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**ESTIMATION OF INFLUENCE OF KEY COMPETENCES'
LEVELS ON NON-MATERIAL
JOB SATISFACTION**

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Abstract

In this article an estimation of marginal effects of competence levels on non-material component of graduates' job satisfaction is presented. The importance of non-material factors of job satisfaction is outlined. As an indicator of job-satisfaction binary variable based on graduates' self-esteem is used. The research is focused on the process off employability and job performance seen from graduates' point of view. The authors used logit-models to determine the effects and to measure the influence of competence levels on job satisfaction of university graduates and estimate its dynamics for the period of 2014-2016yy. The Data of questionnaire of graduates of the Higher School of Economics Nizhny Novgorod including totally 310 observations was analyzed. As a result, groups of competences with positive and negative marginal effects was formed for bachelors and masters. Authors conducted the comparison of these groups. Also, the competences playing stimulating role for job performance were described as well as destimulating ones. Consequently, the results allow to see in what direction university should adjust its competence-based learning process to meet future requirements of labor market and to improve graduates' job satisfaction and as a result – their job outcomes. Finally, the results of the research can be used in creating studying plans and programs of university subjects.

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1. Introduction

With the transition to competence-based educational model (further in text – CBEM) great opportunities to analyze the position of graduates in labor market appear. The employers' requirements to employees' competences are focus of several researches. In these conditions the problem of correspondence of graduates' level of competences and requirements of the labor market can get wider opportunities to be investigated.

This correspondence can be assessed from two basic points: from the employers' side and from the side of graduates – further employees. While talking about a university education efficiency, the point of view of graduates should be taken into consideration first because the quality of graduates' education seems to be the main indicator of university performance. As for employers – their requirements should be carefully investigated with the focus on further trend of labor market development in order for university to try to meet these requirements while preparing new graduates for the labor market.

1.1. Related literature

All the literature on the subject can be conditionally divided into three main blocks: the works devoted to correspondence of educational level, skills, competences of graduates with employers' requirements; the articles analyzing connection between graduates' competences and employability, job satisfaction or labor market outcomes; and studies concerning development of CBEM in higher educational institutions.

For instance, Gil-Galvan (2011) analyses levels of graduates' competences and compares them with requirements of labor market. Jameson, Carthy, McGuinness, and McSweeney (2016) consider list of non-cognitive competences from employers' point of view. Nita and Goga (2014) investigate labor market expectations in concern with theoretical and practical graduates' competences. The problem of meeting future employers' expectations is analyzed in the work of Podolskiy and Pogozhina (2017), Podolskiy and Pogozhina (2016), Suleman (2016) analyses how employers are satisfied by graduates' skills.

As for dependence of graduates' professional outcomes on competences' levels obtained in universities, it is the focus of works of Corominas, Saurina, and Villar (2010), Pinto-Diogo and Ramalheira (2017). Blázquez, Herrarte, and Llorente-Heras (2018) consider influence of cognitive and non-cognitive competences on employability and wages of graduates. Gavrishina and Zaharov (2015) study connection between levels of graduates' competences and their adaptability on labor market. Finally, Roshchin and Rudakov (2016) analyze in what way quality of higher educational institution affects graduates' salaries.

There is certain lack of literature devoted to connection between competence levels and job-satisfaction. Trivellas, Akriyoubi, Tsifora, and Tsoutsas (2015) describe the influence of knowledge sharing culture on job-satisfaction. Also, job-satisfaction is the main subject of Eyupoglu, Gardashova, Allahverdiyev, and Saner (2016) – they use fuzzy-logics approach, Rudaleva and Kabasheva (2014) – they analyze several factors of job-satisfaction, and some others.

Additionally, during research process we based on some works concerning CBEM implementation in general. Among them there are Usmanova, Shindina, and Basharina (2015), Kudryavtseva (2012), Koenen, Dochy, and Berghman (2015).

The analysis of the literature leads us to the conclusion, that the topic of connection of graduates' competences and their job satisfaction is highlighted not so widely while being interesting and promising subject of research.

1.2. Notion of job satisfaction

In this research we have taken the indicator of job satisfaction as an indirect estimation of graduates' success on labor market. This proposition is based on several reasons:

- We imply that when graduate is highly satisfied by his job performance they will estimate the level of education given at the university as rather high and satisfactory;
- Graduates, who are satisfied by their jobs usually make significant progress and get success;
- Job satisfaction can be measured rather easily through graduates' interviews.

However, this approach also has certain disadvantages and they mainly consist in its subjective character. Another disadvantage can imply certain bias of estimation caused by the fact that active and successful graduates are more willing to answer the interviews than those who found themselves unsuccessful.

According to the studies devoted to the problem of job satisfaction it's necessary to construct the definition of the term. Most frequently 'job satisfaction' is used as a multifactorial variable, which can be measured in several directions. Among factors, influencing graduates job satisfaction there can be listed the following:

Activity, Independence, Variety, Social Status, Supervision-human relations, Supervision-technical, Moral Values, Security, Social Service, Authority, Ability, Company Policies and Practices, Compensation, Advancement, Responsibility, Creativity, Working conditions, Co-workers, Recognition, Achievement (Rudaleva & Kabasheva, 2014).

In our research all factors of job satisfaction are generally divided in three groups:

- Factors, related to money compensation;
- Factors, related to work conditions;
- Factors, related to job contents.

We find it reasonable to focus on job contents and to investigate job satisfaction from this point of view for several reasons. Firstly, job contents seem to be the main factor that provides sustainability of job satisfaction. Even if an employee is highly satisfied by salary level and job conditions, unsatisfactory job contents will inevitably lead to frustration and desire to change the job. Secondly, while calculating correlations between satisfaction of salary level and satisfaction of job contents we found out weak correlation, that leads us to conclusion, that these two factors should be analyzed separately. And finally, there are a pool of researches devoted to connection between graduates' competences and salary levels (Roshchin & Rudakov, 2016; Blazquez, Herrarte, & Llorente-Heras, 2018), however, there is a lack of works concerning non-material component of job satisfaction. So, further in the article we will use the term 'job satisfaction' in the meaning of 'satisfaction from job contents' separated from satisfaction from salary and job conditions.

1.3. Competence levels

Another important part of research concerns competence levels. Competences are units of education-assessment in the competence-based education model (CBEM). Transition to CBEM has certain advantages and one of the most important is simplifying of measurement and estimation of education results. According to competence-based approach entire level of graduate's skills and abilities obtained during university studying can be assessed as a pool of different competences' levels. (Koenen, Dochy, & Berghman, 2015).

The main challenge here is the way in which competence levels could be measured. In this research we rely on self-measurement of competence levels given by graduates. This approach has certain disadvantages caused by its subjective character. However, it can be used because graduates are actually the consumers of educational services of university, so their estimation of university performance and levels of competences given is of great importance. Another reason for using that of graduates' self-estimation is that these esteem is received by the same way as the job satisfaction is measured – by graduates' interviewing.

2. Problem Statement

Generally, the problem consists in amount of influence of acquired levels of graduates' competences on their non-material job satisfaction. Also, the research results help to determine if any particular competence is more or less significant for graduates' employment success and what effort university should take to develop competence levels.

3. Research Questions

The authors of the article set the following questions:

3.1. How non-material job satisfaction is correlated with salary satisfaction?

The goal is to determine if these two factors are similar for graduates or not, and to what extent it makes sense to analyze them separately.

3.2. What competences should be chosen as the most important and influencing non-material job satisfaction?

Here the algorithm of choice and criteria are of great importance.

3.3. To what extent do key competences influence non-material job-satisfaction of graduates?

What competences affect job satisfaction more or less and also the direction of this influence.

3.4. What competences learning should university improve or pay less attention?

In what direction university should adjust its learning programs.

4. Purpose of the Study

Methodological scheme of research is presented on Figure 1

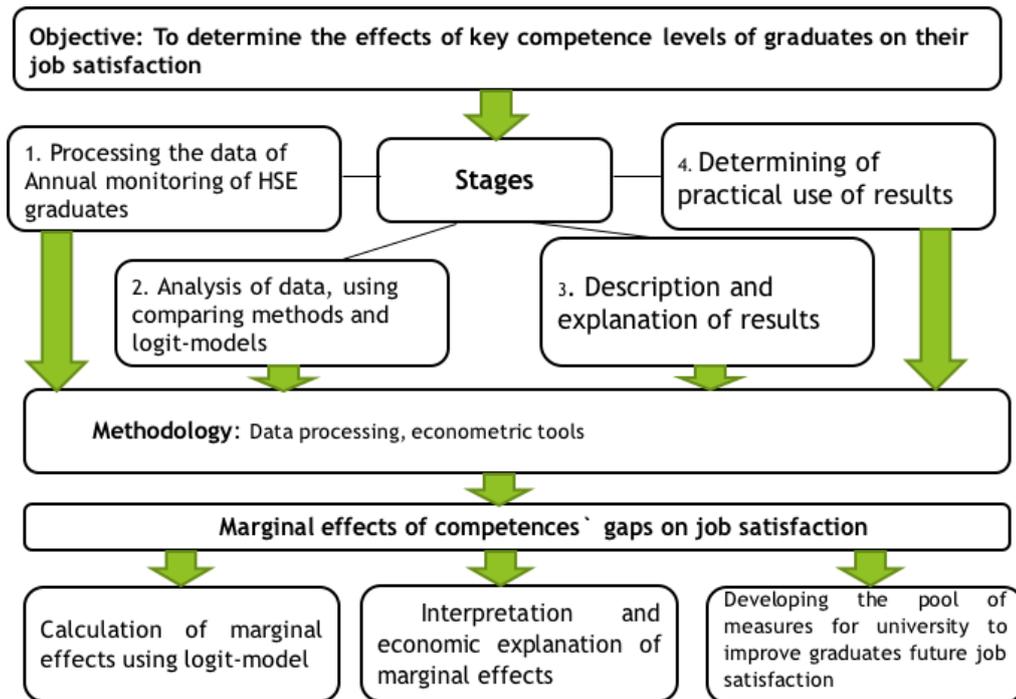


Figure 1. Methodological scheme. Source: Constructed by the authors.

While getting this objective the following problems are solved:

- - Determine excess and deficient key competences of graduates;
- - Investigate dependence of non-material job satisfaction on those key competences;
- - Make conclusions and give recommendations.

5. Research Methods

For the construction of model we used binary variable of graduates job satisfaction. It shows if they are satisfied by their job itself and doesn't take into consideration satisfaction from salary level and job conditions. Then logit-regression on most significant competence gaps are created.

Specification of logit-model was chosen because it helped to estimate marginal effects when regressor is dummy variable and independent variables are not continuous. Moreover, all the variables are attribute, so logit-model seemed to us as the best choice.

5.1. Data

The data of Annual Monitoring of HSE-Nizhny Novgorod graduates (Monitoring further in the text) for 2014, 2015, 2016 years was used. Description of data is given in Table 1.

Table 01. Data of Annual Monitoring's of HSE-Nizhny Novgorod graduates' description.

Year	2014	2015	2016
Total number of observations	147	127	109
N of employed graduates (taken in the model)	123	104	83
N of employed Bachelor graduates	65	54	38
N of employed Master graduates	58	50	45

For the reason that job satisfaction is the key point of the survey, we don't take into consideration graduates who have no job at the moment of interview. All the graduates are divided into categories: bachelors and masters – this division is explained by the fact that masters and bachelors have different pools of competences and different position on labor market.

6. Findings

6.1. Choice of key competences

Monitoring implied questioning of graduates about several universal key competences obtained in university and needed on their workplace.

In this work we use the indicator called Competence Gap (CG) which shows the difference between 5-ball esteem of competence level needed by employer and 5-ball esteem of competence level obtained during the university studies (given by graduates). This indicator shows the degree of discrepancy between level of competence graduate has (estimated by themselves) and level of competence required by their employer. Earlier the similar indicator was used, for instance, by Gil-Galvan (2011), however he conducted just comparative statistical analysis and didn't use econometric approach.

If the meaning of CG is close to zero we can speak about relative correspondence between education level and job requirements. If it is significantly different from zero, there are two options: negative or positive CG.

Negative CG for particular competence generally means that this competence is excess in terms of labor market requirements. However, influence of this overcompetence on job satisfaction is unclear. This ambivalent effect is shown by Meroni & Vera-Toscano (2017) when they analyze the influence of overeducation on graduates' job start. In some cases, such exceed competence makes an employer think that the job is not for their high competence level. In other conditions exceeding level of competence make young employee feel more confident and skilled. To clear up this difference we make logit-analysis further in the text.

Positive CG means that particular competence has insufficient level for graduate's workplace. As in case with negative CG this situation can have different consequences. Sometimes lack of competence plays stimulating role, making job more interesting and increasing job satisfaction (see for example, Gil-Galvan (2011)). However, the case can be opposite – when lack of competence makes an employee think that they don't meet the requirements of workplace.

While calculating CG for bachelor and master graduates a lot of results quite close to zero were received. In table 02 the most significant positive and negative meanings of average CG (per one observation) are shown:

Table 02. Competences with most significant average CG for Bachelors and Masters.

Competence	CG per observation		
	2016	2015	2014
Bachelors			
Use professional knowledge and skills in practice	0,4474	0,6667	0,9385
Collaborate with others and solve conflicts	0,8947	0,6111	0,9538
Communicate in foreign language for professional and private goals	-0,4737	-0,7407	-1,0462

Present job results in public forms using oral presentations	-1,10526	-0,7407	-0,7692
Set goals an determine the ways of their achievement	0,9211		
Masters			
Formulate ideas in writing form literally	0,3111	0,3061	
Communicate in foreign language for professional and private goals	-0,1556	-0,3469	-0,6769
Present job results in public forms using oral presentations	-0,5111	-0,5510	
Cope with large amount of work	0,3333	0,3061	-1,2769
Create absolutely new ideas, develop creativity and initiative		0,3673	
Organize interaction/communication in team			1,4923

Source: Calculated by authors using data of Monitoring

There are some conclusions from the figures of table 2:

We can see from the table 2 that aver' CG absolute values are lower for masters than for bachelors. This effect can be explained by the fact that graduates with master's degree obtain deeper competences and understand better the requirements of labor market.

After that we can make the conclusion about excess and insufficient competences for masters and bachelors and divide them in four groups (Table 3).

Table 03. Competences with excess and insufficient levels for graduates' workplaces.

	Masters	Bachelors
Excess competences	<ul style="list-style-type: none"> • <u>Communicate in foreign language for professional and private goals;</u> • (2016, 2015) <u>Present job results in public forms using oral presentations;</u> • (2014) Cope with large amount of work 	<ul style="list-style-type: none"> • <u>Communicate in foreign language for professional and private goals;</u> • <u>Present job results in public forms using oral presentations</u>
Deficient competences	<ul style="list-style-type: none"> • (2016, 2015) Formulate ideas in writing form literally; • (2016, 2015) Cope with large amount of work; • (2015) Create absolutely new ideas, develop creativity and initiative; • (2014) Organize interaction/communication in team 	<ul style="list-style-type: none"> • Use professional knowledge and skills in practice; • Collaborate with others and solve conflicts; • (2016) Set goals an determine the ways of their achievement

Coinciding positions for bachelors and masters are underlined. The table shows two main overdeveloped competences for graduates. They include foreign languages and presentation of job results. Other competences are assessed by graduates as insufficient for their job. It makes sense for the university to enforce teaching of the competences from the lower row of table 3 while graduates feel lack of these competences.

6.2 Logit-model

For the construction of model we used binary variable of graduates job satisfaction. It shows if they are satisfied by their job itself and doesn't take into consideration satisfaction from salary level and job conditions. Then logit-regression on most significant competence gaps are created.

Logit-model for bachelors gave following results (see Table 4):

Table 04. Results of logit-model for Bachelors

Competence	Coefficient in logit-model		
	2016	2015	2014
Use professional knowledge and skills in practice		0,4217**	
Collaborate with others and solve conflicts		-0,2854*	0,3085
Communicate in foreign language for professional and private goals		0,4293**	0,4995*
Present job results in public forms using oral presentations	0.2792	-0,2438	-0,6242**

** - 5% level of significance, * - 10% level of significance.

Estimation-Prediction Evaluation of this model is 81% for 2015 and 84% for 2014 and 2016 that means rather high level (80-100%).

In Table 4 it's interesting to explain signs of coefficients. If the sign is negative it means that excessive level of competence improves job satisfaction and deficient level reduce satisfaction from job contents. As for positive signs – for these competences excessive level does not support job satisfaction but the lack of this competence plays stimulating role.

Logit-model for Masters gave following results (see Table 5):

Table 05. Results of logit-model for Masters

Competence	Coefficient in logit-model		
	2016	2015	2014
Formulate ideas in writing form literally		-0,6208*	
Communicate in foreign language for professional and private goals	0,4199	-0,3219	-0,0474
Present job results in public forms using oral presentations	0,5126	0,8235**	
Cope with large amount of work	-0,0947	0,8205*	0,3479*
Create absolutely new ideas, develop creativity and initiative		0,7947*	
Organize interaction/communication in team			-0,3783*

** - 5% level of significance, * - 10% level of significance.

Estimation-Prediction Evaluation of this model is 82% for 2014,2015 and 79% for 2016 that means rather high level (80-100%).

The meanings of coefficients' signs are the same as for Table 4.

Marginal effects calculated for competence gaps are presented in Table 6.

Table 06. Marginal effects

Competence	Marginal Effect		
	for average meaning		
	2016	2015	2014
Bachelors			
Use professional knowledge and skills in practice		0,0904	
Collaborate with others and solve conflicts		-0,0612	0,0759
Communicate in foreign language for professional and private goals		0,0921	0,1229
Present job results in public forms using oral presentations	0,0346	-0,0522	-0,1536
Masters			
Formulate ideas in writing form literally		-0,0651	
Communicate in foreign language for professional and private goals	0,0797	-0,0338	-0,0064
Present job results in public forms using oral presentations	0,0973	0,0864	
Cope with large amount of work	-0,0178	0,0861	0,0470
Create absolutely new ideas, develop creativity and initiative		0,0834	
Organize interaction/communication in team			-0,0511

Source: Calculated by authors.

7. Conclusion

Among the competences with most significant competence gap there are 'Communicate in foreign language for professional and private goals' and 'Present job results in public forms using oral presentations' which exceed job needs both for bachelors and masters. So, the university level of this competences is high enough.

Comparing bachelors and masters competence gap, we can see that masters have lower level of gap, that probably means that their competence level is closer to employers' requirements.

Competences for which university level is insufficient for employers are:

- 'Use professional knowledge and skills in practice' and 'Collaborate with others and solve conflicts' for bachelors;
- 'Formulate ideas in writing form literally', 'Cope with large amount of work' and 'Create absolutely new ideas, develop creativity and initiative'. It's reasonable for educational institution to enforce studying of these particular competences.

Logit-models have shown negative marginal effects for:

- 'Collaborate with others and solve conflicts' and 'Present job results in public forms using oral presentations' for bachelors;
- 'Formulate ideas in writing form literally' and 'Communicate in foreign language for professional and private goals'

For this competences it's better to have higher level than employer requires to be satisfied by job.

Positive marginal effects have been got for:

- ‘Use professional knowledge and skills in practice’ and ‘Communicate in foreign language for professional and private goals’ for bachelors;
- ‘Present job results in public forms using oral presentations’, ‘Cope with large amount of work’ and ‘Create absolutely new ideas, develop creativity and initiative’.

For these competences gap plays a stimulating role and increases job satisfaction. It’s remarkable that ability to make presentations have negative marginal effect for bachelors and positive for masters.

The results of the research can be used in creating studying plans and programmes of university subjects because they allow to determine what competences have greatest influence on job satisfaction of graduates.

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