付属資料

6. Pan localization phase I - FOSS Training

NiDA | OCM The Office of the Council of Ministers | Royal Government of Cambodia

Angkor Wat, Cambodia, 7th World Heritage

National ICT Development Authority (NiDA)

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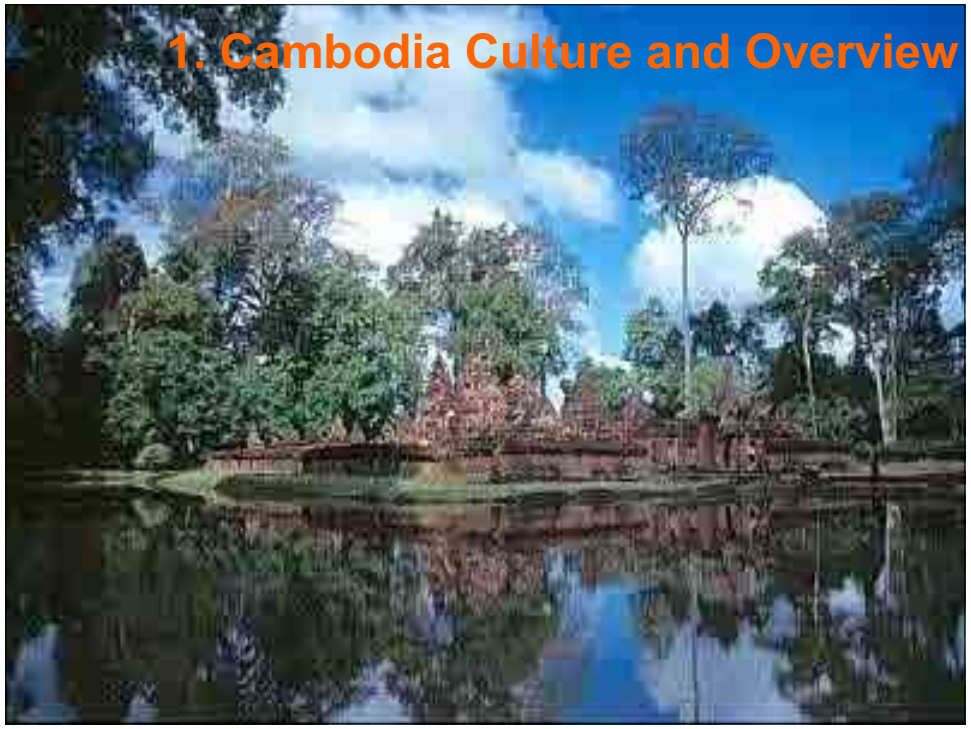
1 Overview of Cambodia
2 NiDA & Policy Formulation
3 FOSS Master Plan
4 State of Technology for the Localization
5 Implementation Strategy
6 Motivation
7 Networking and Partnership
8 Certification
9 Curriculum Development




ANGKOR WAT AND ANGKOR THOM


Phnom Penh, the capital city of Kingdom of Cambodia




Royal Palace



National Museum

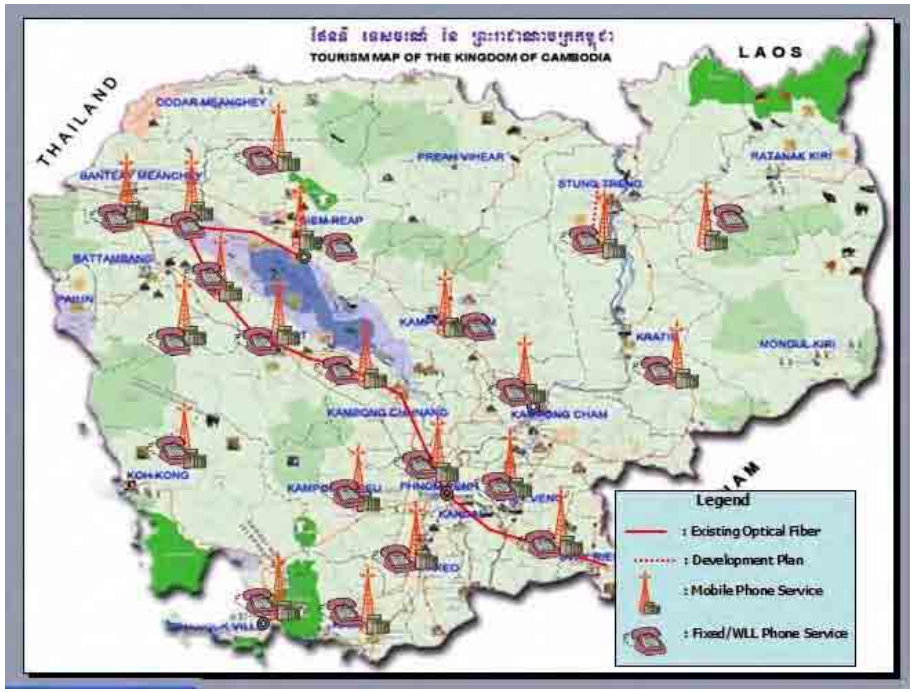


Situation Analysis

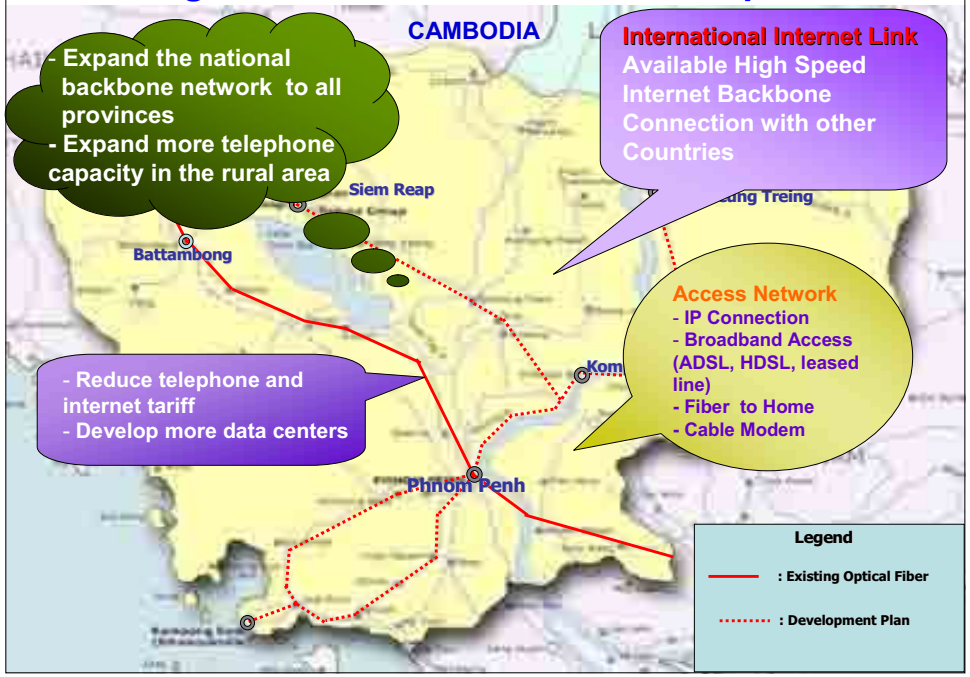
- Population: 13.8 million (NIS 2005)
- Students in General Education: 3,344,063
- Schools: 8, 648 (Classrooms: 80, 019)
- Educational Staff: 94, 723
- Higher Institutions: 56 (Public: 21 & Private: 35)
- Official Language KHMER (CAMBODIAN)
- Literacy about 85%
- English Literacy less than 10%
- PC Penetration about 6%
- Internet Subscriber 0.2%
- Mobile Phone subscriber about 9%
- Telephone Operator 9
- ISP 10

Situation Analysis

- Keyboard, Computer Font – 30 different fonts, now UNICODE in place working
- Shorting
- Searching
- Collation
- Dictionary
- Translation Tools: PoEdit and Kebabel on KDE and GNOME
- Curriculum Development
- Training Material
- Software Distribution



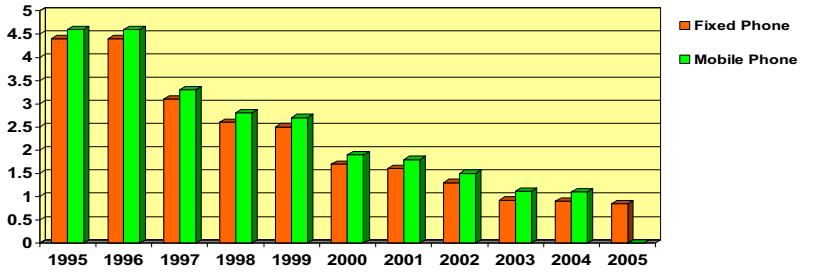
Existing & Future ICT Infrastructure Requirement



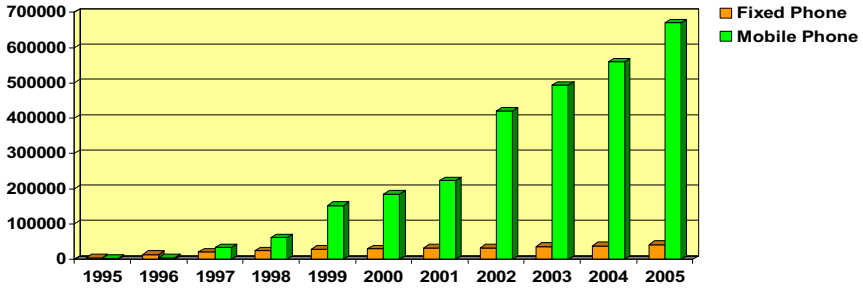
Telephone Service Provider

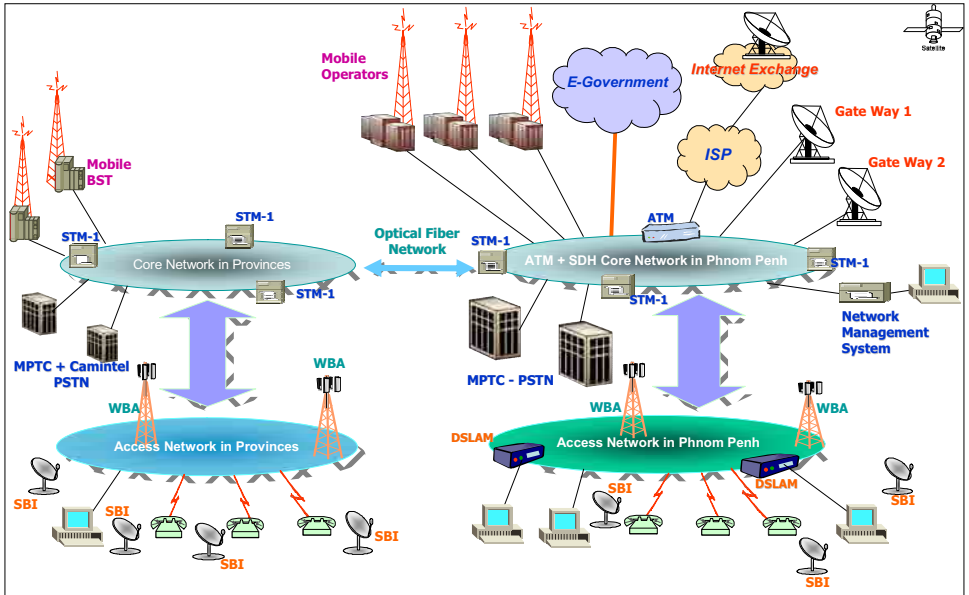
- **MPTC**:Ministry of Posts and Telecommunications of Cambodia **(1993)**, Fixed Phone, International gateway
- **Casacom (1992)** : Mobile Phone
- **Camtel (1992)** : Mobile Phone
- **Camintel (1993)** : Fixed Phone and Wireless local loop(WLL)
- **Tricelcam (1993-1999)**: Mobile Phone
- **Camshin (1993)** : Wireless local loop (WLL)
- Camshin **(1998)** Mobile Phone
- **CamGSM (1997)** : Mobile Phone
- **AZ (2004)** : Mobile Phone
- **AngkorNet (2006)** : Mobile Phone

Telephone Tariff (International Call USD/minute)



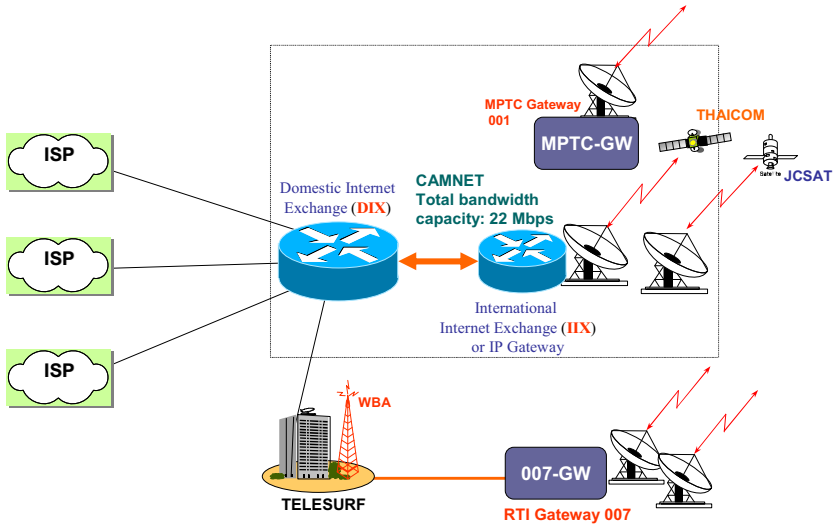
Number of Telephone Subscribers



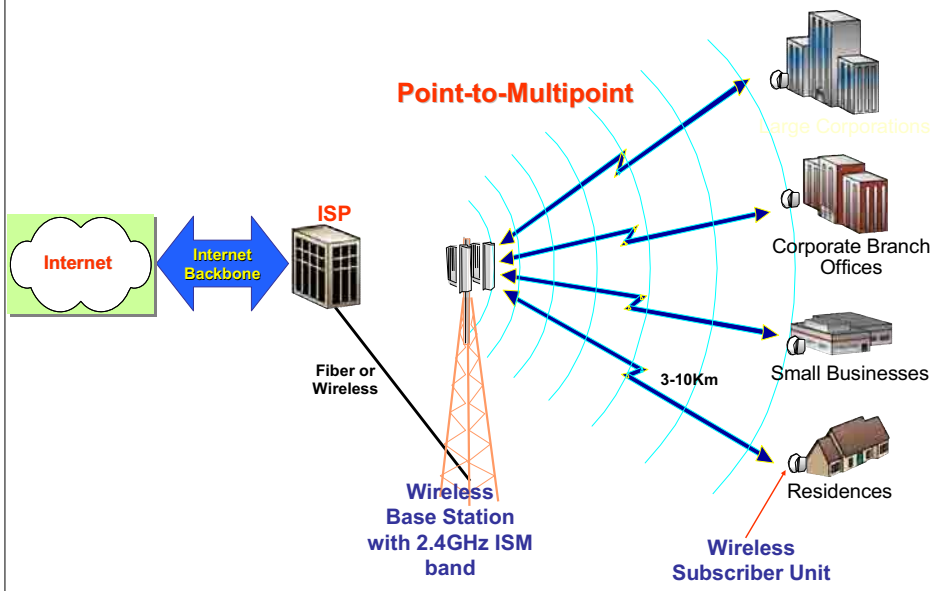


Existing Telecommunication Network in Cambodia

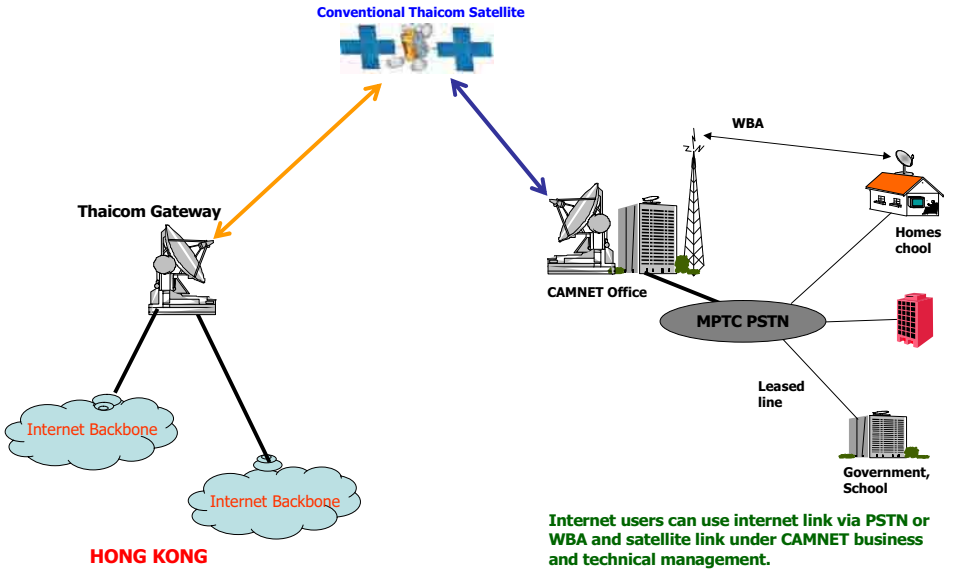
Internet Exchange



Wireless Broadband

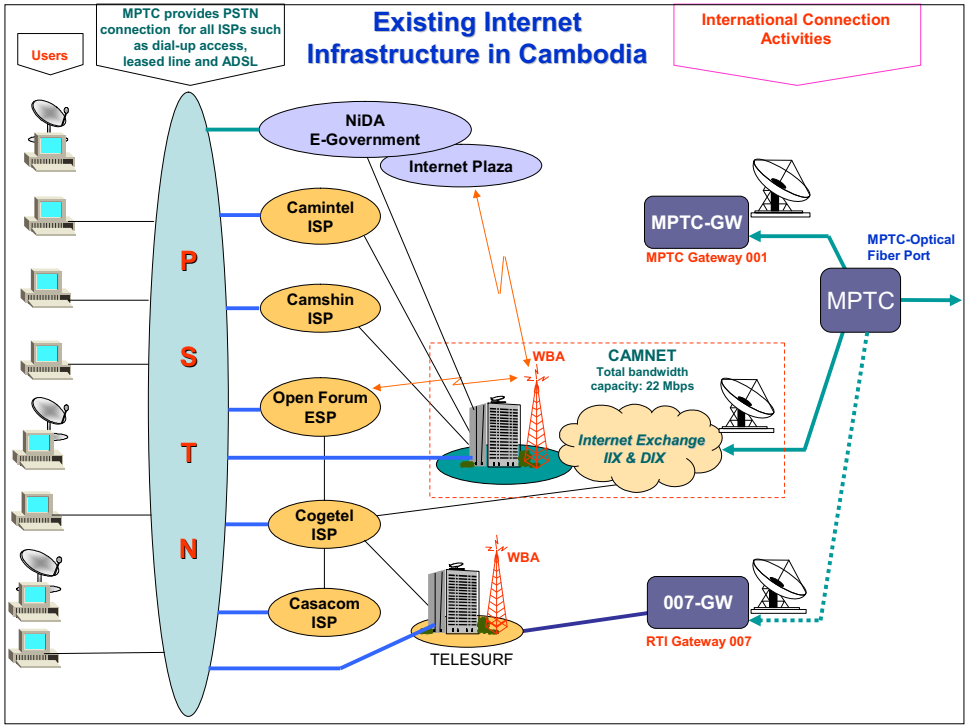


Territorial Internet Service



Internet users can use internet link via PSTN or WBA and satellite link under CAMNET business and technical management.

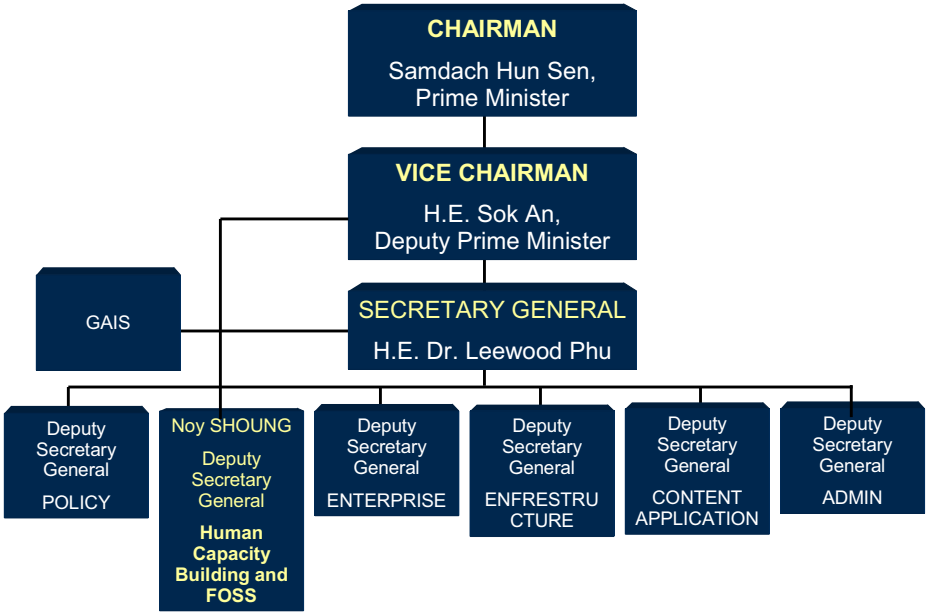
Existing Internet Infrastructure in Cambodia



2. National ICT Development Authority

Website www.nida.gov.kh

NiDA Organisation Structure



NiDA Activities

(Our Vision and Mission)

Vision

- NiDA 's vision is the Prime minister's vision as started in the Asian Wall Street Journal on July 31, 1999.
- "Cambodia would like to fully reclaim its destiny, to be a real partner in **regional** and **global** affairs and be well on its way to becoming a truly **free nation - free from want and poverty** above all else."

Mission

- Our mission is to bring the government closer to the people and vice versa; so that essential services can be provided.

http://www.nida.gov.kh

NiDA Activities

(Our Strategy)

We plan to achieve our vision through localization computerization and utilization of current technology as the following:

- **Expected outcome:**

  Localisation Computerization of government services will remove **"rural"** berries from the development equation. Thus, our vision of becoming a real partner in regional and global affairs, a truly free nation, free from want and poverty can be affectively achieved.

- **Cooperation:**

  NiDA will work closely with donor countries, government agencies, industries and community to achieve this vision.

http://www.nida.gov.kh

Draft ICT Policy

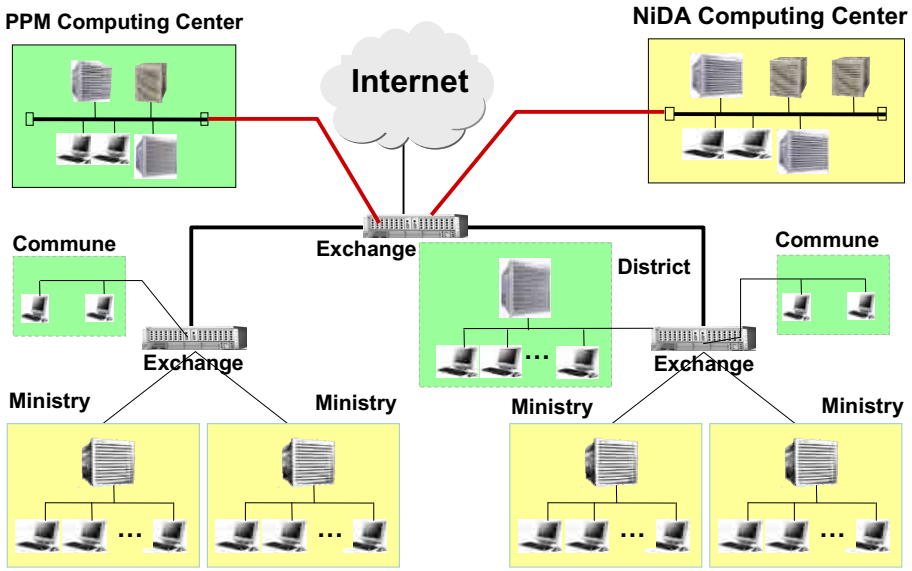
- **Government must promote the LOCAALISATION for all** content and application are in **open content and open standard** and to ensure that local company able to provide support and maintenance

http://www.nida.gov.kh

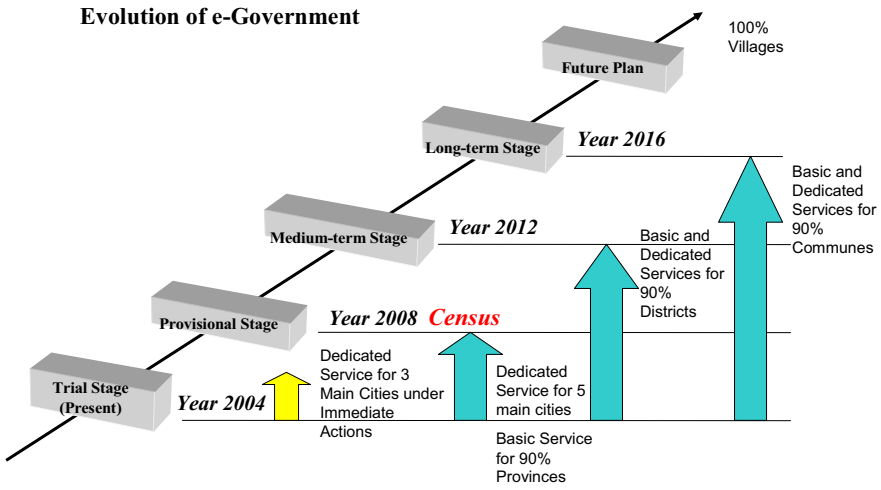
Successful Practical GAIS Project by NiDA

CELEBERATED GAIS PROJECT UNDER CAMBODIAN PRIMISTER AND KOREAN PRIME MINISTER

GAIS Network Configuration



Cambodia ICT Expansion



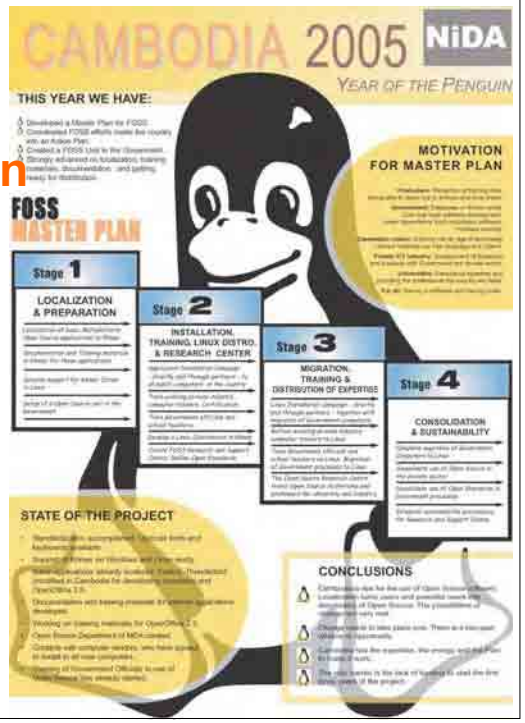
2005

- Change in gears
  - Understanding the value of FOSS and localization.

Localization separates the skills of "English" and "Computer".

Localization of Open Source in countries where no other localized software is available → creates → competitive advantage and demand for FOSS from users.

3. FOSS Master Plan



Stage 1

PRODUCTION

- **Localization of Multi-platform Applications**
- **Documents and Training Materials**
- **Defining Research and Support Center**
- **Developing Khmer Script Support on Linux**

Project Plan – Stage 1

March 2004 - March 2005

- Translate all basic applications (office and Internet applications)
- Documentation and training materials.
- Make applications available on Windows.
- Develop Linux support for Khmer script

Present state of the project

- All programs for stage 1 have been translated.
- OpenOffice 2.0 NOW 2.2
  - –Writer (Word processor)
  - –Cal (Spreadsheet)
  - –Impress (Presentation tool)
  - –Thunderbird (Internet browser)
  - –Firefox (E-mail, chat)
- Working on documentation and training materials.
- Support for Khmer script in Linux has been developed.

Stage 2

DISTRIBUTION

- Distribution and Installation of FOSS applications directly and through partners (on MS Windows platform).

TRAINING

- Training of Trainers to Khmer FOSS Applications. Development of a final-user FOSS certification program. Training of Government Official.

RESEARCH CENTER

- Integration in Education System.
- Creation of Research and Support Center

OPEN STANDARDS

- Development of Open Standards for Government

KHMER DISTRO

- Development of Complete Linux Distribution in Khmer

Project Plan – Stage 2

April 2005 – April 2006

Khmer Software available

Develop KhmerOS

Complete Khmer Linux-based Software Package

Install

Negotiate with vendors

Install in public places

Training Materials available

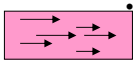
Reach out to training industry

Provide training for trainers

Certification system

Stage 3

MIGRATION



- Government starts migration to Linux.

DISTRIBUTION

- Installation campaign all over the country.
- Retraining of Trainers to Linux Desktop.

TRAINING

- Upgrade of certification system to include Linux Khmer desktop. Training for universities and private industry.

IMPROVEMENT OF SOFTWARE

- Development of two more versions of Khmer Distro.

Project Plan – Stage 3

April 2006 – April 2007

KhmerOS 1.0 available

KhmerOS 2.0

KhmerOS 3.0

Install

Negotiate with vendors

Install in public places

KhmerOS Training Materials

Reach out to training industry

Provide training for trainers

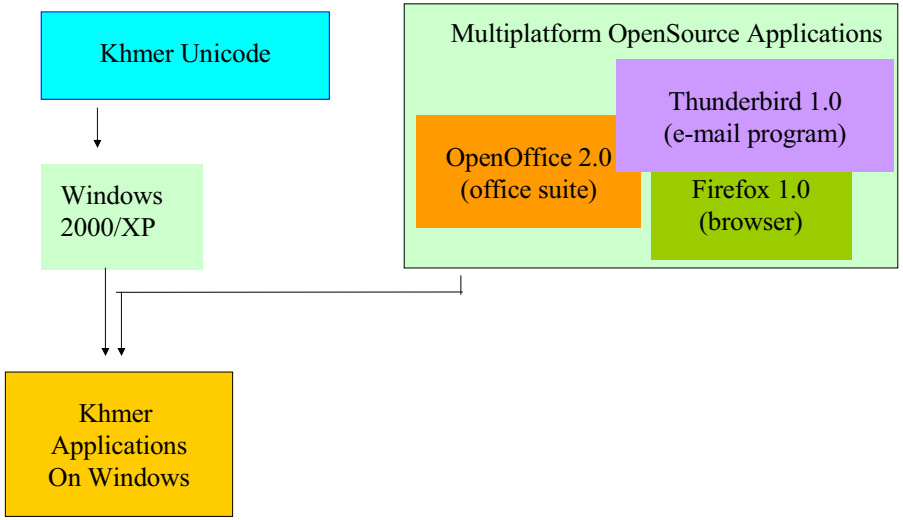
Develop sustainable maintenance and support

Stage 4

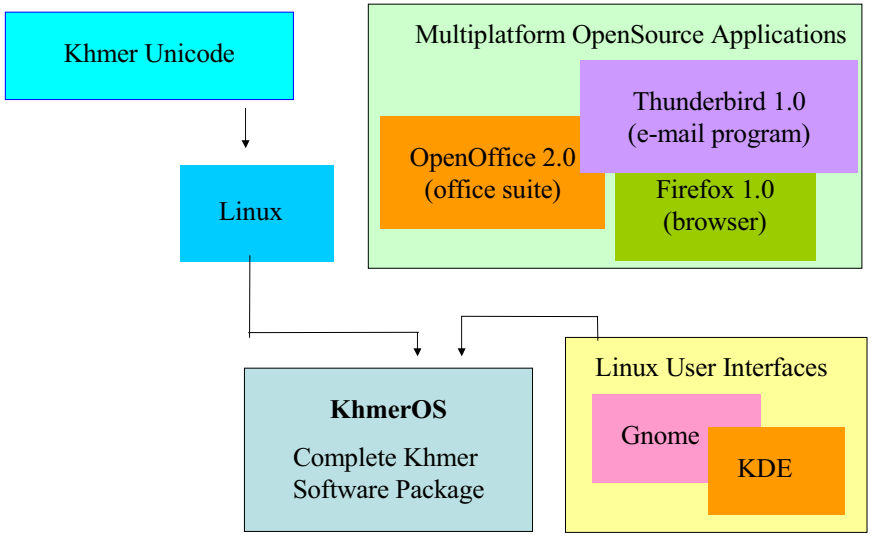
CONSOLIDATION

- Government completes migration to Linux.
- Open standards consolidated.
- Evaluation and improvement of Training Certification program.
- Sustainability procedures for Research & Support Center established. New versions of the Distro produced.
- Local companies develop applications for Government based on OSS.
- Universities produce graduates prepared to work on FOSS.

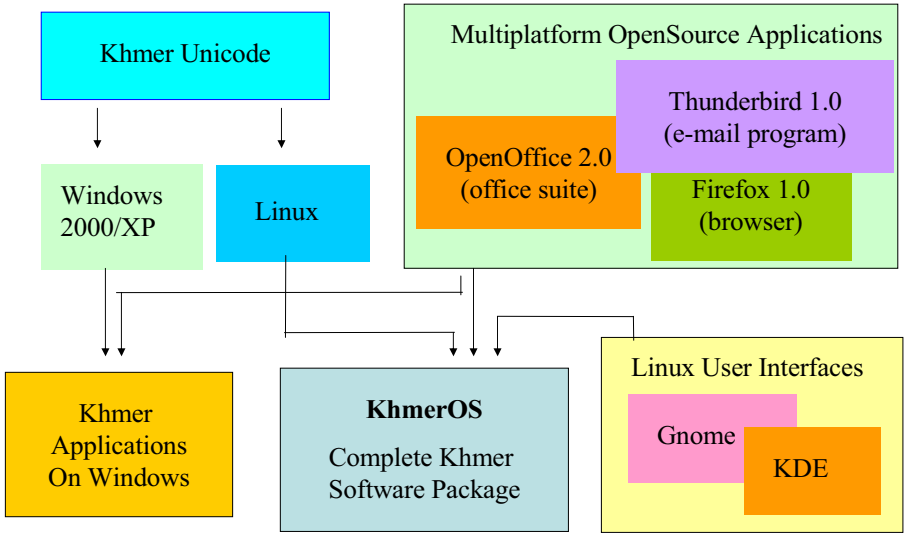
4. State of Technology for the localization



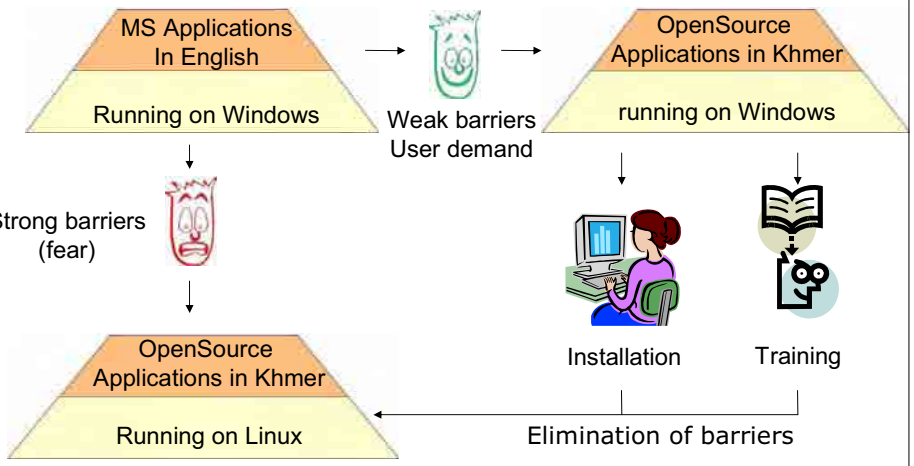
4. State of Technology for the localization



4. State of Technology for the localization



5. Implementation Strategy

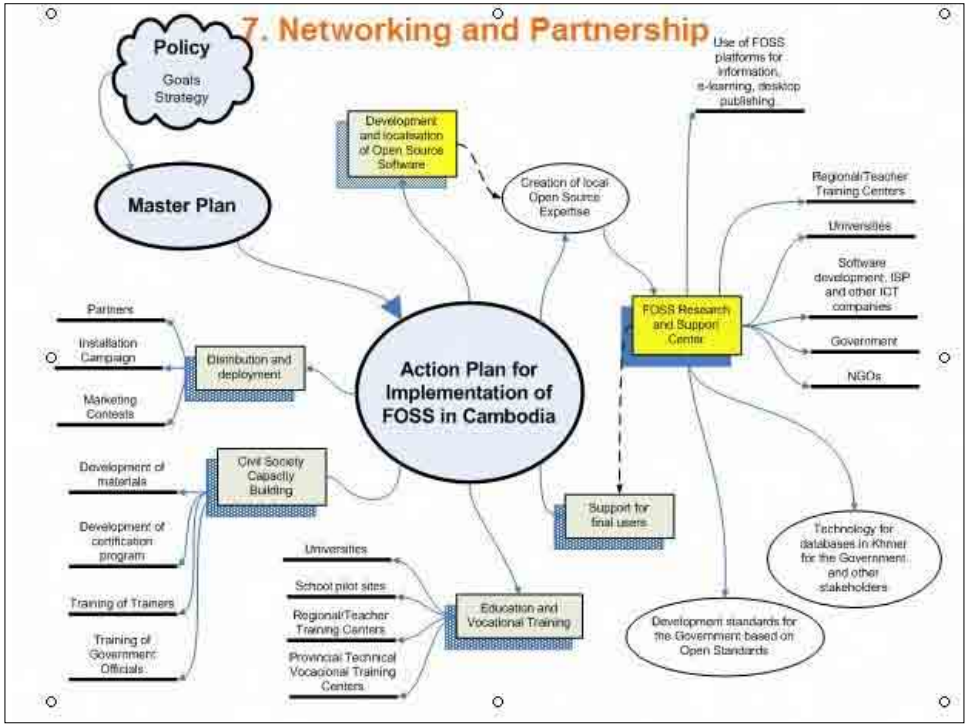


6. Motivation

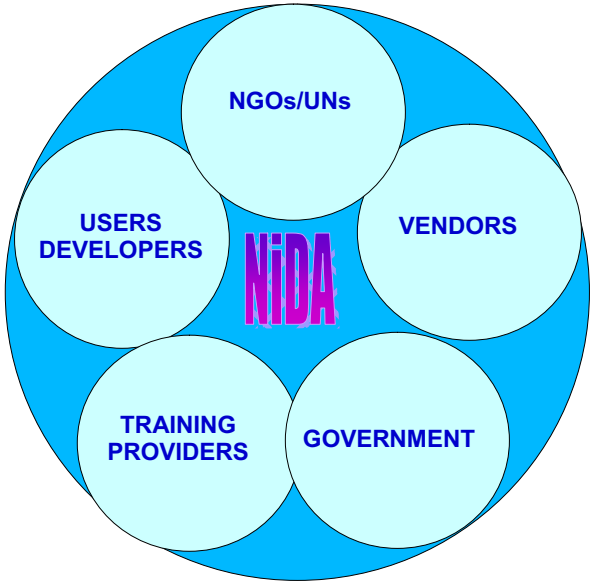
- **For final-users.**
  - Reduction of training time.
  - Being able to reach out to schools and rural areas.

  ↓

  Reduction of the digital divide.
- **For the Government.**
  - Being able to work and maintain databases Khmer script.
  - Having low-cost local software-development providers.
  - Decrease dependency from proprietary software companies. Increase security.
- **For Cambodian culture:**
  - Entering into an age of technology without forfeiting our own language and culture.
- **For private ICT industry.**
  - Development of Expertise and business with government and private sector.
- **For Universities.**
  - Developing expertise and providing the professional the country will need.
- **For all.**
  - **Simply usage, Saving in software costs reduce training time and cut down the Barriers**



OPEN ICT ECOSYSTEM
Every one must have their own block



Training of multipliers
Empathy to work for ministry
Strengthen the FOSS ecosystem
Need to bundle FOSS ecco system
Support existing master plan
Reinforce existing structure
Reach out to provinces

ICT Ecosystem

Government

Players:
NiDA

National ICT Policy
ICT Master Plan
ICT Action Pan
FOSS Master Plan
FOSS Action Plan

Research

Players:
Universities
Research institutes
NGOs
Fun developers
Training institutes

Private Sector

Players:
Software Vendors
Hardware Vendors
Training Providers

Members of the ICT EcoSystem

CENTER OF EXCELLENCY			
Policy Board			Implenting board
Government	**Private Sector**	**Research**	**FOSS TRAINERS:** ADMINISTRATORS, PROGRAMMERS, END USER **FOSS ADVISERS:** (TO IDENTIFY NEEDS/DEMANDS/ NETWORK/FOSS AWARENESS) GOVERNMENT, PRIVATE SECTOR, RESEARCH **CoE MANAGERS**
Members of the FOSS research and support center **Representatives of:** NiDA Ministry of Education Youth and Sports Ministry of Lsbour and Vocational Training	**Representatives of:** Software Vendors Hardware Vendors Training Providers	**Representatives of:** Universities Research institutes NGOs Fun developers Training institutes	

The FOSS research and support center will have a policy and an implanting board to best incorporate the various stakeholders.

Size of the FOSS research and support center:
Implementing board: 20-30 trainers/advisers/consultants
Policy board: 10-20 decision fellers

7. Networking and Partnership

- Internet Café
- Training Provider (universities, Institutes, Colleges, Training Centers)
- PC and Software Vendors
- SME
- Regional Teacher Training Center
- Teacher Training Center
- Regional Technical Training Center
- Provincial Training Center

Note: all training we are focus in multiplier training channel,

- First training, NiDA conduct training, NiDA provide all curriculum, training material, handout, exercise paper etc
- Second training, NiDA conduct training our partner become our assistant
- Third Training our partner conduct training and NiDA provide their assistant to ensure that our partner feel more confident
- Forth, fifth so on NiDA provide support

NiDA OCM The Office of the Council of Ministers Royal Government of Cambodia

FOSS RESEARCH & SUPPORT CENTER

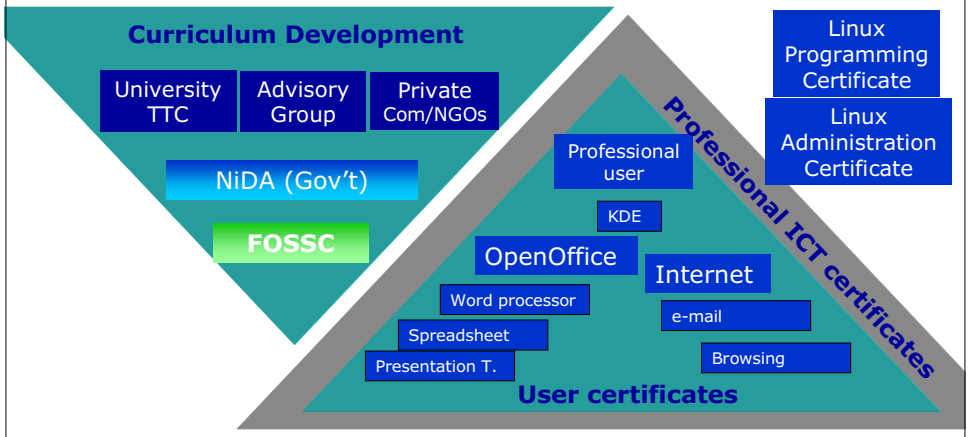
RESEARCH AND SUPPORT CENTER

- FOSS Developer Group
- Call Center
  - Support online
  - Assist FOSS User Group
- R&D
- Survey on ICT Current Labor Market
- Survey on Training Provider
- Training/Learning Need Assessment
  - Conduct the survey what is the priority skill
  - Priorities the skill and prepare curriculum
  - Prepare training material base on the curriculum
  - Review the curriculum and modify upon course evaluation
  - Contest
- NiDA Collaboration

Target Group

- Public Sector Employees
- CIO from all ministries
- IT Supporters
- School Teachers
- University Students
- SMEs
- End Users
- Farmer - Communities
- Grassroots level of students

8. FOSS Professional Certificates



9. Curriculum Development

- SuSe Linux 10.2
  - Administrator
  - Beginner
- OpenOffice 2.2
  - Khmer Standard Unicode
  - Writer
  - Cal
  - Impress
  - Base
- Thunderbird
- FireFox

Training Methodology

- Master Trainer 45
  - Current trainer, NiDA conduct training for conduct training in FOSS
- Trainer 550
  - Select the good trainee who wheeling to conduct training to others and NiDA conduct training for them on Master Trainer
- Power End User 0ver 8,000
  - Training for free and free material, the only conduction is to conduct training and support other and we call them again for the other training for the trainer program

E-Strategies

- Policies need strategies
- Strategies need action plan
- Action Plans need implementation

Strategies are a set of concrete directions that address policies

Policies become action-oriented through Strategies

Without Strategies, policies will not have much meaning

POLICIES
↓
STRATEGIES
↓
ACTION PLANS
↓
IMPLEMENTATION

KHMER FOSS TRAINING
48/13 Training Providers and Provincial Government Employee
Regional Teacher Training Center, Hun Sen, Kandal,
16-22 December 2006

KHMER FOSS TRAINING
57/9 Training Providers and Provincial Government Employee
Build Bright University,
Siem Reap,
25-29 December 2006

KHMER FOSS TRAINING
45/7 Training Providers and Provincial Government Employee
Cambodia University Specialties (CUS),
Kampong Cham,
25-29 December 2006



KHMER FOSS TRAINING
52/15 female Training Providers and Provincial Government Employee
BBU, Takeo,
11-17 January 2007

KHMER FOSS TRAINING
31/7 Training Providers and Provincial Government Employee
BBU, Sihanoukville,
10-15 January 2007



Training of Khmer Applications for Training Providers and Provincial Government Employee
BBU, Battambang,
6-10 February 2006

The first training providers have adopting the SuSE Linux
Training of Khmer Applications for Training Providers and Ministry of Labor and Vocational Training Employee
National Polytechnic Institute of Cambodia (NPIC)
24 Jul–11Aug 2006

Training of Khmer Applications for Training Providers and Provincial Government Employees
Angkor University, Siem Reap
14-18 February 2006

Khmer Applications for Training Provider & Provincial Government Employees
Build Bright University (BBU), Takeo, 20-24 February 2006

Training of Khmer Applications for Trainer (30 School Teachers and Health Centers)
NiDA Training Room

•120 trainees are being train a months
•In Khmer Application from January 2005
•Two weeks training
•Open to public
•45 hours each training course

Achievement of the FOSS 2005

Free/Open Source Software Seminar-January 6, 2005

Chair By: H.E. Leewood Phu, Speaker Prof. Masayuki Ida and Mr. Javier Sola

Seminar of Utilization Strategy of OSS in Cambodia, 5-6 Jan 2006 by Prof. Masayuki Ida

NiDA Cambodia and CICC Japan

Achievement of the FOSS 2005

Training of trainers

Training Workshop in ICT and FOSS for the government official in Siem Reap Province, 20/03/2005

FOSSAP II – Siem Reap, Cambodia 1-4 Sept 2005

Achievement of the FOSS 2004

National Seminar on ICT Education for Government Official

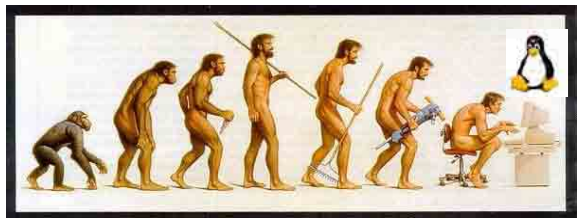
Human Networking

- Two Heads are better than one
- Team work and share your experience
- Make things happen
- Be free and open
- Poor can help, but lazy can't help

We can't spell

S _ CCESS

without U



付属資料

7.GMS Project

Construction Scale

Telecom Cambodia transmission network project will be finished in two phases.

- **Phase I**, Upgrading System of 11 nodes (on the existing network STM-1, 679Km) to STM-16 from Bavet to Poi Pet and from Bantey Meanchey to Siem Reap.
- **Phase II-Section 1**, New Optical cable G.655 48-core from Siem Reap to Skun with STM-16 transmission system for 7 nodes in 235Km.
- **Phase II-Section 2**, New Optical cable G.655 48-core from Kampong Cham to Lao border with STM-16 transmission system for 8 nodes in 416Km.
- **Optional**: The part from Phnom Penh to Skun (74Km) and from Skun to Kampong Cham (47Km) are optional.
- The total amount of optical links in phase II is 651Km
- Construction will finish in March 2008.

GMS Optical Fiber Network

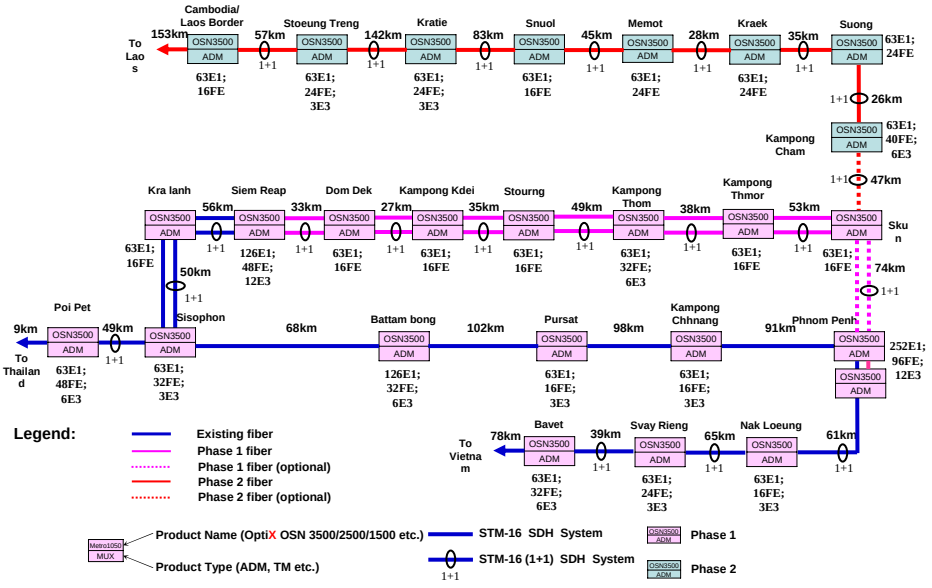
GMS Optical Fiber Network, Phase I

GMS Optical Fiber Network, Phase II

Transmission equipment

- The transmission network project will also be completed in two phases.
- Phase I and section 1 of Phase II, 18 sets of OSN3500 will be added to form one 2.5Gb/s SDH ring around the Tonle Sap lake and two 2.5Gb/s SDH linear systems to the Thailand and Vietnam borders separately.
- Phase II, 8 sets of OSN3500 will be added to form one 2.5Gb/s SDH linear system to the Laos border.
- A total of 26 sets (25 sites) of OSN3500 and other assistant devices will be added in this project.

Network Structure Diagram



付属資料

8.Draft Report on ICT Use and Infrastructure for Small and Medium Enterprises(SMEs)Survey

Draft Report

on

ICT Use and Infrastructure for Small and Medium Enterprises (SMEs) Survey

Prepared by

The National ICT Development Authoriy (NiDA)

Cambodia

2007

ACRONYMNS

AFTA	ASEAN Free Trade Area
ASEAN	Association of South East Asian Nations
BCC	Business Co-operation Contract
Camintel	Cambodia Indosat Telecommunication
Camshin	Cambodia Shinawatra
Camtel	Cambodia Mobile Telephone Company
Casacom	Cambodia Samart Coomunications Company Ltd.
CAS	Country Assistance Strategy
CCC	Cambodian Chamber of Commerce
CDRI	Cambodia Development Resources Institute
CDC	Council for the Development of Cambodia
CG	Consultative Group
EAS	Electronic Approval System
eCommerce	Electronic Commerce
eTrade	Electronic Trade
GDP	Gross Domestic Product
GNP	Gross National Product
GMS	Greater Mekong Subregion
GSM	Global System for Mobile Communication
ICT	Information and Communication Technology
IMF	International Monetary Fund
ISO	International Standards Organization
ISP	Internet Service Provider
IT	Information Technology
ITU	International Telecommunication Union
LAN	Local Area Network
MEF	Ministry and Economy and Finance
MIME	Ministry of Industry, Mines and Energy
MLMUPC	Ministry of Land Management, Urban Planning, and Construction
MoC	Ministry of Commerce
MOEYS	Ministry of Education, Youth and Sport
MOH	Ministry of Health
MRD	Ministry of Rural Development
MPTC	Ministry of Post, Telecommunication of Cambodia
NBC	National Bank of Cambodia
NCC	National Codex Committee
NIDA	National Information Communications Technology Development Authority
NGO	Non-governmental organization
PPIAF	Public-Private Infrastructure Advisory Facility
SME	Small & Medium sized Enterprise
SMS	Short Message Service
UNDP	United Nations Development Programme
WAN	Wide Area Network
WTO	World Trade Organization

I. An Overview of the Cambodia ICT: Issues and Trends

1. Introduction

Information & Communications Technology (ICT) is new to the Cambodia society. The Royal Government of Cambodia (RGC) is supported to shift to new IT development paradigm. In the long run, key factors of production will shift from land and natural resources to information, knowledge and innovation embodied in Cambodia's human capital. In other words, knowledge, skills and expertise of the Cambodian people will become increasingly crucial to the country's future economic growth. Extensive economic growth and development will be gradually giving way to intensive economic growth. This type of growth requires more values added from ideas and innovation. Thus, the RGC has endeavored to promote the use of modern technology in Cambodia to enable the country to respond to the current needs in all sectors, including the development of ICT.

Cambodia has been experiencing a significant move towards lasting peace, sustainable development and tangible progress, as evident in economic growth and continuous efforts to strengthen democratic institutions. The Royal Government of Cambodia has achieved remarkable success in maintaining macroeconomic stability and improving security.

The Royal Government of Cambodia has strong desire and commitment to build a people-centred information society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life through the use of ICT. In 2001, the Government of Cambodia has adopted the e-Government Project, which brings governmental institutions into online together. It has connected 27 ministries and governmental institutions with the e-government network and the electronic approval system (EAS) will be introduced to execute the government administrative tasks. This network equipped with modern hardware and software in order to upgrade the Government itself and to improve productivity and quality of the public services. In addition, the Government has brought all 76 communes and 7 districts of the Phnom Penh Municipality into online. These local authorities will firstly, in the country, deploy the Resident, Vehicle, and Real Estate Information Systems to perform their daily tasks more efficiently and effectively. This is a reflection of an improvement in the administrative procedure and public services, which result in good governance and poverty alleviation.

Cambodia, is a case of the least developing countries, has considered the policy to adopt ICT as a part of socio-economic development. So far the Government has promoted the establishment of the ICT infrastructure through encouraging public and private investments in the sector so that the country can possess the adequate network to improve the business activities. However, public communication means for village, provincial and central government has only very slowly developed in the last 10 years. Most public servants are unable to carry out their duties properly due to the lack of basic facilities such as phone or email services.

2.The Network and Physical Infrastructure Issues

2.1 Telecommunications Sector

The Cambodia' information and telecommunications sector can be divided up in the following sub-sectors: telephone, cable, satellite, broadcasting and print/media.

In accordance with the RGC's policy, the telecommunications sector has witnessed more private sector involvement than any other infrastructure industry. To date the Ministry of Post and Telecommunications (MPTC) has issued five mobile licenses and one international gateway license to private companies and recently completed a 10 year co-operation agreement with another private company for the operation of the primary international gateway.

Despite the involvement of the private sector in almost all aspects of operations, telecommunications in Cambodia can also be described as the area of Cambodian infrastructure with the greatest degree of centralized control. A single central government agency, the Ministry of Post and Telecommunications, shares in the ownership of all mobile services, the fixed line network and the international gateways. It also sets telecommunications policy and acts as the regulatory agency.

Cambodia's telecommunications sector has seen rapid change during the last decade. There were approximately 3,000 working lines in 1993 and over 100,000 in 2000. Four mobile companies offer services and internet access is now available even in provincial towns. However, the combined fixed and mobile penetration rate is currently only around 12.9 per 100 inhabitants. This is low by both regional and international standards. The low fixed network penetration rates are due to the collapse of the network during the period 1975 to 1990. Recent increases in fixed network coverage have come about through investment under foreign assistance and has mainly benefited Phnom Penh. Geographical coverage has not increased significantly.

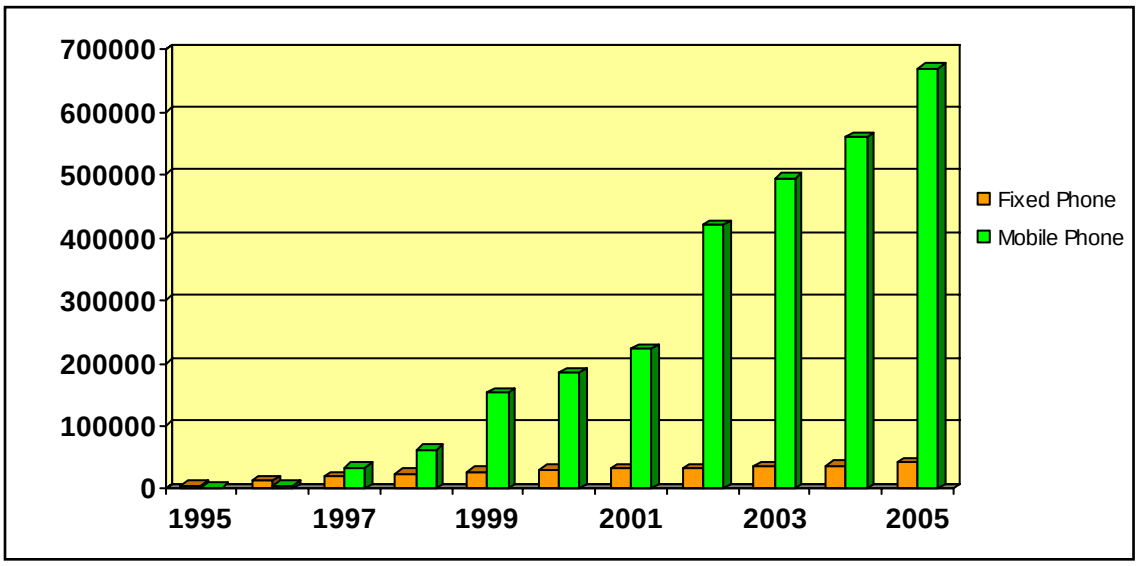
There are 8 operators in Cambodia providing types of systems.

Table 1. Telephone Operators

Service	**Number of Operators**	**Name of Operator**	**Note**
Fixed Line	3	***MPTC***	In Phnom Penh and 8 provinces
		Camintel	Provinces + WLL in Phnom Penh
		Camshin	WLL in Phnom Penh
GSM Cellular	3	Camshin	GSM 1800
		MobiTel	GSM 900
		Casacom	GSM 900
Analog Cellular	2	Casacom	NMT-900
		Camtel	AMPS-800 network in Phnom Penh

Source: ITU and MPTC

Figure 1. Number of Telephone Subscriber



Source: ITU and MPTC

2.2 International services

In 1990, Telstra International of Australia was awarded a 10-year Business Co-operation Contract (BCC) with the MPTC to install and operate an international gateway and the payphone system. Telstra spent approximately $20m installing an international switch, two earth-stations, an international gateway exchange, telecommunications building with air-conditioning and systems for international accounting and billing. Under this contract, Telstra received 49% of the revenue from incoming calls and 12% of the revenue of outgoing calls. In addition, the mobile networks interconnect directly with the international gateway, which was also used as the main trunk exchange for switching between the mobile networks. This contract came to an end in 2000 and has not been renewed. MPTC is currently responsible for operating this gateway.

2.3 Internet Availability

An estimation of Internet users in Cambodia is roughly 13,000 and most of them are mainly in Phnom Penh and Siem Reap. There are plenty of Internet Cafés throughout Cambodia. This business as well are mostly located in Phnom Penh, Siem Reap, Sihanoukville and a small number in the other tourist centres. A recent survey identified at least a few one Internet access point each in the provincial capitals. Most of these offer not only web and e-mail access but also VOIP at very low costs. Although VOIP was declared illegal by the Ministry of Posts and Telecommunications (MPTC) so far it is not being consistently suppressed. Internet Cafés are frequented not only by foreign tourists, but also by many Cambodian students, male and female. As there are not many systems available that can handle Khmer fonts, a certain level of knowledge in the English language is a prerequisite for accessing the Internet. Two Cambodian youth and student organisations were among the earliest users of email systems in Cambodia in 1995.

Technical availability and economic availability are, however, two quite different realities. With a monthly salary of around US$30 for high school teachers, ICTs stay for many outside of their financial possibilities. The economic gap between the urban and the rural population is strongly reflected in the gap in telephone lines and Internet access.

No one know for sure of the numbers of Cambodian related website registered in the generic or other countries top level domain such as .com, .net, .org etc. GoCambodia is also providing domain registration to the public with generic top level domain and found out that any good and reputable names were already taken such as Cambodia, Khmer, kampuchea, provincial town name, Angkor, apsara, bayon etc. Domains are available with in long and unique name format. The numbers registered with non-kh, we are guessing they are well over 1,000 domains considering a fact that the Cambodian population living abroad and Cambodian living here who are not qualified to register, want non-kh, or for any reason. There are roughly 250 registered with under KH which as administered by DNS at the MPTC. Domains registered worldwide is roughly 33 millions and mostly are in dot com.

2.4 Mobile communications

Cambodia is the first country in the world where mobile phones outnumber the fixed lines. The ratio is very high with more than 10 out of telephones users are mobiles. Used mobile phone set available as low as $25, each SIM card costs between $8 and $10 depending on mobile operator and prepaid card with denominations with little as $5, mobile communication is very affordable.

Network Prefixes

011	-	Camshin
012	-	CamGSM
015	-	Casacom (NMT)
016	-	Casacom (GSM
018	-	Camtel
023	-	Fixed

2.5 Internet

There are currently four ISPs providing full Internet access throughout Cambodia. They are CamNet, Online, TeleSurf and Camintel. Camintel is licensed to offer Internet at provinces only. Accessing Internet can be done via Dialup, Wireless broadband, DSL, and Satellite broadband and leased line. There are many options are available for customer to choose from and they differ greatly from company to another. As low as $10 per month, one can have three hours of Internet access usage per month or an organization or individual may choose to have an unlimited Internet access via Satellite or wireless broadband for $350 per month.

Open Forum is an Email provider only and it has two tariffs: $8 for Cambodian and $15 for foreigner for unlimited access.

Fees are dropping dramatically recently mainly due to competition, and the number of subscribers are increasing which make ISPs receive better deal from their volume purchases. ISP used to charge installation fee for Internet access subscriber, but now is offered for free.

2.6 e-Government

In August 2000, the Government of Cambodia has decided to establish the National Information Communication Technology Development Authority (NiDA) in order to handle the information communication technology vision. The Government of Cambodia desires to bring the government closer to citizens and vice versa through the computerization of its administration. The government has introduced the basic ICT application services since 1992

and steadily upgraded. As mentioned above, the Government has launched the e-Government project in the earlier 2001 in order to pursue its ICT vision. The project has scope to all ministerial bodies of the central governmental administration and the Phnom Penh Municipality only. It has brought all 27 ministries and Secretariats of State and the Phnom Penh Municipality, including the 7 districts and 76 communes into online. In addition, the project has introduced four dedicate applications including electronic approval system, resident information system, vehicle information system, and real estate information system. The project was officially opened for operation in October 2004. It is true that the project will no be success if there are not proper people who handle and use the system. The government, therefore, must train the government official to have the proper skill and knowledge in handling the system.

In doing so, NiDA has offered ICT training courses to the government officials from various ministries, Phnom Penh municipality and schools. The training courses are divided into the basic application courses and system management courses. The basic application courses, including office applications, are designed to improve the government officials' knowledge and skill so that they are able to perform their jobs about more efficiency and effectiveness. The system management courses are provided to administrator designation in order to manage the system in proper and sustainable manner. To assure efficiency and effectiveness of the ICT tasks related, NiDA is continuing to upgrade and conduct the ICT training courses to the government officials.

Moreover, since 2002, NiDA ha cooperated with UNDP and APDIP in establishing the regional Cisco networking academy center in order to impart ICT training. It has also established the local centers at the institute of Technology and Management and the Royal Phnom Penh University to offer the Cisco networking courses to the students as well as to public. Also, a number of NGOs are found to be involved in capacity building and ICT training along with large number of private training centers offering short-term courses in ICT. Generally in this stage, most ministries and government institutions are becoming learning organizations by establishing training institute or training department in their respective organizations in order to continuously develop their human resources to meet their needs and improve the quality of public services. Thus, there are multiple actors involved in the generation of human capital for ICT in the country.

The ICT policy of the country, as is evident from the following statement made by the Prime Minister of the country rightly, lays emphasis on "promoting the use of modern technology in Cambodia's e-mail systems to enable the country to respond to the current needs in all sectors, especially to the development of e-commerce. The top priority in the short run is to use ICT to serve and to meet the day-to-day needs of the people". ICT is envisaged to become an efficient means for the public to exercise their rights to get information related to the decisions made by the government and the conduct of government business in accordance with the principles of transparency and good governance. In addition, the country will build up its policies on information and communication technologies to directly or indirectly address human development and poverty alleviation in particular.

3. Cambodia's e-Policies and e-Strategies

Cambodia has an ambition to create conducive environment for ICT development, thus, the Government is drafting e-Policies and e-Strategies to address the human resource development and poverty alleviation. These national e-Policies are confirmed with the Millennium Development Goals that aimed to improve human capacity, living standard of citizens and the quality of the public services. The key policies focus on infrastructure, human capacity, enterprises, and contents and applications.

3.1 Development of ICT Infrastructure

Given the fact that IT infrastructure is the *sine qua non* for the increased use of IT, the policy aims at developing telecommunication infrastructure through the policy of liberalization, strengthening the authority responsible for the supervision and regulation and open access to in still fair competition. The government is also in the process of formulating policies and establishing a legal and regulatory framework for the development of the telecommunication sector. At the same time, the Royal Government of Cambodia (RGC) is committed to provide incentives to attract investments in the telecommunications sector. As a result, Cambodia is being recognized as a country with the state-of-the-art telecommunication network, which will pave the way for further development of the sector.

In addition, the Government shall continuously install and upgrade reliable and appropriate ICT infrastructure through out the country and establish the network and Internet facilities, such as Public Internet Kiosks and Tele Centers in the country. These facilities are very important tools for citizens to access the information for their daily decision-making related to business, medical needs and education. Also, the Government must make the policy to support and encourage such activities through public campaign and education.

3.2 Expanding Internet Use

Expanding the coverage for the use of the Internet by considering measures to attract private investments and modern technology, and by ensuring free and fair, market-based competition is yet another aspect that is highlighted in the policy. The objective is to create necessary conditions for cost reduction, improvement in public services, so that the government, the private sector, the educational and research universities and the Cambodian people in general will be able to use of this instrument as efficient as possible.

3.3 Use of Local Language

Since language is an important vehicle to promote development and IT transfer and that the use of IT in Khmer language will open access to millions of people who will be able to benefit from these technological developments, the policy envisages the standardization of Khmer language in computers to improve efficiency and capability of this sector and facilitate communications at all levels. In pursuant this policy, the Government has created the committee developing the Khmer Unicode. This committee has cooperated with many international professional organizations in the Khmer Unicode.

3.4 Computer Literacy

The policy also envisages at developing computer literacy, as is the case with foreign languages, among Cambodians. Computer literacy is currently one of the most important tools that exist for communications, economic management, trade, domestic and international investment, as

well as for knowledge accumulation and management expertise. This is true for every country in the world, and Cambodia is no exception to this. The most important direction is to include computer literacy in the curriculum of every secondary school, faculty and university throughout the country.

3.5 Human Capacity

With the purpose of making use of new technology opportunities, the Ministry of Education, Youth and Sport (MoEYS) with support and assistance of the UNESCO Office in Cambodia, organized a round-table to launch a project and to formulate policies and strategies on the use of information and communications technology in learning and education for all in Cambodia on 25-26 February 2003. As a result of this national seminar, four specific policies were developed.

- The first policy is that of ICT for all teachers and students, meaning that ICT is used as an enabler to reduce the digital gap between Cambodian schools and other schools in the world at large, especially schools in Asia and the Pacific.

- The second policy emphasizes the role and function of ICT in education as a teaching and learning tool, as part of a subject, and as a subject by itself. Apart from radio and television as a teaching and learning tool, this policy stresses the use of the computer for accessing information, communication, and as a productivity tool.

- The third policy emphasizes using ICT to increase productivity, efficiency and effectiveness of the management system. ICT will be extensively used to automate and mechanism work processes such as the processing of student and teacher records, access to information via the Internet, communication between individuals and schools, management of educational management information systems (EMIS), lesson planning, assessment and testing, financial management and the maintenance of inventories.

The fourth policy is to promote education for all through distance education and self-learning, especially deprived children, youth and adults who lack access to basic education, literacy and skill training, by integrating ICT with radio, television, printed materials and other media.

In line with this specific policy, the Ministry of Education, Youth and Sport (MoEYS) is attempting to reduce the digital divide that exists in the different parts of the country by providing access to ICT for learning and communication to all regional and municipal/provincial teacher training institutions and then to schools across the country by 2015. This drive must be accompanied by the development of appropriate strategies, namely 1) Learning Needs Assessment and Curriculum Development; 2) ICT Networking; 3) Learning Resources, Research and Courseware; and 4) Teacher Development and Training. At the same time, notwithstanding the liberal approach towards FDI there appears to be no significant foreign investment for human capital formation in general and IT in Particular. The government in its effort towards attracting investment into the field of education and human capital offers liberal incentives for investment in human capital formation, regardless of the level of investment involved. However, it appears that substantial investments are yet to flow into the field of IT training. Hence there appears to be an urgent need for scaling up the activities of all the actors and attracting more investment into the field of education in general and IT education in particular. Also, given the fact that there are multiple actors involved, government might consider coordinating different actors as well as begin a scheme of accreditation by NiDA or any other competent authority.

4. Small and Medium Enterprises in Cambodia

As mentioned above, ICT infrastructure building is critical important for development of other e-business solutions and the Government must take a lead in this sector. The government should lead in developing the electronic payment and trading system that provides the mechanism for the trading and enterprise growth. The small and medium enterprises are playing important role in contributing a significant proportion of the country GDP, and the Government must provide incentives and protect them by subsidizing. The Government needs to encourage them use ICT to improve their efficiency and productivity, and to assist them in financing for their business. Funding issue is critical problem for SMEs in Cambodia due to the lack of trusts and confidents on information of all organizations in the country. The Government will create favorable environment for ICT enterprise development and promote e-trade, e-payment and other e-business activities. Thus, the Government must establish the appropriate policies, laws and regulations on ICT enterprises to public.

4.1 Issues

Education, knowledge, information and communication are the core of human progress, endeavor and well-being. Information and Communication Technologies have an immense impact on virtually all aspects of our lives. The rapid progress of these technologies opens completely new opportunities to attain higher level of development. However, the benefits of the information technology revolution are today unevenly distributed between the developed and developing countries, as well as within societies. There is a need to turn this digital divide into a digital opportunity for all, particularly for those who live in remote, rural and marginalized urban areas, to empower them to access information and to use ICT as a tool to support their efforts to lift themselves out of poverty.

In this regard, the e-Government of Cambodia has significantly impact on the way they are working and serving the public. For instance, in the part of vehicle information registration, it can serve the public faster, better, and it collect more tax revenues for the government. However, the e-government is not good governance, in case the country likes Cambodia, it needs to make much effort in improving up the legal system and other administrative procedures so that all together can be logically working. The e-Government needs the people who posses the new skill to work on it. It is major challenge that the Government does not have enough human resource to handle the work, and it can lead to the mass of management in the government administrative.

Furthermore, the country does not have adequate fund to expand and sustain the e-Government system, and these will affect on the future plans for expanding the e-Government to nationwide. In addition, the expanding plan can not be implemented due to the lack of electricity and basic telecom infrastructure. Thus, the Government must consider on the preparation of the basic ICT infrastructure through the country prior to step on further e-Government development plan.

II. ICT Survey

1. Background of project

The ICT Use and Infrastructure for Small and Medium Enterprises (SMEs) Survey carried out by the National Information and Communications Technology (ICT) Development Authority of Cambodia (NiDA) is a part of phase I of the Promotion of ICT use for small and medium enterprises (SME) project in collaboration with the RGC which is implemented by NiDA. The samples of 1000 small and medium enterprises was selected and weighted according to the propotion of total number of business. This survey aimed to collect information of currently use of the ICT in the Cambodian SME (CSME), currently infrastructure included hardware, software , applications use in CSME to promote and compete with other partners in the global market, ICT training needed and produce a comprehensive report for national action plan to promote CSME.

2. Project objectives

- The main objectives of the survey are:

- To collect information of currently use of the ICT in the Cambodian SME (CSME).
- To collect information of currently infrastructure included hardware, software , applications use in CSME to promote and compete with other partners in the global market.
- To collect information of ICT training needed.
- Produce a comprehensive report for national action plan to promote CSME

3. Scope and Limitations of the Project

3.1 Survey Area and Period

The actual field survey was conducted within the period covering December 2006 to April 200 7 in fourteen (14) cities in the Cambodia, namely: Phnom Penh, Siam Reap, Kampong Thom, Bateay Meanchey, Bat Tambang, Po Sat, Kampong. Chhang, Kampong Cham, Kratie, Prey Veng, Kep, Kampot, Sihanuk Ville and Koh Kong.

3.2 Survey Respondents

The respondents of the survey are selected purposively, include representatives of small and medium scale enterprises (SMEs) in the aforementioned fourteen (14) major cities.

3.3 Survey Sample

Below is the distribution of the sample by area:

Province/city	Total
Phnom Penh	400
Siam Reap	110
Kampong. Thom	10
Bateay Meanchey	20
Bat Tambang	54
Po Sat	52
Kampong Chhang	45
Kampong Cham	108
Kratie	6
Prey Veng	12
Kep	10
Kampot	82
Sihanuk Vill	36
Koh Kong	55
Total	1000

3.4 Survey Sampling Scheme

Initially, sample establishments were generated from government listings (Ministry of Industry, Mine and Energy) and Chamber of Commerce. However, due to the limited number of SMEs in the available lists and perceived inaccuracies (as to addresses and telephone numbers, among others), it was decided to purposively find SMEs to fill the sample quota. This was conducted through a door-to-door search to determine whether or not an establishment is a qualified SME.

4. Methodology

The survey was conducted in 3 major phases:

4.1. Pre-survey phase, which includes the following:

a) Sample Construction;
b) Questionnaire Formulation, Pre-testing and finalization; and
c) Training of Field personnel

4. 2. Actual Survey Phase, which include the following corollary activities:
a) Supervision and monitoring of field interviews;
b) Spot-checking; and
c) Field Editing

3. Post-survey phase, which include the following:
a) Retrieval and Data Processing;
b) Data Analysis and Report writing; and
c) Drawing and Writing of Case Studies of Best Practices.

5. Pre-Survey Phase

5.1 Sample Construction

The sample was constructed by initially consulting government lists (particularly, the MIME list on SME) and Cambodia Chambers of Commerce. The survey-sampling frame will be restricted to include only SMEs in fourteen cities. Due to the inadequacy and inaccuracy of the available lists, purposive sampling was done to fill the sample quota.

5.2 Questionnaire Formulation, Pre-testing and Finalization

For purposes of comparability, the survey questionnaire was based on the ITC Use questionnaire, appropriately revised to adapt to Cambodia conditions. The revised questionnaires were pre-tested. Comments and suggestions turned in after pre-testing was incorporated before finalizing the questionnaire. Moreover, language experts translated the English version of the questionnaire into Khmer language for Cambodian SME owners.

5.3 Training of Field Personnel

A maximum of two days office training was held to orient the field personnel on the nature, purpose and other basic details of the project.

6. Actual Survey Phase

6.1 Supervision and Monitoring of Field Interviews

Supervisors were commissioned to observe, follow-up and check interviewers, of which at least 10% of the latter were observed by the former. They report to the field manager to ensure that field logistics were received promptly and administered properly.

6.2 Spot-Checking

Spot-checking was conducted at various stages of the fieldwork:

- The first one after about 30% of the interviews was completed;
- The second after 60% completion; and
- The third one immediately after 90% completion.

During spot-checking, at least 20% of the unsupervised interviews were re-interviewed/back-checked. If serious errors persisted after 20% spot-checking, the original interviews were invalidated and respondents re-interviewed. If some questionnaires were found to be incomplete or had inconsistent answers, the interviewer was asked to go back to the respondent so that the questionnaire could be completed and/or corrected as the case may be.

6.3 Field Editing

After each interview was completed, the interviewer was asked to go over the responses to check for consistency. All accomplished interview schedules were submitted to the assigned group supervisor, who, in turn, made the necessary editions and/or corrections as deemed fit.

7. Post Survey Phase

7.1 Data Processing and Report Writing

An office editor was commissioned to conduct a final consistency check on all interviews prior to coding. A code frame was designed to organize the coding of data from the raw questionnaires. Interview sheets were edited/checked twice by office editors before information was encoded. A data entry computer program verified and checked the encoded data for consistency before data tables were generated.

An analysis of the processed data was conducted and a written report, incorporating a comprehensive discussion of the survey results and corollary analysis of the same, was done by the NiDA research team. The data processing and tabulation was use the SPSS programme.

III. Survey Results and Analysis

SECTION 1. General Information

1. Industry breakdown

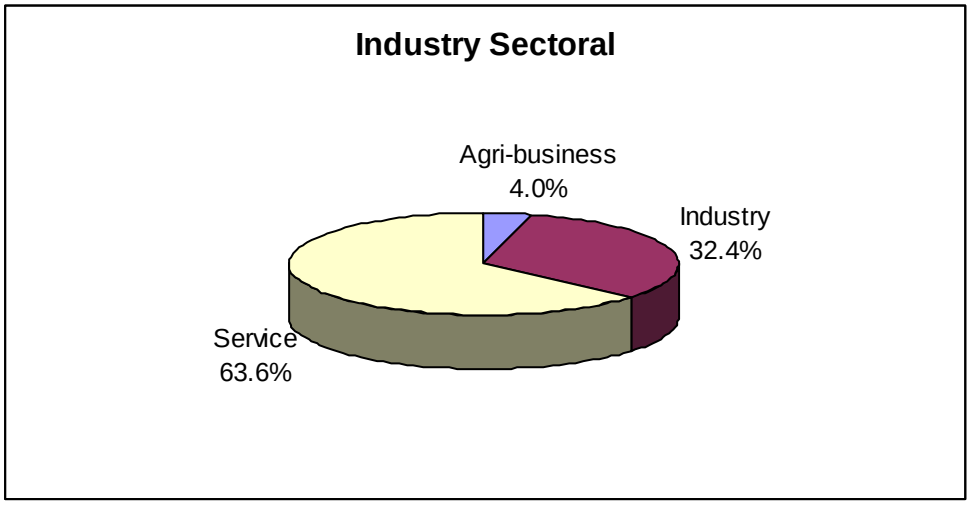
The survey sample consisted of representatives from three major industry groups, namely: the Industry Sector, the Service Sector and the Agri-business Sector. The results show that most firms in the sample belong to the Service sector. Of the 1000 respondent firms,

- 4.0% (40 firms) belong to the Agri-business sector
- 32.4% (324 firms) belong to the Industry sector
- 63.6% (636 firms) belong to the Service sector

Table2. Industry/ Sector Classification

Sector	Number	Percent
Agri-business	40	4.0
Industry	324	32.4
Service	636	63.6
Total	**1000**	**100.0**

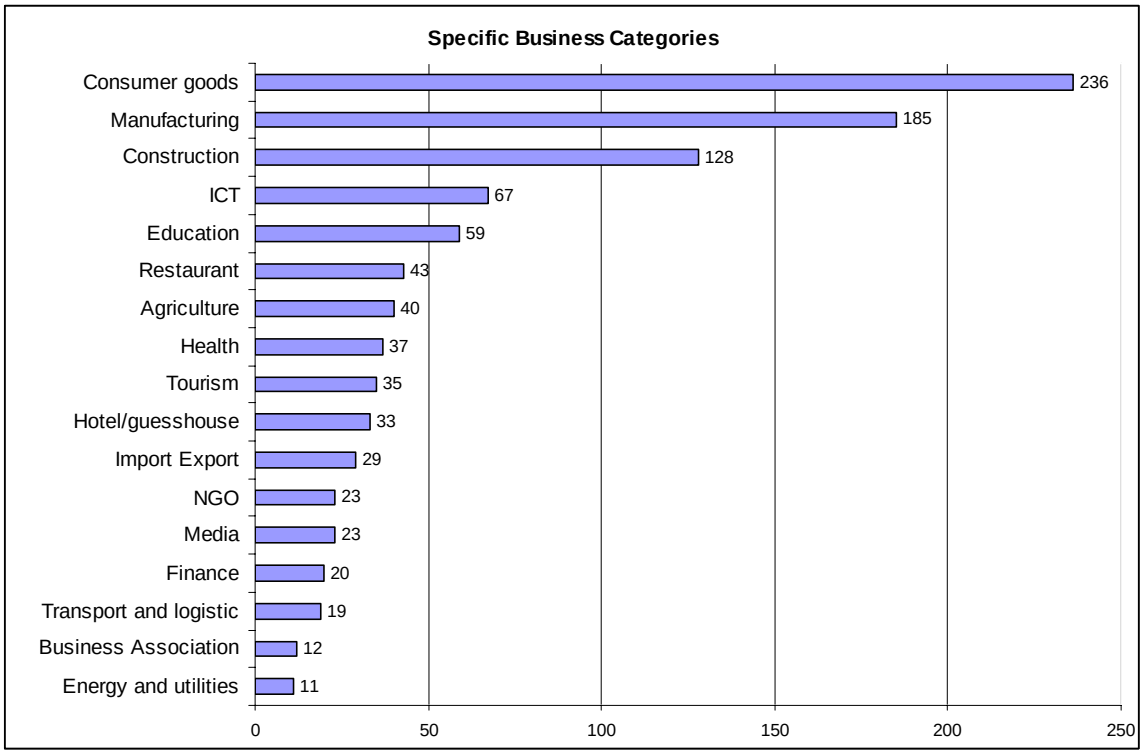
Figure 2. Industry/ Sector Classification



2. Specific Business Categories

The Sample consisted of very diverse businesses. Most firms in the sample are consumer good firms accounting for 23.6% of the sample. The next distribution are firms engaged in food processing, garment accounting for 18.5% of the sample, following by construction accounting for 12.8%, ICT accounting for 6.7%, education accounting for 5.9%, restaurant accounting for 4.3%, agri-business accounting for 4.0%, health accounting for 3.3%, tourism accounting for 3.5%, hotel and guest house accounting for 3.3%, import-export accounting for 2.9%, NGO accounting for 2.3%, finance accounting for 2.0%, transportation accounting for 1.9%, business association accounting for 1.2% and energy and utilities accounting for 1.1%.

Figure 3. Specific Business Categories



3.Type of Business Ownership

Most of Cambodian SME is established in the form of Sole proprietorship. In the sample selected, the type of ownership of the business were represented as below

- 85.6% belong to Sole proprietorship
- 8.2% belong to Partnership
- 3.4% belong to Limited liability
- 2.8 % belong to NGO

Table3. Type of business ownership

Type of ownership	Number	Percent
Sole proprietorship	856	85.6
Partnership	82	8.2
Limited liability	34	3.4
NGO	28	2.8
Total	**1000**	**100.0**

4. Share of Ownership

The share of business ownership information collecting in this survey has shown that almost 91.0% of enterprise interview are Cambodian owned, following by 5.0% foreign owned and nearly 4.0% of enterprises are joined venture between Cambodian and foreigners.

Table 4. Percent of Share

Percent of Share		Number of Enterprises
Cambodian	Foreign	
100	0	908
95	5	1
90	10	5
80	20	1
70	30	3
65	35	1
60	40	2
55	45	1
51	49	12
50	50	10
40	60	2
20	80	1
0	100	53
		1000

SECTION 2. Business Information

2.1. Business Client

Cambodian SME supply products and services to both local and foreign clients, namely: Int'l companies based in Cambodia, Int'l companies based abroad, Cambodian companies, NGO, government, International organization and final goods. According to result of survey, of 1000 firm are supplies to:

- 5.5 % to Int'l companies based in Cambodia
- 2.6 % to Int'l companies based in abroad
- 11.5 % to Cambodian company
- 75.3% to Final consumer
- 12.3% to NGO
- 8.2% to Government
- 4.3 % to Int'l organization

Table 5. Business Clients of CSME

Type of Clients	Percentage
Int'l companies based in Cambodia	5.5
Int'l companies based in abroad	2.6
Cambodian company	11.5
Final consumer	75.3
NGO	12.3
Government	8.2
Int'l organization	4.3

6. Number of Employee

Similar to other developing countries the CSME have average of 13 employees and the average of 8 for male and 4 for female per enterprise.

Table 6. Average of Employees

Employee	Average
Male	8.4
Female	4.8
Total	13.3

SECTION 3. Computer Equipments

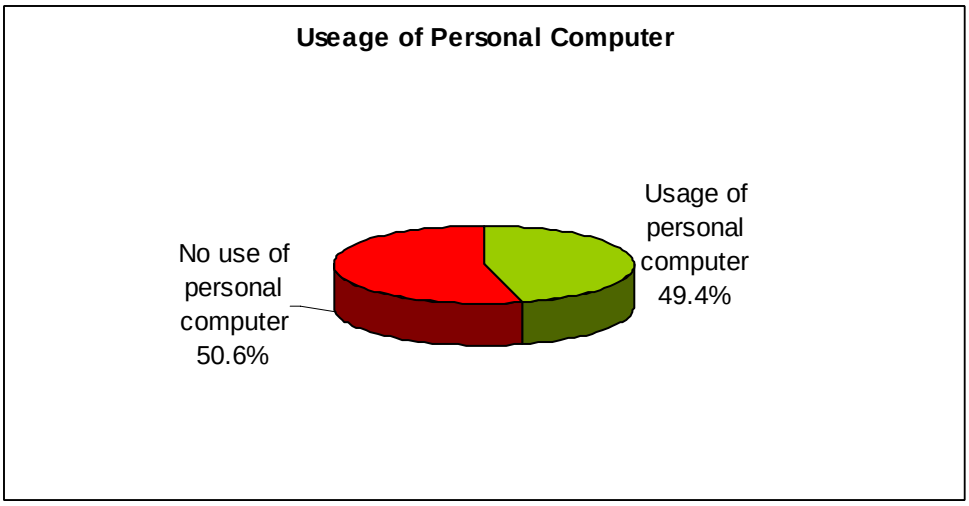
3.1. Usage of Personal Computers

49.4% of respondents had between 1 to 12 personal computers in their offices.
50.6% of respondents companies did not have any personal computer in their offices.

Table 6. Use of Personal Computer

Usage of Computer	Number	Percentage
Yes	494	49.4
No	506	50.6
Total	**1000**	**100**

Figure 4. Use of Personal Computer

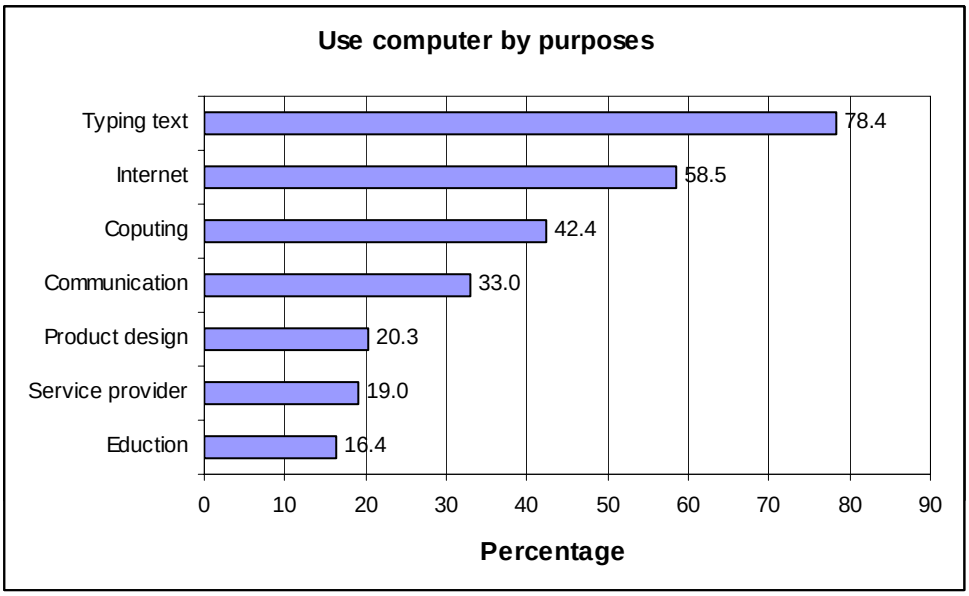


3.2. Use of Personal Computer by purposes

The respondents of the survey were used their personal computer for the purposes of their business as below:

- 78.4% were used their personal computer for typing text
- 42.4% were used their personal computer for computing
- 33.0% were used their personal computer for communication with clients
- 20.3% were used their personal computer for product design
- 58.5% were used their personal computer for internet
- 16.4% were used their personal computer for education
- 19.0 % were used their personal computer for services provider

Figure 4. **Use of Personal Computer by purposes**



3.3. Outsource of Employee

23% of respondents were use outsource IT employees in their business operation. All most sectors of CSME were used outsource IT employees, except of agri-business. The respondent firms were used outsourcing was shown in table below:

Table 8. Outsource of Employee by Business Categories

Business categories	**Outsource of IT employee?**		**Total**
	yes	**no**	
Business Association	2	7	9
Construction	0	16	16
Consumer goods	20	81	101
Education	23	27	50
Energy and utilities	0	2	2
Finance	2	16	18
Health	5	7	12
Restaurant	1	5	6
Import Export	6	18	24
ICT	16	50	66
Media, Com and Entertainment	4	18	22
NGO	8	13	21
Tourism	5	29	34
Manufacturing	2	8	10
Transport and logistic	5	6	11
Agriculture	0	2	2
Others	1	26	27
Total	**100**	**331**	**431**

SECTION 4. Computers' OS (Operating Systems)

4.1. Type of Operation System for personal computer

Almost firm respondents were reported that they were used Microsoft Windows as operation system in their PCs. 90% of firm using Microsoft Windows as operation system following Macintosh 2.8% and Linux 3%. The rest are small percentage of usage.

- 90.0% are currently using Microsoft Windows
- 2.8% are currently using Macintosh
- 0.008% are currently using Unix
- 3.0% are currently using Lunix
- 0.00% are currently using AS 400
- 0.00% are currently using AIX
- 0.008 % are currently using Sun OS/Solar

Table 9. Type of Operation System

Type of operation system	Number	Percent
Microsoft Windows	445	90.0
Macintosh	14	2.8
Unix	4	0.008
Lunix	15	3.0
AS 400	1	0.00
AIX	2	0.00
Sun OS/solar	5	0.008
Other	8	1.6
Total	**494**	**100.0**

4.2. Perception of Respondents in Using Current Operation System

When asked about perception of using current OS, 96% of respondents happy with current OS and 4% said they are not happy.

- 90% of respondents are happy with current OS
- 4% respondents are not happy with current OS

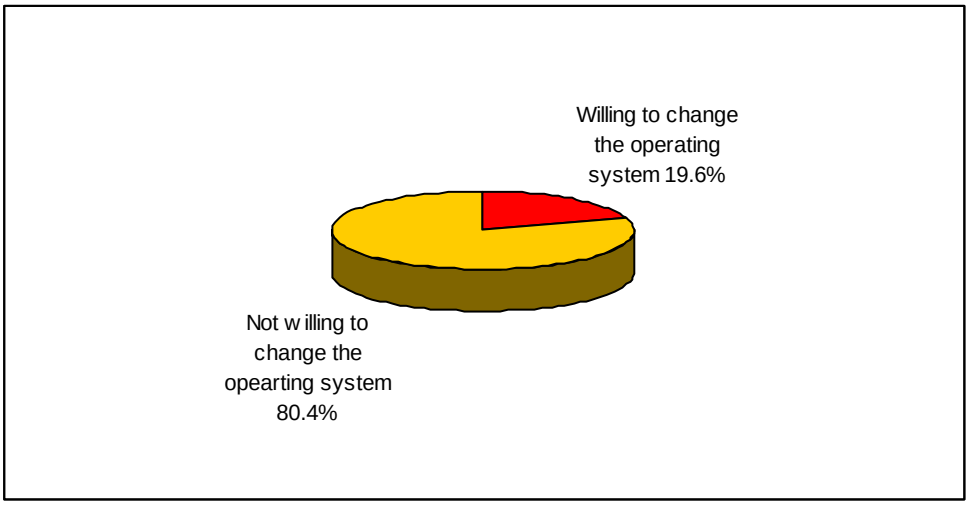
Table 10. Perception of Using Current Operating System

Happy in current OS	Number	Percent
Yes	410	96.0
No	17	4.0
Total	**427**	**100**

4.3. Willing to Move to Other OS?

Of total 17 respondents 19.6% of respondents are willing to move to other OS while 80.4% of respondent are not willing to change they OS.

Figure 6. Perception of Change to Other OS



SECTION 5. Network

5.1. Network Connection

The number of firm has network connection according to survey results was 64.3% of total respondents.

- 64.3% (272) of firm has network connection within organization
- 35.7% (151) of firm has no network connection within organization

Table 11. Network Connection

Network connection	Number	Percent
Yes	272	64.3
No	151	35.7
Total	**423**	**100**

5.2. Type of Business with Network Connection

By type of businesses (table 11), most of firm with connected to network. According to results of survey, of 422 firms:

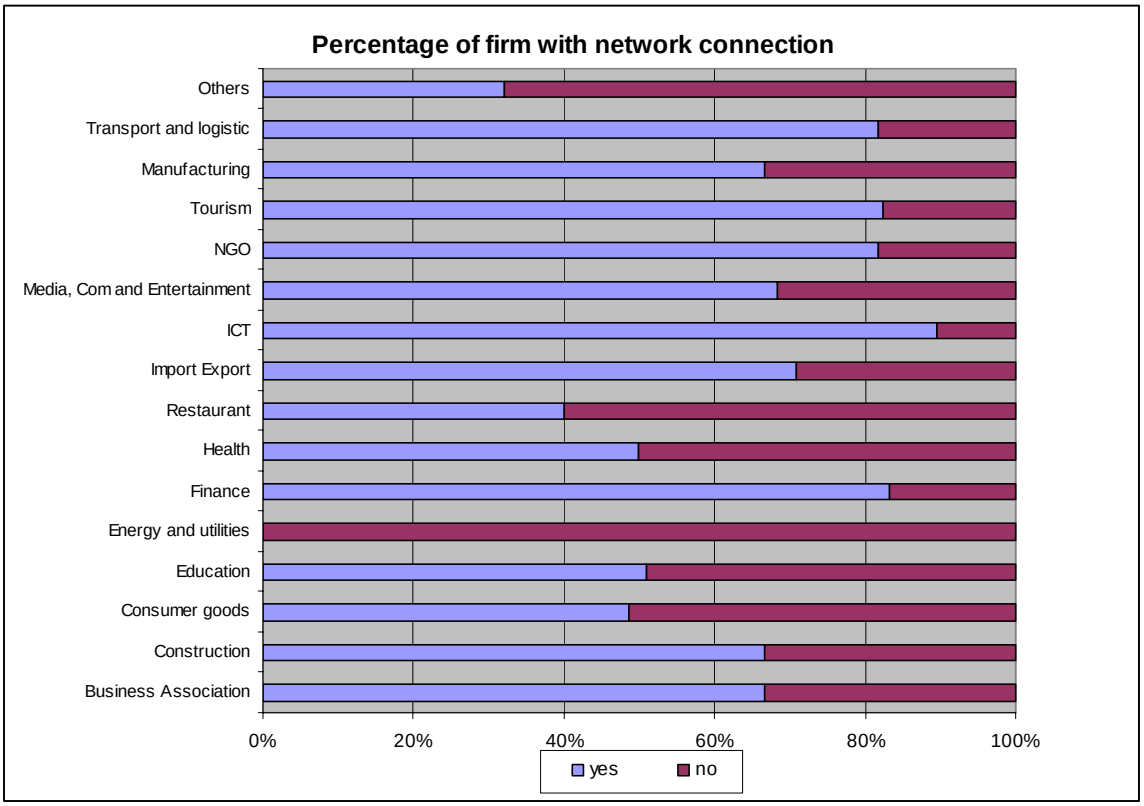
- 50% of business association with network connection
- 66% of construction firms with network connection
- 48.5% of Consumer goods firms with network connection
- 51% of Education firms with network connection
- 0% of Energy and utilities firms with network connection
- 83% of Finance firms with network connection
- 50% of Health firms with network connection
- 40 % of Restaurant firms with network connection
- 70% of Import Export firms with network connection

- 89% of ICT firms with network connection
- 68% of Media, Com and Entertainment firms with network connection
- 81% of NGO with network connection
- 82% of Tourism firms with network connection
- 66% Manufacturing firms with network connection
- 81% of Transport and logistic firms with network connection
- 32% of Others firms with network connection

Table 12. Network connection

Type of Business	Network connection?		Total
	yes	no	
Business Association	6	3	9
Construction	10	5	15
Consumer goods	50	53	103
Education	25	24	49
Energy and utilities	0	2	2
Finance	15	3	18
Health	5	5	10
Restaurant	2	3	5
Import Export	17	7	24
ICT	60	7	67
Media, Com and Entertainment	13	6	19
NGO	18	4	22
Tourism	28	6	34
Manufacturing	6	3	9
Transport and logistic	9	2	11
Others	8	17	25
Total	**272**	**150**	**422**

Figure 6. Percentage of firm with network connection



5.3. Type of Network

69.6% of respondent firms had Local Area Network(LAN), followed 22.5% of respondent firm had Wireless Area Network (WAN) and the rest of 7.9 % had Wireless Local Area Network (WLAN).

Table 13. Type of Network

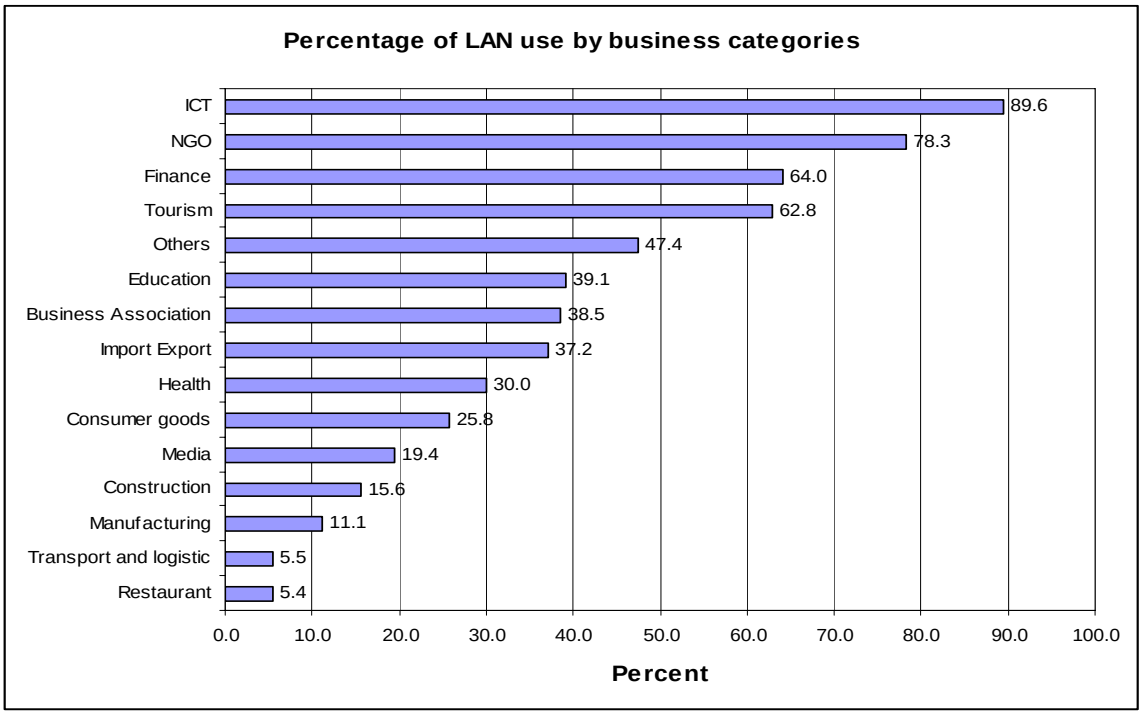
Type of Network	Number	Percent
LAN	294	69.6
WAN	95	22.5
WLAN	33	7.9
Total	**422**	**100**

5.4. LAN use by type of business categories

Regardless of respondent's distribution, ICT respondent firms was the most usage of Local Area Network (figure .7). The result from survey has shown that:

2 Of Restaurant had connected LAN
5 Of Business Association had connected LAN
8 Of Health firm had connected LAN
9 Of Transport and logistic firm had connected LAN
9 Of Others firms had connected LAN
10 Of Manufacturing firms had connected LAN
13 Of Media firms had connected LAN
15 Of Construction had connected LAN
16 Of Finance firms had connected LAN
18 Of NGO had connected LAN
26 Of Import Export firms had connected LAN
27 Of Education firms had connected LAN
37 Of Tourism firms had connected LAN
45 Of Consumer goods firms had connected LAN
54 Of ICT firms had connected LAN

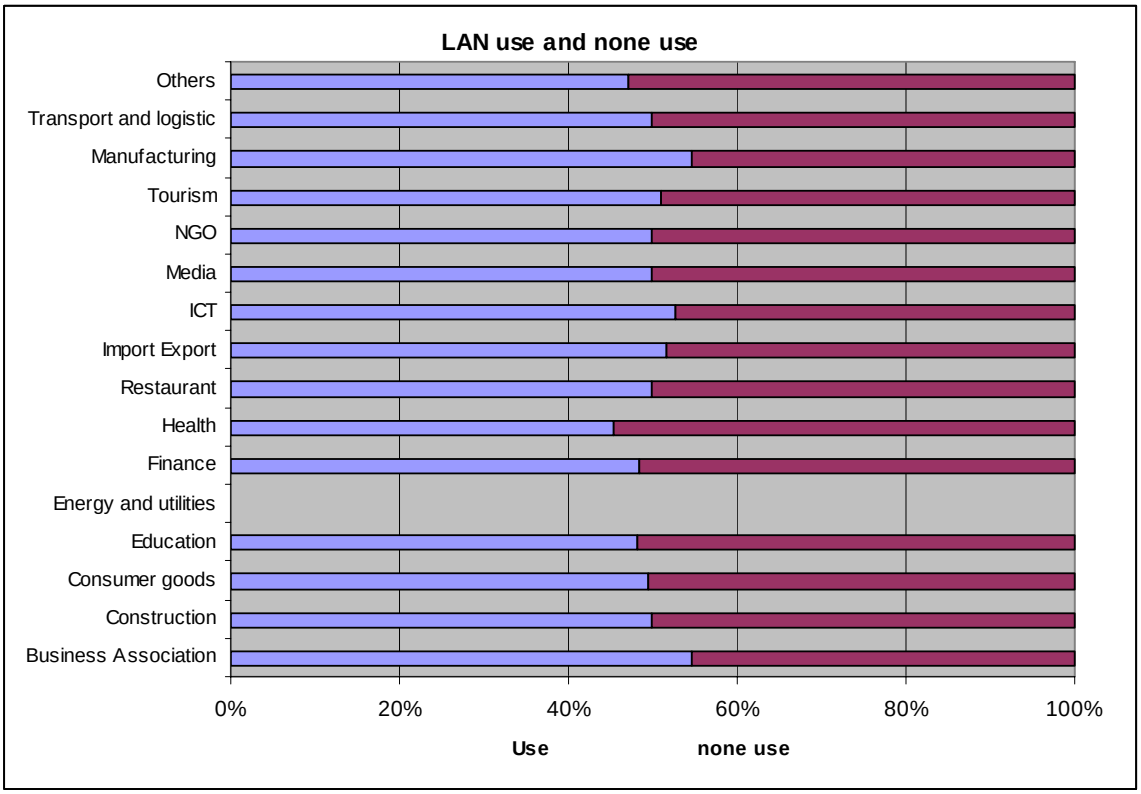
Figure 8. Percentage of LAN use by type of business categories



5.5. LAN use vs none Use by business categories

There was little difference between companies with LAN when distributed by business categories (Figure 9).

Figure 9. LAN use vs LAN none use by business categories



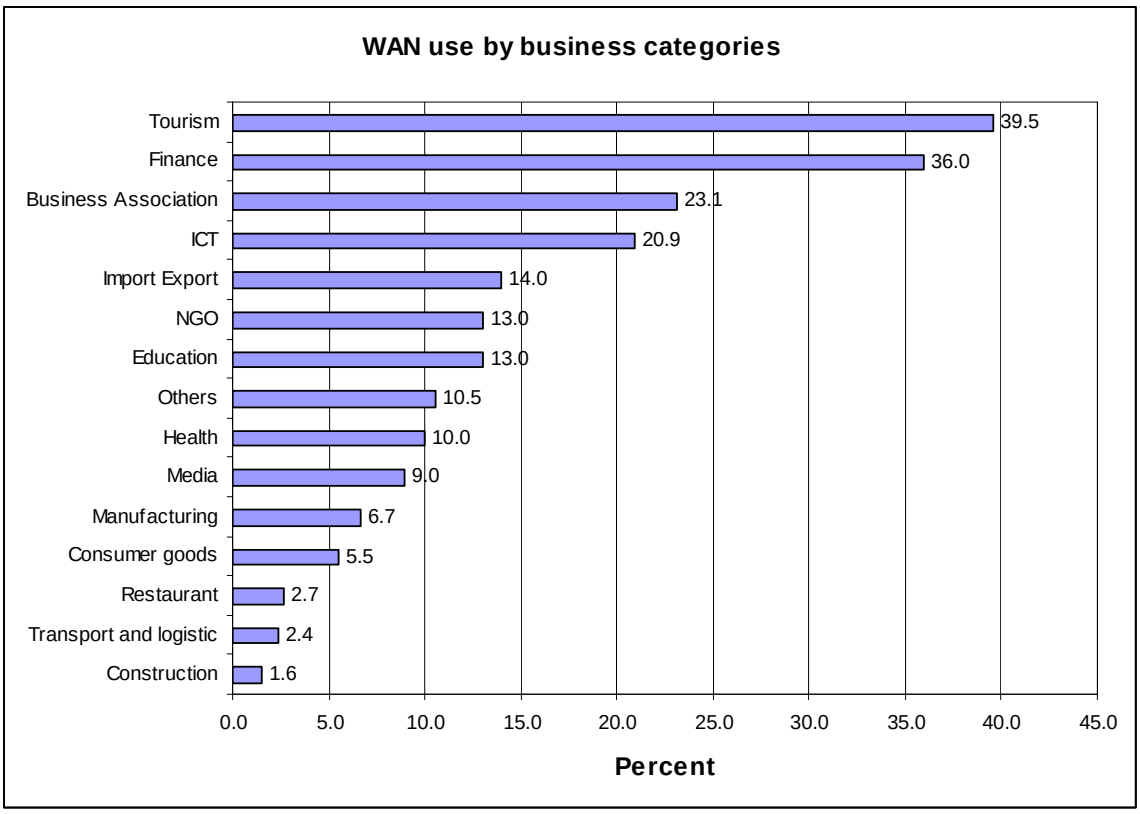
5.6. WAN use by type of business categories

Regardless of respondent's distribution, Tourism respondent firms was the most usage of Wireless Area Network. The result from survey has shown in table 13:

Table 14. WAN use by type of business categories

Business categories	Number	Percent
Business Association	3	23.1
Construction	2	1.6
Consumer goods	13	5.5
Education	9	13.0
Finance	9	36.0
Health	2	10.0
Restaurant	1	2.7
Import Export	6	14.0
ICT	14	20.9
Media	6	9.0
NGO	3	13.0
Tourism	17	39.5
Manufacturing	3	6.7
Transport and logistic	4	2.4
Others	2	10.5
Total	**94**	**100.0**

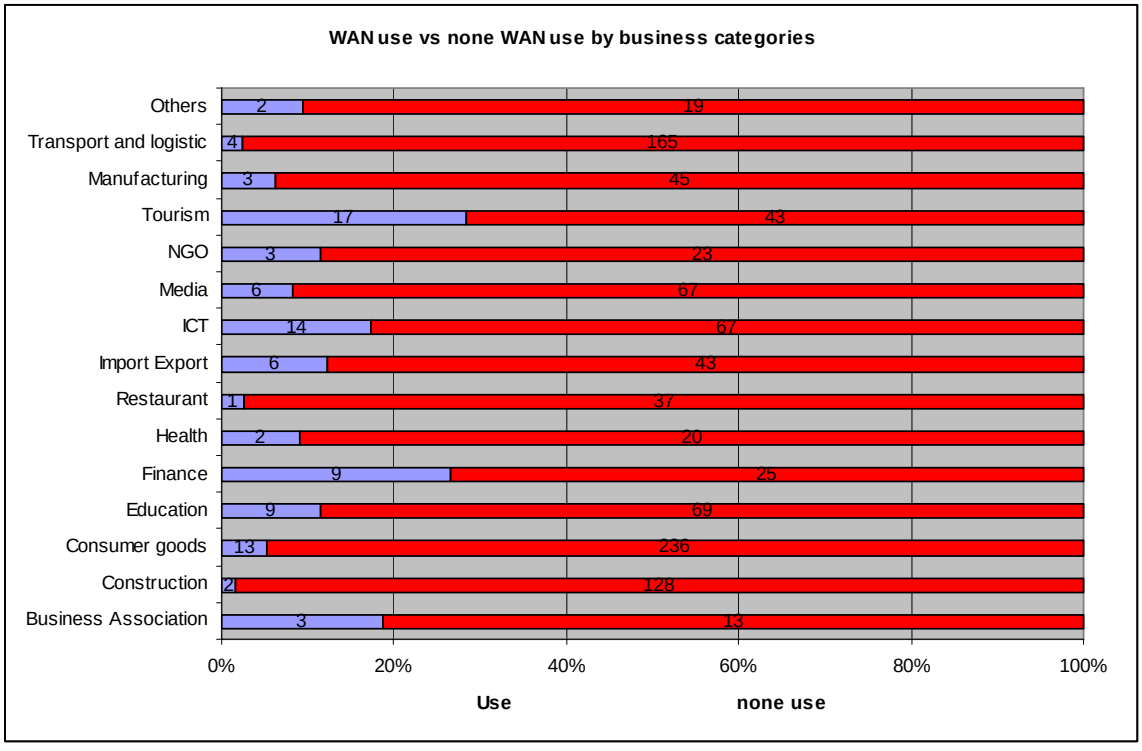
Figure 10. WAN Use by business categories



5.7. WAN use vs none WAN Use by business categories

There was big difference between companies with WAN when distributed by business categories (Figure 11).

Figure 11. WAN use vs none WAN Use by business categories



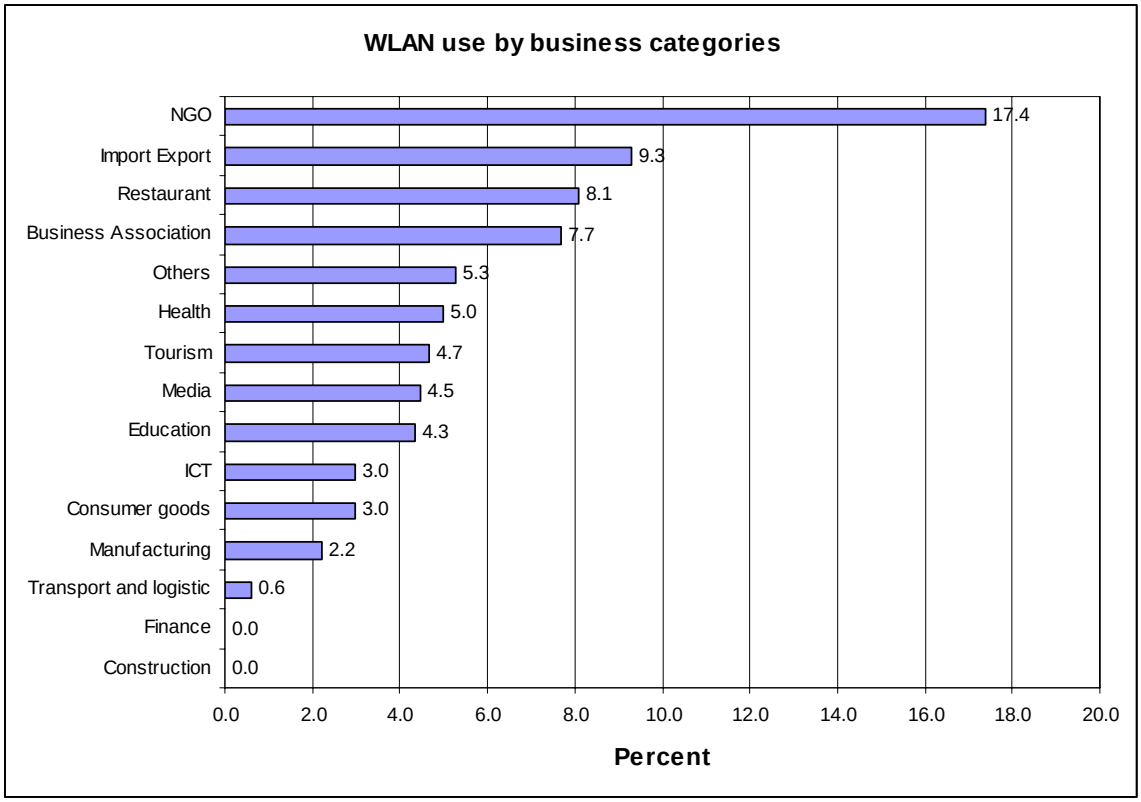
5.8. WLAN use by type of business categories

Regardless of respondent's distribution, NGO respondent firms was the most usage of Wireless Area Network. The result from survey has shown in table 13:

Table 15. WLAN use by categories

Business categories	Number	Percent
Business Association	1	7.7
Construction	0	0.0
Consumer goods	7	3.0
Education	3	4.3
Finance	0	0.0
Health	1	5.0
Restaurant	3	8.1
Import Export	4	9.3
ICT	2	3.0
Media	3	4.5
NGO	4	17.4
Tourism	2	4.7
Manufacturing	1	2.2
Transport and logistic	1	0.6
Others	1	5.3
Total	33	100

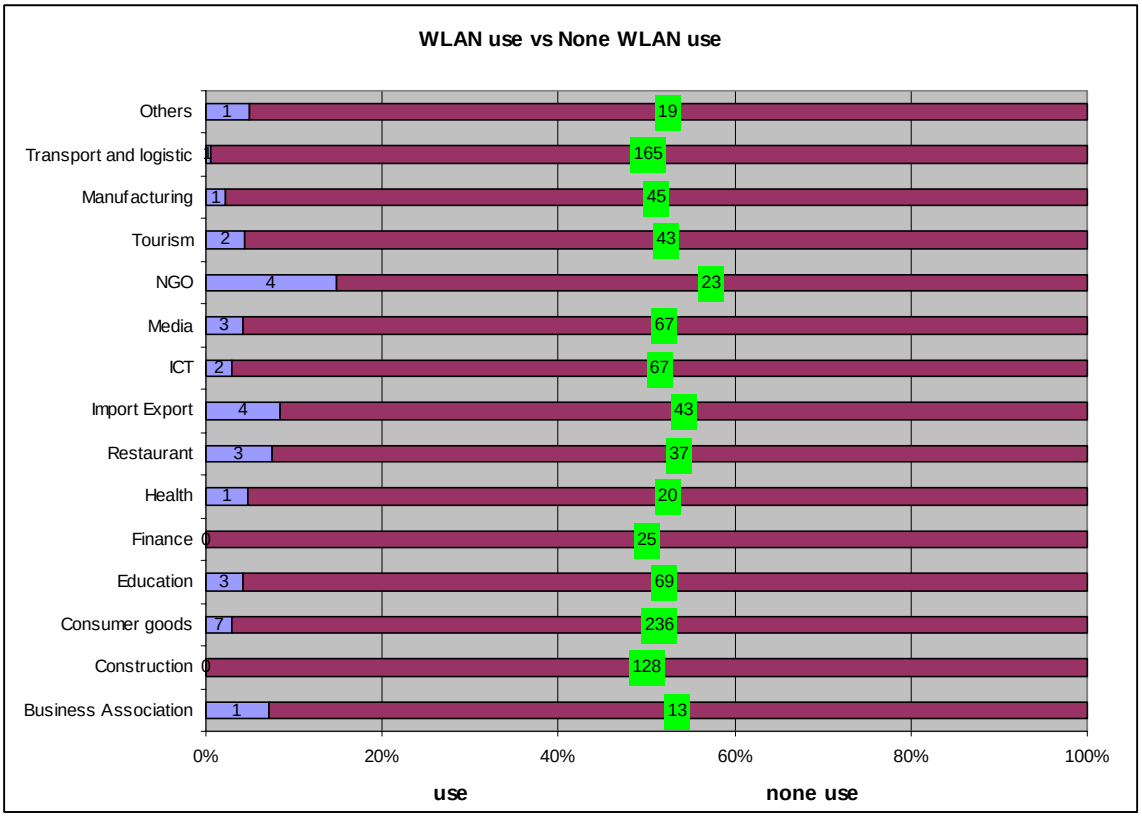
Figure 12. WLAN use by categories



5.9. WLAN use vs none WLAN use

There was big difference between companies with WAN when distributed by business categories (Figure 13).

Figure 13. WLAN use vs none WLAN use



5.10. Number of Server

Over 75% of respondent firms connected network had one server. Following by 19.8% of respondent who had two servers and on small percentage of respondent had more than two servers.

Table 16. Number server

server	Number	Percent
1	311	75.1
2	82	19.8
3	7	1.7
4	7	1.7
5	3	0.7
6	1	0.2
10	3	0.7

5.11. Number of server by business categories

Regardless distribution, education was the most organization set up with more server than other followed by ICT and import export.

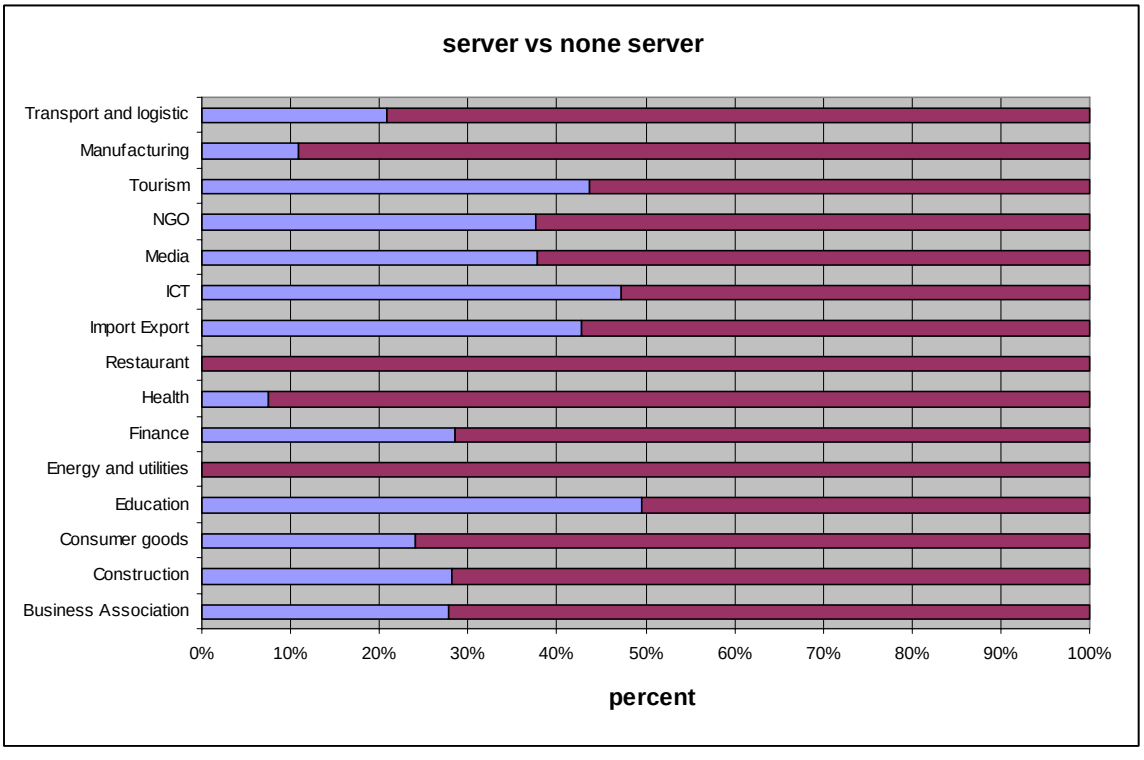
Table 17. Number of server by business categories

Business categories	How many server?
Business Association	5
Construction	50
Consumer goods	75
Education	68
Energy and utilities	0
Finance	8
Health	3
Restaurant	0
Import Export	50
ICT	60
Media, Com and Entertainment	14
NGO	26
Tourism	35
Manufacturing	20
Transport and logistic	5
Agriculture	0
Others	3
Total	**422**

5.12. Server vs none server

There was big difference between companies with server when distributed by Business categories (Figure 13). The largest group was education (50%). The second large group was ICT (45.5%). The smallest group were the rest of business categories.

Figure 14. Server vs none server



5.13. Type of OS for server

Microsoft windows accounting for 92.2% of respondent companies were used for server as operating system following by Linux 4.8%.

Table 18. Type of OS for server

Type of operation system	Number	Percent
Microsoft Windows	389	92.2
Macintosh	6	1.4
Unix	1	0.0
Lunix	17	4.8
AS 400	1	0.0
AIX	1	0.0
Sun OS/solar	7	1.6
Other	0	0.0
Total	**422**	**100.0**

5.14. Purposes of Server Use

According to survey results had shown that:

- 21.3% of respondents use server for the purpose of mail server
- 17.3%24.4 of respondents use server for the purpose of database
- 24.4% of respondents use server for the purpose internet server
- 16.8% of respondents use server for the purpose file server
- 7.6% of respondents use server for the purpose of application server
- 12.6 %of respondents use server for the purpose antivirus server,

Table 19. Purposes of Server Use

Type of operation system	Number	Percent
Mail server	90	21.3
Database	73	17.3
Internet server	103	24.4
File server	71	16.8
Application server	32	7.6
Antivirus server	53	12.6
Total	**422**	**100.0**

SECTION 6. Internet

6.1. Internet

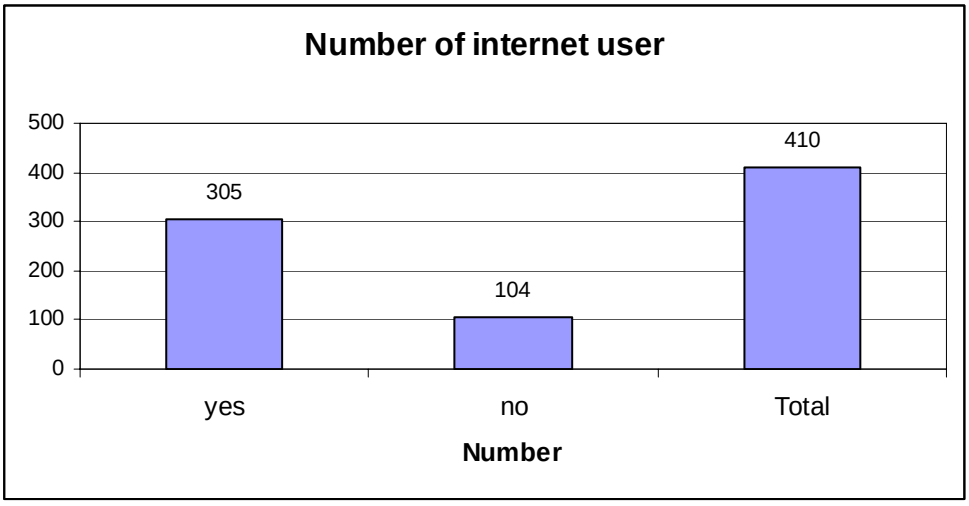
The number of Internet users in Cambodia as of December 2006 according to a report of Ministry of Post and Telecommunication was about 9,435. There was no shortage of telephone lines. Three organizations have provided more than 1 million telephone numbers to households throughout the country. Internet Service Providers are available in Phnom Penh and some major cities. Apparently, the exact number of Internet Service Providers (ISP) cannot be officially stated. However, at least 10 ISPs can be identified from the Internet search as follows:

Table 20. Name and Website Internet Service Providers

Company	Website
Camintel	http://www.camintel.com
Camnet	http://www.camnet.com.kh
Camshin	http://www.camshin.com
Casacom	http:// www.hellogsm.com.kh
Citylink	http:// www.citylink.com.kh/
Cogetel	http://www.online.com.kh
Online	http://www.online.com.kh
Telesurf	http://www.telesurf.com.kh
AZ	http://www.3tel.com.kh

From the survey, 409 companies are Internet users. 305 of these respondents had subscribed the internet (Figure 14).

Figure 14. Subscribe to internet

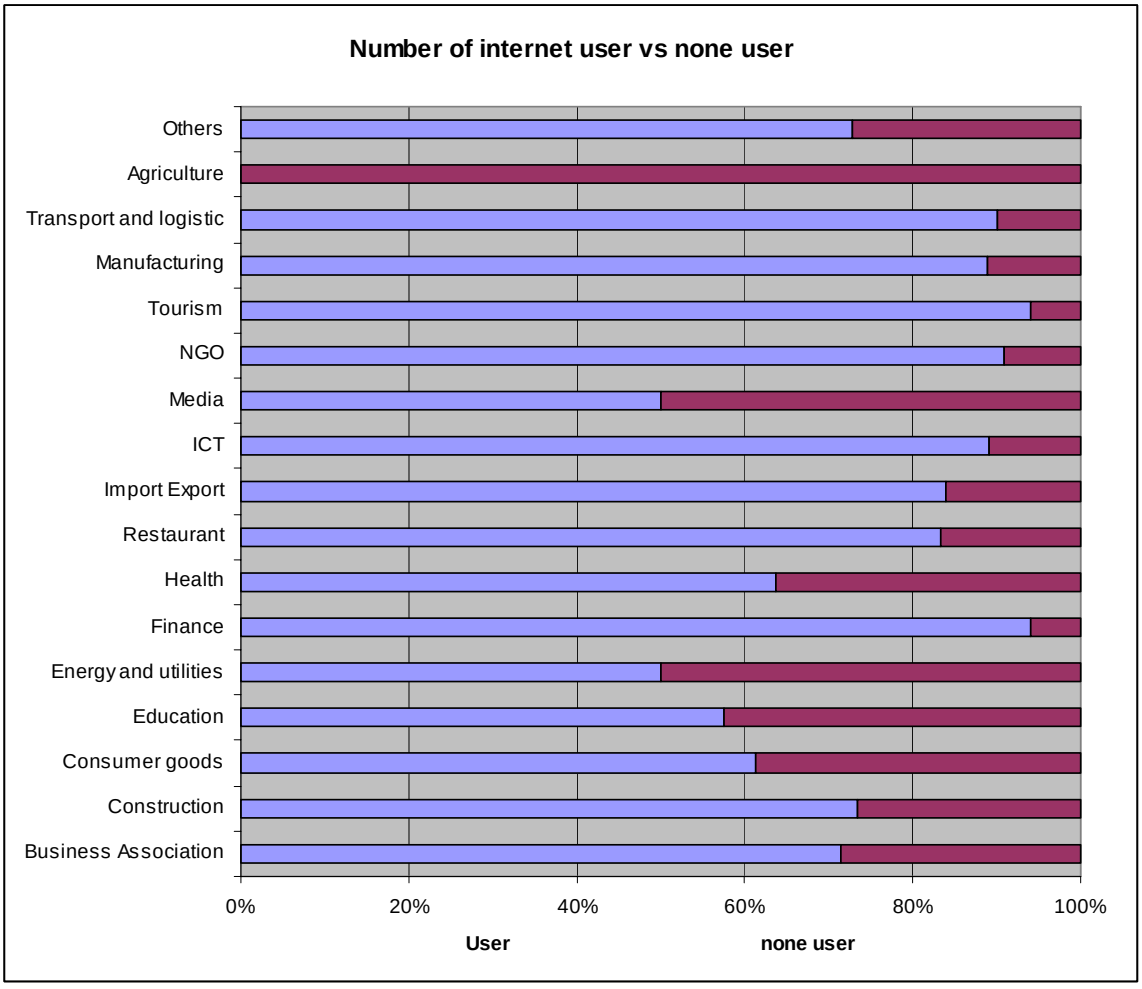


6.2. Subscribe to Internet by Business Categories

According to survey 74% of total respondents which had network connection were connected internet. The percentage of user vs none user had shown below:

71.4%	Of Business Association connected internet
73.3%	Construction connected internet
61.2%	Consumer goods connected internet
58.3%	Education connected internet
50.0%	Energy and utilities connected internet
94.1%	Finance connected internet
63.6%	Health connected internet
83.3%	Restaurant connected internet
84.0%	Import Export connected internet
89.1%	ICT connected internet
50.0%	Media connected internet
90.9%	NGO connected internet
94.1%	Tourism connected internet
88.9%	Manufacturing connected internet
90.0%	Transport and logistic connected internet
0.0%	Agriculture connected internet
72.7%	Others connected internet

Figure 15. Number of internet users by business categories



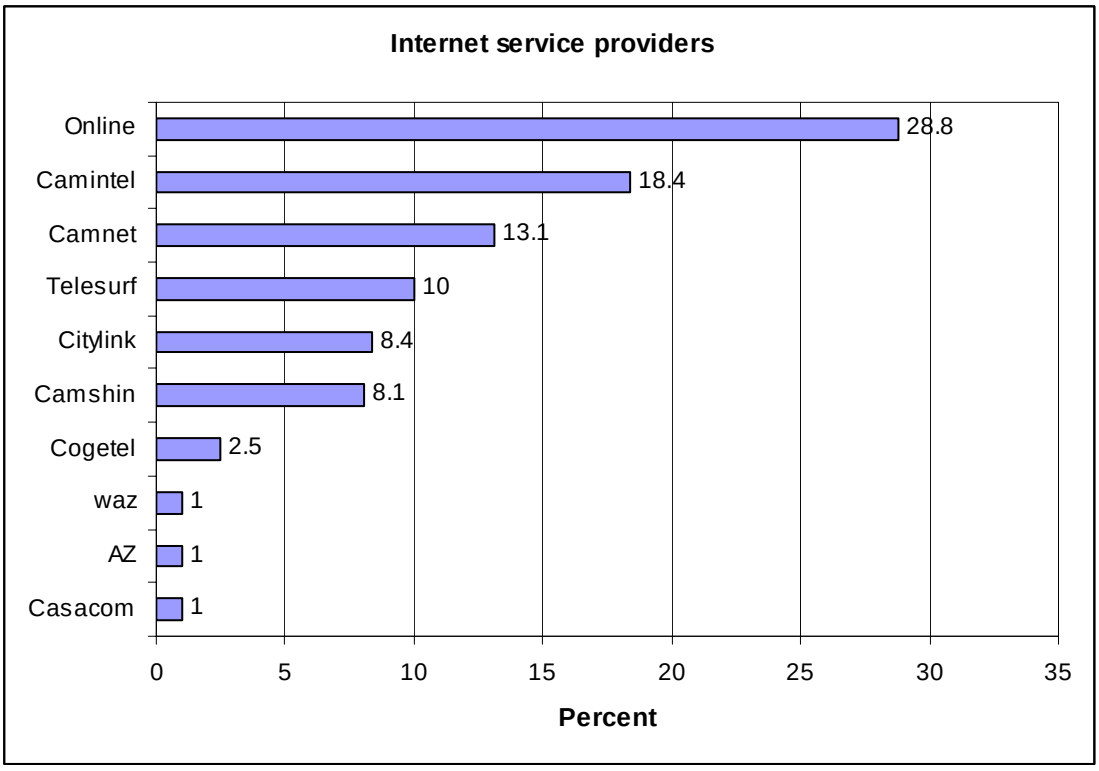
6.3. Internet service provider (ISP)

According to survey results internet user have subscribed from they internet service provider as below:

Table 21. Distribution of ISP

ISP	Percent
Camintel	18.4
Camnet	13.1
Camshin	8.1
Casacom	1.0
Citylink	8.4
Cogetel	2.5
Online	28.8
Telesurf	10.0
AZ	1.0

Figure 17. Internet Service Providers



6.7. Internet Speed

Most respondents were not certain about the average speeds received. Answers about the receiving speeds could be concluded into 5 categories (Figure 1.12): 56 kps, 128 kps, 256 kps, 512 kps, and 1024 kps. A respondent remarked that receiving speeds might depend upon the quality of the connection equipment such as computers, signal wire, modem speed, information traffic, etc.

Table 22. Internet speed

Internet speed	Percent
56 Kbps	17.5
128 Kbps	44.3
256 Kbps	14.5
512 Kbps	6.8
1024 Kbps	1.2

6.4. Satisfaction of Internet speed

Out of 422 of respondent 55.0% of respondents considered speeds of the Internet connection in Cambodia were satisfied on average, 45.0% stated that the speeds of connection were very slow.

Table 23. Satisfaction of Internet Speed

Satisfaction of internet connection	Percent
Yes	55.0
No	45.0
Total	**100.0**

6.5. Reason of not satisfied

Out of 405 respondents 21.5% because of cost connection and fee, 44.6 % stated of not reliable of connection and only 5.7% were not satisfied of internet speed.

Table 24. Reason for not satisfied

Reason of not satisfied	Percent
Cost	21.5
Reliable	44.6
Speed	5.7

Their decision on using the Internet speed of the Internet connection would be related to time saving, cost saving, and work productivity. The results shown in table 24 as below:

Table 25. Decision on internet speed

Internet speed	Yes	Percent
56 Kbps	24	33
128 Kbps	88	55
256 Kbps	28	19
512 Kbps	10	10
1024 Kbps	2	2

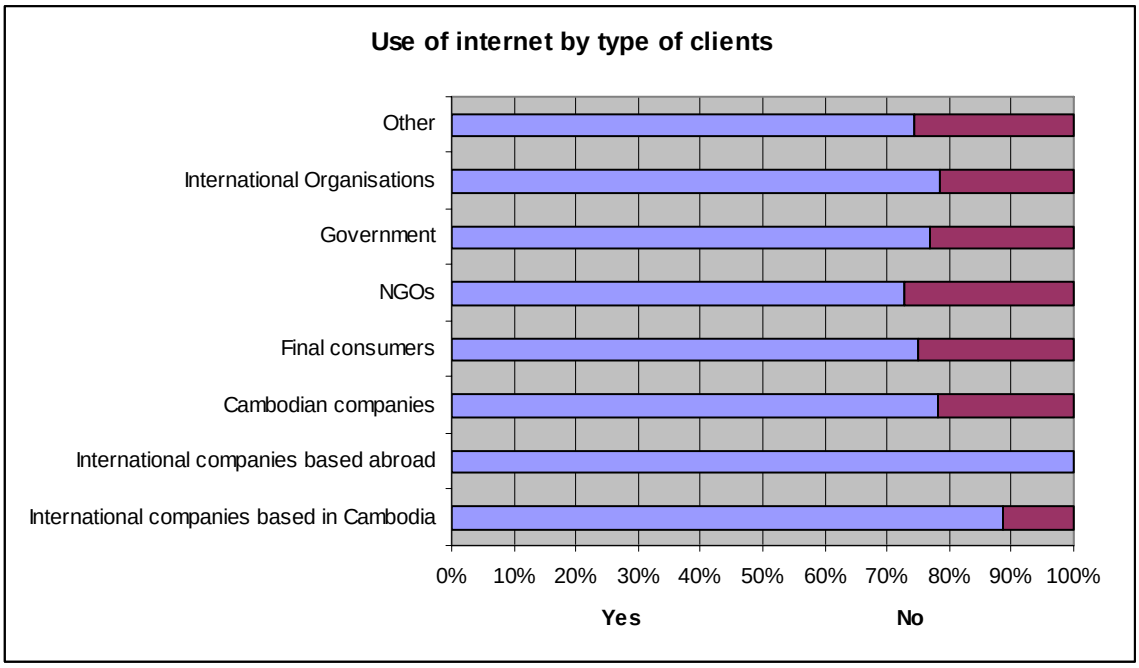
. **The use of Internet connection by clients**

Respondents gave information on the use the Internet, e.g., gateway to foreign markets, purchasing foreign products, convenient communication approach, image improvement, addition to traditional distribution channel, public relations, etc. The results as followed:

Table 25. The use of internet by type of clients

Type of clients	Percent
International companies based in Cambodia	11.6
International companies based abroad	5.7
Cambodian companies	17.8
Final consumers	52.8
NGOs	16.5
Government	10.6
International Organisations	8.1
NGOs	11.6

Figure 18. Use of internet by type of clients



SECTION 7. Software

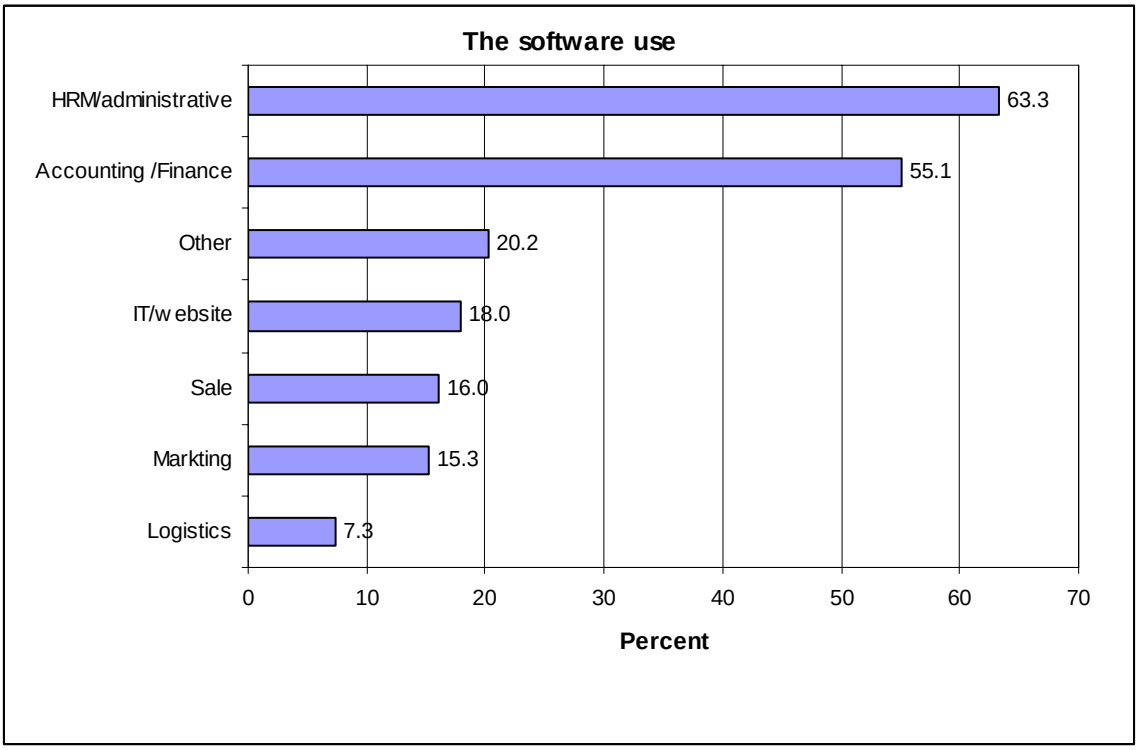
7.1. The use of package software (word, excel …)

About 63.3% of HRM/administrative departments were used package software following by accounting department 55.1%, other department 20.2%, IT department 18.0%, Sale 16.0%, marketing 15.3% and logistics 7.3%.

Table 27. Use of package software

Department	Percent
Logistics	7.3
Marketing	15.3
Sale	16.0
IT/website	18.0
Other	20.2
Accounting /Finance	55.1
HRM/administrative	63.3

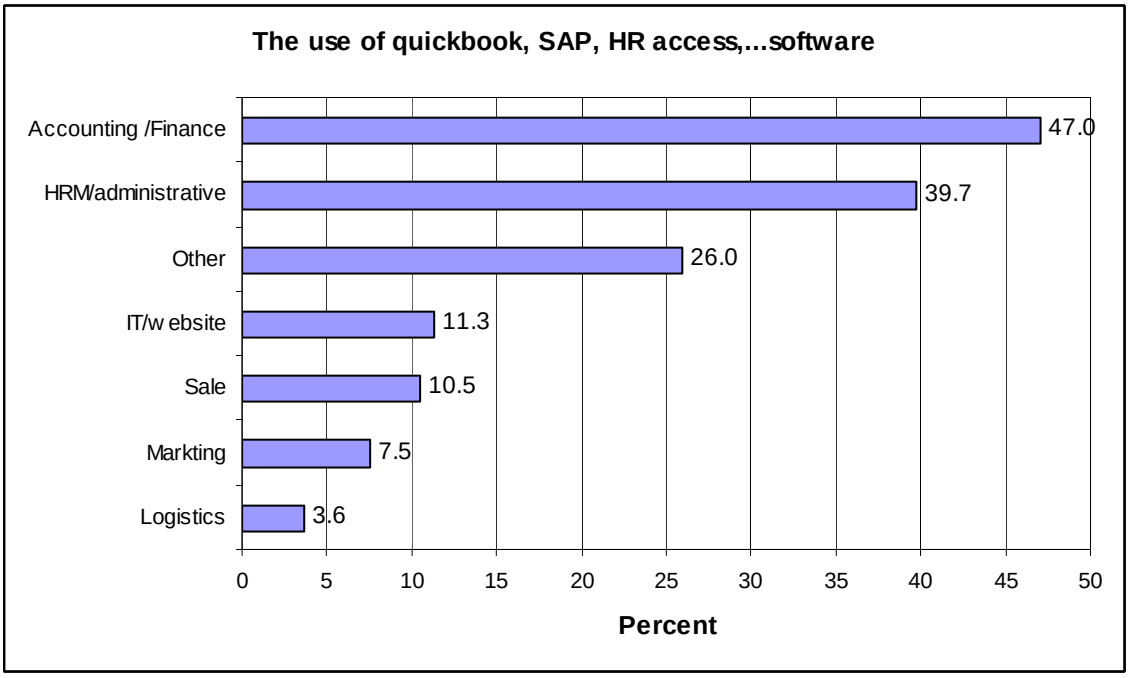
Figure 19. The use of package word excel… in these department



34. Use of special software like quickbook, SAP…in the department

Accounting/finance department were used special soft ware such quickbook for their operating about 47.0% following by HRM/administrative departments were used special software by 39.7%, other department 26.0%, IT department 11.3%, Sale 10.3%, marketing 7.5% and logistics 3.6%.

Figure 20. The use of special software



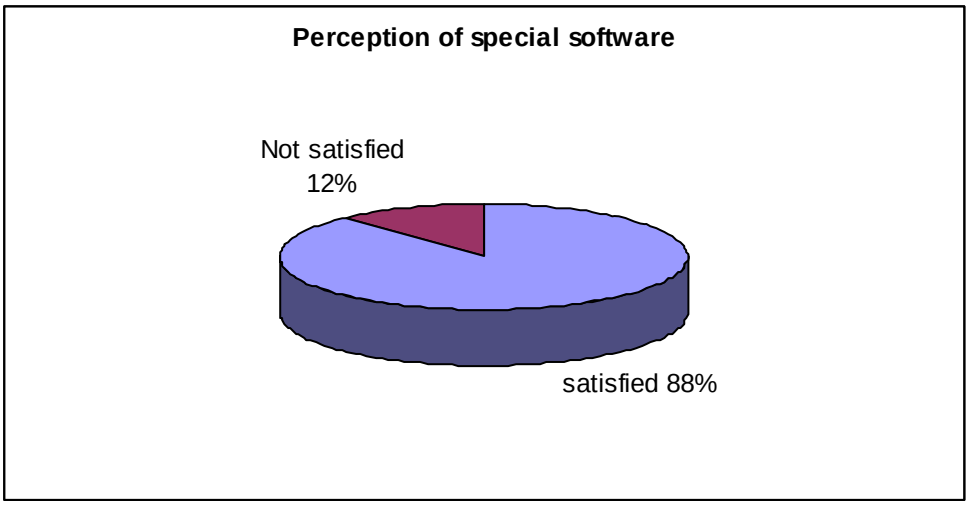
35. Perception with special software

When asked if they satisfied with these special software 88.3% of respondent firms were satisfied and 11.7% were not satisfied.

Table 28. Perception of special software

Satisfied	Percent
Yes	88.3
No	11.7
Total	100.0

Figure 21. Perception of special software



SECTION 8. Current IT needs and outsourcing

The survey was explored the current IT needs and the outsourcing of respondent firms. This section asked respondent about the skills needed, level of skills, level of staff skills and outsource of local and foreign.

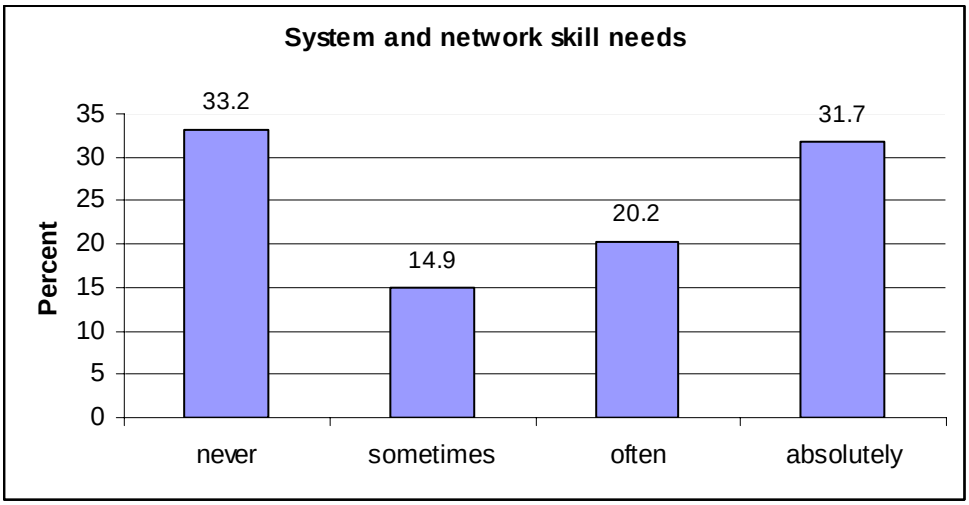
8.1 System and Network

When asked about system and network skill needed in their firms 33.2% of respondent firms reported they never needed, 14.9% were reported that they need for sometimes, 20.2% were reported they need very often and 31.7% were needed completely.

Table 29. System and network skill needs

Frequent	Percent
Never	33.2
Sometimes	14.9
Often	20.2
Absolutely	31.7
Total	100.0

Figure 21. System and network skill needs



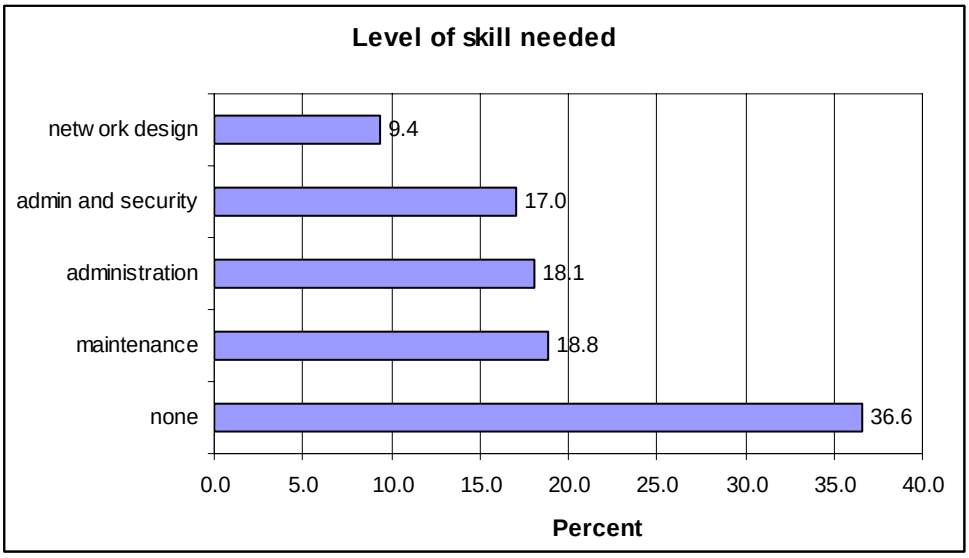
37. Level of skills

When asked about skill level currently needed for system and network 36.6% of respondent firms were reported that they do not need, 18.8% currently needed for skill maintenance, 18.1% currently needed for skill administration, 17.0% currently needed for skill security and 9.4% currently needed for skill network and design.

Table 30. Level of skill needed

Level	Percent
None	36.6
Maintenance	18.8
Administration	18.1
Security	17.0
Network design	9.4
Total	100.0

Figure 22. Level of skill needed



8.3. Current level of IT staff

When asked about current level of IT staff for system and network 39.6% of respondent firms were reported that they have no IT staff, 12.9% currently have IT skill for maintenance, 21.1% currently have IT staff for skill administration, 16.9% currently have skill for security and 9.5% currently have skill for network and design.

Table 31. Current level of IT staff

Current level of IT staff	Percent
none	39.6
maintenance	12.9
administration	21.1
admin and security	16.9
network design	9.5
Total	**100.0**

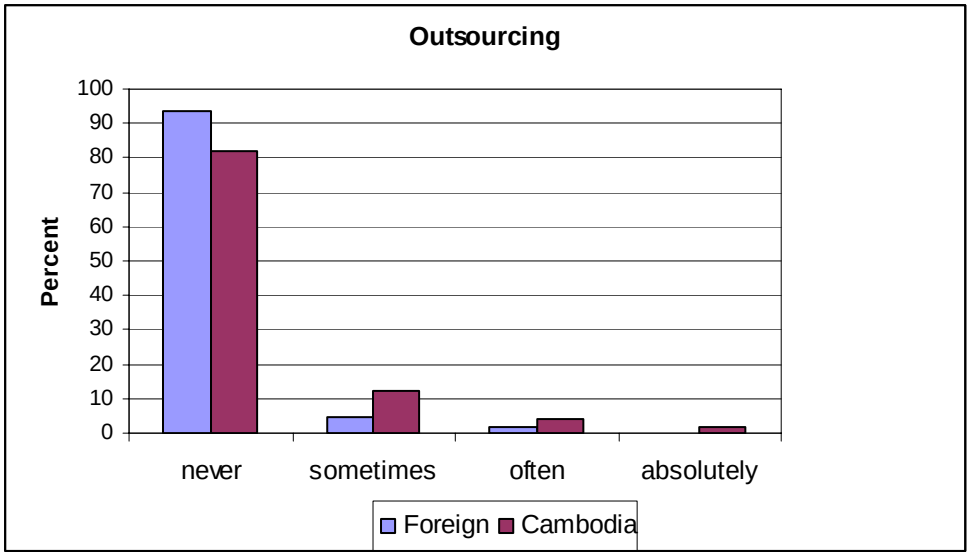
8.4. Outsourcing

Of total firms (422 firms) with IT used, 93.3% and 81.8% never outsourcing to foreign and Cambodia IT company, 4.7% and 12.1% sometimes outsourcing to foreign and Cambodia IT company, 1.7% and 4.1% often outsourcing to foreign and Cambodia IT company and 0.3% and 1.9% absolutely outsourcing to foreign and Cambodia IT company.

Table 32. Outsourcing

Outsource	Foreign	Cambodia
never	93.3	81.8
sometimes	4.7	12.1
often	1.7	4.1
absolutely	0.3	1.9
Total	**100.0**	**100.0**

Figure 23. Outsourcing



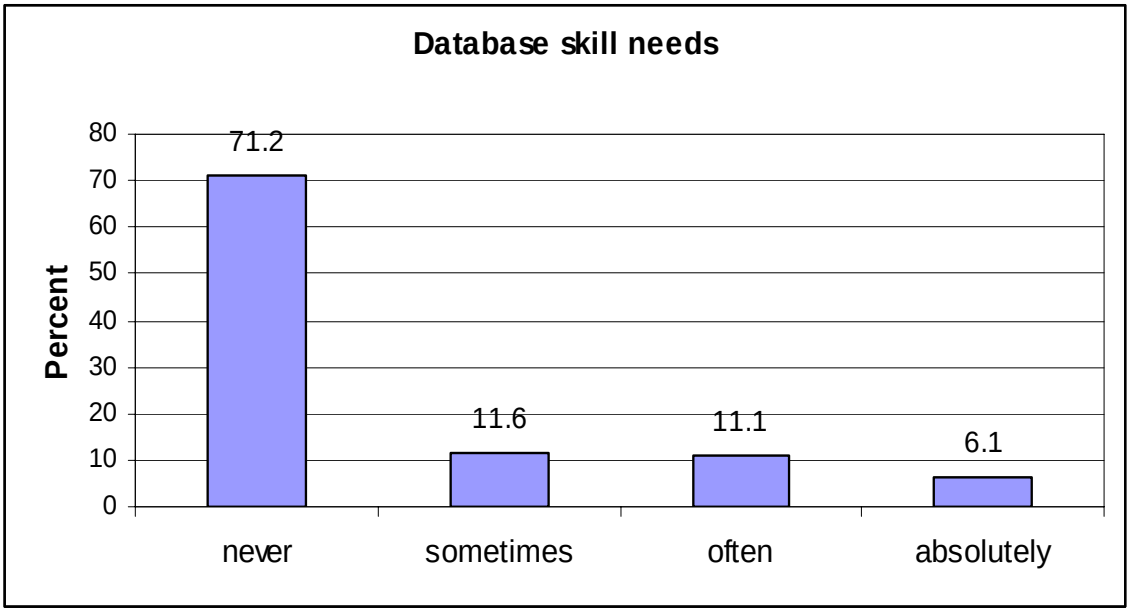
8.5. Database

When asked about database skill needed in their firms 71.2% of respondent firms reported they never needed, 11.6% were reported that they need for sometimes, 11.6% were reported they needed very often and 6.1% were absolutely needed.

Table 33. Database skill needs

Frequent	Percent
Never	71.2
Sometimes	11.6
Often	11.1
Absolutely	6.1
Total	100.0

Figure 24. Database skill needs



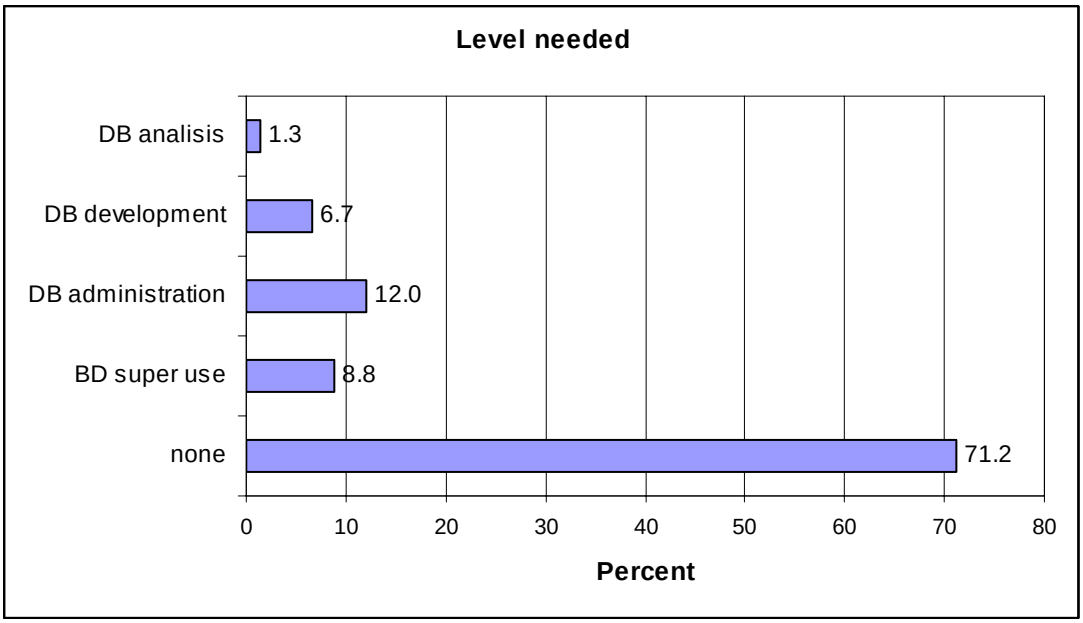
8.6. Level of skills for database

When asked about skill level currently needed for system and network 71.2% of respondent firms were reported that they do not need, 8.8% currently needed for skill DB super use, 12.0% currently needed for skill DB administration, 6.7% currently needed for skill DB development and 1.3% currently needed for skill DB analysis.

Table 34. Level of skill needed for database

Level	Percent
none	71.2
BD super use	8.8
DB administration	12.0
DB development	6.7
DB analysis	1.3
Total	100.0

Figure 25. Level of skill needed for database



8.7. Current level of IT staff for Database

When asked about current level of IT staff for database 71.2% of respondent firms were reported that they have no IT staff, 8.8% currently have IT skill for DB super, 12.0% currently have IT staff for skill DB administration, 6.7% currently have skill for DB development, 1.3 % currently have skill for DB analysis.

Table 35. Current level of IT staff

Current level of IT staff	Percent
none	71.2
BD super use	8.8
DB administration	12.0
DB development	6.7
DB analysis	1.3
Total	100.0

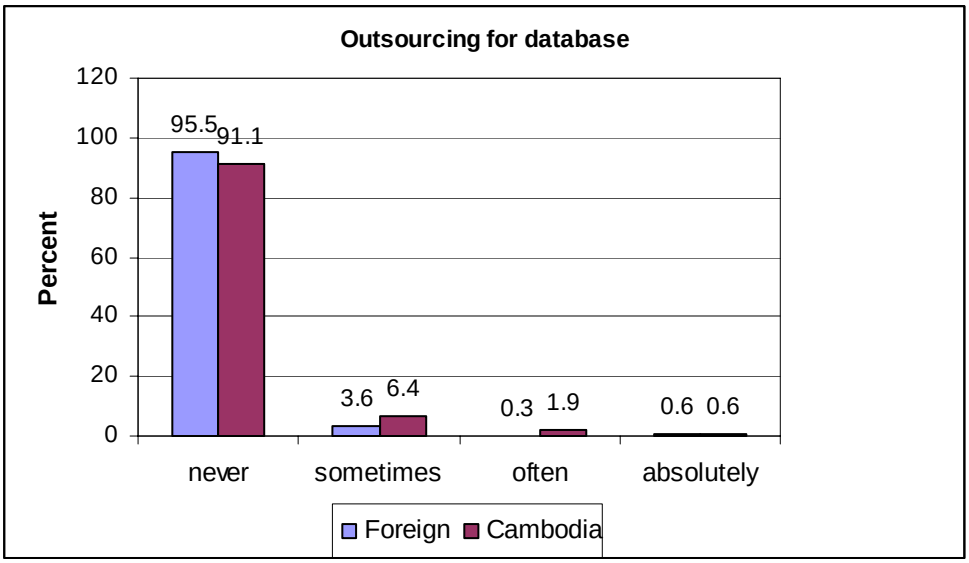
43. Outsourcing for database

Of total firms (422 firms) with IT used, 95.5% and 91.1% never outsourcing to foreign and Cambodia IT company, 3.6% and 6.4% sometimes outsourcing to foreign and Cambodia IT company, 0.3% and 1.9% often outsourcing to foreign and Cambodia IT company and 0.6% and 0.6% absolutely outsourcing to foreign and Cambodia IT company.

Table 36. Outsourcing

Outsource	Foreign	Cambodia
never	95.5	91.1
sometimes	3.6	6.4
often	0.3	1.9
absolutely	0.6	0.6
Total	100.0	100.0

Figure 26. Outsourcing for database



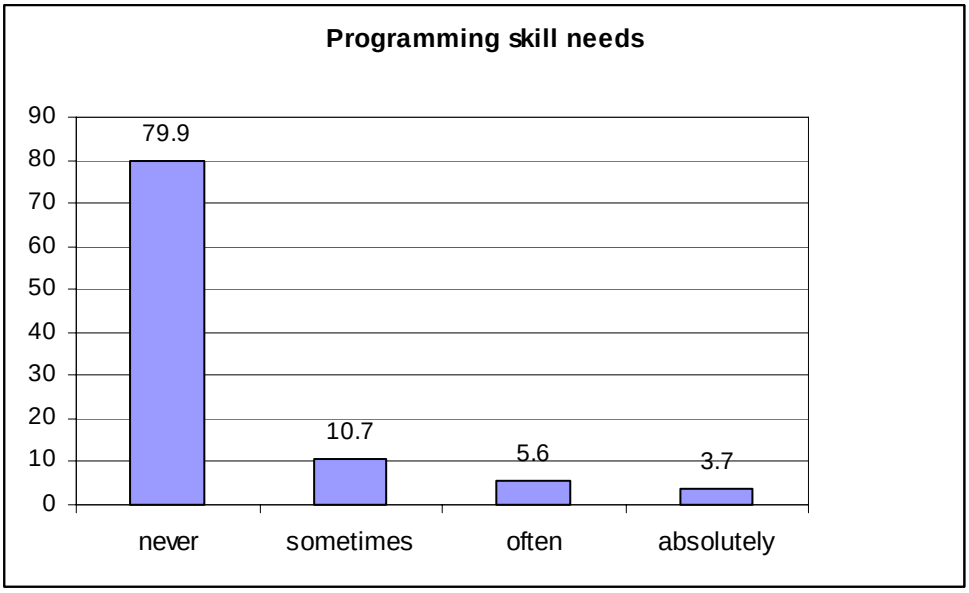
8.9. Programming skills needs

When asked about programming skill needed in their firms 79.9% of respondent firms reported they never needed, 10.7% were reported that they need for sometimes, 5.6% were reported they needed very often and 3.7% were absolutely needed.

Table 37. Programming skill needs

Frequent	Percent
Never	79.9
Sometimes	10.7
Often	5.6
Absolutely	3.7
Total	100.0

Figure 27. Programming skill needs



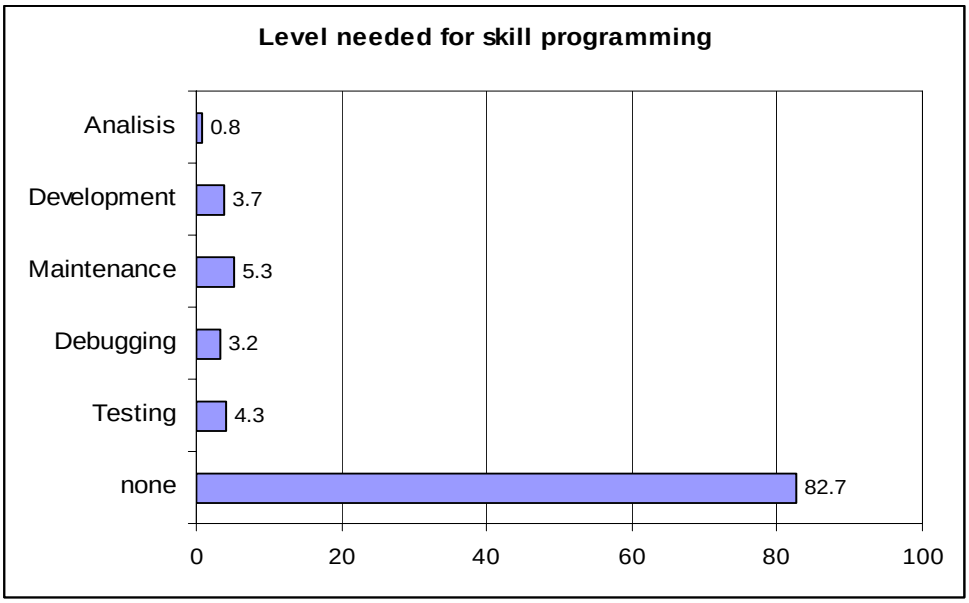
8.10. Level of skills for programming

When asked about skill level currently needed for system and network 71.2% of respondent firms were reported that they do not need, 8.8% currently needed for skill DB super use, 12.0% currently needed for skill DB administration, 6.7% currently needed for skill DB development and 1.3% currently needed for skill DB analysis.

Table 38. Level of skill needed for programming

Level	Percent
none	82.7
Testing	4.3
Debugging	3.2
Maintenance	5.3
Development	3.7
Analysis	0.8
Total	100.0

Figure 28. Level of skill needed for programming



8.11. Current level of IT staff for programming

When asked about current level of IT staff for programming 83.4% of respondent firms were reported that they have no IT staff, 4.6% currently have IT skill for testing, 2.4% currently have IT staff for skill debugging, 5.1% currently have skill for maintenance, 3.8 % currently have skill for development and 0.8% currently have skill for analysis.

Table 39. Current level of IT staff

Level	Percent
none	83.4
Testing	4.6
Debugging	2.4
Maintenance	5.1
Development	3.8
Analysis	0.8
Total	100.0

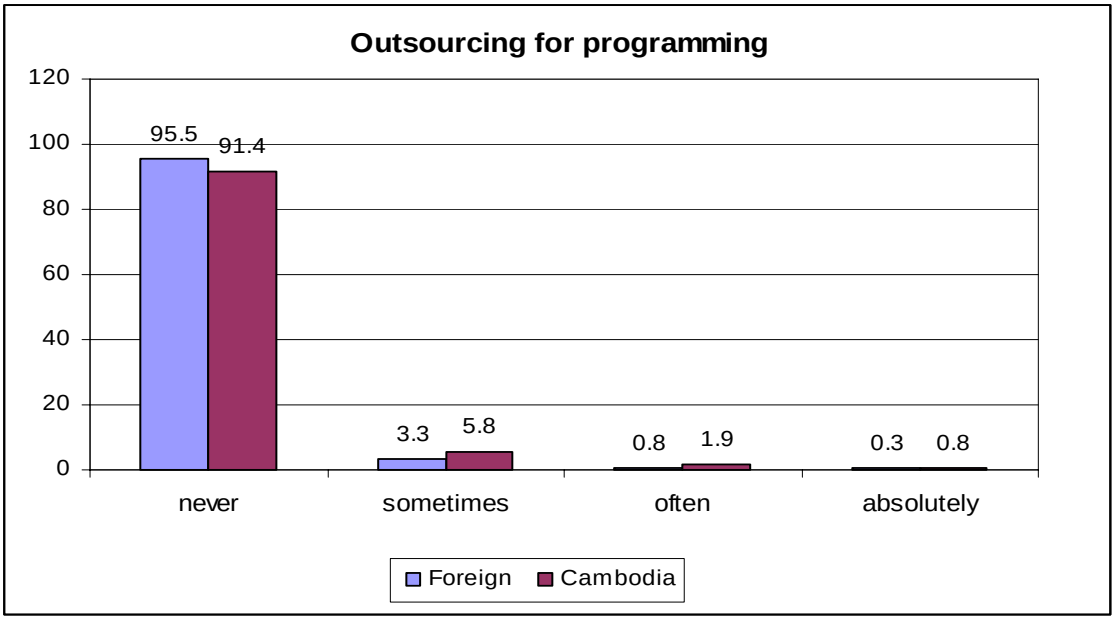
8.12. Outsourcing

Of total firms (422 firms) with IT used, 95.5% and 91.4% never outsourcing to foreign and Cambodia IT company, 3.3% and 5.6% sometimes outsourcing to foreign and Cambodia IT company, 0.8% and 1.9% often outsourcing to foreign and Cambodia IT company and 0.3% and 0.8% absolutely outsourcing to foreign and Cambodia IT company.

Table 40. Outsourcing for programming

Outsource	Foreign	Cambodia
never	95.5	91.4
sometimes	3.3	5.8
often	0.8	1.9
absolutely	0.3	0.8
Total	100.0	100.0

Figure 29. Outsourcing for programming



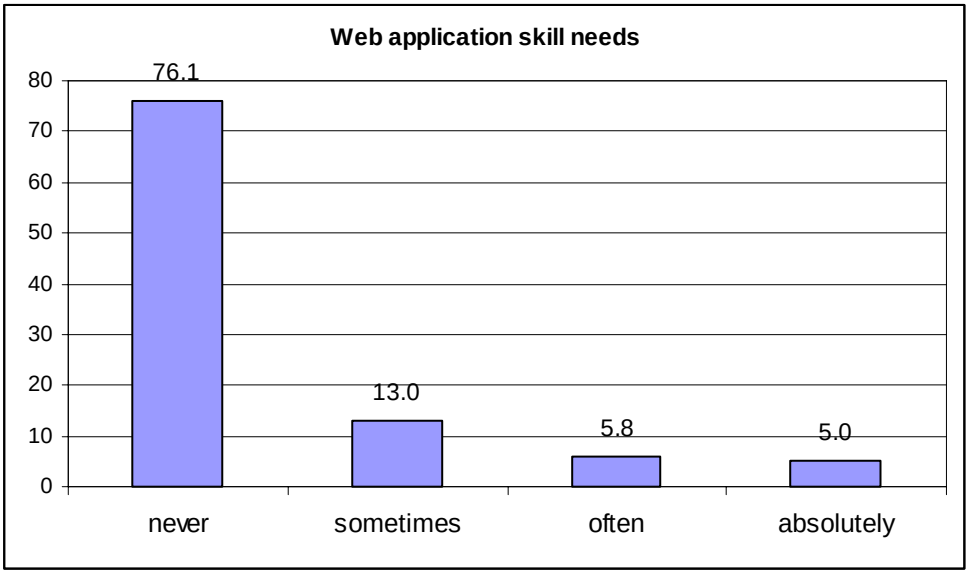
8.13. Web application

When asked about programming skill needed in their firms 76.1% of respondent firms reported they never needed, 13.0% were reported that they need for sometimes, 5.8% were reported they needed very often and 5.0% were absolutely needed.

Table 41. Web application skill needs

Frequent	Percent
Never	76.1
Sometimes	13.0
Often	5.8
Absolutely	5.0
Total	100.0

Figure 29. Web application skill needs



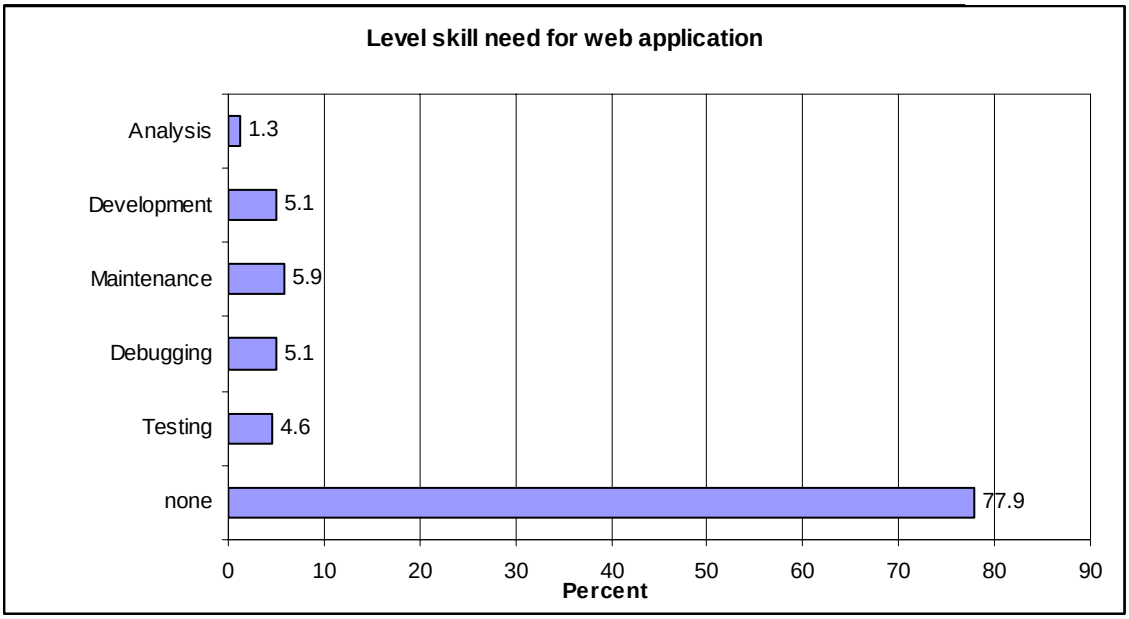
8.14. Level of skills for web application

When asked about skill level currently needed for system and network 77.9% of respondent firms were reported that they do not need, 4.6% currently needed for skill testing, 5.1% currently needed for skill debugging, 5.9% currently needed for skill maintenance, 5.1% currently needed for skill development, and 1.3% currently needed for skill analysis.

Table 42. Level of skill needed for web application

Level	Percent
none	77.9
Testing	4.6
Debugging	5.1
Maintenance	5.9
Development	5.1
Analysis	1.3
Total	100.0

Figure 30. Level of skill needed for web application



8.15. Current level of IT staff for web application

When asked about current level of IT staff for web application 79.2% of respondent firms were reported that they have no IT staff, 4.3% currently have IT skill for testing, 4.50% currently have IT staff for skill debugging, 4.8% currently have skill for maintenance, 5.6% currently have skill for development and 1.6 % currently have skill for analysis.

Table 43. Current level of IT staff for web application

Level	Percent
none	79.2
Testing	4.3
Debugging	4.5
Maintenance	4.8
Development	5.6
Analysis	1.6
Total	100.0

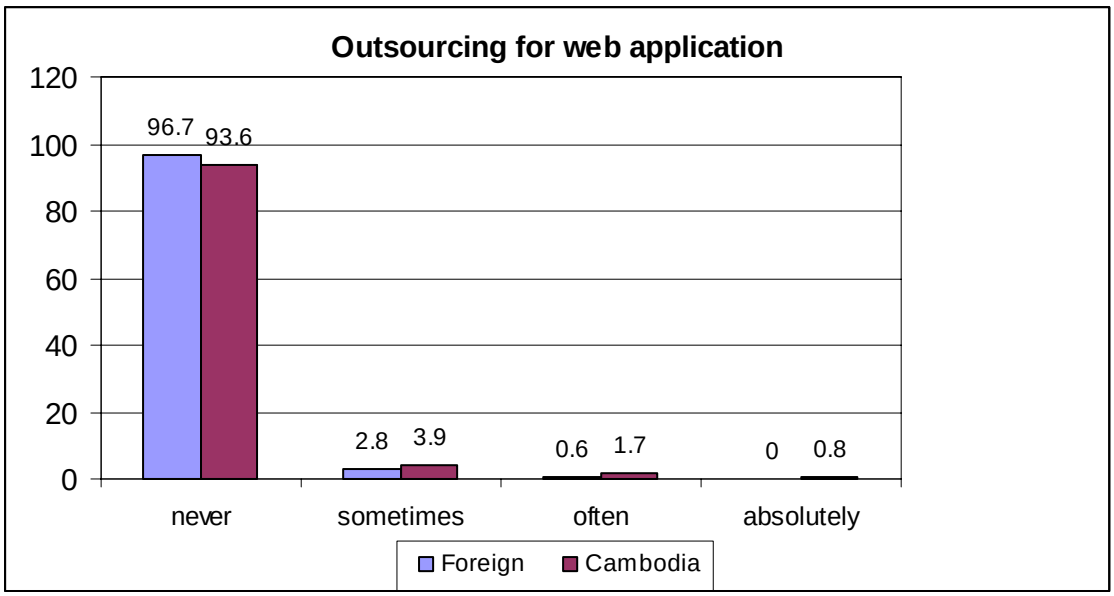
8.16. Outsourcing for web application

Of total firms (422 firms) with IT used, 95.5% and 91.4% never outsourcing to foreign and Cambodia IT company, 3.3% and 5.6% sometimes outsourcing to foreign and Cambodia IT company, 0.8% and 1.9% often outsourcing to foreign and Cambodia IT company and 0.3% and 0.8% absolutely outsourcing to foreign and Cambodia IT company.

Table 49. Outsourcing for web application

Outsource	Foreign	Cambodia
never	96.7	93.6
sometimes	2.8	3.9
often	0.6	1.7
absolutely	0.0	0.8
Total	100.0	100.0

Figure 31. Outsourcing for programming



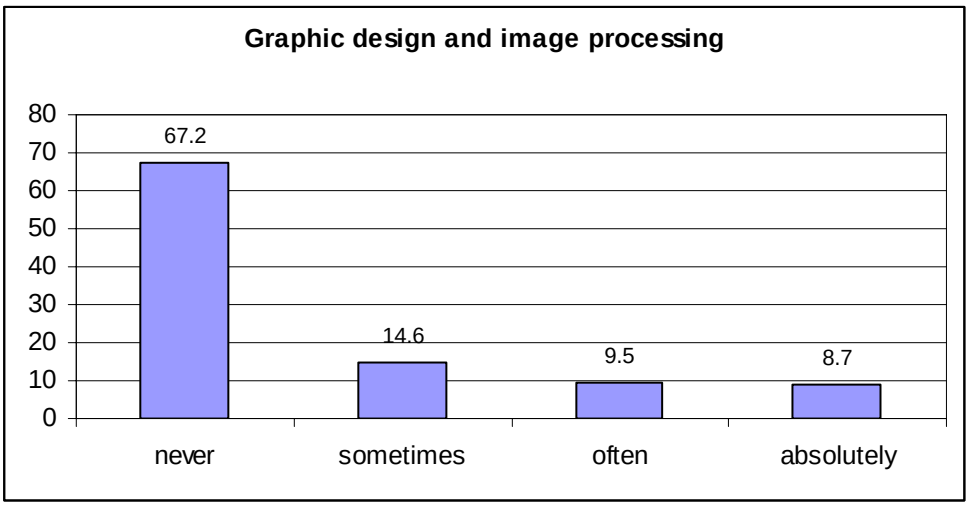
8.16. Graphic design and image processing

When asked about graphic design and image processing skill needed in their firms 67.2% of respondent firms reported they never needed, 14.6% were reported that they need for sometimes, 9.5% were reported they needed very often and 8.7% were absolutely needed.

Table 50. Graphic design and image processing skill needs

Frequent	Percent
Never	67.2
Sometimes	14.6
Often	9.5
Absolutely	8.7
Total	100.0

Figure 32. Graphic design and image processing



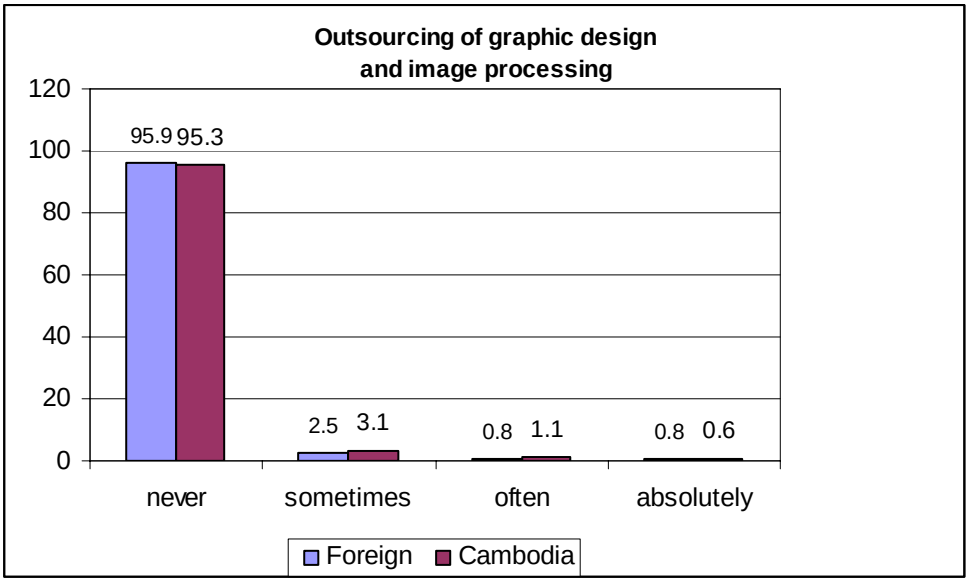
8.17. Outsourcing Graphic design and image processing

Of total firms (422 firms) with IT used, 95.9% and 95.3% never outsourcing to foreign and Cambodia IT company, 2.5% and 3.1% sometimes outsourcing to foreign and Cambodia IT company, 0.8% and 1.1% often outsourcing to foreign and Cambodia IT company and 0.8% and 0.6% absolutely outsourcing to foreign and Cambodia IT company.

Table 46. Outsourcing Graphic design and image processing

Outsource	Foreign	Cambodia
never	95.9	95.3
sometimes	2.5	3.1
often	0.8	1.1
absolutely	0.8	0.6
Total	100.0	100.0

Figure 33. Outsourcing of graphic design and image processing



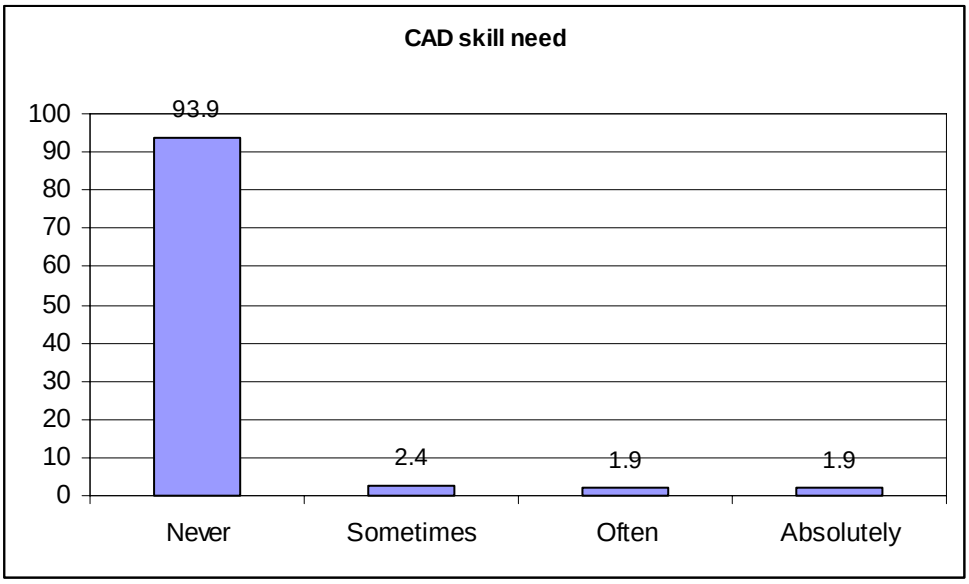
8.18. CAD

When asked about graphic design and image processing skill needed in their firms 93.9% of respondent firms reported they never needed, 2.4% were reported that they need for sometimes, 1.9% were reported they needed very often and 1.9% were absolutely needed.

Table 47. CAD skill needs

Frequent	Percent
Never	93.9
Sometimes	2.4
Often	1.9
Absolutely	1.9
Total	100.0

Figure 34. CAD skill needs



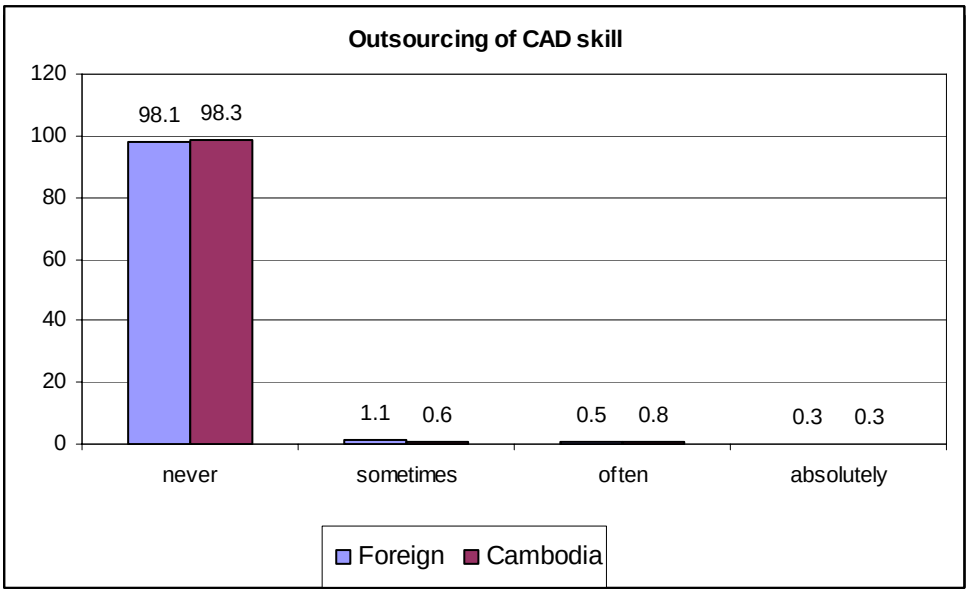
8.19. Outsourcing for CAD

Of total firms (422 firms) with IT used, 98.1% and 98.3% never outsourcing to foreign and Cambodia IT company, 1.1% and 0.6% sometimes outsourcing to foreign and Cambodia IT company, 0.5% and 0.8% often outsourcing to foreign and Cambodia IT company and 0.3% and 0.3% absolutely outsourcing to foreign and Cambodia IT company.

Table 48. Outsourcing for CAD

Outsource	Foreign	Cambodia
never	98.1	98.3
sometimes	1.1	0.6
often	0.5	0.8
absolutely	0.3	0.3
Total	100.0	100.0

Figure 35. Outsourcing of CAD



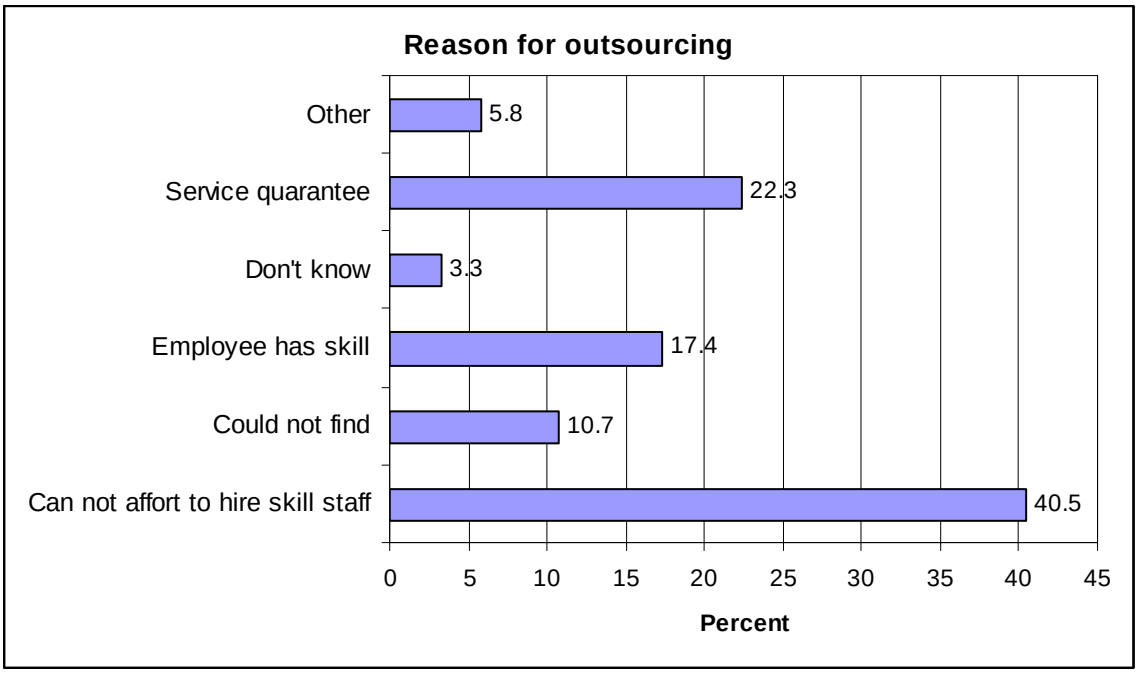
8.20. Reason for outsourcing

When asked why outsourcing, 40.5% of respondents reported that they can not afford to hire skill staff, 10.7% reported they could not find staff, 17.4% they have skill staff, 22.3% because of services guarantee and 5.8% have other reason.

Table 49. Reason for outsourcing

Reason	Percent
Can not afford to hire skill staff	40.5
Could not find	10.7
Employee has skill	17.4
Don't know	3.3
Service guarantee	22.3
Other	5.8
Total	**100.0**

Figure 36. Reason for outsourcing



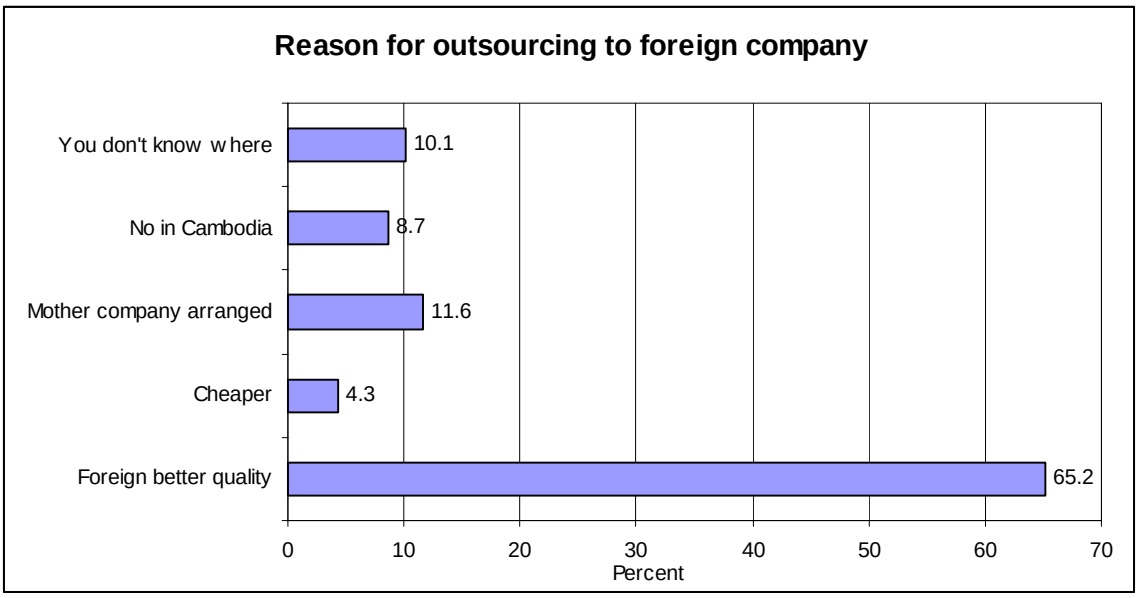
8.21. Reason for outsourcing foreign company

When asked why outsourcing to foreign company not Cambodia company, 65.2% of respondents reported that foreign company better quality, 4.3% of respondents reported that foreign company is cheap, 11.6% of respondents was arranged by mother company, 8.7% because of services not available in Cambodia.

Table 50. Reason for outsourcing to foreign company

Reason for outsourcing to foreign company	Percent
Foreign better quality	65.2
Cheaper	4.3
Mother company arranged	11.6
No in Cambodia	8.7
You don't know where	10.1
Total	100.0

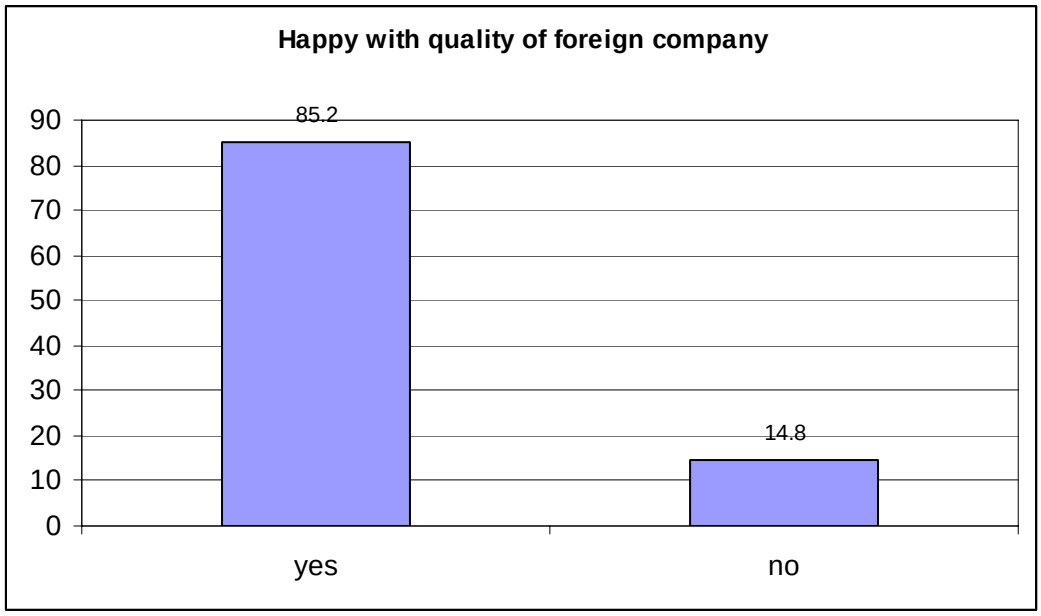
Figure 37. Reason for outsourcing to foreign company



8. Happy with quality of foreign company

85.2% of respondent firms reported that they happy with quality of services provided by foreign company and 14.8% were not happy with foreign company.

Figure 38. Happy with quality of foreign company

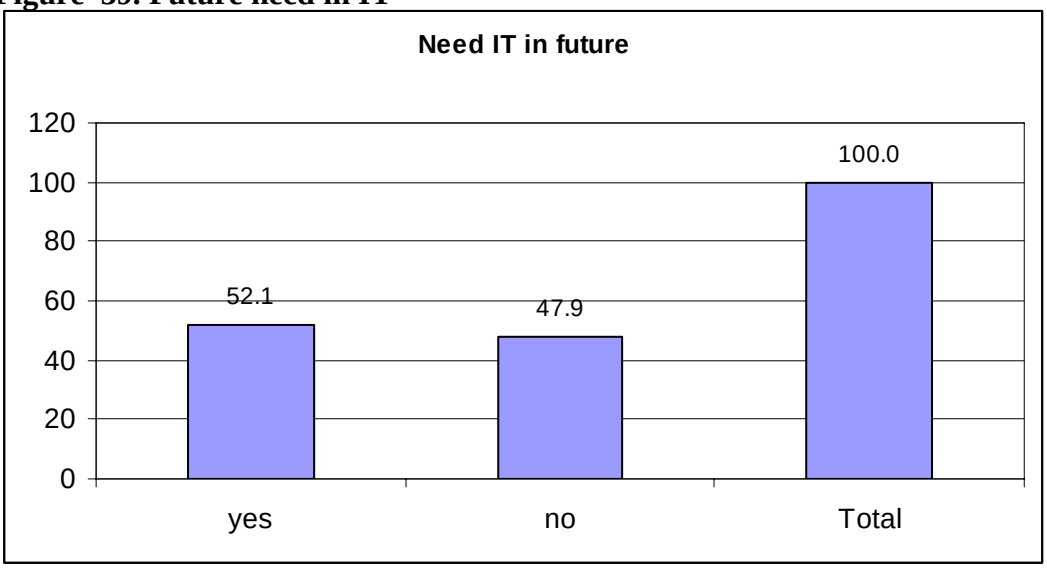


SECTION 9. Future needs in IT

9.1. Need IT in future

52.1% (out of 935 firms) of respondent firms reported that they need IT staff in future and 47.% (out of 935 firms) were not need IT staff.

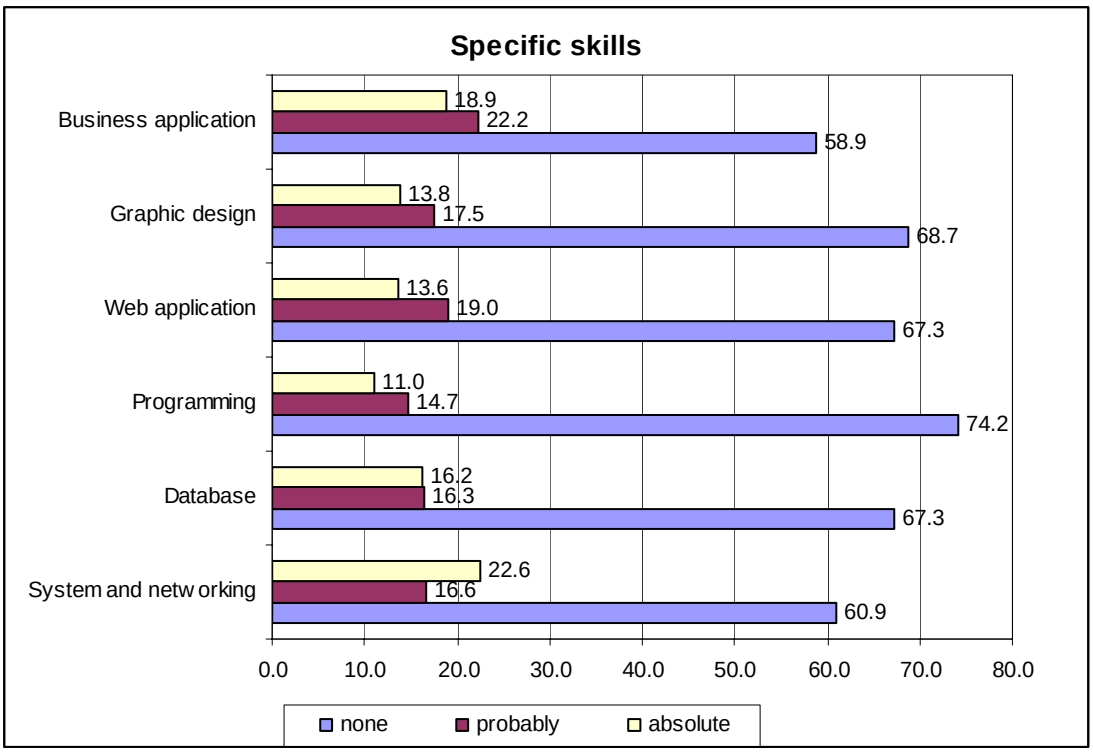
Figure 39. Future need in IT



9.2. Skills need in IT staff

18.9% (of 935 firms) of respondent firms need business application, 13.8% needed graphic design skill, 13.6% needed web application skill, 11.0% needed programming skill, 16.2% needed database skill, 22.6% needed system and networking .

Figure 40. Specific skill in IT staff

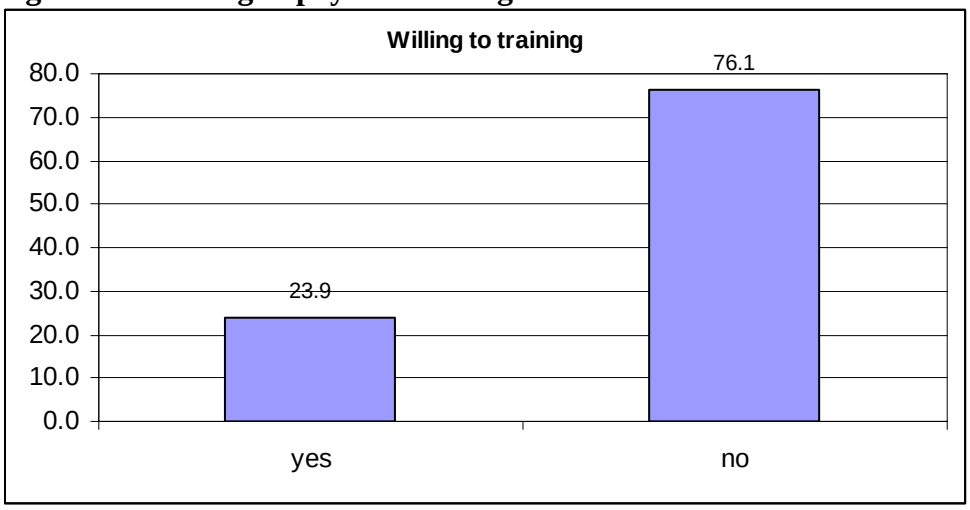


SECTION 10.Training needs

10.1. Willing to pay training

According to respondents 23.9% willing to pay for training and 76.1% are not willing to pay the training for staff.

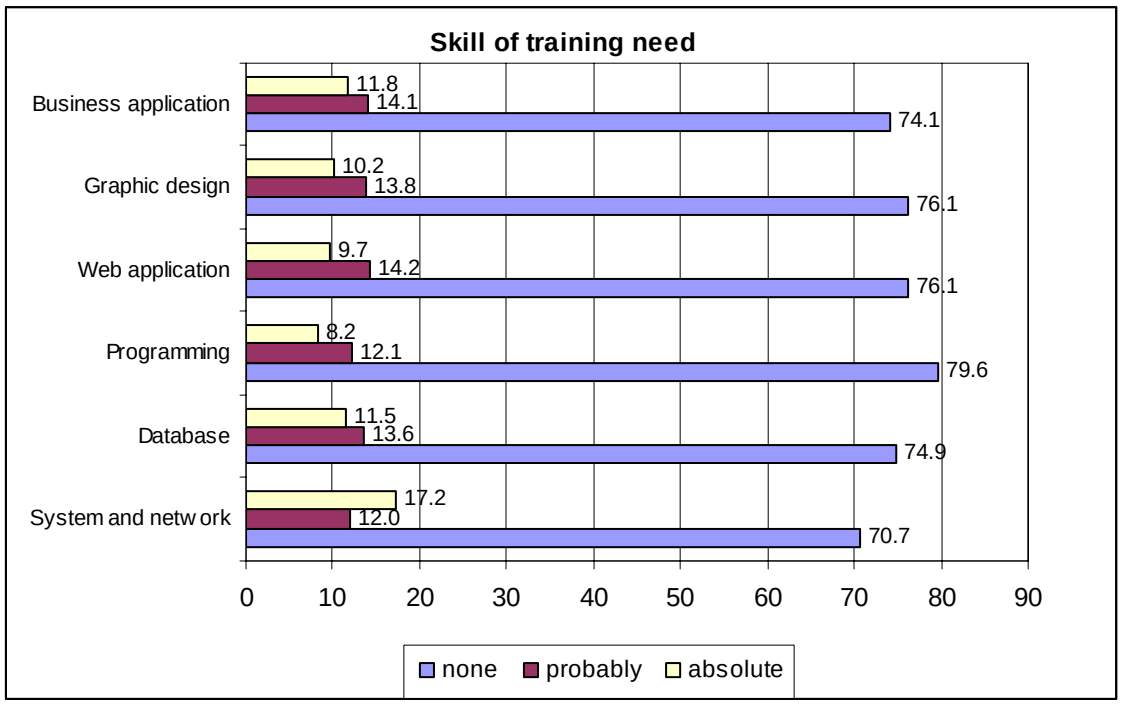
Figure 41 . Willing to pay for training



10.2. Training information

11.8% (of 935 firms) of respondent firms desired training on business application , 10.2% were desired training of graphic design, 9.7% were desired training on web application, 8.2% were desired training on programming, 11.5% were desired training on database, 17.2% were desired training on system and networking .

Figure 42. Training information



10.3. IT HR information

Employ of non-local IT staff

Only 2.3% (of 935 firms) were recruited foreign IT staff and 97.7% were not recruited foreign IT staff.

Figure 43. Employ of non-local IT staff

10.4. Nationalities of foreign IT staff

The percentage of foreign staff is very small. 0.7% are Thai, 1.0 are Vietnamese, 0.7% are Chinese, 0.2 are Philippines, 0.7% are Indian, 1.4% are Western, 0.2% are Japanese and 3.6% are other nationalities such Korean, Bangladesh…

Table 51. nationalities of foreign IT staff

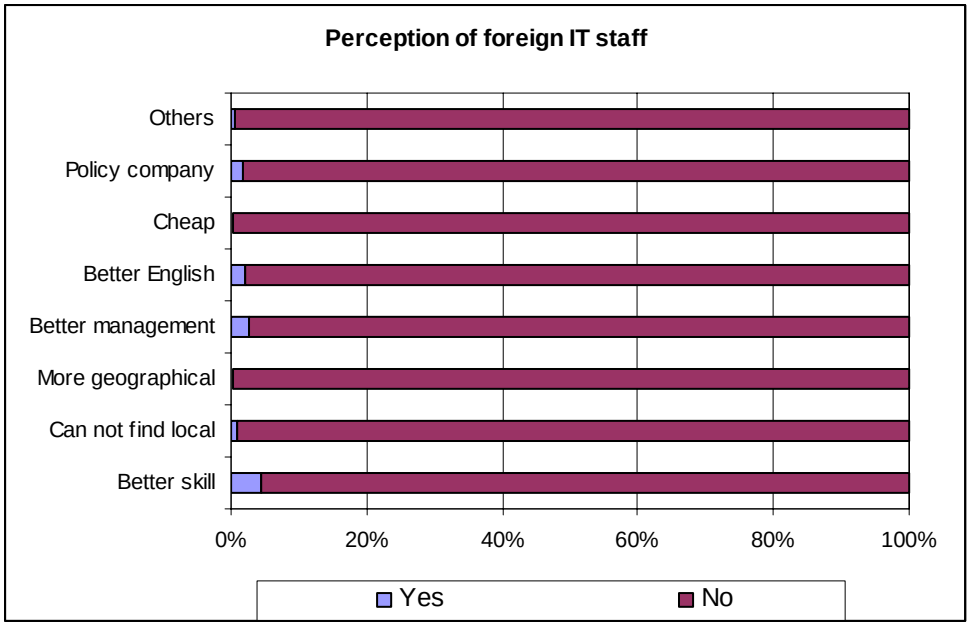
Nationalities	Percent
Thai	0.7
Vietnamese	1.0
Chinese	0.7
Philippines	0.2
Indian	0.7
Western	1.4
Japanese	0.2
Other	3.6

10.5. Opinion on foreign IT staff

According to survey results the respondents have their perception as bellows:

4.5% Respondent recruiting foreign IT staff because of better skill
1.0% Respondent recruiting foreign IT staff because can not find local
0.3% Respondent recruiting foreign IT staff because more geographical
2.7% Respondent recruiting foreign IT staff because better management
2.1% Respondent recruiting foreign IT staff because better English
0.3% Respondent recruiting foreign IT staff because cheap
1.7% Respondent recruiting foreign IT staff because policy company
0.7% Respondent recruiting foreign IT staff because other reasons

Figure 44. Opinion on foreign IT staff



SECTION 11. Recruitment criteria

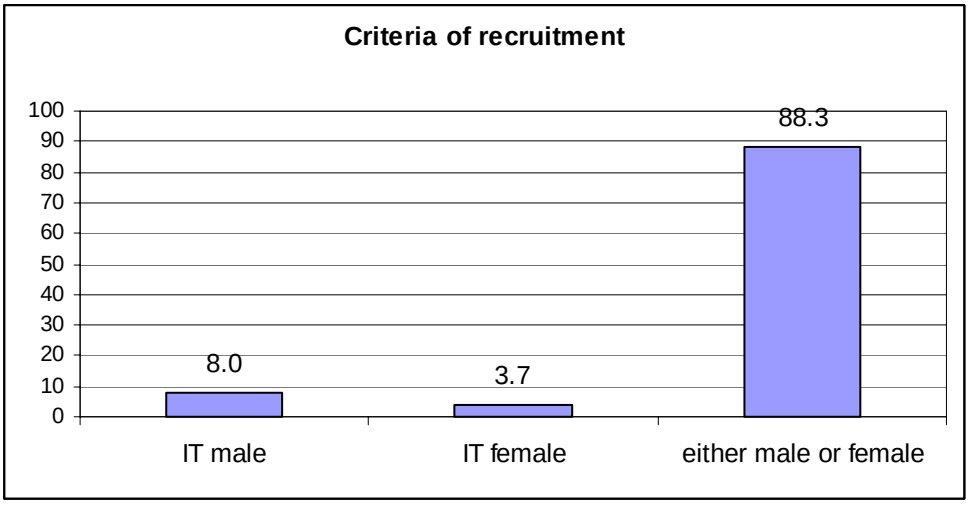
66. Criteria

8.0% of respondent firms are willing to recruiting IT male, 3.7% are willing to recruiting IT female and 88.3 %either male or female.

Table 45. Criteria of recruiting IT staff

Criteria	Percent
IT male	8.0
IT female	3.7
either male or female	88.3
Total	100.0

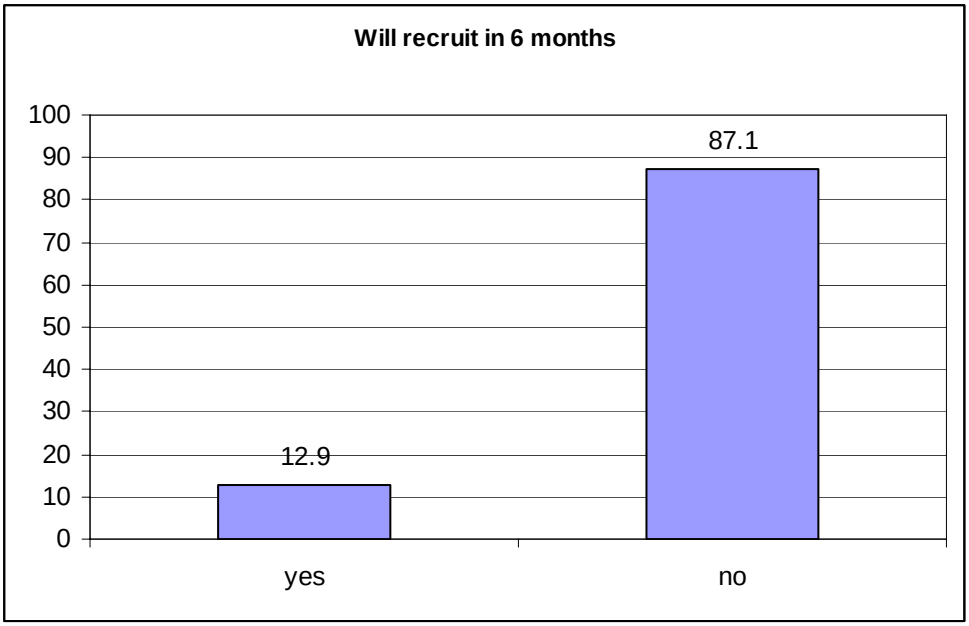
Figure 45. Criteria of recruitment



11.2. Will recruit IT staff in next 6 months?

When asked if the respondent firms will recruit in the next 6 months, 12.9% reported that they willing recruiting IT staff in next 6 months and 87.1% have no option of recruitment yet.

Figure 61. Will recruit IT staff in the next 6 months



11.3. Condition of recruitment

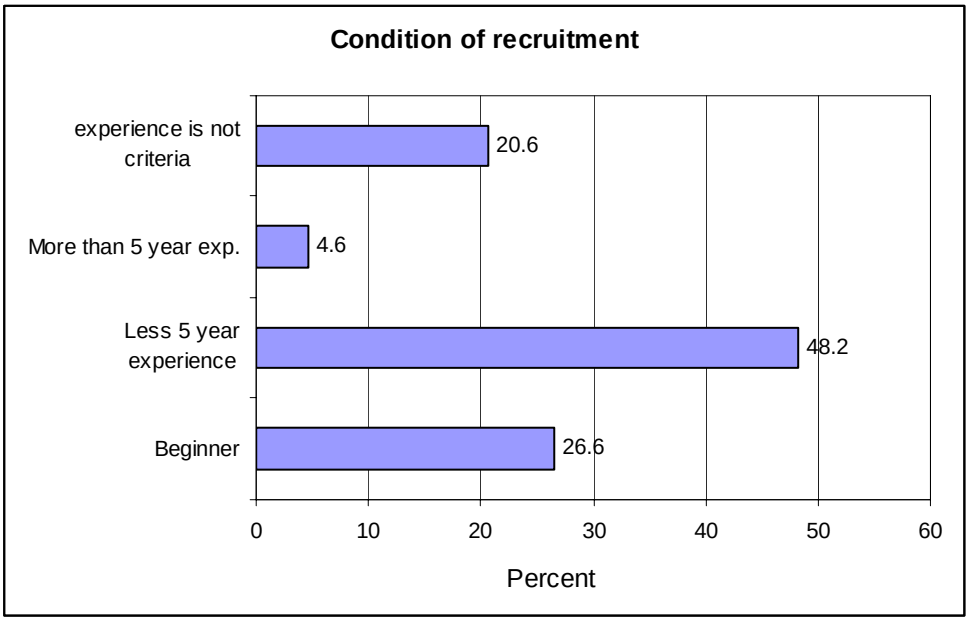
20.6% (of 135 firms) of respondents firms said experience is not criteria

4.6% (of 135 firms) of respondents firms said they wanted IT staff with more or 5 years of experiences

48.2% (of 135 firms) of respondents firms said they wanted IT staff with less 5 years of experiences

26.6% (of 135 firms) of respondents firms said they wanted IT staff with 5 years of experiences

Figure 46. Condition of recruitment

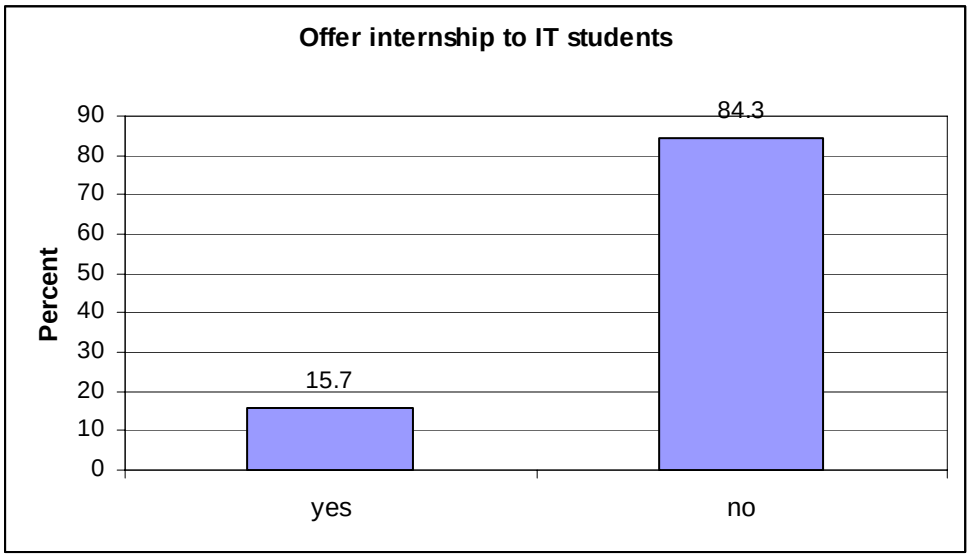


SECTION 12. Internship

12.1. Offer internship to IT students

15.7% of respondent firms are provided internship and 84.3 are not provided internship to IT students.

Figure 47. Offer internship to IT students



IV. Conclusion

This survey gives us a profile of the extent of ICT use, its infrastructure and various applications among SMEs in the most largest cities in the Cambodia. Because the sample is not randomly generated, the conclusions of this study are not necessarily true for all SMEs in these cities or indeed, for all SMEs in the country. However, in the absence of a more scientific study on Cambodia SMEs , the results of this study provide the best current indicators on issues related to SME use of ICT and ecommerce. Most of SME respondents consider the ICT use as tool important to their business in both in the present and in the future.

General Behavior of SMEs

The use of ICT in SMEs in Cambodia is moving fast in the last few years. Based on the results of this survey nearly half of the SMEs respondents were use ICT daily to promote their business. However, the extent of this use is limited by the SMEs at the basic level due to the lack of infrastructure which led to expensive service that the SME cannot afford and the lack of human skills in the ICT field and also the lack of awareness of potential benefits of ICT. Meanwhile, the Cambodian owned SMEs recognition of the importance of face-to-face interaction with their buyers as well as suppliers. The level of confidence of using e-mail for communication with both suppliers and buyers only increases after an initial face-to-face interaction. E-mail, therefore, is a means for maintaining a business relationship.

Lack of understanding of the value of ICT

Most the SMEs surveyed have not use of ICT, because they fail to see the value of ICT to their businesses. Many perceive IT as something to be used only by big companies and that it is an additional cost that will not bring any major returns on investment.

Lack of ICT Awareness and Knowledge

People will play a vital role in the development of ITC. However, technology literacy is still very limited in the Cambodia. The respondents identified the shortage of skilled workers as a key issue in moving forward with using information technology in their businesses.

Financial Costs

Cost is a crucial issue. The initial investment for the adoption of a new technology is proportionately heavier for small than for large firms. The respondents identified the high cost of computers and Internet access to be a barrier to the uptake of the technology. Faced with budgetary constraints, SMEs consider the additional costs of ICT spending as too big an investment without immediate returns.

V. Recommendations

Any program aimed at enhancing the competitiveness of SMEs would benefit from a national database of SMEs. The lack of a national database means that program progress cannot be measured. The Ministries responsible for SME should also develop standard measurements and definitions of SME size (i.e., capitalization, asset size and number of employees). This standard definition should also conform to global norms so that the collection of data for international comparability is facilitated.

Awareness Campaign on ICT

This survey revealed that the lack of SME appreciation for ICT. Most of the SMEs have identified their lack of knowledge of technology to be one of the main barriers to using technology. Government and the private sector partnerships should be developed to disseminate information to SMEs about ICT policies, best practices, success stories, and opportunities and obstacles relating to the use of ICTs . These awareness campaigns may come in the form of online newsletters and bulletins; training courses and workshops; awards programs; and the creation of information centers to assist SMEs. Ultimately, this information campaign should come in the form of an overall development strategy for the economy, focusing on its various innovative applications for SMEs.

Private Sector Participation

The market ultimately drives business development, but it is the private sector that fuels it. The private sector should be proactive in developing an SME development program where various sectors can provide technical assistance to SMEs and its uptake of ICT. In particular, steps should be taken to provide incentives to individuals to become entrepreneurs by lowering borrowing rates, provide incentives to SMEs which intend to use ICT in their business operations, and provide credit extension facilities to SMEs in order for them to use ICT.

e-Government

e-Government refers to the use by government agencies of information and communication technologies (ICT) that have the ability to transform relations with citizens, businesses, government employees, and other arms of government in the delivery of services. It is the use of ICT to improve the efficiency, effectiveness, transparency, and accountability of government. E-Government is a tool by which limitations of time, distance, and cost are reduced, thereby **enhancing citizens' access to government services**. Government should be the lead-user of ICT – prompting various business and private sector related activities to move online. In effect, government becomes a positive influence in prompting SMEs and other businesses to adopt and use ICT. This can come in the form of various transactions such as company registration, taxation, applications for a variety of employee- and business-related requirements, etc.

Network Infrastructure

The network infrastructure becomes crucial to ICT uptake of SMEs. However, the network is fully concentrated in the key cities of the Cambodia and in areas near economic zones. SMEs located in the periphery may not receive Internet access, or worse, may be charged higher Internet costs compared to other SME located in major cities. While cable Internet – high bandwidth, flat-free pricing for Internet access – is becoming increasingly available, moving away from the tedious "dial-up" process, this is still among the higher range Internet products available in the country. With the relatively high number of ISPs vying for a very limited user base, offering a wide range of pricing strategies targeting SMEs that suit various business needs or requirements can foster competition. If an ISP can develop a niche for servicing SMEs, many will be quick to follow suit, bringing down access prices and encouraging the laying out of "last mile" infrastructure to areas populated by SMEs. Needless to say, as long as high Internet costs and Internet metered charges exist, Internet and ICT uptake of SMEs will be take time.

Appendix