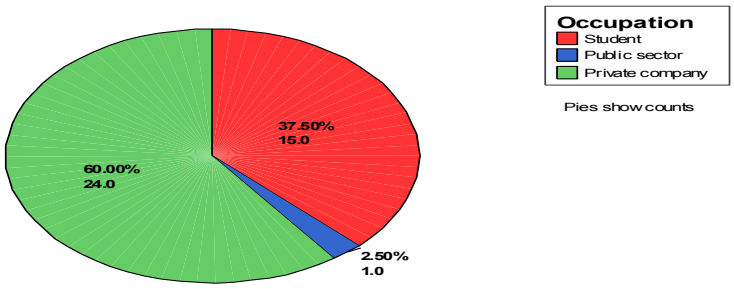


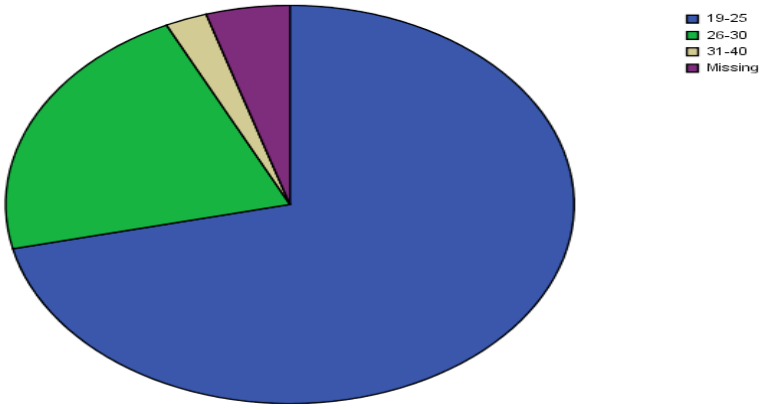
Figure 5.1.3 Occupational status (source: author survey)

5.2 Analysis of age group and the use of E-government

From the sample survey, it is evident that many Cambodian people aging from 19-25 of 13 respondents equally to 43 percent is "very likely and almost certainly" while there is 15 respondents equally to 50 percent is " likely" and there are 2 respondents equal to 6.7 percent is " not likely" to contact with public agencies or officials in the future. There is 6 respondents aging from 26-30 years old is "likely" while another 2 equally to 22.2 percent is " likely" and there is only 1 respondents (11.1%) is " not likely" to contact the public agencies or public officials. Beside them, there is a grouped age from 31-40, 1 respondents equal to 100 percent is " very likely and almost certainly" will contact the agencies or officials in the future.

Figure 5.2.1 shows the age group and the usage of E-government amongst respondents.

The grouped age



The usage of E-government

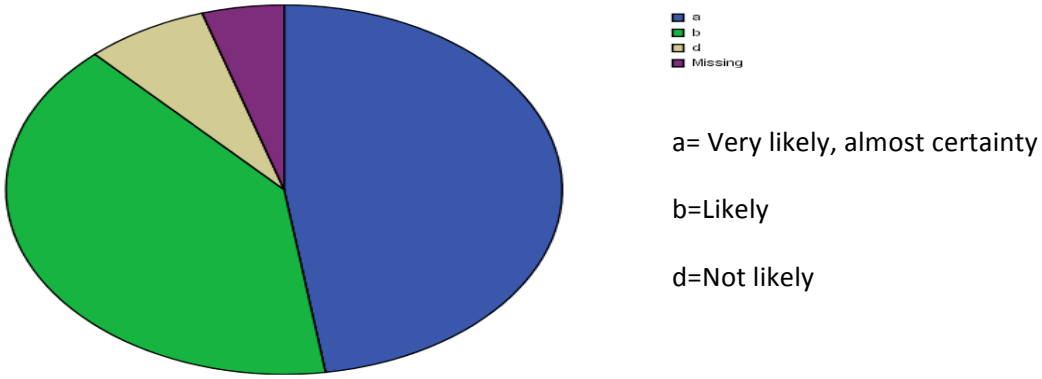


Figure 5.2.1 shows the age group and the usage of E-government (source: the author survey)

5.3 Analysis of gender and the use of E-government

According to the survey, there is 57.1 percent of male respondents (20) is "Very likely, almost certainty" while there is 37.1 percent of male respondents (13) is "likely" and there is 5.7 percent of male respondents (2) is "not likely" to contact with public agencies or officials. Beside them, there is 80 percent of female respondents (4) is "likely" while there is only 1 percent is "not likely" to contact with the public agencies or officials in the future.

Figure 5.3.1 shows the gender and the use of E-government.

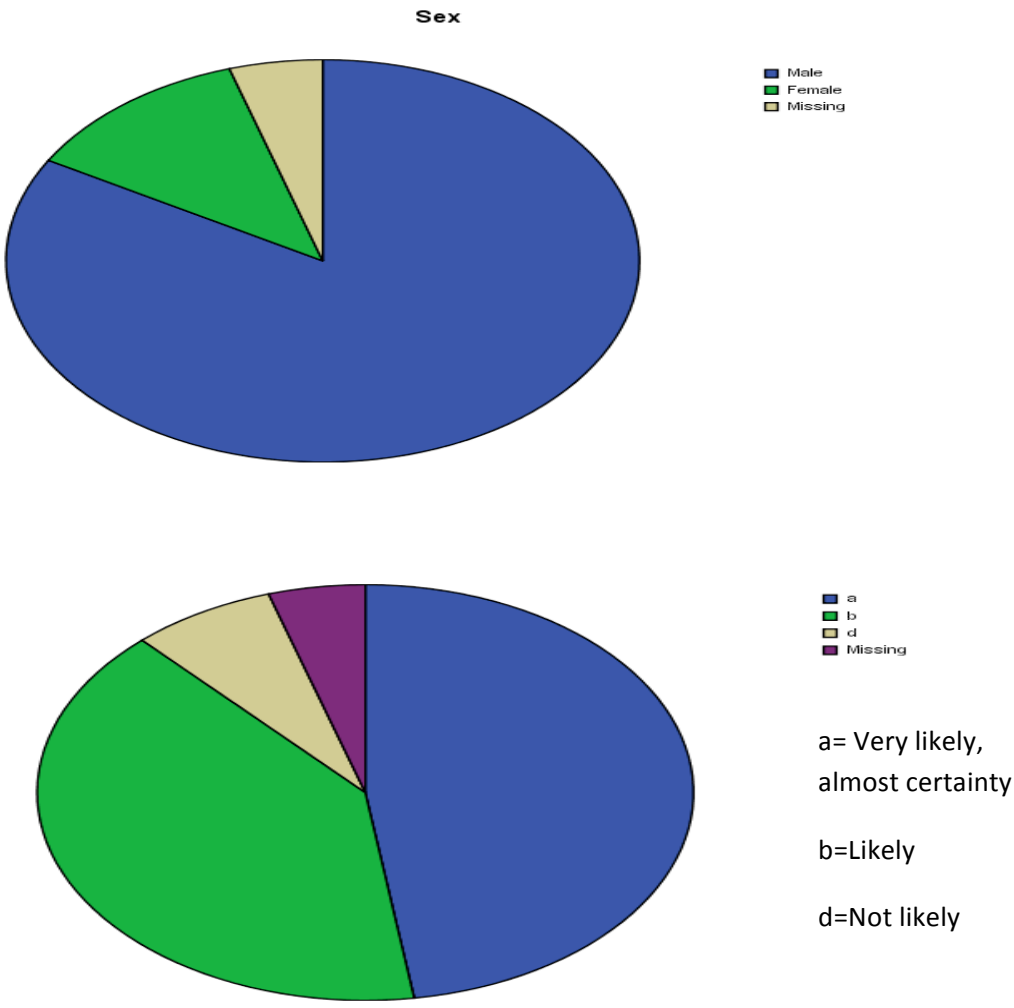


Figure 5.3.1 shows the gender and the use of E-government. (Source: author survey)

5.4 Analysis of the use of internet and the use of e-government

Owing to the author's survey indicates through figure 5.4.1 that there are 10 respondents (43.5%) is "very likely, almost certainly" and there are 11 respondents (47.8%) is "likely" while only 2 respondents (8.7%) is "not likely" to use the internet "daily". There are 6 respondents (46.2%) is "very likely, almost certainly" and there are 6 respondents (46.2%) is "likely" while only 1 respondents (7.7%) is "not likely" to use the internet "several times a week". There are 4 respondents (100%) is "very likely, almost certainly" use the internet "several times a month".

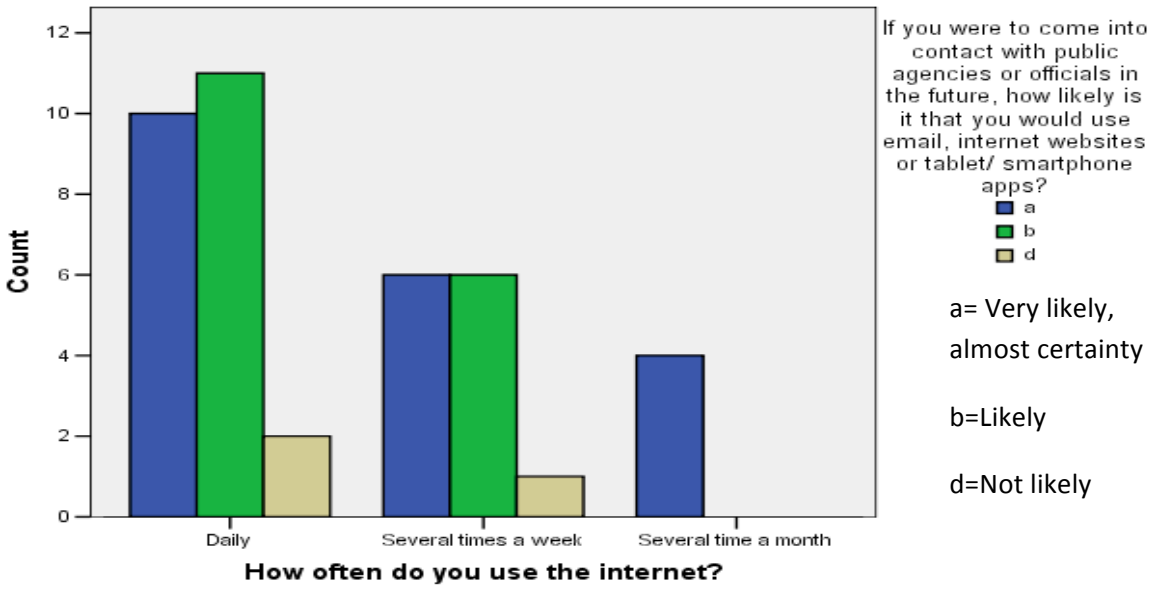


Figure 5.4.1 the use of internet and the use of E-government. (Source: author survey)

6. Conclusion

The thesis researches on the E-government challenges and opportunities in Cambodia reaches for the end. From the theory knowledge showed that the internet user increased from 0.01 percent in 1997 and a maximum of 6 percent in 2013.The internet subscriptions in Cambodia increases from 3.86 million at the end 2013 to over 5 million at the end of 2014. It is quiet similar to the author survey. There are 85.7 percent of respondents used the internet. It shows the number of internet user is growing up in 2015. Furthermore, the current state of E-government in Cambodia is not so good because citizens used the internet or online in the other purpose like chatting through Facebook. But for contacting with public agencies or officials in the future, 95.2 percent of citizens would like to go to see face to face. People thinks that seeing directly with the officials is more effective than contracting through the phone or online. Anyway, the challenges from the theory are shown as the robust information network, the connection of all 24 provinces to the central government's information-sharing system via a fibre-optic backbone, the lack of infrastructure, the narrow the gap network between provincial offices and Phnom Penh city, and no internet connection. The opportunities of E-government are the project of E-government will be deployed and developed around the city and the whole country, the computer training, the network connection in the department, the implementation of IT development, the system online installation by the ministries, the penetration of the internet effectiveness, the additional assistance from South Korea, the establishment of Provincial Administration Information System (PAIS), new technology satellite using Israeli technology, Gilat Satellite Networks technology. Let's see the challenges and barriers from the author survey. The challenges have found as following: the educational, social, political, organizational and technological factors (ESPOT). The barriers are the financial budget, unaffordable cost of ICT, the infrastructure gap and shortage, and the education (IT literacy). The opportunities are the willingness of people to learn, the funds worth about $28 million (2009) and $40 million (2015) from abroad, the ASEAN community integration end of 2015, the IT experts and professional will come to invest in Cambodia and bring the new advance technology.

The author is going to summary the outcome of the survey comparing with the theory through descriptive way. It shows that it is not much different because the study is realities and actual. The author would like to give the solution and make the suggestion in order to reduce and reach for eliminating the challenges and barriers for E-government as following:

To increase the IT understanding and improvement for citizens, government should create the IT training courses at public and private school. To avoid the political problem, the government officials should be neutral among any parties and adhere justice not bias, providing the ICT training for all citizens who are willingness to learn, open the budget package from abroad to deploy , develop and build the poles of internet connection. Therefore, the gap of infrastructure will become smaller and smaller, punishing strictly the legal offenders who commits corruption, cybercrime, structuring the organizational system. If comparing with the neighboring countries like Thailand, Vietnam and Laos, Cambodia has no much challenges or barriers. Furthermore, Cambodia has a lot of available places for developing especially IT business field.

6.1 Limitations and Need for Further research

The author knows the fact that this research work is limited in at least two ways. Firstly, the sample size used is relatively small compared to the Cambodian population. Secondly, the author would have loved to be on the grounding Cambodia to get firsthand information from respondents and but this was not the case due to cost implications and time limitation. All these limitations have not in any watered down the quality and contribution of this research work to the generation. The author would expect that a further research will be carried out on this topic though with a larger sample size to either as certain or disprove some of the assumptions and observations stated in this research work.

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APPENDICES

APPENDIX A:

Questionnaire on challenges and opportunities of E-government in Cambodia

This questionnaire serves only for an academic survey, every information you shall give will serve the main purpose of this academic work on challenges and opportunities of E-government in Cambodia. As such, please feel free to make your genuine response. The findings of this academic research would be published in an academic journal. I assure you that all the information submitted would be treated in Strict confidence. Thanks

* Required

1/ Gender*

- a. Male
- b. Female

2/ Your age is *

- a. 18 or less
- b. 19 -25
- c. 26-30
- d.31-40
- e.40+

3/ You are *

- a. Cambodian currently living in Cambodia
- b. Cambodian currently living abroad
- c. Foreigner currently living in Cambodia

4/ Educational status*

- a.Basic School (Primary School)
- b.Secondary (high) School
- c.Bachelor's / Undergraduate
- d.Master's
- e.PhD

5/ Occupation*

- a.Student
- b.Public sector
- c.Private company
- d.Maternity leave
- e.Retired
- f.Other

6/ How often do you use Internet?*

- a. Daily
- b. Several times a week
- c. Several time a month
- d. Less often

7/ Where do you access the Internet the most:*

- a. Home
- b. Work/school
- c. Public places (library, office, etc.)
- d. Elsewhere (please specify)

8/ How do you access the Internet the most:*

- a. PC
- b. Laptop/netbook/ultrabook
- c. Smartphone
- d. Tablet
- e. Different (please specify)

9/ How would you rate your skills in using Internet?

- a. Poor (e.g. I can barely start web browser and open search engine or my e-mail box)
- b. Fair (e.g. I can search for information, communicate basically via e-mail and Skype)
- c. Good (e.g. I am able to fill-in and submit applications at various web pages, make advanced searches, evaluate information and use advanced functions of e-mail and communication programs)
- d. Excellent (e.g. I am a professional using the Internet and its services on daily basis, or developing web pages or applications for my employer or customers)

10/ Have you ever used the Internet to communicate with a public office or institution (e.g. local municipality, tax authority, public school, hospital, etc.)*

- a.Yes
- b. No

11/ If you answered " yes " to question No.10, please answer for which purposes have you used the Internet:*

- 1. LE1: Enrolling in higher education and/or applying for a study grant
- 2. LE2: Starting a procedure for a disability allowance
- 3. LE3: Looking for a job
- 4. LE4: Becoming unemployed
- 5. LE5: Retiring
- 6. LE6: Applying for a driver's licence (or renewing an existing one)
- 7. LE7: Registering a car
- 8. LE8: Buying, building or renovating a house
- 9. LE9: Moving and changing address within one country
- 10. LE10: Moving or preparing to move to another country (ex. to study, work, retire...)
- 11. LE11: Needing a passport to travel to another country
- 12. LE12: Declaring the birth of a child and/or applying for a birth grant
- 13. LE13: Marrying or changing marital status
- 14. LE14: Death of a close relative and/or starting an inheritance procedure
- 15. LE15: Starting a new job
- 16. LE16: Making a doctor's appointment in a hospital
- 17. LE17: Reporting a crime (smaller offences, e.g. theft, burglary etc.)
- 18. LE18: Declaring income taxes
- 19. LE19: Making use of the public library

12/ Please evaluate the services that you used (question no. 10) according following criteria *

1- certainly agree, 2 – rather agree, 3 – neutral or don't know, 4 - rather disagree, 5 – certainly disagree

	certainly agree	rather agree	neutral or don't know	rather disagree	certainly disagree
a. Accuracy (e.g. correct data input, completeness of request, etc.)					
b. Advantages (e.g. faster processing of the request, more options in the application, etc.)					
c. Speed of response (e.g. the service responses fast to your interaction, notifications after submission)					
d. How the service meets requirements (e.g. the service does what you expected to do)					

	certainly agree	rather agree	neutral or don't know	rather disagree	certainly disagree
e. User friendliness (e.g. colour contrast, legibility of the web page, page navigation, size of font, etc.)					
f. Satisfaction (e.g. how are you satisfied with the use of the service)					
g. Safety (e.g. how do you feel safe when using the service in terms of data protection, treating personal and sensitive date, data storage)					
h. Navigation (e.g. how easy is to navigate on the page)					
i. Learnability (to what					

	certainly agree	rather agree	neutral or don't know	rather disagree	certainly disagree
extent does the page help you to understand its control, e.g. user help, manual, guidelines, chat with administrator, feedback to users)					

13/ If you answered "no" to question No.10, please answer what are the reasons for not having used e-mail, Internet websites or tablet / smartphone apps to come into contact with public agencies or officials?*

- a. I was not aware of the existence of relevant websites or online services
- b. I preferred to have personal contact to get what I wanted/needed
- c. I expected to have things done more easily by using other channels
- d. I did not use the Internet because of concerns about protection and security of
- e. Personal data
- f. I did not have the skills or did not know how to get what I wanted/needed via the Internet
- g. I could not find or access the information or services I wanted/needed
- h. The relevant services will require personal visits or paper submission anyway
- i. I tried but I abandoned the service, because the service was too difficult to use
- j. I tried but I abandoned the service, because the service's website or application had technical Failures.
- k. I did not expect to save time by using the Internet to get what I wanted/needed
- l. Other reasons

14/ If you were to come into contact with public agencies or officials in the future, how likely is it that you would use e-mail, Internet websites or tablet / smartphone apps? *

- a. Very likely, almost certainly
- b. Likely
- c. Neither likely nor unlikely
- d. Not likely
- e. Not very likely, almost certainly not

15/ If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact? *

- a. In-person, face-to-face
- b. Mail, posted letter, fax
- c. Telephone (fixed line or mobile)
- d. SMS (texting)
- e. E-mail
- f. Internet websites
- g. Tablet / smartphone applications

16/What are the key challenges and barriers to e-government in Cambodia?

kindly express your opinion*

17/How do you think if the E-government is developed in Cambodia?

Kindly express your opinion*

18/What means to create the awareness of E-government to public?

Kindly express your idea*

APPENDIX B:

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	29	69.0	72.5	72.5
	Female	11	26.2	27.5	100.0
	Total	40	95.2	100.0	
Missing	System	2	4.8		
Total		42	100.0		

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	40	95.2	100.0	100.0
Missing	System	2	4.8		
Total		42	100.0		

Grouped age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19-25	30	71.4	75.0	75.0
	26-30	9	21.4	22.5	97.5
	31-40	1	2.4	2.5	100.0
	Total	40	95.2	100.0	
Missing	System	2	4.8		
Total		42	100.0		

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	40	95.2	100.0	100.0
Missing	System	2	4.8		
Total		42	100.0		

How often do you use the internet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	36	85.7	90.0	90.0
	Several times a week	3	7.1	7.5	97.5
	Several time a month	1	2.4	2.5	100.0
	Total	40	95.2	100.0	
Missing	System	2	4.8		
Total		42	100.0		

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	40	95.2	100.0	100.0
Missing	System	2	4.8		
Total		42	100.0		

How often do you use the internet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	36	85.7	90.0	90.0
	Several times a week	3	7.1	7.5	97.5
	Several time a month	1	2.4	2.5	100.0
	Total	40	95.2	100.0	
Missing	System	2	4.8		
Total		42	100.0		

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	40	95.2	100.0	100.0
Missing	System	2	4.8		
Total		42	100.0		

New

Statistics

		Sex	If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?
N	Valid	40	40
	Missing	2	2

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	29	69.0	72.5	72.5
	Female	11	26.2	27.5	100.0
	Total	40	95.2	100.0	
Missing	System	2	4.8		
Total		42	100.0		

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	40	95.2	100.0	100.0
Missing	System	2	4.8		
Total		42	100.0		

Statistics

		Grouped age	If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?
N	Valid	40	40
	Missing	2	2

Grouped age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19-25	30	71.4	75.0	75.0
	26-30	9	21.4	22.5	97.5
	31-40	1	2.4	2.5	100.0
	Total	40	95.2	100.0	
Missing	System	2	4.8		
Total		42	100.0		

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	40	95.2	100.0	100.0
Missing	System	2	4.8		
Total		42	100.0		

Statistics

		How often do you use the internet?	If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?
N	Valid	40	40
	Missing	2	2

How often do you use the internet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	36	85.7	90.0	90.0
	Several times a week	3	7.1	7.5	97.5
	Several time a month	1	2.4	2.5	100.0
	Total	40	95.2	100.0	
Missing	System	2	4.8		
Total		42	100.0		

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

Chi square test

Sex

	Observed N	Expected N	Residual
Male	29	20.0	9.0
Female	11	20.0	-9.0
Total	40		

If you were to come into contact with public agencies or officials in the future, how likely is it that you would use email, internet websites or tablet/ smartphone apps?

	Observed N	Expected N	Residual
a	20	13.3	6.7
b	17	13.3	3.7
d	3	13.3	-10.3
Total	40		

Test Statistics

	Sex	If you were to come into contact with public agencies or officials in the future, how likely is it that you would use email, internet websites or tablet/ smartphone apps?
Chi-Square(a,b)	8.100	12.350
df	1	2
Asymp. Sig.	.004	.002

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
How often do you use the internet?	40	1	3	1.13	.404
If you were to come into contact with public agencies or officials in the future, how likely is it that you would use email, internet websites or tablet/ smartphone apps?	40	1	4	1.65	.834
Valid N (listwise)	40				

Grouped age

	Observed N	Expected N	Residual
19-25	30	13.3	16.7
26-30	9	13.3	-4.3
31-40	1	13.3	-12.3
Total	40		

If you were to come into contact with public agencies or officials in the future, how likely is it that you would use email, internet websites or tablet/ smartphone apps?

	Observed N	Expected N	Residual
a	20	13.3	6.7
b	17	13.3	3.7
d	3	13.3	-10.3
Total	40		

Test Statistics

	Grouped age	If you were to come into contact with public agencies or officials in the future, how likely is it that you would use email, internet websites or tablet/ smartphone apps?
Chi-Square(a)	33.650	12.350
df	2	2
Asymp. Sig.	.000	.002

How often do you use the internet?

	Observed N	Expected N	Residual
Daily	36	13.3	22.7
Several times a week	3	13.3	-10.3
Several time a month	1	13.3	-12.3
Total	40		

If you were to come into contact with public agencies or officials in the future, how likely is it that you would use email, internet websites or tablet/ smartphone apps?

	Observed N	Expected N	Residual
a	20	13.3	6.7
b	17	13.3	3.7
d	3	13.3	-10.3
Total	40		

Test Statistics

	How often do you use the internet?	If you were to come into contact with public agencies or officials in the future, how likely is it that you would use email, internet websites or tablet/ smartphone apps?
Chi-Square(a)	57.950	12.350
df	2	2
Asymp. Sig.	.000	.002

If you were to come into contact with public agencies or officials in the future, by which of the following means would you prefer to interact?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	40	95.2	100.0	100.0
Missing	System	2	4.8		
Total		42	100.0		

APPENDIX C: E-government development South-Eastern Asia

(Source: United Nation E-government Survey 2010)

Country	E-government development index value		World e-government development ranking	
	2010	2008	2010	2008
Singapore	0.7476	0.7009	11	23
Malaysia	0.6101	0.6063	32	34
Brunei Darussalam	0.4796	0.4667	68	87
Thailand	0.4653	0.5031	76	64
Philippines	0.4637	0.5001	78	66
Viet Nam	0.4454	0.4558	90	91
Indonesia	0.4026	0.4107	109	106
Cambodia	0.2878	0.2989	140	139
Myanmar	0.2818	0.2922	141	144
Lao People's Democratic Republic	0.2637	0.2383	151	156
Timor-Leste	0.2273	0.2462	162	155
Sub-regional average	0.4250	0.4290		
World average	0.4406	0.4514		

APPENDIX D: LIST OF INTERVIEWEES

I1	Interviewee 1	Teacher of IT
I2	Interviewee 2	Teacher of IT
I3	Interviewee 3	IT department of Ministry of Education
I4	Interviewee 4	Teacher of IT
I5	Interviewee 5	Teacher of IT
I6	Interviewee 6	Chief of the Village
I7	Interviewee 7	Officials of Ministry of Telecommunication
I8	Interviewee 8	Teacher of IT