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## Research on University Education Quality Assurance: Methodology and Results of Stakeholders' Satisfaction Monitoring

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### Abstract

The paper deals with quality assurance in university education and training graduates demanded by the labor market. It reveals the role of research conducted according to the DPCA cycle for the continuous improvement of degree programs. The essential component of a degree program quality assessment and assurance is monitoring of stakeholders' satisfaction with education results. The necessity of quality assessment based on the feedback from students and employers is also proved by the criteria and practice of public professional accreditation of degree programs. The paper presents a complex methodology for monitoring of stakeholders' satisfaction with degree programs education results. The results were obtained at Saint Petersburg Electrotechnical University "LETI" (Saint Petersburg, Russia) in the frames of research on quality assurance of its degree programs. Some research results are given based on surveying students and employers on their satisfaction with teaching degree programs. The presented methodology of monitoring students, graduates, and employers' satisfaction with education results can be used by higher education institutions as a mechanism of quality assurance for degree programs.

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*Keywords:* quality of education; degree program; education results; assessment of quality; monitoring of stakeholders' satisfaction

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## 1. Introduction

As a result of its activities, any university produces two kinds of products:

- Educational programs in the market of educational services;
- Degree programs` graduates for the labor market.

The peculiarity of university educational activities and interconnectedness of the offered products is that its students being direct customers in the market of educational services become a product at the labor market after completing their studies. The problem of teaching students demanded by the labor market should be solved in a systematic way through quality assurance of university education in competitive degree programs (DP). The Federal Law “On Education in the Russian Federation” defines a DP as “a complex of the main educational features (study workload, content, expected learning outcomes, etc), teaching and organizational environment, and forms of attestation” (Federalnyi zakon №273 ot 29 decabria 2012 goda “Ob obrazovanii v Rossiiskoi Federacii”, 2012).

Quality of education is usually understood as the balanced compliance of education (its outcomes, processes, environment) with identified needs, goals, requirements, norms and standards (Terminologicheskii slovar v oblasti upravleniia kachestvom vishego i srednego professionalnogo obrazovanii (proekt), 2005). Quality of a DP is the level of compliance of the program’s characteristics and outcomes with the requirements set for this DP (Gerasimov & Shaposhnikov, 2014). There are several approaches to the assessment of quality in education described in the works of Damiechili F. et al. (2011), Dr. Marjorie Peace Lenn (1992), Haris I. (2013), Fatima H. Eid (2014).

One of the effective mechanisms for quality assessment of DPs is public professional accreditation including accreditation according to the international guidelines and rules conducted by some accreditation bodies (e.g members of the European Network for Accreditation in Engineering Education, ENAEE. In Russia it is the Russian Association of Engineering Education, a ENAEE member). The value of such accreditation of DPs is proved by the international experience presented in the works by Finocchietti C. et al. (2003), Judith S. Eaton (2010), Pinedo M. et al. (2012), Yu.P. Poholkov (2010), S.O. Shaposhnikov (2013).

Criteria and procedures of public professional accreditation of DPs have strong attention to the effectiveness of the DP stakeholders` feedback (students, graduates, employers) in terms of their satisfaction with the education results. Assessment of the quality of education based on students` feedback is widely covered in the works by A. Lidice et al. (2013), A. Arbor (2001), A.A. Rusanova (2011), Henard F. at al. (2012). C. Douglas (2001) who pay special attention to the “added value”, i.e. what a graduate gets “at the exit” compared to what he had “at the entrance”. This approach underlines the validity of assessment of graduates` satisfaction with the education they got. Issues on the importance of quality of education for employers and the employers` role in the quality of education assessment are considered by A. Chevalier (2014), M. Humburg et al. (2013), A.V. Kosminin A.V. et. al. (2011). Thus, monitoring of DP stakeholders is a very important component of the education quality assurance system.

## 2. Objectives, methodology and research design

A DP quality assurance should be based on the implementation of the PDCA (Plan – Do – Check – Act) cycle which provides continuous improvement of the educational service offered by a university (see Fig. 1).

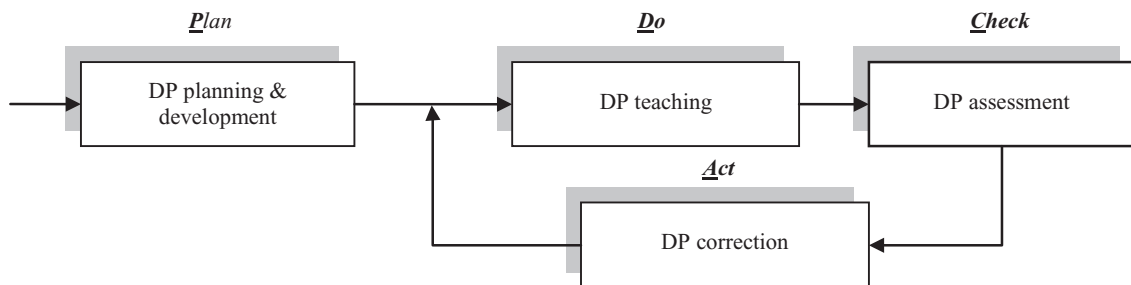


Fig. 1. PDCA cycle of DP continuous improvement

The use of the PDCA approach for quality assurance in education is analyzed in the works by A. Shokraiefard (2011), T. Guergiev (2006), M. Sokovic et al. (2010), John E. Knight (2012).

### 2.1. The role of research in the PDCA cycle for a DP

The PDCA cycle includes research targeted at getting information needed for making decisions on the DP quality continuous improvement.

#### *DP planning and development:*

Any DP should produce graduates` demanded by the labor market. Hence, DP planning and developing should be started with collecting information on the labor market demand in specialists to be produced by the DP. It is important to evaluate both qualitative and quantitative demand of the market. The quantitative evaluation shows how many specialists of the considered subject area may be demanded by the employers whereas the qualitative evaluation tells which competences should be possessed by graduates. One of the sources for the determination of the labor market demand is Professional Standards.

#### *DP assessment:*

Teaching a DP takes quite a long time, so monitoring of the academic process should be conducted throughout the whole period of provision of this educational service. An important component of the DP quality assessment is monitoring of the DP customers` satisfaction with the provided education.

The necessity of DP quality assessment based on the feedback from students, graduates, and employers is also proved by the practice of using criteria of DP public professional accreditation. These criteria, however, contain only a requirement for the existence of a mechanism of collecting the feedback from DP stakeholders but do not describe methods of its realization.

*The goal of conducted research was in the development and approbation of a complex methodology for monitoring of DP stakeholders` satisfaction with educational results.*

### 2.2. Components of monitoring the satisfaction with DP studies results

Feedback on the assessment of satisfaction with DP studies results should be collected from the following target groups:

- Students of the DP;
- Graduates of the DP;
- Young alumni who graduated from the DP and have several years of work experience;
- Employers who have the DP alumni.

Monitoring of students` satisfaction with the study process should be carried out during the DP provision. Assessment of satisfaction should be done in the end of each study semester.

Satisfaction with the DP study results should be assessed for both graduates who had recently completed their studies at the university and alumni who have 2-3 years of work experience after graduation from the university and who are able to assess the level of compliance between the knowledge and skills they obtained upon completing their university studies and real requirements of their professional activities.

Of special importance is the role of employers who deal with the DP graduates in the assessment of the DP study results.

Thus, monitoring of satisfaction with the DP study results has the following components (see Fig. 2):

- Assessment of students` satisfaction with the study process;
- Assessment of graduates` satisfaction with the DP study results;
- Assessment of young alumni`s satisfaction with the DP study results;
- Assessment of employers` satisfaction with the graduates` knowledge and skills obtained from the DP studies.

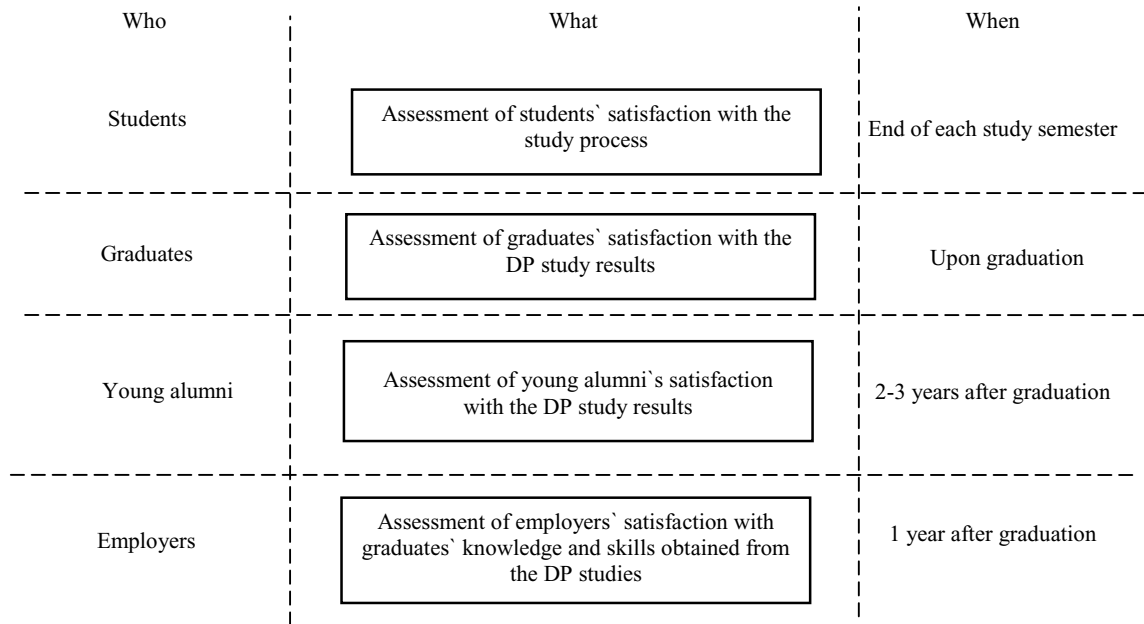


Fig. 2. Components of monitoring the satisfaction with the DP studies' results

The complex of information on satisfaction with the DP studies results from all target groups serves as a source for decision making on correction of the DP during its provision and helps to assure the quality of studies and increase the level of satisfaction of all DP stakeholders.

### 2.3. Methodology of monitoring the level of satisfaction with the DP studies results

#### 1. Assessment of students' satisfaction with the quality of the study process

Goal of research:

1. Quality assessment of the study process organization and the study environment.
2. Quality assessment of the study process (for each study course):
  - Structure and content;
  - Study resources;
  - Teaching staff.
3. Quality assessment of study results (for each study course):
  - Sufficiency of achieved knowledge and skills,
  - Usefulness of the course;
  - Attendance of the course;
  - Study performance of the course.

Research method: survey.

Time of surveying: end of each study semester.

Respondents:

- 1st – 4th year students of Bachelor programs.
- 1st – 2nd year students of Master programs.

The survey is conducted using a questionnaire. Table 1 presents an example of the questionnaire structure for the survey.

Table 1. Questionnaire structure for the survey

<i>Questions</i>		<i>Answer options</i>
<i>Task 1. Quality assessment of the study process organization and the study environment</i>		
Assess the organization of the study process for the past semester	List of courses	
	Correlation of the courses with prerequisites	<input type="radio"/> Excellent
	Study schedule	<input type="radio"/> Good
	Sufficiency of information on the study process	<input type="radio"/> Satisfactory
	Availability of administration (study office, profile department)	<input type="radio"/> Bad <input type="radio"/> Very bad
Your comments and suggestions on the improvement of the study process _____		
Assess the study environment for the past semester	Lecture rooms	
	Campus (buildings, recreations, territory)	<input type="radio"/> Excellent
	Information booths	<input type="radio"/> Good
	Library	<input type="radio"/> Satisfactory
	Website and information portal	<input type="radio"/> Bad
	Internet access	<input type="radio"/> Very bad
Your comments and suggestions on the improvement of the study environment _____		
<i>Task 2. Quality assessment of the study process (for each study course)</i>		
Assess the course	Course content (modules, topics)	
	Conformity of lectures and workshops	<input type="radio"/> Excellent
	Methodical support (lecture notes, course books, etc.)	<input type="radio"/> Good
	Technical facilities of laboratories (computers, equipment, etc.)	<input type="radio"/> Satisfactory
	Theoretical studies (lectures)	<input type="radio"/> Bad
	Practical studies (laboratory works, workshops, course works)	<input type="radio"/> Very bad
	Volume of theoretical studies	<input type="radio"/> Too big <input type="radio"/> Adequate <input type="radio"/> Average
	Volume of practical studies	<input type="radio"/> Inadequate <input type="radio"/> Too small
	Your comments and suggestions on the improvement of the structure, content and resources of the study course _____	
Evaluate the lecturer	Clear and accessible presentation	<input type="radio"/> Excellent <input type="radio"/> Good
	Teaching methods and technologies	<input type="radio"/> Satisfactory <input type="radio"/> Bad
	Objective assessment of students	<input type="radio"/> Very bad

<i>Questions</i>	<i>Answer options</i>	
Level of rigor	<input type="radio"/> Too high <input type="radio"/> High <input type="radio"/> Average <input type="radio"/> Low <input type="radio"/> Too low	
Your comments and suggestions for the lecturer _____		
Clear and accessible presentation	<input type="radio"/> Excellent	
Teaching methods and technologies	<input type="radio"/> Good	
Evaluate the teacher of practical classes	Objective assessment of students	<input type="radio"/> Satisfactory
		<input type="radio"/> Bad
		<input type="radio"/> Very bad
Level of rigor	<input type="radio"/> Too high <input type="radio"/> High <input type="radio"/> Average <input type="radio"/> Low <input type="radio"/> Too low	
Your comments and suggestions for the teacher of practical classes _____		
<b>Task 3. Quality assessment of the study results (for each study course)</b>		
Sufficiency of knowledge and skills resulted from learning the course?	<input type="radio"/> Enough <input type="radio"/> Kind enough, in part no <input type="radio"/> Not enough	
Usefulness of the course for achieving knowledge and skills needed for your future specialty?	<input type="radio"/> Useful <input type="radio"/> Partly useful, partly no <input type="radio"/> Useless	
Which part of the course classes you attended in the past semester?	<input type="radio"/> 70%-100% <input type="radio"/> 50%-70% <input type="radio"/> Less than 50%	
What were the reasons to skipping the course classes in the past semester?	<input type="checkbox"/> Not interesting <input type="checkbox"/> Poor self-organization, can not make myself attend classes <input type="checkbox"/> Not enough time (work, family) <input type="checkbox"/> Illness <input type="checkbox"/> Other _____	
Your academic performance on this course?	<input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> Not passed yet	

## 2. Assessment of graduate`s satisfaction with the program study results

Research tasks:

1. Assessment of graduates` satisfaction with the study results.
2. Assessment of graduates` demand in continuing education.

Research method: survey.

Survey time: upon graduation.

Respondents:

- Program graduates who completed studies this year.

Table 2 presents an example of the questionnaire structure for surveying graduates.

Table 2. Example of the questionnaire structure for surveying graduates

<i>Questions</i>	<i>Answer options</i>
<i>Task 1. Assessment of graduates` satisfaction with the study results</i>	
Are you satisfied with the study results?	<input type="radio"/> Fully satisfied <input type="radio"/> Rather satisfied <input type="radio"/> Partly satisfied, partly not <input type="radio"/> Rather unsatisfied <input type="radio"/> Fully unsatisfied
<i>Content of the study program</i>	
Assess the level of teaching by components	<input type="radio"/> High <input type="radio"/> Average <input type="radio"/> Low
<i>Quality of teaching</i>	
<i>Studies methodical support (course books, lecture notes, etc.)</i>	
<i>Material resources (laboratories, equipment)</i>	
Assess the level of studies according to specialty	<input type="radio"/> High <input type="radio"/> Average <input type="radio"/> Low
<i>Theoretical studies</i>	
<i>Practical studies</i>	
<i>Task 2. Assessment of graduates` demand in continuing education</i>	
Which areas would you like to get continuing education in?	<input type="checkbox"/> Information technologies <input type="checkbox"/> Economics, management <input type="checkbox"/> Business, entrepreneurship <input type="checkbox"/> Foreign languages <input type="checkbox"/> Special technical courses <input type="checkbox"/> Other_____
Where would you like to get continuing education?	<input type="checkbox"/> At your Alma-mater <input type="checkbox"/> Some other university_____ <input type="checkbox"/> Training center <input type="checkbox"/> Does not matter
What are the reasons for your need in continuing education	<input type="checkbox"/> Inadequate background in the specific field <input type="checkbox"/> Need in studies in another area <input type="checkbox"/> Getting a professional certificate <input type="checkbox"/> Additional requirements of the employer <input type="checkbox"/> Other_____

3. Assessment of alumni satisfaction with studies on the program

Research tasks:

1. Assessment of alumni satisfaction with their education.

2. Development of the alumni portrait.

Research method: personal formalized interviewing, surveying, or telephone surveying.

Respondents:

- Young alumni who graduated from the university 2-3 years ago – graduates of the program.

Table 3 presents an example of the questionnaire structure for surveying young alumni.

Table 3. Example of the questionnaire structure for surveying young alumni

<i>Questions</i>	<i>Answer options</i>
<i>Task 1. Assessment of alumni satisfaction with their education</i>	
Are you satisfied with education you got?	<input type="radio"/> Fully satisfied <input type="radio"/> Rather satisfied <input type="radio"/> Partly satisfied, partly not <input type="radio"/> Rather unsatisfied <input type="radio"/> Fully unsatisfied
Assess your satisfaction with knowledge and skills obtained during the studies within the program	Theoretical studies in the professional area
	Practical training in the professional area
	Knowledge of foreign languages
	Computer skills
	Business knowledge
	Managerial skills
Team work skills	
<i>Task 2. Development of the alumni portrait</i>	
Which year did graduate from the program? _____	
What was your study department? _____	
Which program did you study? _____	
Is your present job related to the specialty obtained at the university?	<input type="radio"/> Related <input type="radio"/> Partly related <input type="radio"/> Not related <input type="radio"/> Do not work at present
Which company (organization) do you work at? _____	
What is your position?	<input type="radio"/> Business owner
	<input type="radio"/> Top manager
	<input type="radio"/> Middle level manager
	<input type="radio"/> Specialist
	<input type="radio"/> Other _____
Which branch of industry does your company (organization) belong to?	<input type="radio"/> Shipbuilding
	<input type="radio"/> Radio Engineering
	<input type="radio"/> Electronics
	<input type="radio"/> Electrical Engineering
	<input type="radio"/> IT
	<input type="radio"/> Transport and Automotive



<i>Questions</i>	<i>Answer options</i>
	Industry <input type="radio"/> Fuel and Energy Complex <input type="radio"/> Medicine and Biology <input type="radio"/> Education and Research <input type="radio"/> Service Industry <input type="radio"/> Other _____
What is the scale of your company (organization)?	<input type="radio"/> Less than 50 employees <input type="radio"/> 50-100 employees <input type="radio"/> 101-200 employees <input type="radio"/> 201- 500 employees <input type="radio"/> More than 500 employees
Which competencies obtained during your studies in the program are demanded in your professional activities?	<input type="radio"/> Knowledge and skills according to the speciality obtained at the university <input type="radio"/> Knowledge of foreign languages <input type="radio"/> Computer skills <input type="radio"/> Business knowledge (Economics, Marketing) <input type="radio"/> Managerial skills <input type="radio"/> Team work skills <input type="radio"/> Other _____

4. Assessment of employers` satisfaction with education obtained within the program graduates

Research tasks:

1. Assessment of employers` satisfaction with the quality of education obtained by the program graduates.
2. Characteristic of the program graduates job positions.

Research method: personal formalized interviewing, surveying, or telephone surveying.

Respondents:

- Middle level managers of companies and organizations at which the program graduates are employed.

Table 4 presents an example of the questionnaire structure for employers` surveying.

Table 4. Example of the questionnaire structure for employers` surveying

<i>Questions</i>	<i>Answer options</i>	
<i>Task 1. Assessment of employers satisfaction with the quality of education obtained by the program graduates</i>		
Are you satisfied with the quality of education of the program graduates employed at your division?	<input type="radio"/> Fully satisfied <input type="radio"/> Rather satisfied <input type="radio"/> Partly satisfied, partly not <input type="radio"/> Rather unsatisfied <input type="radio"/> Fully unsatisfied	
Assess the level of competences of the program graduates employed at your division	Theoretical studies in the professional area	<input type="radio"/> Very high
	Practical training in the professional area	<input type="radio"/> High
	Knowledge of foreign languages	<input type="radio"/> Average

Questions	Answer options
Computer skills	<input type="radio"/> Low
Business knowledge	<input type="radio"/> Very low
Managerial skills	
Team work skills	
What are your suggestions on quality improvement of teaching the program? _____	
<b>Task 2. Characterization of the program graduates job positions</b>	
Which company (organization) do you work at? _____	
Which company division do you work at? _____	
How many program graduates work at your division? _____	

### 3. Discussion of the research outcomes

The presented complex methodology of monitoring the level of satisfaction with the DP studies results was developed based on the experience of research for DPs quality assurance at Saint Petersburg Electrotechnical University “LETI”, Saint Petersburg, Russia (Kutuzov et al., 2014). Below, some results are presented illustrating surveys conducted at the university for each component of the monitoring (see Fig. 3 – 15).

#### 1. Assessment of students` satisfaction with the quality of the academic process

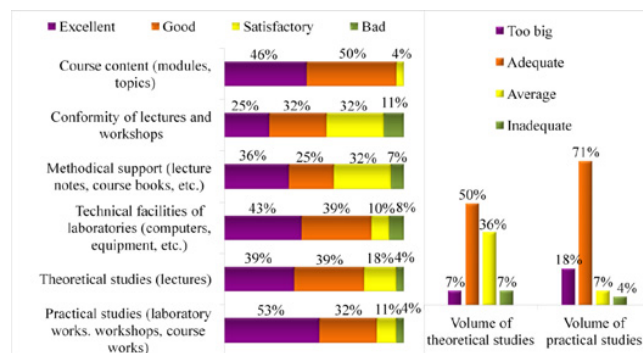


Fig. 3. Assessment of the courses by the students

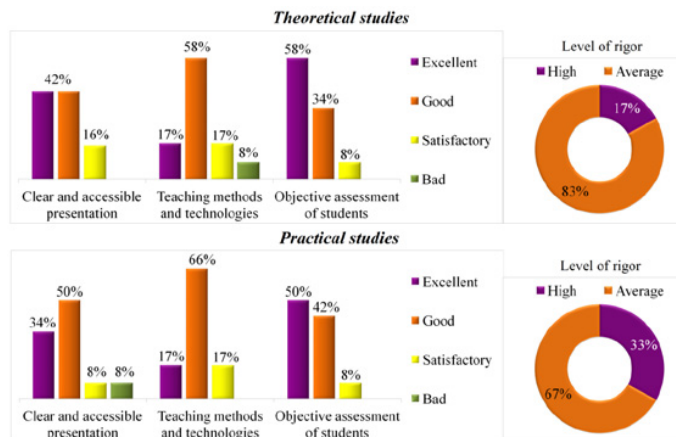


Fig. 4. Assessment of DP teachers by the students

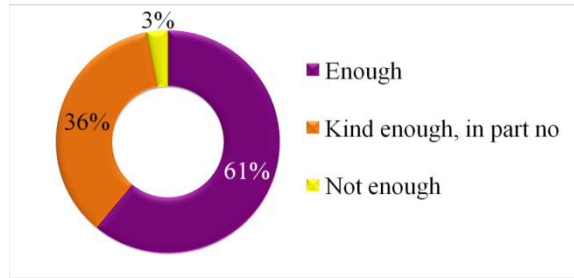


Fig. 5. Assessment of sufficiency of the course knowledge and skills by the students

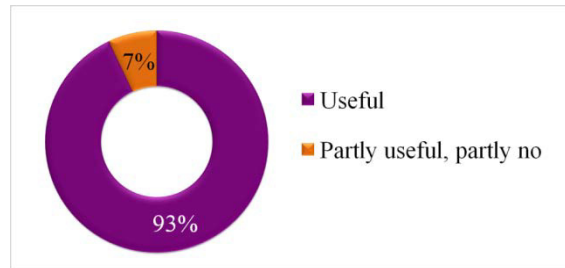


Fig. 6. Assessment of the course utility by the students

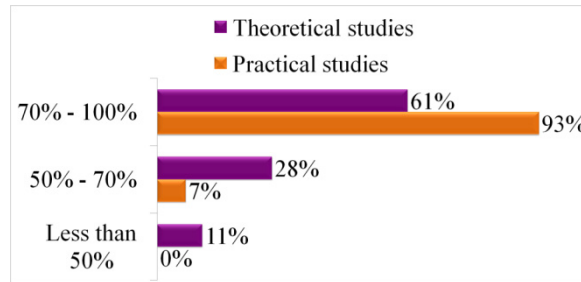


Fig. 7. Assessment of the course attendance by the students

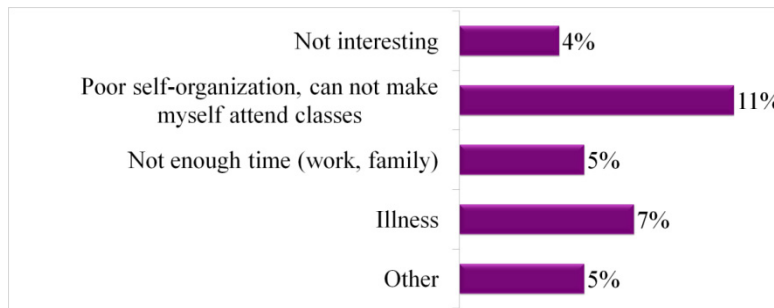


Fig. 8. Reasons for skipping classes by the students

2. Assessment of graduates` satisfaction with the DP studies results

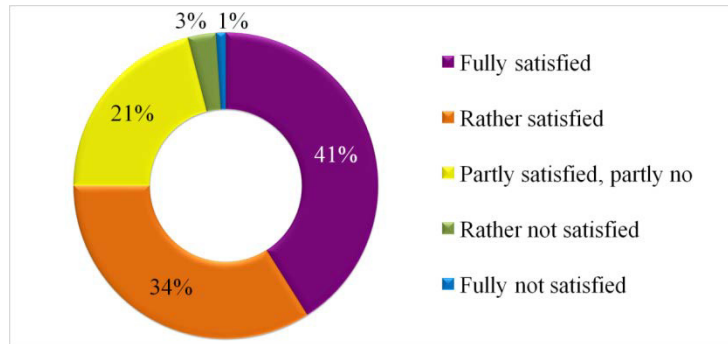


Fig. 9. Satisfaction of graduates with the quality of DP studies

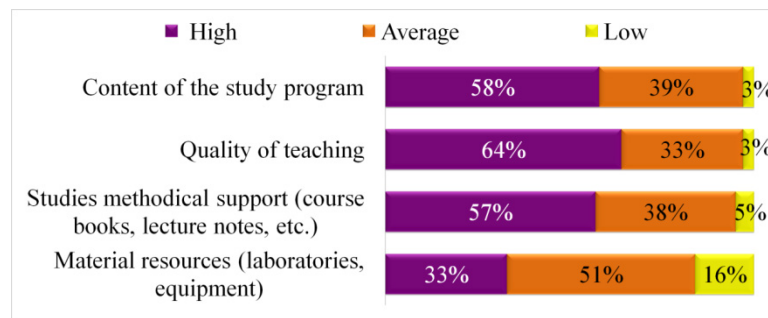


Fig. 10. Satisfaction of the graduates with the level of teaching

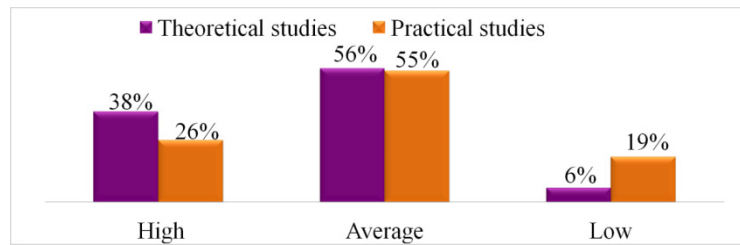


Fig. 11. Satisfaction of alumni with the level of DP studies results

3. Assessment of alumni satisfaction with the DP studies results

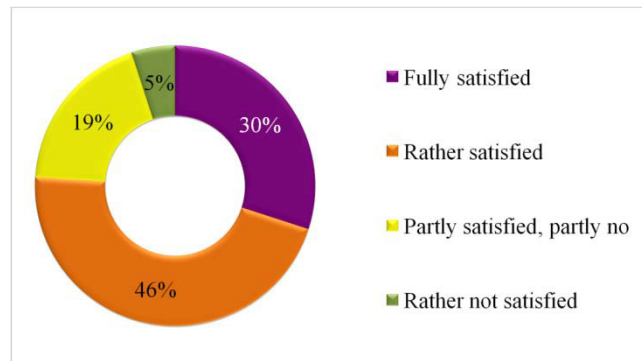


Fig. 12. Satisfaction of alumni with DP studies results

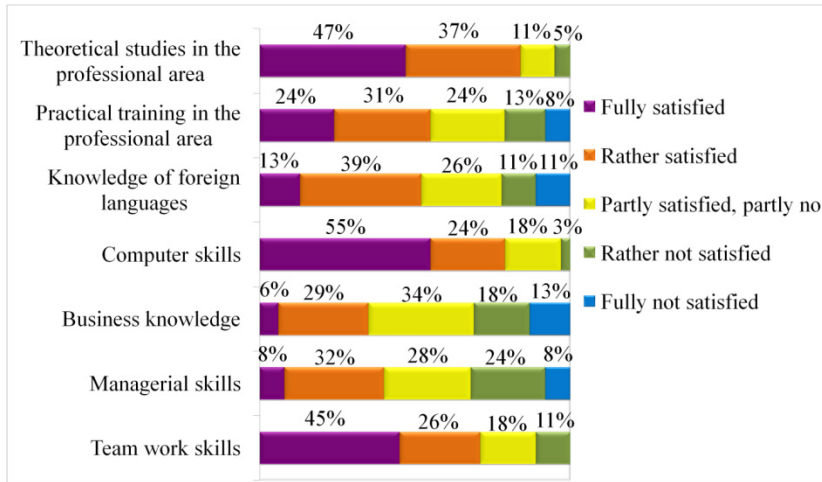


Fig. 13. Satisfaction of alumni with knowledge and skills obtained from the DP studies

4. Assessment of the employers' satisfaction with education obtained by the DP graduates

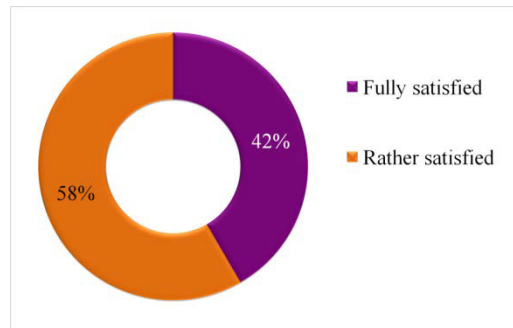


Fig. 14. Satisfaction of employers' with the quality of education

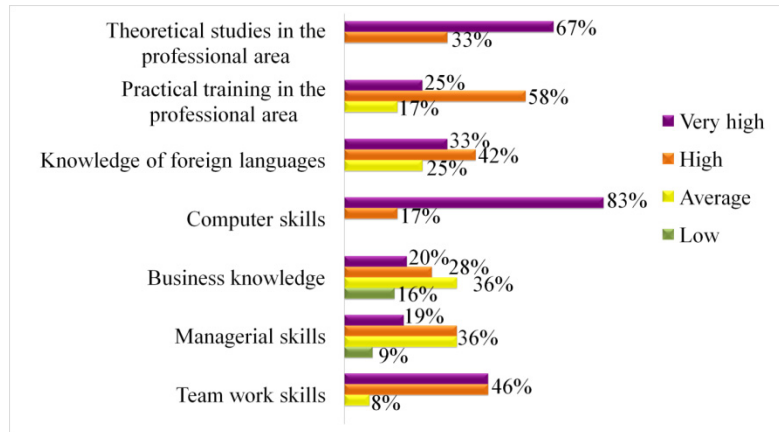


Fig. 15. Assessment of the graduates' level of competences by the employers

#### 4. Conclusion

Complex methodology for the assessment of stakeholders' satisfaction with the DP studies results allows to collect the feedback from customers of a DP and provides information for decision making on the quality improvement of the educational service.

Collecting feedback from the students in the course of their studies at the university, graduates upon completing their studies within the DP, young alumni who graduated from the DP and have several years of work experience, employers who employ graduates of the DP, makes possible to assess the level of satisfaction with the DP studies results in a complex way.

The proposed mechanism for quality assurance within DP studies is appropriate to use for the management of any DP. The described methodology can be adapted according to the learning outcomes of any specific DP.

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