

# The Employment of Graduates by the Profession: Factors of Effectiveness

A. Borisova

Department of Management  
Novosibirsk State Technical University,  
Novosibirsk, Russia  
a.borisova@corp.nstu.ru

**Abstract** —Regular monitoring is needed for a thorough study of factors determining the imbalances in the conditions of the youth labor market. Means used for measuring do not fully satisfy the criteria of resource intensity; moreover, they make use of excessively overloaded set of indicators. As a rule, the choice of indicators is based on logical-analytical deductions by the authors, which affects the validity of research results. The task to justify the necessary and adequate set of indicators, which possess a close relationship with the type of job placement, has been outlined and solved. The application of this set of indicators allows the resource intensive monitoring of graduate mobility. The research revealed that, at different stages of professional realization, the importance and relevance of competitive advantages of employment types vary. Thus, entering the market, the field-specific type of employment is realized in the conditions of high entry barriers and limits the possibility of getting larger values which characterize the employment advantages. During this period, the non-specific and search types of employment dominate. Then, the situation changes, and the non-specific employment limiters become significant, which makes much more difficult for the graduates, who have chosen the non-specific jobs, to satisfy their value preferences.

**Keywords** — labor market, higher school graduate, employment, employer.

## INTRODUCTION

The analysis of already-existing paths of professional development of high school graduates is performed by various stakeholders with the help of monitoring tool. The problem of sufficient economic damage caused by non-specific employment of high school graduates is urgent today, consequently, the development of resource-intensive monitoring becomes necessary. State regulation of youth employment policy is based, as well, on the data obtained by the Budgetary Monitoring Center at Petrozavodsk State University, which performed the survey in all federal subjects of the Russian Federation. The system of interactive employment monitoring (SIEM) of high school graduates includes 51 indicators [1], the values of which are used to describe the conditions of the regional labor markets and educational services. The choice of indicators included in the SIEM is based on logical-analytical deductions and does not make use of tools which test the factor influencing the resultant, i.e. the employment. The collection of data and their

verification are labor consuming. Therefore, the issue of the necessary and adequate set of indicators which are significantly related to the resultant, i.e. the type of employment is still urgent. The relevant set of indicators with such resultants as "career" and "salary" are found in the works [2; 3]. Other sources available failed to provide us with the information concerning the statement and solution of the problem that shows the relationship between the indicators applied and their resultants. Thus, the key issue concerning the necessary and sufficient set of indicators, which show the significant relationship with the type of employment, remains open. The analysis of high school graduates' allocation in the labor market in terms of relevant values allows defining the factors which determine the non-specific employment. What advantages do the graduates receive when they do not work within their field of competence, and what limitations on their return to the profession exist? The search for answers to the above-mentioned questions enables us to find out limitations on the employment according to the field of competence, verify the tools used for monitoring the high schools activities aimed at graduates' placement, and save resources.

## I. THE EMPIRICAL BASIS AND METHODOLOGY OF RESEARCH

The collection of data in two time samples predetermines the intention of the researcher. The comparison of characteristics and their dynamics regarding the initial and current employment perspectives allow us to identify the tendency in higher school graduates' allocation according to the types of employment, justify the advantages of graduates' employment according to the type of employment, and reveal the factors keeping down the frequency of field-specific employment. The assumptions made about the type of dependence of education- career paths efficiency can be referred to casual hypotheses and, in order to test them experimentally, it is necessary to obtain the data from one and the same research object for a long period of time. That is why, the longitudinal method has been used in the work, which makes it possible to perform several slice samplings of data at the stages "before" (the level of graduates' readiness to actualize themselves in their occupations) and "after" (the type of employment and level of competitiveness), as well as to explain the difference between the groups by assessing

graduates' competitiveness. The applied scheme of research is an updatable panel longitude. The object of research is education-career paths of higher school students and graduates who study —Management”, —Human Resource Management”, and —Labor Economics”. The territory of sampling is limited by such cities of the Siberian Federal District as Novosibirsk and Irkutsk.

The collection of data includes two stages. At the first stage, the dynamics of readiness during the period of training at the university is traced, moreover, it is easy to control that, in its turn, ensures a high level of representativeness of samples. The transition to the second stage of data collection is performed in two years after graduating from the University and staying in the market. The two-year period has been chosen because it is possible for the majority of graduates to assess the successfulness of their employment in comparison with other participants in the labor market. The indicated period allows reducing the influence of —maturity effect”.

Thus, the formation of the empirical basis reflects the intention of the researcher. The relationship between the stages manifests itself in comprehensive search for the factors determining the field specific employment and the level of graduates' competitiveness as the main resultants of implementing their educational and career paths. This design makes it possible to avoid certain limitations inherent to some other types of research, which lacks the relationship between the stages of building the education-career path of professional development, and substituting the object of survey rather than assessing actual implementation of their professional potential (the effectiveness of job placement) is noticed.

In order to find the significant factors influencing the job placement of graduates according to their specialization, the multi-way tables and chi-square criterion are used [4] due to the qualitative character of these indicators.

The advantage of this analysis is that it is possible not only to identify the differences between four types of employment studied but also to find out the differences in each pair of types, which, in some cases, allows us to understand better the mechanics of development of this or that type of employment. However, the chi-square criterion fails to conclude what is the direction of their relationship. Consequently, in the cases where it makes sense, we move to the order scale and calculate the Spearman correlation coefficients [5].

The k-means cluster analysis is used for classifying the graduates on the basis of indicators which have been determined for different types of employment. As a number of characteristics are presented in the nominal scale, the matrix computation of distances between the points, which correspond to each graduate, in the multidimensional indicator space is performed with the use of the Gauer coefficient [6] which allows simultaneous application of variables measured in different scales.

The selection of variables for clustering has included the targeted search for possible combinations of factors, providing the least total value of intra-cluster variances.

## II. THE INITIAL JOB PLACEMENT OF GRADUATES IN THE LABOR MARKET

The initial set of indicators includes 20 elements. The correlation between their relationship and the type of employment made it possible to single out a number of the most significant elements. The indicators, which did not reveal any significant relations, demonstrate maturity in making professional choice and permanent specific employment in a company.

Thus, it remains valid that graduates consider their first employment as a starting point for acquiring experience, mainstreaming their potential (in case of field-specific employment), and increasing the employment value proposition. The graduates are ready to work long hours in circumstances where the employee-employer relations are poorly regulated and protected.

Their readiness to put up with certain hardships in employment is limited in time, because they (hardships) become significant at the subsequent employment. This situation exacerbates the problem of high barriers for the graduates who intend to enter the field-specific market and reduces the possibility of the employer to hire specialists, because their subsequent departure is highly probable. Employment types clustering: primary employment. Three clusters were distinguished when classifying the graduates according to the indicators determined above (Table 1).

Table 1. Distribution of employment types into clusters

Cluster characteristics			Employment type, % of the number of entries to the cluster			
№	Size, %	Average diameter	Field specific	Field-specific-return	Non-specific-with-professional-experience	Non-specific
			1	48,5	0,47	8,6
2	30,7	0,45	18,5	3,5	6,5	2,2
3	20,8	0,53	4,8	6,1	0,9	9,1

The clusters obtained are closely correlated with the type of employment (chi-square statistics is 65,88 and its value is 0,1%) / In the first cluster, the non-specific employment of graduates in the labor market prevails, in the second cluster, the field-specific employment of graduates in the labor market prevails, the third cluster is characterized by the lowest frequency values of employment referring to the field - specific and non-specific-with-professional-experience type and the average values referring to field-specific and field-specific-return in comparison with others.

As we did not manage to single out a separate cluster by the type of field-specific-return employment and non-specific-with-professional-experience employment, then we can only speak about three main groups of graduates. The first group includes the graduates who follow the steady non-specific path, the second one – the field-specific path. These groups characterize the so-called —pure” types of employment, which could be easily differentiated by employment parameters. The graduates, who are still in the process of decision between alternatives and forming their professional

skills, are placed in a separate group. This group is characterized by different parameters of graduates' employment as the highest intraclass variance has been identified.

The search trajectory of professional development is the basis for the so-called "blurred" types of employment – field-specific-return and non-specific-with- professional-experience. The dimensionality of clusters proves the statement that non-specific type of employment significantly dominates in the market (within certain fields of training and time-frame of research, practically one graduate of two, fails to stay in the workplace according to their specific field of training). Less than one third of graduates work in their specific field, and one graduate of five is looking for the opportunity to develop and use their competences.

The current situation proves the necessity to provide help for students in developing their education - career paths and use the tools facilitating the specific field employment. The reduction of the period of training at the University to four years (bachelor's degree) may lead to a further worsening of the situation. In order to interpret the results of cluster analysis, a measure of contingency between variables, which are used for classification, and indicators of clusters' membership is identified/ For the first and the second clusters, the most significant are such variables as "employment" and "professional skills' application". The difference between forms of employment has been found: full employment dominates in "pure" types, whereas part -time employment dominates in the "blurred" ones. The ways of labor organization in modern management practice are constantly improving. Virtual workplaces and distant forms of employment are oftener created in large companies. A lot of specialists working at domestic enterprises consider part-time work as temporary employment caused by situational factors.

The change of social stereotypes about the acceptable forms of employment is a long process which is still developing in the regional labor market. That is why, when interpreting the results of this research, we assess the high values of temporary employment of the third group of graduates as their job dissatisfaction at the company and desire to change the place of work.

The value of wages during the probation period is a significant variable for forming pure types of employment and the wage growth is a significant variable for the blurred ones. The change of the essential component of variables showing the level of material wealth is of particular importance. In case of field-specific employment, the employees' benefits are very significant whereas, in case of non specific employment, the key factors are the prospective possibilities of meeting the dominating value preferences at the expense of wage growth.

The non-specific type of employment oftener makes it possible to get higher wages and its further growth. The upper threshold of the growth of the wages reference level (determined through the third quartile) during the non-specific employment in comparison with the field-specific employment is higher by 37,5 %, and with the field-specific-return employment by 46,6 %. The capacities of the

organization, which employs young socialists according to their specific field, are quite modest. The current situation is caused by the lack of balance in supply and demand in the labor market. With positive dynamics of demand for higher education among young people, the researchers note a great disbalance between the professional potential of graduates and their demand by the employers. The significant gap in assessment shows the scarcities in professional training against the background of employees' higher education level. This contradiction often explains the reasons for low rates of development in the real sector of economy, limitations of economic activities and its effectiveness. It seems difficult to provide high rate of labor productivity for those employees who are not professionally trained and have to acquire professional skills directly in the workplace. Consequently, all this decreases the value of higher education and harms the credibility of a university degree.

Separating from the parental family and starting their own family apart from practicing their profession are considered to be dominating value priorities for young specialists. The level of material wealth is important for their realization. The data show the shift of emphasis from professional to material preferences among respondents in assessing their viability. Modern graduates face bigger challenges in education, career and life than the previous generation against the background of reducing the time of expectation and realization.

The transition from consecutive to parallel and rapid means of creating a career should be noted. If the level of financial compensation is high at non specific employment, most graduates choose them and do not agree to accept financial limitations at present for the sake of potentially expected material wealth in the future. Current labor market conditions help to strengthen the unfavorable situation due to the predominance of non-specific employment. The information about the demand for employees without field-specific training is more accessible to the graduates, and modest requirements for the professional skills are also attractive.

The graduates who are ready to work in non-specific fields, explain their willingness by the necessity to develop professional skills, but their arguments sound rather unconvincing since the employment at such enterprises is more sustained and long-lasting. It reduces the opportunities of the graduates to determine and regulate themselves the search for employment, additionally, the situational factors greatly influence this process. The type-forming features may be ordered according to the degree of influence on forming the clusters in the following way (with diminishing chi-square statistical values): the form of employment (231<sup>\*\*\*</sup>); the measure of utilizing the professional training (196<sup>\*\*\*</sup>); wages during the probation period (15,61<sup>\*\*\*</sup>); the length of job search (9,14<sup>\*</sup>); the growth of wages at the initial place of employment (7,80<sup>\*</sup>); the length of employment at a company (7,53).

The interpretation of identified clusters allows the assumption that the graduate may change the type of employment (Table 2). Further analysis has proved the actual

implementation of this probability. The assessment of the probability of the change in the type of employment represents high potential removability of the type of non-specific employment (Table 3). Thus, the initial employment (after graduating from the university) would include the following factors that limit field-specific employment of university graduates:

- small rate of updating and creating new workplaces which are supposed to increase the capacity of the staff;
- high requirements for professional training and personal competency;
- low competitive wage rates and a very modest level of their possible growth;
- limited application of adaptation technologies and a small chance to stay in the position are not adequate to value priorities of young specialists;
- modest advertising campaign aimed at attracting young specialists.

Table 2. The characteristics of graduates' distribution according to the predominant types of employment and reasons for changing the place of employment

Cluster	The characteristics of graduates employment	The probability and reasons for changing the place of employment
1	The graduates with low application of acquired professional skills who rapidly found the place of full employment with high wage policy. Long-term employment relations are prevalent	Low probability. It resulted from lost professional capacity, missed opportunities and high level of employment satisfaction
2	The graduates with high application of acquired professional skills who rapidly found the specific field employment. They are placed at an enterprise where the wage policy is moderate, and the employment relations tend to be long-termed	Low probability. It resulted from the fact that the professional capacity has been actualized and is growing, the satisfaction of value preferences is expected in the future
3	The graduates who rapidly found the place of employment are characterized by low level of actualization of professional potential at the companies offering average market costs at part-time employment. The relationship with the employer is limited in time with future intention to cancel the labor contract	High probability. It resulted from the fact that there is experience in changing the place of employment, methods of search and selection have been developed, the certainty in choosing value preferences at professional realization, conditions for wage growth are not provided

Table 3. Trends in graduates' movement against the type of employment

Cluster based on the initial employment	The probability of change of employment type based on current employment clustering, in equivalent unites		
	Field-specific	Search	Non-specific
Field-specific	0,13	0,12	0,06
Search	0,005	0,14	0,01
Non-specific	0,16	0,19	0,13

High probability of the second turn to the blurred types of employment allows the prediction of market volume changes in pure types of both field-specific and non-specific employment. Let us consider the changes in graduates' distribution in the labor market two years after their graduating.

### III. THE PROFESSIONAL CAREER DEVELOPMENT: CURRENT EMPLOYMENT OF GRADUATES

A set of indicators used for diagnosing the competitive advantages of current employment of graduates originally consisted of 74 items. Studying the strength of links between the indicators and the type of field-specific employment made it possible to limit the number of significant indicators. When the number of indicators was reduced, it turned out that those indicators that, at first, did not demonstrate strong links became relevant. This can characterize the significant extension of the item list, which is necessarily used to assess the competitiveness of employment over the period – professional development (the start of the career) – staying in the labor market (current employment)". A detailed description of links' characteristics and further clustering make it possible to bring out the dynamics of graduates' employment according to the type of their specific field. The clustering has been performed twice: first, for the purpose of original employment benchmarking against the identical set of significant indicators, then against the extended set of indicators.

The analysis of original and current employment distributions against the identical set of indicators confirms that, with the time on, the frequency of graduates' distribution according to the type of employment changes greatly: the frequency of non-specific types of employment reduces significantly, and the frequency of search trajectories of professional development more than doubles. The movement of graduates from "non-specific employment" group to "field-specific" and "field-specific-return" groups dominates. The acquisition of work experience, which is considered to be the key competitive advantage, amplifies the frequency of graduates' movement in the search for better workplaces.

The change in clusters' dimensionality indicates the dynamics of graduates' employment distribution, and the necessity to take repeated measurements of the parameters of movements in the labor market. Reducing the dimensionality of the "non-specific employment" cluster is closely associated with the turn of professional development of young specialists and their desire to implement professional capacities when the value of labor resources is growing. The assumption concerning the tendency to decrease the frequency of field-specific employment has not been established. On the contrary, it is noted that there is an increase in the market share of graduates who are employed within the framework of their professional training. The data obtained prove that the period of adaption and socialization of young specialists has been lengthened. The current clustering is interrelated with the type of employment. (the chi-square statistics is 33,26 and relevant at 0,1%). Low values of infraclass characteristics dispersion. In order to interpret the results of cluster analysis, the measures of contingency between variables and cluster indicators were found.

The comparative analysis of initial and current employment allows the following conclusions. Steady labor relations are formed due to the domination of the forms of full employment. The forms of part-time employment are applied

marginally. As a rule, it is young specialists who choose one of the alternatives because their decision is often affected by their work and life circumstances. The stability of employer-employee relationship is reflected through the duration of their employment in one and the same workplace.

For all types of employment, the duration of current employment is considered to be dominating. It can prove the decrease in young specialists' mobility in future and restrictions on returning to field-specific employment. Job-seeking periods are modified. Work-experience in a specific field reduces job-seeking periods. At the same time the search for non-specific employment with a high level of realizing the value preferences becomes rather difficult and demands considerable time. Consequently, at the very start, the work-experience in a specific field is a key factor which makes for their future professional and career development. The non-specific employment after graduating from higher education establishments, which is characterized by high rates of job-seeking, will further limit the promotion opportunities in employment as well as in social advantages, and hamper the development of their professional capacities. Frequent changes in graduates' movement, which are typical of "blurred" types of employment, and relatively long professional biography enhance the possibilities of a quick job search. The variety of employment, which can facilitate various professional capacities, is confirmed. Earlier, the overwhelming majority of graduates working in their own profession commended the relevance of their professional training. The current assessment of actualization of professional capacities lies in the extended "low-high" range. Search trajectories are followed by the growing relevance of their professional training.

Work experience in a specific field greatly increases the value of young specialists' labor and allows them to claim higher paid starting positions. The field-specific employment supported by work experience will significantly facilitate the pay rise in future.

Thus, the acquired competitive advantages of field-specific employment after graduating from the University provide a time lag during which the employment benefits are built: the period of job search reduces, the opportunities to stay longer in the same workplace increase, the growth of wages as well as the rate of increase are provided. The advantages of non-specific employment at the start of the professional career are not only smoothed, but, in some cases, decreased.

The classification of graduates' distribution according to the extended list of indicators made it possible to form three clusters. This clustering is closely related to the type of employment (the chi-square statistics is 25,60 and its relevance is 0,1%). The first cluster includes the graduates selected by the type of their employment: field-specific and field-specific-return. In the second cluster, the graduates are integrated under the non-specific type of employment.

The third cluster is characterized by search trajectories of development. The comparative analysis of dimensionality of clusters, which represent the distribution of

employment types according to the professional capacities with the help of limited and extended sets of indicators, allows us to prove the increase in the market volume of field-specific employment (to 41,7%) by decreasing the frequency of non-specific and search actions. The data obtained show that it is necessary to introduce additional events facilitating the field specific employment as it is not possible to achieve the specified standard. The difference confirms the necessity of searching and determining the influence exerted by predictors of field - specific employment. The analysis of variables contingency, which lies in the basis of classification, makes it possible to conclude that the advantages of field-specific employment concerning the job search rates and low probability of getting the refusal to be employed. Acquiring work experience according to the professional training significantly increases the chances of more rapid employment at the company with high level of wages. Non-specific and search types of employment decrease the chances of finding well-paid job in a short period of time.

The lack of professional training even with work experience decreases the mobility of a specialist and increases the number of refusals to be employed. It holds true in regard to the employment of graduates who, during the period fixed in this research, did not try to get education in other specific professional fields. The advantages of field-specific employment concerning the working hours are not found. The work load corresponding to the standard length of the working week prevails. Search employment oftener than any other types is connected with longer or irregular hours.

Movements from one type of employment to another one are characterized by a higher level of work load growth. At search employment, the demand for labor is diverse as it is connected to "the extent to which the professional skills are utilized". One can assume that the high estimate of demand for professional capacities will boost the movement to the joint field-specific group. The negative assessment is typical of pure types of employment when the job requirements and qualifications are compared. It proves the need for increasing the qualification level and realizing the modern concept of lifelong learning, and the existence of misbalance between the rate of updating the requests of the business environment and capabilities of the education system to correspond to the dynamics of changes. The mismatch between job requirements and qualifications urges young specialists to improve professional capabilities autonomously (sometimes at their own expense), and it probably influences the assessment of their job satisfaction. Higher levels of job satisfaction are identified in field-specific employment and supported by high motivation of young specialists to be engaged in the work performed. Low levels of job satisfaction often characterize search trajectories. This situation can cause the increase in probability of making a return to pure types of employment.

## Results and Conclusions

The obtained results prove that the significant obstacles preventing young specialists from entering the field-

specific labor market exist when they are initially employed. Then these barriers become lower. The non-specific employment at the very beginning of their career history is characterized by competitive advantages in the rate of job search, level of wages, and their growth.

The field-specific employment after graduating from the university possesses fewer opportunities to get high estimation when it comes to the competitiveness of employment. Over the time the situation evolves. The acquisition of work experience influences the advantages of field-specific employment: they become relevant and competitive. At the very beginning of their career history, young specialists make their choice on the basis of comparison of predicted expectations of the growth of professional education returns and the level to which the dominant professional preferences at current employment are satisfied. At this period of time, work experience in the field of professional training becomes a basic condition for further rise in rates of employment. Work experience which is not based on professional training does not greatly influence the growth of employment rate.

The dynamics of graduates' distribution according to the types of employment is indicated. At first, the search and non-specific types of employment are dominant, and then the volume of graduates who are employed according to their specific field significantly increases. The influence of institutional market regulators is limited, and implementing the mechanism of graduates' distribution remains a challenge because there is a sufficient loss of resources.

The involvement of universities in allocation processes is a necessary measure which requires the expansion of responsibilities of the staff working at universities' placement services. Besides, facilitating a dialogue between employers and graduates which is considered to be a dominating function of placement services, of no less importance are such functions as diagnosing the occupational suitability, monitoring the dynamics of graduates' readiness to work, and promoting the strategy development of employment and career directions.

This expansion of duties entails the revision of HR policy at placement agencies and sharing responsibilities between structural subdivisions of the University (departments which provide training in a range of specialisms, sociological laboratories, assessment centers) in order to support education and build the graduates' careers.

Thus, the results of investigating the structure of graduates' distribution in the labor market were supplemented and reinforced. The most suitable set of indicators relevant to the value of field specific employment was specified. The set of indicators could become the basis for monitoring which helps to save resources. The application of these indicators allowed us to determine the vector of professional development and permanent employment in the market, the measure of actualization of professional competences gained at the University, and steady intention of the graduates to continue working in their specific fields. The established clusters of

graduates were identified, and their characteristics in accordance with type-forming factors were described.

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