

## **INVESTIGATION OF SUPPLY OF FORMAL EDUCATION SYSTEM TO LABOUR MARKET IN THE DIRECTION OF PREPARING IT SPECIALISTS IN AZERBAIJAN**

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**Introduction.** Information communication technologies (ICT) are nowadays one of the most important and developing areas of Azerbaijan economy. Therefore, present situation and increasing growth of IT market in the republic has largely influenced formation of the labor market, thus making utilization of information technologies (IT) inevitable for other specialists as well.

Information technologies have passed through all areas of the social and political life, thus creating a great demand for qualified IT specialists. Researches show that need to IT specialists in other areas has grown up recently too, and the process is speeding fast. Just because of this, researching present situation in the labor market of IT specialists and the investigation of the existing problems of the area assumes vital importance.

Declaration of ICT sector as one of the prior spheres of economical development of the country, mass computerization and consideration of information as a global resource, increasing social partnership due to co-ordination activities of International Union on Information Technologies has created a suitable ground for building of information society. However, it is impossible to realize this without potential of suitable cadre.

On the other hand, today unfortunately we often witness paradoxical fact like "lack of cadres in the abundance" that is some employers think that level of some graduates and IT specialists does not meet demands of the labor market.

Therefore problem of monitoring of the labor market in the field of IT is quite actual in all levels of education (primary, secondary, higher), and structure and dynamics of this segment of the labor market can give necessary information about quantitative and qualitative indices. Thus, adaptation of educational system to demand of the labor market is one of urgent problems and the following are necessary for solution of this problem:

1) All activities of the educational system must be directed to the solution of the problem of meeting concrete demand for qualified specialists

2) Monitoring system of the labor market which includes solution of the problems such as evaluation of demand for profession, definition of the most desirable and promising professions and jobs in the labor market, professional determination of market volume, definition of activity types and level of professional requirements of workers from among concrete professions should be realized, and education must be linked to this system;

3) Contribution of educational system and social partners and to formation of new professions and educational standards and to changing of the present ones.

Analysis of the dynamics and long-term development of ICT sector and present situation in cadre market show two main tendencies: important growth in demand to professional IT specialists and their expected level of high quality. It is not surprising, that majority of IT students start their career at early stages of higher education, and by becoming skilled specialists, they get quite prestigious and well-paid jobs already before they get university degree. It has two groups of reasons. First group include:

1) lack of correspondence between standards of existing professions and education and real demand of the labour market;

2) low professional level of many teachers and lack of stimulations in IT specialists for regular self-education, which is of great importance for increasing professionalism;

3) Spiritually out of date technical resources and teaching programs;

4) Non-applicability of knowledge taught in higher schools into practice, that's impossibility of using inadequate experience obtained at universities as a tool for work.

5) Interests of students to modern technology and to becoming a specialist under supervision of experienced IT professionals;

Another group of reasons include:

1) Regular increase in demand for IT specialists and respective rise of the wage levels;

2) Unsatisfactory level of wages in most government institutions are not attractive for most high qualified specialists, and it makes most managers hire students - cheap labor force.

As a result, education must rapidly answer to the needs of the labor market in all levels and must offer corresponding educational services. That is, Azerbaijan needs information system outstripping existing educational system as one of the most important factors of economical development. It should also provide solution of three strategically important problems for future of our country:

- Training enough specialists, necessary for improvement of IT industry, information economy and for business development.
- Providing considerable progress of education in the field of IT and securing its adequacy to modern and perspective demands of information societies in developed countries.
- Activation of the process of forming the culture of new information that will pave the way development of IT and corresponding services.

A number of researches have begun to discover present situation in the market of IT specialists and offer corresponding recommendations for improvement of the market.

First of all analysis of the preparation of IT specialists have been carried out in formal educational system of Azerbaijan.

It has been specified that list of professions of higher education covering areas of professional activities connected with development and application of IT is divided into 2 groups, basic and additional [1]:

1. Basic list of the professions of higher education covering areas of professional activities connected with development and application of IT directly involves professions for training specialists;
2. Additional list of the professions of higher education related to areas of professional activities connected with development and application of the information technologies involves professions that indirectly attract specialists to this area.

In the result of analysis of the preparation of IT specialists formal educational system of Azerbaijan, it has been specified that, at present every year the following number of the students are admitted to higher educational institutions of our republic dealing with areas of professional activities connected with development and application of IT [2]:

- 1) 2285 students on 20 higher professions entering basic list (Table 1);
- 2) 2148 students on 33 higher professions entering supplemental list (Table 2).

Immediate affairs carried out in the direction of researching real situation in the market of IT specialists have been directed to the solution of the following problems:

- state of demand and supply in the market of IT specialists;
- IT specialists' satisfaction level of employers' requirements in the system of formal education;
- most demanded professions of IT area in the labor market;
- Satisfaction level of present educational and professional standards and corresponding teaching programs to real structure of the labor market in the area of IT in Azerbaijan;
- Forming the contours of the contrary connection between IT industry and educational system;
- Prognosticating of the demand to IT specialists.

Table 1. Basic list of the professions of higher education covering areas of professional activities connected with development and application of IT.

<b>N</b>	<b>Name of profession</b>	<b>Yearly admittance</b>	<b>Name of university</b>
1.	Mathematics	536	BSU, ASPU, GANJA SU, Sumqait SU, Nakhchivan SU, Teacher's University of Azerbaijan.
2.	Maths and informatics	301	ASPU, GANJA SU, Nakhchivan SU, Qafqaz U, Teacher's University of Azerbaijan, Teacher's University of Nakhchivan, Lenkoran SU, Nakhchivan Private University, Baku Girls' Univ., Az.Int.Univ.
3.	Informatics	76	BSU, GANJA SU, Mingechevir Politechnical Univ.
4.	Applied Maths	127	BSU, ASOA.
5.	Mechanics	24	BSU
6.	Computers	231	ASOA, Az.Tech.Univ, Sumqait SU, Western Univ.
7.	Instrument-making	80	ASOA, Az.MTU
8.	Automation and management	148	ASOA, Az.Tech.Univ, Sumqait SU
9.	Avtomation and information engineering (Tempus proq.)	65	ASOA, Az.Tech.Univ, Sumqait SU, Mingechevir Politechnical Univ.
10.	Computür and maths	35	ASOA, Hazar Univ.
11.	Systems of automatization information processing and management	54	Az.State Ec. Univ., Mingechevir Politechnical Univ.
12.	Computer engineering	38	Lenk.SU, Qafqaz Univ.
13.	Technological machines and equipments	214	ASOA, Az.Tech.Univ, Az.Academy of griculture. Az.Tech.Univ., UNIVERSITY OF ARCHITECTURE AND CONSTRUCTION
14.	Telecommunication	109	Az.Tech.Univ, Az.Tech.Univ.
15.	Radio engineering	70	Az.Tech.Univ
16.	Designing electronic equipments Technology	30	Az.Tech.Univ
17.	Management and informatics in technical systems	47	Az. Arch. And Constr.Univ, Az.Tech.Univ.
18.	Information systems	65	Nakhchivan SU, Az.Acad.Agriculture, Az. Arch. and Constr.Univ
19.	Complete sets of computers, systems and nets	25	Qafqaz Univ.
20.	Electronic devices and equipments	10	Sumqait State Univ.
	Total:	2285	

Successful solution of these problems specifies solution of the of monitoring system of the IT specialists segment of the labor market of Azerbaijan. In order for that, the following questionnaires have been placed at [www.ict.az](http://www.ict.az):

- Questionnaire A – investigating demand to IT professions from quantitative and qualitative point of view and discovering the dynamics of supply of existing work places (for employer);
- Questionnaire B – investigating of the basic requirements by potential employers and experts proposed for IT specialists (for holding concrete work place);
- Questionnaire C – investigation of the labor market of local IT specialists.

Table 2. Supplemental list of the professions of higher education covering areas of professional activities connected with development and application of IT.

No.	Name of specialty	Annual enrolment	Name of institution
1.	Electronics and automation of the physical devices	20	ASOA
2.	Physics and technique of optician communication	20	Az. Technical University
3.	Electron equipment	45	Az. Technical University
4.	Applied physics	24	BSU
5.	Physical electronics	25	BSU
6.	Material processing and machine building	125	ASOA, Az. Technical University
7.	Technology of science of defining industry materials and new materials	55	ASOA, Az. Technical University, UNIVERSITY OF ARCHITECTURE AND CONSTRUCTION
8.	Machine building of power engineering and energy	64	ASOA
9.	Power engineering of heat, machine and devices	106	ASOA, Az. Technical University
10.	Electrical engineering and electromechanics	97	ASOA, Az. Technical University, Sumgait SU
11.	Technique and physics of high tensions	22	ASOA
12.	Engineer economy and management	413	ASOA, Az. Technical University, UNIVERSITY OF ARCHITECTURE AND CONSTRUCTION, Min.Pİ.
13.	Electroenergetics	65	ASOA, Az. Technical University, Sumgait SU, Min.Pİ
14.	Biotechnology and medical apparatuses and systems	20	ASOA
15.	Automation, electromechanics and communication in railway transport	25	Az. Technical University
16.	Engineering work in the biological medical practice	15	Az. Technical University
17.	Service in the technical way of life	45	Az. Technical University
18.	Metallurgy	79	Az. Technical University
19.	Organizing transport and management in transportation	97	Az. Technical University, Az. Naval Academy, BSU

20.	Technical exploitation of aviation of the electron systems and flying navigation complexes	14	National Aviation Academy
21.	Flying exploitation of the airships	12	National Aviation Academy
22.	Exploitation of the air transport and it's motion control	12	National Aviation Academy
23.	Technical exploitation of the transport radio equipments	14	National Aviation Academy
24.	Exploitation of the systems of flying supervision	12	National Aviation Academy
25.	Quality management and diagnostics method and apparatuses	12	National Aviation Academy
26.	Applied geodesy	20	University of Architecture and Construction
27.	Mechanization to automatization	20	University of architecture and construction
28.	Materials physics	16	University of architecture and construction
29.	Construction	173	University of architecture and construction
30.	Shipbuilding and ship repair	15	Az. Naval Academy
31.	Electric equipments and automation of the ships	15	Az. Naval Academy
32.	Machine building technology	25	Az. Technological.Univ., Min.Pİ
33.	Standardization and certification	126	ASOA., Az.Technical University, ASEU., Az. Agricult. Academy, Az. Techn. Univ., Sumgait SU
	Total	2148	

### Literature

1. IT-Education 2005. Professions. Internet-University of Information Technologies. June 20, 2006. (in Russian)
2. Abituriyent # 3. Announcement of Student Admission for academic year of 2006/2007. (in Azerbaijani)
3. Information of Ministry of Education on higher educational institutions preparing specialists on the direction of professions. (in Azerbaijani)