# Students' desired IT positions and preferred areas for additional qualification and practical preparation in Telecommunications Department

T. Stefanova[1], G. Petrov[2], I. Bogomilov[3], A.Slavinski[4]

*Abstract* **The article shows the results of a survey done by the students of Telecommunication Department at New Bulgarian University. The article shows the opportunity that the education gives to students for their future realization, as well as mostly wished positions of IT specialists, areas for additional qualification and practical preparation.**

**In the survey, the students pointed the areas preferred by them for extra practical preparation and additional qualification that they would like to obtain. The areas that are most preferable by the students will be more emphasized in the future curriculum of the Telecommunications Department.**

**According to this survey, preferences for the necessary changes for the curriculum in the bachelor and master's program were prepared.**

*Index Terms:* **training in telecommunications; preferred it positions, practical training**

## I. INTRODUCTION

Telecommunications, as a sphere of expression and opportunity for satisfaction from work, is a preferable professional field by many young people, searching for conditions for a complete realization of their abilities, cravings and wishes. The environment in which the personnel of the system of telecommunications work is not only tempting, but satisfying, to a great extend, their image for a contemporary and progressive work methods, creation and realizations of ideas, thence a stimulus of career development. Universities are required to prepare well-trained specialists who creatively apply their knowledge and ability, who can develop their activity and can create new technologies and meanwhile can found new knowledge.

The rapid changes of the modern technologies require annual updates of the educational content in ICT. On account of this, in the frames of the project BG051PO001-3.1.07-0062 "Improvement of interdisciplinary skills and interaction with the business of specialists in Telecommunication" executed by the Department of Telecommunications at NBU, made a survey based on the business needed knowledge and skills in ICT specialists, which later could become a traditional source of information for NBU.

[1,2,3,4] Senior Assist. Prof. Stefanova T. PhD, Senior Assist. Prof. Petrov G. PhD, Assoc. Prof. Bogomilov I. PhD, Prof. Slavinski A. Telecommunications Department – New Bulgarian University, Sofia, Bulgaria

In conjunction with this, the realization of the students of telecommunication program was examined.

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## II. THE INQUIRY

The inquiry was implemented at NBU. Sixty-seven students were inquired – fifty-two Bachelors and fifteen Masters from Telecommunication Department at NBU. The inquiry itself, aims to get the highest degree of true information for students'opinion regarding to the courses they study and knowledge they obtain.

The inquiry consists of 29 questions. Most of them are closed and require students' evaluation. These questions will be used mostly for obtaining opinions, suggestions and some additional information.

NBU is notable to some extent for its opened to student's vision, for its business requirements, and also for its flexibility to respond to the labor market. A serious advantage of NBU is the opportunity given to the students to choose their studying programmes and courses by themselves, based on their needing and their interests. This is the reason why many of the questions included in the inquiry, are about students' wish for additional theoretical and practical courses, for additional qualification IT positions preferred etc.

2.1. Courses desired beyond the ones included in the programme

In this inquiry the students could point courses beyond the courses included in the programme, Bachelor or Master, as a change of courses not desired. Only ten students wanted to change courses.

Other desired courses are:
- Computer Networks;
- Computer Technology;
- Linux;
- Informatics;
- Management in Telecommunications;
- Finance;
- Economics courses;
- Tourism.

Students also showed the certificates they have, as well as the certificates they wish to gain during their education.

## 2.2. Additional certificates

Less than one third of the inquired students have additional certificates as most of them are Bachelors. Greater part of the students have CISCO certificate, less have Microsoft certificate. Other certificates shown are beyond the ones included in the inquiry:

- ITIL v.3; Project Management;
- ITIL;
- FCE;
- SQL;
- Western Digital; Seagote Management; ACER;
- Professional qualifications in the field of telecommunications;
- Foreign languages.

### 2.3. Additional qualifications

The greatest part of the students point that study another second subject, followed by the students that would like to study an additional qualification only if it is compulsory – Fig. 1.

The number of the students that would like have retraining, and the students that wouldn't like to have retraining, is equal.
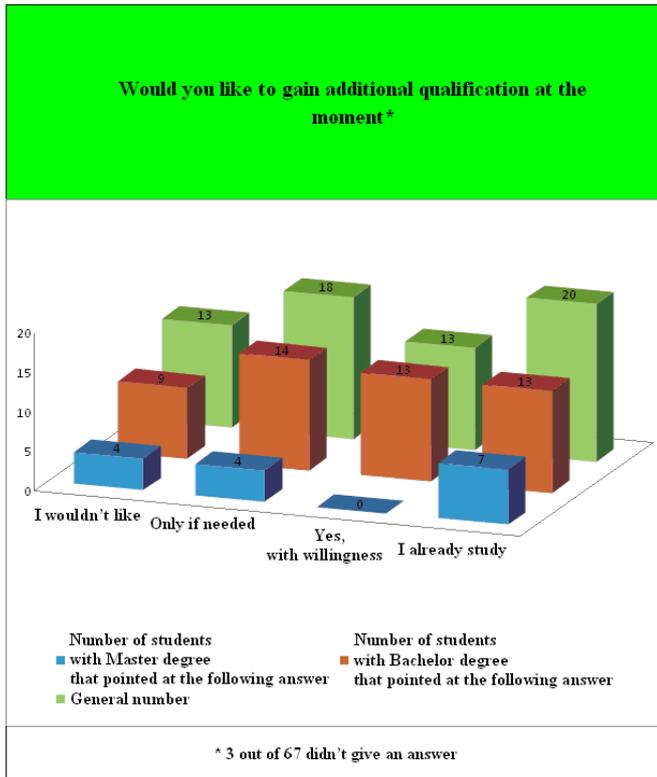


Fig. 1 Additional qualifications.

About two third are the students that pointed the additional qualification, the most desired additional qualifications are:

- Networks and Security;
- System administrator;
- Microsoft, Juniper certificates;
- Audio and video equipment / technique;
- Embedded Systems; ASIC programming;
- IT technologies and systems;
- Networks; Cisco;
- Information Technology;
- Practical training / qualification;
- Practice as a manager; environment control;
- Depends on the field of work;
- Management.

### 2.4. Fields preferred for additional practical preparation

A question, for having the opportunity to point the certain fields which they would like to study next year, is also included in the inquiry - Fig. 2

The following fields are enumerated, ordered according to their general number (both Bachelors and Masters):

1. Windows Server Administration
2. Linux System Administration
3. Mobile Networks Planing
4. Cloud Computing
5. IPv6, 6 to 4 transition, fixed netwok planning
6. VoIP & IPTV
7. Smatphone Programming
8. Communication and Information Security
9. Software Defined Networks и Database design and management
10. Multimedia: HDTV, Digital Studio Technologyes, Digital Audio
11. WEB programming & social networking tools & deployment
12. Video Security and Surveilance
13. System Modelling and Simulation
14. DVB and radio broadcasting и Embedded systems, Sensor Networks, Signal Processing and Imaging Technologies
15. Spectrum Management
16. Others

Students with Bachelor degree give first place to Linux System Administration and second place is Windows Server Administration. Order with students of Master degree is different.

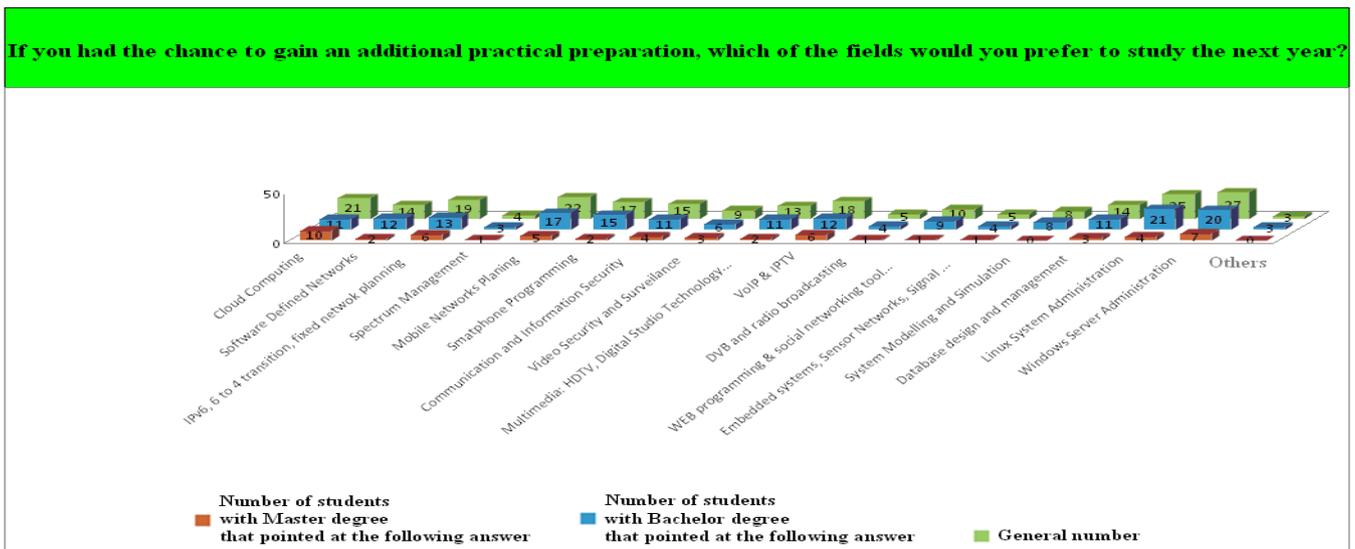First place is Cloud Computing and second is Windows Server Administration.

Fig. 2 Fields preferred for additional practical preparation.

*2.5. IT positions preferred*

The students point at the positions preferred by them for their future job - Fig. 3 ordered according to the number pointed (both Bachelors and Masters) as it follows:

1. System Administrator / Integrator / Engineer
2. Telecommunication equipment engineer
3. Technical Support
4. Security engineer
5. Developer
6. Project / Account / Product / People Manager и Sales
7. 2D / 3D artist
8. Quality Assurance engineer
9. UI / UX engineer (designer)
10. System Architect и On-line marketing specialist

Concerning this question the students are consentient- the most preferable position is System Administrator / Integrator / Engineer. As a second desired position, Bachelors point at Telecommunication equipment engineer, and Masters-Security engineer.
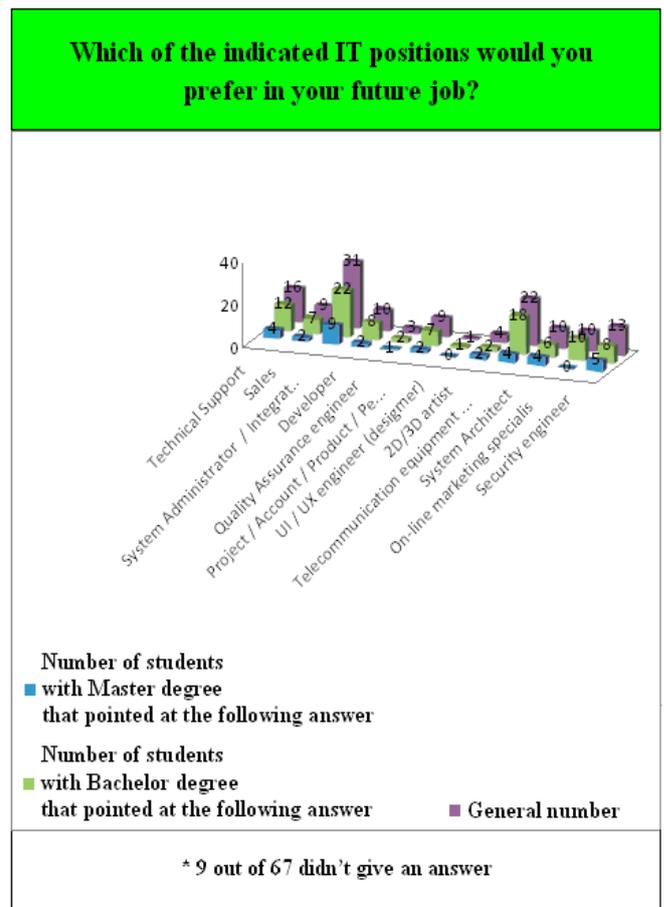


Fig. 3 Preferred positions.

## 2.6. Education taken into consideration required by the Telecommunication branch

More than two third of the students have the opinion that the education in Telecommunication is complied with the requirement of the branch. About one third can't give any estimation – Fig. 4.
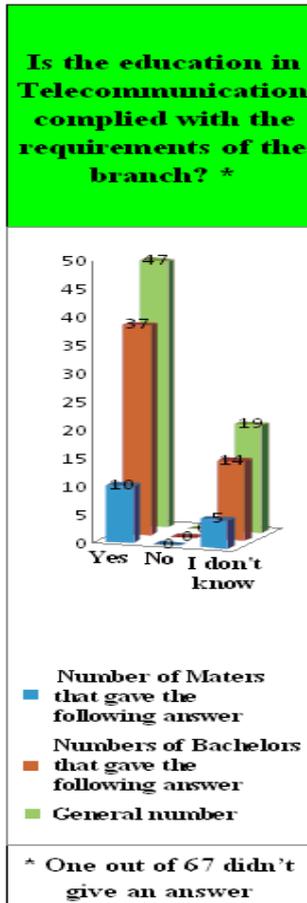
## 2.7. Education in collaboration with companies

Greater part of the students inquired, do not wish to have the theme for their diploma work / master thesis assigned by an outer company. The students who do are one third from Masters and one fourth from Bachelors - Fig. 5.
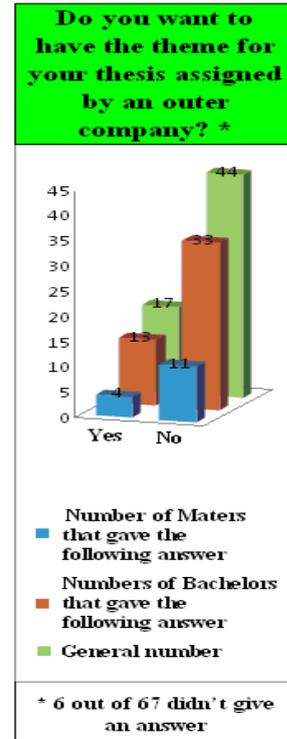


**Fig. 4** Education taken into consideration required by the Telecommunication branch**.**



**Fig. 5** Education in collaboration with companies**.**

## 2.8 Expectations for realization as engineers in Telecommunication

The possible answers to this question are six and students could point at more than one answer – Fig. 6.

The greatest part of the students consider that will have the opportunity for modern and innovative way of working and for a fully valued realization of their capability, opportunities for creative contribution and career development.
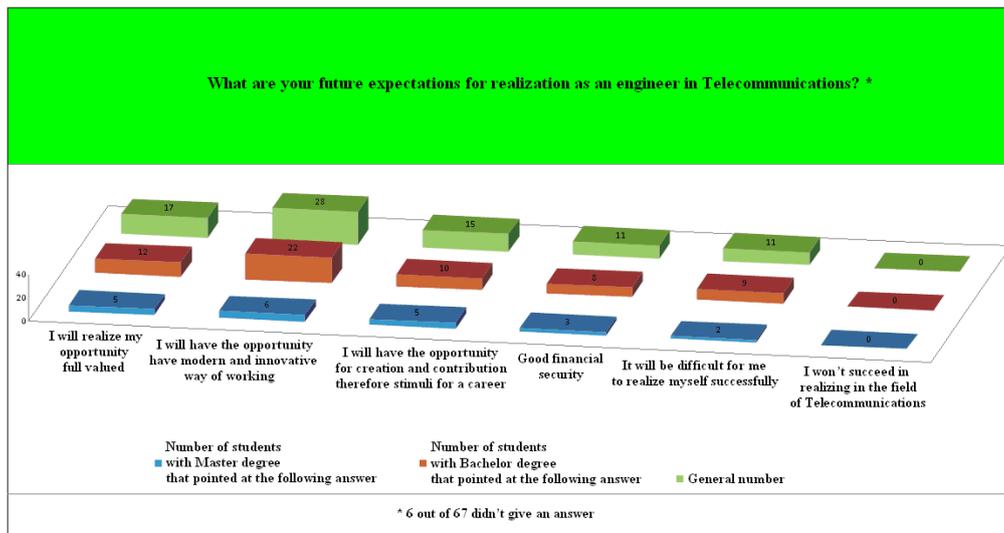
**Fig. 6** Expectations for realization as engineers in Telecommunication.

## III. CONCLUSIONS

With the inquiry made it was possible to find out the correct opinion of the students in the Telecommunication Department at NBU as well as the opportunities that the education give for a successful professional realization of the students.

The inquiry deals with some important problems education in engineering such as: the content and complexity of the material studied that is learned as a general theory, specified theory and practical preparation; need for additional knowledge in many fields.

From the datas shown we could summarize that the greater part of the students inquired estimate the studying content as well-balanced in its complexity in general-technical courses and in specified technical courses.

Education in Telecommunication at NBU is orientated to the requirements of the real business conditions in this branch of our modern economics. This is confirmed by two third of the inquired students. However lots of them do not want to have the theme for their diploma work / master thesis given by an outer company.

The expectations of graduating students for realization as engineers are that they will have the opportunity of modern and progressive way of working, the chance to work creatively, the chance of contribution consequently stimuli for career development. There are no students that consider they wouldn't be able to realize themselves in the field of Telecommunication.

Students, graduating in the programmes of Telecommunication at NBU have a positive estimation according to usefulness and value of the gained professional preparation and would like to realize themselves as engineers. An appreciable part of all inquired students consider that it is necessary to gain an additional qualification within 2 to 5 years in the field they work in, as they point at another qualification they would like to have.

In the inquiry the students pointed at specific fields preferred by them as an additional practical training and qualification, they wish to receive. These fields that are preferred by most of the students will be taken into consideration for the future programmes of Telecommunication Department.

On the basis of the inquiry done, were made recommendations for needed changes in the studying content of the courses which would lead to increase the capacity and quality of Bachelor and Master degrees in Telecommunication Department at NBU.

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