Evaluation of Enterprise Skills from the Perspective of University Education

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Abstract: *In this paper the criteria and the application procedure for evaluation of professional skill by enterprises are presented and discussed. The outgoing point for this research is the innovative approach presented in the paper "Approach for evaluation of professional knowledge, skill, and competence by professors, alumni/students, and industry" /1/. The application of this new approach presented below is focused on enterprises cooperating with university or with certain study program. Enterprises are involved in education process of particular study program as employer of graduates. The main aspects and crucial points for research presented are the flexibility and the objectivity of the evaluation. Decisive attributes and their application within evaluation process are explained in detail.*

Key words: *Evaluation of enterprise skills, University education*

Introduction

In presented research enterprises embody the group employed students during and graduates after the completion of certain study program and so are related to educational process at the university. This relation might be considered from different points of view – students work during their study in the firms and so acquire knowledge and skill needed for the jobs after the graduation on the other side practitioners from selected enterprises teach some courses at the university and participate in different committees and influence this way the curriculum of the university program. E. g. for the last activity is the regular accreditation procedure obligatory in European countries.

Both other groups involved in the educational process - students and professors - have their own interests regarding the cooperation with business. Professional skill of enterprise staff is one of crucial attributes as by students as by professors in their decision about possible cooperation with the enterprise. Students check the professional skill of the firm to apply for the student job or graduation projects. Professors test the professional skill of the firm to develop cooperation in some research and development projects but also in teaching activities. The evaluation of enterprise skills is focused on their capabilities to fulfill some (specific) professional task within core business processes in the enterprises related to selected body of professional knowledge. This is decisive for every student and graduate therefore they check this point very carefully before they contact the enterprises with respect to the student or regular job. Consequently implicit or explicit every student has the vision among others about the skill in the firm he or she would like to work in. On the other side professors at the universities have to investigate the situation on the market and select well established innovative partner for the cooperation in educational processes and in research projects. Some of these skill requirements by students and by professors are similar. Some others are different because both pursue different goals. Surveys made among the graduates of Business Informatics at the University of Applied Sciences Berlin /2/ show that their market value and also salary are strong dependent on professional skill gathered during the educational activities as well as in projects with business.

This is the motivation why students are interested in addition to generation of profound knowledge in growing of professional skill in the field of their specialization /3, 4/. In this context skill represents the capability and ability to realize or fulfill some task within the business process e.g. in enterprise without intensive supervision by experts. Obviously in the enterprise with high professional skill students have more chances to improve their own one and so better prepare them for the job after the graduation. Also professors are

interested in cooperation with enterprises which have high professional skill. Such cooperation contains good opportunities to developed new products and services quickly test them in the firm and prepare for the market. The next paragraph describes the attributes related to professional skill in an enterprise important from the perspective of the educational process.

Characteristics of professional skill in industry

Generally every enterprise acting at the market is focused a priori on practical experiences in development of products and services for the customer. Following this idea the growing of professional skill is the ordinary process in every enterprise day by day and year by year. Distinctions appear because of specialization on some kind of products, materials, approaches, business organization etc.

It is self-evidently impossible to investigate all possible situations in every kind of enterprises in the short paper like current one. Therefore in following paragraphs only general concepts for evaluation of professional skill in the enterprises will be presented. For better understanding of the situation in the enterprise some general information about it are interesting for the evaluation procedure. It could be the number of employee, branch of industry, market entry, proportion of certified processes, or number of employee in the field of interest. This information can get the general trends in the branch of industry and also some special characteristic about the enterprise experience in the field compared with the competitors on the market.

The next characteristic attributes are related to Products manufactured in and Services offered by the enterprise. The Table 1 presents this part of decisive attributes and their specification.

Table 1. Evaluation criteria for professional skill in the enterprise regarding manufactured Products and Services

Decisive Attributes	*Specification*
Products development in the current year/ In relation to last year/ Data of market entrance	**Number of new products**
	Number of new patented products
	Number of certified products
	Number of new product version
Services developed in the current year/ In relation to last year/ Data of market entrance	**Number of new services**
	Number of certified services
	Number of updated services

Information presented by the enterprise according to the criteria specified in the Table 1 is decisive for the definition of its professional skill with respect to products and services. In addition to the information about products and services it is possible to investigate the dimension Approaches and Tools. This is so far important if the considered enterprise is specialized in application of some approaches or tools, e.g. Six Sigma or SAP. The Table 2 represents the evaluation criteria for this case.

Table 2. Evaluation criteria for professional skill in the enterprise regarding Approaches and Tools

Decisive Attributes	**Specification**
Approaches in use	**Name and application field**
	Number of applications
	Duration of application(s)
Tools in use	**Name and application field**
	Number of applications
	Duration of application(s)

The specification of attributes is flexible and has to support different situation relevant for evaluation. For instance if the enterprise apply one or another approach in own business activities or offer the consultancy for other companies and provide the service over the years it can fill the information in corresponding form to support its correct evaluation.

The next set of attributes is related to the different kind of Projects particular enterprise participated in. These attributes and their specifications are listed in the Table 3.

Table 3. Evaluation criteria for professional skill in the enterprise regarding Projects

Decisive Attributes	Specification
Research cooperation projects (academia & industry)	Project goals
	Project information (Budget, Duration, Position, etc.)
	Project partner (Local/regional/international firms/universities/authorities)
Development cooperation projects	Project goals (products/services)
	Project information (Budget, Duration, Position, etc.)
	Project partner (Local/regional/international firms/universities/authorities)

Attributes presented in the Table 3 can be specified alone the time as it is proposed in the Table 1. In this case the information about projects will be additionally structured for the current year, related to the last year, duration of the partnership, etc.

Within professional skill one can consider also other dimensions like Media activities, Professional associates and Committees, Further qualification activities. The Attributes related to these dimensions are presented in the Table 4.

Table 4. Evaluation criteria for professional skill in the enterprise regarding Media activities,Professional associations and Committees, Further qualification activities

Decisive Attributes	Specification
Media activities	Exhibitions
	Conferences
	Internet presence
	Publications (papers, prospects, etc.)
Associations and Committees	Memberships
	Duration of activity
Further qualification	Kind of qualification
	Number of courses/participants
	Number of certified employees

Analogous to discussion presented before one can extend the proposed list of attributes in this table by considering e.g. local, regional, international contributions separated from each other.

As mentioned in Introduction the general orientation of the research presented is the

educational process at Universities. Therefore presented in the Table 5 evaluation criteria related to cooperation with universities could be considered exceptionally.

Table 5. Evaluation criteria for professional skill in the enterprise regarding Cooperation with Universities

Decisive Attributes	**Specification**	
Student employee	**Department/ Project/ Number**	**Job:**
		Duration:
		Program:
		Semester:
Industrial placement	**Department/ Project/ Number**	**Job/Position:**
		Duration:
		Program:
Graduation projects	**Bachelor (number of)**	**Program:**
		Subject:
	Master (number of)	**Program:**
		Subject:
	PhD (number of)	**Subject:**
Semester projects	**Program:**	**Number of Students:**
	Subject:	**Duration:**
Granted professorship	**Program:**	**Duration:**
	Subject:	

All attributes listed in the table 5 from student jobs till sponsoring of professorship position represent the professional collaboration between academia and business and influence unintermediate the educational process at the university.

Framework and evaluation procedure for professional skill

According to the approach presented in /1/ evaluation of professional skill in the enterprise – analogous to other presented in previous reports /5, 6, 7, 8, 9/characteristics – is based on submitted rather statistical information regarding the professional expertize as well as about corresponding skill oriented activities discussed in previous chapters. This information has to represent the professional skill by selected enterprise and so support the universality of approach described in /1/. The submission of information by the target group – in current research enterprises – is the first step of this approach.

In the next step this information will be evaluated by representatives of both other groups - students and professors. An example of framework for evaluation of professional skill in the enterprise is shown in the Table 6. This part of the framework presents the attributes related to cooperation with universities. The last column will be filled by students and get the weighting of the information presented in other columns of the table. This procedure used in the other parts of the evaluation framework /5, 6, 7, 8, 9/ supports the objectivity of the evaluation as it was declared in approach presented in /1/.

Table 6. Part of extended Framework for evaluation of professional skill in the enterprise with respect to Cooperation with Universities

Decisive Attributes	*Specification*		*Evaluation Criteria for Students**	*Grades or Points*
Student employee	**Department/ Project/ Number**	**Job:**	***ESG:***	
		Duration:	***ESG:***	
		Program:	***ESG:***	
		Semester:	***ESG:***	
Industrial placement	**Department/ Project/ Number**	**Job/Position:**	***ESG:***	
		Duration:	***ESG:***	
		Program:	***ESG:***	
Graduation projects	**Bachelor (number of)**	**Program:**	***ESG:***	
		Subject:	***ESG:***	
	Master (number of)	**Program:**	***ESG:***	
		Subject:	***ESG:***	
	PhD (number of)	**Subject:**	***ESG:***	
Semester projects	**Program:**	**Number of Students:**	***ESG:***	
	Subject:	**Duration:**	***ESG:***	
Granted professorship	**Program:**	**Duration:**	***ESG:***	
	Subject:			

***Abbreviation used: ESF – Enterprise Skill Grade**

Both last columns will be filled by students as follows. In the column Evaluation Criteria for Students representatives from industry will get grades from 0 to1 (or from 1 to 10). Based on this value the information submitted and presented in the previous column will be weighted and forwarded into the last column of the framework.

Following scenario describes in details how the procedure of evaluation will be completed.

For instance enterprise will place in the row Industrial placement > Department > Job/Position 4 placement Jobs as young assistant occupied by students in last semester. The initial grade for this job is 20 points; students get the enterprise Skill Grade 0.8 from 1.0. Altogether one can derive for this contribution in the last column 16 points. Adapted variants of such procedure will be realized for all listed characteristics accordingly.

Very similar to the part presented in the Table 6 is the framework part will be used by professors. Despite the differences in the perspective of evaluation by students and professors bot can use the same part of framework. One can define the initial grade for students and professors separately. Such differentiation may be caused by the different perspectives on evaluation in both groups.

All point gathered by single enterprise can be summarized to evaluate its professional skill. Based on evaluation results both students and professors can make their decisions regarding industrial placement, student jobs, graduation projects, cooperation, teaching activities etc.

Literature

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The paper has been reviewed.