

**INFORMATION AND TELECOMMUNICATION
TECHNOLOGIES SECTOR IN ARMENIA
2014 STATE OF INDUSTRY REPORT**



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1. ICT Business in Armenia

1.1 Overview of IT Industry in Armenia

It is already widely accepted fact that information and high technologies as well as their commercialization in different industries are one of the main growth driving factors of the world economy since last decades. As a well-known hub for software development, industrial computing, electronics, and production of semiconductors even under the Soviet Union, Armenia has preserved its huge potential for technology development and continues to be the regional leader in IT and high-tech industry due to its competitive labor, its share in GDP, as well as the constant growth of number of companies and total turnover.

Total revenue of the industry, which consists of Software and Services sector and Internet Service Provider sector has reached 474.9 USD which is 25.2% higher in comparison to 2013.

Competitive technical workforce in Armenia creates a favorable investment climate for large ICT companies and Multinationals. These specialists are estimated to ensure annual productivity equal to up to 46,000 USD for their companies.

Armenian ICT companies specialize in 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 400 ICT companies operate in Armenia, generating an average annual growth of 20%. Majority of these companies are Yerevan-based (about 90%), but we have to note that 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, particularly in the Shirak and Lori regions.

Only in 2013 and 2014 34 new companies were established, which created almost 340 new jobs. In total, around 1100 new jobs were created in 2014.

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?

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.

It should be noted that Armenia was ranked 32nd (out of 185) in the World Bank Doing Business 2013 report for 'Ease of doing Business' and 11th for 'Starting a Business'.

According to the same source Armenia made starting a business easier by streamlining post registration procedures and by eliminating the company registration fees.

The following table¹ presents key indicators for opening and operating business. As it can be seen from the content of the table the presented indicators are more favorable in Armenia than in Europe, Central Asia and OECD countries.

Indicator	Armenia(2014)	Europe Central Asia &	OECD Countries
Starting and registering a Business: Time (days)	3	12.1	9.2
Starting a Business: Cost (% of income per capita)	1	5.3	3.4
Enforcing Contracts: Time (days)	570	448.1	539.5
Enforcing Contracts: Cost (% of claim)	14	25.2	21.4
Total tax rate (% profit)	20.4	34.9	41.3

A major highlight of the reform agenda was the opening of the One-Stop Business Registry launched within the Ministry of Justice on March 25, 2011. It helped streamline start-up procedures and reduce the business registration process by approximately two weeks. The new system also cut entrepreneurs' start-up costs.²

Taxing

The main tax categories being rather low in Armenia compared with other countries are presented below:

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

In 2013 the employee and employer social contributions and individual income tax were merged into one unified income tax which led to an easier way of paying taxes. The same year 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,

¹Source: <http://www.doingbusiness.org>

² Source: <http://www.ifc.org>

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.

2014 was marked by passage and enforcement of a new package of tax reforms. The passage of these legal acts was determined by the need to ensure more favorable taxing conditions for small and medium entrepreneurship entities and family members involved in joint commercial activity (purchase and sales) with consideration of the reality that the legal regulations in force before these amendments were conducive of a shadow turnover due to non-documentation of acquisitions by the turnover tax payers. With respect to family members involved in joint entrepreneurship, the lack of a specific taxing approach was a limitation to formation and development of entrepreneurship entities in this group.

To summarize, as of October 1, 2014, the above mentioned legal reforms introduces a privileged taxing system for family entrepreneurship/business. The RA Law on Taxes defined the procedures for qualifying as an entity of family entrepreneurship and termination thereof in addition to regulating taxing and tax record keeping issues.

- With respect to enforcement of tax legislation a family enterprise is defined as the joint entrepreneurship activity undertaken by more than one member of the family (parent, spouse, child, sibling) with the purpose of profit making, if the proceeds from sales of all goods and services (works done) related to that activity does not exceed 18.0 million Armenian drams annually, without VAT.

- It was defined that all entities of family entrepreneurship are exempt from all state taxes arising from family entrepreneurship (including the obligation to calculate, withhold and transfer the tax agent tax to the state budget). Exception is made for the obligation to calculate and pay income tax from taxed income from family entrepreneurship for each family member involved in the business (including hired help). This tax is 5,000 Armenian drams for each person, which is paid before the 20th (including) of the month following the month for which income is calculated and is considered a final obligation with regard to income tax.

- In addition, new simplified procedures for qualifying as a VAT payer and turnover tax payer were defined by the Value Added Tax and Turnover Tax Laws as of January 1, 2015.

Thus, in compliance with these legal regulations, legal entities registered as involved in entrepreneurship activity or legal entities entitled to involve in entrepreneurship activity, branches of foreign companies registered in the Republic of Armenia (irrespective of their non-commercial status), notaries or sole entrepreneurs will qualify as VAT payers from January 1 to the end of the calendar year, if as of January 1 they do not qualify as turnover tax payers or if they failed to submit a statement about their turnover tax payer status within the timelines defined by the law.

These legal modifications resulted in changes in turnover tax rates related to commercial activity (purchase and sale) alongside with the requirement of documenting acquisition transactions and defining measures of liability.

Thus, as of October 1, 2014 turnover tax from commercial (purchase and sale) activity income is calculated at 1 % rate applied to the taxed entity (instead of the current rate of 3.5%). Turnover tax payers involved in commercial (purchase and sale) activity are obliged to document all goods acquisition transactions in compliance with the requirements defined by the law.

In 2014 the RA Ministry of Economy has initiated the introduction of targeted tax privileges for startup IT companies (the law is expected to be ratified by early 2015). A simplified procedure is set for creating start-ups, where the start-ups will have to pay only 10% income tax and 0% profit tax during the first three years of operation. The start-ups need to be new created, not a daughter company or restructured company, have not more than 30 employees.

To maximally increase the predictability of tax legislation, the Law on Making Amendments and Supplements to the RA Law on Taxes (HO 152) was adopted and entered into force in 2014. The Law specified time requirement for enforcing laws on increased tax rates, new taxes or relevant provisions of other laws of the Republic of Armenia. Thus, such laws and provisions should enter into force at the beginning of the fiscal year following the year when the law or provision was passed, but not earlier than the first day of the sixth month following the official publication of the laws.

1.3 Legal Framework

In 2014 the Republic of Armenia maintained its support to the development of information technology industry, which is considered as one of the most promising sectors of Armenia's economy. An important factor contributing to industry progress is sustained improvement of the investment environment for the legal entities operating in the information technology sector (hereinafter IT companies). To this end the RA Government has ensured that all previous efforts in this direction are carried on in 2014 alongside with undertaking additional steps to form a straightforward, transparent and affordable environment with regard to state regulation, services and administrative procedures. In addition, efforts were directed to put in place market infrastructure that ensures equal completion field and is conducive to business as well as applying balanced tax and customs policies.

In line with this mission and to effectively implement reforms, the RA Government adopted Decision N 258-A (dated February 20, 2014) on Approving the Set of Activities for 2014 to Improve the Business Environment (hereinafter the 2014 Program on Approving the Business Environment). To summarize, new reforms were implemented in 2014 while also enforcing the previously introduced reforms in several directions. Noteworthy for improvement of business and investment environment for IT companies are activities to improve tax payments, foreign trade, company establishment, contract enforcement, credit financing, investor protection, title registry and others alongside with efforts already in implementation.

Electronic Governance

In 2014 the effective application of previously introduced electronic governance system was carried on in the Republic of Armenia. The system is accessible at www.e-gov.am website and unifies all tools and resources required for electronic governance. This resource makes available a number of systems to Armenian IT 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. Some of these systems will be featured below.

The website has “Write a letter to the Government” section, which allows anyone to express opinions, positions and views as well as track the progress of a letter and follow which Government body or official was tasked to handle the hand-delivered or mailed application.

Foreign Trade

In 2014 continuous efforts were made to develop the technical specifications of the One-Window system for customs processing of documents required for exporting goods and its introduction at RA customs points at borders. In order to improve entrepreneurial awareness about the customs system a special section was added to the website of the RA Customs Service. In addition, informational leaflets on how to appeal customs decisions were published for larger public. Regular courses were offered by the RA Ministry of Finance to help entrepreneurs increase their awareness on issues related to the customs system.

With respect to innovations in customs, the time reduction of custom clearance administration for vehicles should be noted. The whole process from custom paperwork to registry takes one hour. The number of vehicle custom clearance procedures has been reduced twofold, while the sequencing is more systemized and logical.

Introduction and implementation of TAX FREE - a new initiative aimed at business promotion was another 2014 milestone that brought the taxing and customs systems applied to Armenian IT companies closer to progressive standards. Starting with 2014 foreign citizens arriving in Armenia could get VAT return when departing the country.

Armenia was the second among CIS countries to implement this system and it was assessed as the easiest since it operates on one platform-allowing foreigners to provide only the passport with all completed data being transferred automatically to all customs points in the Republic of Armenia.

Eligibility to use the system is determined by the availability of a Tax free invoice or a cash register check and receipt (from the same tax payer) and if the value of goods acquired during the same day has exceeded 100,000 AMD (including VAT), VAT has exceeded 16,670 AMD and in case the purchased good was not used before its export and has kept the original packaging. The opportunity for reimbursement is valid within 90 days. Exceptions to the Tax free system include food products, tobacco, medication, cultural values, vehicles or their parts. The VAT on purchased goods is returned to foreign citizens upon their departure from Armenia, at airports and other border points upon submission to the customs officer of a passport, the paper copy of the tax invoice or the cash register account, a document validating the payment for the good being exported (cash register receipt, or bank transfer receipt), VAT return tax record (cash register tax record) with listing of the exported good and the boarding pass -in case of air travel. The customs authority puts a “Subject to return” marking on the Tax free invoice or the Tax free account of the cash register and defines the amount subject to return, which is done through a bank transfer within 30 days or in cash-from the bank branches operating at customs points.

Establishing Legal Entities

2014 was marked by a number of initiatives that simplified procedures related to registration of legal entities thus contributing to an improved business environment for IT companies.

“Acceleration rates” are continued to be applied with respect to registration of legal entities. Part 2 of Article 10 of the RA Law on State Registration of Legal Entities, State Registry/Record Keeping of Separated Subdivisions of Legal Entities, Institutions and Sole Entrepreneurs” allows performing state registration or state registry faster than within the defined timelines if respective payments are made.

It should be noted that the previously established One-Window Center for registering legal entities and record-keeping of sole entrepreneurs (www.e-register.am) was further improved in 2014.

In addition, access to English and Russian version of the E-registry website was ensured by the RA Ministry of Justice thus making Armenia’s IT sector and IT companies maximally transparent for foreign investors.

State Registration of Rights/Title over Real Estate

The discussion of the IT business environment within the context of 2014 developments should also address the situation with registering rights over real estate. This is especially relevant to startup companies and established companies that have growth potential. In 2014 organizational and functional restructuring continued at the State Committee of Real Estate Cadastre under the RA Government, which is the authorized body to implement state registration. Service offices functioning in all administrative units were separated from the previously consolidated subdivisions. 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.

Application of the so called “acceleration rates” for fees levied for state registration of rights was carried on in 2014 as another important factor for improved business environment. To illustrate, in compliance with part 2 of Article 74 of the RA Law on State Registration of Property Rights, state registration of right origination, modification and assignment over real estate can be conducted in accelerated mode at the applicant’s request. In this case the fees specified by the Law are multiplied by the following coefficients: in case the state registration is performed within the third working day following the submission of application-by a coefficient of 2 (i.e. the specified payment is doubled), while in case the state registration is performed within the second working day following the submission of application-by a coefficient of 3 (i.e. the specified payment is tripled).

Another key development with respect to improving the business environment serving IT companies is the cancellation of the notary validation requirement that was previously applied to the transactions related to assigning rights over real estate. In 2012 amendments to the RA Law on State Registration of Rights Over Property entered into force. In compliance with the requirements of Chapter 5 of the Law and Article 299 of the RA Civil Code, as well as Decision N 1851 of the RA Government (dated December 22, 2011) On Approving the Sample Templates of Contracts not Requiring Notary Validation, contract sample templates were approved and put into effect. Thus, the transactions are signed by recognizing the authenticity of the signatures of the parties without notary validation, for which purpose the parties should personally show up at any service office of the State Committee of the Real Estate Cadastre under the RA Government and sign the document in the presence of the relevant employee.

With regard to registration of rights the electronic system of the State Committee of Real Estate Cadastre under the RA Government continued to be applied as means of improving the overall business environment. This is an official electronic registry system, which is posted at the Committee's 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 Law 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

While introducing the business environment in place for IT companies in Armenia there should be recognition that legislative changes of the previous years resulted in 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.

Among other improvements of the business and investment environment that occurred in 2014 reduction of processes, timelines and costs required for contract enforcement should be noted alongside with such awareness building initiatives as the publication of detailed brochures describing the processes and costs required for resolving disputes arising from contracts.

In addition, the RA Ministry of Justice was tasked to develop the bill on making amendments and supplements to the RA Civil Procedure Code and the RA Law on Notary so as to reduce the time required for resolution of court disputes, to transfer decision making on some issues from courts to notary offices, to clarify the phases of court proceedings, to increase predictability and to establish clear grounds for applying private expert opinions.

E-Payment State System

Successful application of the state electronic payment system (www.e-payments.am) was carried on in 2014. The system allows for electronic payments of state and local duties defined by RA legislation, as well as of fees collected for services delivered by state or local government bodies and administrative fines.

Payments can be made by use of ArCA or MasterCard payment cards as well as with the virtual ArCA card. The payments are grouped in four main categories: duties, service fees, fines and taxes. Each of these categories has sub indexes through which the payer can easily find the required payment type.

The system also accepts community payments (e.g. property tax, land tax, garbage collection fee and others) from all Yerevan districts as well as for Gyumri and Vanadzor. In the future it will also cover other communities of the Republic of Armenia

The state e-payment system allows the Armenian citizens in foreign countries and citizens of other countries to make consular service fee payments (e.g. passport issuance, entry visa and others) or pay state duties.

Venture Fund Initiative

While discussing the business investment climate for Armenian IT companies the successful implementation of the Venture Fund initiative in 2014 should be noted. The Fund is of primary

importance for Armenian IT companies since it seeks to promote their innovative initiatives, facilitate establishment of contacts with western markets and increasing own capacities in addition to supporting general development of the Information Technology infrastructure in Armenia

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;
- Highly competitive cost of 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. 2014 Survey

2.1 Sampling and Methodology

The survey sample was expanded in 2014 to include around 400 Armenian ICT companies that were classified according to NACE rev.2. To observe expanded population data time series the data available for 2013 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 October-November 2014. 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 – 2013.

The 2014 survey covered almost 200 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 2014 Report.

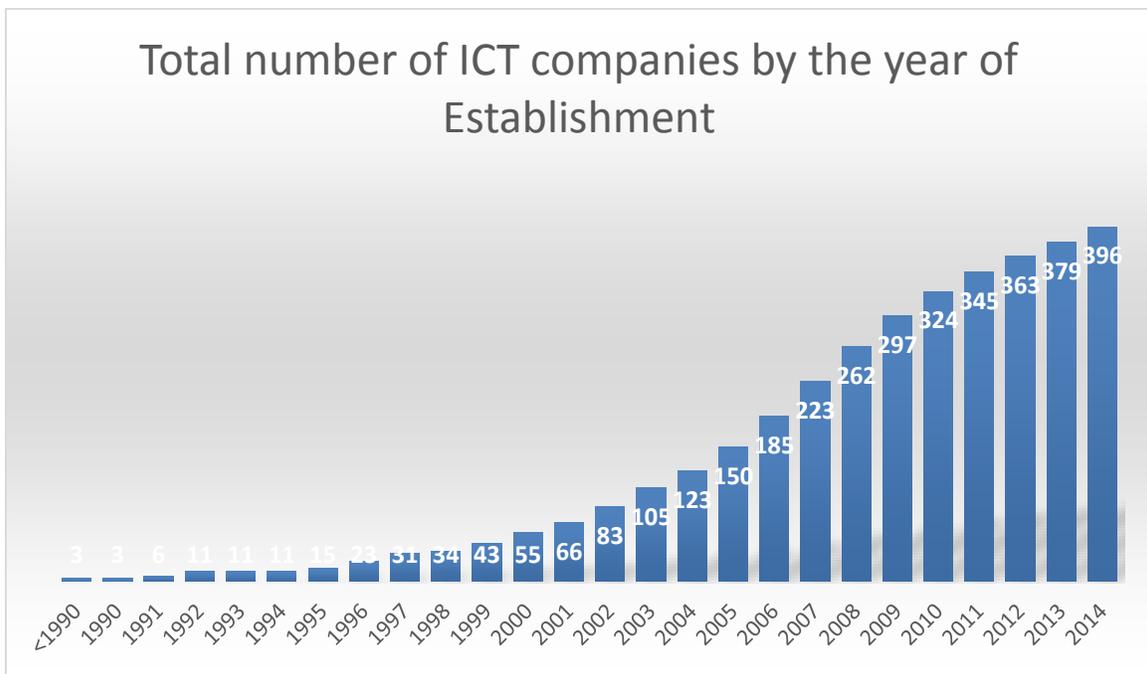
Research Manager, methodology design, overall market research and analysis, Report preparation – Mr Areg Gevorgyan

Data analysis, Education and Workforce research, Report preparation – Ms Varduhi Grigoryan

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

3. Key Findings

Armenia's software and services industry is rather young with most of the companies, i.e. nearly 80% founded during 2000-2014. 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 2014 the number of functioning ICT companies reached almost 400, i.e. a 4% increase compared to the previous year. In 2004-2014, an estimated average of 25 ICT companies was established per year. 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 hardly sufficient for the needs of the existing companies.

In 2010-2014 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 to work on developing innovative products in Software and Services. In 2014 16 new companies evolved from these teams.

The government support will continue in the coming years, with grant programs in Gyumri and Vanadzor, it is expected to form minimum of 20 new companies in 2015.

Almost 51% of Armenia's ICT companies were established in 2007-2014, with 16 and 17 new companies founded in 2013 and 2014 respectively. ICT companies ensure sustainable growth for the country's economy with an industry turnover in 2014 growing by 20% compared to the previous year.

3.1 Customized Software and Services

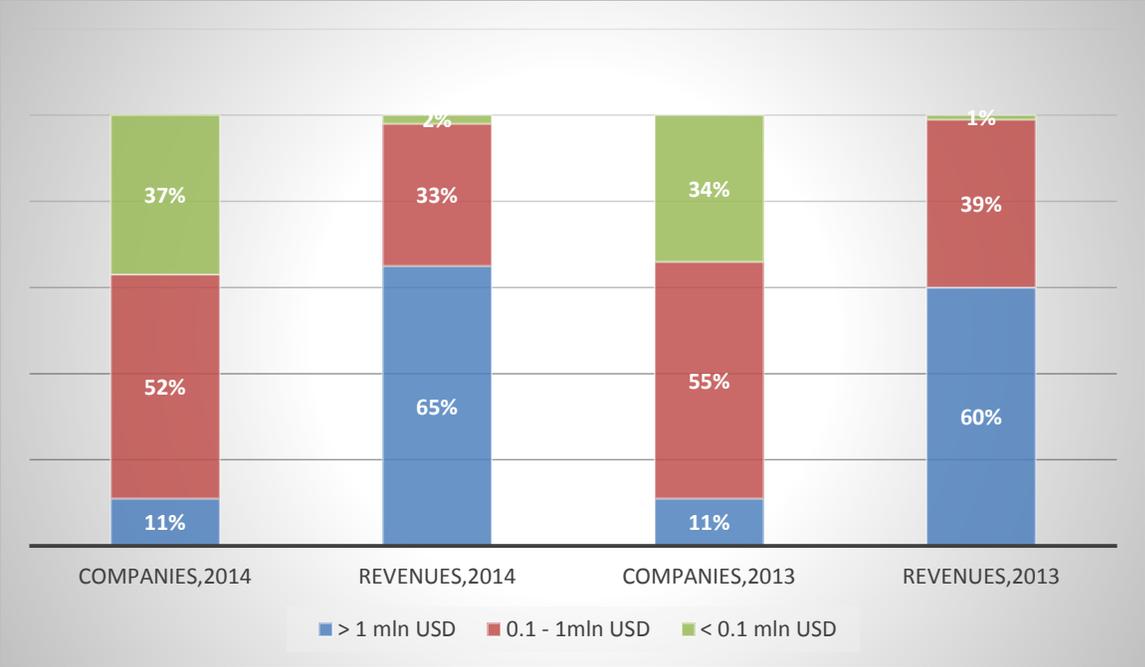
3.1.1 Economic Indicators

In 2014, the total turnover of the Armenian Software and Services sector amounted to around USD 349.4 million, which is equal to 19% growth compared to last year. In general, the average annual growth in the industry equaled to 21.8% in 2009-2014.

The share of local companies in the total industry revenue comprises 45% 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 chart below indicates, the 40 large (with turnover of USD 1 million and more) Software and Service companies, which make up 11% of all companies, generate 65% of total industry revenue. The share of large companies in the total industry revenues has increased relative to 2013.

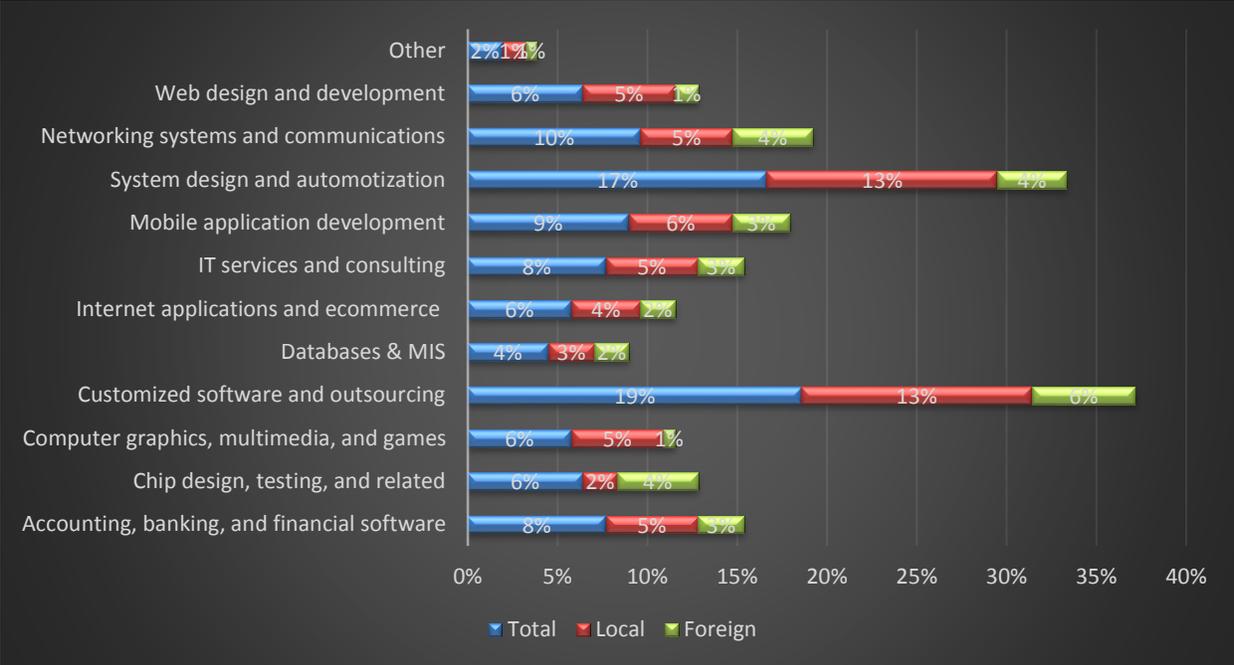
Half of the IT companies have average annual revenue equal to USD 100 thousand to USD 1 million. The share of the number of medium companies has decreased to 52% relative to 2013 (57%). The data indicates that this decrease is due to healthy transition of medium companies into large companies, as well as establishment of 17 startups in the industry during 2014.



The number of small firms with less than USD 100,000 in revenues increased by 10% relative to 2013, while their share in the total industry revenues increased by 50%. Though those small firms do not have any visible impact on the industry, their increased total number is a positive indication of the market’s continued growth.

3.1.2 Main Specializations

The total number of companies currently active in the Armenian Software and Services sector is 363. The better half of these companies specializes in software development.



Distribution of companies by specialization

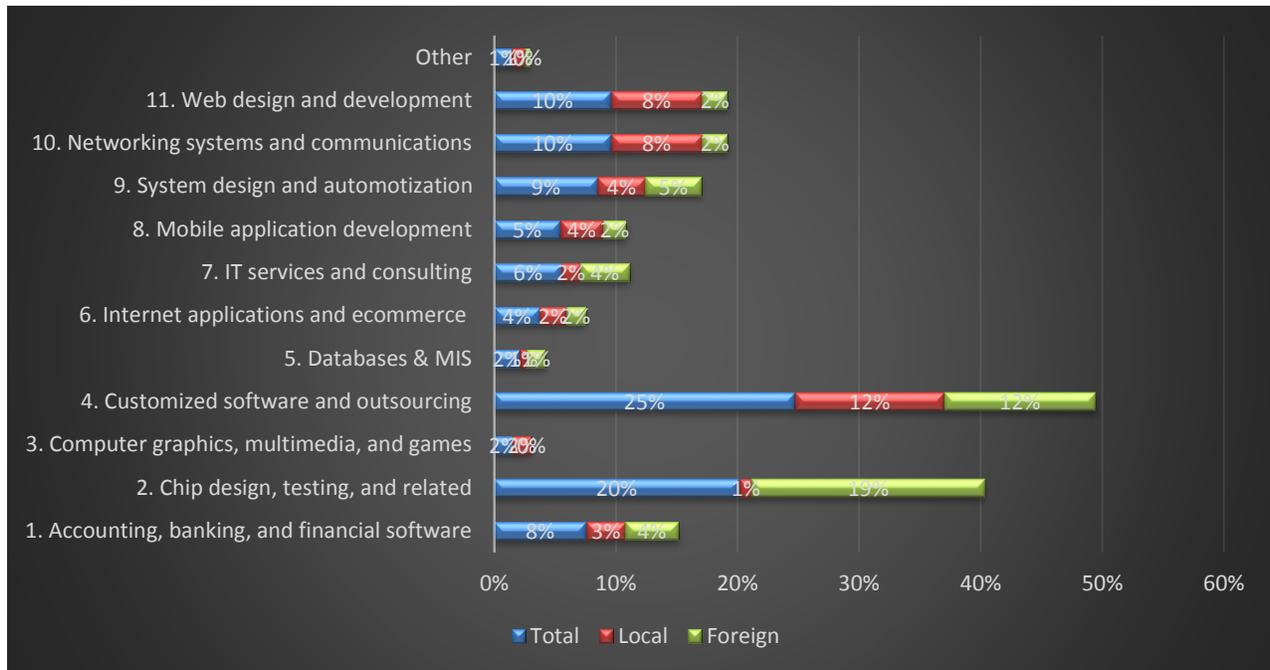
The diagram shows the results of survey concerning specializations of Software and Services companies based on their share in total number of companies. As we can see the dominant specializations by number of companies are Customized software and outsourcing and System design and automatization.

With respect to distribution of industry revenue by specializations of IT companies, Customized software and outsourcing, as well as Chip design, testing and related are the most profitable operations. It is worth mentioning that while 6% of IT companies specialize in chip design, their revenues comprise about 20% of the total Software and Services segment turnover.

3.2 Telecommunications

3.2.1 The Industry and Key Economic Indicators

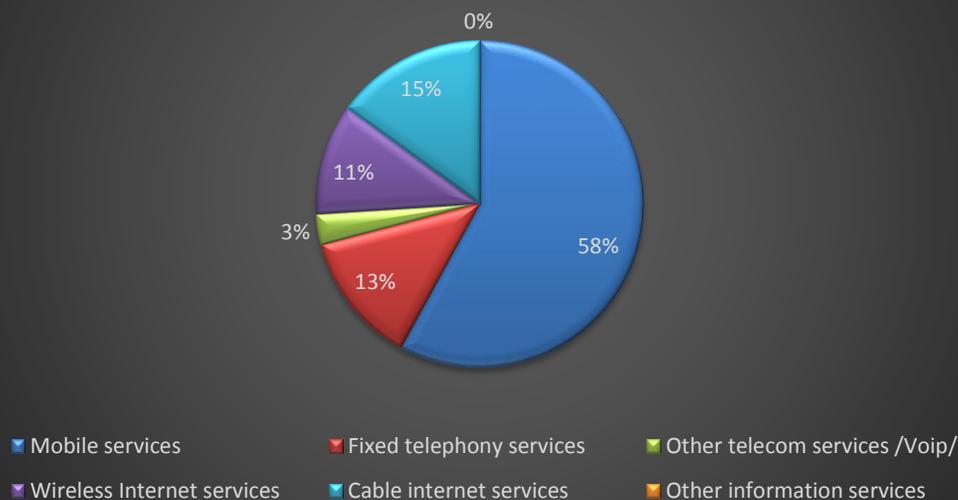
Armenian Telecommunications sector is represented in this research by 33 companies providing services under following NACE rev2 classifications: wired telecommunication services (61.10), wireless telecommunication services (61.20), other telecommunication services (61.90) and companies working on web 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.



Distribution of revenues by specialization

According to the 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, which will start providing mobile services from January 1, 2015.

Distribution of Telecommunications sector revenues 2014



In 2014 positive growth dynamics was observed in mobile communications market in Armenia. Mobile coverage has reached 121% ensuring an annual 5% increase. October 2014 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 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.

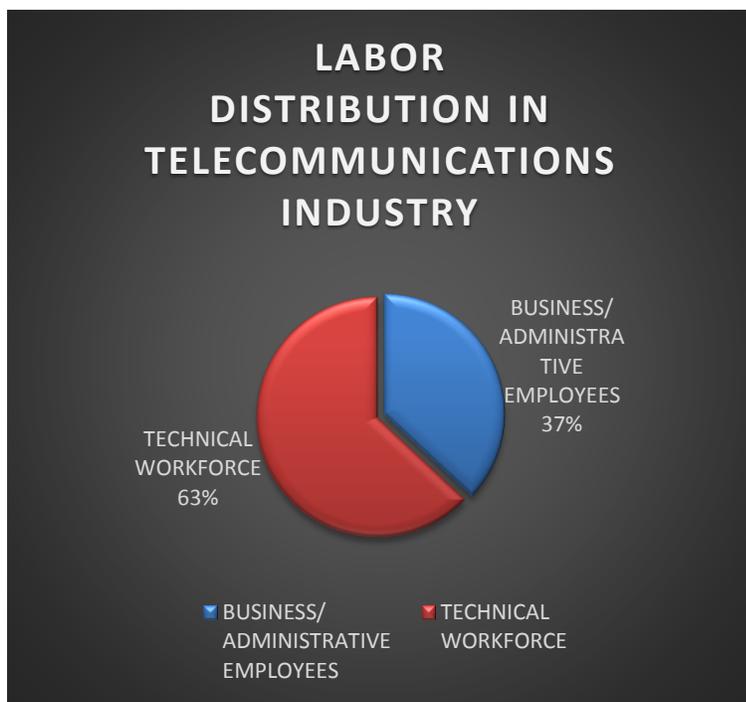
The growth trend for the overall telecommunications sector has slowed down relative to 2013, which can be an indication of market saturation. The total revenue is expected to amount to 474.7 million USD. The customer/subscriber base has grown by 13% reaching 5.1 million subscribers.

Meanwhile the Internet Services (cable, wireless and VoIP) sector has thrived in 2014, with revenue of the sector reaching USD 125.7 million, where the share of foreign companies was 86%.

3.2.2 Internet Coverage

Increased access to internet triggered heightened interest among young users. The number of internet users (including wireless 3G and GPRS) has reached 67%, i.e. a total of about 2 million users. Parallel to increase in internet coverage, mobile communication has also made progress, the number of mobile users has reached 3.1 mln in 2014.

48% 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), 4G/LTE. Although internet services based on 4G/LTE are available for limited locations including Yerevan, Gyumri, Vanadzor, Dilijan, Tsakhkadzor. At present, the number of ADSL subscribers in Armenia is 152,000. Tariff plans offer various internet speeds including 1Mbps to 32Mbps. 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 about 84,000. Such services are accessible to limited geographic locations, mainly in the cities of Yerevan and Abovyan.



In 2014 the number of broadband internet services users (including 3G) has reached 1.1 mln. Average price for 1MB/s internet is 4500 AMD (10 USD). The operators are also offering three in one packages including IP television and fixed telephone services, the average price for package with 11 MB/s speed is 10000 AMD (22 USD).³

The number of subscribers for wireless technologies (WiMax4, WiFi) is 247,000. In late 2014 the 3G coverage has reached 97.1%. 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 \$22 to \$55) depending on the ensured accessibility and the quality of services.

4. Key Challenges to ICT Operations

Approximately forty seven percent (46.8%) of respondents representing the leadership of companies involved in the survey emphasized the challenges related to attracting highly qualified workforce. The shortage of highly qualified staff was mentioned by 58.86 % as a major impeding factor, 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

³ www.psrc.am

compensation for such technical workforce. Furthermore, 41% 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 (38% and 40% 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. Moreover, 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. Respectively forty three (43) and thirty nine (40) percent of surveyed companies cited such challenges.

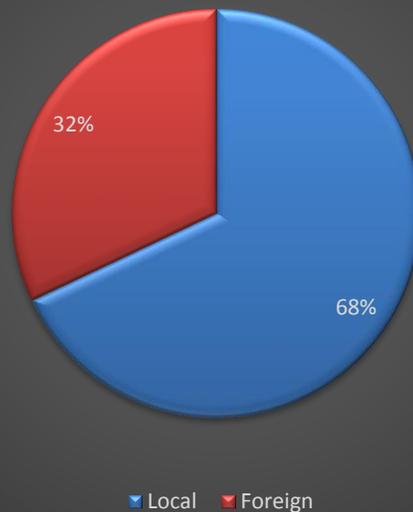
Around twenty percent (18.98%) of surveyed organizations face challenges related to entry to world markets. As noted by the respondents, the underlying reason for this is lack of awareness of Armenia by several international partners or low trust to representatives of a country with low or average income levels. Interestingly, about 6 percent of the companies included in the survey noted problems related to unclear tax legislation despite it was not mentioned to them by the interviewers. Only 2% of the companies included in the 2014 ICT survey cited challenges related to low level of education, while nearly 3% noted issues related to the saturation of the market and its little size as barriers to business development.

5. Research and Development in Armenian ICT Companies

The number of Armenian ICT companies developing their own products and investing in R&D is growing from year to year, which is a positive indicator that the ICT sector of Armenia is transforming from outsourcing destination for foreign companies to a technology development hub. The average revenue generated from own products and services of companies included in the survey sample have grown reaching 52% of total revenue in comparison to 43% in year 2013. 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.

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

Distribution of R&D companies



There is growth of the share of local companies in the number of total companies investing in R&D from 51% to 68%, which due to establishment of local technology based startups.

For 71% of companies established in 2013-2014 development of their products and services is a primary operation, which exceeds the same indicator from the previous year by 1%. This is indicative of innovation growth trend in Armenia's ICT industry.

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. As already mentioned in the report in 2014 tax incentives has been introduced at Parliament, which is creating unprecedented favorable

conditions for IT industry growth: the income tax will be only 10% and profit tax 0% for new established start-ups and they can profit from these incentives up to three years.

Meanwhile, foreign investors can receive tax privileges by placing their companies in the Free Economic Zone. 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

The availability of high quality technical and management professionals working in the industry leads to sustained ICT growth in Armenia.

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 2013-2014 around 8500 students were enrolled in different specialization studies offered by Armenian Universities⁴. 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 Academy (ERIICTA), the Russian-Armenian (Slavonic)

⁴Source: RA Statistical Service, www.armstat.am

University (RAU), Yerevan State University of Architecture and Construction (YSUAC) and the French Higher Institute of Engineering in Armenia (ISIFA).

Representatives of 13 departments teaching IT specializations in the above Universities were involved in the Survey (see table 10).

Table 10: Universities and Departments offering IT specializations

State Engineering University of Armenia	Radio-techniques and Communication
	Applied mathematics and physics
	Mechanics and machine study
Yerevan State University	Mathematics and Mechanics
	Applied mathematics and informatics
	Physics
	Radio Physics
American University of Armenia	Science and engineering
European Regional Academy	Information Technologies
Russian-Armenian (Slavonic) University	Mathematics and High-Tech
Yerevan State University of Architecture and Construction	Cybernetics
	Computer Systems and Informatics
French Higher Institute of Engineering in Armenia	Information management systems

Except for the French Higher Engineering Institute in Armenia which is a newly established university and has a small number of students the other ones included in the survey are considered to be the main universities in Armenia proposing ICT related faculties.

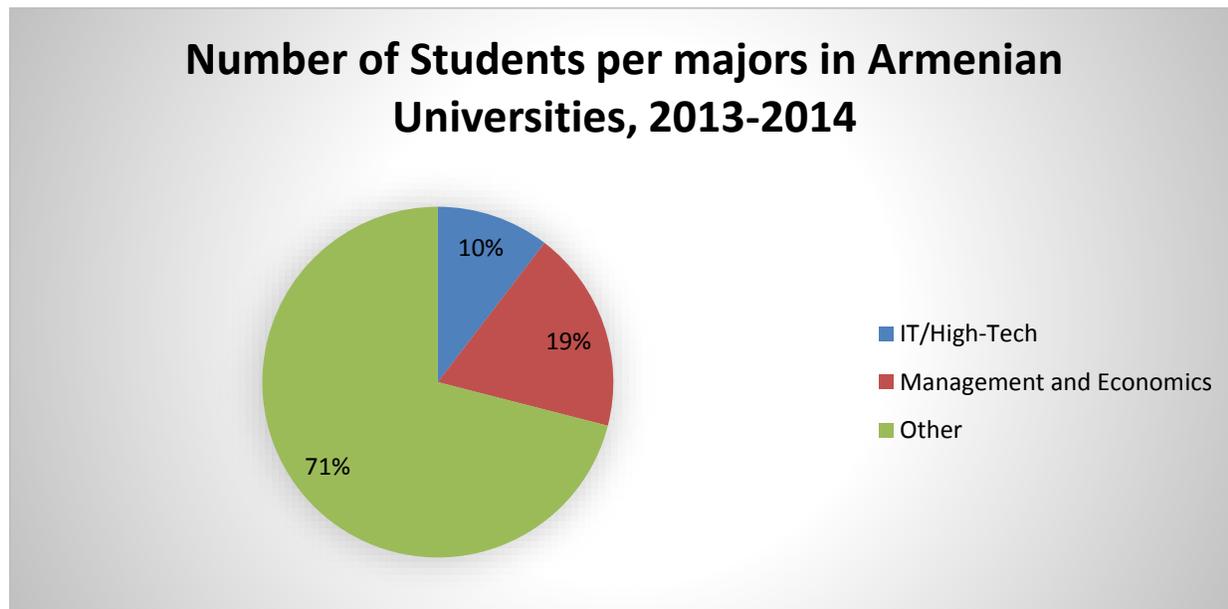
Date received from these six key Universities indicates that 981 faculty members are employed in the ICT related departments.

In 2013/2014 around 5156 students were enrolled in these six Universities, of which near 60% are SEUA and YSU affiliated.

6.2 Institutions of Higher Education/Universities

In academic year 2013-2014 a total of 8489 students were enrolled in departments related to informational and high tech specializations, which constitutes 9.9% of total student

population(85922) in Armenia's Universities. Whereas the students engaged in economics and management represent nearly 19% of the total number of students of Armenian universities.



The largest and oldest institutions in Armenia that prepare ICT specialists are State Engineering University of Armenia (SEUA) and Yerevan State University (YSU). IT education is being offered at other institutions as well and these institutions include the Yerevan State University of Architecture and Construction, the American University of Armenia (AUA), the European Regional Academy (ERIICTA) and the Russian-Armenian (Slavonic) University (RAU).

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 10000⁵, 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 development, electronics and microchip design, automated management systems and others. SEUA conducts scientific research in different areas ranging from computer systems, design and installation of networks,

⁵Source: SEUA <http://www.seua.am>

artificial intelligence, 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 12000 students⁶. In general, around 100000 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: alorythme languages, cybernetics, discrete mathematics, software development, 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 information 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 Virutal 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 distant use. The initiative is financed by the Open Society Foundations Armenia.

Yerevan State University of Architecture and Construction

The history of the Armenian school of Architecture and Construction started in 1921, with opening of a Technical School in the newly established Yerevan State University. The new specialties taught in the school included the specialties of Engineering and Architecture and Engineering and Hydro-technology.

In February 1933, the Construction Institute was restructured into the Polytechnic Institute including also the Chemical Engineering Institute that existed independently by the time.

During the 86 years of the history, starting from the Technical Faculty of the Yerevan State University up to today's Yerevan State University of Architecture and Construction, the university has produced around 30,000⁷ graduates.

⁶Source: YSU <http://www.yasu.am>

⁷Source: YSUAC <http://www.ysuac.am/>

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 computer 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 Academy (ERIICTA)

Established in 2001 by the European Union ERIICTA is specializing in programming and IT business management. Parallel to mainstream academic programs ERIICTA offers language programs in three foreign languages-English, German and French. Currently, around 250 students are enrolled in EREA programs.⁸

Russian-Armenian (Slavonic) University (RAU)

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 nanoelectronics, 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.

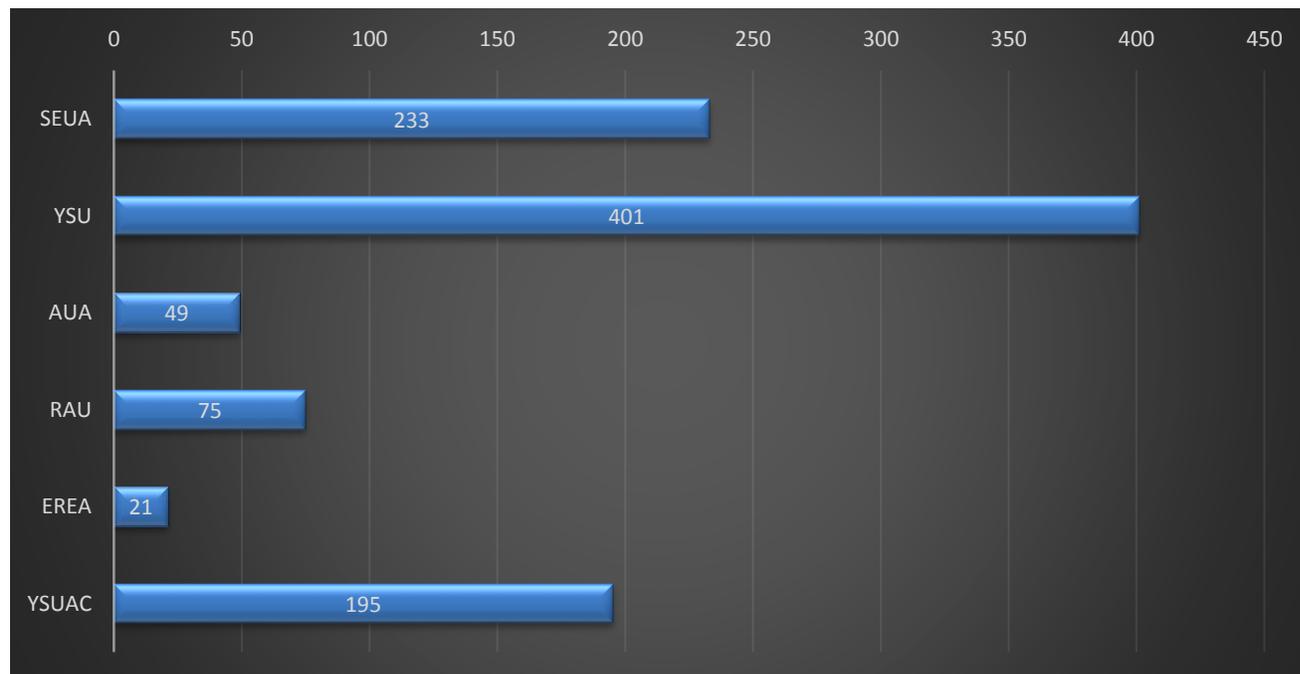
⁸Source: EREA, <http://www.era.am/>

The main issue 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 ICT related specializations is concentrated in YSU and SEUA, with the rest spread over the remaining Universities. The total number of faculty members in six leading Universities is 974 specialists.

Faculty member distribution across the top 5 Armenian Universities, 2014



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 2013-2014 8489 students⁹ were enrolled in Armenian universities offering IT specializations, of which 5156 students study in the above-mentioned six main universities. Around 60% of all these students study at YSU and SEUA. Foreign students studying in Armenia are from CIS, Middle East, Europe and USA 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.

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;

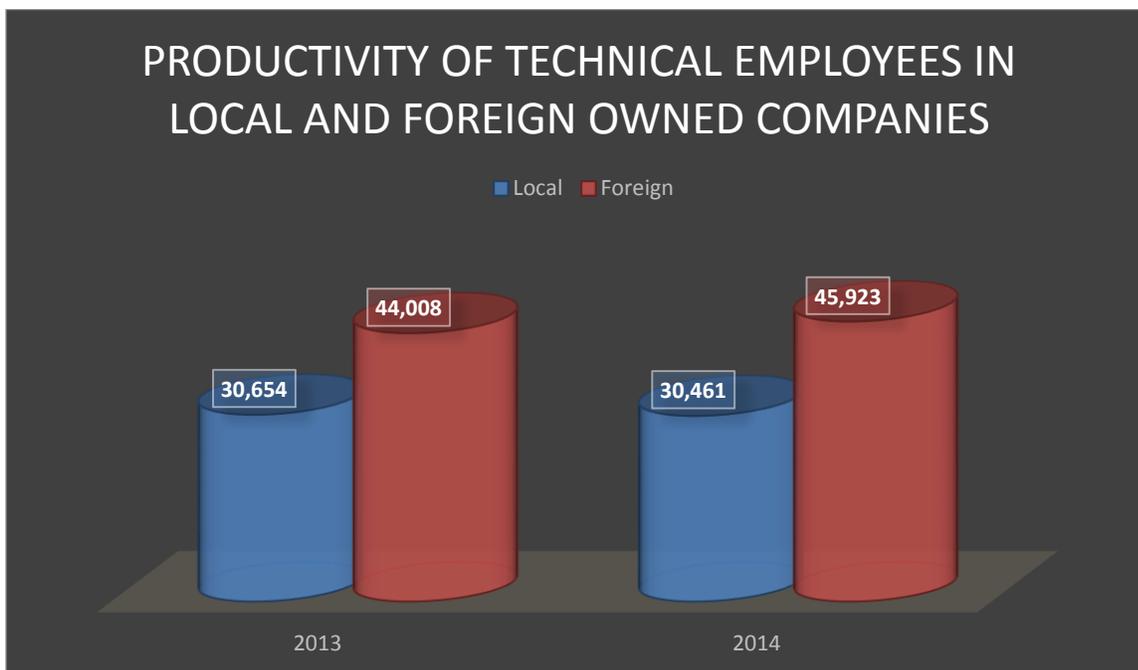
⁹Source: National Statistical Service, <http://www.armstat.am>

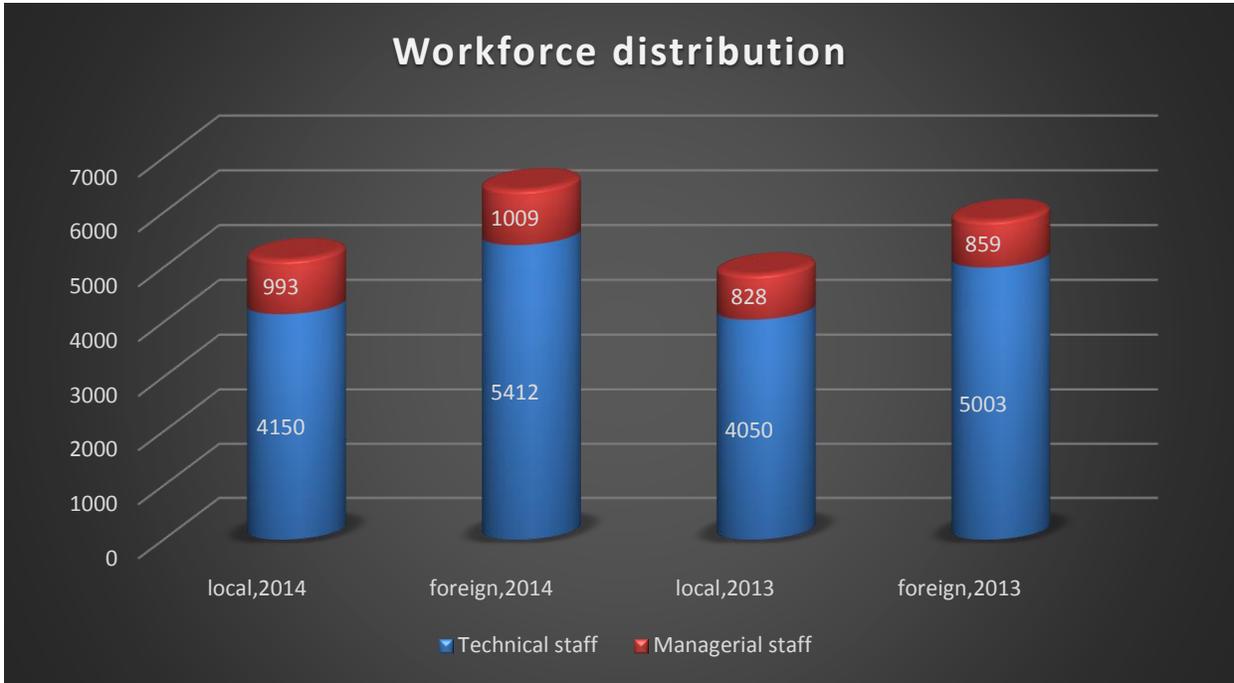
- Gyumri IT Center, first IT training center in the city of Gyumri, was established by the Fund For Armenian Relief (FAR) and EIF in 2006;
- Microsoft Innovation Center formed by Microsoft, EIF, USAID and SEUA;
- Armenian-Indian Center for Excellence in ICT, founded in 2011 under the joint project of 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, as well as IBM Innovative Solutions and Technologies Centre will be established at YSU in 2015.
- Samsung Learning Center was formed at YSU in 2014 by joint efforts of Samsung and YSU.

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. Not only low-paid workforce, but also high productivity of Armenian specialists is much attractive to foreign investors. In 2014, the workforce employed in the IT sector reached 11,564, which accounted for about 10% growth compared to 2013. The number of technical specialists such as software engineers, analysts, developers, IT project managers and others reached 9,567.





The productivity of technical workforce has grown by 5% for foreign owned companies compared to 2013 reaching USD 45,923 per employee, for local owned companies productivity of employees has not registered big change and is about USD 30,500 as in previous year.

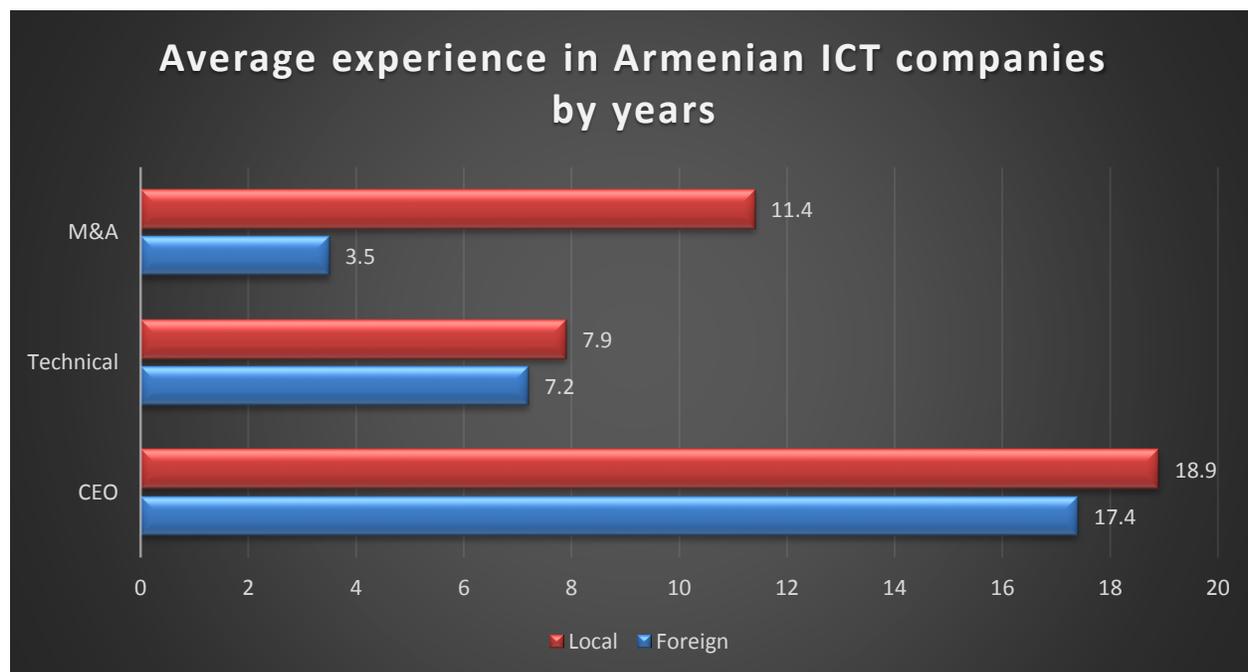
48 percent of 9,567 technical specialists employed in IT sector are engaged in the telecommunication segment, while the remaining technical workforce works for the Software and Services segment.

As the chart shows, in 2014 the number of management and business professionals increased in the total IT workforce as compared to 2014 both in domestic companies and those with foreign ownership. We can see that foreign companies have registered higher rate of growth in comparison to local companies, which indicates that foreign companies are broadening their presence in Armenia.

According to 2013 data, 65% of Armenian ICT workforce has Master's or higher degrees. Students represent 36% 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 (66%). The number of female employees in the software and services sector has increased by 3% as compared to 2013.

Average work experience of company directors included in our survey sample is 18.9 years in domestic companies and 17.4 years in foreign companies. Information on average years of work experience of other employees is shown below:



Local and foreign companies employed 44% and 56% of the total workforce respectively (in 2008, this ratio was 50/50), which means that the number of persons employed by domestic companies has decreased by 1% 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.

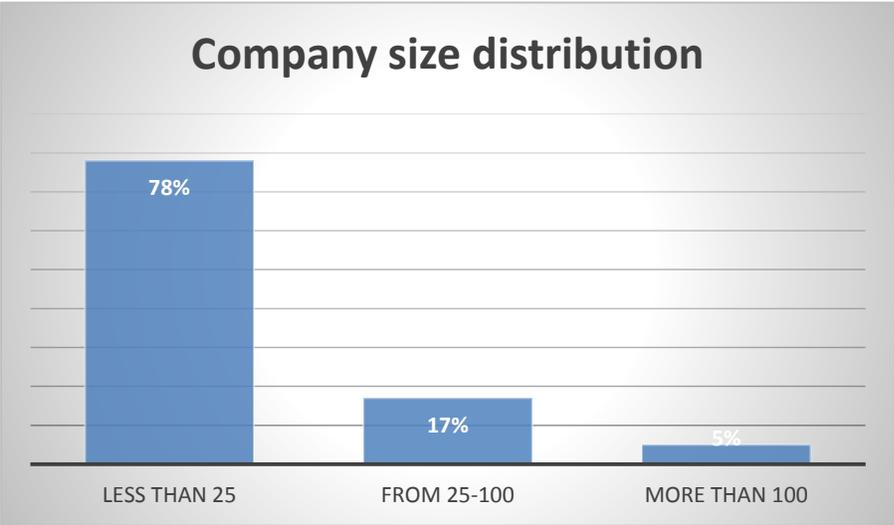
Armenia is still considered a low cost offshore development location, where salaries are competitive with those of many IT outsourcing countries such as India, Russia, Israel, Ireland, and China.

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 400 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 2014 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 5% of all businesses employ 100 or more specialists constituting 45% of the total workforce, while 78% has less than 25 employees constituting 30% 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 2014 the share of revenues generated by the software and services sector and internet service providers was 4.3% in Armenia’s GDP (USD 10.9 billion¹⁰).

During 2010-2014, the average annual growth in the industry amounted to 20.1%. Industry’s share in total exports increased from 8% in 2010 to 10% in 2014¹¹, confirming the growing importance of the software development sector for the Armenian economy focused on the expansion and development of export-oriented businesses.

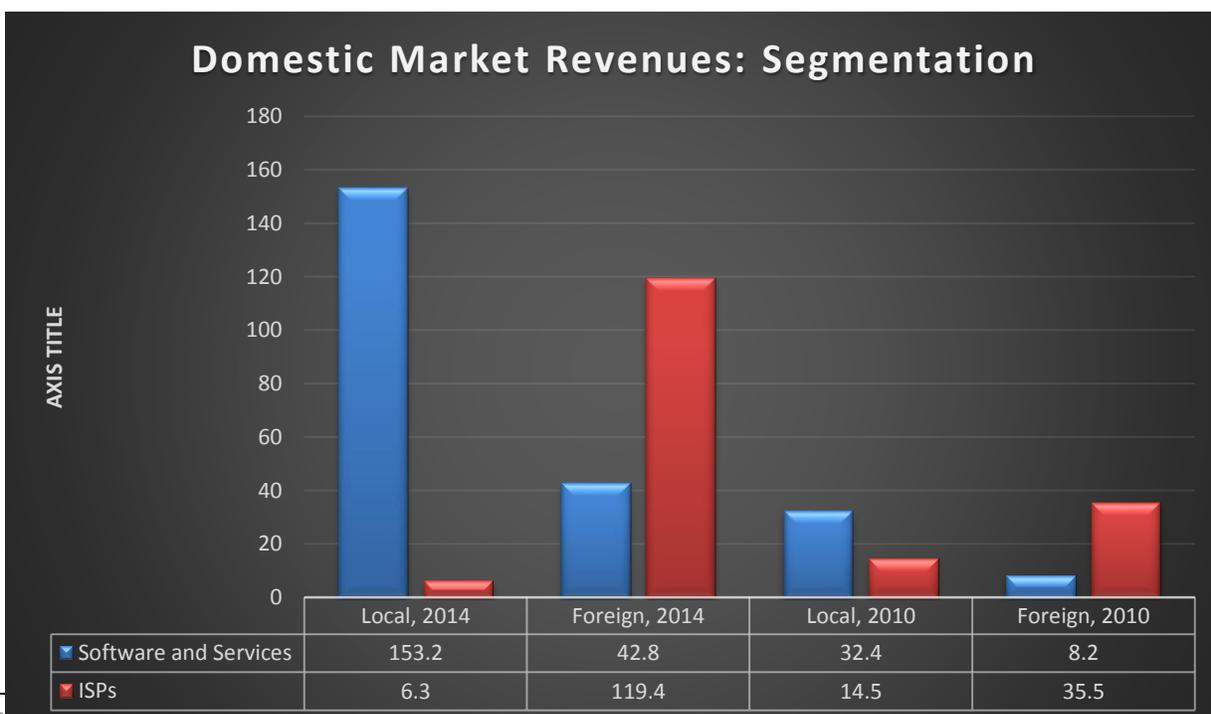
1700 well-paid jobs for technical specialists are created annually in the ICT sector. However, Armenian universities prepare 2,000 IT and high-tech specialists each year, hence only the best specialists, after undergoing training in the companies, are hired for these jobs.

The share of local companies in total revenues of software and services segment comprises approximately 45% which is more by 7% 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 2014, the volume of the domestic market reached about USD 321.7 million comprising 68% of the industry’s total, thus exceeding the 2013 domestic market share by 3.2%. In general, since 2010, the sales volumes in the domestic market have increased by more than 255%, which has



¹⁰Source: National Statistical Service of the Republic of Armenia, <http://www.armstat.am>. GDP is counted for 3 quarters of 2014 and 4th quarter of 2013.

¹¹Based on export indicators of 2014 (data from the Central Bank of the Republic of Armenia)

been the result of a substantial growth in the internet services area. The share of the software constituted 74% of the domestic market, while ISP segment was 26% with an estimated USD 125.7 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 2014, domestic market turnover was much larger than that of the exports compared to the last year.

In 2014 exports comprised 44% of the total turnover while 56% of revenues were generated by the domestic market. As the chart shows, turnover volumes have doubled during the last 4 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 limited 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 better 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 2014 exports increased essentially and reached USD 153.2 million comprising 44% of the Software and Services segment (without ISPs) total.



With 86% of exports share foreign companies are 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 153.2 million of products and services to many countries worldwide. About 50% of IT companies export 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%).

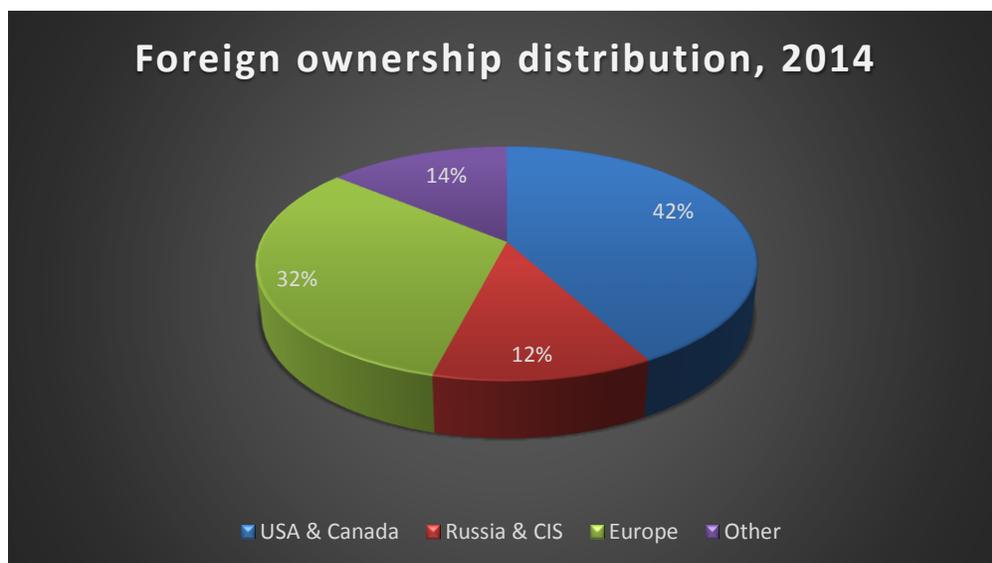
The largest share of exports, almost 78.6%, goes to the United States and Canada, 10.4% goes to Europe, and Russia and CIS countries are the third with 8.4%. Share of services exported to USA and North America increased by 8.6% while the volume of services exported to Europe decreased for 9.6% during 2014. Among other countries, UAE has the highest demand for Armenia's services focusing mostly on outsourcing of accounting, banking and financial services.

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, becoming less important.

8.4 Foreign Owned Companies

The 2014 data shows that 157 companies with foreign ownership operate in Armenia constituting about 40% 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 (42%). This number has decreased by 5% as compared to the numbers recorded in the previous year. 32% of companies with foreign ownership are European companies or have a European share.



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.

8.5 Success stories

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 six hundred 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.

 On October 25, 2011 GFI Software announced acquisition of Monitis Armenian start-up, one of the pioneers of cloud-based network and systems monitoring solutions. As stated by GFI officials this acquisition is intended to further strengthen GFI's ability to provide affordable end-to-end systems monitoring for small and medium-sized businesses (SMBs) and to be a one-stop shop for managing heterogeneous IT infrastructures, be they on-premise, hosted or in the cloud.

 In November 2014 Cisco Systems Development president, Mario Mazzola during his visit in Armenia has announced that Cisco Systems (an American multinational corporation headquartered in San Jose, California that designs, manufactures, and sells networking equipment) has acquired Memoir Systems Armenian company and will open its office in Armenia. This acquisition will enable the company to increase manufacturing of affordable and high-speed memory for existing ASIC-Cisco switches and circuits.

LIVELOOKORACLE

On June 20, 2014 U.S. based multinational computer technology company Oracle announced that it signed an agreement to acquire LiveLOOK to strengthen Oracle Service Cloud with leading co-browse functionality to improve customer experiences through connected real-time engagements. Following this acquisition Oracle decided to keep the LiveLOOK office in Yerevan as part of its R&D staff, resulting in the first Oracle R&D office in Yerevan. Oracle is even exploring the possibility of expanding in Armenia, during his speech in Armenia Igor Khalatian, founder and CEO of LiveLOOK Inc., announced that Oracle is planning to have 200-300 member R&D center in Armenia.

9. Policy Developments and Major Accomplishments

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 leading Armenia towards becoming 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 technology parks 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 as 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, has become 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 Unicom 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 Corporacion 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, pharmaceuticals 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.

In 2013 Memorandum of Understanding was signed between the Government of Armenia and IBM on cooperation in sphere of education and R&D, specifically establishment of Innovative Solutions and Technologies Center.

In December 2014 another Memorandum of Understanding was signed between the Government of Armenia and IBM on cooperation in the social services sector, including implementation of IBM Curam technology in Armenia, as well as establishment of Center of Excellence in Social Services.

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 USD
Industry revenues	1 bln 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

	2014	% from Industry	2010	% from Industry	% change 2014/2010	CAGR 2014/2010
Number of Companies						
Industry	396	100%	197	100%	101%	26.2%
Local firms	239	60%	125	63%	91%	24.1%
ISPs	20	5%	16	8%	25%	7.7%
Foreign branches	157	40%	72	37%	118%	29.7%
ISPs	13	3%	3	2%	333%	63.0%
Company Ownership Geography						
Industry	396	100%	197	100%	101%	26.2%
Armenia	239	60%	125	63%	91%	24.1%
USA & North America	75	19%	36	18%	108%	27.7%
Europe	38	10%	18	9%	111%	28.3%
Russia & CIS	30	8%	15	8%	100%	26.0%
Other	14	4%	3	2%	367%	67.1%
Exports Geography, millions of U.S. dollars						
Industry	\$153.2	100%	\$58.2	100%	163%	38.1%
USA & North America	\$120.4	79%	\$40.5	70%	197%	43.8%
Europe	\$15.9	10%	\$11.1	19%	44%	12.8%
Russia & CIS	\$12.9	8%	\$4.9	8%	163%	38.0%
Other	\$4.0	3%	\$1.6	3%	149%	35.5%
Productivity (average output per technical employee excluding ISPs), U.S. dollars						
Industry	\$38,192	100%	\$31,548	100%	21%	6.6%
Local firms	\$30,461	80%	\$29,186	93%	4%	1.4%
Foreign branches	\$45,923	120%	\$33,668	107%	36%	10.9%

Software and Internet Services Industry Turnover, millions of U.S. dollars	2014	% from Industry	2010	% from Industry	% change 2014/2010	CAGR 2014/2010
Industry	\$474.9	100%	\$148.8	100%	219%	47.2%
Local firms	\$180.9	38%	\$57.8	39%	213%	46.3%
Foreign branches	\$294.0	62%	\$91.1	61%	223%	47.8%
Domestic market	\$321.7	68%	\$90.7	61%	255%	52.5%
Local firms	\$159.4	33.6%	\$46.9	32%	240%	50.4%
Software and IT consulting	\$153.2	32%	\$32.4	22%	373%	67.8%
Internet services	\$6.3	1%	\$14.5	10%	-57%	-24.3%
Foreign branches	\$162.3	34.2%	\$43.7	29%	271%	54.9%

Software and IT consulting	\$42.8	9%	\$8.2	6%	423%	73.5%
Internet services	\$119.4	25%	\$35.5	24%	236%	49.8%
Exports	\$153.2	32%	\$58.2	39%	163%	38.1%
Local firms	\$21.4	5%	\$10.8	7%	99%	25.7%
Foreign branches	\$131.8	28%	\$47.3	32%	179%	40.7%
Industry	\$474.9	100%	\$148.8	100%	219%	47.2%
Software and IT consulting	\$349.2	74%	\$98.8	66%	253%	52.3%
Internet services	\$125.7	26%	\$50.0	34%	151%	36.0%

Industry Turnover, (Nace classification) millions of U.S. dollars	2014	% of Industry	2013	% of Industry	2014/2013	CAGR 2014/2013
Software and Services	\$349.2	100%	\$294.20	100%	19%	5.9%
58.21 Publishing of computer games	\$5.38	2%	\$1.90	1%	183%	41.5%
58.29 Other software publishing	\$13.10	4%	\$1.90	1%	589%	90.3%
62.01 Computer programming activities	\$209.2	60%	\$178.80	61%	17%	5.4%
62.02 Computer consultancy activities	\$52.90	15%	\$49.10	17%	8%	2.5%
62.03 Computer resource management activities	\$63.47	18%	\$58.70	20%	8%	2.6%
62.09 Other information technology and computer service activities	\$ 5.1	1%	\$3.80	1%	35%	10.6%
Telecommunications	\$474.68	100%	\$470.90	100%	1%	0.3%
61.10 Wired telecommunications activities	\$119.8	25%	\$87	18%	38%	11.3%
61.20 Wireless telecommunications activities	\$303	64%	\$279	59%	9%	2.8%
61.90 Other telecommunications activities	\$13.00	3%	\$7.50	2%	73%	20.1%
63.1 Data processing, hosting and related activities; web portals	\$1.59	0.3%	\$1.26	0%	26%	8.1%
Other income in Telecom industry	\$ 37.19	8%	\$ 96.14	20%	-61%	-27.1%

Workforce Distribution*	2014	% from Industry	2010	% from Industry	% change 2014/2010	CAGR 2014/2010
Industry	11,564	100%	4,960	100%	133%	32.6%
Technical specialists	9,562	83%	4,110	83%	133%	32.5%
Management	2,002	17%	850	17%	136%	33.1%
Software and IT consulting	8,219	71%	3,770	76%	118%	29.7%
Local firms	4,543	39%	1,880	38%	142%	34.2%
Foreign branches	3,676	32%	1,890	38%	94%	24.8%
Internet services	3,345	29%	1,190	24%	181%	41.1%
Local firms	600	5%	240	5%	150%	35.7%
Foreign branches	2,745	24%	950	19%	189%	42.4%
Local firms	5,143	44%	2,120	43%	143%	34.4%
Technical specialists	4,150	36%	1,660	33%	150%	35.7%
Management	993	9%	460	9%	116%	29.2%
Foreign branches	6,421	56%	2,830	57%	127%	31.4%
Technical specialists	5,413	47%	2,450	49%	121%	30.2%
Management	1,008	9%	380	8%	165%	38.4%
Software and IT consulting	8,219	71%	3,770	76%	118%	29.7%
Technical specialists	6,941	60%	3,130	63%	122%	30.4%
Management	1,278	11%	640	13%	100%	25.9%
Internet services	3,345	29%	1,190	24%	181%	41.1%
Technical specialists	2,621	23%	980	20%	167%	38.8%
Management	724	6%	210	4%	245%	51.1%

* Totals may differ due to rounding

Distribution of number of companies by specialisation	Industry, 2014	Local firms, 2014	Foreign branches, 2014	Industry, 2010	Local firms, 2010	Foreign branches, 2010
1. Accounting, banking, and financial software	7%	5%	2%	5.3%	4.2%	1.1%
2. Chip design, testing, and related	6%	2%	4%	2.5%	0.4%	2.1%
3. Computer graphics, multimedia, and games	5%	5%	1%	6.4%	5.3%	1.1%
4. Customized software and outsourcing	17%	12%	5%	21.6%	10.2%	11.4%
5. Databases & MIS	4%	2%	2%	6.0%	4.6%	1.4%
6. Internet applications and ecommerce	5%	4%	2%	11.3%	8.1%	3.2%
7. IT services and consulting	7%	5%	2%	11.3%	8.1%	3.2%
8. Mobile application development	8%	5%	3%	*		

9. System design and automotization	15%	12%	4%	*		
10. Networking systems and communications	9%	5%	4%	6.4%	4.2%	2.2%
11. Web design and development	6%	5%	1%	17.7%	14.1%	3.6%
12. Other	2%	1%	1%	7.3%	3.2%	4.1%
13. Internet Service Provider	8%	8%	0%	10.2%	5.7%	4.5%

* Mobile Application Development, as well as System Design and Automotization specialisations were separated since 2012

Distribution of revenues based on specialisation	Industry, 2014	Local firms, 2014	Foreign branches, 2014	Industry, 2010	Local firms, 2010	Foreign branches, 2010
1. Accounting, banking, and financial software	\$26.4	\$11.4	\$15.0	\$7.8	\$5.3	\$2.5
2. Chip design, testing, and related	\$70.4	\$3.7	\$66.7	\$21.0	\$0.7	\$20.3
3. Computer graphics, multimedia, and games	\$5.4	\$5.3	\$0.1	\$2.7	\$1.9	\$0.8
4. Customized software and outsourcing	\$86.4	\$42.9	\$43.5	\$25.4	\$10.5	\$14.9
5. Databases & MIS	\$7.3	\$2.1	\$5.2	\$3.6	\$3.0	\$0.6
6. Internet applications and ecommerce	\$13.1	\$7.5	\$5.5	\$2.5	\$1.6	\$0.9
7. IT services and consulting	\$19.4	\$5.3	\$14.0	\$12.7	\$6.9	\$5.8
8. Mobile application development	\$18.9	\$12.3	\$6.6	*		
9. System design and automotization	\$29.7	\$13.7	\$16.1	*		
10. Networking systems and communications	\$33.5	\$26.2	\$7.3	\$5.7	\$3.0	\$2.7
11. Web design and development	\$33.5	\$26.2	\$7.3	\$6.6	\$4.8	\$1.8
12. Other	\$5.1	\$3.7	\$1.4	\$10.8	\$5.6	\$5.2
13. Internet Service Provider	\$125.7	\$6.3	\$119.4	\$50.0	\$15.5	\$34.5

* Mobile Application Development, as well as System Design and Automotization specialisations were separated since 2012