

Main Points of Rating for Professional Educational Organizations

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Abstract: This study discusses one of the main problems of pedagogical theories and educational practices of recent decades, the measurement of the level of provision of educational services or education qualities and rating based on measurements of educational organizations. The researchers rightly point out that the social and economic tendencies that dominate in the modern world including Russia, determined the need to compare the data on the quality of life, function, conditioning of social institutions which is particularly difficult to implement when it comes to latency indicators. As an instrument of integral indicator of provision of educational services measurement metric system of G. Rush is offered which is a method of parameters analysis, measurement of latent variables using a special computer program RUMM 2030.

Key words: Secondary vocational education, rating of professional educational facilities, rating goals, the qualitative approach, latent variables measurement theory, principles of professional educational organizations ratings creation, independence of the rating construction, integrative nature of the construction of ratings, objective assessment, orientation of rating on the labor market, the iterative nature of rating values system development, adaptability of tools for rating building (the consistency and continuity of internal and external evaluation procedures), systematic of rating procedure conduct

INTRODUCTION

At the moment, the society is in high demand for data comparison on quality of life, on the functioning of social institutions, etc. On the one hand, publicly available information is sufficient, every day its amount increases, number of information sources that are available for different segments of users is growing. However, on the other hand, people are in need of information that would allow them to understand the current situation and make right decisions. In addition, they face a false interpretation of the data and do not trust the source. All of the above is relevant for the understanding of modern situations in education. Today in Russia, a system of evaluation of the quality of education is being formed. Ratings of educational institutions and pre-school education, higher education institutions created within the project "Social Navigator", Rachevsky have provided experience in this field. Studies by rating refer to the presentation of results of the evaluation of educational organizations or systems activities where participants of rating are placed in a specific sequence in dependence on estimates obtained from different indicators of activity.

The system of vocational training methods to identify, measurement and evaluation of the quality of education in individual regions are only being formed. The implementation of the pilot project "Preparation and carrying out of monitoring and formation of a comprehensive evaluation system of organizations implementing the programs of professional training and secondary vocational education" in the Perm Region helped to clarify the goals and objectives of rating for secondary vocational education.

Objectives of rating should be linked with the understanding and representation of educational systems and institutions activities in general. At the same time, they can be directed to the development of ranked objects and (or) on information provision of the customer. The objectives of the rating are the following:

- The use of specific indicators which are clearly recognized by educational community, businesses and all stakeholders as the most important
- To ensure that all stakeholders interested in vocational education have opportunities for a sufficiently accurate representation of the success or failure of solving the problems of education quality

- Rating of the best professional educational institutions (VET) as growth points, on the basis of which it is possible to improve the quality of the whole system
- Determination of the best educational institutions and introduction of successful experience in mass educational practice
- Increasing of competition and the development of additional incentives for VET, reaching the highest effectiveness and efficiency
- Implementation of criteria and indicators to assess the level of VET educational services provision, to allow you to create the basis of public and professional expertise of VET

In most cases, ratings in education a comprehensive assessment of the educational organization activities. However, the researchers emphasize that in this regard they are faced with an insoluble, in their view, contradiction. On the one hand, the simpler the rating, the easier it's correlate criteria that it consists by Agranovich (2014). Therefore, in the regional system ratings of educational organizations are based on a number of quality indicators. At the same time, the smaller the number of characteristics included in the rating, the less accurate it is, the less it can satisfy the request of the education community, employers and regional education authorities. On the other hand, the presence of large amounts of complex, integrated indicators, each of which has its own weighting factor makes ratings and ratings opaque and rating results the least accurate. This problem is solved in the various scientific approaches, the most widespread of which received a qualitative approach and the approach based on the theory of measurement of latent variables using a model by Rasch (1960).

MATERIALS AND METHODS

According to the qualitative approach, the transition from the individual assessments (Id) to integrated assessment (IC) is possible in specially developed mathematical models such as the equation:

$$IC = \sum_{i=1}^n Id_i \cdot C_i \quad (1)$$

Where:

n = The number of evaluation procedures

C_i = Weight coefficient of i evaluation procedure, established by the method of group expert evaluations and the condition of normalization must be satisfied:

$$\sum_{i=1}^n C_i = 1 \quad (2)$$

As can be seen from Eq. 1, quality model of the object of measurement depends on the assignment correctness of a particular evaluation procedure of weighting coefficients. In other words, the importance of each structural element of the model is determined by the expert and will depend, inter alia, on the competence of experts. Consequently, in the model of integrated evaluation of educational organization activity there is a subjective component.

Thus, the traditional method of calculating the integral index is reduced to the following procedure:

- On the basis of expert assessments each indicator variable is attributed a weight: the higher importance of the indicator variable, the bigger weight
- The absolute values of indicator variables are turned into relative ones. This is done as follows. For every indicative variable its maximum value is defined which is taken as a unit; the remaining values of the indicator variable are expressed in fractions of the maximum value
- Relative value of indicator variable is multiplied by the weight of the indicator variable, the integral index is calculated by summing the weighted values of all indicator variables
- Objects are ranked on the basis of the integral index

However, this method has significant drawbacks:

- Expert assessments are subjective (varying weights, it is possible to obtain any form of ranking objects)
- The set of indicators used can characterize not only one variable but several which distorts the assessment received
- The received estimates are not measured on a linear scale that over-complicates monitoring and comparison of objects (Maslak *et al.*, 2005)

Since, the measured value in the social sciences is a complex multidimensional construct, the method of simplifying the model, in our view is not promising.

A feature of social systems is the latent (hidden) nature of the phenomena and processes. The quality of such systems cannot be directly measured, it is determined indirectly, through its pro-events (manifestations). This indirect measurement procedure conditioned the need to develop tools that can help you convert the displays of the measured property in numbers that can be regarded as the result of measurements (Maslak *et al.*, 2005). For analysis and creation of such

categories development projections it is encouraged in the research to apply the theory of compliance of observable manifestations of the measured quality of one parameter model by G. Rush.

The advantage of the theory as foreign researchers say is that when the dual calculation of difficulty of test variables, they are nonetheless regarded as independent indicators: quantitative characteristic of the studied property of each object is not determined by the quantitative characteristic of the difficulty of requirements imposed on it (Bond and Fox, 2001; Ingebo, 1997).

Main part: To build a complete, reliable, relevant rating, ensuring the transparency of the methodology used for rating creation, given the diversity of educational institutions activities with the use of basic provisions of the theory of latent variables it is necessary to keep compliance with a number of principles. We proved basic principles of construction of ratings of VET which are as follows:

Independence of the rating construction: Construction of VET ratings creates need to carry out independent from educational organizations procedures of selection, collection and processing of quantitative and qualitative figures. These procedures are carried out by an independent structure which includes representatives of educational community and employers.

Meanwhile formation and selection of indicators happens taking into account public requirements to the quality of the core activities, requirements and expectations of employers that employ graduates of vocational education, requirements and expectations of students and their parents.

Integrative (complex) nature of construction of ratings: This principle shows that the object of evaluation, for example, the quality of the core activities of VET must be presented in complex in key areas of VET. The number of activities and a set of indicators on each activity is determined by experts at the first analytical stage of the indicators system creation. Evaluation acquires integrative (complex) character in the case, if the objects of assessment are the result or process of activity as well as the learning environment of VET.

Thus, a system of generalized indicators and process evaluation indicators, outcomes and conditions of the main activities of VET are being created. The pilot project in the Perm Region we proposed a model of quality of educational services in five areas of activity of VET. Overall assessment of the organizations activity that

implement professional training programs and secondary vocational education was an integral assessment of five different activities VET: networking interaction of region organizations of secondary vocational education; education enforcement organizations availability of infrastructure that provides free access to the object and services for invalids; monitoring of professions and training areas demanded by the labor market of the Perm Region; staff, information, educational resources of educational institutions of Perm Region; evaluation of the quality of education. For each activity from four to twenty seven indicators of evaluation of VET activity was selected.

Objectivity of assessment: This principle implies implementation of evaluation by independent experts on the basis of indicators that are objectively important for the quality of performance of the basic activities of VET. The most important condition for this is the interaction of indicators with the subject of evaluation (results and/or process, conditions of activity of VET).

Practical orientation of the ration or orientation on labor market: Indicators are complex, they should reflect not only the standard part of activit but also the requirements of employers and students that are a link between the government, business and education. Since, employers today are interested in specialists who are ready to solve professional problems, the presence of personal qualities that boost effectiveness of such a decision, the indicators of result quality and conditions of VET activity should consider these requests.

The iterative nature of rating indicators system development: Iterativeness of development process of rating indicators provides the validity of measuring instrument and means including of representatives of the academic and professional community in its creation. Testing of measuring instruments for constructing a rating a system of indicators is carried out on a sample of VET. The results of testing are subject to mathematical treatment that are based on the theory of measurement of latent variables. Instrumentation requires adjustment of set of indicators based on the interpretation of the results of testing that leads to the final iteration which, in turn should be reviewed after a certain period of time (from 1-5 years) for relevance and compatibility with the object of evaluation.

Adaptability of tools for constructing rating (lack of contradiction and continuity of procedures of internal and

external evaluation). The idea of building rating applies to the procedures of external and internal (within VET) evaluation, thus providing succession and consistency of the procedures. Common approaches to the development of indicators for any objects of evaluation, the process, results and conditions of performance, provide effectiveness of estimation and also purposeful management of these values by the leadership of VET, creating opportunities to improve operations and as a result, the VET rating increase.

The systematic procedure of rating. According to this principle, the procedure of creation of a ranking is not one-time but repeats periodically. The rating results are used by management of VET either to hold high-ranking positions or to improve indicators.

RESULTS AND DISCUSSION

Research project in the Perm Region revealed that formed set of indicators can be used for monitoring in order to create the complex system of evaluation of the organizations activity that implement programs of professional training and secondary vocational education. To measure the level of provision of educational services the dialogue system RUMM 2030 (Rasch Unidimensional Measurement Models) was used. This system was developed under the guidance by Andrich *et al.* (2005). The results of the pilot project showed that compatibility of 59 indicators, determined on the basis of the criterion χ^2 makes value (124.2); the number of degrees of freedom (122,000); empirical level of significance (0.425). Since, the empirical significance level of statistics χ^2 considerably exceeded the value of 0.05, this makes it possible to say that all 59 indicators are compatible and adequate

measurement models. The joint distribution of the indicator variables that characterize the activities of VET with relevance to their difficulty as well as VET of Perm Region, also the level of provision of educational services are reflected in the histogram (Fig. 1). In the upper part of Fig. 1, there is a graph showing the distribution of VET in terms of the provision of educational services and the bottom part shows distribution of indicator variables according to the value of difficulty on the same scale. Here persons correspond to VET and items 59 min indicator variables.

In Fig. 1, the best according to complex evaluation of activity VET are located on the right side of the logit scale and VET for which latent variable “level of provision of educational services” has the lowest values are in the range of minimum values of logit scale. Based on the provided information in Fig. 1, we can make the following conclusions:

- The range of VET variation is sufficient and make up 3 logit (from -1.2 to +1.8 logit), indicating a sufficient distinction between them as far as diagnosed level of provision of educational services is concerned
- The indicator variables values vary in large range by -7 logit (from -3 to +4 logit) which ensured high measurement accuracy across the entire range of measurement of variation of the complex evaluation of activity and evaluation of the quality of education
- Indicator variables are distributed almost evenly depending on their difficulty which indicates the ability to use their system for measuring the level of provision of VET educational services of the Perm Region

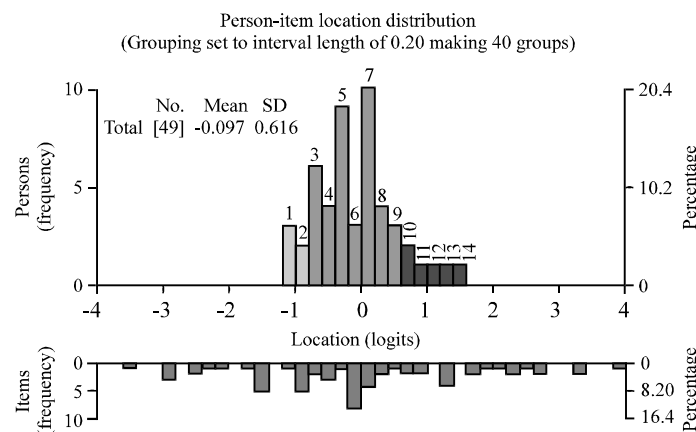


Fig. 1: Diagram of professional educational organizations and indicator variables in the logit scale distribution

- Designed set of indicators corresponds by difficulty to the level of providing educational services VET in Perm Region. Thus, we can conclude that rating is to be one of the approaches in the evaluation of educational institutions and vocational education systems. However, the method of rating, based on the qualitative approach is controversial in nature in terms of the validity of the weighting coefficients of indicators of quality of educational services by educational institutions from different regions with different socio-economic conditions and contingent of students. A significant differentiation of conditions not only at the regional level but also at the level of specific educational organizations proves the lack of comparability of ratings of educational organizations without taking into account these conditions, outside the context of their activities.

CONCLUSION

Study gives a short comparative analysis of potentials of qualitative approach and strong points of the theory of latent variables in evaluating the quality of

education, value of which is in that that it allows you to answer one of the key questions of rating of educational institutions of suitability, reliability and objectivity of the results.

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