Work Force Demand Survey for the ICT Industry in Macedonia 2009

*Including some comparisons to
the First Workforce Demand Survey for the ICT Industry
in Macedonia conducted in 2005*

*prepared by SMMRI Skopje
supported by USAID, Macedonia*

*for ICT Chamber for commerce – MASIT
([www.masit.org.mk]( ))*

MASIT

Skopje, April 2009

MASIT
Macedonia
ICT Chamber of Commerce

I EXECUTIVE SUMMARY

1.1 SURVEY OBJECTIVE

The Macedonian ICT Workforce demand survey was conducted by SMMRI Skopje upon the demand and in cooperation with MASIT and USAID. The survey was jointly designed by MASIT, MCA (Macedonian Competitiveness Activity, project funded by USAID), and SMMRI Skopje in accordance with the prior survey in 2005 and the ESOMAR rules and procedures. The objective of this Survey aimed at assessing the work force demand for Information and Communication Technology (ICT) workers / specialists in the below defined segments:

a) Information and Communication Technology (ICT) industry (including: computer hardware, packaged software, IT services, telecom carrier and other telecommunication services)

b) Financial sector (including: banks, leasing companies, saving houses, pension and investment funds, insurance companies, major accounting firms, brokerage firms)

c) Public sector (including: government ministries and agencies, public companies, local government, higher educational institutions)

The sample size being a statistically relevant number of organizations from the above mentioned segments. The targeted persons surveyed, primarily, include ICT Managers and, secondarily, Human Resource Managers or, where not applicable, other relevant managerial staff from the organizations of interest (executives with decision making power in regards to HR issues, directors, general managers, owners, and professionals).

1.2 METHODOLOGY

The Macedonian ICT Workforce Demand Survey was conducted as a business to business survey based on a structured questionnaire. Data was collected through face to face business interviews and, in a small number of cases where considered necessary, through a direct contact - phone or visit, which resulted in e-mailed or faxed answers.

Fieldwork control was done in 12% of totally interviewed in all strata proportionally to sample size, and logic and consistency control of collected data is performed in 100%. Data collection was performed form 19th February to 06th Mach 2009.

1.3   SAMPLE DESCRIPTION

Sample frame incorporates companies and institutions commercially registered in the Republic of Macedonia - information and communication technology (ICT) industry, financial and public sector. It was based on and drafted from commercial data bases for the territory of Macedonia with a targeted inclusion of MASIT members who belong to the main users of IT services and the largest employers of ICT workforce. Sample size is 307.

Stratification was done in 2 stages – by sector and by regional distribution, where possible. (Note: Public and Finance Sector were not suitable for regional stratification due to the centralised decision making especially when workforce recruitment is concerned; therefore, these two sectors were mostly covered on the territory of Skopje only, with exceptions for companies/institutions from the other three regions that were relevant and able to answer the questionnaire.

Unlike the previous survey, conducted in 2005, where the accent was on IT companies and other large companies from various industry sectors with a small percentage of the public sector included (main IT firms and a few financial institutions, as well as the biggest manufacturing firms in some industries were covered in this 2005 survey). Some industries, for example, education and health, TV and radio stations, postal services, and many of the governmental institutions were not included in the 2005 study. Therefore, comparisons on sector level are very difficult to be made whatsoever. Moreover, the minimum sample size is also much higher if compared to the one in 2005 (307 as opposed to 82 completed interviews in 2005) which, again, complicates the comparison of data at certain levels.

Similarly to the survey in 2005, smaller percentage of the respondents were women – 20%, and up to 80% were male respondents. According to their age, majority belongs to the most productive age group – 30 to 39 years of age – 47%, 23% of them are between 40 and 49 and up to 17% belonged to the youngest group – 20 – 29. Same as in the survey in 2005,

and despite the younger population being more represented, 2% of the respondents belong to the age group '60 and above'.

1.4 SHORT INTRODUCTION TO SURVEY RESULTS

This survey took place during the period February – March 2009, i.e. it lasted approximately a month and a half with about 3-week fieldwork data collection (19.02 – 06.03.2009). As it was said above, it covered three major sectors – ICT industry, Public Sector, and Finances. Accordingly, all relevant statistical findings are presented according to these areas.

Out of the 478 companies that were contacted during the fieldwork phase 315 answered the questionnaire and 307 of them were taken as complete and appropriate for analysis.

The main aim of the survey was to determine the current number and different structures of the IT employees in the Macedonian IT and non-IT companies in order to predict the future size and skills requirements of the country's IT workforce.

More detailed definitions of ICT job classification and ICT related subcategories of workers can be found at the end of this report, in Appendix I – ICT Workers. ICT workers had to be previously defined in order to have unified categories when recording the related answers.

II FINDINGS

2.1   COMPANY PROFILE

All of the surveyed companies/institutions have registered activities within the territory of the Republic of Macedonia. Majority of them come from the ICT industry - 55.4%, i.e. somewhat more than half of the respondents, whereas the other half consists of financial (12.4%) and public (32.2%) institutions/companies.
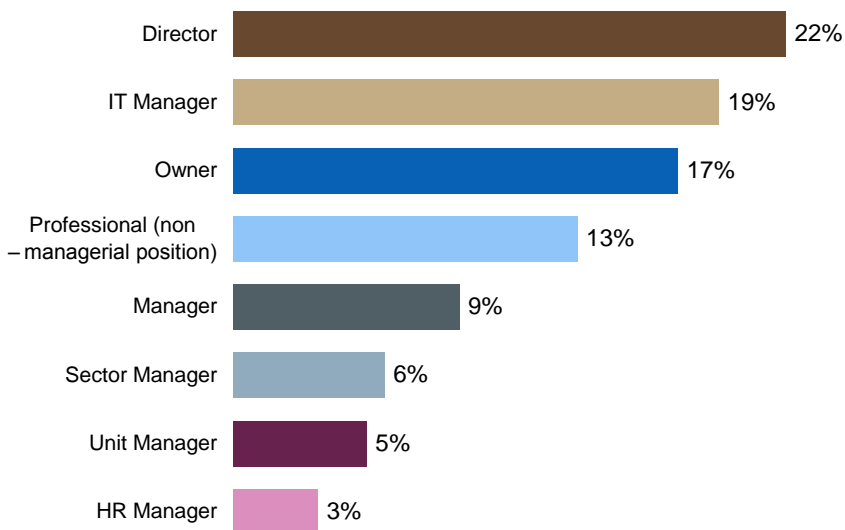
Survey respondents by general sector of activity

32%

56%

12%

☐ ICT ☐ Finance ☐ Public Sector
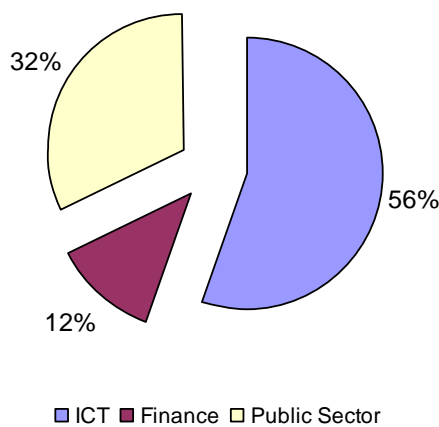
Majority of the surveyed entities come from Skopje (70%) due to the centralized decision making policy for majority of the public sector and finance institutions. The other three geo–economic regions are represented with about 10% each, roughly speaking (11.7 for the East and Central region of Macedonia, 9.4% for the North-West and Kumanovo, and 8.8% for the South West region).

The structure of the people who actually filled in the questionnaire or the respondents profile according their position in the firms is the following: namely, 22% of the respondents are directors (20% in 2005), 19% are IT managers, 17% are owners, 13% professionals responsible for ICT affairs in the company and 9% are other type of managers, and so on. It can be said here that this structure follows a similar pattern to that of 2005.
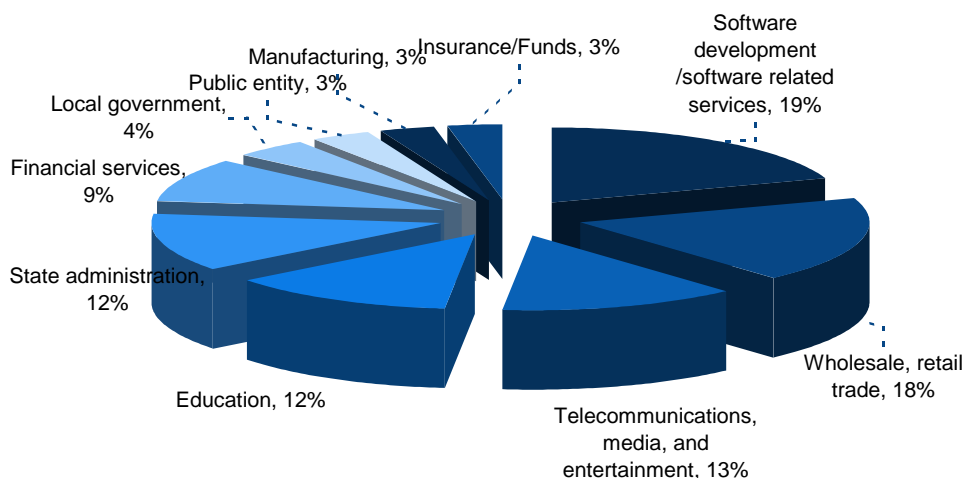
Survey respondents by position

Position	Percentage
Director	22%
IT Manager	19%
Owner	17%
Professional (non – managerial position)	13%
Manager	9%
Sector Manager	6%
Unit Manager	5%
HR Manager	3%

Regarding education, almost 75% of the respondents are holders of a university degree, around 11% are MA/PhD holders and there are about 13% of the respondents with secondary education.

Software development and software related services together with wholesale/retail trade (mostly hardware) are the most frequent subsectors – 19% and 18% respectively. Telecommunications and media follow with 13%, and Education and State Administration with 12% each. Financial services were indicated as a main activity by 9% of the total number of respondents.

Type of company/organization by main activity

Software development /software related services, 19%
Wholesale, retail trade, 18%
Telecommunications, media, and entertainment, 13%
Education, 12%
State administration, 12%
Financial services, 9%
Local government, 4%
Public entity, 3%
Manufacturing, 3%
Insurance/Funds, 3%

Most of the interviewed business subjects have one primary activity (82%) according to their claims.

Companies by their geographical area of activities
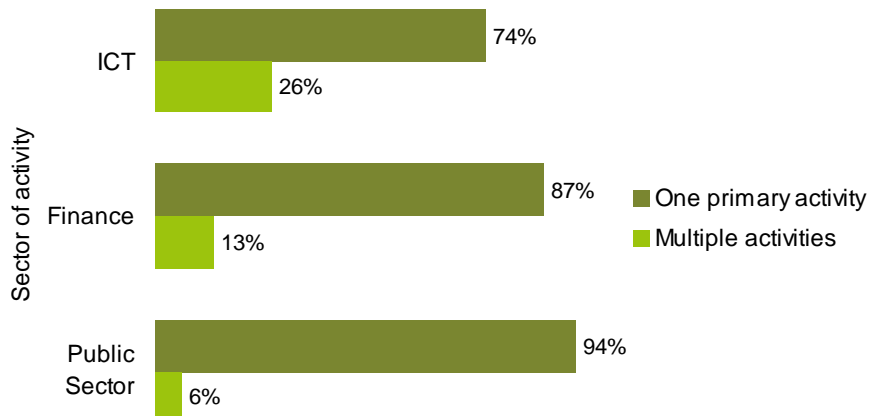
When total revenues are an issue, according to 72% of target population applicable to answer this set of questions (these are questions mostly applicable to companies and related to sales, export share from revenues, financial growth, etc) they mostly belong to the category 'less than 1 million Euros' - 59% of these companies indicated this category as an answer, whereas 30% of them belong to the second category 'between 1 and 5 million Euros'.

Companies by their total revenues

Base: 72% of target population, applicable to answer the set of questions related to sales, exports, and financial growth
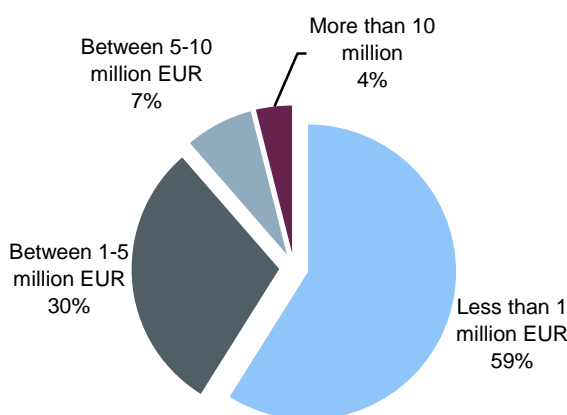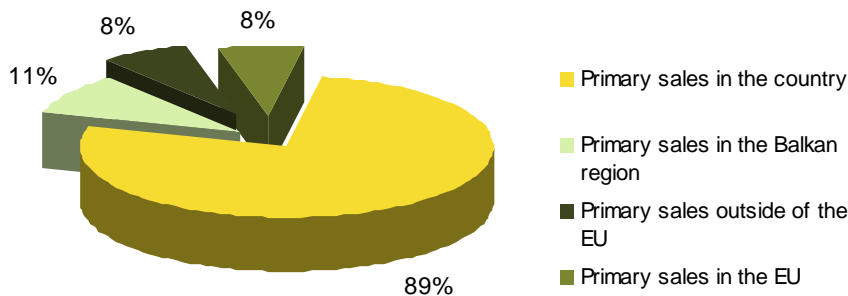

Primarily sales are oriented towards the country (89% of those 72% eligible for answering), which means most of the companies are focused towards the domestic market), but there are respondents who are also oriented towards sales abroad: Balkan region - 12%, and EU and overseas - 8% each, which

follows a similar pattern to the results from the 2005 survey (domestic market - 71%, the Balkans or the regional market - 17% and 12% for EU markets and other overseas countries)

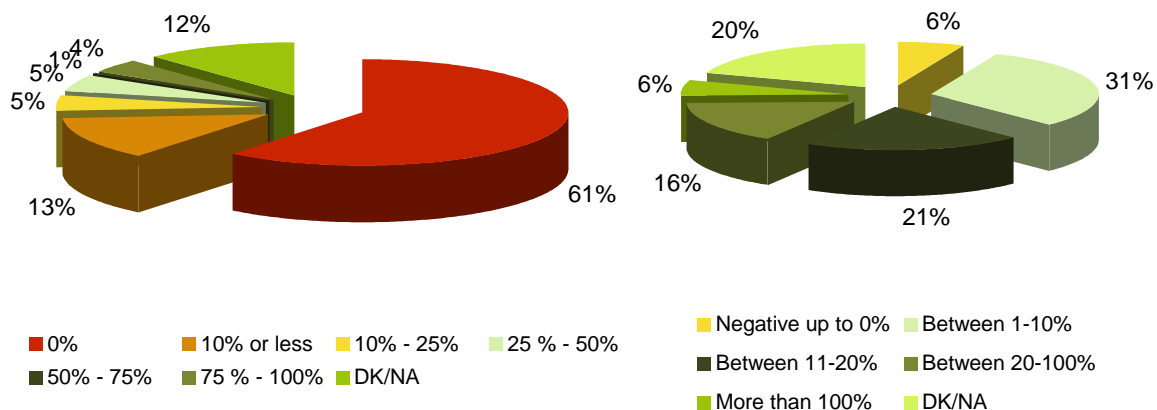**Companies by their primary geographical orientation**

Base: 72% of target population, applicable to answer the set of questions related to sales, exports, and financial growth

- Primary sales in the country
- Primary sales in the Balkan region
- Primary sales outside of the EU
- Primary sales in the EU

Regarding exports and their percentage from total revenues in the ICT sector, Skopje based companies differ from the rest of the regions in this respect. Namely, only 34% of the respondents who answered this question (72%) indicated 0% exports from total revenues while in the other 3 regions there were more respondents, more or less 80% per each region, who claimed 0% export from their total revenues. Correspondingly, Skopje based companies claimed higher percentages for export share in their revenues.

Companies by their exports percentage   Companies by their financial growth

Base: 72% of target population, applicable to answer the set of questions related to sales, exports, and financial growth

- 0%
- 10% or less
- 10% - 25%
- 25 % - 50%
- 50% - 75%
- 75 % - 100%
- DK/NA

- Negative up to 0%
- Between 1-10%
- Between 11-20%
- Between 20-100%
- More than 100%
- DK/NA

When financial growth is concerned, almost 20% of the respondents who answered this question (72%) did not provide information and only 6% claimed a negative or 0% growth (Public Sector being excluded from this,

with an exception of only 11 subjects who found this issue relevant for answering)

Research and Development investments range between 1 and 10% of the total revenues for almost half of the respondents who answered this question (72%) – 46%, whereas 15% of them claimed 0% from their total revenues spent on R&D. (11% - 11 to 20, 12% 20 to 100%).

Companies by their R&D investments

Base: 72% of target population, applicable to answer the set of questions related to sales, exports, and financial growth
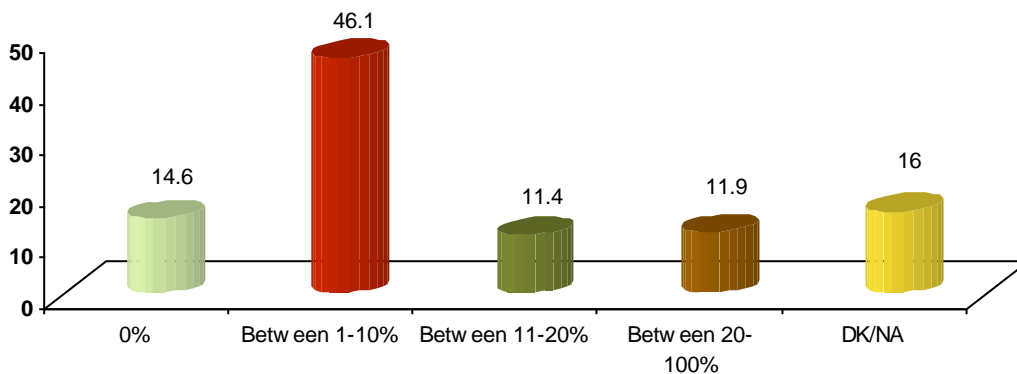
According to the number of employees, 37% of the interviewed entities belong to the micro enterprises (1 to 10 employees), 30% of them are small enterprises, and 21% are medium ones. Only 9% of them are large companies/institutions (public sector prevailing with large enterprises/ institutions and ICT sector and finances are mostly represented by small and micro ones).

Company size by number of employees
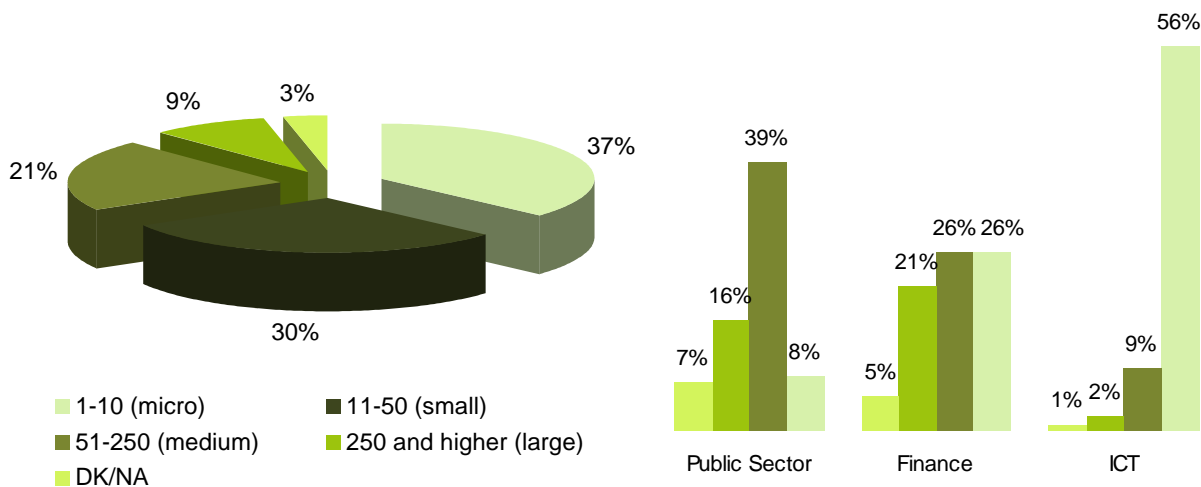
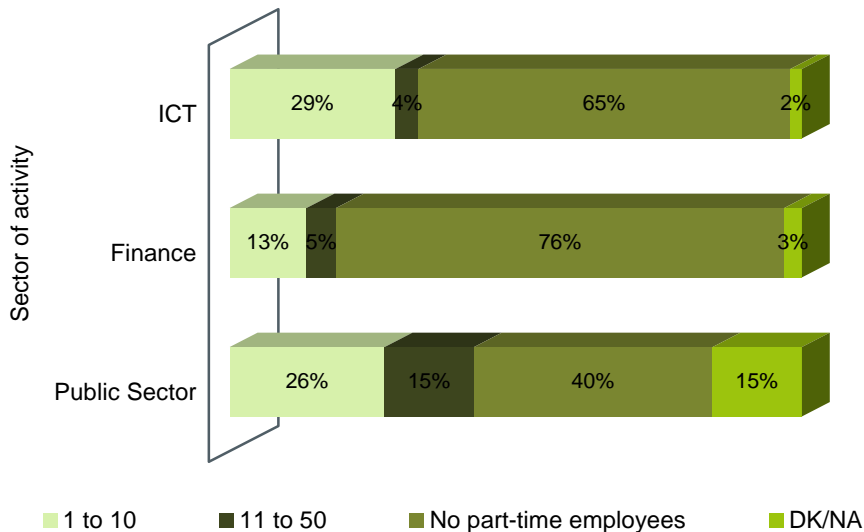Majority of the respondents (58.6%) do not have part time employees in their companies/organizations, whereas 26% of them have 1 to 10 part time employees. Only about 8% have more than 10 part-timers. 15% of the public sector respondents could not provide an answer to this.

Part time employee distribution by sector

2.2   ICT WORKERS

Regarding the ICT workforce distribution, an issue has been raised among some of the interviewed entities. Namely, according to the respondent's opinions, ICT workforce distribution by job position is sometimes very difficult to be made due to the fact that many of the employees actually perform more than one major task/job. For example, one employee usually performs all the tasks within a project – both project management and programming, or client handling combined with database development, etc. Another similar situation is when a company or institution has only 1 or 2 ICT workers who are responsible for all IT related activities – from maintenance of computers and networks to data base development and other necessary activities.

Another issue relevant here is that respondents were not always able to clearly differentiate the different job descriptions and sometimes they gave vague answers (simply 'IT position' as an answer) that could not be classified under any of the given positions. Therefore, workers distribution findings can be discussed with slight reservations.

If we analyze the different job posts, most of the interviewed entities claimed to have highest number of ICT workers who belong to the category 'programmer/software engineer' – 25.3% (30% in 2005).

Next most represented category is 'technical support (including ICT related contact center representatives)' with 18.2% (17% in 2005). 'Database design, development and administration' follows with 11.4% (12% in 2005) and 'ICT sales/marketing' with 10.5% (12% in 2005). 'System analysis and integration' and 'network design and administration' follow with
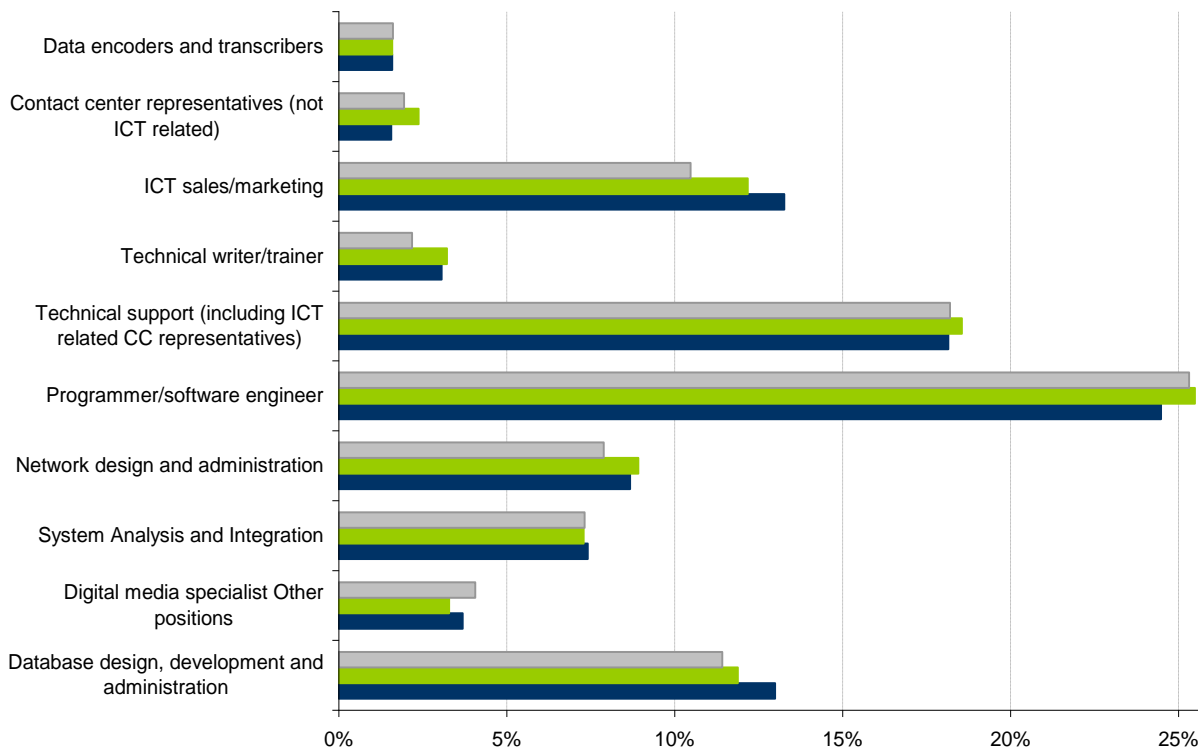
approximately 7.5% each (11% and 9%, respectively, in 2005). Other categories are represented with less than 5%. If we look at the figures from 2005 (given in brackets for each mentioned category), we can say that the job position distribution follows a very similar pattern.

As for future needs and estimations, slight progression in the estimates for workforce demand in the next 2 years is recorded under the following categories: ICT sales and marketing (about 3%), data base design, development and administration' (about 2%) and 'network design and administration' and 'technical writers/trainers' (about 1%) ('System analysis and integration' - only 0.1%). Other categories seem to record the same demand for the next 2 years as in 2008.

Regarding ICT management distribution, 22% of the interviewed entities claimed to have no ICT manager's posts, whereas 72% of them reported 1 to 5 positions held by ICT managers.

The graphic-presentation by sector shows that the biggest number of companies without ICT management belong to the public sector (38% of them).

Number of ICT Management staff

■ 1 to 5
■ 6 to 14
■ 15 - 70
■ 0 (No ICT Managers)
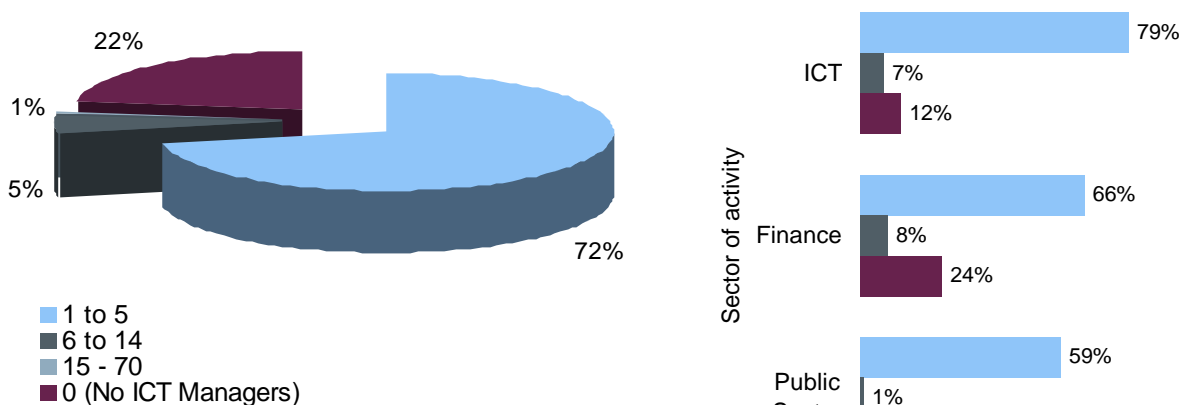
Number of ICT staff/supervisors (including team leaders) –

Full time employees   Part time employees

■ 1 - 5
■ 6 - 14
■ 15 - 70
■ 71 - 310
■ 0 (No full-time ICT staff/supervisors)

■ 1 - 5
■ 6 - 14
■ 15 - 70
■ 71 - 310
■ 0 (No full-time ICT staff/supervisors)
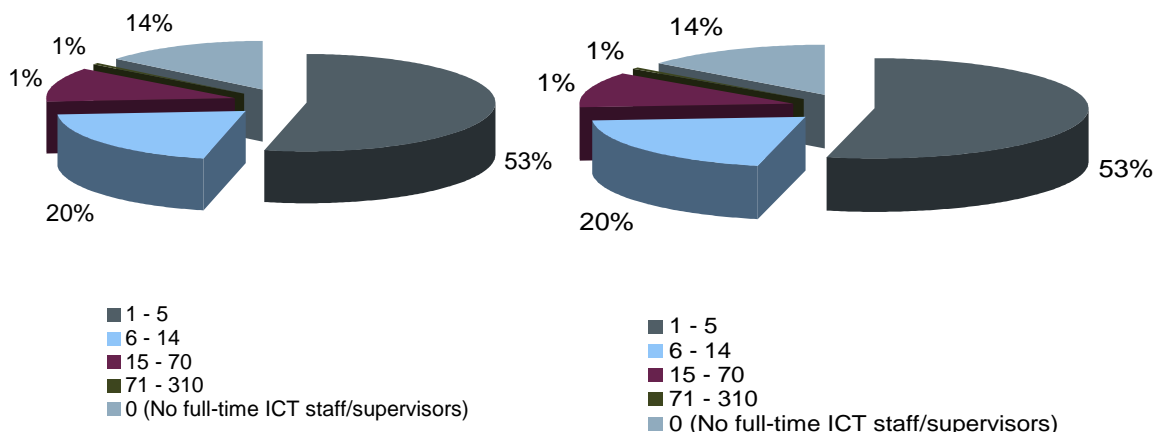
The graph above show that majority of companies (53%) have 1 to 5 full time ICT employees, while 14% of them reported no full time employed ICT staff/supervisors. On the other hand, when part time ICT staff is concerned, 87% of the interviewed entities reported no part-time employed ICT staff/

supervisors and 11% claimed to have 1 to 5 part time ICT employees (only 2% reported more than 5 part time ICT employees).

Concerning the estimated gender breakdown and turnover rate of full time ICT workers in 2008, the situation is shown below:

Estimated gender breakdown and turnover rate of full time ICT workers in 2008

Male employed in 2008

8%

46%

46%

■No employees ■1 - 5 employees ■over 5 employees

Female employed in 2008

1%

28%

71%

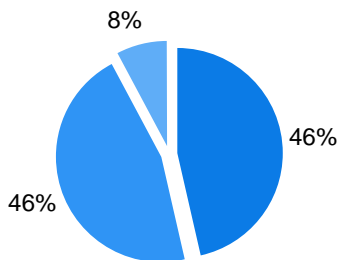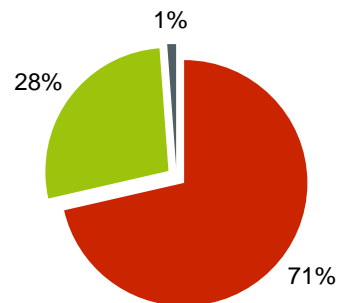■No employees ■1 - 5 employees ■over 5 employees

Male left the organisation
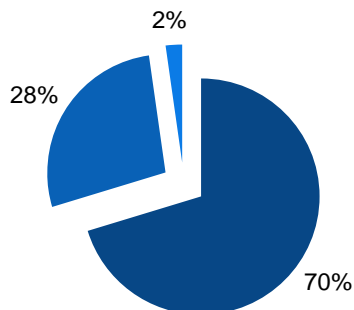
2%

28%

70%

■No employees   ■1 - 5 employees

■over 5 employees

Female left the organisation

2%

15%

83%
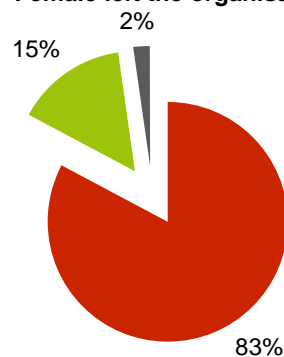
■No employees   ■1 - 5 employees

■over 5 employees

If we compare the results for female employees, it can be noted that bigger percentage of interviewed entities reported negative trends in both categories – 71% of them reported no females employed in 2008 (as opposed to the 46% for the male employees) and up to 83% said that they had no females who have left the organization during 2008 (70% for the male employees). As for the numbers of employed personnel in 2008, 46% of the respondents reported 1 to 5 new male employees and 28% of them reported new female staff. Regarding the trend of leaving the organization, 28% of the companies

reported a number of 1 to 5 male employees who left and 15% of them reported the same for female employees.

The estimated percentage breakdown of full time ICT employees by their highest level of educational attainment is presented below:

Estimated percentage breakdown of full time ICT employees by their highest level of education

■ High school graduates
■ Vocational/Technical school
■ University graduate, IT/Computer degree (3-years program, 180 ECTS)
■ University graduate, Non-IT degree (3-years program, 180 ECTS)
■ University graduate, IT/Computer degree (4-years program, 240 ECTS)
■ University graduate, Non-IT degree (3-years program, 240 ECTS)
■ Masters/PhD degree holder
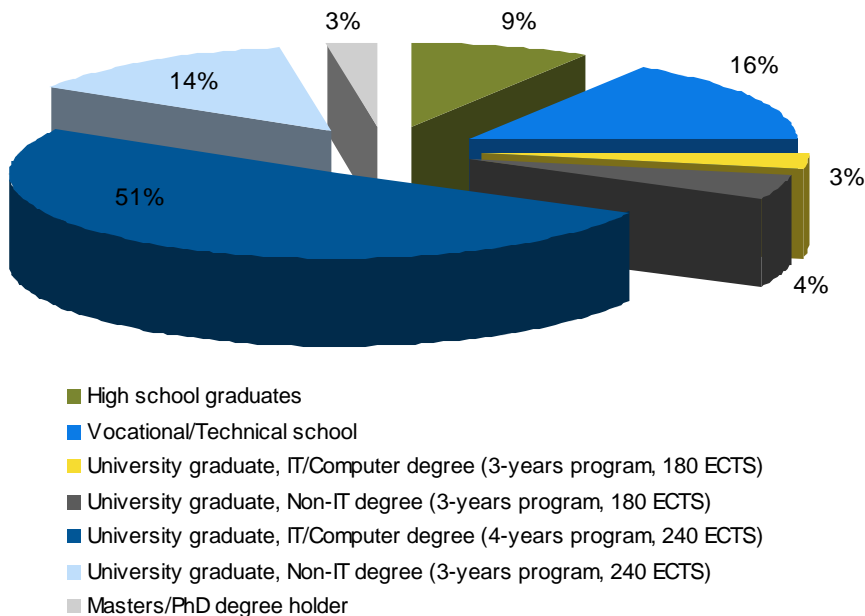
Majority of the full time ICT employees are university graduates with a 4-year ICT degree program and 16% of them are with a vocational/technical school degree. Only 3% are Masters/PhD holders, while 9% are high school graduates. If we analyze these through the three different sectors, it can be seen that the biggest percentage of university graduates with a 4-year ICT degree program are distributed in the finance sector, while vocational/technical school degree is more frequently found in the ICT sector – 23% (as opposed to the 7% in Finance and 8% in Public Sector).

Estimated percentage breakdown of full time ICT employees by their highest level of education per different sector
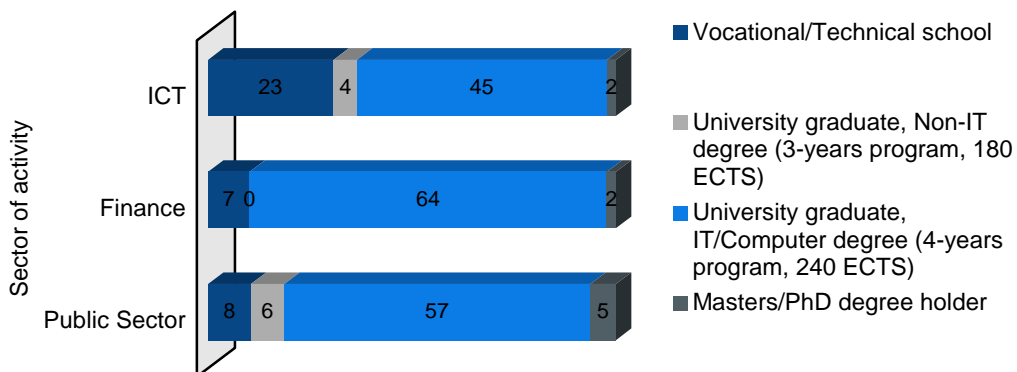
2.3   SOURCING OF ICT WORKERS

39% of the total number of interviewed entities said that they had 0 applicants in 2008. For those who positively replied to this question the number of applicants ranges between 1 to 10 applicants in 2008 - 6% of the entities, 11 to 100 applicants – 20%, and over 100 applicants in 2007 – 4% of the interviewed entities.

Number of applicants in 2008

■ No applicants in 2008   ■ 1 to 10 applicants in 2008
■ 11 to 100 applicants in 2008   ■ DK/NA
■ over 100 applicants in 2008
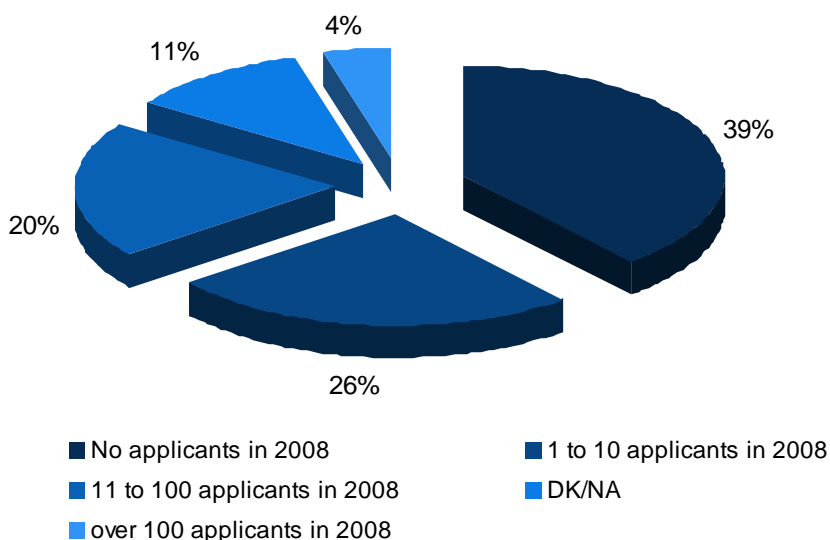
Number of applicants in 2008 per different sector
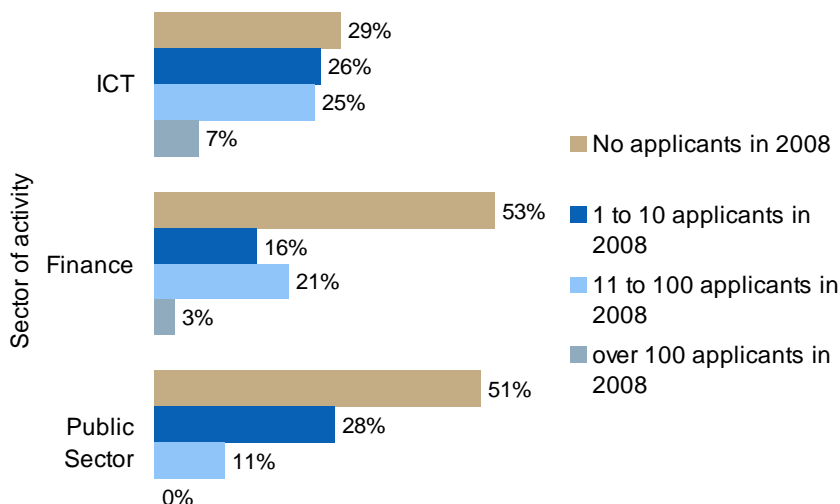
During the process of ranking the top three key qualifications of the ICT workers, respondents gave the following a priority:

As number one, they ranked: Technical skills - 20% of the respondents, Business skills (planning, management, sales, HR management, client handling...) - 17.3%, Soft skills (languages, team work, presentation skills, creative thinking ...) - 13%, Education - 12.7%, and as last 'number 1' - Experience with about 9%.

Skills Ranking
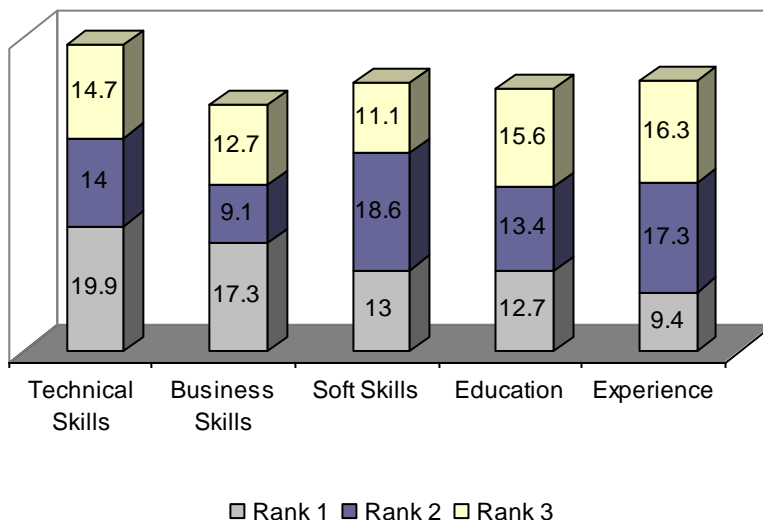
Regarding academic institution ranking – *Faculty of Electrotechnics and Information Technologies*, Skopje (*FEIT*) is definitely above all other academic institutions offering ICT related education opportunities since 58% of the respondents ranked it as 'number 1'. *The Faculty of Natural Sciences and Mathematics - PMF* follows with 26%, and *South East Europe University -*

Tetovo appears as the third first ranked institutions with 5% of the total number of respondents ranking it as number 1.

Second ranked are PMF with 44%, *FEIT* with 24%, *SEE University* Tetovo with 6% and the *Technical Faculty* in Bitola, *FON*, and the *Faculty of Mechanical Engineering* with 4% each.

Here it can be noted that not all respondents provided answers for all three institutions they were asked to rank. Namely, they sometimes opted for one institution only, or two in some cases and that resulted in smaller ranking percentages for the mentioned institutions, which is even more represented in the following ranking process, i.e. ranking of educational centers/technical schools. This was sometimes due to a lack of information the respondents had about these schools.

Higher Education Institutions Ranking

- Faculty of Electrotechnics and Information Technologies, Skopje
- Faculty of Natural Sciences and Mathematics - PMF, Skopje
- South Eastern European University, Tetovo
- "St.Cyril and Methody" University, Skopje
- Faculty of Mechanical Engineering, Skopje
- Technical Faculty, Bitola
- First Private University - FON , Skopje
- "American College" University, Skopje
- Faculty of Economics, Skopje
- First Private European University "Republic of Macedonia", Skopje
- Tetovo State University
- MIT, Skopje - Faculty of Information Technology, Skopje
- Faculty of Economics, Prilep
- Faculty of Administration and Information Management, Bitola
- "Goce Delcev" University, Stip
- Technology & Metallurgy Faculty, Skopje
- New York University, Skopje

Moreover, educational centers/technical schools ranking was regionally conditioned in a way and concrete names and examples were difficult to analyze on general level. For example, technical high schools are still valued as good quality education in terms of ICT and, depending on the region, different technical high school names appeared in different regions and were rated as 'the best' (like for instance, *Slavco Stojmenski* high school in Stip and *Mosha Pijade* secondary school from Tetovo (with about 3% each). Correspondingly, due to the big number of respondents coming from the region of Skopje, Skopje based high schools got highest rankings. However, some of these Skopje based schools were mentioned in other regions than Skopje as well; like for ex. *RJ Korcagin* that was mentioned as 'the best' by 11% of the respondents coming from the central and eastern region.

Ranking Educational Centers/Technical High Schools

Legend:
- ☐ Technical High Schools
- ☐ Rade Jovcevski Korcagin
- ☐ Mihajlo Pupin Skopje
- ☐ Alexandria Educational Center
- ☐ Semos Educational Center
- ☐ Orce Nikolov Skopje
- ☐ High School Slavco Stojmenski Shtip
- ☐ CSU Mosha Pijade-Tetovo
- ☐ Nikola Karev Skopje
- ☐ PTT Vlado Tasevski Skopje
- ☐ Jahia Kemal College
- ☐ INET Educational Center
- ☐ Josip Broz Tito Skopje
- ☐ Next Sense Educational Center
- ☐ Kiril Pejcinovik High School
- ☐ High School Mirce Acev Prilep
- ☐ Risto R Ricko Prilep

First ranked educational centers/technical high schools are: *Rade Jovcevski Korcagin* with 16.7%, then: two private educational centers *Alexandria* and *Semos*, and one of the Skopje based technical high schools – *Mihajlo Pupin*, which were ranked as 'number 1' by nearly 7% of the respondents each, and *Orce Nikolov* following with 6% of the respondents choosing it as 'the best' secondary IT education.

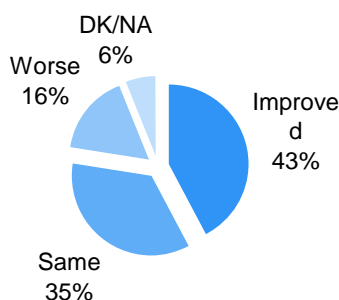We should mention here that 23% of the interviewed entities did not provide any answer for the first rank, 41% for the second ranked institution and up to 69% did not give their third ranked option for the technical schools/educational centers ranking.

42.3% of the interviewed respondents believe that the quality of students coming from the state educational institutions has improved, while 35.2

believe it stayed the same. Only 16.3% think that state education quality has worsened (most of these answers from the south west region – 30% of these respondents).

As compared to the private educational institutions, opinions somewhat vary and 62.5% believe that state education quality has improved and only 18.6 believe it stayed the same. 10.4% still consider it to have become worse than before.

Quality of students   **Quality of students in State educational**
in state educational institutions   **.institutions as compared to private ones**

DK/NA 6% · Worse 16% · Improved 43% · Same 35%
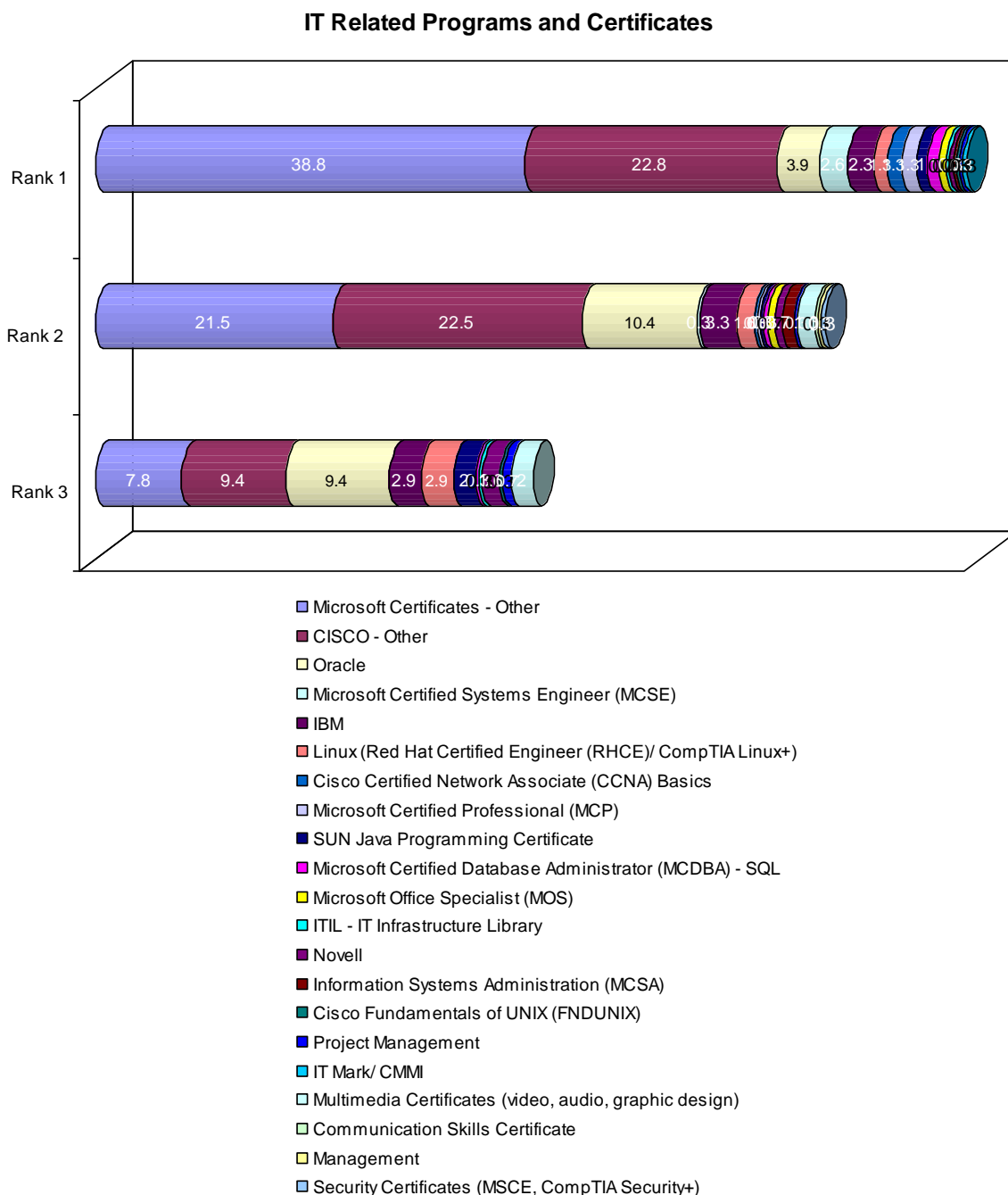
DK/NA 9% · Worse 10% · Same 19% · Improved 62%
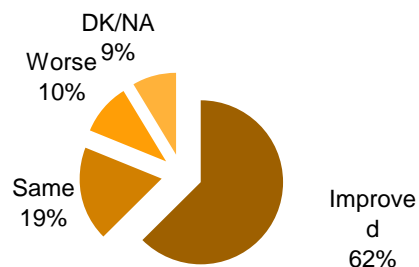
Certification Programs ranking is yet another issue to be taken with reserves. Namely, not all respondents were able to respond correctly and give sufficient answers with exact programs/certificate titles (either because of their incapacity or their unwillingness to provide full response).

Moreover, as in the case of institution ranking, there were again a certain number of respondents who did not provide all the answers which resulted in a certain number of cases without answers – 13% of them for the first rank, 26% for the second ranked certification/program and 54% for the third.

Another issue to be mentioned here is related to the type of certificates/programs. Namely, it appears that the disambiguation between IT and non-IT (and even other types of) certificates/programs is not always easy to be made, i.e. the category a certificate/program belongs to is not clear enough to all the respondents. This is illustrated by the fact that both IT and non-IT programs appear in respondents' answers for the IT category, and the same happens in the non-IT category as well. There are even cases where a completely different type of certificate is mentioned (ISO certificates) that has nothing to do with the individual skills certificates/programs that were the object of assessment.

Regarding IT related certificates/programs, 39% of the total number of respondents opted for Microsoft certificates in general without mentioning any particular courses. 23% chose Cisco certificates as the most important ones, again without giving exact names of the various Cisco certificates. Oracle and MCSE followed with 4.5% and 3%, respectively.

IT Related Programs and Certificates

- ■ Microsoft Certificates - Other
- ■ CISCO - Other
- □ Oracle
- □ Microsoft Certified Systems Engineer (MCSE)
- ■ IBM
- ■ Linux (Red Hat Certified Engineer (RHCE)/ CompTIA Linux+)
- ■ Cisco Certified Network Associate (CCNA) Basics
- □ Microsoft Certified Professional (MCP)
- ■ SUN Java Programming Certificate
- ■ Microsoft Certified Database Administrator (MCDBA) - SQL
- □ Microsoft Office Specialist (MOS)
- □ ITIL - IT Infrastructure Library
- ■ Novell
- ■ Information Systems Administration (MCSA)
- ■ Cisco Fundamentals of UNIX (FNDUNIX)
- ■ Project Management
- □ IT Mark/ CMMI
- □ Multimedia Certificates (video, audio, graphic design)
- □ Communication Skills Certificate
- □ Management
- ■ Security Certificates (MSCE, CompTIA Security+)

ICT certification programs are very important for 31% of the respondents, and 37% of them find them important, while only 6% consider them to be

crucial to the hiring process. Only 8% find these programs not important at all and 11% consider them as slightly important.
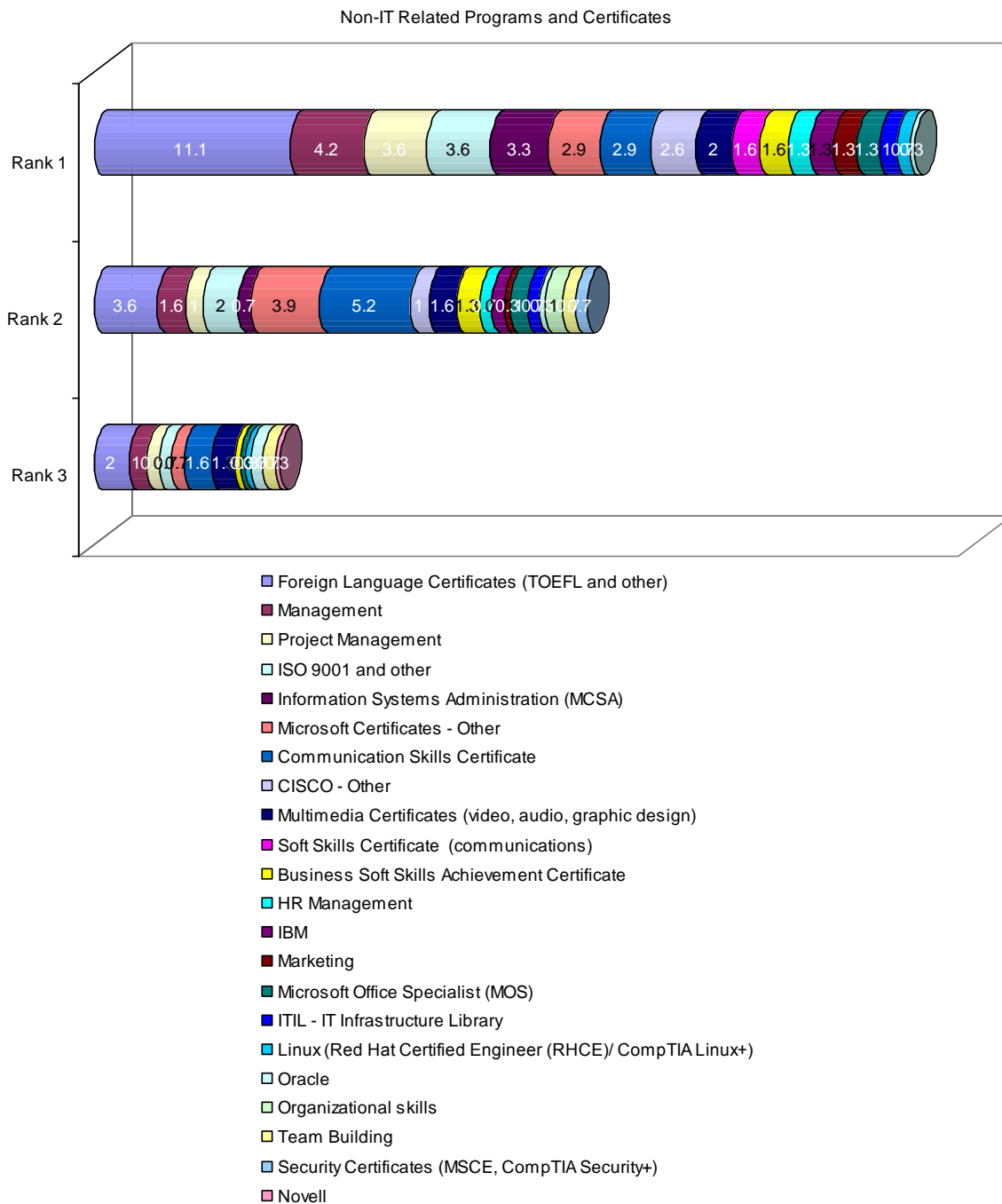
ICT certification programs importance
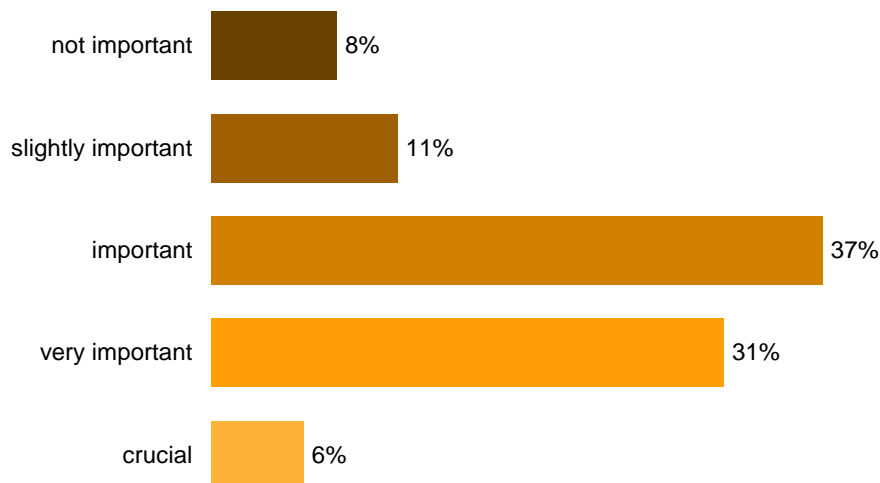
Further more, ranking of non-ICT certification programs gave the following results:

Foreign language certificates were ranked as most important by 11% of the total number of respondents, followed by Management and Project Management with 4% each. As third important, communication oriented certificates (3%), i.e. Soft Skills certificates (2%) and other communication and business soft skills certificates (2%) were mentioned. (It might be said that these three can be regarded as one category – thus, Soft Skills certificates will have 7% share in the respondents' answers - since they refer to the same skills; however, answers were not precise enough to fully determine this finding). Multimedia certificates were also ranked as number 1 by 2% of the respondents who answered the related questions.

Following the trend of the previously mentioned open ended questions related to ranking of educational institutions and certificates/programs, once more we find a higher percentage of 'no answers' for the required certificate titles and their level of importance. Namely, almost half of the respondents did not rank any non-IT related program as 'number 1' (46.6%), almost 68% did the same for the second rank, and 88% for the third open position for non-IT related certificates/programs. the frequent excuse to this was 'no relevance' in their case, no knowledge about these certificates, or a difficulty in remembering an actual title or name.

Non-IT Related Programs and Certificates

- ■ Foreign Language Certificates (TOEFL and other)
- ■ Management
- □ Project Management
- □ ISO 9001 and other
- ■ Information Systems Administration (MCSA)
- ■ Microsoft Certificates - Other
- ■ Communication Skills Certificate
- □ CISCO - Other
- ■ Multimedia Certificates (video, audio, graphic design)
- ■ Soft Skills Certificate (communications)
- ■ Business Soft Skills Achievement Certificate
- ■ HR Management
- ■ IBM
- ■ Marketing
- ■ Microsoft Office Specialist (MOS)
- ■ ITIL - IT Infrastructure Library
- ■ Linux (Red Hat Certified Engineer (RHCE)/ CompTIA Linux+)
- □ Oracle
- □ Organizational skills
- □ Team Building
- □ Security Certificates (MSCE, CompTIA Security+)
- □ Novell

As mentioned previously, it can be noted here that some respondents gave answers that do not match this category in percentages that are worth mentioning. For example, ISO certificates were mentioned by 4% respondents, Information Systems Administration (MCSA) and other Microsoft certificates, as well as Cisco certificates, were mentioned by 3% each.

Communication skills certificates were ranked as second most important by 5% of the respondents with foreign language certificates and Microsoft following with 4% each.

Non-ICT certification programs importance
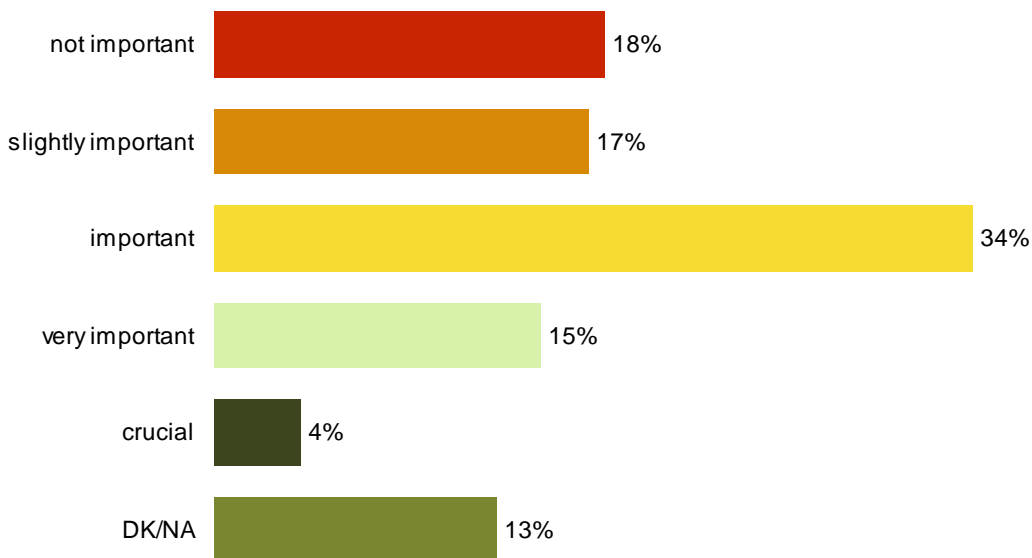
Non-IT certification programs are important to 34% of the total number of surveyed entities. 15% find them very important and only 4% see them as crucial. Another 17% believe that they are only slightly important, while 18% of the total respondents consider non-IT certification programs as not important at all.

When training is an issue, up to 26.4% of the total interviewed entities state that they do not have training included in their budget, i.e. they have 'no budget for training' (more such answers recorded by respondents representing the public sector (38% of these) and the south-west region – 48%).
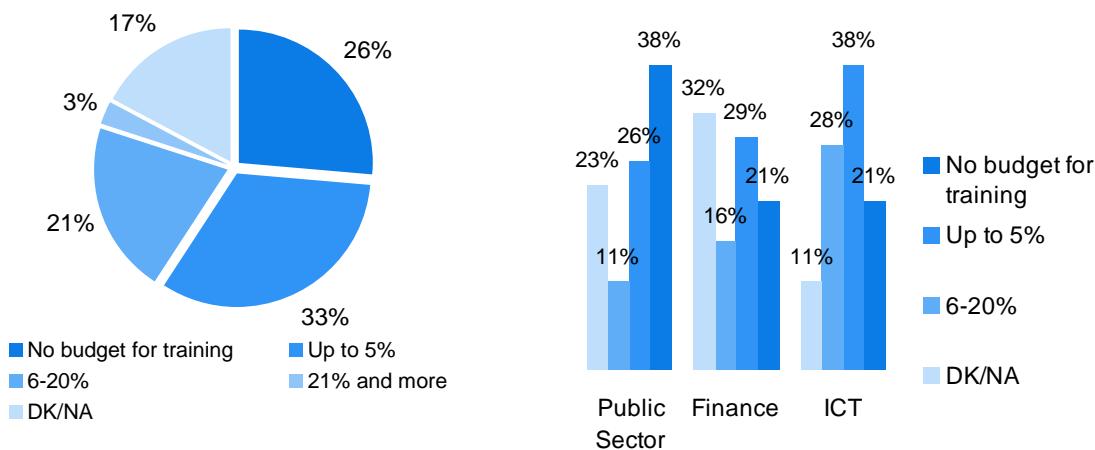

However, another 33% claim to spend up to 5% of their budget for training and certification programs, and 21% spend 6 to 20% of their budgets. Only a very small percentage answered that they spend more than 21% of their budget (2.6%).

Correspondingly, the average time an average employee spends on training is '0 days' for some 17% of the total number of interviewed entities, while 33% of them claim that this amount is 1 to 10 days per year, and 24% - 11 to 20 days. Up to 21% of the interviewed entities have their employees trained for an average of more than 20 days per year (mostly ICT sector).
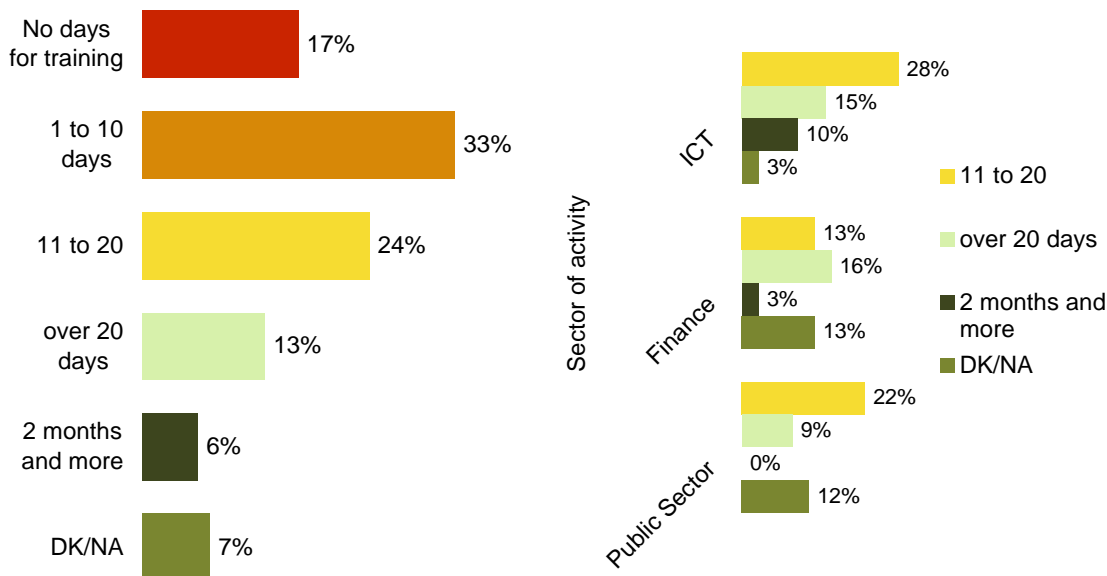
This percentage is much higher when new employees are concerned. Namely almost 50% of the companies/institutions claimed to have these new employees trained for more than 20 days (34% of ICT sector respondents said that new employees have even more than 2 months of training on average). 15% of the respondents indicated 11 to 20 days of training for an average new employee and 12% of them indicated 1 to 10 days for the same category of employees.
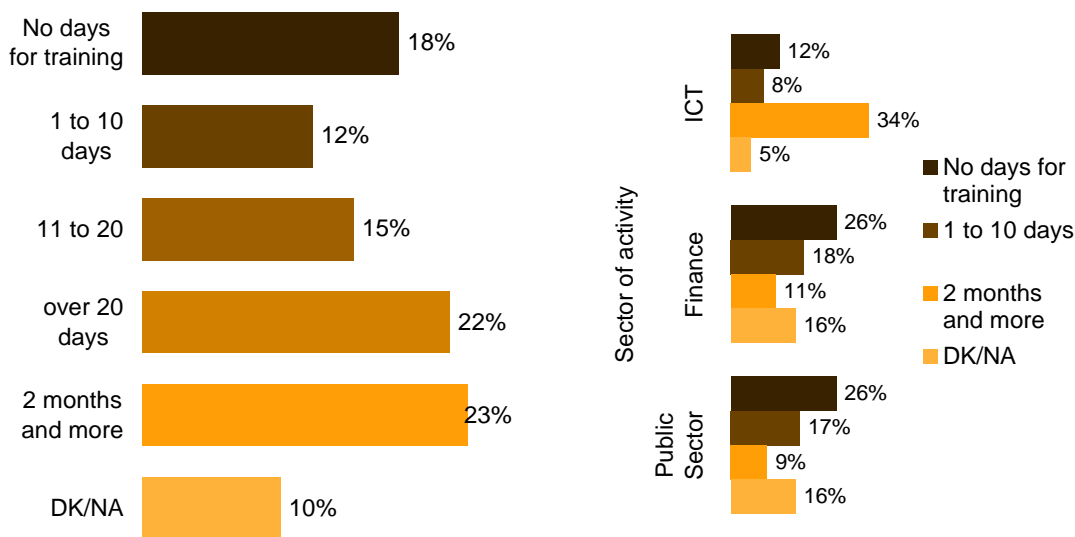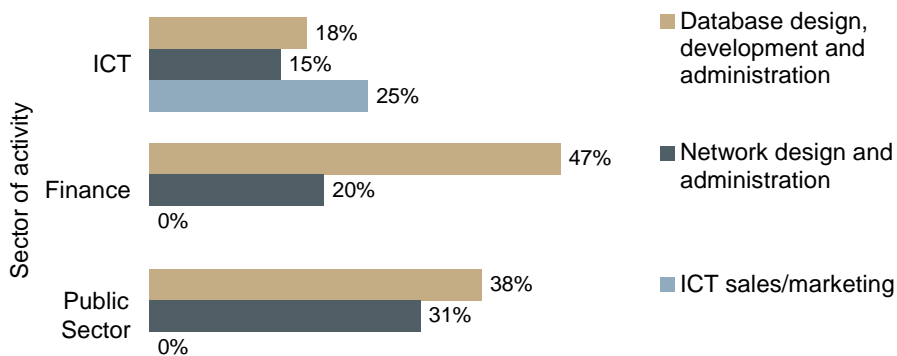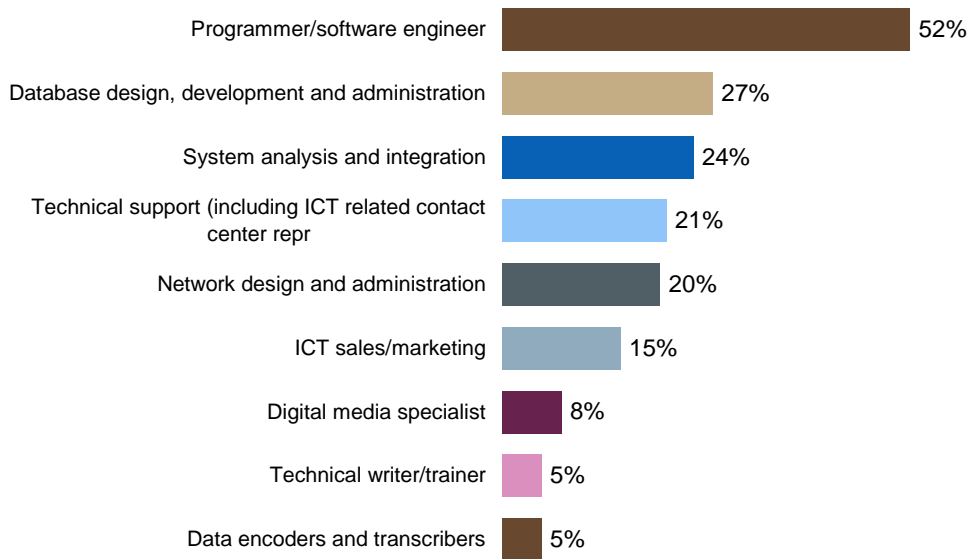
Again, 18.2% said they had no days for training for the new employees as well and 105 of the total interviewed respondents could not provide an answer to this question.
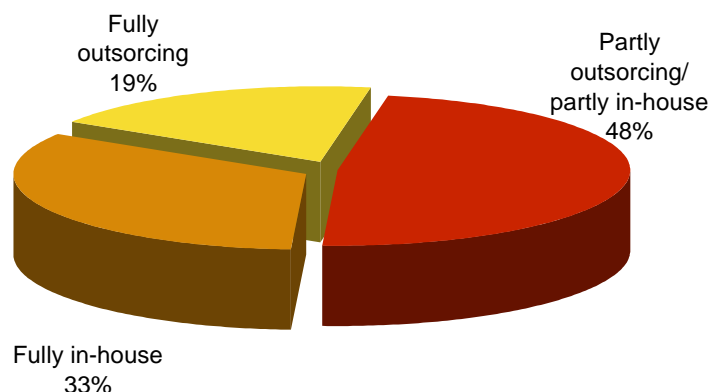
Employee training is partly outsourced and partly in-house implemented for 42% of the interviewed entities, 29% have a full in-house training, whereas 16.6% are outsourcing their training activities to external companies/ institutions.
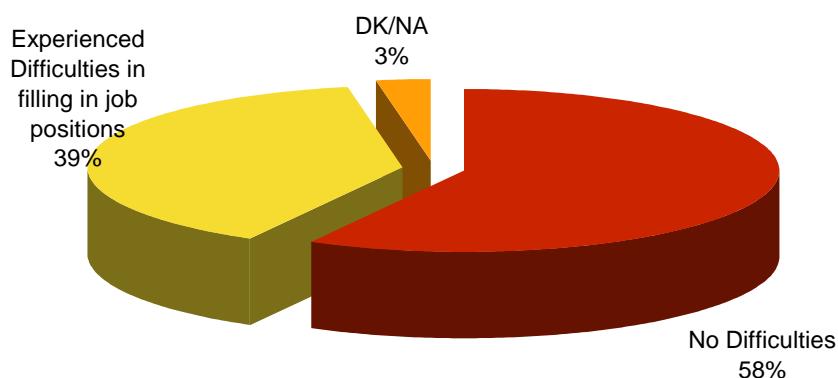
No difficulties were experienced in filling in job positions in 2008 for 58% of the respondents but 39.1% did experience some difficulties and the following positions seem to be most difficult to be filled in, according to the answers of the interviewed entities: programmer/ software engineer – 52%, data base design, development and administration – 27%, system analysis and integration – 24%, technical support (including ICT related contact center representatives) – 21%, network design and administration – 20%, and ICT sales/marketing 15%. The remaining positions reported as problematic to be filled in are represented with somewhat lower percentages - digital media specialist – 7.5%, technical writer/trainer – 5% and data encoders and transcribers – also 5%.

Programmer/software engineer	52%
Database design, development and administration	27%
System analysis and integration	24%
Technical support (including ICT related contact center repr	21%
Network design and administration	20%
ICT sales/marketing	15%
Digital media specialist	8%
Technical writer/trainer	5%
Data encoders and transcribers	5%

Sector of activity

- ICT: 18%, 15%, 25%
- Finance: 47%, 20%, 0%
- Public Sector: 38%, 31%, 0%

Legend:
- Database design, development and administration
- Network design and administration
- ICT sales/marketing

Moreover, vis-à-vis preferred recruitment methods, personal contacts and recommendations seem to be most frequent method for hiring new employees – 56% of the total number of interviewed entities claim to prefer this method. 31% also use employment agencies and 25% indicated advertisement as another method of preference. Internship was mentioned as a preferred method by 19% of the respondents and direct contact from secondary and higher educational institutions by nearly 17%.

Sector of activity

- ICT: 69%, 25%, 24%
- Finance: 55%, 13%, 18%
- Public Sector: 33%, 47%, 11%

Legend:
- Personal contacts and recommendations
- Employment agencies
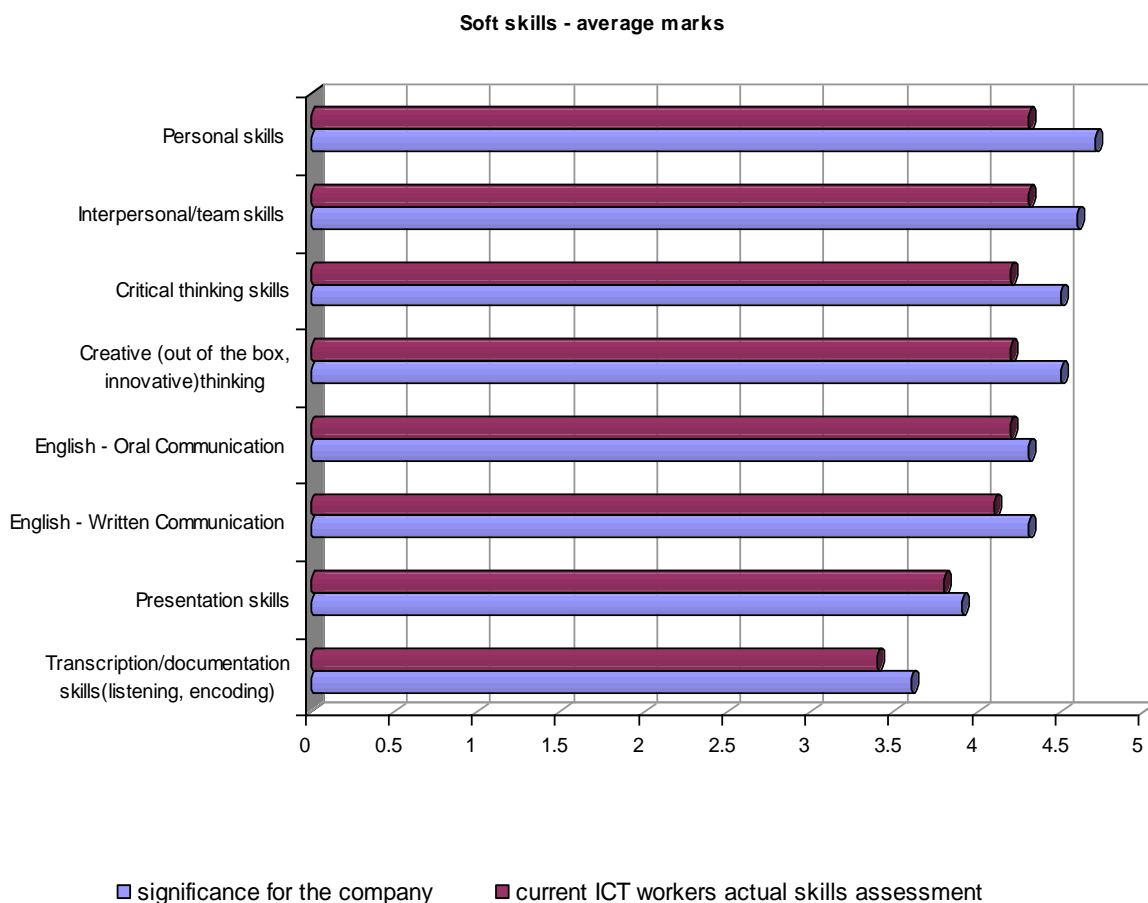- Internship
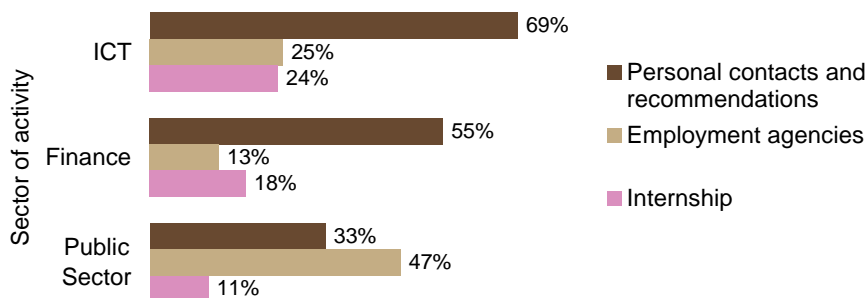
2.4 ICT WORKERS SKILLS ASSESSMENT

The ICT workers skills assessment was performed as grouped under three previously defined categories:

– soft skills,

– business skills, and
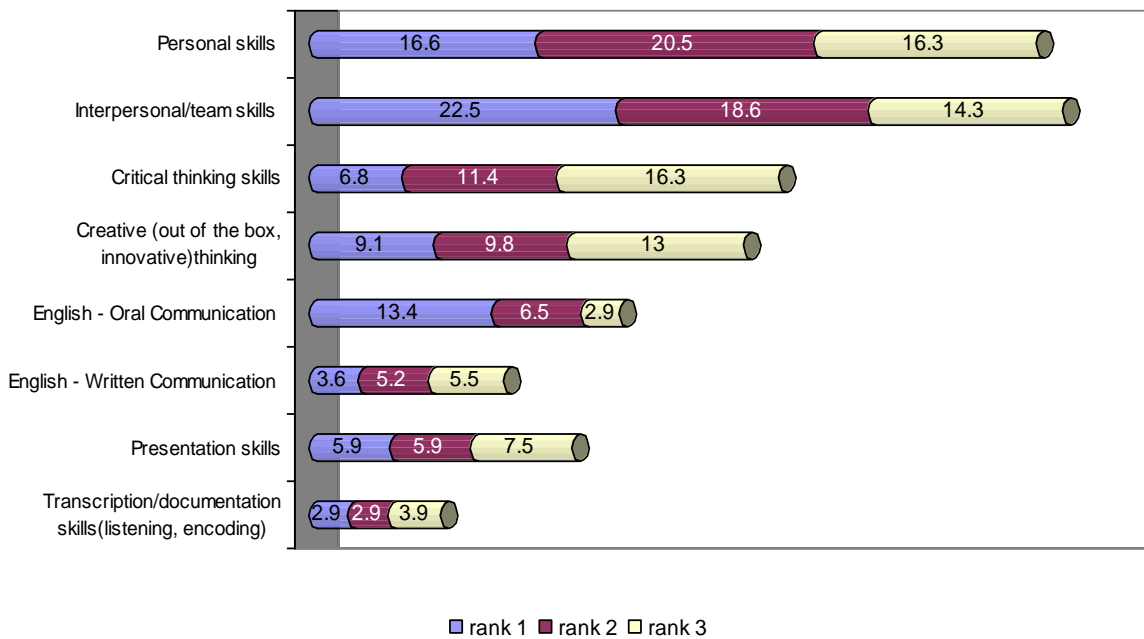
– technical skills.

Moreover, all the skills from each of the mentioned categories where also individually assessed, as separate skills. The grouped assessment of these three different types of skills, combined with 2 more aspects (education and experience), was already analyzed in the previous chapters, i.e. under ranking of ICT workers skills. For the individual ranking of skills, there were three aspects per each particular skill assessment:

- relevant significance of the particular skill for the given company/institution,

- current ICT workers' actual possession/ competence for the mentioned skill, and

- future estimation regarding the importance

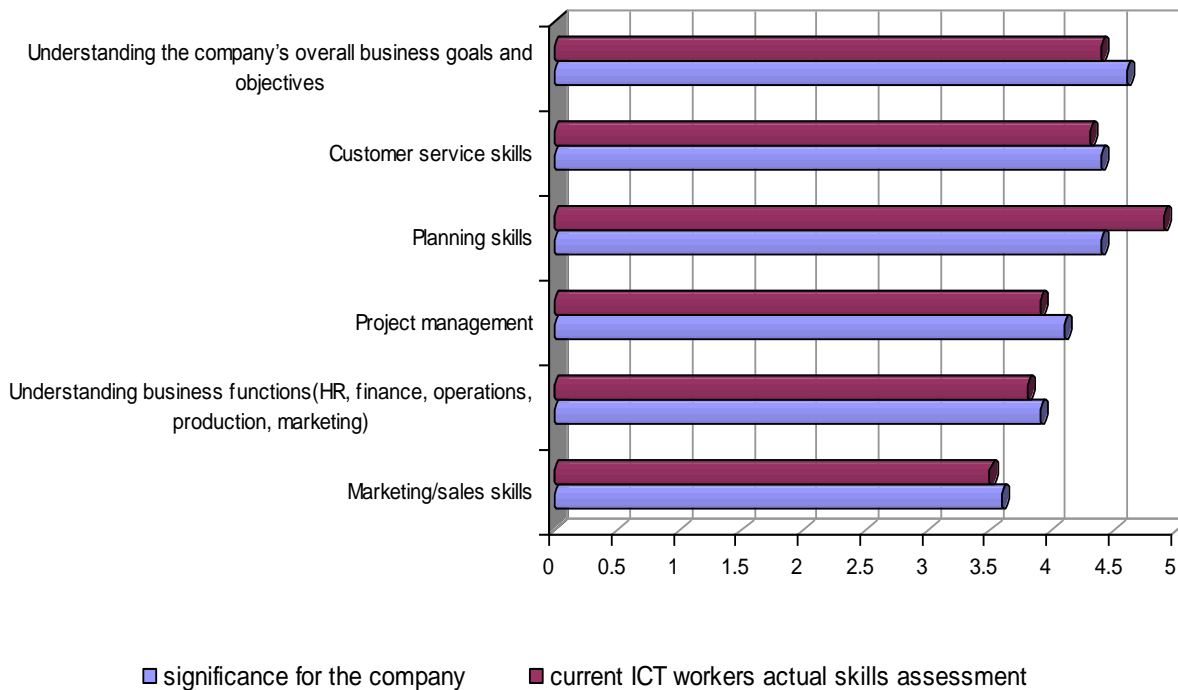The results for the individual ranking of skills under each category separately are graphically presented below.
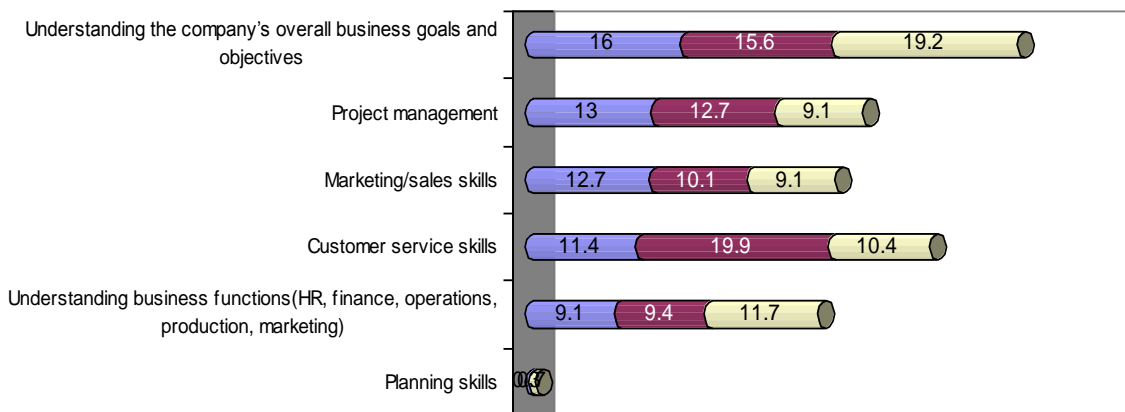
Soft skills - average marks

significance for the company ▪ current ICT workers actual skills assessment

ICT Chamber of commerce MASIT

Ranking future importance of soft skills

Skill	rank 1	rank 2	rank 3
Personal skills	16.6	20.5	16.3
Interpersonal/team skills	22.5	18.6	14.3
Critical thinking skills	6.8	11.4	16.3
Creative (out of the box, innovative)thinking	9.1	9.8	13
English - Oral Communication	13.4	6.5	2.9
English - Written Communication	3.6	5.2	5.5
Presentation skills	5.9	5.9	7.5
Transcription/documentation skills(listening, encoding)	2.9	2.9	3.9

□ rank 1 ■ rank 2 □ rank 3

Business skills - average marks

Understanding the company's overall business goals and objectives

Customer service skills

Planning skills

Project management

Understanding business functions(HR, finance, operations, production, marketing)

Marketing/sales skills

0   0.5   1   1.5   2   2.5   3   3.5   4   4.5   5

□ significance for the company   ■ current ICT workers actual skills assessment

Ranking future importance of business skills

Understanding the company's overall business goals and objectives — 16 | 15.6 | 19.2
Project management — 13 | 12.7 | 9.1
Marketing/sales skills — 12.7 | 10.1 | 9.1
Customer service skills — 11.4 | 19.9 | 10.4
Understanding business functions(HR, finance, operations, production, marketing) — 9.1 | 9.4 | 11.7
Planning skills — 0 0 7

■ Series1   ■ Series2   □ Series3

Technical skills - average marks
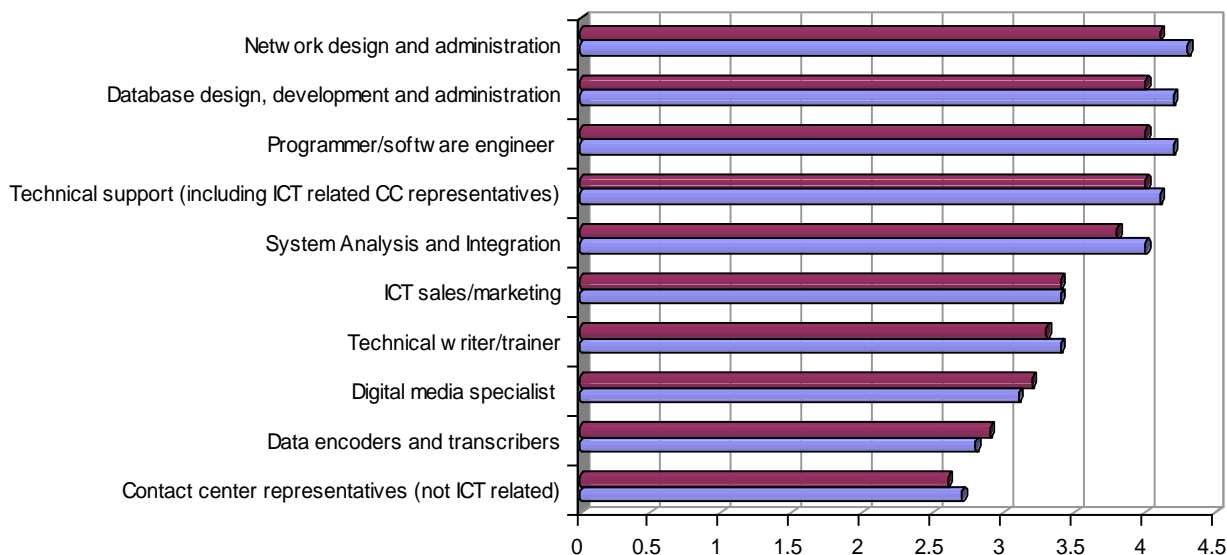
- Network design and administration
- Database design, development and administration
- Programmer/software engineer
- Technical support (including ICT related CC representatives)
- System Analysis and Integration
- ICT sales/marketing
- Technical writer/trainer
- Digital media specialist
- Data encoders and transcribers
- Contact center representatives (not ICT related)

0   0.5   1   1.5   2   2.5   3   3.5   4   4.5

■ significance for the company   ■ current ICT workers actual skills assessment

Ranking future importance of technical skills

Database design, development and administration: 20.2 | 9.8 | 10.4
Programmer/software engineer: 19.5 | 10.1 | 11.7
Network design and administration: 11.4 | 17.6 | 14
System Analysis and Integration: 9.1 | 14 | 11.1
ICT sales/marketing: 6.2 | 7.8 | 8.8
Technical support (including ICT related CC representatives): 5.2 | 10.7 | 9.8
Digital media specialist: 4.9 | 6.2 | 4.2
Technical writer/trainer: 2.6 | 3.3 | 3.3
Data encoders and transcribers: 4
Contact center representatives (not ICT related): 1

■ rank 1 ■ rank 2 □ rank 3

2.5   RESPONDENTS' AGREEMENT WITH GIVEN STATEMENTS

The level of agreement with previously defined statements shows respondent's opinions on matters that are very important to this research and it can be viewed from two different angles – by analyzing the *mean* numbers, i.e. the average degree of agreement per each statement separately, and by analyzing the different percentages of positive and negative answers per statement. According to the average values obtained from the respondents' answers, the following statement gained highest agreement: *Most IT workers today are proficient in technical skills but lack business and soft skills* – average level of agreement 3.8, on a scale from 1 to 5. it is closely followed by these two statements: *Macedonian MNC subsidiaries can host/provide ICT-enabled services to regional offices*, and *The government is doing its share in promoting the ICT industry-* with 3.7 average mark. *There is limited information and documentation on required ICT positions and skills* reached an average mark of 3.6 according to respondents' level of agreement with this statement. Then, their grade for the level of agreement is 3.4 for the following two statements: *The Macedonian workforce has a high level of ICT skills*, and *Employers prefer ICT workers with university degrees over those with technical/ vocational certificates in ICT.* Least compliant with the

interviewed respondents' opinions is the statement: E*nglish proficiency has declined significantly* – average mark1.9.

**Assessment of statements - average mark according to respondent's agreement**
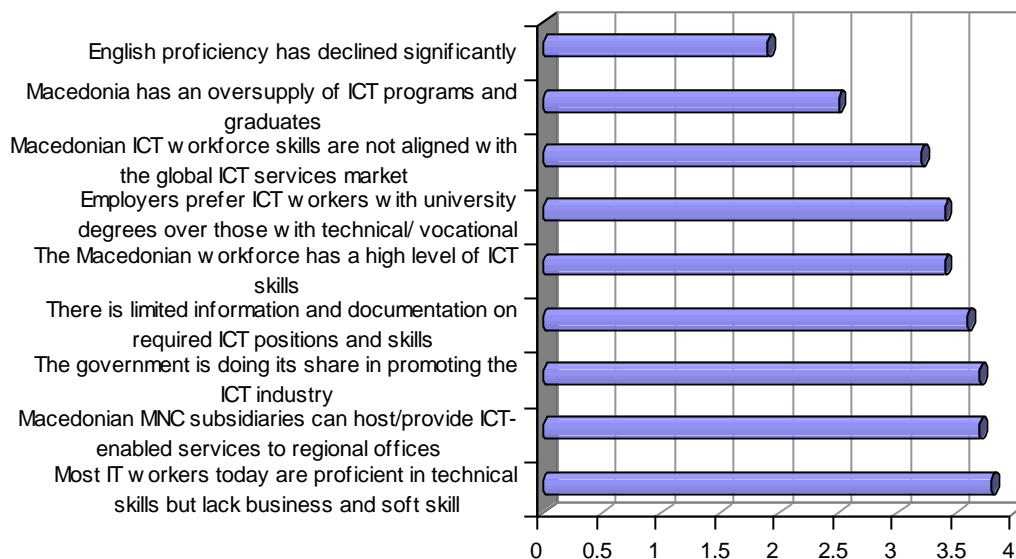
As for the actual positive and negative answers given by the respondents, using a scale from 1 to five as in school, the following was observed:

- 53% of the total number of respondents believe that '*Macedonian workforce has a high level of ICT skills*', whereas 23% do not agree with this statement. 23% are neutral, i.e. 'neither disagree nor agree' with this statement.

- *Macedonian ICT workforce skills are not aligned with the global ICT services market* – 44% of the respondents agree with this statement, whereas 30% of them disagree, 24% staying neutral in their answers.

- 56% do not agree that '*Macedonia has an oversupply of ICT programs and graduates*' ; on the other hand, 23% of the respondents agree with this and 20% are neutral

- *Employers prefer ICT workers with university degrees over those with technical/ vocational certificates in ICT* –49% agree with it, 26% disagree, 24% remain neutral.

- *There is limited information and documentation on required ICT positions and skills* – 57% agree with this, 18% disagree, and 23% are neutral.

- *Most IT workers today are proficient in technical skills but lack business and soft skills* –63% agree, 11% disagree, and 24% are neutral.

- The lowest level of agreement is noted for '*English proficiency has declined significantly*' – 74% of the respondents do not agree with this statement, 14% agree, and 11% are neutral.

- *Macedonian MNC subsidiaries can host/provide ICT-enabled services to regional offices* – 55% agree, 15% disagree, 25% remain neutral.

- *The government is doing its share in promoting the ICT industry* – 60% agree with this statement, 16% disagree, and 20% are neutral; at this point, we can mention that the public sector seems to be most positive about this statement – 78% of them agree with this statement and only 6% disagree.

Below, a graphic presentation of the positive answers per statement is shown (*Sum +* percentage that combines the two positive answers on the scale from 1 to 5, i.e. 4 'somewhat agree' and 5 'strongly agree', into one.
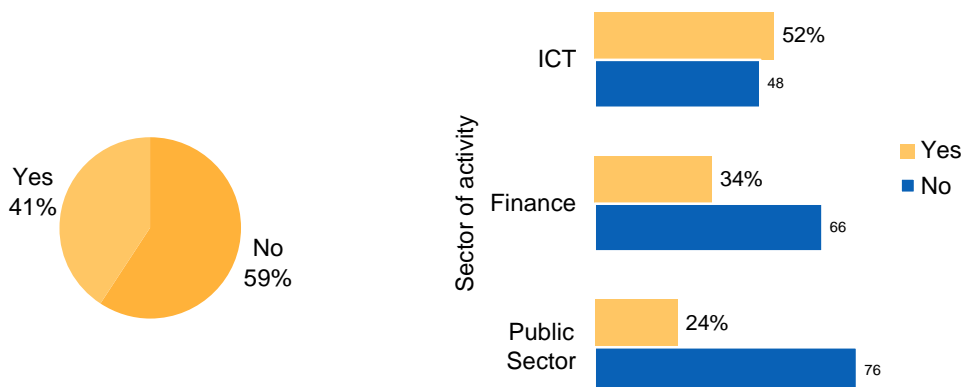
Agreement with the statements -sum of positive answers (Sum +)
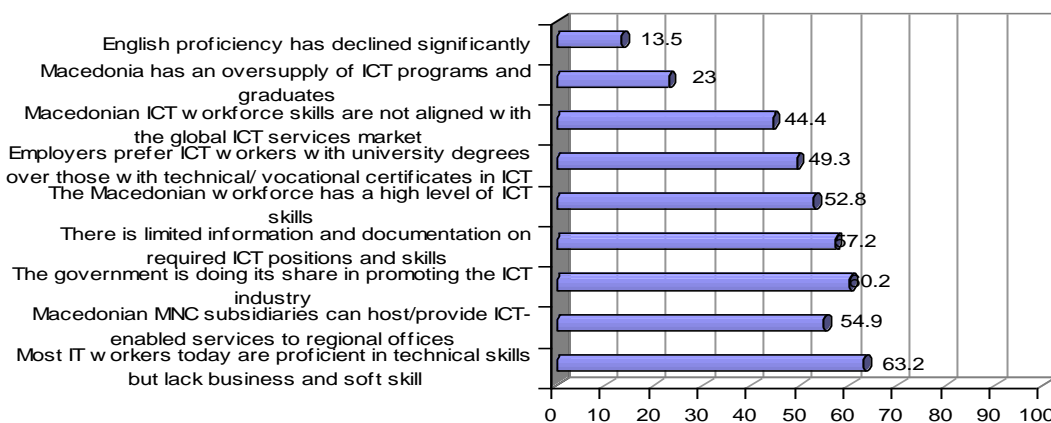
2.6   INTERNSHIP

As regards to engaging interns – 59.3% have said not to have engaged interns during 2008 (mostly public sector – 76% of the public entities have not engaged interns throughout 2008) while 40.7% did engage - mostly in the ICT industry – 52%, while only 24% in the public sector.

Interns engaged in 2008

Furthermore, as far as the number of interns engaged is concerned, up to 79% of the interviewed companies/institutions who engaged interns in 2008n (41% of the total number) have reported 1 to 5 interns engaged in 2008, whereas 10.4% have said to have engaged 6 to 10 interns, and nearly 9% increased this number up to more than 10 interns throughout the previous year.

Number of interns engaged in 2008

Base: 41% of target population (engaged interns in 2008)

■ 1- 5 interns ■ 6 - 10 interns ■ more than 10 interns ■ DK/NA
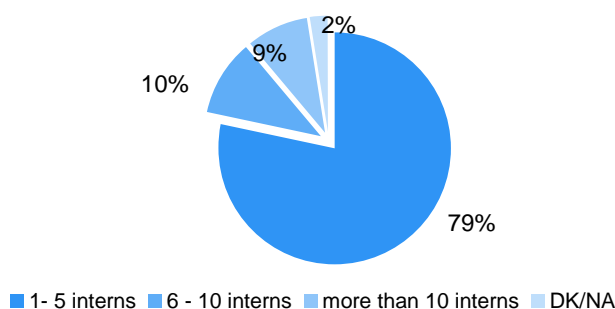
Regarding the methods used for engaging these interns, 54% said to have done this through personal contacts and recommendations, 44% have used educational institutions – faculties, 14.4% have used their websites and only 3.2% used public methods like job advertisements, employment agencies

and student fairs.   66% of these have a remuneration system for the engaged interns, while 32% do not have such a system.
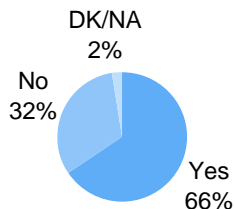
Methods used for the interns engaged in 2008

Base: 41% of target population (engaged interns in 2008)
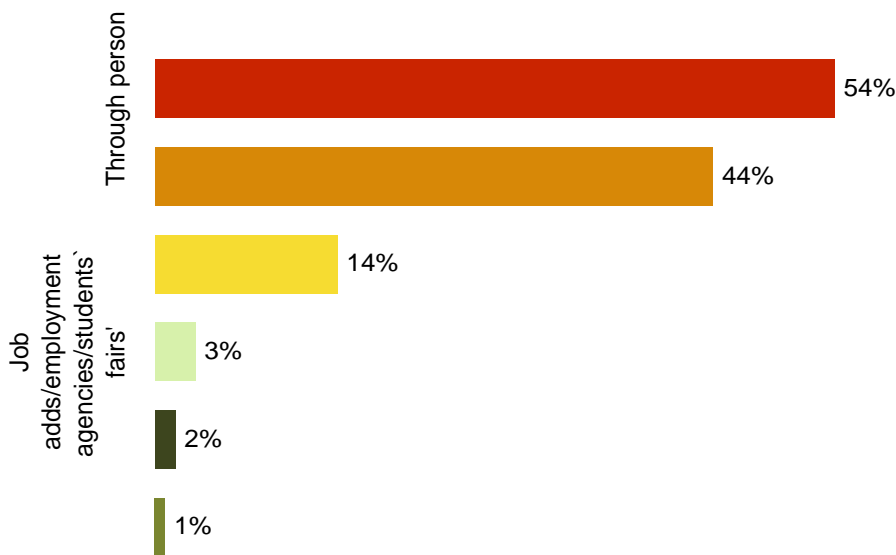
**Existence of a remuneration system for the interns engaged in 2008**

Base: 41% of target population (engaged interns in 2008)

66% of the companies that engaged interns in 2008 (41% of the total target companies) reported to have certain remuneration system for these interns. On the other hand, 32% of them did not report existence of such a system.

The average length of internship is 1 to 3 months for 25.4% of all the interviewed entities and up to a month for 20% of them. Nearly 8% of the respondents reported an indicated an internship period of 3 to 6 months and only a small percentage – 2.3% – said to have internship period of more than 6 months (public sector).

Average length of internship per company
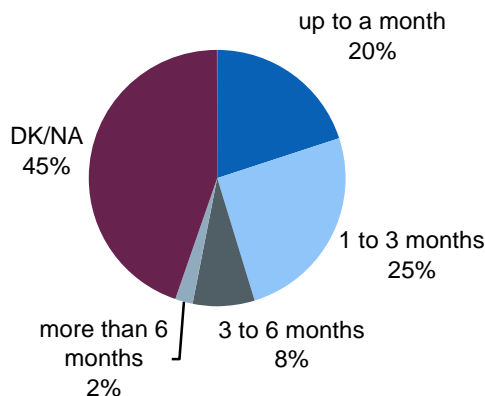
Moreover, 58.3% of the total number of respondents plan to engage interns in 2009 and the other 42% do not have such intentions. If we divide these answers by sectors, it can be seen that the ICT companies seem to appear with highest percentage when engaging interns in 2009 is an issue – 69%, as opposed to the 47% in the finance sector.

**Interns to be engaged in 2009 - per sector of activity**
Base: 59% of target population (that are going to engage interns in 2009)
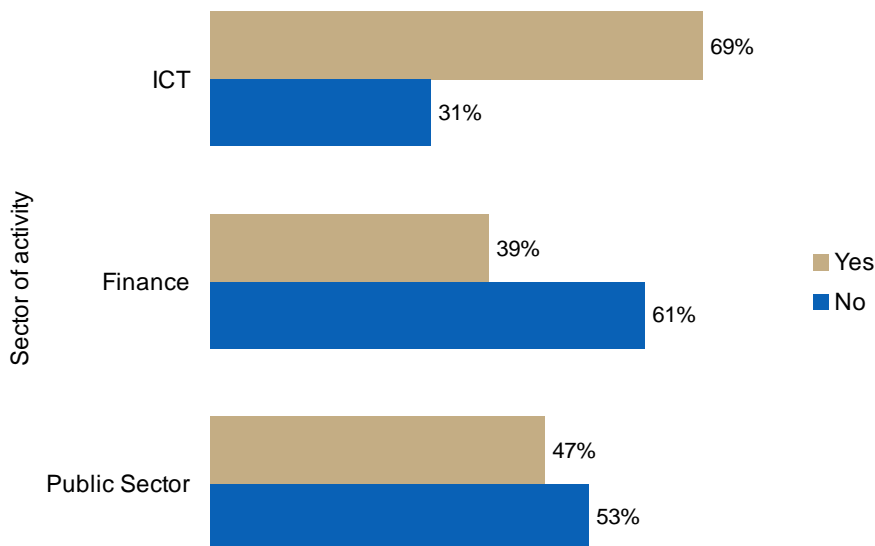
The estimated number of interns to be engaged in 2009, according to these 58.3% of the interviewed entities, is 1 to 5 for 77% of the respondents and some 10% intend to engage 5 to 10 interns, while only about 7% of them are going to engage more than 10 interns.

Estimated number of interns to be engaged in 2009
Base: 59% of target population (that are going to engage interns in 2009)
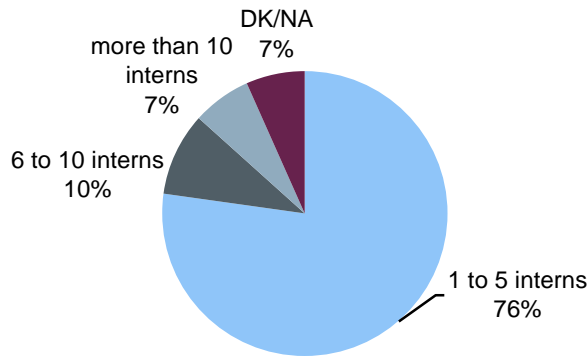
About 64% of these respondents have a remuneration system for the interns to be engaged and nearly 30% do not have such a system.

Divided opinions seem to appear when the best estimated length of internship is concerned. Namely, this period should be 2-3 months according to 30% of the total number of respondents, up to 2 months for 25%, 4-6 months for 12%, 3-4 months for 11%, and 6-12 months for 7% of the respondents (of these, biggest percentage falls on the public sector (14%; the other 2 sectors only 3% each)

Best estimated length of internship per company

Base: Total target population
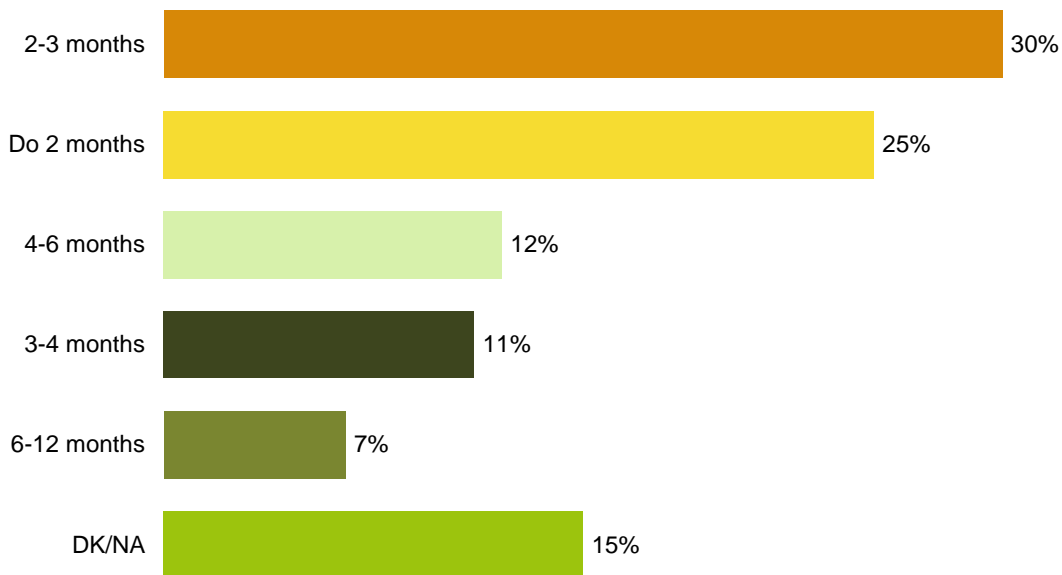
Nearly 66% interested to contact the project, and the other 34% did not find this cooperation of their interest.

III CONCLUSIONS AND RECOMENDATIONS

3.1   CONCLUSIONS

1. In the year 2008 the number of female employees in the ICT industry is smaller than the number of the male employees. At the same time the number of female employees that leave the companies from this industry is far larger than the male employees.
2. A substantially large number of companies do not practice student internships.
3. An improvement of the students quality is noticed, especially in those students comming from the state universities.
4. IT certification continues to be important for the employers.
5. There is a lack of appropriately qualified ICT personnel. This is especially expressed when talking about programmers, data-based specialist, system analytics, technical support specialist, network engineers, sales specialist and digital medias
6. The possession of soft, business and technical skills is especially important for the process of employment.

3.2   MASIT RECOMMENDATIONS

1. MASIT encourages the employers since the start of the process of employment to treat all candidates equally, regardless of their gender, making no discrimination. Additionally MASIT will support all activities in order to provide increased participation of the female employees in the ICT industry.
2. MASIT will continue with the activities that promote the internship. A special accent will be put on those activities that inform the companies about the benefits of hiring an intern.
3. MASIT encourages the educational institutions to continue with their work of improving the student's quality.
4. MASIT encourages the educational institutions to continue with the promotion of the certificate forms and their implementation as optional student courses.
5. MASIT will continue with the activities leading towards building awareness for the need of these ICT personnel, especially between students from secondary school and universities. Also MASIT strongly supports the programs for prequalification of the unemployed and the additional qualification of the employed.
6. MASIT encourages the educational institutions to continue with the promotion of the professionalism as a form of needed/ wanted behavior.

V APPENDICES

5.1   APPENDIX I: ICT WORKERS LISTING

For the purpose of this survey, ICT worker is precisely defined, so ICT worker definition was applied to those individuals employed in the areas of:

Database design, development and administration
- Database developer/architect
- Data conversion specialist
- Database analyst
- Database manager
- Database security expert
- Systems administrator
- Tester
- Knowledge architect

Digital media
- 2D/3D artist
- Animator
- Multimedia author
- Media/Instructional designer
- Web developer/designer
- Programmer
- Virtual reality specialist
- Streaming media specialist

Enterprise systems analysis and integration
- Application integrator
- Systems/Process analyst/architect
- Systems integrator
- eBusiness specialist
- Business continuity analyst

Network design and administration
- Data communications analysts
- IS planner/operator
- Network analyst
- Network administrator
- Network engineer
- Network manager
- Network security analyst
- Network technician
- Systems administrator
- PC/technical/user support specialist

Programming/software engineer

- Application/systems analyst
- Business/process analyst
- Programmer
- Operating system specialist
- Software architect

Technical support
- Analyst
- Call center/customer service representative (includes customer care representatives)
- Help desk specialist/technician
- Maintenance technician
- Support specialist
- Technical support engineer/representative
- Testing engineer

Technical writing/training
- Desktop publishing
- Documentation specialist
- Editor
- Electronic publications specialist
- IT trainer/educator
- Online publisher
- Publications manager
- Technical writer

IT Sales/marketing
- Marketing/product manager
- Pre-sales support
- Account managers/relationship managers

Contact center representative (or function related to managing contact center functions). Includes customer care employees. Category is NOT ICT related

Data encoders and transcribers (or function related to encoding/transcribing functions)

5.2   APPENDIX II: TECHNICAL SKILLS

Programming
- Java/Javascript/JSP
- C/C++/C#
- Visual Basic/VB.net
- XML
- HTML
- Unix
- Windows OS
- Linux
- SQL
- Perl
- Active Server Pages
- CGI
- Solaris
- Cold Fusion
- Linggo
- Python

Database Development and administration
- Oracle
- SQL Server
- DB2
- Sybase
- Informix
- Access

Network Design and Administration
- Cisco products
- Novell Netware
- Windows OS
- Unix
- Linux
- SNA
- IPX
- Routing
- LAN/WAN
- TCP/IP
- Ethernet
- Virus protection/firewalls
- 10 base-T switching
- Client/server technology
- Data network protocols
- Wireless

Enterprise systems analysis and integration
- Oracle
- SAP
- Baan
- JDE
- Great Plains

Technical Support
- Windows OS
- Unix
- Business applications
- LAN/WAN
- Novell Netware
- TCP/IP
- PC Hardware

Other ICT-enabled service technical skill requirement (primarily for BPO related services). Examples include:

- Accounting knowledge
- Understands medical terms
- Understands legal terms

5.3 APPENDIX III: LIST OF COMPANIES/INSTITUTIONS

ICT Sector
A1 TV
A2 Eurokompjuter Sistems ECS
AC-DC
Akcent Kompjuteri
Aksis
Alcatel Lucent
Alfa TV
Alkon-Ps
Alsat-M
Amplekom Dooel
AMC
Anhoc PTD Doo
Anic Sistemi Doo
Applifaj
Arthaus Doo
Aspekt
Bajt Kom
Be Tako Soft
Billy Compjuters
Bilocular-Dvogled Doo
Blajer Dooel - Skopje
Blank Dooel - Skopje
Blu Media Grup - Doo Skopje
Bo Net Prilep
Bransis Dooel Skopje
BSC
Cabletel Doo Skopje
Cisko Sistemi Makedonija
Compunet
CT Kompjuter MK
Dasto Dooel
David Kompjuteri
DJ
Digicom Dooel Skopje
Digit Kompjuteri
Doajen Data Sistem
Dooel Bit Mak
DPTU Dominik Dooel Veles
Kom Dizajn Doo Veles
Dtu Nekst Em Dooel
Duna Kompjuters
Edu Soft
Ein Soft
Ekonet Doo
Eksploring Makedonija
Elenik.Kom
Enter Doo
Eureka-Informatika
Euro Net Kom
Euro Soft Plus
Fibernet

Forvard
Gemak
Generep Software Group
Geonet Gps
Gera Kom Plus
Gimeks
Gisdata Skopje Dooel
Global Net
Goda Kompjuteri
Gord Sistemi
Grnarov Doo
G-Sistem Doo Skopje
Ha Em Prilep
Hjulit Pakard
Inel Tehnik Internacional
Inet Doo Skopje
Infinite Solutions
Info Gejt
Info Softing
Iris TV
Kabtel Dooel Skopje
King Ict Dooel
Kodeks Kompjuteri
Koha
Kom Soft
Koma
Komeo
Kosmofon Ad Skopje
Kvatro
Lankom Kompjuteri
Luna Kompjuteri
Makedonski Biznis Sistemi
Makpetrol Ad Skopje
Makpetrol Centar Dell
Maks Kompjuteri
Marnet
Mebius Doo
Megasoft Info Centar Dooel Bitola
Mikro Doo
Miks Net
Mild Komp Maxi Kompjuteri Veles
MM Komerc
Mobiko Doel
Neklstsens Doo
Nekskom Makedonija
Nekst Generacion
Neokom
Neotel
Netcetera Doo Skopje
Netra
Nevada Kompjuteri
Nexttel Doo
Niko Kompjuteri
Nineks Dooel
On Net
Opteron Dooel
Overnet Dmd Doo

Pakom Kompani
Partes Produkcija Doo (Aka Partes Social Advertising)
PC Kompjuters
Peksim Dooel Skopje
Planet Interactive
Poliproekt
Printec
Printin Imidz
Promo
Rema Kompjuters
Revolution Computers
Ribon
Riversoft Computers
Seavus
Semos Multimedija
Senso Mikro
Serkan 200
Set Kompjuteri
Si Corporation
Sigma - Sb Dooel Skopje
Simt
Sinaps
Sins Sistemi
Sit Hermes Plus
Soft Mak Kompjuteri
SPD
Spica Sistemi
Star Compjuters
Stoun Kompjuters
STRD Star
Studio Nova
Sul Sys
TD Giza Ko Elektronika
Tdk Komputers
Tehnoologika Dooel
Telekabel KTV Robi
Telit Doo
Temo Grup
T-Home (Makedonski Telekom)
Tireks-Prilep
TRD TV KTV 41
Triger Kompjuteri
TV Art
TV Era
TV Intel
TV Kanal 5
TV Telma
TV2 Televizija Due
TVist-Prilep
Ultra Dooel Skopje
Unet
Unikoders
Vegesa
Venikom Softver
Verteks Broadcast Solution Prilep
Vikeli Prilep
Vizard Kompjuter

Volt Dizajn
Web Centar Doo
Zona Dooel Prilep
Zote Bros

Finance Sector
AD Vardar Osiguruvanje
Alb Sig AD Skopje
Alta Viza Broker
Bavag
Bitola Broker AD
Centalen Depozitar za hartii od vrednost
Centralna Kooperativna Banka (Sileks)
Eos Matrix Makedonija
Euro Mak Broker
Eurolizing
Evroins Osiguruvanje
Fond za zdrastveno osiguruvanje
Hypo-Alpe-Adria Lizing Doel
Investbanka
KB Prvo Penzisko Drustvo
Klirinska Kuka Kibs
Kni Prokom Prilep
Komercijalana Banka AD Skopje
Leon Strumica
Lupus Obezbeduvanje
Makedonska Banka za Poddrskai Razvoj AD Skopje
Makedonska Berza AD Skopje
NLB Tutunska Banka
Nov Penziski Fond
Ohridska Banka AD Ohrid
PIOM
Postal Broker
Postenska Banka
Printec
Procredit Bank
Rafajlovski Konsalting
Sigma
Stater Banka (ex KIB Banka Kumanovo)
Stedilnica Moznosti
Stopanska Banka Ad Skopje
Stopanska Banka - Direkcija za rabota so hartii od vrednost i brokerski uslugi
TTK Banka AD Skopje
Uni Banka AD Skopje

Public Sector
Megunaroden Fakultet Struga
AD Makedonska Posta
AD Makedonska Posta R.E. Negotino
Agencija za Elektronski Komunikacii
Agencija za Vrabotuvanje
Agencija za Mladi i Sport
Agenncija za Stokovi Rezervi
Aleksandrija
ASUC Boro Petrusevski
BAS (Business Academy Smilevski)
Carinska Uprava Na RM

Centralen Registar Na RM
Direkcija za Bezbednost na Klasificirani Podatoci
Direkcija za Zastita i Spasuvanje
Drzaven Arhiv na RM
Drzaven Univerzitet
Drzaven Zavod za Statistika
Drzavna Agencija za Sprecuvanje na Korupcija
Drzavna Izborna Komisija
Ekonomski Fakultet Skopje
Ekonomski Fakultet Prilep
Elektrotehnicki Fakultet
Fakultet za Bezbednost Skopje
Filoloski Fakultet
Filozofski Fakultet
FON
Fakultet za Turizam - Ohrid
Gimnazija Pance Poposki
Gimnazija Slavco Stojmenski
Goce Delcev Univerzitet - Fakultet za Informatika -
Gradezen Fakultet
Institut za Informatika Pmf
JKP Derven Veles
JP Pazarista
JP Ulica i Patista
JP Vodovod i Kanalizacija
JPAU - AD Aerodromi na Makedonija
JSP Skopje
JZU Opsta Bolnica Veles
Medicinsko Uciliste Nikola Spein
Megunaroden Slavijanski Institut Sveti Nikole
Ministerstvo za Ekonomija
Ministerstvo za Finansii
Ministerstvo za Informaticko Opstestvo
Ministerstvo za Kultura
Ministerstvo za Nadvoresni Raboti
Ministerstvo za Obrazovaniei Nauka
Ministerstvo za Odbrana
Ministerstvo za Pravda
Ministerstvo za Transport i Vrski-Kapetanija Na Pristaniste Onrid
Ministerstvo za Trud i Socijalna Politika
Ministerstvo za Zdravstvo
Ministerstvo za Zemjodelie, Shumarstvo i Vodostopanstvo
Ministerstvo za Zivotna Sredina i Planiranje
Nacionalnma Univerzitetska Biblioteka
OSTU Zlate Malakoski
Opstina Aerodrom
Opstina Cair
Opstina Caska
Opstina Centar
Opstina Gostivar
Opstina Karpos
Opstina Kumanovo
Opstina Novaci
Opstina Novo Selo
Opstina Stip
Opstina Tetovo
Opstina Veles

Opstina Vrapciste
Osnoven Sud Skopje
Osnoven Sud Ohrid
Osnoven Sud Prilep
Osnoven Sud Stip
Osnoven Sud Tetovo
Osnoven Sud Veles
Ostu Nace Bugoni
Pedagoski Fakultet Bitola
SOEU Jane Sandanski
Sekreterijat za Zakonodavstvo
Semos Graficka Edukacija
SOTUR Gorgi Naumov
SOU Gimnazija Josip Broz Tito
SOU Goce Delcev
SOU Kiro Spandzov Brko
SOU Kole Nehtenin
SOU Taki Daskalot
Sovet za Radiodifuzija
SOU Koco Racin
SOU Kiro Burnaz Kumanovo
SOU Riste R Ricko Prilep
SEE - Stulov Univerzitet
Tehnicki Fakultet Bitola
Uprava za Javni Prihodi
Uprava za Katastar
Uprava za Sprecuvanje na Perenje na Pari
Uprava za Zastita na Kulturnoto Nasledstvo
Veterinaren Fakultet
VPU Evro Colege
ZELS