

ICT business statistics and ICT sector: Uzbekistan's experience

Global informatization process underway worldwide leads to rapid advancement of scientific and technological revolution. Degree and rates of information penetration and technological development in many respects determine the state of economy, living standards, national security, and country's role in the international community. Rapid development of economy and education based on utilization of information and communication technologies (ICT) becomes the ultimate national priority. Furthermore, in ensuring accessibility ICT is a strategic instrument in achievement of the Millennium Development Goals identified in the Millennium Declaration. Wide scale programmes for introduction of information technologies into the governance, education, healthcare, commerce, and other sectors are undertaken in all developed and most of developing countries. Yet realizing the importance of nurturing information society, every country is developing its own "Concept" for implementation of this focal area. These processes are underway in the Republic of Uzbekistan as well.

Coordination Council for Development of Computerization and ICT, which is the highest interagency body for coordination of development of computerization and ICT, approved the amended "Concept for Development of Information Technologies in Uzbekistan" in its decision on May 12, 2005 (Minutes of the Meeting #11). According to the Concept, the following focal areas have been identified as key directions for country's development goals in information technologies

- Development of national ICT infrastructure;
- Electronic education;
- Establishment and development of information and knowledge market;
- Electronic government;
- Electronic commerce;
- Electronic healthcare;
- Improvement of legal framework

Effectiveness of measures to be taken in implementation of the approved Concept will be assessed by the set of specific quantitative indicators, and it was envisioned to conduct a study on "Assisting the Government of Uzbekistan in the Formulation and Implementation of Information and Communication Technologies for Development Policy" which is a joint project of United Nations Development Programme (UNDP) and Government of the Republic of Uzbekistan. The Project started its activities in May 2005, and it is the practical realization of UNDP's objective - to assist the Government of the Republic of Uzbekistan in development of ICTs as well as implementation of tasks envisioned in the government decisions pertaining to ICT sector.

Based on the level of electronic readiness of the country and to ensure comparability with similar studies conducted by the UNDP in the framework of Digital Development Initiative Programme², this review tracks the indicators of ICT development in the following sections:

- Access to global information resources;
- ICT in education;
- Public use of ICT;
- Electronic government;
- Electronic commerce;
- Government's ICT Policy.

The function of collecting of dates was возложена to the State Statistics Committee, which had created the new state statistic forms 1IT and 1-ICT with these dates.

INDICATORS OF ICT DEVELOPMENT IN UZBEKISTAN

Component	Indicators	Source of Information
I. ACCESS TO INFORMATION RESOURCES		
1.1 Information infrastructure	<i>Number (penetration rate) of main telephone lines</i>	data according to Form #40 - state statistical reporting for communications, compiled by UzACI
	<i>Number (penetration rate) of cellular communication subscribers</i>	data according to Form #1 - state statistical reporting for communications, compiled by UzACI
	<i>Number (penetration rate) of computers</i>	data according to Form #1HT - IT state statistical reporting, summarized by State Statistics Committee
	<i>Number (penetration rate) of regular Internet users</i>	data identified by assessment analysis
	<i>Number (penetration rate) of television sets</i>	data identified by assessment analysis
1.2 Communication quality	<i>Total capacity of modem pools of Internet service providers per 100,000 residents</i>	data identified by survey of Internet service providers
	<i>Total bandwidth of external channels of the Internet access per 1 regular user</i>	data provided by UzACI
	<i>Percentage of successful connections on local telecommunications lines</i>	data according to Form #13 -state statistical reporting for communications, summarized by UzACI
	<i>A verage time to fix malfunctioning subscriber line</i>	data according to Form #13-state statistical reporting for communications, summarized by UzACI
	<i>Share of digital communication lines</i>	data according to Form #40-state statistical reporting for communications, summarized by UzACI
1.3 Availability of access to information and data networks	<i>Number of Internet service providers</i>	data provided by UzACI (Number of licensees)
	<i>Number of websites in. UZzone</i>	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	<i>Number of second level domains in. UZzone</i>	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	<i>Number of public Internet access points</i>	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	<i>Number of Internet-cafes</i>	data according to Form #1 - state ICT statistics reporting, compiled by UzACI
	<i>Number of regular Internet users (subscribers)</i>	data identified by assessment analysis
	<i>A verage cost of Internet access per hour</i>	data identified by survey of Internet service providers
	<i>A verage rental cost of leased line Internet connection</i>	data identified by survey of Internet service providers

	<i>Cost of local telephone call</i>	data provided by UzACI (price list of Uzbektelecom JSC rates)
1.4 Hardware and software	<i>Number of personal computers</i>	data identified by assessment analysis
	<i>Number of computers imported into the country</i>	essential to be included in statistical reporting
	Number of computers domestically manufactured	<i>essential to be included in statistical reporting</i>
	Ratio of suppliers of equipment to the overall list of companies involved in ICT	<i>data identified by market analysis</i>
	Number of ICT software applications developed domestically	<i>data provided by SPA</i>

II. PUBLIC USE OF ICT

2.1 Use of ICT in workplace	<i>share of organizations with installed local area networks (LAN)</i>	data according to Form #1HT - IT state statistical reporting, compiled by State Statistics Committee
	<i>share of organizations connected to the Internet</i>	data according to Form #1HT - IT state statistical reporting, compiled by State Statistics Committee
	<i>share of organizations with their websites</i>	data according to Form #1HT - IT state statistical reporting, compiled by State Statistics Committee
2.2 Use of ICT in day-today life	<i>Total number of Internet audience</i>	data identified by public survey
	<i>Number of regular Internet users</i>	data identified by public survey
	<i>Number of users at public access points</i>	data identified by survey of public access points
2.3 Home Internet access	<i>share of population regularly using the Internet</i>	data identified by public survey
	<i>share of population using e-mail</i>	data identified by public survey
	<i>share of population using the Internet to purchase goods and services;</i>	data identified by public survey
	<i>share of population in possession of hardware and software for Internet access</i>	data identified by public survey

III. ICT IN EDUCATION

3.1 Accessibility of ICT for educational institutions: Related to schools	<i>Number of pupils per 1 computer</i>	data provided by MoPE
	<i>Number of pupils per 1 computer class</i>	data provided by MoPE
	<i>Number of schools per 1 computer class</i>	data provided by MoPE
	<i>share of school computers enabling use of modern IT technologies in learning</i>	data provided by MoPE
	<i>share of schools connected to the Internet</i>	data provided by MoPE
Related to HEIs	<i>share of higher academic institutions connected to the Internet</i>	data provided by MHSSE
	<i>share of students - active users of the Internet</i>	data identified by survey of HEIs and their students
	<i>A verage working hours of university computer classrooms</i>	data identified by survey of HEIs and their students
	<i>share of financial expenditures of academic institutions for ICT within overall budget</i>	data provided by MHSSE
3.2 Use of ICT in educational process	<i>share of academic institutions with websites</i>	data identified by survey of academic institutions (MoPE and MHSSE)
	<i>share of disciplines using ICT in learning within total number of disciplines</i>	data provided by MHSSE and MoPE
	<i>share of students - users of distance learning at academic institutions</i>	data identified by survey of HEIs and their students

	<i>share of educational institutions, using computer testing</i>	data provided by MHSSE and MoPE
	<i>share of teachers, using information technologies (Internet) for teaching disciplines unrelated to Informatics</i>	data identified by survey of academic institutions (MoPE and MHSSE)
3.3 Availability of trained staff	<i>share of ICT students in total number of students</i>	data provided by MHSSE
	<i>share of ICT teachers in total number of teachers</i>	data provided by MHSSE
	<i>share of teachers trained in ICT</i>	data provided by MHSSE
	<i>share of government institutions staff trained in computer literacy</i>	data identified by survey of government bodies (UzACI)
	<i>share of adult population trained in ICT</i>	data identified by survey of institutions offering training or survey of adult population
IV. ELECTRONIC GOVERNMENT		
Electronic government	<i>Percentage of government institutions with websites;</i>	data identified by survey of government bodies (UzACI)
	<i>share of websites of government institutions, in conformity with relevant criteria</i>	data identified by survey of government bodies (UzACI)
	<i>share of government services available online</i>	data identified by survey of government bodies (UzACI)
	<i>Indicator of basic package of services offered</i>	data identified by survey of government bodies (UzACI)
	<i>Amount of government procurement that can be done online</i>	data identified by survey of government bodies (UzACI)
	<i>Number of civil servants per 1 computer</i>	data identified by survey of government bodies (UzACI)
	<i>Number of civil servants per 1 computer, connected to the Internet at government institutions</i>	data identified by survey of government bodies (UzACI)
	<i>Phase of computers connected to the Internet at government institutions</i>	data identified by survey of government bodies (UzACI)
	<i>Phase of government funds allocated for ICT as percentage of total government expenditures,</i>	Data provided by the Ministry of Finance
V. ELECTRONIC COMMERCE		
Electronic commerce	<i>Number of online shops and their total sales</i>	data identified by survey
	<i>Phase of organizations providing online commercial services</i>	data identified by survey of institutions
	<i>Phase of electronic trade in gross domestic trade</i>	data identified by survey of institutions (MFERIT)
	<i>Number of terminals for A TM card transactions</i>	data identified by survey of institutions or terminal distributors
	<i>share of electronic payments in total amount of payments</i>	data identified by survey of institutions (MFERIT)
	<i>share of banks issuing cards of international payment systems</i>	data identified by bank survey (CBU)
	<i>share of banks using "bank-client" electronic technology</i>	data identified by bank survey (CBU)
	<i>Share of population using A TM cards</i>	data identified by bank survey (CBU)

Assessment of the development of information infrastructure and access, conducted based on a number of main (number of landlines, cellular communication subscribers, computers, regular Internet users) and expanded (number of television sets) indicators displays improvement in general state, while identifying different degrees of growth in various indicators (see *Table 1.1.*).

High rates of growth are evident in the indicators such as the number of cellular communication subscribers and regular Internet users. Rate of growth in the number of cellular communication subscribers has remained robust at 30-60% annually since 2000, and amounted to 1,149,900 as of 01.01.2006. Despite rapid growth of subscribers in absolute terms, indicator per 100 residents merely accounts for 4.42 subscribers (see Diagram 1.1). The process of establishing the structure of cellular communication market has continued, and three leading companies by the number of subscribers have been identified: Uzdunrobita (MTS), Unitel, and Coscom, which together account for 95% of the market. (see Diagram 1.2.)

Indicators	Number (thous.)			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
Number of main telephone lines	1647.1	1674.1	1714.9	1725.6
Number of cellular communication subscribers	211.8	394.5	900	1149.9
Number of computers	400	590	640	640*
Number of regular Internet users	235	526	806	855
Number of television sets	5800	5924	6004.2	6004.2*

* as of 01.10.2005

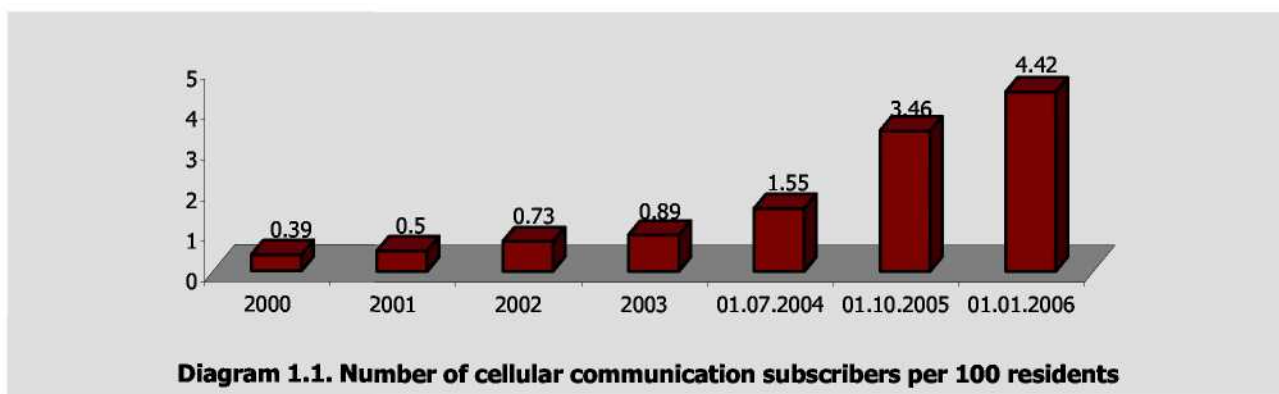


Diagram 1.1. Number of cellular communication subscribers per 100 residents

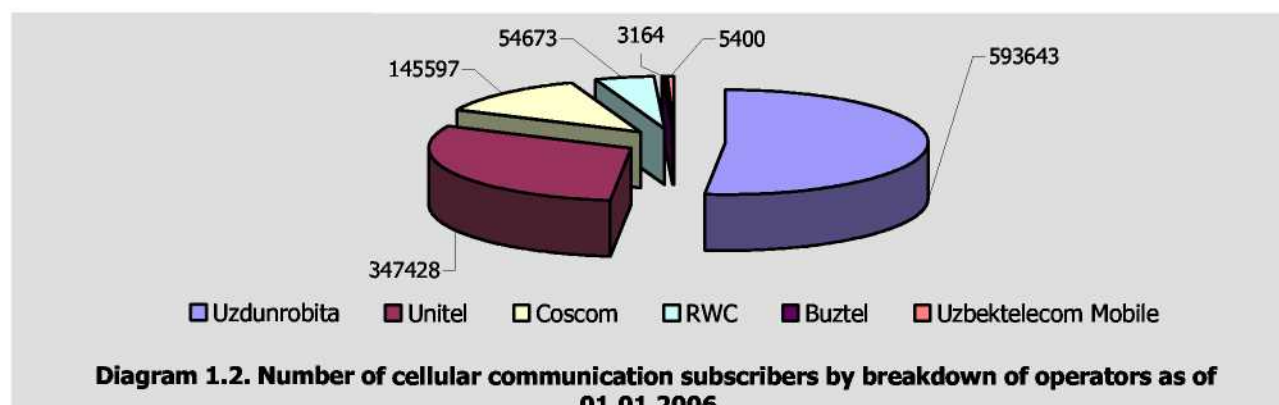
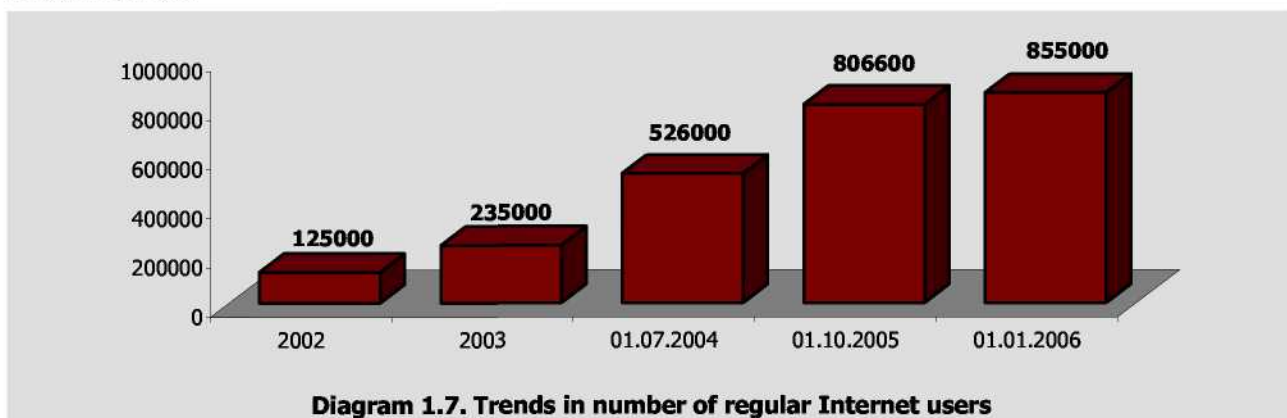


Diagram 1.2. Number of cellular communication subscribers by breakdown of operators as of 01.01.2006.

Minor improvements in telephone line penetration were observed. In excess of 2,000 automatic telephone stations (ATS) with total installed capacity of approximately 1,980,300 numbers are operating nationwide. This capacity is used at the rate of 87.1% - number of landlines amounted to 1,725,600. Total telephone penetration for 100 residents is only 6.56.

According to the survey data, total number of computers has increased by 50,000 and amounted to 640,000. Hence, the number of computers per 100 residents increased up to 2.4. Also the number of regular Internet users measured by polls grew by more than 50% and reached 855,000 as of 01.01.2006.



Effective use of ICT requires also access of government organizations to the Internet. The number of government institutions in Uzbekistan with Internet access stands at 735 out of 6,713, while among companies it is 16,425 out of 305,526 (number of active companies, including small and private entrepreneurs as of 01.01.2006) or their share amounts to 5.3% (see Table 2.1.).

Table 2.1. – Indicators of ICT use in workplace

Indicators	Share (%)			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
<i>Number of organizations with installed local area networks (LAN)</i>	3.9	5.2	5.2*	5.2*
<i>Share of organizations with Internet access</i>	1.1	2.74	5.3	5.3
<i>Share of organizations with websites</i>	1	2.1	< 5.3	< 5.3

**projected data, as statistical data will be available in mid- 2006*

In this regard, presence of individuals and organizations in the global network was assessed for the purposes of this review based on the indicators listed in Table 2.3. (see Table 2.3).

The survey data has shown that the share of public awareness of the Internet equals 59%. There is an increase in the number of Internet users, as according to the survey findings, 3 of 100 persons regularly use Internet

Table 2.3. – Indicators of home Internet access

Indicators	Share (%)			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
<i>Share of population regularly using Internet</i>	1	2.06	3.1	3.3
<i>Public awareness of Internet</i>	43	55	59	59*
<i>Share of population in possession of hardware and software to access Internet</i>	0.53	1	1.15	1.15*

** as of 01.10.2005*

The results of the study have demonstrated improvements in ICT infrastructure of domestic educational institutions. Improvements in availability of computer technologies for pupils and students are evident. The number of pupils and students - active users of the Internet within total number of students is growing every year. All HEIs have access to the Internet.

Table 3.2. – Indicators of ICT accessibility for higher educational institutions				
Indicators	01.05.2003	01.07.2004	01.10.2005	01.01.2006
<i>Number of HEI students per 1 computer</i>	16	16	14.9	14.9
<i>Ratio of HEIs using LAN against total number of HEIs (%)</i>	77	78.7	80.3	83.6
<i>Share of HEIs connected to the Internet (%)</i>	100	100	100	100
<i>Share of HEI students – active users of Internet (%)</i>	--	3.5	6.9	6.9
<i>Average working hours of computer classes in HEIs (hours)</i>	8	8	8	8
<i>Share of financial costs of academic institutions for ICT in total budget (average for all academic institutions - %)</i>	10	17.26	23.27	23.27

Wide-scale use of modern innovative educational technologies (long distance, information and telecommunication technologies) enabling to train tens and hundreds of thousands persons is recommended to improve the educational process. This assumes adoption of government decisions for development of electronic education infrastructure and improvement of the system of Internet-based continuous education and training.

ICT in governance provides good opportunities for improvement of interactions of the government with the public and commercial organizations, as well as enhancement of the efficiency of government institutions themselves. In this regard, the national government focuses particularly on development and wide scale utilization of ICT in governance. In the meantime, review of the share of computers connected to the Internet at government institutions, despite its systematic growth, still remains quite low - only 12% of the computers at government institutions are connected to the Internet.

It is notable that majority of government institutions and local authorities have their local computer networks. In fact every agency develops and maintains its information systems. However, only 11% of them have their corporate networks, while the information systems created function primarily for intra-agency needs, do not interact with other agencies and do not provide access to information for all stakeholders.

Table 4.1. – Indicators of electronic government				
Indicators	01.05.2003	01.07.2004	01.10.2005	01.01.2006
<i>Percentage of government institutions with websites (% of total number of government institutions)</i>	76.9	87.3	96.7	96.7
<i>Number of websites of public services available online among total number of government institutions (%)</i>	3	2	15.5	15.5
<i>Number of civil servants per 1 computer</i>	10	5	--	--
<i>Number of civil servants per 1 computer, connected to the Internet</i>	300	67	--	--
<i>Share of computers at government institutions connected to the Internet (%)</i>	3.0	7.0	12.0	12.0
<i>Share of government budget appropriations allocated for ICT (% of total expenditures)</i>	1	No data available	0.56	0.56

Currently Government of Uzbekistan is developing National Programme for Development of Electronic Commerce until 2010. Ultimate objectives of government efforts are to create modern information market infrastructure for goods and services; to deliver prerequisites and facilitate favorable environment for every possible development of electronic commerce based on enhancement of the effectiveness of government support; to focus and coordinate efforts of government, public, and private institutions.

As it was noted in the previous reviews of domestic ICT development, Uzbekistan has the environment essential for development of electronic commerce. There is legislative framework in place to do business by using ICT.

Application of modern Internet technologies in business is not just limited to creation of website or electronic catalogue enabling to place orders but it also means utilizing technologies and accumulated experience for profound transformation of the way business transactions are done with the help of Internet and relevant computer networking technologies. Therefore, for further development of electronic commerce domestically, development and implementation of the range of measures for development of infrastructure and providing adequate support for it, improvement of regulatory framework and government support for advancement of electronic commerce nationwide, and media promotion of the advantages of electronic commerce are proposed.

Table 5.1. - Indicators of electronic commerce

Indicators	Number			
	01.05.2003	01.07.2004	01.10.2005	01.01.2006
<i>Number of online shops</i>	14	20	30*	30*
<i>Number of plastic card payment terminals</i>	902	1819	8200	--
<i>Share of electronic payments in the total volume of payments (%)</i>	1	1.0	1.8	1.8
<i>Number of banks issuing the cards of international payment systems</i>	--	4	6	6
<i>Share of population using ATM cards (%)</i>	--	1.56	4.42	5.76
<i>Share of banks using "bank-client" electronic technologies (%)</i>	--	100	100	100

* estimated data

In the reviewed period actions were taken to improve legislative framework regulating issues of electronic payments, usage of EDS, ensuring computer security as well as decisions were made to improve ICT training of human resources, develop educational network and make preparation for privatization in the sphere of telecommunications.

For instance, in December 2005 the Law "On Electronic Payments" was adopted, which, along with previously adopted laws, provides the legal framework for further development of electronic trade.

ICT development is becoming an important component of Uzbek economy. Major aspects of National ICT and Internet Strategy is reflected in the Decree of the President of the Republic of Uzbekistan dated 31.05.2002. "Concept for Development of Informatization in Uzbekistan" developed on its basis has been tested and approved by the Coordination Council for Development of Computerization and ICT on 12.05.2005

In order to encourage and support domestic software industry, starting January 1, 2006, the single tax for microfirms and small businesses involved in development and implementation of software products has been reduced from previous 13% down to 5%²⁰. Considering that 80% of approximately 100 businesses involved in developing software products and information systems are microfirms and small businesses, this lowering of single tax rate should provide incentives for development of software industry.

Previous period was significant with regard to mobilization of intellectual and financial resources to address issues in ICT sector. A number of **programme documents** have been adopted for this purpose and their implementation has started. Hence, transition from development of ICT strategy and concepts to establishment of concrete mechanisms for its implementation has been performed.

As of 01.10.2005, National ICT Development Strategy is backed up by the following programme documents:

Programme for Development of ICT and Computerization in 2002-2010, approved according to the Resolution #200 of the Cabinet of Ministers dated June 6, 2002, determines the major areas for development of ICTs and sets general framework for ICT development until 2010, particularly in development of telecommunication infrastructure, national Internet segment, procurement of computer hardware and development of computer networks,

creation of software industry, generating and utilizing information resources, human resources training in the area of ICT, developing competitive environment in ICT sector and improvement of regulatory framework, standardization and certification.

Target indicators for development of telecommunication and data networks, and application of ICTs until 2010, approved according to the Resolution of the President #PP-117 dated 08.07.2005, sets annual target indicators for development of telecommunication and data networks (capacity of ATS, rate of digitization, length of fiber-optic communication lines and digital radio relay communication lines, speed of access to international data networks, number of Internet users and points of public access to the Internet, number of cellular communication subscribers as well as targets for ICT introduction into activities of government institutions and local authorities (availability of computers, creation of LAN and corporate networks), share of computer literate staff and share of paperless document flow) in 2005 - 2010.

Programme for Modernization of Postal Services Network, Introduction and Development of New ICT based Services until 2010, approved according to the Resolution of the Cabinet of Ministers #128 dated 19.05.2005, identifies focal areas and objectives of modernization of postal services network and development of new ICT based services as well as envisions two-stage schedule and plan of activities for realization of the programme. *Programme for Introduction of ICT into activities of government institutions and local authorities until 2010*, approved according to the Resolution of the President #PP-117 dated 08.07.2005, lists activities for improvement of legislative and regulatory framework of ICT sector and activities of local authorities based on implementation of ICTs.

- ***Programme for Establishment and Development of National Information Search Engine***, approved according to the Resolution of the President #PP-117 dated 08.07.2005, identifies the activities for creation, forming, expansion, and integration of national information search engine in the Internet.

CONCLUSION

Application of ICT creates vital opportunities and may facilitate economic development, enhancement of productivity, improve and change the nature of relations. ICT may be a powerful instrument to overcome various development issues and improve livelihoods of the population in general.

This review of ICT development in the country is an assessment of various factors impacting ICT development and identifies general trends of its changes. Given rapid development and changes in the ICT sector, this review is a snapshot assessment of the situation.

The Review of ICT development conducted in six prioritized areas such as development of infrastructure, electronic education, information and knowledge markets, electronic government, electronic commerce, and government's ICT policy have demonstrated overall positive trend in ICT development in the country. At the same time the Review still underlined the existence of problems mentioned in the previous reviews particularly in the segments of electronic government and electronic commerce.

It is expected that these problems will be resolved in the course of implementation of the Resolution #PP-117 of the President of the Republic of Uzbekistan dated 08.07.2005 "On Additional Measures for Further Development of Information and Communication Technologies", which identifies clear targets for development of telecommunication networks, data transfer and application of ICT in governance both centrally and locally and development of National information search engine.

Yet financing remains an important prerequisite of further development of ICT and meeting the objectives set by the government. Favorable tax and customs benefits²¹ introduced in 2002 facilitated accessibility of computer hardware, emergence of new ICT companies, fostering competition and ICT promotion among the public, private institutions and the Government. Nevertheless, as the review has indicated, in order to accelerate the pace of development, it is essential to enhance the instruments of government support to ICT development, extend the terms of customs exemption of computer hardware and network equipment imported into the country, and grant VAT benefits. If there are no government support measures, issues of ICT implementation in private sector and society may move to the background of other social and economic issues.