STIKK

SHOQATA PËR TEKNOLOGJI TË INFORMACIONIT DHE TË KOMUNIKIMIT TË KOSOVËS
KOSOVO ASSOCIATION OF INFORMATION AND COMMUNICATION TECHNOLOGY

USAID Kosovo Private Enterprise Program (KPEP)

Implemented by USAID Contractor Booz | Allen | Hamilton

Skills Gap Analysis for Information and Communication Technology

SAF # WY2_FPS_046_WFD

STIKK
PashkoVasa 22, Peyton Street

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List of acronyms

MEST	Ministry of Education Science and Technology
MLSW	Ministry of Labor and Social Welfare
Cisco	Cisco Systems Inc
NetAcad	Networking academies, refers also to the program and curriculum developed by Cisco Systems
CS	Computer Science
VET	Vocational Education and Training
FECE	Faculty of Electrical and Computer Engineering
FMNS	Faculty of Mathematical and Natural Sciences
USAID	United States Agency for International Development
KPEP	Kosovo Private Enterprise Program
UP	University of Prishtina
UBT	University for Business and Technology
SPSS	Statistical Package for the Social Sciences
STIKK	Kosovo Association of Information and Communication Technology

Executive Summary

The perception of a significant skills gap in the ICT sector has been in existence for a long time in Kosovo. As recent as in December 2009, when KPEP commissioned STIKK to organize an 'ICT Job – fair' event, it became eminent that a thorough look into the issue is due. Namely, the 'job-fair' event attracted over 900 candidates to register for 28 openings by 8 reputable companies in Kosovo, of which over 100 candidates were invited to the event for interviews, of which none landed a job! It became evident that something is broken between the demand and supply of ICT skills in Kosovo. This research is an attempt to shed light into the problem of ICT skills gap in Kosovo.

The research has shown that Kosovo ICT industry is experiencing steady growth[1], which is reflected in the increased number of vacancies for ICT professionals. However, there is no evidence of a systematic shortage of ICT employees in Kosovo, although there is likely to be undersupply of some skills especially in the areas of software development and programming. Findings have shown that employers value especially the combination of technical and soft skills such as management skills, the ability to work in groups and deliver on time. Companies have also reported longer training times for new hires due to a mismatch between the training offered in the educational institutions and the skills required in the job market.

On the side of skills supply it appears that the number of annual ICT graduates is large relative to the ICT employment pool. Most of the graduates from universities come from the public University of Prishtina where Faculty of Electrical and Computer Engineering leads the way. At the same time vocational education providers have been proved effective in training and supplying skills for the job market. Specialized and vendor trainings have proven to be an important asset for job seekers. However, the burden of upskilling, sometimes even for the most basic positions, has to be provided or facilitated by the hiring companies. The workforce retraining and upskilling is a significant problem within the ICT sector who must fill-in the gaps between the educational programs and job requirements.

Perhaps the most striking finding of the research was that there is no dialogue whatsoever taking place between the three parties: 1) education policy makers who regulate the learning criteria for education providers, approve education programs and student quotas; 2) education providers who provide education and training programs, and 3) job providers who are to make use of the outputs out of the state of affairs between the first two parties. At present each of the three parties seem to be entrenched firmly in their own respective right: to govern, educate and hire, without realizing that their triangle has a meaning only when connections are drawn between them. Otherwise, it is nothing more than a nebulous triangle where the Kosovo youth loses their time, their money and prospects of employment and future life. In the words of one of the educators: "(they) compete for a share to extend the agony of unemployment for the students". A sequel study to examine simply why do the students enroll in the current educational system in Kosovo would undoubtedly provide interesting findings.

[1] For detailed market analysis and forecasting see IDC Adriatics reports, e.g. *Kosovo IT Market 2010-2014 Forecast and 2009 Vendor Shares*, Dec 2010 - IDC# ESQ07S

The focus group discussion and interviews conducted in the course of this research have stressed the need for initiation of coordination process and involvement of all stakeholders at the level of curriculum development and education provision. MEST should engage the education industry and the business community to ensure that curriculum offerings are in line with the capacities and requirements of the market. The example of FECE, which has an Industrial Consultation Council to inform its curriculum design process, should serve as good practice for other education providers and MEST as well.

Introduction

This research was commissioned by the Kosovo Private Enterprise Program (KPEP), a USAID-funded project implemented by Booz Allen Hamilton.

The research had the objective to assess the demand and availability of skilled professionals in the ICT sector in Kosovo, to identify gaps and root causes, and to suggest ways of improving the situation.

The research took place during Jan-April 2011. Questionnaire instruments were designed to survey three primary groups of stakeholders: private companies, education providers and education policy makers. Various other sources and documents were reviewed and consulted as they were available. These include primarily government documents as well as donor reports on the subject. A focus group was organized in March with the key stakeholders from education institutions and from business. Most of the analysis and conclusions came as a result of qualitative research, through numerous individual interviews with the representatives of key stakeholder's groups.

The report is organized as follows: next section outlines the methodology used to conduct the research, followed by detailed findings outlined in different categories, ending with conclusions and recommendations for the future.

Methodology

What constitutes a skill shortage and how best it is measured is the subject of considerable debate. Most often skill shortages are not shortages in aggregate labor supply, but rather a shortage of the "right" mix of skills and knowledge. Employers, education providers and policy makers have varying perspectives on what skill shortages mean. Shah and Burke (2005)[2] highlight some of the conceptual and definitional difficulties that come to the fore when estimating skill shortages. For example:

- From a market perspective, a skill shortage occurs when there is insufficient supply of appropriately qualified workers willing to work under existing market conditions, particularly the current wages. Unfilled or hardtofill vacancies are indicators of a shortage.
- Employers' perspective on skills shortages are important because often they are the main, if not the only, source of data allowing judgments to be made about the existence of a skills shortage. The employer perspective is, however, usually in terms of recruitment difficulties experienced by individual employers. These do not necessarily lead to unfilled vacancies in the short run but can result in other labor market difficulties or rising labor costs that the employer may regard as a shortage.
- Although many employers equate skills shortages with hard-to-fill vacancies, a substantial number do not. For example, some employers view internal skills deficiencies, or gaps, in the same light as skills shortages. Others declare the existence of skills shortages when in fact they are unwilling to offer competitive wages.

Considering the scarcity of existing information in Kosovo, especially when it comes to the education policy makers, which processes and deliberations are usually not open, and considering the limited sample size of this research[3], qualitative methods of applied sociological research were utilized in addition to the quantitative research. The work has been conducted in three phases:

- Desk Research;
- Surveying of stakeholders among ICT businesses, ICT education providers and policymakers;
- Focus groups with selected stakeholders.
- Individual interviews with key representatives from stakeholders groups.

[2] Shah, C. and Burke, G. (2005), "Skills shortages: concepts, measurement and policy responses", *Australian Bulletin of Labour*, Vol. 31, p.47

[3] The structured questionnaires were completed by 35 ICT companies and 4 universities

DESK RESEARCH AND PREPARATION. Available secondary sources of information were studied in order to obtain as much information. These include publications by KPEP and USAID, government policies and regulations pertaining to education, statistical data and reports available from various sources including donors and other stakeholders.

This phase of the research started off by gathering and analyzing secondary information concentrating on:

- Identifying all the stakeholders in the skills development area, including institutional, the business sector and donors;
- Identifying and reviewing the existing documents and reports pertaining to the skills and labor relationships;
- Identifying and examining existing policies and strategies by relevant bodies and institutions;
- Identifying the current projects in the skills development area.

FIELD SURVEY. Based on the findings from the desk research phase, the team went on to prepare the questionnaire and conduct the survey. The sample comprised of ICT companies - members of the ICT Association STIKK, and key stakeholders among the ICT education providers and policymakers. This phase comprised the following steps:

Questionnaire preparation. The questionnaires aimed to assess the actual as well as the foreseeable gap between the demand and supply of skills in the ICT sector. The questionnaires focused on information of interest which could not be obtained from the published documents analyzed during the desk research.

The questionnaires aimed at gauging the needs of the labor market for professionals in terms of "quality" of professionals (specific education and skills profiles) and in terms of quantity (the actual number of professionals needed in time). A part of the questionnaire was dedicated to analyzing the profile of the sector, to provide underlying explanations for the behavior of the sector in regard to labor needs and as a follow up and comparison to the previously completed study by USAID "Supply - Demand Survey" (2010).

Training of interviewers. In order to ensure consistency and quality of data collection, a two days training of field researchers (interviewers) was organized to ensure adequate interviewing skills and to draw attention to specific issues arising potentially.

Questionnaire testing. The questionnaires have been tested with a limited sample of respondents. Following the analysis of the responses of this test sample, the questionnaires have been revised and finalized with the help of KPEP staff.

Two additional questions were designed after the initial questionnaire was completed. These were most used during the analysis in sections 4.8 and 4.9.

Field Survey. The field survey, initially planned for November – December 2010, had had to be postponed for early 2011 upon demand by the ICT industry. The respondents contacted indicated that they were overloaded with end of the year financial closure processes, while the government stakeholders were busy going through the intermittent general elections. The field survey was finally conducted during January – February 2011.

The sample size comprised of 35 ICT companies and relevant Institutions. The targeted persons surveyed include, primarily, ICT Managers and, secondarily, Human Resource Managers or, where not applicable, other relevant managerial staff from the organizations of interest such as executives with decision making power in regards to HR issues, directors, general managers, owners, and professionals.

Interviews have been conducted face-to-face using the semi-structured method. In several cases, questions were obtained also by e-mail.

Results database. The data from the completed questionnaires have been entered and analyzed using SPSS.

FOCUS GROUP. Following preliminary analysis of the data from questionnaires, a number of hypotheses and contradictions emerged which needed further discussion and verification. Such are the contrasts between the employers and education providers on whether the latter consult the former at any stage during the preparation of their study programs offerings. Thus, a decision was made to organize a focus group with a limited number of relevant stakeholders coming from the ICT businesses, education providers and policymakers in an attempt to resolve and clarify the information.

The focus group was organized in March 2011. It gathered 10 participants in total, of which 6 coming from the ICT business, 2 from private universities, and 2 from public university. 2 participants of ICT businesses also represented their private VET centers. The respective specialists from KPEP were also involved in the focus group.

INDIVIDUAL INTERVIEWS. Numerous additional interviews were conducted with stakeholders' representatives in order to obtain information which could not be derived from the questionnaires alone or that was not discussed during the focus group. A one-to-one interview setting offered relaxed conditions which help establish the trust and conveyance of sensitive information. However, companies reluctantly, if at all, provided financial information such as revenues, revenue distribution per activities, and to lesser extent they also hesitate to disclose employee wages per positions. The education providers, in addition, hesitate to provide number of students[4] and consequently number of graduates in specific programs.

[4] The number of students in educational institution is strictly controlled by the MEST. The number of students is mandated by financial sustainability requirements imposed on education providers by MEST, which states that a guarantee needs to be put forward for the total revenue forecasted three years ahead. (Law on Higher Education in Kosovo, 2003/14, Article 22.4 "*A condition of the grant of a licence to a private provider of higher education shall be the submission to the Ministry of a business plan for the provider, including a guarantee by the founder of financial viability for at least three years. A rolling revision of the plan, including such guarantee, shall be submitted annually to the Ministry.*")

Findings

In order to understand the demand and supply, it is important to understand where does this demand and supply come from, that is, the profile of the ICT sector in Kosovo. The following section provides an outline of the information technology industry in Kosovo. It starts out by outlining the main characteristics of the IT industry including providing a current snapshot of ownership structure, company registration, client segmentation and main activities of the IT companies in Kosovo. It follows by presenting the skills demand and supply by specific areas of expertise. This chapter is divided in two parts: Part I dealing with company profiles and Part II dealing with Human Resources.

Part I: ICT company profile

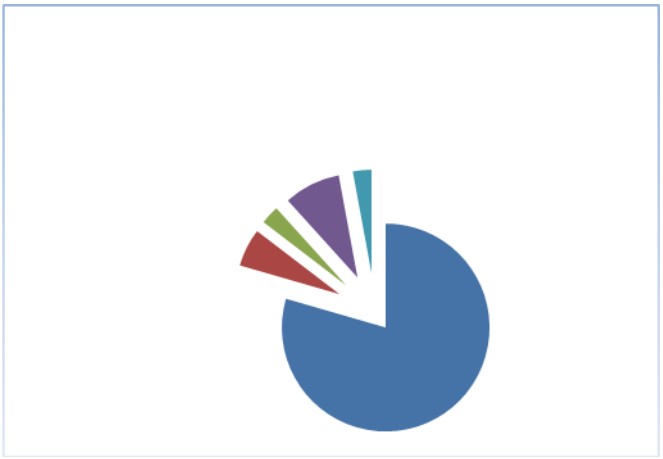


Fig.1 *Company Ownership*

1.1. Ownership structure (Q3)

The presence of active foreign owned ICT companies operating in Kosovo is very small (8.8%) compared to the number of locally owned companies (79.4%). Most ICT companies are Kosovar owned ones followed by 100% foreign owned, majority Kosovar owned, and 50-50 Kosovar /foreign ownership.

1.2. Type of company registration (Q4)

The ICT sector profile in Kosovo is equally dominated by two types of companies: Limited Liability Company (41.2%) and Single Owner (Sole Proprietorship) (38.2%). The data indicate shifts towards former, in comparison to the USAID 2010 study "Supply - Demand Survey", where LLC had just 28.6% and 'Single Owner' had 53.8% respectively.

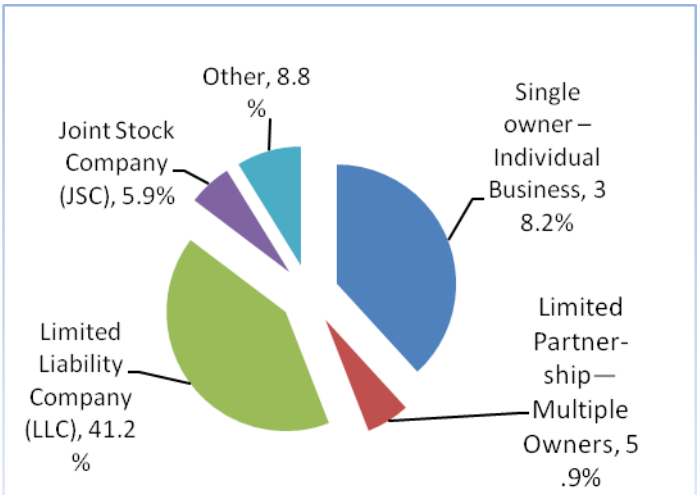


Fig. 2 *Company Registration*

1.3. Business activities (Q5)

The core business activities of the majority of ICT companies are concentrated on vendor hardware and software (23%) and software development and programming (22%).

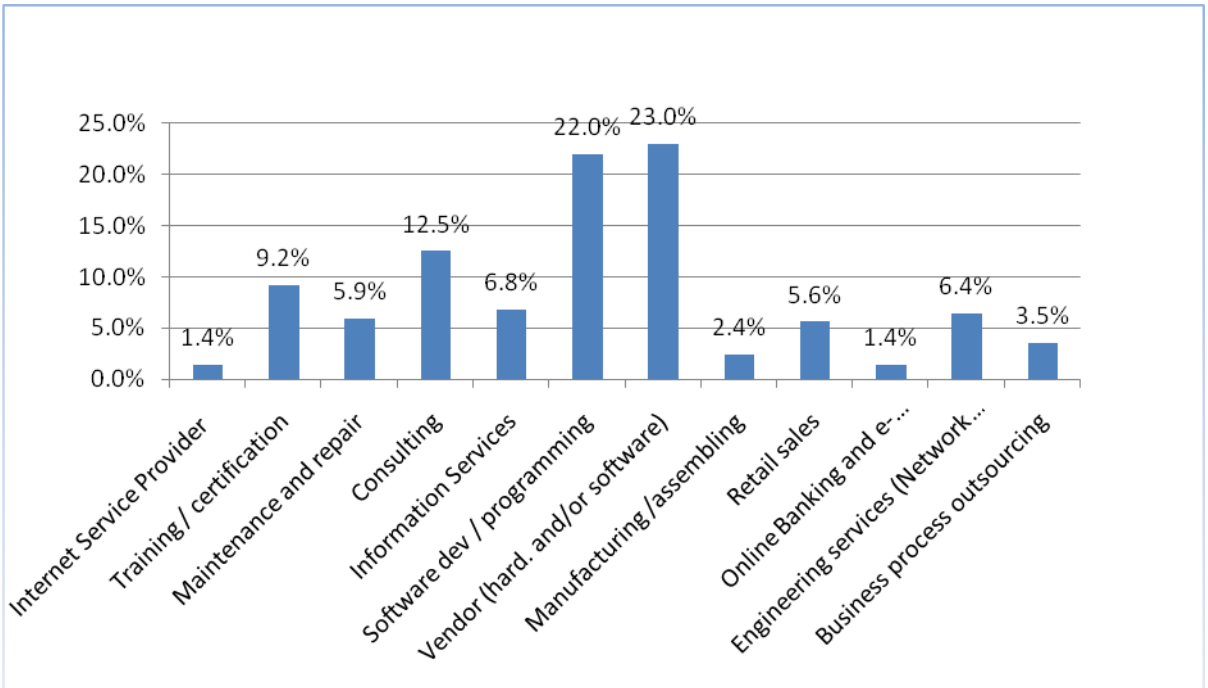


Fig. 3 *Company core ICT business activities*

The secondary ICT business activities are concentrated more in providing maintenance and repair services (22%), consulting services (18%) and engineering services (network&systems operation/management).

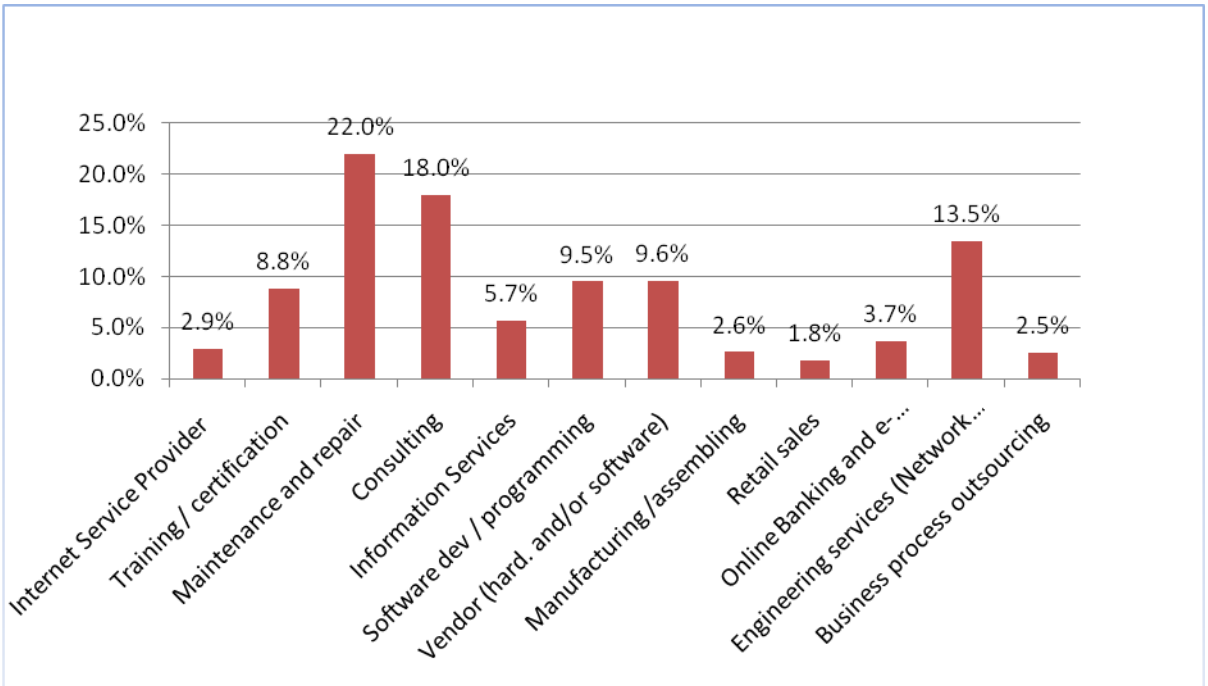


Fig. 4 *Company secondary ICT business activities*

1.4. Company clients & location (Q7& Q10))

The primary clients of the ICT companies reveal little vertical markets and integration. Clients from other sectors comprise (43.6%), ICT companies (26%) and Government (20.3%). However, the vertical market comes as a result of a handful of powerful distributors who deliver to other ICT companies, thus revealing that the research sample targeted mainly dominant market companies – members of STIKK. The secondary clients are companies from other sectors (35.1%), individuals (household, consumer products & services, etc) (27.1%), ICT companies (20.1%) and Government (17.8%).

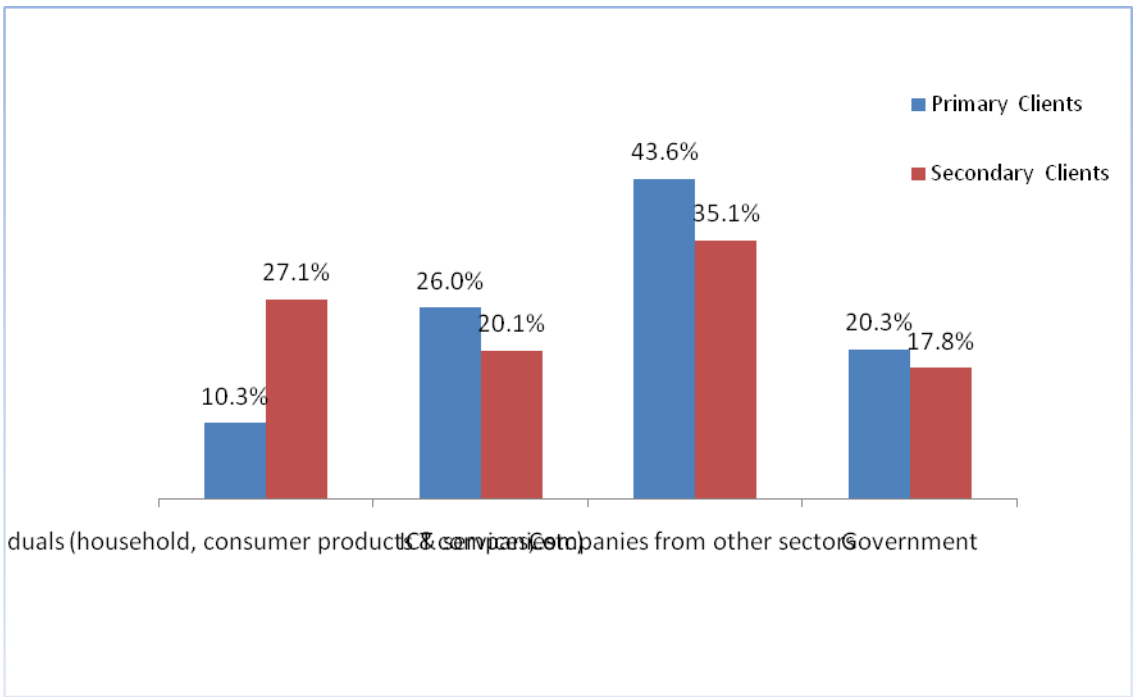


Fig. 5 *ICT Company Clients*

1.5. Company target industries (Q9) and location (Q10)

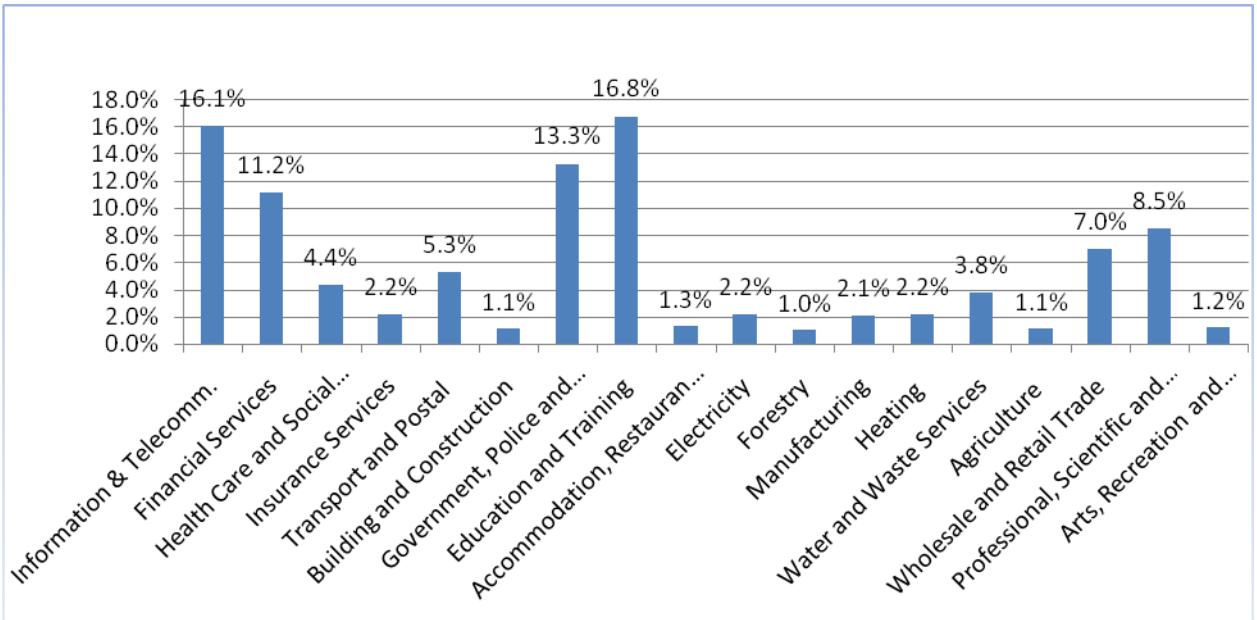


Fig. 6 Company primary target industries

The target of ICT companies in Kosovo is mainly the education sector followed closely by the information and telecommunication, financial and public sector. The results show education and training (16.8%), information and telecommunication (16.1%), Government, police and emergency services (13.3%) and financial services (11.2%).

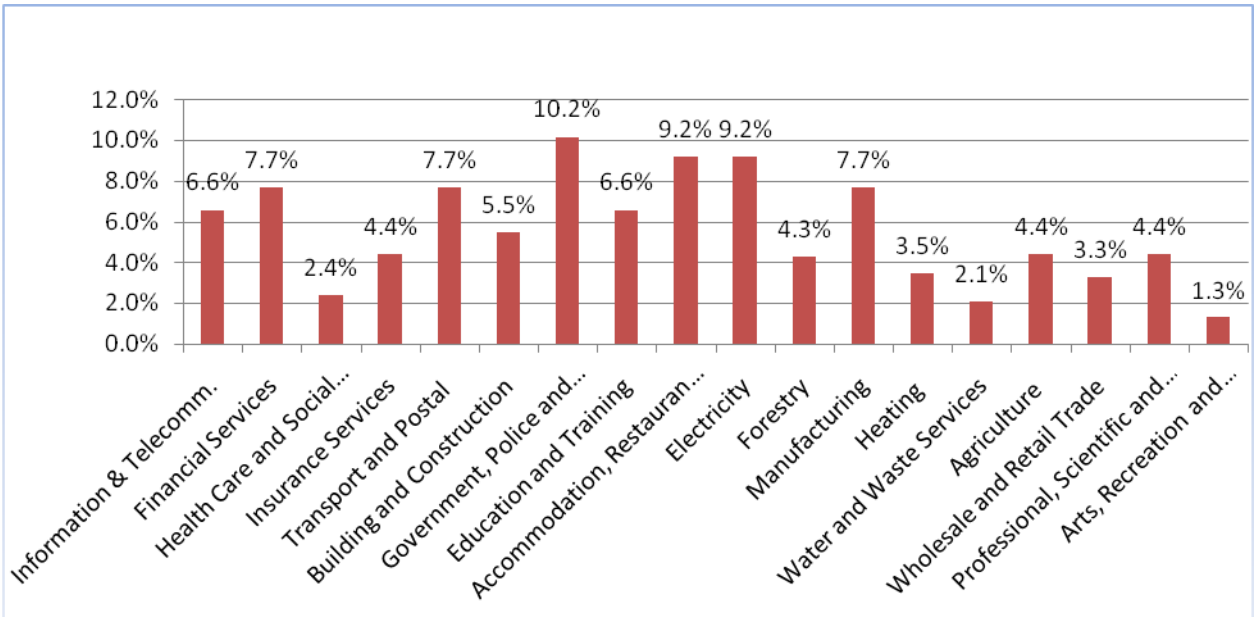


Fig. 7 Company secondary target industries

Beside the public sector, an important sector targeted by ICT companies is the private sector. Apart from Government, police and emergency services (10.2%), the secondary target industries for ICT companies are accommodation, restaurants and food, and electricity each with 9.2%, followed by financial, manufacturing and transport and postal services each with 7.7%.

The location of clients of the Kosovo ICT companies in both categories, primary and secondary, is shown in the chart below. The primary clients are located mainly in Kosovo, and only 2.6% in the region and 3.3% in Europe. However, to the secondary clients the Kosovo ICT companies provide their services for27%of them in the region and for73% of them in Europe.

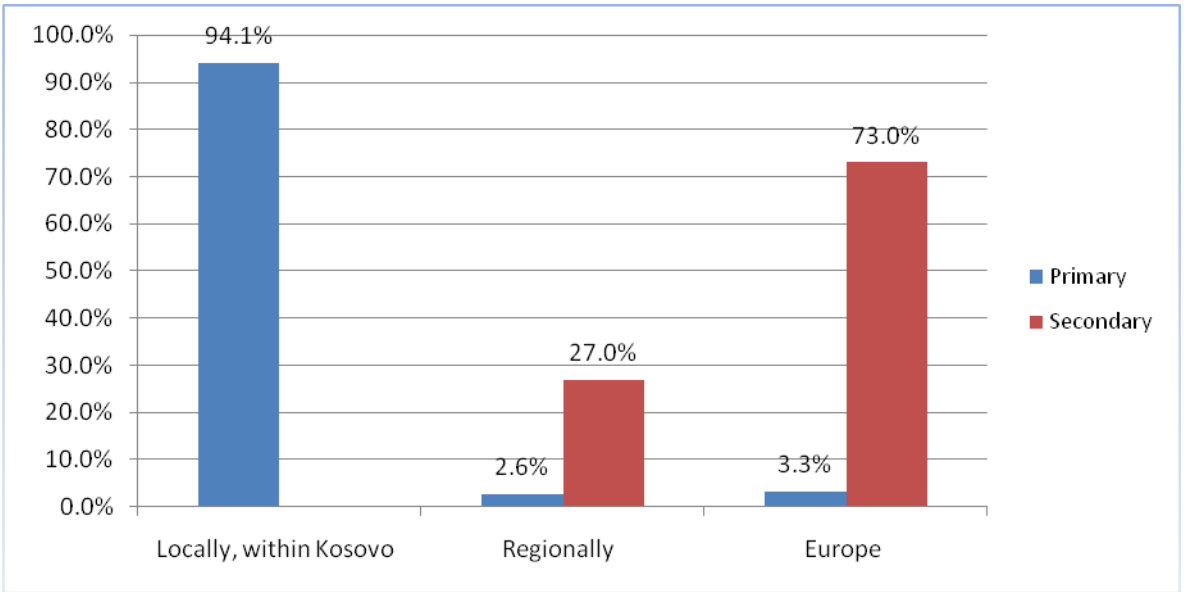
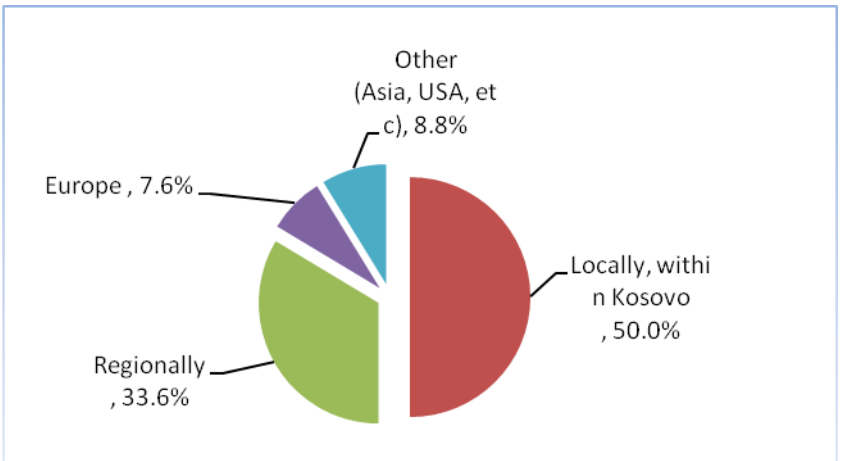


Fig. 8 Location of principal clients

1.6. Opportunities for growth (Q12)& (Q13)

The opportunities for expansion are seen mostly in Kosovo market and in the region. Even though the principal clients are located mainly in Kosovo, the ICT companies seek their expansion in the region (33.6%), Europe (7.6%) and the rest of the world Asia, USA (8.8%) where they apparently see the opportunities for growth of ICT business.

Fig. 9 Business Expansion opportunities



The respondents revealed that the primary ICT areas in which they see the pontential for growth or expansion are ICT vendor related activities concentrating around **hardware and software sales** and maintenance and **software development and programming**.

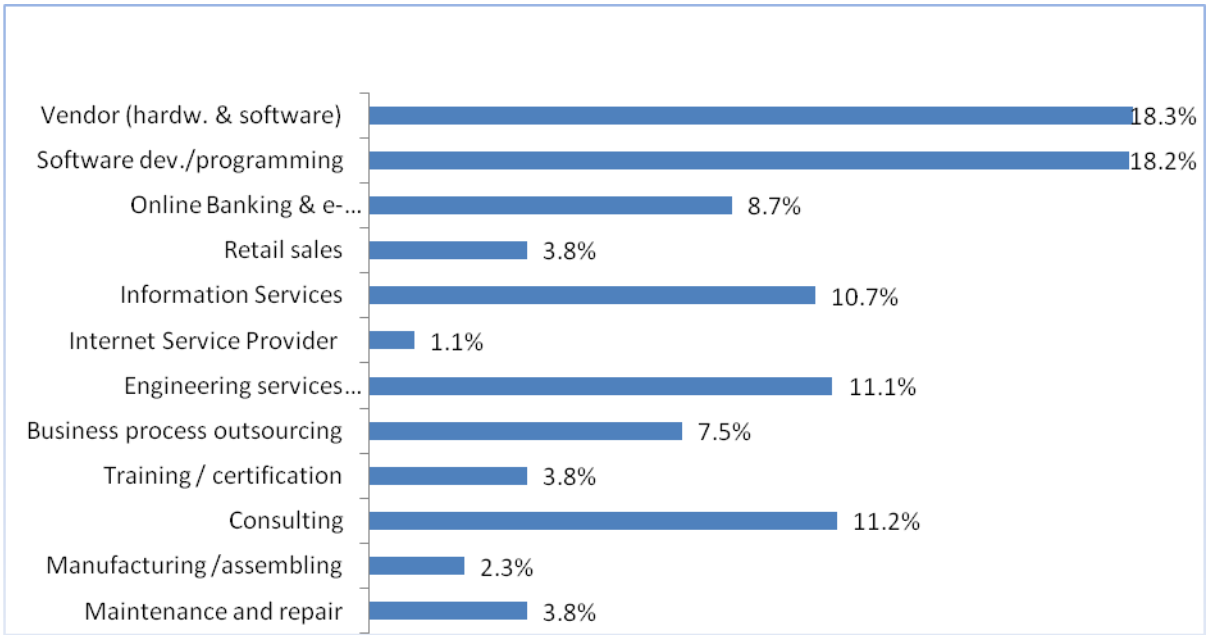


Fig. 10 Primary ICT areas of potential for growth or expansion

In adittion to the primary areas of expansion mentioned above, the secondary area of potentional for growth and expansion are obviously **information services** with 20.6%.

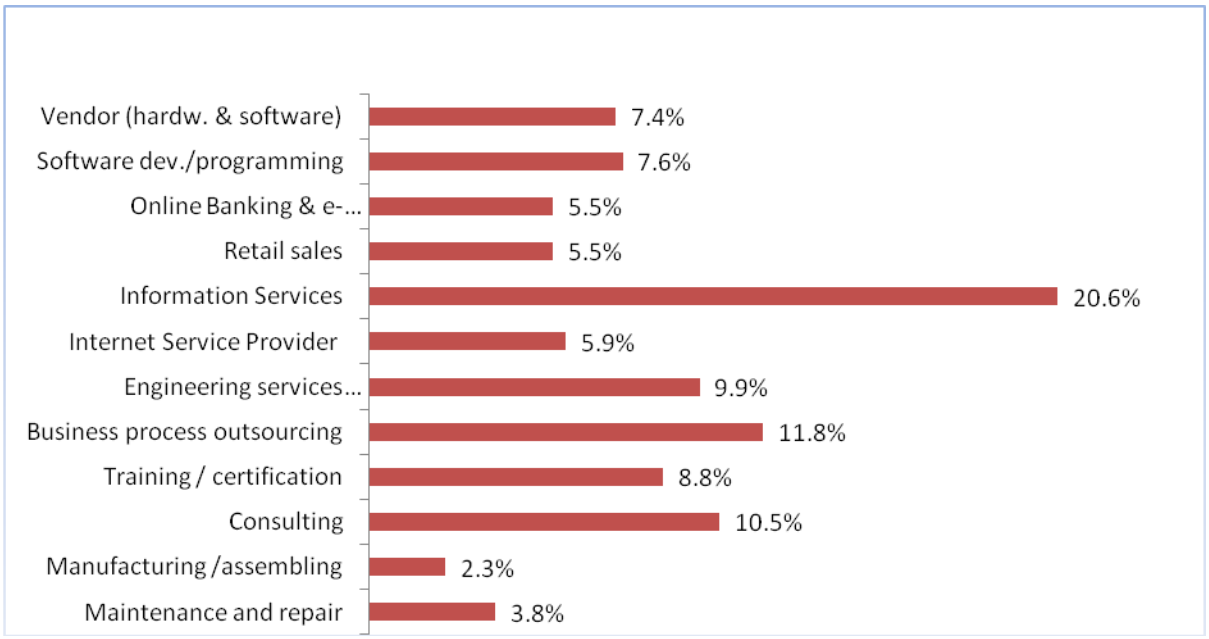


Fig. 11 Secondary ICT areas of potential for growth or expansion

Part II: Human resources

1.7. Employee data (Q17-Q19)

The number of ICT workers by occupation	# employees	(%)	Average Salary
Telecomm. Network Engineers	123	14.8%	450
Software and Application Programmers	76	9.2%	487
ICT Project Managers	65	7.8%	507
ICT Managers	48	5.8%	641
Web Designers and Developers	42	5.1%	550
Hardware Technicians	42	5.1%	406
ICT Trainers	41	4.9%	450
ICT Sales Representatives	39	4.7%	316
Electrical Engineers	32	3.9%	500
Database Developers	27	3.3%	No Answer
ICT Business Development Managers	22	2.7%	683
ICT Account Manager	21	2.5%	550
Database Administrators	20	2.4%	No Answer
Telecommunications Technicians	18	2.2%	350
ICT and Telecomm. Technicians	18	2.2%	230
ICT Professionals (vendor certifications)	17	2.1%	600
Network Administrators	16	1.9%	500
Telecommunications Field Engineers	15	1.8%	No Answer
Web Administrators	14	1.7%	No Answer
Systems Administrators	13	1.6%	950
Telecommunications Engineers	12	1.4%	600
Network Analysts and Network Designers	11	1.3%	450
Multimedia Designers	11	1.3%	No Answer
Electronic Equipment Trades Workers	11	1.3%	400
Telecommunications Cable Technicians	10	1.2%	No Answer
ICT Business Analysts	10	1.2%	No Answer
Radio communications Technicians	9	1.1%	230
ICT Network and Support Professionals	8	1.0%	No Answer
ICT Systems Test Engineers	7	0.8%	No Answer
Telecommunications Trade Workers	6	0.7%	No Answer
Systems Analysts	6	0.7%	No Answer
ICT Support Technicians	6	0.7%	300
ICT Quality Assurance Engineers	6	0.7%	325
ICT Security Specialists	4	0.5%	No Answer
ICT Customer Support Officers	3	0.4%	No Answer
Total Employees	829		

The average number of employees over the sample has gone up at 23.9 from the 20 indicated on the "Supply Demand Survey" of 2010[5]. Of this number, only 3.8 on average are part-time employees. Interestingly, an average number of interns per company is 3, with the lowest number declared 1 and the maximum of 8 interns in a single company. The actual average gender imbalance is at approx. 3:1 in favor of male employees. The actual total number of employees in the ICT companies surveyed is 829.[6]

Telecommunication Networks Engineers are most represented (14.8%), followed by Software and Application Programmers (9.17%) and ICT Project Managers (7.8%).

Of the available data (companies in general hesitated to declare salary scales), System Administrators are the highest paid group (950 Euros), followed by ICT Business Development Managers (683 Euros) and ICT Managers (641 Euros).

1.8. Skills Demand

The respondents identified a shortage of people with skills in web design (15.4%) and web development (14.7%). They also indicated that basic technical skills and computer networks (CNNA and CCNP combined 17%) form an important part of the skills demand.

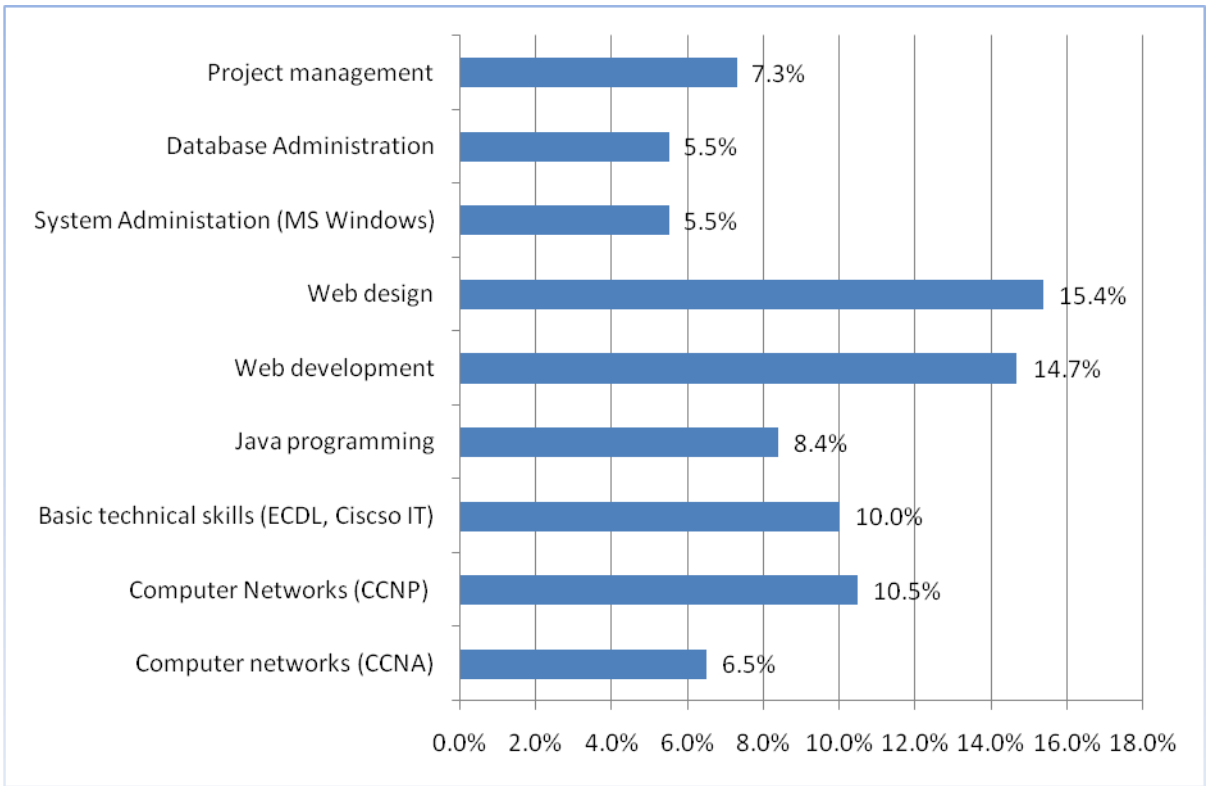


Fig. 12 Most needed skills in ICT Industry (in %)

[5] The sample size is different in current research, at about half of the number of companies surveyed on the "Supply Demand Survey" in 2010.
[6] Ibid

Many respondents and interviewees identified an important demand for people who posses combinations of technical and communication skills such are problem solving skills, time managment and communication skills. This clearly indicates the demand for ICT proffesionals who in addition to their core expertise posses problem solving and high interpersonal skills. Interestingly, formal education is regarded as 'very important' by least number of respondents placing it firmly near the end of the scale (30.3%), and being more important only to 'Knowledge of operational and work procedures' (29.4%)

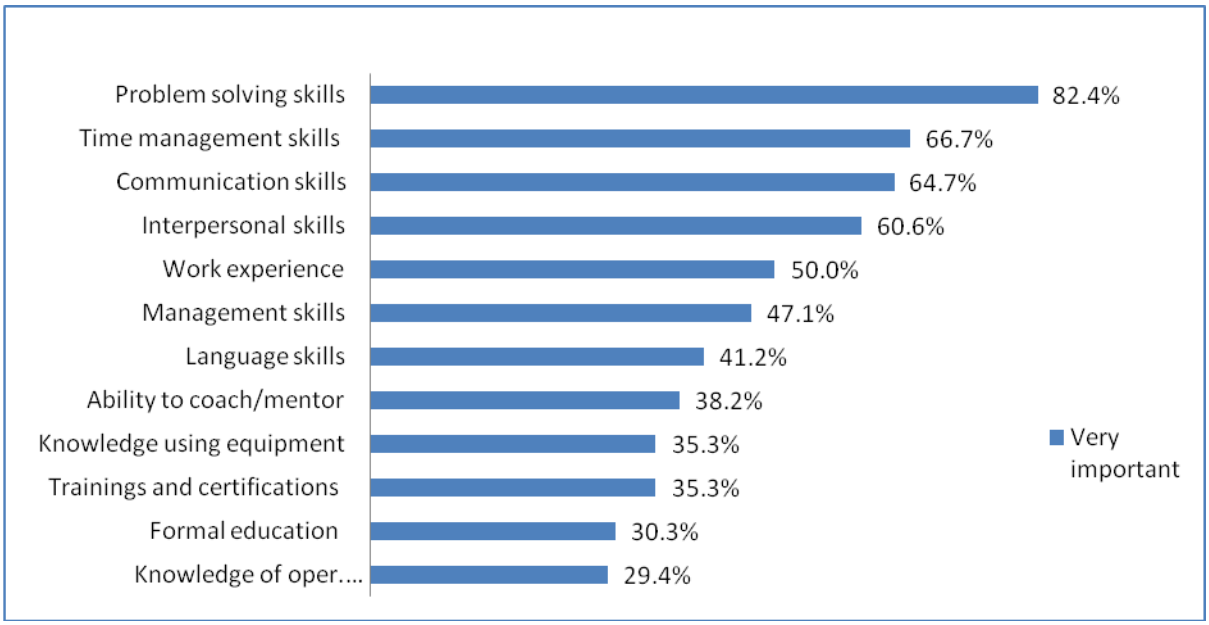


Fig. 13 Skills Importance

In contrast, despite the low esteem of formal education on the list of most demanded skills for an emplyee, the typical new hires in the ICT sector are expected to posses quite high education level such as bachelor degree (50.0%) or Masters or higher degree (41.2%).

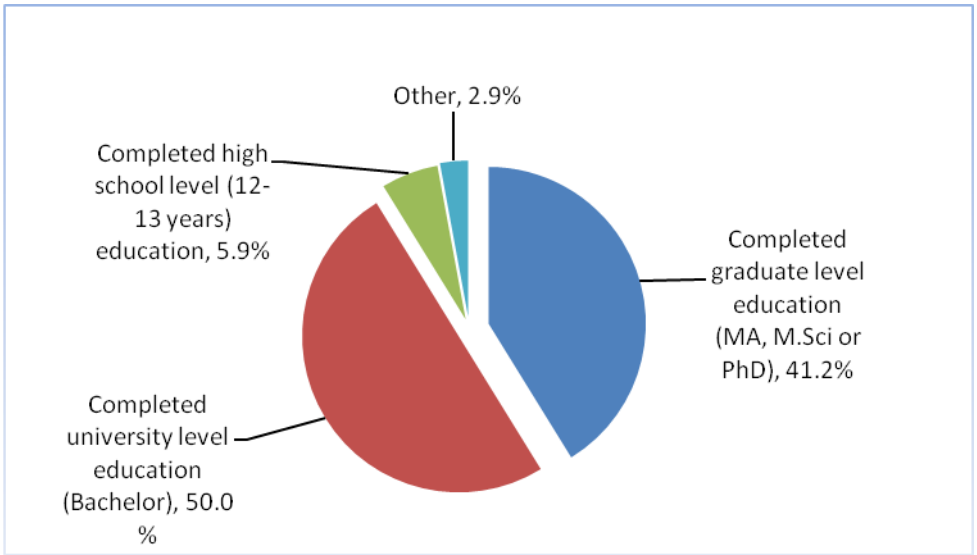


Fig. 14 The educational level of companies new hires

1.9. Skills supply

This analysis includes an assessment of effectiveness and appropriateness of education programs of the universities in Kosovo (both private and public) as well as the offerings of VET training centers. The skills supply has been analyzed twofold; through a quantitative field survey and through a qualitative research. Thus this section contains both the findings from the survey usually followed by the qualitative analysis. It has to be noted though that the more interesting findings in the following sections came as a result of mostly qualitative research; individual interviews with teaching personnel and the students.

1.10. Where do the employees come from?

In average, ICT industry employs more graduates from public educational institutions than from private educational institutions by a close lead (average 16.1 relative to 13.6). However, given the smaller overall number of students enrolled in private institutions, it seems that these students have higher chances of employment in the ICT industry. Regardless the source, the average level of satisfaction is the same within a narrow margin (6.6/10 to 6 /10 respectively).

Two institutions lead the satisfaction level for the graduates they have supplied to the ICT industry; The Faculty of Electrical and Computer Engineering (20.6%) and The Faculty of Mathematical and Natural Sciences – Computer Science (17.6%). However, it has to be noted that FECE, and to a lesser degree FMNS, have both, a long tradition of collecting - rather than attracting, the best and the brightest of the secondary school technical and engineering graduates. For a long time FECE was the closest a student could get to the 'computers' related and computer science (CS) degrees. FMNS has and continues to have a strong abstract mathematics curriculum and consequently had a lesser appeal to ICT students although FMNS formally initiated computer science studies much earlier in 2000-2001. When asked about the reasons they were satisfied with the students coming from these two institutions, the respondents stated two leading reasons 'Sufficient professional knowledge' (17.6%) and 'Higher knowledge' (8.8%).

Surprisingly, the respondents were most dissatisfied with the graduates coming from the American University in Kosovo (AUK)[7] (8.8%) and, with a close second, with the graduates coming out of the University of Prishtina (8.0%). The reasons stated were uniformly distributed to 'Non professional education', '…quality', '…false confidence', 'not prepared to work', 'no practical experience' and similar.

In general, the respondents regard that 'lack of technical /professional skills (including language)' dominates in importance (73.5%) over the lack of 'soft skills (interpersonal skills, communication skills)' (17.6%).

[7] AUK does not have a computer science or ICT related program of studies, although it has ICT VET courses (CCNA and CCNP) for, mostly, external students.

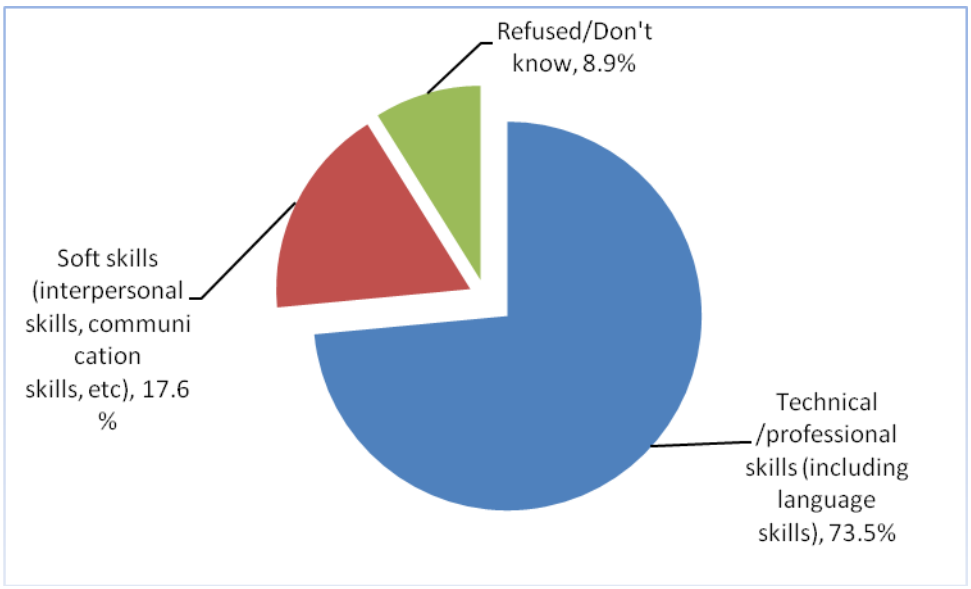


Fig. 15 General skills that new employees lack most

1.11. Training of employees

Most employers train their employees on the job (76.5%), some send them to an external training center (20.6%), while only 2.9% do not train their employees. Trainings are provided on any and all areas of importance to the primary activity of the company. The average time it takes to train the new employee until reaching the maximum productivity is usually 1 – 3 months (45.5%), followed by 3 – 6 months (30.3%), and dropping as the length increases to 6-9 months (15.2%) and over 9 months (9.1%). The average amount spent per employee on training is around 1000 Euro up to a maximum of 70,000 Euros reportedly.

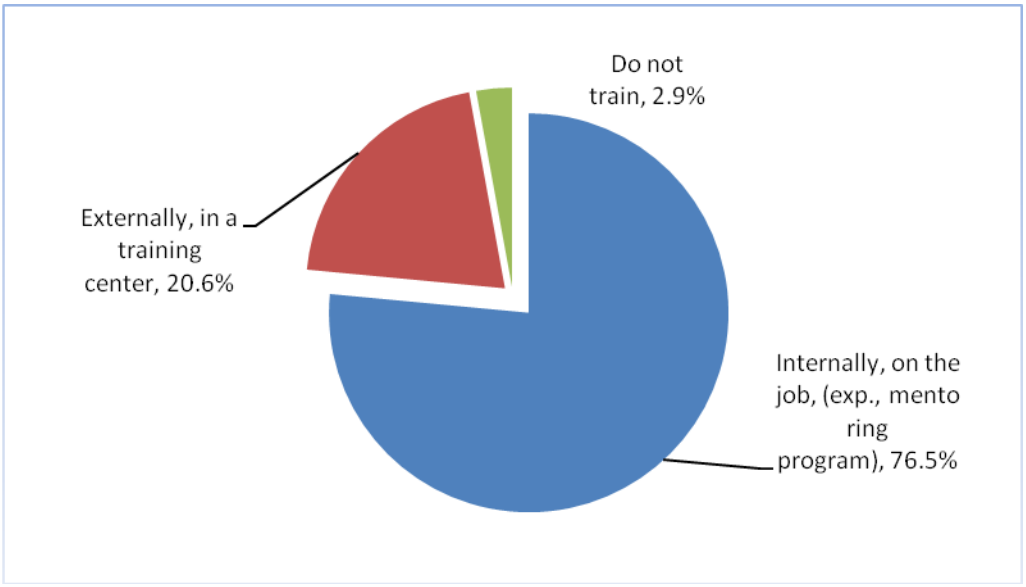


Fig. 16 Training of Employees

1.12. New hires in a year

Almost all companies have hired new employees in a year's time, most have hired 2 people (28.5%) followed closely by those hiring 3 people (21.4%). Most companies (79.4%) plan on hiring new employees in the next year.

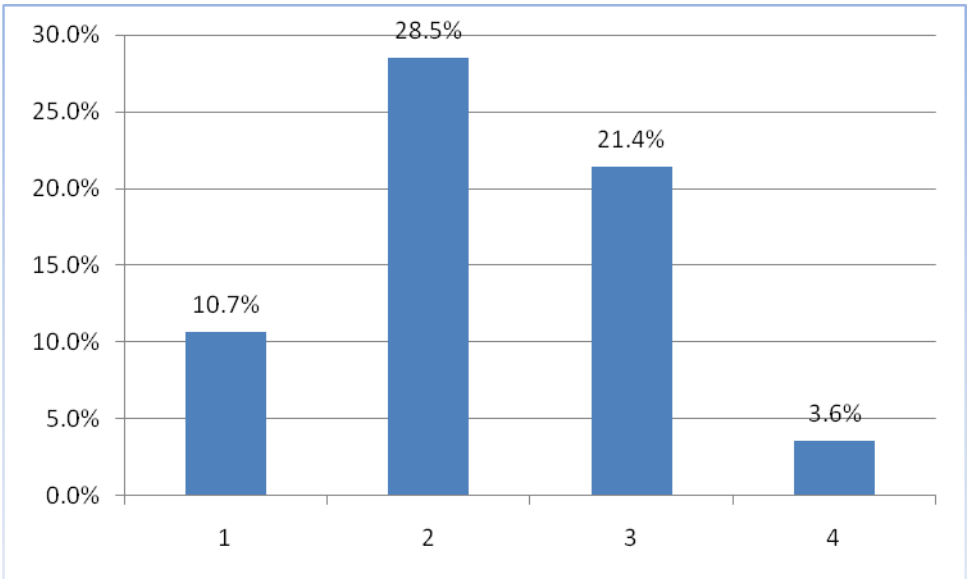


Fig. 17 Number of new employees a company has hired in a year

A list of positions that will be open ranges from technical to management, to sales, to finance& accounting and it is shown in the table below:

Name of positions
Accounting manager
Administrator
Finance administrator
System administrator
Sales agent
Project assistant
Engineer
System engineer
Audio/video engineer
Network administrator
Manager
Enterprise sale manager
ICT manager
Technical assistant
Project manager
Sales agent
Software development

The total number of new job openings in the next year is reported to be **134**.

Most companies (61.8%) plan on hiring interns, of which most will be hiring one intern (30.0%) and others (25.0%) will hire 2 interns.

1.13. Difficulties in filling in the vacancies

Over 80% of companies surveyed have had employees leaving during the last year. Most often there was just one (38.4%) or two (15.3%) employees leaving. The key reasons stated are 'Better opportunities in another sector' (35.5%), followed by 'Fired' (19.4%).

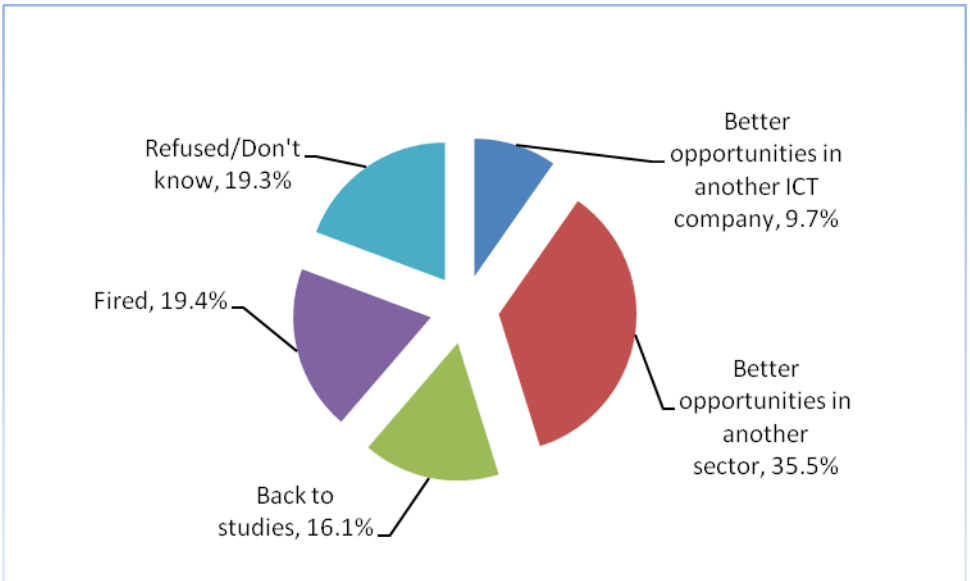


Fig. 18 Reasons for leaving

In most cases (44.1%) it took less than a month (two weeks – to a month) to fill-in the vacancies left open by a leaving employee. However, for about one third (32.4%) it took over a month to fill-in the vacancies. Interestingly, contrary to the expected, the reasons stated put more weight on the 'Recruitment procedures' (41.2%) than on 'Lack of specialized skills' (29.4%). The new employees were found using multiple methods, mostly by utilizing both 'personal contacts and references' (76.5%) and by advertising publicly (58.2%).

It was interesting to investigate further how private companies can afford to have lengthy recruitment procedures. It was discovered that in many cases this happens due to a high number of candidates applying for openings and the corresponding time needed to go through the applications. Several teachers at the university noted that they have been approached by the companies to help them quickly recruit students on reference by the teacher.

The inquiry on why job fairs were not among the preferred ways of hiring employees, revealed that employers did not benefit much from the job fairs organized by organizations and donors external to the industry, and that they prefer the education providers have them organized themselves, on a continuous and regular basis, e.g. by the end of each term.

1.14. Relationship between the industry and policy makers

An astounding 97.1% of the respondents stated their company was not yet consulted by policy makers (MEST, MLSU, Public University, etc) in any way in relation to the curriculum development for professions or for the educational level corresponding to their target employees.

Similarly, and contrary to the claims by the private education providers, 94.1% of the respondents answered their company has not been consulted in any way by private training or educational providers in relation to the curriculum development for professions or for the educational level corresponding to their target employees.

Not one company surveyed was included in any way in the policy making process by a government body in relation to educational policies affecting workforce supply for their sector.

To every respondent that does (14.7%), there are four (58.8%) that do not believe that curriculum used in programs purporting to produce the necessary job skills in the sector does, indeed, fulfill its purpose. Some of the reasons stated for this disbelief are: 'does not correspond to the needs of the industry', 'lack of work practice', 'not professional trainings', and 'doesn't meet criteria'.

If they were to be included in the curriculum and policy making processes, the respondents would be advocating for: 'more practical work during studies' (internships), 'establishment of institutes', 'more math', and 'problem solving'.

1.15. University level education outlook

There were surveyed four university level institutions that offer ICT programs:

- Faculty of Electrical and Computer Engineering at the University of Prishtina
- Faculty of Natural Sciences, Department of Computer Science at the University of Prishtina[8]
- University for Business and Technology (UBT)
- AAB- Riinvest University

According to the information collected for this study the enrollment of students in the institutions offering programs in ICT in the past three years are as follows[9]:

[8] No quantitative information regarding enrollment and graduation has been provided by this institution.

[9] Private institutions were not allowed to register new students in 2008/09

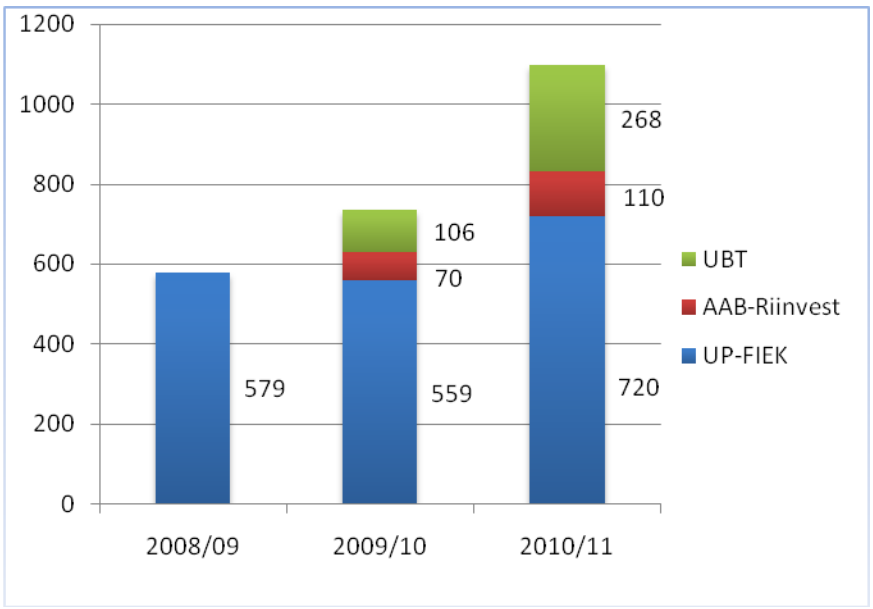


Fig. 19 Number of registered students per year

At the same time the number of students graduating from these institutions is as follows:

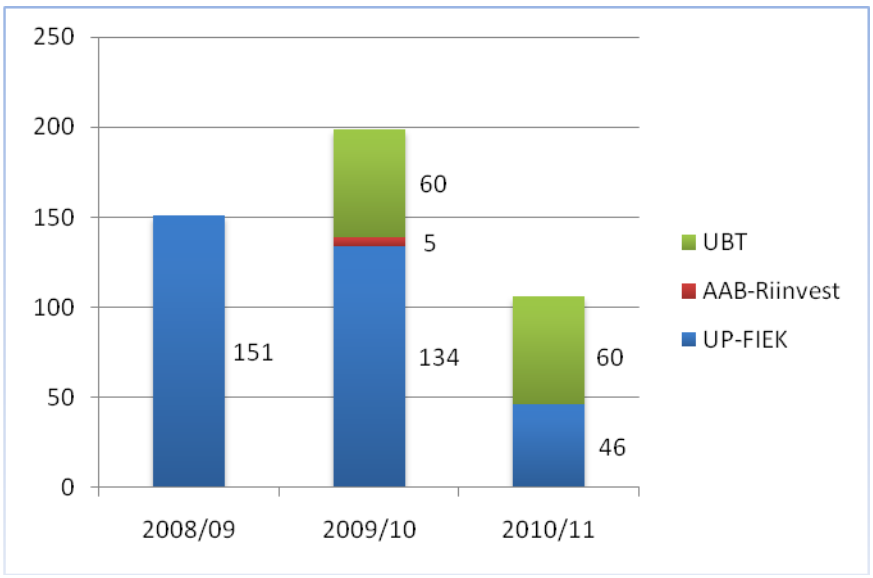


Fig. 20 Number of graduated students per year

As the above graphs show, the majority of students in the ICT market in Kosovo are still educated by the public university.

The qualitative research conducted mostly through the focus group and by interviewing representatives from stakeholders groups showed additional interesting findings. It appeared that all the universities surveyed offer basic to intermediate courses in areas such as programming, networking, web and databases, which are all too similar to each other with none of the universities reaching a distinct specialization or excelling in any area. This may come as a result of several factors, including:

- The resulting limited access to foreign universities, either in their base country[10] or in their (non-existent) branches in Kosovo[11], has left the student body in Kosovo with almost no choice but to enroll in any of the all too similar local universities. This, in turn, during the prolonged period, has contributed to having a limited number of educational professionals able to bring back to Kosovo new knowledge and new teaching methodology.

- Limited pool of qualified teaching personnel in Kosovo, who, given the opportunity, engages in more than one university teaching the same or very similar programs.

- The rigid program requirements and lengthy procedures for change which are imposed not by the job market, but by the Ministry of Education, have effectively slowed down throughout the educational landscape of Kosovo the development of capacity to adapt to job market requirements.[12]

  For example, by Law on Higher Education 2003/14, MEST must approve all of the following: statutes of institutions (Article 4.1b and 13.6); merger or closure (6.3); format of the (graduation) document (12.1); curricula leading to employment as a teacher (12.4); arrangements for governance and management (13.1); commercial activity, including creation of property rights (21.2); student entry requirements (27.2); fees for enrollment, examination, graduation (28.3). This Law, further, refers, in 16 instances, to 'administrative instruction'(s) by which instructions the actual provisions of the law will be implemented.[13] Needless to say, the instructions have not been enacted yet, and if so, they are not posted publicly.

Provisions of the Law on Higher Education 2003/14 particularly inhibiting the ICT sector and the development of competitive market of educational providers in general are:

[10] Kosovar students are required entry visas to, basically, any other country. In addition, the resources to study abroad are at the hands of a very limited number of Kosovar students.

[11] Most private universities purport to have some sort of 'cooperation' with foreign universities. However, no foreign university has its branch operating in Kosovo yet. This may very well come as a result of 'financial sustainability' requirement imposed by Law on Higher Education (Articles 22.4 and 22.5) and MEST, which effectively presents an unreasonably high entry barrier to educational market.

[12] By Law, all study programs must obtain prior approval by MEST.

[13] 'Administrative instruction' is the term used for secondary legislation in relation to the law concerned. This secondary legislation does not need to be enacted by the parliament but by the respective ministry in charge.

8.2 The title 'university' may be granted under the provisions of this Law only to anaccredited provider of higher education with an independently audited enrolment of at least 3000 full-time-equivalent students and providing courses or programmes in at least five different subject groups as prescribed in administrative instructions to be issued by the Ministry.

22.3 A private provider of higher education may commence operation only after obtaining a license but may advertise for and recruit students subject to a license being granted.

22.4 A condition of the grant of a license to a private provider of higher education shall be the submission to the Ministry of a business plan for the provider, including a guarantee by the founder of financial viability for at least three years. A rolling revision of the plan, including such guarantee, shall be submitted annually to the Ministry.

22.5 A private provider of higher education may be closed by the founder only at the end of an academic year. The license for a private provider shall include provision for a bond to protect the financial interests of students needing to complete their education at another provider in the event of closure and provision to enable students to complete examinations.

- The administrative and regulation regime imposed to the educational providers in Kosovo, has created unnecessary barriers to entry into the educational market, and it has assured almost monopolistic position of the public University of Prishtina. This further has contributed to the uniformity of education and prevents competition of new ideas.

- There is no incentive for developing new programs, because, among others, despite the onerous regulation, the system does not warrant mutual acceptability of degrees, nor transferability of students among the licensed institutions, thus preventing the students the right to continue studies at will.

  To its extreme, for example, at the University of Prishtina the course credits are not transferrable even within the departments (Faculties) of the University of Prishtina. For example a math exam completed at Faculty of Math will not be automatically recognized at the FECE, unless the professor at FECE 'accepts' it and rewrites the exam in the students 'index' (student's transcript notebook).

  Exams completed at private universities are generally not transferrable to the public University of Prishtina.

- There is no direct correlation of the programs offered to the needs of the ICT industry in Kosovo; most universities claim to develop their programs following "best practices" from universities abroad, but universities rarely or at all, consult businesses when deciding what programs to offer as part of their ICT education. A notable exception is FECE where an Industry Consultation Council has been established and meets regularly to provide input and feedback to the curriculum

development process. However, the Council is consulted only in regard to one particular new graduate program in Telecommunications which was driven entirely by donor support (USAID) and implemented with a support of external assistance from the implementer, University of Pittsburg. Further, the deliberations of the Council have no binding effect on curriculum development at FECE, which is prone to regular lengthy approval processes first by the University of Prishtina Rectorate and then by the MEST.

- Almost all private universities compete for the same student profile as the University of Prishtina, that is, what is left out once the enrollment process completes in the University of Prishtina.[14] Out in the words of one of the interviewees: 'we (private universities) compete for a share to extend the students their agony of unemployment'.

1.16. Vocational Education outlook

The vocational education offering in Kosovo is rather more vivid than the university scene. Seven private providers have been interviewed in the course of this research: Atikos, Don Bosko, DataProgNet, PPC IT, The Open Institute in Prishtina, Gashi Computers, Cacttus, and one university (AUK) that also provides ICT related vocational education. While most of the findings in the vocational education sector echo findings from the university level sector, it was possible to get richer data regarding the specific programs that they offer.

The findings that came out of the questionnaire analysis are outlined below.

- Majority of VET training providers are concentrated around general ICT skills as well as networking which comes as the close second. At the same time these areas are seen as having the most potential for growth.

[14] All private universities have an extended enrollment period going usually beyond September, which is the enrollment deadline at the University of Prishtina.

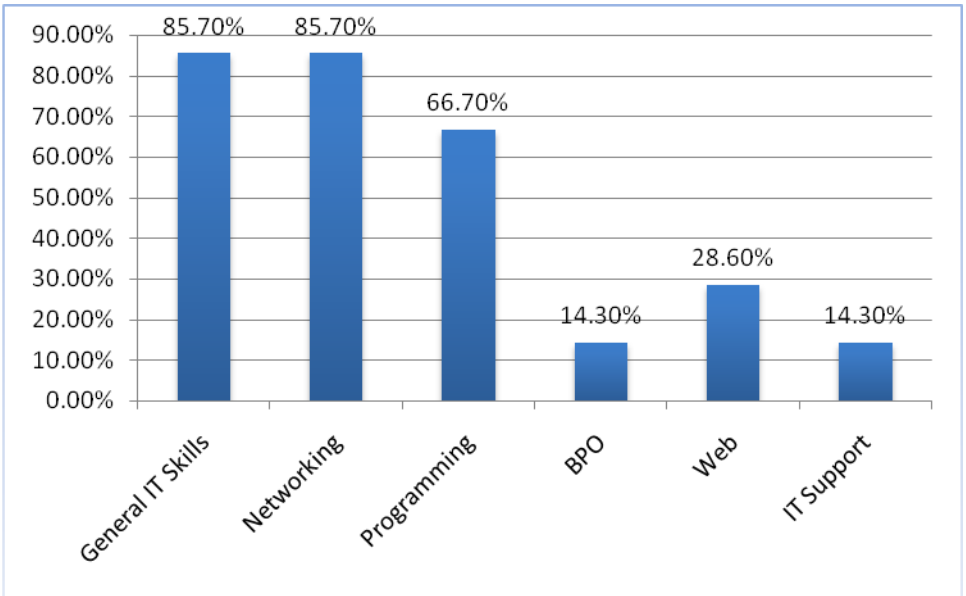


Fig. 21 Potential Areas for growth

'General IT skills' mostly regard ECDL training programs, while 'Networking' exclusively refers to the Cisco Networking Academies program (NetAcad). ECDL training and certification is not usually the most sought after training for ICT industry emplyees; it is tailored for the employees coming from public administration and other non-ICT areas. Since the beginning of Kosovo's post-war era in 2001 and until 2009, NetAcad has trained over 4,200 ICT networking professionals and has developed into a major driver for local capacity-building efforts.[15]

- The actual agregate data of the surveyed VET providers confirm that the majority of students in the last two years have enrolled and graduated from the ECDL and NetAcad programs.

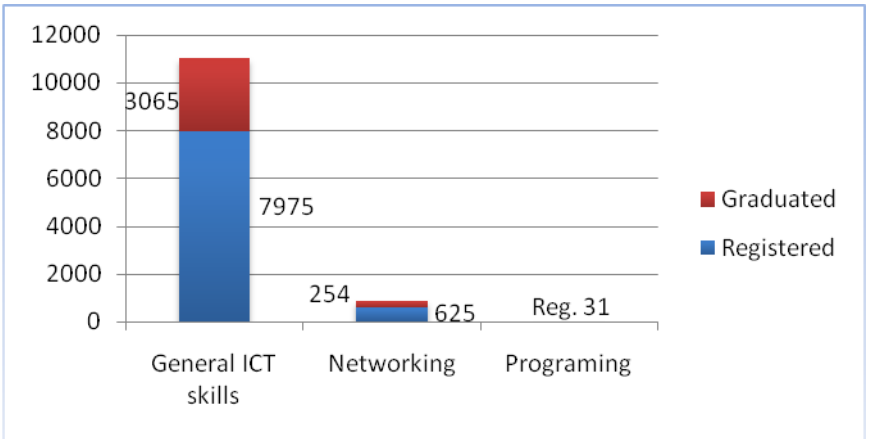


Fig. 22 Number of VET students registered and graduated during last two years

[15] Gemici, S. & McFaden, K., (2009). Contributions of Private-sector ICT Workforce Training to Post-conflict Reconstruction: A Case Study from Kosovo, (p 9)

- In contrast to the university sector, majority of VET providers claim to tailor their offerings based on the needs identified by businesses.[16]

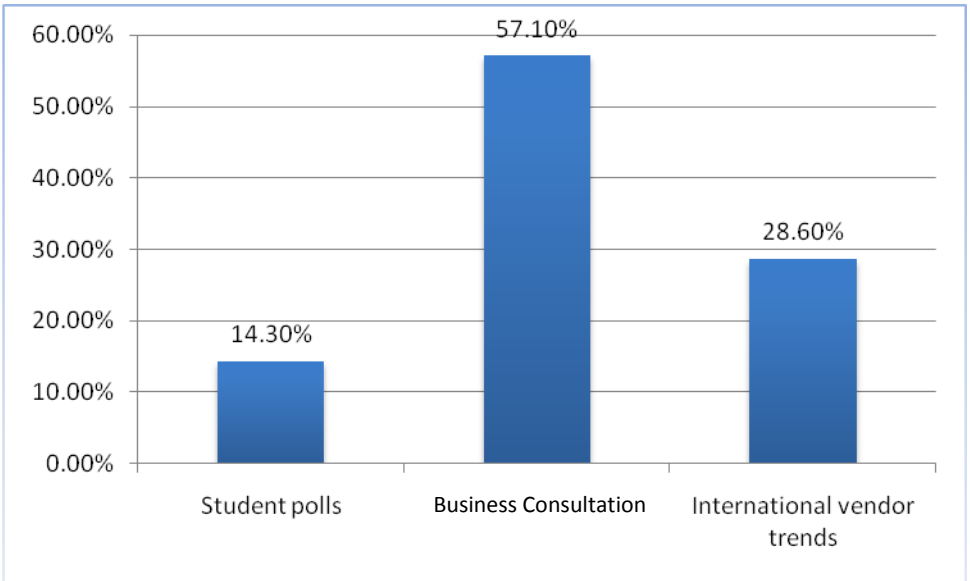


Fig. 23 How do you decide on your curriculum offerings?

- Similarly to the university level institutions, the relationship of VET providers with education policy makers in Kosovo leaves plenty of room for improvement.

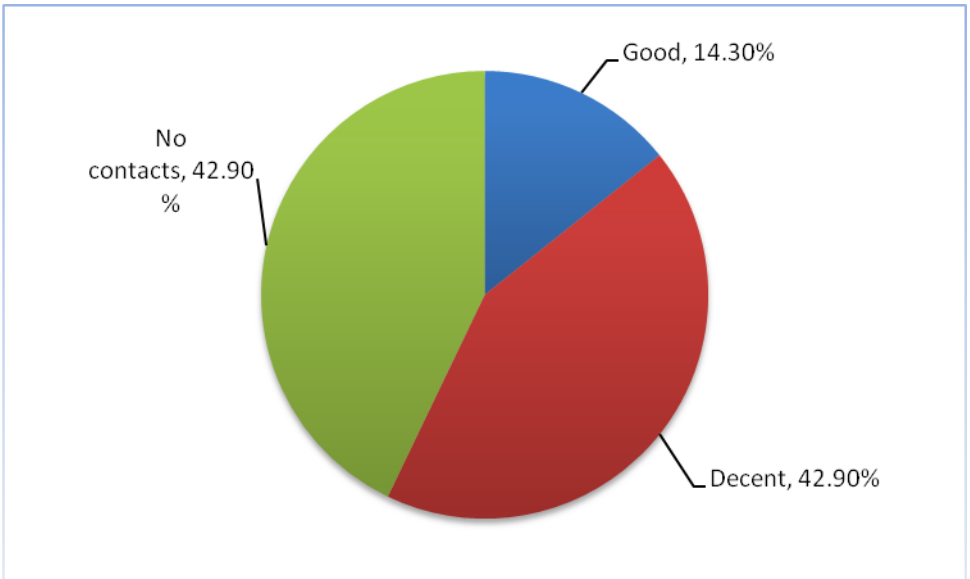


Fig. 24 How would you describe your cooperation with policy makers in Kosovo?

[16] However, the claim does not resonant with the response of the businesses on the same question, who mostly declare they have not been contacted at all.

- Vocational education providers were split around what would benefit most their further development. It apears that a combined approach of ensuring proper financing grants and clarifying a long term strategy on the part of policy makers would make most sense.

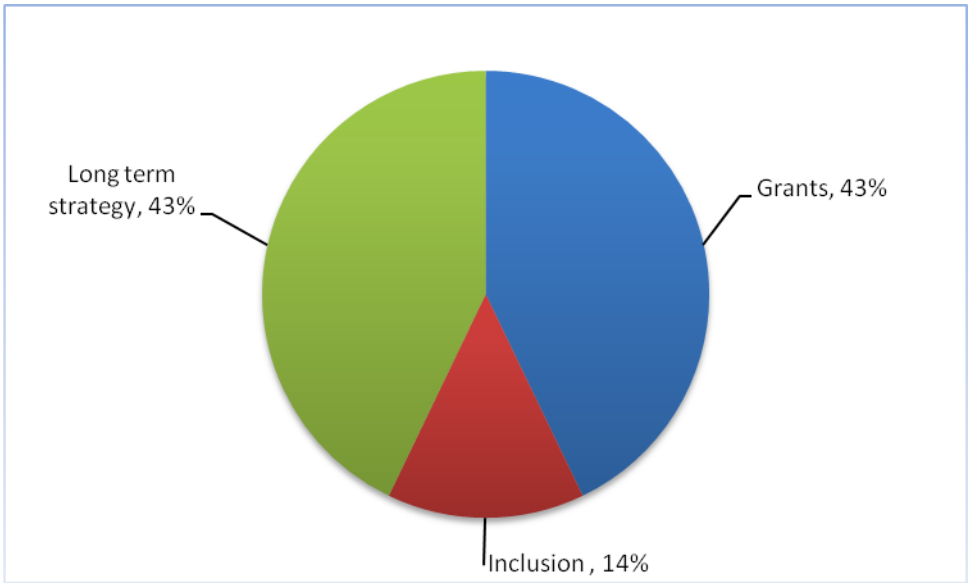


Fig. 25 What would contribute most to your further development?

A qualitative analysis revealed, however, several important obstacles to the development of VET sector in Kosovo, and increase of its importance to ICT skills gap closure:

- There is still a general bias against VET leading to belittling the value of VET courses in favor of genuine 'academic' education. For example, at present, no VET course is part of an accredited program at any university level institution in Kosovo[17].
- Almost all VET courses offered are certification leading courses by widely known international vendors such are Cisco, Microsoft, etc. This may be explained by the following factors:
    - Lack of institutional or industry approved framework for recognition of adequately developed original courses.
    - Lack of capacity to develop original, tailored courses, to the actual needs of the ICT industry in Kosovo.

[17] A notable exception was the University of Prishtina, Faculty of Electrical and Computer Engineering, where NetAcad CCNA courses were taught and given academic credit. However, this ended in 2007.

- Students create the demand for these courses based on their higher confidence on internationally recognized courses and certificates, following a belief that their investment in training will be paid off by seeking employment either locally or abroad.

- The claim on the part of VET providers of being in alignment with the job market demands does not necessarily pass the scrutiny, considering in addition to the above points, that in fact there is no evidence of an established process of consultation taking place between VET providers and ICT industry. IT may be rather, that the course offerings follow a process of trial-and-error, and a path of minimizing the risk of investment by adopting existing widely recognized courses. This may also impede the capacity of VET providers to adjust rapidly to eventual changes in demands from the ICT industry, such as if a foreign investor would decide to invest in Kosovo and requires a rapid development of certain profiles of employees.

- While there is evidence of commendable efforts in VET area on the part of the government and driven by various donors, the private VET part of the sector has been left mostly out of the process and the government owned VET centers were exclusively favored. Despite the efforts, "*active labor market policies (i.e., internship programs, on-the-job training interventions) have yielded disappointing results. In fact, less than 2% of the unemployed target population has benefitted from such state-organized capacity-building measures*"[18].

- In contrast to the government owned VET centers, the private VET providers are exposed to the risk and the burden of over-regulation from the state. The Law on Adult Education and Training and the Law on Professional Education have been long enacted to no visible effects whatsoever; no VET center has yet achieved to obtain a license by the Ministry of Education as prescribed in the governing laws. In fact, a prospective VET center has no place to submit the request to[19]. An informal explanation from MEST states that the licensing has not started yet, pending enactment of secondary legislation, completion of national qualifications framework and similar.

Provisions of the governing *Law for Adult Education and Training No. 02/L-24* that are particularly inhibiting to the ICT sector and the development of competitive market of VET educational providers able to serve the ICT sector are:

Ambiguity and non-completeness:

[18] Luxembourg Agency for Development Cooperation, 2006, quoted on Gemici, S. & McFaden, K., (2009). Contributions of Private-sector ICT Workforce Training to Post-conflict Reconstruction: A Case Study from Kosovo, (p 8)

[19] A Cisco Networking Academy VET center could not find a person in the Ministry of Education to accept their request for licensing, nor could anyone provide information on where or when this will become possible.

7.1. Adult education and training provisions as defined in Article 1 of this Law shall be organized in the Education and Training Institutions registered and licensed for this purpose under arrangements defined in an ***Administrative Instruction****.*

33.2. Adults' education and training institutions can be established as public and private institutions and are organized in schools, in adults' education and training institutions that are registered and licensed based on the Law and ***other legal acts****.*

Imposition of prior approval and mandatory licensing:

9.2. Educational providers and private training compile their programs which are approved by the MEST.

15.1. Institutions and other educational organization are obliged that educational programs and work organizational[20] *as well, to present to MEST for approval.*

33.4. Each educational private institution for adults' education and training functioning in Kosova demands license from MEST.

37.1. It is forbidden exercising of activity of Legal person organizing unregistered and unlicensed adult education and training provision.

37.2. In case of exercising activity by Natural person that leads unlicensed and unregistered legal person may be sanctioned to a fine of 10.000 Euro.

37.3. Responsible Natural person exercising the activity of organizing unregistered and unlicensed adult education and training provision may be fined to an amount of 2.500 Euro.

38.1. Public education institutions which are licensed and organize the adult educational process till the issuance of this Law (do not)[21] *need to be licensed, but they are obliged that the normative acts to be harmonized with this Law within 6 months.*

Article 40. All institutions and organizations of Adults' education and training within 6 months have to be registered and licensed.

Imposition of time constraints:

25: Adults Education Program and training shall be published prior the registration competition (public advertising, remark by author) *to the public information means.*

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[20] This is an actual citation from the law, English version, form the official parliament web site

[21] There is a difference there in the text on the Albanian and English translation of the Law. The Albanian version explicitly says it is not necessary for public VET providers to be licensed, thus creating barriers for private VET centers only.

38.1. Institucionet arsimore publike të cilat janë të licencuara dhe qe organizojnë procesin mësimor për të rritur gjerë në nxjerrjen e këtij ligji nuk kanë nevojë të licencohen, por janë të obliguar që aktet normative ti harmonizojnë më këtë ligj në afat prej 6 muajve.

16.3. The advertisement of paragraph 16.1, 16.2 should be published latest one month prior to start of the school year.

1.17. Education policy making process in Kosovo

While not initially planned, the information gathered during the initial survey preparation showed that analyzing the policy making process that impacts the offering of training and programs in the ICT area, is of high importance to understanding the actual skills gap. In this regard, the findings are summarized below:

- Currently, MEST is working with the National Council for Curriculum Development and other stakeholders (Unicef, World Bank) to develop comprehensive framework for curriculum development (including ICT subjects). MEST has prepared a draft of the education strategic development plan, which together with the national research agenda puts ICT at the top of the policy agenda for the period 2011-2016. This should ensure a modern process of curriculum development and offering at all levels of education in Kosovo, provided:
    - The policy making process gains transparency - which is not the case at present, and it involves various stakeholders on the employers' side including the ICT industry.
    - MEST moves beyond drafting and not into yet another drafting process, as is the actual practice but initiates implementation phase.
- The process of curriculum development employed so far by the MEST weights heavily on the expertise of available experts it engages to develop curriculums, while neglecting largely the input from the ICT industry and input from the education providers. Most of the projects in the area have been initiated and steered by donors with very little local ownership. The projects encompassed limited areas of intervention and has been relied heavily on replicating the 'best practices' present in the donor countries, which were usually not in alignment with practices in other projects and donor countries, and most often not in alignment with the actual situation in the ground.
- MEST may need to clear up the existing legal base; redraft the laws that never got hold on[22], simplify and abolish numerous licensing requirements and then enforce an equal playing field for all education providers.

[22] Amendment of the laws below may be particularly beneficial to enabling a competitive and vibrant market for VET and higher education providers:
Law on the Higher Education in Kosovo No.2002/3
Law for Adult Education and Training No. 02/L-24
Law on Professional Education No. 02/L-42

Conclusions and Recommendations

- The Kosovo ICT industry is experiencing steady growth, year on year 2010 – 2011, which is reflected in the increased number of vacancies for ICT professionals.

    - There is a match, if not an oversupply, in the number of graduates coming from the educational system (formal and vocational) and the demand on the market. However, this match is rather quantitative and a qualitative gap seem to be significant.

Recommendation: Specific programs can be designed to tackle the qualitative aspects of the skills available on the market. Internship programs, new curriculums in the universities especially focusing on programming and software development (with a focus on web) could be proven helpful.

- There is no reported brain drain of the ICT professionals from Kosovo, primarily as there seems to be a sufficient number of jobs within Kosovo for ICT professionals, and then because of the comparable average salary level to that in the region[23][24] as well as due to the visa restrictions and the inability to travel and seek employment freely in the more developed countries in the west. Moreover, few managers of the companies having branches in Albania and Macedonia, complained that total cost of labor in Kosovo for a comparable skill is higher than in the region.

- The quality of professionals graduating from the educational system in Kosovo, in words of the employers, does not meet fully the requirements of the job market. The lack of skills of new hires necessitates on the employers to substitute by providing further training, which last in average from 3 to 6 months, and which comprise significant loss in revenue, in time and in competitiveness of the hiring companies. This adds to the total cost of the labor in the ICT industry and gives backing to the claims of the interviewed employers that the total labor cost in Kosovo is higher than in the region.

Recommendation: If there is to be FDI in Kosovo ICT area, and an increase of the overall competitiveness of the sector, the total cost of labor in ICT industry must be addressed urgently, primarily by better aligning the curriculum to the job market, and then by increasing the output.

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[23] See, for example, an online salary survey in Serbia, Infostud 3 d.o o, employment and career site *Review of average salaries per category: Information technologies* http://www.istrazivanjeplata.com/index.php?action=category&category_id=5

[24] State Statistical Office of Republic of Macedonia, News Release No.: 4.1.11.22, *Average monthly net wage paid per employee*, January 2011:

62 Computer programming, consultancy and related activities:
29002 – 33183 MKD or 473 – 541 Euros
63 Information service activities: 32196 – 31478 MKD or 525 – 514 Euros

- There is no direct correlation of the programs offered to the needs of the ICT industry in Kosovo; most universities claim to develop their programs following "best practices" from universities abroad, but universities rarely or at all consult businesses when deciding what programs to offer as part of their ICT education.

Recommendation: Foster establishment of joint Industry Consultation Councils, similar to the one at FECE, and empower them to make recommendations that are binding for MEST and for educational providers.

- There is a general bias against VET leading to belittling the value of VET courses in favor of genuine 'academic' education; no VET course is currently part of an accredited program at any university level institution in Kosovo.

Recommendation: VET courses should be included freely in the accredited course offering in education institutions, with equal treatment in determining the credit-worthiness of the courses based on the workload as with other 'academic'.

- Most successful VET courses offered are the certification leading courses by international vendors such are Cisco and Microsoft. There is little evidence for a capacity of VET providers to adjust rapidly to eventual change in the demand arising potentially from the ICT industry, such as in the case of FDI.

Recommendation: All capacity building programs for VET should include private VET providers, to help them increase capacity to meet the current and future demands with a focus on FDI.

- The educational system in Kosovo does not warrant mutual acceptability of degrees between the licensed and accredited institutions, nor transferability of students among these institutions, thus preventing the students the right to continue studies at will, lowering the confidence in any of the programs and institutions, and diminishing incentives to innovation.

- Disparately to the public education institutions and centers, the private education providers are exposed to the risk of over-regulation from the state. The 'Law for Adult Education and Training' and the 'Law on Professional Education' have been long enacted to no visible effects whatsoever; no VET center has yet achieved to obtain a license by the Ministry of Education as prescribed in the governing laws.

Recommendation: MEST may need to clear up the existing legal base; redraft the laws that never got hold on, simplify and abolish numerous licensing requirements and then enforce an equal playing field for all education providers, public and private. This intervention may present an opportunity for target activities by the Business Enabling Environment and other various reform activities including USAID's KPEP.

- Finally, the education policy making process appears on top of the list of causes for the existing gap between the curriculum and skills offerings and the job market demand in Kosovo. The process of curriculum development employed so far by MEST weights heavily on the expertise of available experts, while largely neglecting input from ICT industry and from education providers.

- **Recommendation:** An open, all inclusive, and transparent process of education policy making needs to be established by MEST, MLSW and other government actors on one side, and education providers and ICT industry on the other side. KPEP may find it worthwhile engaging in an activity to help establish a sound process and procedures in this regard. Any training activity, however well-thought, is short lived and will not substitute for a systemic lack of dialogue and coordination between the education providers, employers, and education policy makers. Thus, KPEP and other assistance projects, should weight thoroughly whether to embark on provision of direct trainings, and should look instead into assisting with the dialogue between the local stakeholders aiming at enabling the ICT market to drive the ICT study programs.

Annex 1 - List of the companies interviewed

1. Probit
2. Albvision Group
3. Art House
4. AtiKos
5. Asseco See
6. Cacttus
7. Comtrade Computers
8. DataCom
9. EkonetKosova
10. Elting Electronics
11. Gashi Computers
12. Idea Communication
13. Inet
14. Infocom
15. Infotrade
16. Inovativi
17. Instituti I Hapur
18. Iteg
19. Kibernetika
20. Komtel
21. Login Systems Kosova
22. Montkomerc
23. Piko Telekom
24. PPC IT Solutions
25. RROTA
26. Smarttech
27. Telekom Development Group
28. IT and Business Media Group
29. AVC Group
30. Ntsh Logic Systems
31. Appdec
32. DataProgNet
33. Adaptivit
34. 3CIS
35. InterAdria
36. WSOP Informations Management GmbH (questionnaire annulled)

Annex 2 –List of education and training providers interviewed

1. AtiKos
2. Cacttus
3. Gashi comp
4. Instituti I Hapur
5. PPC IT Solutions
6. DataProgNet
7. AUK Training and Development Institute
8. Don BoskoQendra Social –Edukative
9. PTK- QTZH

Annex 3 – List of Stakeholders

Following are the lists with identified stakeholders in the skills development area, including institutions, the business sector and donors.

Institutions (stakeholders)

1. Ministry of Education, Science, and Technology (MEST) - Innovation and Transfer of Technology center
2. The National Qualifications Authority (NQA)
3. The Council for Vocational Education and Training (CVET)
4. Ministry of Public Administration - Department of Information Technology (DIT)
5. The Ministry of Transport and Communications –
6. Department of Information and Communications Technology
7. The Telecommunications Regulatory Authority (TRA)
8. University of Prishtina - Faculty of Electrical and Computer Engineering
9. University of AAB Reinvest
10. American University in Kosovo
11. University for Business and Technology

Main Donors in the ICT educational area (stakeholders)

12. USAID
13. UNDP
14. World Bank
15. ECLO
16. British Council
17. GTZ
18. WUS – Austria

Vocational Training Centers (stakeholders)

19. American University in Kosovo - Training and Development Institute
20. Socio-Educational Center “Don Bosko “
21. The Open Institute in Prishtina
22. Cactuss
23. Information Development Initiative (IDI)
24. Dataprognet
25. QendraRinore “Atë Lorenc Mazreku”
26. Expik
27. Kolegji Victory

Annex 4 – Policy framework affecting the ICT industry and the education for ICT

1. Law on the Higher Education in Kosovo No.2002/3
2. Law for Adult Education and Training No. 02/L-24
3. Law on Professional Education No. 02/L-42
4. Law on Education in the Municipalities of the Republic of Kosovo 03/L-068
5. Law on Scientific Research Activity No. 2004/42
6. Law on Telecommunications No. 2002/74
7. Law on Information Society Services No. 02/L-23
8. Law on The Administrative Procedure No. 02/L-286
9. Law on Copyright and Related Rights No. 2004/45
10. Draft Law on the Protection of Personal Data
11. Draft Law on Prevention and Fight of the Cyber Crime

Annex 5–Questionnaire(s)templates

Attached to the document