INFORMATION AND TELECOMMUNICATION TECHNOLOGIES SECTOR IN ARMENIA

2013 STATE OF INDUSTRY REPORT

Content

1. ICT Business in Armenia

1.1 IT Industry in Armenia

Innovation in information and high technologies as well as their application in different industries determine the rapid growth of the world economy in the last decade. Even under the Soviet Union Armenia was a known hub for software development, industrial computing, electronics, and production of semiconductors. By maintaining its considerable potential for technology development, Armenia remains the regional leader in IT and high-tech industry.

Availability of a technical workforce in Armenia creates a favorable investment climate for large ICT companies and multinationals. These competitive specialists are estimated to ensure annual productivity equal to up to 44,000 USD for their companies.

Major specializations within Armenian ICT companies include embedded software development and semiconductor design, customized software and outsourcing, financial software, multimedia, web design, information systems and system integration. Armenia has made significant gains in semiconductor design and creation of related objects of Intellectual Property.

Today, about 380 ICT companies operate in Armenia, generating an average annual growth of 20%. While 90% of these companies are Yerevan-based, the number of companies operating in other regions of Armenia is growing from year to year due to the development of educational and scientific infrastructure as part of regional development programs.

Only in 2012 and 2013, thirty six (36) new companies were established, which created almost 360 new jobs. In total, around 1800 new jobs were created in 2013.

The Survey of Armenia's Information and Communications Technology industry has been implemented since 2002 to follow up on the ICT developments and to address the identified issues through tailored measures.

1.2 Why Start Business in Armenia?

Presented below are the main tax categories in Armenia, which are rather low compared with other countries:

- *Multilevel/unified personal income tax and* employer's social security payment with the respective rate between *24.4-36%;*
- *value added tax* (VAT) is 20% or turnover tax-3%;
- *corporate (profit) tax rate is 20%.*

Armenia offers a number of privileges to foreign investors, including not levying duties on investment in the founding capital and absence of obstacles to investment entry. The Law on Foreign Investment provides a five-year investment protection from unfavorable legislative changes. In addition, the annual tax losses are carried over to the next year.

Key Indicators for Opening and Operating Business Armenia[1]

Indicator	Armenia	Europe & Central Asia	OECD Countries
Starting and registering a Business: Time (days)	8	12.8	11.1
Starting a Business: Cost (GDP per capita, %)	2.5	6.7	3.6
Enforcing Contracts: Time (days)	570	441	529
Enforcing Contracts: Cost (% of debt/liability)	19	25.3	21

In 2013, the Law on Turnover Tax became effective in Armenia. The Law defines an alternative (Turnover tax rate is 3.5-5%) to the Corporate Income Tax (20% rate) for entrepreneurs and commercial organizations whose turnover does not exceed 58.35 million drams (with the exception of rental income, interest, royalties, assets' disposal (including real estate), for which the tax rate is 10% and income from notary activity, for which the tax rate is 20%).

Privileges are granted to exporters, including no export duties and refund of VAT applied to the value of exported goods and services. Import of some IT products is exempt of custom duties and taxes, while VAT charges are delayed on the import of certain equipment. In compliance with Armenia's Custom Code the value of software content is not included in its custom value, which is limited to the value of the software medium. This provision complies with WTO and GATT agreements pertaining to the estimation of the customs value.

The RA Ministry of Economy has initiated the introduction of additional tax privileges for startup IT companies, which are currently in development.

1.3 Legal Framework

The e-governance system implemented in Armenia for already some time continues to be effectively applied. It is posted at www.e-gov.am, which makes available a number of systems to Armenian IT

[1] Source: http://www.doingbusiness.org

companies, including: submission of electronic tax reports, submission of electronic requests to the Intellectual Property Agency and possibility to search the Agency's database, submission of license requests in addition to access to electronic systems of State Payments, State Real Estate Cadastre, electronic registry of organizations, legal databases, the official online public notification website, electronic signature, and electronic visas.

Establishing Legal Entities

A One-Window Center for registering legal entities and record-keeping of sole entrepreneurs alongside with an electronic system (www.e-register.am)for registering legal entities and record-keeping of sole entrepreneurs functions in Armenia. The activities implemented within the 2013 Program of Business Environment Improvement allowed reducing the time and processes required for registering joint stock companies. Electronic registry of joint stock companies was made possible in addition to reducing contacts between citizens and authorities, reducing the number of documents required, reducing the time required for registering changes as well as reducing costs. To simplify processes the E-registry system now allows making changes to the Statute/Bylaws of limited liability companies and other modifications (restructuring, liquidation and others).

In addition, to ensure the transparency and accessibility of Armenia's IT industry and the IT companies, the RA Ministry of Justice's online E-registry is available in English and Russian.

State Registration of Rights/Title over Real Estate

The discussion of the IT business environment within the context of 2013 developments should also cover the situation with registering rights over real estate. This is specifically relevant to those startups and established companies that have growth potential. In 2013 consolidated subdivisions and service offices of the Real Estate Cadastre functioned in all administrative units. It should be noted that a request for registration could be submitted to any subdivision irrespective of the location of the real estate, while the title certificate could be obtained from any office regardless of where the request was registered and entered into the system.

Improvements were made to the electronic system of the State Committer of Real Estate Cadastre under the RA Government, which is posted at its official website at www.e-cadastre.am. The system allows for electronic online submission of requests for registering rights over real estate and movables as well as supporting documents in compliance with the procedure defined by the RA Las on State Registration of Rights over Property. The procedure is further detailed in RA Government's decision N 165, dated February 9, 2012.

Contract Enforcement

In presenting the business environment in place for IT companies in Armenia there should be recognition of the removal of a discretionary requirement for "by seal" ratification of transactions or other documents signed by legal entities that was effective in the past. In other words, the mere signing of civil-legal acts by legal entities functioning in Armenia will not, from now on, constitute grounds for recognizing them invalid.

A number of other improvements of the business and investment environment occurred in 2013 with respect to reduction of processes, timelines and costs required for contract enforcement as well as improved awareness thereof. These included the requirement for conducting a minimum of three seminars to address dispute resolution processes ensuing from contracts or the publication of brochures with

detailed descriptions of the processes and costs related to the resolution of disputes ensuing from contracts.
In addition, the RA Ministry of Justice was tasked to draft amendments and supplements to the RA Civil Procedure Code and RA Law on Notaries to achieve reduction of the time spent on court disputes, the possibility of transferring the jurisdiction of decisions on certain issues from courts to notaries, clarification of the phases of the court proceedings, increasing predictability, and creating clear grounds for using the conclusions provided by private experts.

Investor Protection

In order to enhance enterprise/company transparency (including IT enterprises) and provide increased protection to small shareholders, the 2013 Program of Improved Business Environment imposed a number of measures directed at enhancing the mechanisms for identifying interest driven big transactions (business activity) as well as expanding the responsibilities of the directors. To illustrate, the need for making amendments to the RA Law on Joint Stock Companies was defined. The following stipulations were made by the amendments: submission of an independent audit opinion in advance of signing an interest driven transaction, posting information on such transactions at www.azdarar.am-the official website for public notification in the Republic of Armenia, as well as requirements for fine payments by the executive body to the shareholder that has applied to the court for entering an unlawful interest driven transaction:

1.4 Competitive Advantage

As a country favorable for foreign direct investments in ICT Armenia offers the following competitive advantages relative to other countries of the region:

- World-class R&D capabilities in engineering, computer science, physics, and mathematics;
- Well-educated and talented workforce with technical skills and English language proficiency;
- Strong university programs with specializations in IT and related sciences;
- Affordable labor and low operating costs;
- Solid government support to the sector and commitment to improve the investment climate;
- Sustainable and continuous growth of the IT sector;
- Strong and successful Diaspora in Europe and North America;
- Extensive experience with large multinational companies;
- IP protection laws and regulations meeting international standards.

2. 2013 Survey

2.1 Sampling and Methodology

The survey sample was expanded in 2013 to include around 380 Armenian ICT companies that were classified according to NACE rev.2. To observe expanded population data time series the data available for 2012 was refined respectively.

Information and Data

The survey relied on the data provided during interviews with industry representatives. Incomplete or unreliable data was approximated with the data generated from the estimates made in the ICT sector growth model.
However, based on our experience with the industry, estimates available in other surveys and publications, and other sources, we believe that the Report offers a reliable description of the industry, its main trends and characteristics, as well as its overall prospects.

Definitions
Software and Services segment of the Information Technology industry is defined as the cluster of companies engaged in software development and maintenance; provision of software related services, consulting and integration; development of graphics, animation, multimedia applications; chip design; and provision of engineering and R&D services. Internet service providers offer access to internet (wholesale and/or retail) through various channels. This group includes VoIP businesses and companies providing web hosting services and working with web portals. While companies included in our research may be engaged in a number of other operations within the technology sector, the above two components make up the key directions of their operations and the major source of their revenue. Respectively, only software and ISP segments of those companies were used in estimating industry figures. Local companies are defined as Armenia-based enterprises with at least 51% of their equity owned by Armenian citizens, permanent residents of Armenia or locally owned firms. Foreign branches or companies are defined as Armenia-based enterprises with at least 51% of their equity owned by foreign citizens, residents, or firms.

Assumptions and Estimation Methods

Productivity was estimated based on annual revenues per employee. Two sets of figures were calculated: one was a mere division of all industry revenues by the total workforce while the second looked at the annual revenue of each company per employee, which was then averaged for the total industry using revenues as the weight factor. While the second estimation provides a better picture of the productivity, it complicates the forecasting of the industry growth. Therefore, the first method was used to make industry projections. Productivity calculations were made only for software development and services companies.
Workforce estimates were made based on the number of technical, business or administrative specialists of companies in the Software and Services segment as well as technical employees of ISPs.

Outline of the Industry Survey
This report feeds on the industry survey conducted by EIF in November-December 2013. The survey respondents included three main groups: companies engaged in Software and Services segment, Internet Service Providers, and ICT related departments of major educational institutions. The survey looked into a number of areas important to the development and growth of the industry such as business and legal environment, revenues, educational framework, human resources, export and others. The report also uses information from previous industry surveys conducted by EIF in 2003 – 2012.

The 2013 survey covered 140 companies involved in software, IT consulting, and Internet services alongside with ICT departments of major educational institutions.

Acknowledgements

Implementation of the annual Survey is supported by the Ministry of Economy of the Republic of Armenia.

EIF's research team would like to thank the management staff of Armenian ICT companies, as well as Faculty members of YSU, SEUA, ERIICTA, RAU, and AUA that have participated in the Survey for their time and kind assistance in data acquisition for our Survey.

The key members of our research group are listed below. Meanwhile, we would also like to thank all the other participants of our research, among them our fieldwork team and volunteers for their contribution to the implementation of our survey and preparation of our State of ICT Industry 2013 Report.

Research Manager, methodology design, overall market research and analysis, Report preparation – Ms Sona Kochkanyan

Data analysis, Telecommunications Industry research, Report preparation–Mr Areg Gevorgyan

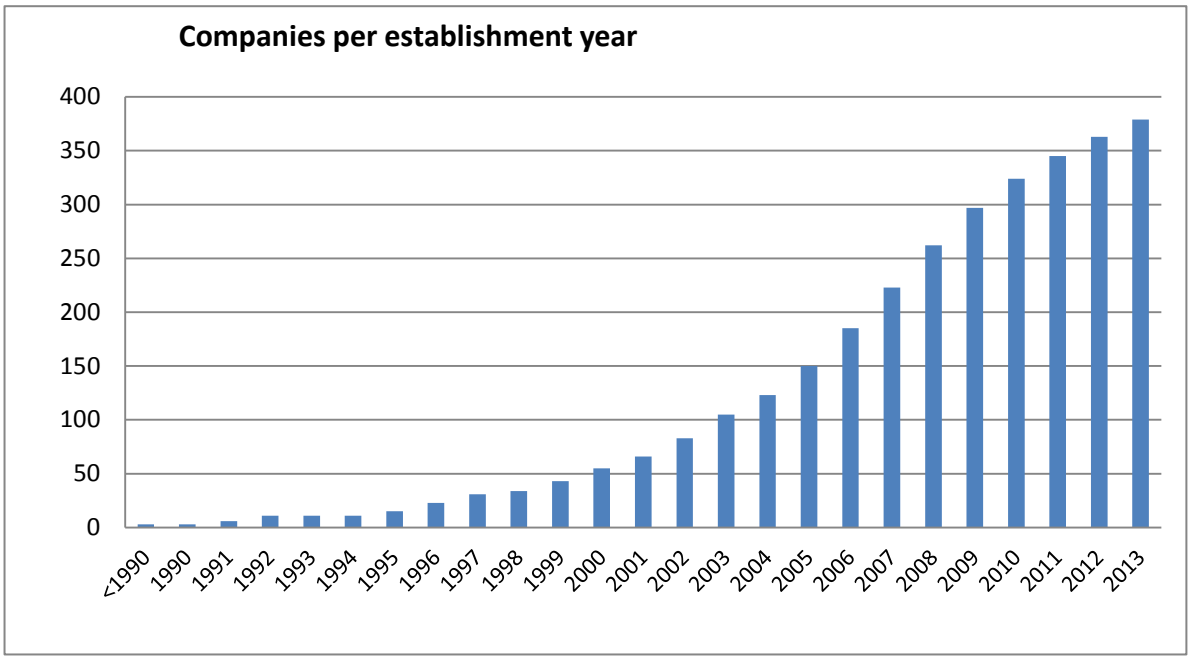
Analysis of the legal framework related to the IT Sector – Mr Aram Khachatryan.

3. Key Findings

3.1 Program Software and Services

3.1.1 Economic Indicators

Armenia's software and services industry is rather young with most of the companies, i.e. nearly 80% founded during 2000-2013. The first local private software firm was established in 1987, and within the next 5 years the first foreign branch was launched in Yerevan. 1991-1997 proved a challenging transitional period for the technology sector since regional conflicts, declining economy and brain drain had prevented the economy's general recovery. As of 1998, close to 35-40 software firms and ISPs were operating in Armenia employing, according to various estimates, nearly 1,000 specialists. The workforce employed in the sector in 1998 was notably smaller compared to that of 1987, when only YerSRIMM employed up to 10,000 people. During the last 11 years, the industry has seen a sharp increase in the number of local startups and branches of foreign companies.



In 2013 the number of functioning ICT companies reached 380, i.e. a 5% increase compared to the previous year. In 2000-2013, an estimated average of 22 ICT companies was established. To compare, it should be noted that back in 1990s the same indicator ranged between 5-6 companies.

The peak was reached in 2008 when 30 new companies were established. However, maintaining this dynamics has proven challenging since the available cadre of high quality programmers, engineers and project managers is hardy sufficient for the needs of the existing companies.

Almost 53% of Armenia's ICT companies were established in 2007-2013, with 18 and 16 new companies founded in 2012 and 2013 respectively. ICT companies ensure sustainable growth for the country's economy with an industry turnover in 2013 growing by 20% compared to the previous year.

In 2010-2013 the RA Ministry of Economy initiated a number of grants programs targeting information and high technologies to promote idea generation and innovation. As a result, teams of ICT professionals and students were formed that currently work on developing innovative products in Software and Services. It is expected that in 2014 a minimum of 15 new companies will evolve from these teams.

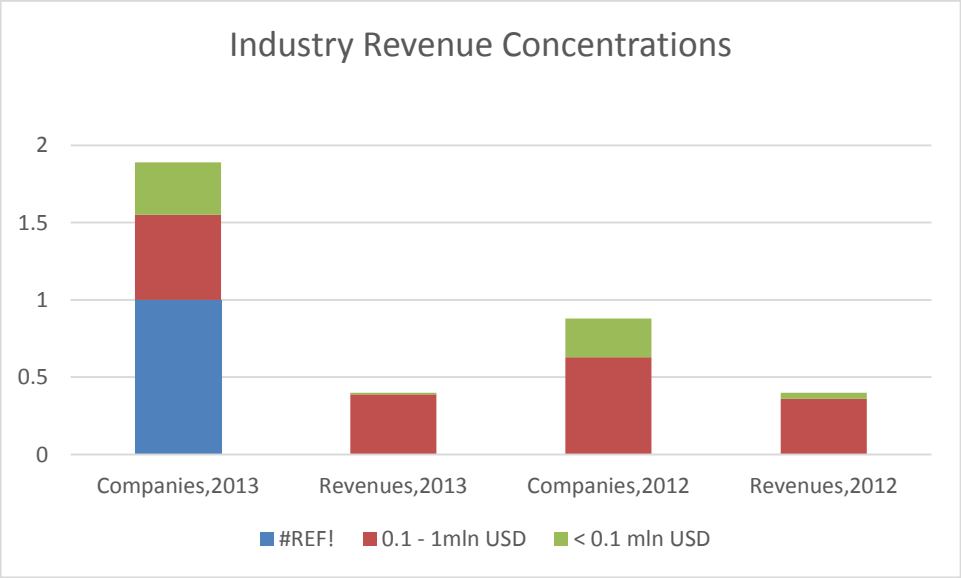
In 2013, the total turnover of the Armenian Software and Services sector amounted to around USD 294 million USD, which is equal to 20% annual growth compared to last year

In general, average annual growth in the industry equaled to 22.6% in 2008-2013.

The share of local companies in the total industry revenue comprises 38% compared to the 42% observed in 2011. Local firms are now in a better shape than five years ago: they have more employees, their technical expertise and knowledge of the market has improved. Furthermore, they implement more complex and value added projects.

As the above chart indicates, the 40 large (with turnover of USD 1 million and more) Software and Service companies, which make up only 11% of all companies, generate 60% of total industry revenue.

The share of large companies in the total industry revenues reduced relative to 2012. The number of small firms with less than USD 100,000 in revenues increased by 9% relative to 2012, while their share in the total industry revenues declined by 3%. Though those small firms do not have any visible impact on the industry, their increased number is an indication of the market's continued growth. Half of ICT companies have average annual revenue equal to USD 100 thousand to USD 1 million.



3.1.2 Main Specializations

The number of companies currently active in the Armenian Software and Services sector is 347. The better half of these companies specialize in software development. Classification of these companies by specializations according to NACE rev 2 is shown below:

Classification code	Specialization	Number of companies/%
58.21	Publishing of computer games	9%
58.29	Other software publishing	9%
62.01	Computer programming	66%
62.02	Computer consultancy	22%
62.03	Computer facilities management	21%
62.09	Other information technology and computer services	10%

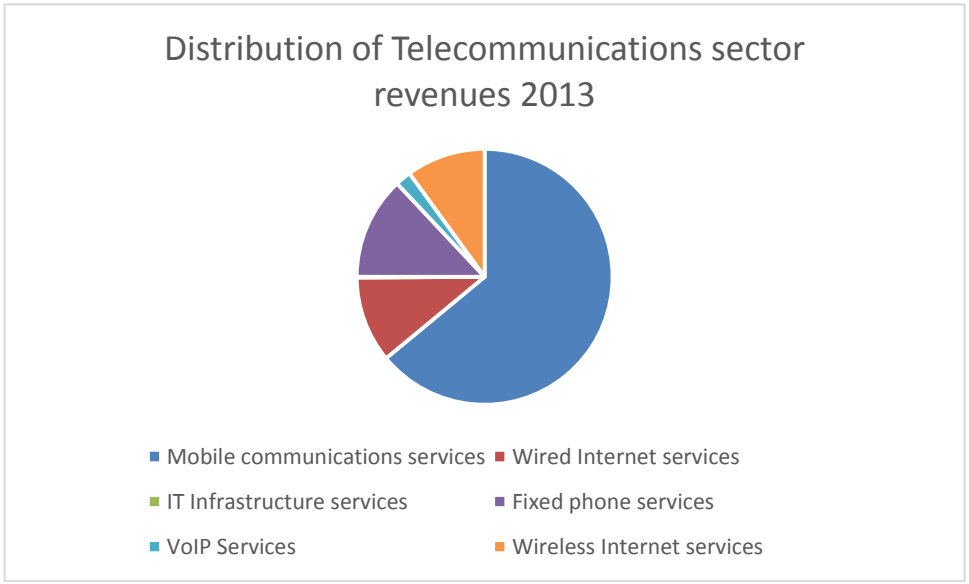
With respect to distribution of industry revenue by specializations of IT companies, customized software and outsourcing, chip design and IT services as well as consulting are the most profitable operations. It is worth mentioning that while 6% of IT companies specialize in chip design, their revenues comprise about 19% of the total Software and Services segment turnover.

Classification code	Specialization	Company revenue/million USD
58.21	Publishing of computer games	8.8
58.29	Other software publishing	20.6
62.01	Computer programming	153.2
62.02	Computer consultancy	29.4
62.03	Computer facilities management	58.7
62.09	Other information technology and computer services	23.5

3.2 Telecommunications

3.2.1 The Industry and Key Economic Indicators

Armenian Telecommunications sector is represented by 33 companies providing services under following classifications: wired telecommunication services (61.10), wireless telecommunication services (61.20), other telecommunication services (61.90) and companies working on web portals (63.12). These companies mostly offer such services as mobile and fixed telephony, cable and wireless Internet, provision of IT infrastructure (e.g. web hosting) and VoIP services. It should be emphasized that telecommunication companies mostly provide their services in the local market rather than for export



According to the above chart the share of revenues generated from mobile communications is the largest in total revenues of Armenia's telecommunications sector. There are three mobile operators in Armenia: Beeline/Armentel, owned by Vimpelcom, one of largest mobile operators in Russia (NYSE:VIP), Vivacell-MTS, owned by Mobile TeleSystems, another largest mobile operator active in Russia and CIS markets (NYSE:MBT), and Orange Armenia, owned by France Telecom, a leading multinational telecommunications corporation. In 2013, a fourth mobile operator-Ucom was issued a license allowing its entry into the mobile communications market. Service provision is expected to start as of January 1, 2015.

In 2013, positive growth dynamics was observed in mobile communications market in Armenia signaling a recovery from the decline of 2009-2010. In 2013, mobile coverage has reached 116% ensuring an annual 5% increase. October 2013 data indicates that there exist 3.4 million mobile users/subscribers in Armenia. Meanwhile, the growth in fixed phone services has been negative since 2009, with no evidence of gaining progress. Beeline has finally completed the national digitalization program and after years of slow progress has ensured 100% digitalization in 2012.

96% of total revenue of the Internet Services segment in Armenia is produced by five large ISPs, one of which is an Armenian provider and the other four are foreign owned companies.

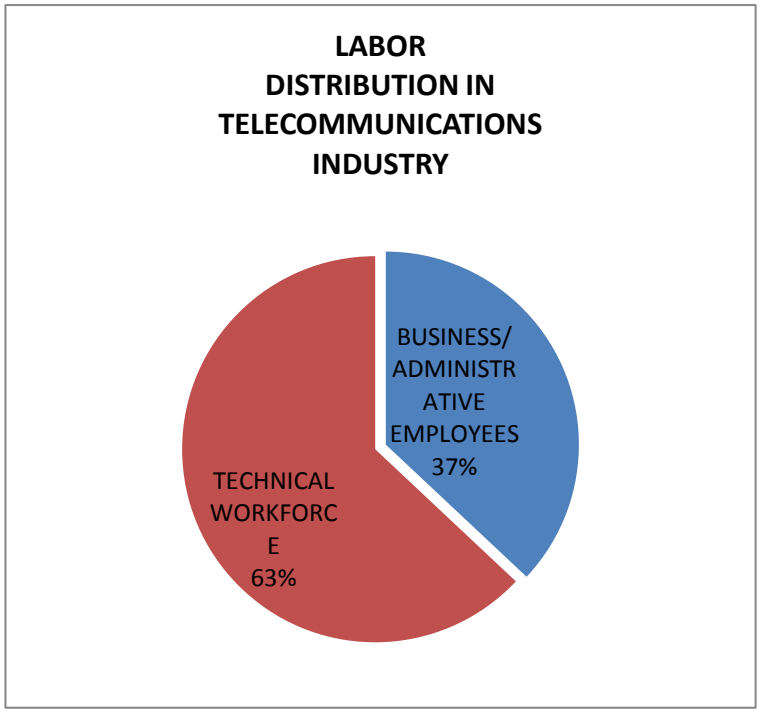
The growth trend for the overall telecommunications sector has been quite positive relative to 2012. The total revenue is expected to amount to 471 million USD, i.e. 18% increase. The customer/subscriber base has grown by 11% reaching 4.5 million subscribers

In 2013, the revenue generated by Internet Services (cable, wireless and VoIP) amounted to USD 108.1 million, where the share of foreign companies was 84%. The Internet Services segment revenue grew by 41% compared to the last year

3.2.2 Internet Coverage

Increased access to internet triggered heightened interest among young users. The number of internet users is expected to reach 66%, i.e. a total of 2 million users. Parallel to increase in internet coverage, fixed and mobile communication has also made progress. It is estimated that 23% of households will have fixed telephones by the end of 2013.

46% of Internet service providers in Armenia are foreign owned companies. Internet providers offer the following services on the domestic market: ADSL, fiber-optic and cable access, WiFi and WiMax wireless technologies, general packet radio services (GPRS), EDGE, CDMA and 3G technologies (UMTS/WCDMA). At present, the number of ADSL subscribers in Armenia is 130,000. Tariff plans offer various internet speeds including 1Mbps, 2Mbps and 3Mbps. All these services are offered across the country, except in 150 villages where no phone lines are available.



The number of fiber-optic network (FTTB) subscribers is 58,000. Such services are accessible to limited geographic locations, mainly in the cities Yerevan and Abovyan. Tariff plans include Internet speed of 8Mbps.

The number of subscribers for wireless technologies (3G technologies, WiMax4, WiFi) is 130,000. In late 2013 the 3G coverage has reached 96.3%. Data transfer and Internet connection via wireless network is organized through GSM/EDGE (900MHz and 1800MHz), UMTS 2100 and UMTS 900 technologies.

Unlike the corporate market, there are no obvious leaders on the consumer market. Supplier offers for such services vary from AMD 10,000 to AMD 25,000 (from $25 to $65) depending on the ensured accessibility and the quality of services.

4. Key Challenges to ICT Operations

Fifty five percent (55%) of respondents representing the leadership of companies involved in the survey emphasized the challenges related to recruiting highly qualified workforce. This is a challenge for both large companies (54%, with annual turnover of USD 100,000 and more) and smaller companies (51%, with annual turnover of less than USD 100,000), which comes to confirm the fact that there is an increased demand for technical workforce with high qualifications and experience. Consequently, the demand results in increased compensation for such technical workforce. Furthermore, 45% of surveyed companies pointed out to the brain drain as a main cause for this situation.

According to the answers provided by the surveyed companies, tax and customs procedures are also barriers (34% and 30% respectively) that hinder developments in the sector. It should be noted that in

case of 71% of these companies their turnover is less than 500,000 USD annually. The respondents claim that the VAT and the corporate tax use up a significant portion of their revenues. Furthermore, local authorities determine the customs rates. In addition, the respondents pointed out to the lack of accessible financing and lack of support by state authorities and non-governmental organizations-both factors that limit the growth of software and services sector in Armenia. Twenty eight percent (27%) of surveyed companies cited such challenges.

Around 26% of surveyed organizations face challenges related to entry to world markets. As noted by the respondents, the underlying reason for this is lack of awareness of Armenia by several international partners or low trust to representatives of a country with low or average income levels. Interestingly, only 2% of the 300 companies included in the 2012-2013 ICT survey cited challenges related to competition, while 1% noted issues related to the quality of their products as barriers to business development.

5. Research and Development in Armenian ICT Companies

The average revenue generated from own products and services of companies included in the survey sample comprises 43% of total revenue, while R&D costs amount to 23%. Innovation related revenue generation in large companies is mainly correlated with the number of company employees, i.e. the larger the company the higher is investment into R&D.

Nevertheless, the average revenue that 78% of companies (included in our sample and established after 2008) generate from innovation or own products and services makes up 46% of the total revenue. Meanwhile, export of products and services generates 68% of this revenue, which is by 3% lower compared to 65% observed in 2012.

Distribution of R&D companies by local and foreign ownership is shown below:

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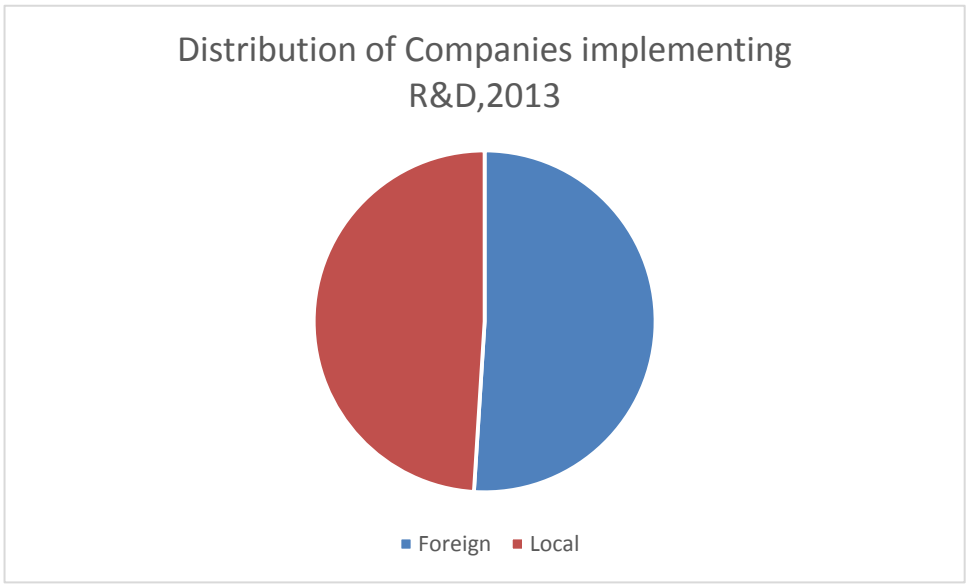


For 70% of companies established in 2012-2013 development of their products and services is a primary operation, which exceeds the same indicator from the previous year by 8%. This is indicative of innovation growth trend in Armenia's ICT industry.

Generally, the three main corporative tax concessions include tax extensions, tax allowances and tax refunds. Later in the report we will review the tax policies of a number of countries and draw comparisons with Armenia.

Generally, governments use R&D tax incentives to support related activities. As to the companies, such tax incentives are an effective way of reducing innovation related costs. There exist several tax incentives provided by governments, which are unique in their type and nature. Tax planning schemes with regard to R&D tax incentives fall under three categories:

1. Spending based tax incentives are calculated based on an organization's R&D spending. To illustrate, in France, an organization's tax credit ranges between 30% and 40% of the its R&D spending (including research staff and devaluation costs).
2. Asset based tax incentives are calculated as a percentage of the asset value used for R&D purposes. To illustrate, in Belgium, R&D investment into R&D assets (including buildings, equipment, patents and R&D capitalized spending from main taxes) is reduced by an additional 13,5% or 20,5%.
3. Revenue based tax incentives are calculated as a percentage from the related revenue. To illustrate, in Luxembourg, the intellectual property tax is calculated as a percentage of the respective revenue generated (including patents).

R&D tax incentives are still being developed in Armenia. Meanwhile, foreign investors can receive tax privileges by placing their companies in the Free Economic Zone. It is expected that revenue based tax incentives will be introduced in 2014.

In June 2011 Armenia passed the Law on the Free Economic Zone and a number of important regulations were put in place by late 2011. The Armenian Government hopes to attract foreign investors and has announced about the creation of two potential zones-one in Zvartnots International Airport and the other at Marx CJSC (which includes the area of the acclaimed Mergelyan Institute, i.e. the Yerevan Scientific Institute of Mathematical Machines).

These two Free Economic Zones will respectively focus on agribusiness and information technologies. Following is the list of privileges/incentives related to operations in the Free Economic Zones:

- 100 % reduction of the income tax deriving from the activities of the beneficiaries in Armenia's free economic zones.
- Non-resident beneficiaries of the free zone are not taxed on their income source in Armenia.
- VAT exemption on the supply of goods and services within the free zone for the organizers and the beneficiaries.
- No licensing required for organizational functions and their implementation in the free zone.

6. EDUCATION

6.1 General Overview

Sustained ICT growth in Armenia derives from availability of high quality technical and management professionals that work in the industry.

Due to educational programs that are applied by Armenian Universities for decades, the labor market in Armenia is supplied with workforce that is on high demand. The Universities emphasize teaching fundamental knowledge in parallel to hands on practical experiences. Educational methodologies used by the Universities are being supplemented with new ideas and enhanced by the traditions and approaches that are utilized by the internationally acclaimed institutions of higher education. Upholding free market principles in Armenia has made such developments possible.

In 2012/2013 around 9500 students were enrolled in different specialization studies offered by Armenian Universities[2]. State Engineering University of Armenia (SEUA) and Yerevan State University (YSU) are the largest institutions offering programs for IT-related technical specializations. Other institutions involved in IT education include the American University of Armenia (AUA), the European Regional Educational Academy (EREA) and the Armenian-Russian (Slavic) University (ARU).

Representatives of 10 departments teaching IT specializations in the above Universities were involved in the Survey (*see table10*).

Table 10: Universities and Department offering IT specializations

University	Department
State Engineering University of Armenia	Cybernetics
	Radio-techniques and Communication
	Computer Systems and Informatics
	Applied mathematics and informatics
	Electronics technique
Yerevan State University	Mathematics and Mechanics
	Applied mathematics and informatics
	Physics
	Radio Physics
American University of Armenia	Engineering and Technology
European Regional Academy	Information Technologies
Armenian-Russian (Slavic) University	Applied mathematics and informatics

Date received from these five key Universities indicates that 965 faculty members are employed in the ICT related departments.

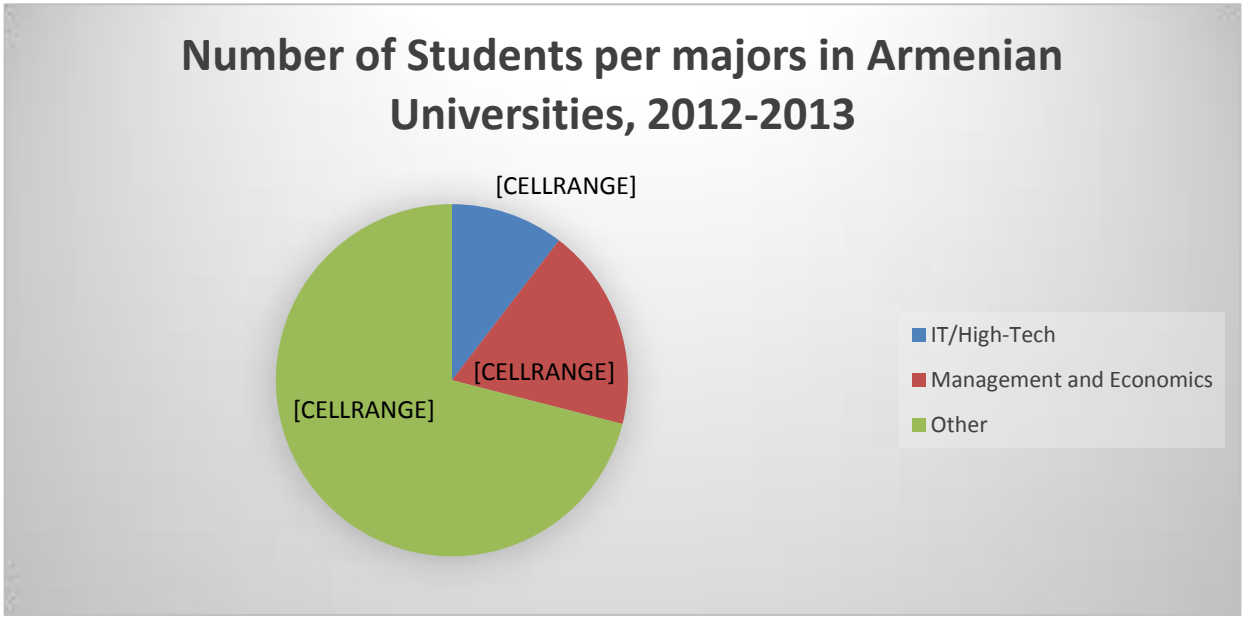
In 2012/13 around 5118 students were enrolled in these five Universities, of which 90% are SEUA and YSU affiliated.

[2]Source: RA Statistical Service, www.armstat.am

It should be noted that the majority of Universities consider that they offer contemporary curricula and methods, in line with the requirements of the industry.

6.2 Institutions of Higher Education/Universities

In academic year 2012-2013 a total of 9622students were enrolled in departments related to informational and high tech specializations, which constitutes 10.4% of total student population in Armenia's Universities.



State Engineering University of Armenia (SEUA) and Yerevan State University (YSU) are the largest and oldest institutions that prepare ICT specialists. Other institutions offering IT education include the American University of Armenia (AUA), the European Regional Educational Academy (EREA) and the Armenian-Russian (Slavic) University (ARU).

State Engineering University of Armenia (SEUA)

SEUA is the successor of the Yerevan Polytechnic Institute established in 1933. The University offers different degree programs in engineering, science and technologies and is considered the major institution in charge of preparing technical specialists in Armenia. The University has its affiliates in different marzes of Armenia. Today, the total number of SEUA's student population is 10000[3], while the University has had over 120000 graduates since its inception. In 1960, when the Cybernetics, Computing Systems and Radio-Technical department (which was later separated into three stand alone departments) was established at SEUA, the University started teaching computer classes. Today, these departments offer different specializations, including computer hardware and software

[3]Source: SEUAhttp://www.seua.am

development, electronics and microchip design, automated management systems and others. SEUA conducts scientific research in different areas ranging from computational systems, design and installation of networks, artificial intellect, study and development of dynamic systems, analyses and synthesis of management systems, microelectronics, microchips techniques and others.

Yerevan State University (YSU)

Established in 1919, YSU is currently Armenia's largest educational institution with over 13000 students[4]. In general, around 91000 students have graduated the University throughout its history. YSU offers educational programs in different specializations including biology. Economics, history, linguistics, legal studies, mathematics, physics and other sciences,. The Mathematics and Physics department was established in 1924, while the Informatics and Cybernetics departments opened in 1971. These departments prepare IT related specialists in the following areas: algorithm languages, cybernetics, discrete mathematics, software developments modeling and others.
The YSU Information Technologies Educational and Research Center was established in 2007 with an objective to provide programs in professional tutoring/mentoring, continuous education, discrete programs, scientific research, University education management and quality assurance, development and installation of informational systems. In addition to traditional formats, the Center offers online and distant learning courses as well as combined programs. The Center is implementing three IT related graduate programs-development of informational technologies, management of information technologies and Visual computation.
The Center also offers advanced professional tutoring/mentoring programs that directly target the needs of the IT sector. Active application of new instructional/educational technologies is one of the achievements of the Center. It includes the development of the Armenian Virtual College sponsored by the Armenian General Benevolent Union as well as development of multimedia courses for YSU, SEUA and RAU. These courses are electronically managed and allow for on distant use. The initiative is financed by the Open Society Foundations Armenia.

American University of Armenia (AUA)

Established in 1991 as the branch of California University, AUA initially offered only graduate programs meeting U.S. educational standards. AUA specializations include business management, informatics, engineering, law and others. In 2013, the University started providing undergraduate programs in computational science. In the research, centers functioning in the University research projects are conducted in the areas of business, engineering, environment, health, law and political science.

European Regional Educational Academy (EREA)

[4]Source, YSU http://www.ysu.am

Established in 2001 by the European Union EREA is specializing in programming and IT business management. Parallel to mainstream academic programs EREA offers language programs in three foreign languages-English, German and French. Currently, around 206 students are enrolled in EREA programs.[5]

Armenian-Russian (Slavonic) University (ARU)

The Armenian Russian (Slavonic) University was founded on August 29, 1997 based on an agreement between the Governments of the Republic of Armenia and Russian Federation. In 1999, the list of specialization offered by the University was expanded to include Applied Mathematics and Informatics, while in 2003 the Physics-technical department was opened.

These departments have educational programs in mathematics and math modeling, software development, electronics and chip electronics. In 2012, the standalone departments offering programs in similar subject areas merged and became separate institutes/colleges. Currently, the Institute for Mathematics and High Technologies is providing specialized education in information and telecommunication areas through specializations in applied mathematics and informatics, electronics and nano-electronics, telecommunication technologies and communication systems, electronic media technologies and design, medical biochemistry, pharmaceutical, bioengineering and bioinformatics. Over 422 students are enrolled in respective programs.

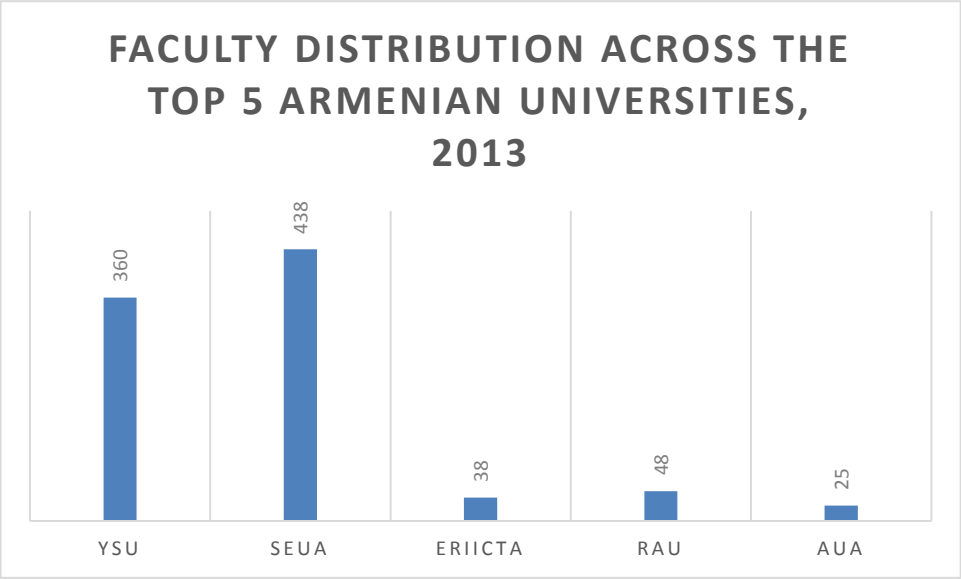
With the exception of a few Universities, the current educational system is overwhelmingly the legacy of the former Soviet Union. Following Armenia's independence, the workforce demand changed drastically, which, in its turn, led to the disappearance of several specializations and the emergence of the others. A number of Armenian Universities have already transitioned to a two-tier educational system offering undergraduate and graduate degree programs. However, in some of the Universities the five-year system inherited from the Soviet Union is still functional. A few of the Universities issue Candidate of Sciences and doctorate degrees.

The main issues faced by the educational sector is lack of sufficient financing since the tuition fees and state subsidies are not adequate for the majority of the Universities. Meanwhile, the private sector's involvement in financing educational programs is almost non-existent. In addition, most Universities are unable to increase tuition fees since they are high for an average Armenian student as things stand. University development is also challenged by other factors including the lack of textbooks and specialized literature, difficulties associated with cooperation with the private sector, challenges related to recruiting new specialists to replace the aging faculty members. Some of the Universities still face problems related to internet access and insufficient quantity of computers.

6.3 The Faculty and Teaching Methods (Instruction)

The overwhelming part of the faculty teaching ICS related specializations is concentrated in YSU and SEUA, with the rest spread over the remaining Universities. The total number of faculty members in five leading Universities is 909 specialists.

[5]Source: EREA,http://www.eriicta.am



It should be noted that the majority of Universities consider that they offer contemporary curricula and methods in line with the requirements of the industry.

A number of faculty members use the experiences of leading European, Russian and U.S> Universities supported by their peers in those institutions. In many instances local IT experts are invited to Universities to help them harmonize curricula to the industry trends and requirements.

Many of the Universities acknowledge that in addition to technical skills the students need business knowledge. This is why a number of Universities offer business related courses such as marketing, management, business ethics, legal studies and others. Teaching of foreign languages, specifically English and Russian, is also emphasized in the overall process of shaping high quality technical and management professionals.

Despite the recent reforms in the education system, the instructional methods that are currently used do not comply with the demand the IT sector has for highly qualified specialists. Two other interrelated issues include the low faculty salaries and the aging faculty. Consequently, there is a stagnation in the system or even a decline, while the number of the students increases annually.

6.4 Students

In 2012-2013 9622 students[6] were enrolled in Armenian universities offering IT specializations, of which 5118 students study in the above-mentioned five main universities. Around 50% of all these students study at YSU and SEUA. Foreign students studying in Armenia are from CIS, Middle East, Europe and other countries, and their number is growing over time. In the past 3-6 years the academic progress of students has increased substantially, and the enrolment in the IT related departments has become rather difficult, specifically at YSU and SEUA. Computer science, applied mathematics, information technologies and information system security, automated control systems and microelectronics are the most popular majors for applicants.

[6]Sourse: National Statistical Service, http://www.armstat.am

Generally, representatives of IT companies consider that the current number of students is not sufficient to meet the demand of average 2000 specialists in the industry. They also point out that the level of proficiency of some graduates does not meet the industry demands and many of them need further training to gain sufficient proficiency and become employed on a full time basis.

6.5 Cooperation with the Private Sector

During the period following the collapse of the Soviet Union the cooperation between the IT industry and universities was rather lacking. However, some positive developments have been recorded recently. Most evident examples of this are the following:

- Interdepartmental Chair of "Microelectronic Circuits and Systems" established by LEDA Systems (acquired in 2004 by Synopsys Inc.) and SEUA. The Chair, now part of Synopsys University Program, supplies more than 60 high quality VLSI and EDA specialists each year. Later Synopsys expanded this initiative through opening interdepartmental chairs at YSU and RAU.

- Internet and web technologies laboratories were established by Lycos Europe, EIF, and Sourcio CJSC at SEUA and YSU in 2005;

- SUN educational laboratories formed by Sun Microsystems, EIF, and USAID at SEUA, YSU and RAU in 2008;

- Gyumri IT Center, first IT training center in the city of Gyumri, was established by the Fund For Armenian Relief (FAR) and EIF in 2006;

- Microsoft Innovation Center formed by Microsoft, EIF, USAID and SEUA;

- Armenian-Indian Center for Excellence in ICT, founded in 2011 under the joint project of Governments of Armenia and India;

- Regional Mobile Application Laboratory founded in 2011 for Eastern Europe, South Caucasus and Central Asia under the joint project of InfoDev, Government of Finland and Nokia;

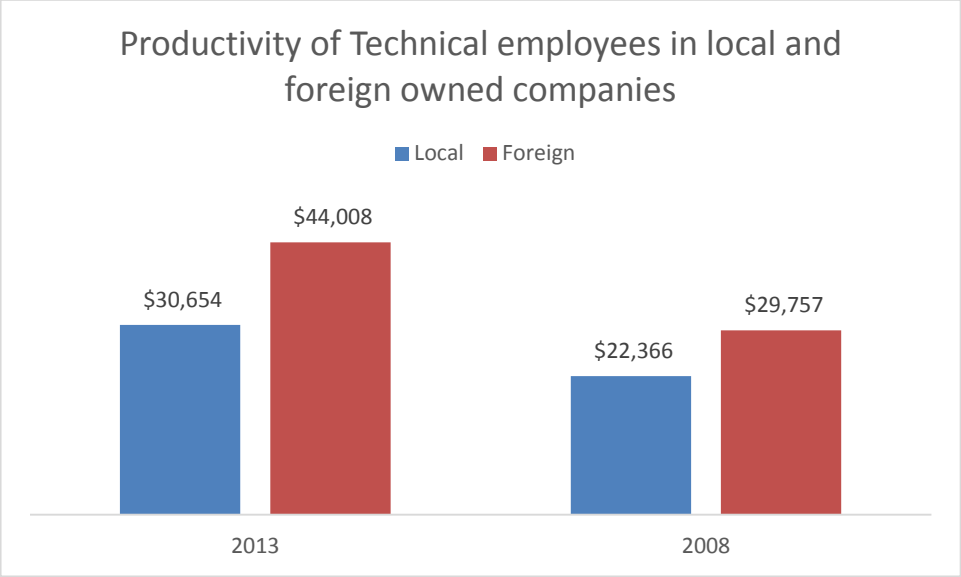
- In 2013 Armenian National Engineering Laboratory was established at SEUA jointly with National Instruments;

- Academic Initiative was launched in 2013 jointly with IBM.

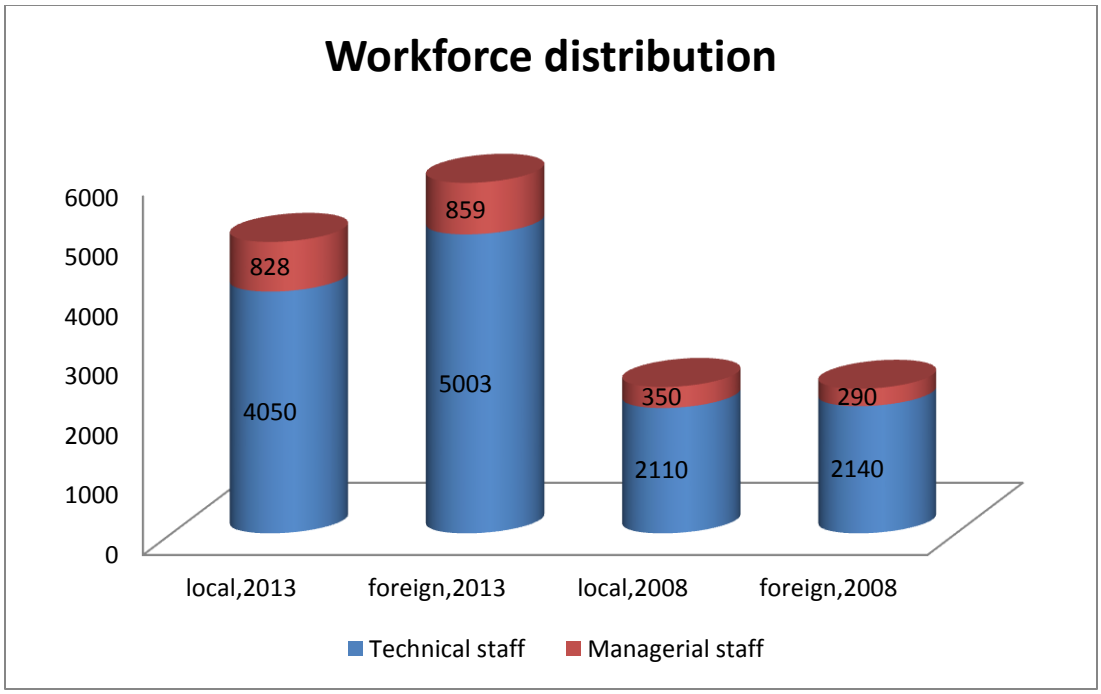
These companies hire graduates of the tailored training programs. At this point, industry and university cooperation goes no further than educational programs and training courses, mainly focusing on development of high quality professionals for certain companies and the industry in general.

7. ICT Workforce Structure

Unquestionably workforce is one of the most important competitive advantages of Armenian ICT sector. During recent years employment was provided to 1700 employees in average (1791 — in 2013) by companies engaged in providing software and services. Not only low-paid workforce, but also high productivity of Armenian specialists is much attractive to foreign investors. In 2013, the workforce employed in the IT sector reached 10,740, which accounted for about 10% growth compared to 2012. The number of technical specialists such as software engineers, analysts, developers, IT project managers and others reached 9,053.



26 percent of 9,053 technical specialists employed in IT sector are engaged in the telecommunication segment, while the remaining technical workforce works for the Software and Services segment.

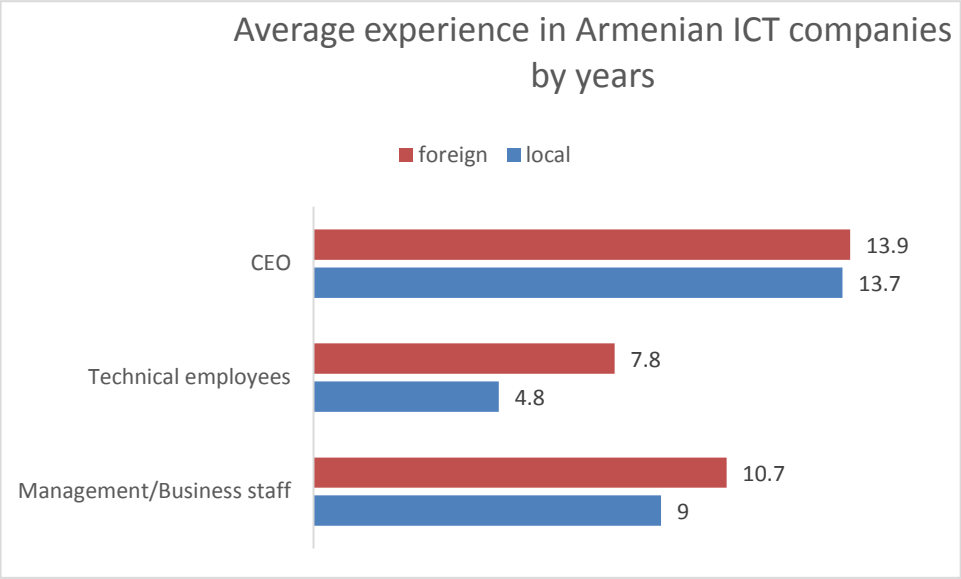


As the above chart shows, in 2013 the number of management and business professionals increased in the total IT workforce as compared to 2008 both in domestic companies and those with foreign ownership.

According to 2013 data, 61% of Armenian ICT workforce has Master's or higher degrees. Students represent 11.3% in the whole ICT workforce. Though local companies prioritize personnel training as an essential factor of their development, few of them are in the position to provide ongoing training. The availability of respective resources and personnel play significant role in this process. Many companies practice non-paid internships when selecting new graduates. It is a common practice to host interns and to train them and use for small value added jobs and then select the best ones for permanent positions. New employees usually do not start working at full capacity for periods longer than two months.

The overwhelming part of the specialists employed in the Armenian ICT sector are males (69%). The number of female employees in the software and services sector has decreased by 3% as compared to 2012.

Average work experience of company directors included in our survey sample is 13.7 years in domestic companies and 13.9 years in foreign companies. Information on average years of work experience of other employees is shown below:



Local and foreign companies employed 45% and 55% of the total workforce respectively (in 2008, this ratio was 50/50), which means that the number of persons employed by domestic companies has increased by 7.5% as compared to the previous year.

Companies with foreign ownership employ 55 people on average (arithmetic average value), while the average number of employees in local companies is 18.

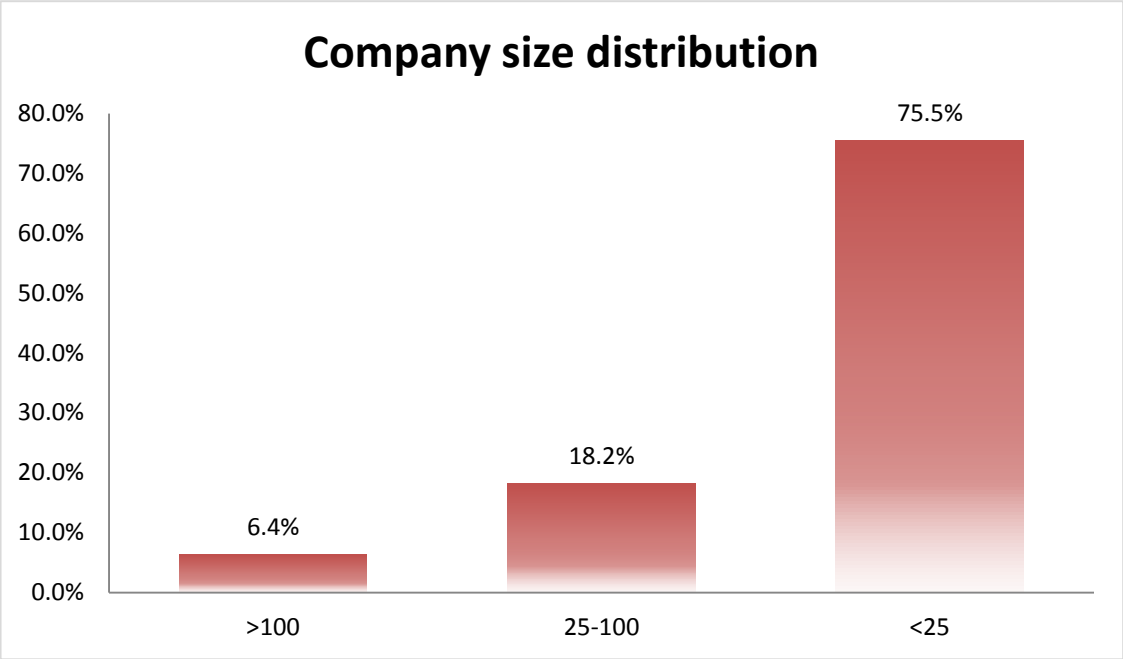
Armenia is still considered a low cost offshore development location, where salaries are competitive with those of many IT outsourcing countries such as India, Russia, Israel, Ireland, and China.

At local companies the average monthly salary of a junior technical specialist amounts to USD 250-300, while the salary of senior specialists reaches USD 3,000. In companies with foreign ownership the amount of the salary of technical specialists ranges from USD 370 to USD 3,500.

The results of this study show that salaries are correlated with work experience rather than educational attainments of technical employees.

Distribution of companies by the number of their staff in 2013 is not much different much from the rates of the previous year. Similar to 2012, the number of specialists employed by the firms varies significantly within the industry. Only 6% of all businesses employ 100 or more specialists constituting 47% of the total workforce, while 75% has less than 25 employees constituting 27% of the total workforce.

Thus, as the chart below shows, the distribution of ICT companies in Armenia according to the workforce considerably tends towards small businesses which is one of factors having negative impact on industry productivity.



Foreign branches, as part of their strategic management, constantly train their employees both in Armenia and at the head offices. Furthermore, the branches have created special resource centers and libraries to provide opportunity for the staff to improve their qualification and skills. Employees of a number of foreign companies have the option of becoming shareholders of the employer company and to receive other non-salary incentives. Similar initiatives are offered also by local companies in the last three years.

8. The Role of ICT Sector in the Economy of Armenia

8.1 Development Progress and Prospects

Summarizing the results of the survey it may be stated that the IT sector has an immense export potential and may have significant contribution in the growth and development of the economy of Armenia.

Nowadays Armenian IT companies are able to offer products and services in compliance with high international standards. However there are still certain problems from the perspective of entering foreign markets and training specialists for the IT industry. With this respect, Government's policies and ongoing programs in support of the sector have an important role to play.

In 2013 the share of revenues generated by the software and services sector was 3.6% in Armenia's GDP (USD 10.4 billion[7]).

During 2008-2013, the average annual growth in the industry amounted to 21.4%. Industry's share in total exports increased from 7% in 2008 to 9% in 2013[8], confirming the growing importance of the

[7] Source: National Statistical Service of the Republic of Armenia, http://www.armstat.am

[8] Based on export indicators of 2011 (data from the Central Bank of the Republic of Armenia)

software development sector for the Armenian economy focused on the expansion and development of export-oriented businesses.

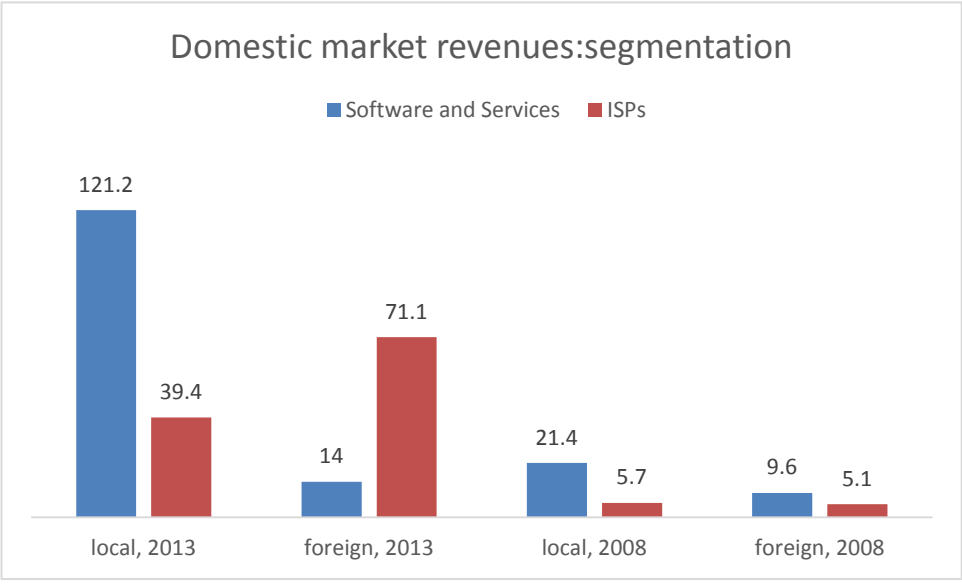
The ICT sector annually creates 1700 well-paid jobs for technical specialists. On the other hand, Armenian universities prepare 2,000 IT and high-tech specialists each year, from which the best specialists, after undergoing training in the companies, are hired for these jobs.

The share of local companies in total revenues of software and services segment comprises 38% which is less by 1% from the indicator of the last year.

Apart from local ICT companies foreign branches and representation offices also operate in Armenia which are primarily outsourcing centers with a clearly defined budget; little value generated by these foreign branches is left in the country, only salaries and other expenses. Nevertheless, this branch model is still relevant for Armenia and has visible positive effect on the industry and the overall economy of the country.

8.2 Domestic Market

In 2013, the volume of the domestic market reached about USD 245.7 million comprising 64.8% of the industry's total, thus exceeding the 2012 domestic market share by 1.8%. In general, since 2008, the sales volumes in the domestic market have increased by more than 175%, which has been the result of a substantial growth in the internet services area. The share of the software constituted 78% of the domestic market, while ISP segment was 22% with an estimated USD 85.1 million in total market revenues. Share of foreign owned ISPs and overall ISP market increased considerably due to the de-monopolization of the telecommunications industry, entry of new large ISP firms in the market, and acquisitions of telecom players. In 2013, domestic market turnover was larger than that of the exports compared to the last year.



In 2013 exports comprised 35% of the total turnover while 65% of revenues were generated by the domestic market. As the chart shows, turnover volumes have doubled during the last 6 years. The reason is the growing demand for IT sector services in other industries. There is a growing demand of IT services in the domestic market; however this is a slow process due to a number of factors including margin domestic market, low wages, and low demand for productivity enhancement tools, financial constraints, high software piracy rates and other factors.

The relatively low domestic demand constituted insufficient inducement for Armenian ICT companies to develop software packages or offer new and quality services. The majority of software packages sold on the domestic market included accounting and financial software for large enterprises and banks. Other products and services with the largest demand were enterprise resource planning solutions, e-commerce, web development services, tools for healthcare industry, and distance learning programs.

8.3 Exports

In 2013 exports increased essentially and reached USD 133.4 million comprising 49% of the Software and Services segment (without ISPs) total.

With 80% of exports share foreign companies were still prevalent in exports. Largest companies of the Software and Services segment are branches of foreign firms, which almost completely export their output. In addition, many domestic enterprises also export significant portion of their products and services.

Armenian IT industry exports nearly USD 133.4 million of products and services to many countries worldwide. About 50% of IT companies exports their own products and services though the export volumes vary; for certain companies exports account for low share in revenues, while others export their products in whole (100%).

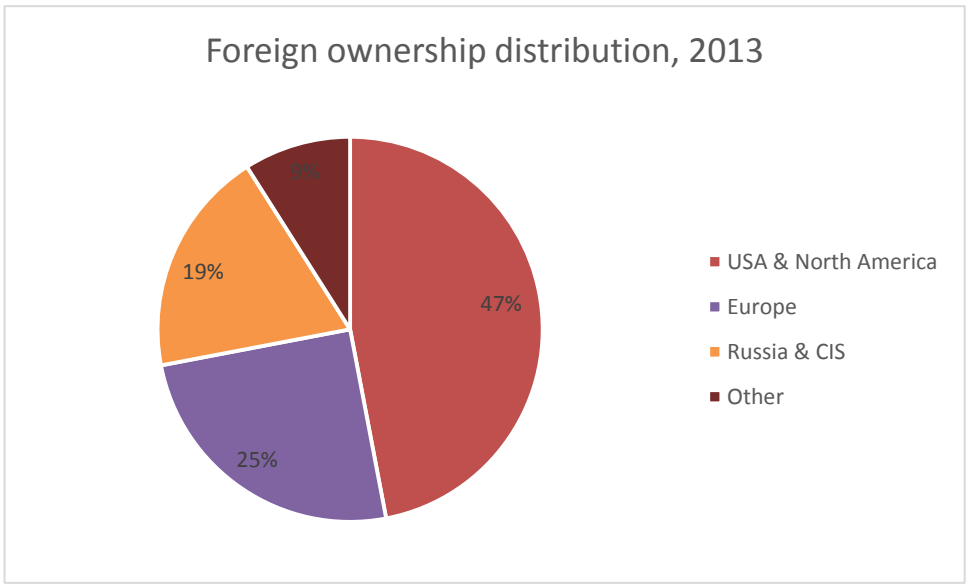
The largest share of exports, almost 70%, goes to the United States and Canada, 20% goes to Europe, and Russia and CIS countries are the third with 7%. Share of services exported to USA and North America increased by 14% while the volume of services exported to Europe decreased for 11% during 2012. Among other countries, India has the highest demand for Armenia's services focusing mostly on outsourcing of customized software development.

In general, the main factors hindering the growth of exports include the insufficient awareness of the international business community about Armenia and its IT industry; remoteness from major IT markets and language barrier, the latter, however, having become less important.

8.4 Foreign Owned Companies

According to 2013 data, 155 companies with foreign ownership operate in Armenia constituting 41% of the industry total. In 2003, these companies represented only 22% of Armenian ICT companies. Armenia's expertise in software development continues gaining recognition overseas, thus attracting foreign investments in the ICT sector.

Similar to the recent years, the US companies constitute the majority of foreign companies (47%). This number has decreased by 1% as compared to the numbers recorded in the previous year.



In the majority of cases, foreign branches are pure development centers for the parent companies. These are usually established as small development centers and, after forming an effectively operating team in place, start increasing the number of employees and moving to higher value added activities to Armenia. It is a common practice to eventually move to Armenia the entire cycle of a company's technical activities including R&D, design, coding, testing, and other functions. In addition, some companies have also started relocating parts of their business related functions such as marketing and customer support to Armenia. Practice of sending local professionals to the customer sites outside of Armenia to provide implementation and customer support is widely used.

In 2004, 2005, and 2010, Armenian ICT sector witnessed a major transaction that took place within the chip design segment. Synopsys Inc., a leader in delivering solutions for semiconductor design and manufacturing, acquired LEDA Design, Monterey Arset, HPL Technologies, and Virage Logic. The new joint development center in Armenia owned by Synopsys is currently the largest domestic software powerhouse with more than 500 employees.

Other examples of acquisitions of existing Armenian companies during the last several years included the sale of three state owned Armenian enterprises (MARS, Yerevan Computer Research and Development Institute and Yer.ACSSRI) to Russian investors by the Government of Armenia; an Armenian branch of a US company, Brience, which was acquired by Germany-based Lycos Europe, and acquisition of Ponte Solutions, a US company with an R&D center in Armenia, by the US-based Mentor Graphics Corporation.

In summer 2011, the regional software development laboratory of D-Link International was launched in Gyumri which will become an important component of the Gyumri Technopark. D-Link International is a Taiwanese company, a world leading manufacturer and vendor of network and telecommunication devices and maintains worldwide presence in more than 100 countries.

In fall 2011, one of major engineering companies of the world, the ST Kinetics (Singapore Technologies Kinetics Ltd) officially announced its entry into Armenia. ST Kinetics opened a branch in Armenia, which would primarily carry out research and development for the platform for stand-alone machinery and off-line equipment.

9. Policy Developments

In 2000, the Government of Armenia declared the IT sector as one of the priorities for the development of the Armenian economy, which was followed by a number of specific actions to bring the Government decree into effect. In 2001, the Government, jointly with the World Bank, USAID, universities, various foundations, and private enterprises, developed the ICT Master Strategy and ICT development implementation plan to promote ICT and establish Armenia as a regional ICT hub. In May 2001, the Government approved the ICT Development Concept Paper and Action Plan prepared by the Ministry of Trade and Economic Development of Armenia based on the recommendations outlined in the ICT Master Strategy.

In July 2001, Information Technologies Development Support Council of Armenia (ITDSC), chaired by the Prime Minister was established by the decree of the President of Armenia. The mission of the Council is to act as a bridge between the Government and the private sector and to serve as a connecting link between the Diaspora and Armenia. The goals of the Council are to assist the Government and the private sector in building strong and viable IT industry and developing Armenia into an advanced information society.

In 2002, Enterprise Incubator Foundation was established by the Government of Armenia and the World Bank to support the development of information technology industry in Armenia. EIF is the largest development initiative within the IT industry in Armenia.

Information technology is considered by the Government as an important area for international cooperation. Various projects are initiated within this framework: the European Regional Institute of Information and Communication Technologies in Armenia (ERIICTA), which was established with the financial assistance from the European Union; the USAID funded Competitive Armenian Private Sector Program (CAPS) and Enterprise Development and Market Competitiveness Project, and other programs

In 2008, the Government adopted a new 10-year industry development strategy focused on building infrastructure, improving quality of IT graduates, creating venture and other financing mechanisms for start-up companies. The main goals of this new strategy are: to build a developed information society in Armenia, make Armenia part of the knowledge creation global network, and form a strong and advanced information technology sector. The strategy aims at increasing the rates of computer and internet penetration in all segments of the economy, building new technoparks and incubators, establishing a major venture fund, developing domestic market for local IT products and services, increasing foreign direct investments, and other measures targeting the expansion of the ICT sector, and on the other hand, the development of an information society in Armenia. The Government body responsible for the implementation of this strategy and overall IT industry development is the Ministry of Economy.

Since 2008, allocations have been made from the National Budget to the RA Ministry of Economy for providing government support to the development of the IT sector. Those funds are used for IT industry research, industry status survey, preparing guidelines of the industry and enterprise rates; organization of industry related events of local, regional and international importance in Armenia – exhibitions, forums, conferences and competitions; participation of Armenia in major international events abroad; and as well co-financing of joint projects and events with foreign governments, international institutions and transnational organizations of IT industry.

ArmTech, the Armenian global high-tech congress and DigiTech, the specialized information, telecommunications and high-tech expo, arranged and implemented in close cooperation with the Government of Armenia, have established a tradition.

ArmTech congresses are intended to highlight the growth in high-tech industry having a strategic importance for the Armenian economy, promote the international collaboration and attraction of investments, foster cooperation between IT specialists and turn the Armenian high-tech industry globally recognizable. The annual forum is organized sequentially in Armenia and USA.

The main goal of DigiTech expo is to create a favorable communication environment for high-tech companies, business consumers and the general public. The expo serves as a floor for studying and understanding the real picture, identifying the achievements, challenges and opportunities of the Armenian ICT sector, and tends to facilitate the market entry of IT companies, the exhibition of their products and services and the strengthening of international relations.

In recent years the Government of Armenia has signed a number of cooperation agreements and memoranda of understanding with governments including the Republic of India, Arab Republic of Egypt and others, as well as with world known companies, such as Microsoft, Alcatel, Hewlett-Packard, Sun Microsystems, National Instruments, Mentor Graphics, Cisco, Intel, Synopsys, D-link and others.

The Government of Armenia implements targeted projects for development of IT sector infrastructure. Particularly, in 2008, the Government of Armenia approved the Concept Paper and the Action Plan for reconstruction of Gyumri to a technocity. Since 2008, allocations have been made from the State Budget of the Republic of Armenia to the Ministry of Economy to provide state support to the activities of Gyumri Technopark. The program aims at turning Gyumri into a Center of Excellence – a Technocity reputed as a business environment with large education institutions, research centers and strong facilities for development, testing, realization of innovative, information and high-tech projects and starting large-scale production and small and medium high-tech companies.

One of the goals of the new ICT Development Strategy adopted by the Government of Armenia is to form an E-society in Armenia, specifically the significant expansion of the computer usage and internet access. To achieve this goal Computer for All program has been launched, which is intended to:

- Make computers affordable and accessible to the population,
- Train skillful users of the respective computer hardware and software,
- Enhance internet accessibility to and the use of E-services by the population,
- Reduce the propagation of non-licensed software.

The program is implemented by the Ministry of Economy of the Republic of Armenia and EIF jointly with international and local ICT companies, banks and other partners.

In 2010, memoranda of partnership were signed by the Ministry of Economy, Ministry of Education and Science, Intel, Hewlett-Packard, EIF and Unicomp CJSC for the implementation of Teachers PC and Classmate PC pilot projects in Armenia.

By its Decree N7 of February 25, 2010, the Government of Armenia approved the Armenian E-society Development Concept Paper to be implemented for the next few years.

To foster the use of electronic management systems to the fullest extent, in 2010, the Government of Armenia introduced the www.e-gov.am electronic management portal with the intention to unify all electronic management tools and databases of the Armenian government authorities and provide a comfortable environment for their use. The site allows electronic applications for license, electronic registration of organizations, electronic tax reports¸ electronic visa applications, electronic applications to Intellectual Property Agency, issue of electronic signatures, electronic procurements, etc. New services are being continuously added to the electronic management portal. At present, efforts are under way to introduce other electronic services including e-health, e-education, e-pension and e-identification services.

To achieve the aforementioned objectives and implement other industry development programs and projects, the Government of Armenia signed a credit agreement with the International Bank for Reconstruction and Development, under which the Armenia E-Society and Innovation for Competitiveness Program started in 2011. The Program consists of several projects aimed at strengthening the ICT infrastructure in Armenia, taking actions to foster the industry development, formation of e-society, etc. Specifically, the program includes the following projects: Pan-Armenian Broadband Access and Management Network, Introduction of Certification Center in Armenia, Computer

for All, Gyumri Technology Center, Financial Support to Companies Needing Innovative Knowledge and Technologies, Assistance to IT/Research Industry Development, and others.

Since July 2011, the Republic of Armenia undertook the coordination of the Black Sea Economic Cooperation Working Group on Information and Communication Technologies for 1.5 years.

In 2012, the Government of Armenia, USAID, National Instruments (NI), State Engineering University of Armenia (SEUA) and Enterprise Incubator Foundation (EIF) jointly started the project of establishment of the Armenian National Engineering Lab (ANEL). The main goal of the Project is to meet the demand of the engineering industry in quality specialists and graduates. This will help Armenian high-tech businesses to address the gap existing in terms of availability of employees and to increase value-added and innovative business activities, thus increasing their international competitiveness.

Efforts towards expansion of research and development activities in the country as well as leverage of private sector experience and R&D potential will allow to implement the most challenging part of the project, that is to establish a strong public-private partnership and promote development of technology innovation.

Armenian IT/High-Tech Representative office was officially launched in December, 2012, at Plug&Play Tech Center in Silicon Valley, California. The office will operate as a hub to foster the development of sales and investment opportunities for Armenian IT and high-tech companies in the US. It will ensure Armenian IT visibility and presence at the US marketplace, introduction and marketing of Armenian IT capabilities and products in the US as well as assistance with establishment of business ties between Armenia-based companies and US firms and investors.

In December 2012, the Government of Armenia and Intel Corporation signed a Memorandum of Understanding on cooperation in the sphere of education and R&D. Under this Memorandum Intel will expand its joint efforts with Armenia towards increasing the rate of computer penetration in schools, training of teachers, creating educational content as well as establishing new partnerships in software development and joint research initiatives.

Another Memorandum of Understanding was signed in December 2012 between the Government of Armenia and Corporation America to establish and launch production of semiconductors and an IT research and development center in Armenia.

In 2012, the first free economic zone (FEZ) was established in Armenia pursuing the goal to contribute to the increase in export volumes and creation of new jobs, as well as ensure sustainable economic development through attracting foreign direct investments and introducing advanced technologies. The free economic zone established at “RAO MARS” CJSC and “The Yerevan Computer R&D Institute” CJSC is oriented to the production and exports of innovative and high technologies in the field of electronics, precision engineering, pharmaceutics and biotechnologies, information technologies, alternative energy, industrial design and telecommunications (elaboration and production of technological equipment, systems and materials for data/information transfer). Free economic zone operators are exempted from profit tax, income tax, VAT, property tax and customs duties.

In 2013 the first venture fund in Armenia was established with the support of the Ministry of Economy of the Republic of Armenia. The primary importance of such an initiative for Armenian IT companies is that

the mentioned venture fund with a goal to support innovativeness of Armenian companies, to promote networking with the Western market of high technologies and FDI options, to develop Armenian Information Technology infrastructure in the Republic of Armenia.
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IT Industry Growth Targets	
	2018
Home/household computer penetration	70%
Computer penetration at educational institutions	100%
Computer penetration at central and local governments	100%
Internet accessibility for general population	90%
RA Government spending on locally developed IT products, % of national budget	>1%
Domestic consumption of locally developed IT products, % of GDP	>2%
Share of e-services in all services provided by RA state entities	80%
Number of IT companies, of which with foreign capital	1000 200
IT workforce	20000
Productivity, output per employee	50,000 mln USD
Industry revenues	1 mln USD
Exports	700 mln USD
IT companies with ≥ 1,000 employees	>1
IT companies offering R&D services	100-200
Large technocity, Technoparks & incubators	>1 >10
Venture capital funds committed	>700 mln USD
Local open joint stock companies registered at Armenian Stock Exchange	50 – 100
Local open joint stock companies registered at international stock exchanges	>5

ANNEXES

Industry Statistics

	2013	% of Industry	2008	% of Industry	% change 2013/2008	CAGR 2013/2008
Number of Companies						
Industry general	380	100%	175	100%	117%	21.4%
Local firms	225	59%	119	68%	89%	17.3%
ISPs	18	5%	20	11%	-10%	-2.6%
Foreign branches	155	41%	56	32%	177%	29.0%
ISPs	15	4%	3	2%	400%	49.5%
Company Ownership Geography						
Industry	380	100%	175	100%	117%	21.4%
Armenia	225	59%	119	68%	89%	17.3%
USA & North America	73	19%	36	21%	103%	19.3%
Europe	38	10%	9	5%	322%	43.3%
Russia & CIS	30	8%	10	6%	200%	31.6%
Other	14	4%	1	1%	1300%	93.4%

Exports Geography, millions of U.S. dollars						
Industry	$133.4	100%	$69.4	100%	92%	17.7%
USA & North America	$78.6	58.9%	$41.0	59%	92%	17.7%
Europe	$32.5	24.4%	$12.7	18%	157%	26.6%
Russia & CIS	$19.3	14.5%	$11.8	17%	64%	13.1%
Other	$3.0	2.2%	$4.0	6%	-25%	-6.8%
Productivity (average output per technical employee excluding ISPs), U.S. dollars						
Industry	$36,789	100%	$26,115	100%	41%	8.9%
Local firms	$30,654	83%	$22,366	86%	37%	8.2%
Foreign branches	$44,008	120%	$29,757	114%	48%	10.3%

Industry Turnover, (Nace classification) millions of U.S. dollars	**2013**	**% of Industry**	**2012**	**% of Industry**	**2013/2011**	**CAGR 2013/2008**
Software and Services	$294,16	**100%**	**$244.35**	**100%**	**20%**	**20%**
58.2 Software publishing	$29.4	10%	$22.8	9%	29%	29%
58.21 Publishing of computer games	$8.8	3%	$7.1	3%	24%	24%
58.29 Other software publishing	$20.6	7%	$15.7	6%	31%	31%
62.0 Computer programming, consultancy and related	$264,8	90%	$221.4	91%	20%	20%

activities						
62.01 Computer programming activities	$153,2	52%	$138.2	57%	11%	11%
62.02 Computer consultancy activities	$29.4	10%	$ 29.8	12%	-1%	-1%
62.03 Computer resource management activities	$58.7	20%	$ 27.7	11%	112%	112%
62.09 Other information technology and computer service activities	$23.5	8%	$ 25.7	11%	-9%	-9%
Telecommunications	$470,9	**100%**	**$400.27**	**100%**	**18%**	**18%**
61.1 Wired telecommunications activities						
61.10 Wired telecommunications activities	$87	**18%**	$ 96	**24%**	-10%	-10%
61.2 Wireless telecommunications activities						
61.20 Wireless telecommunications activities	$279	**59%**	$ 246	**61%**	13%	13%
61.9 Other						
61.90 Other telecommunications activities	$7.5	**2%**	$ 0.6	**0.1%**	1150%	1150%
63.1 Data processing, hosting and related activities; web portals	$1.26	**0.3%**	$ 0.63	**0.2%**	100%	100%
Other income in Telecom industry	96.14					

Software and Internet Services Industry Turnover, millions of U.S. dollars	2013	% of Industry	2008	% of Industry	2013/2008	CAGR 2013/2008
Industry	$379.1	100%	$111.3	100%	241%	35.8%
Local firms	$145.4	38%	$50.1	45%	190%	30.5%
Foreign branches	$233.7	62%	$61.2	55%	282%	39.8%
Domestic market	$245.7	65%	$41.9	38%	486%	55.6%
Local firms	$135.2	35.7%	$31.1	28%	335%	44.4%
Software and IT consulting	$121,2	32%	$ 21.4	19%	465 %	54.2%
Internet services	$14.0	4%	$ 9.6	9%	45%	9.8%
Foreign branches	$110.5	29.1%	$10.8	10%	922%	78.8%
Software and IT consulting	$39.4	10%	$ 5.1	5%	670 %	66.6%
Internet services	$71.1	19%	$ 5.7	5%	1149%	88.0%
Exports	$133.4	35%	$69.4	62%	92%	17.7%
Local firms	$24.8	7%	$19.1	17%	30%	6.8%
Foreign branches	$108.6	29%	$50.3	45%	116%	21.2%
Industry	$379.1	100%	$111.3	100%	241%	35.9%
Software and IT consulting	$294.0	78%	$96.0	86%	206%	32.3%
Internet services	$85.1	22%	$15.3	14%	455%	53.5%

Workforce distribution*	2013	% of Industry	2008	% of Industry	% Change 2013/2008	CAGR 2013/2008
Industry total	10,740	100%	4,890	100%	120%	21.7%
Technical specialists	9,053	84%	4,250	87%	113%	20.8%
Managers	1,687	16%	640	13%	164%	27.4%
Programming and IT services	7,996	74%	4,220	86%	89%	17.3%
Local companies	4,323	40%	2,100	43%	106%	19.8%
Foreign branches	3,673	34%	2,120	43%	73%	14.7%
Internet services	2,744	26%	670	14%	310%	42.3%
Local companies	555	5%	360	7%	54%	11.4%
Foreign branches	2,189	20%	310	6%	606%	63.0%
Local companies	4,878	45%	2,460	50%	98%	18.7%
Technical specialists	4,050	38%	2,110	43%	92%	17.7%
Managers	828	8%	350	7%	137%	24.0%
Foreign branches	5,862	55%	2,430	50%	141%	24.6%
Technical specialists	5,003	47%	2,140	44%	134%	23.7%
Managers	859	8%	290	6%	196%	31.2%
Programming and IT services	7,996	74%	4,220	86%	89%	17.3%
Technical specialists	6,557	61%	3,680	75%	78%	15.5%
Managers	1,439	13%	540	11%	167%	27.8%
Internet services	2,744	26%	680	14%	304%	41.7%
Technical specialists	2,496	23%	580	12%	330%	44.0%

*Total numbers are rounded.

Specializations, % of firms	Industry, 2013	Local firms, 2013	Foreign branches, 2013	Industry, 2008	Local firms, 2008	Foreign branches, 2008
Customized software and outsourcing	23%	14%	9%	23.2%	13.7%	9.5%
Chip design, testing, and	3%	1%	2%	3.9%	1.4%	2.5%

related						
Internet services	10%	2%	8%	8.1%	7.0%	1.1%
Networking systems and communications	11%	10%	1%	7.4%	3.5%	3.9%
Internet applications and ecommerce	5%	4%	1%	8.4%	6.0%	2.5%
IT services and consulting	12%	9%	3%	10.2%	7.4%	2.8%
Accounting, banking, and financial software	5%	3%	2%	6.3%	5.3%	1.1%
Web design and development	14%	9%	5%	12.6%	10.2%	2.5%
Computer graphics, multimedia, and games	5%	3%	2%	4.9%	4.6%	0.4%
Databases & MIS	7%	5%	2%	6.7%	5.3%	1.4%
Other	5%	4%	1%	8.4%	4.6%	3.9%

Specializations, Revenues, millions of U.S. dollars	**Industry, 2013**	**Local firms, 2013**	**Foreign branches, 2013**	**Industry, 2008**	**Local firms, 2008**	**Foreign branches, 2008**
Customized software and outsourcing	$128.9	$38.7	$90.2	$22.9	$10.1	$12.8
Chip design, testing, and related	$56.9	$1.1	$55.8	$17.5	$1.1	$16.4
Internet services	$83.4	$19.7	$63.7	$15.3	$9.6	$5.7
Networking systems and communications	$45.5	$44.6	$0.9	$10.6	$2.2	$8.4
Internet applications and ecommerce	$1.9	$1.7	$0.2	$9.3	$1.6	$7.8

IT services and consulting	$15.2	$8.6	$6.6	$7.0	$5.2	$1.7
Accounting, banking, and financial software	$26.5	$23.4	$3.2	$7.1	$5.9	$1.2
Web design and development	$11.4	$1.3	$10.1	$3.9	$2.9	$1.0
Computer graphics, multimedia, and games	$1.9	$1.6	$0.3	$3.5	$3.4	$0.0
Databases & MIS	$3.8	$1.5	$2.3	$3.1	$2.4	$0.7
Other	$3.8	$1.7	$2.0	$11.1	$5.7	$5.4