Emerging Markets Queries in Finance and Business

Assessment of Creativity on the Job Market

Zita Zoltay Paprika\textsuperscript{a,b}, Viktor Nagy\textsuperscript{b}

\textsuperscript{a}Corvinus University of Budapest, Fővám Square 8, Budapest 1093, Hungary
\textsuperscript{b}Öbuda University, Tavaszmező Street 15-17, Budapest 1084, Hungary

Abstract

Our study was inspired by the fact that both authors work as university professors. The aim of our research was to map the creativity related expectations that recently graduated students face. To achieve this, we generated three sample groups. For the first group, we obtained an EU creativity research database on Hungarian high school teachers, 337 persons. In our second sample we asked university students, 292 persons, and their opinion about the creativity-related statements taken over from the EU research. In the third sample group we surveyed the opinion of 112 HR experts via personal enquiry and online about the importance and measurability of creativity, the statements of the EU project and the definition of creativity. Thus in our analysis three different groups – high school teachers, university students and HR experts interested in fresh graduates – evaluated the 13 creativity-related statements drawn up by EU researchers. In our study we analysed the HR experts’ responses in most detail. First we present the results along three research questions. We examine how important HR experts representing companies deemed creativity when hiring fresh graduates, in which field they regarded creativity important, and what tools they used most often to measure it. In the second part of our analysis we compare the responses of the university students, the high school teachers participate in the survey, and last but not least those of the HR experts regarding the 13 creativity-related statements of the EU research.

© 2012 The Authors. Published by Elsevier Ltd.
Selection and peer review under responsibility of Emerging Markets Queries in Finance and Business local organization.

Keywords: creativity; graduates; job market;

1. Introduction

2009 was designated as the year of creativity and innovation in the European Union and resulted in the publication of a large number of studies. One of the studies published at the time, ftp://ftp.jrc.es/pub/EURdoc/JRC62370.pdf, provided a basic incentive for our paper as it caught our attention and raised our interest. The paper presented the results of a study based on a large number of samples encompassing several EU member states. In the frame of the study high school teachers were asked to evaluate 13 statements on creativity. Using the original questionnaire to repeat the study played an important role in our research.
Our study of 2011 was further inspired by the fact that both authors work as university professors. The aim of our research was to map the creativity related expectations that recently graduated students face. To achieve this, we generated three sample groups. For the first group, we obtained the EU creativity research database on Hungarian high school teachers, 337 persons. In our second sample we asked university students, 292 persons their opinion about the creativity-related statements taken over from the EU research. In the third sample group we surveyed the opinion of 112 HR experts via personal enquiry and online about the importance and measurability of creativity, the statements of the EU project and the definition of creativity. Thus in our analysis three different groups – high school teachers, university students and HR experts interested in fresh graduates – evaluated the 13 creativity-related statements drawn up by EU researchers.

We consider the “chain” of high school -- university -- job market, represented in our study by high school teachers, university students and HR experts, to be important, although we are well aware that the development of creativity starts prior to high school. All the same, we consider high school formation to be a decisive period as it is at this time that the students’ career orientation takes shape. Most students not only make a decision about the orientation of their university studies at this time but also face the challenge of the degree of creativity required in the chosen field. The development of creativity is a clear expectation in university education and, based on our results, employers expect the training institutions to provide this. As a result, our present article will begin the analysis from the „end users”, i.e. the HR experts. We will examine how their creativity-related expectations and opinions vary according to their personal traits, gender, qualification and the characteristics of the companies they represent type of ownership and size. Following the detailed analysis of the HR experts’ opinions, we go on to compare the common results of the three samples, the analysis of the similarities and differences as regards the creativity-related statements taken over from the EU research. All this is then tested on the basis of four hypotheses.

In the present article we will introduce the quantitative analysis of creativity research related data. In one of our previous studies we evaluated the professional literature on creativity in detail and formulated the definition of creativity for working purposes Derecskei – Nagy – Zoltayné, 2011a. Further background calculations and detailed analyses can be found in another of our publications Derecskei – Nagy – Zoltayné, 2011b.

Based on the analysis carried out with the assistance of the NVivo 9 content analyser software, the HR specialists in our sample gave the following definition of creativity, which was accepted in our research as the definition we will work with: „Creativity is a skill, related to thinking, which usually appears as a new, independent idea that serves problem-solving purposes.” In essence, we examined the demand for this skill on the job market when fresh graduates are hired.

2. The methodology of research, research questions, hypotheses

Our primary research, regarding HR experts was based on a questionnaire survey. In the first round, the questionnaires were distributed online among the HR department heads of companies in contact with the Corvinus University of Budapest. In the second round, the representatives of the companies participating in the Career Expo of the Corvinus University of Budapest were asked to assist our research with their answers.

Our HR sample contained 35 men and 76 women who answered the questionnaire, which means that the gender ratio was around 2:1 in favour of women. The youngest respondent was 22, the oldest was 62, so the age range was 40 years. The period of employment spent at the company varied between 1 and 30 years. Amongst the respondents there was only one with a high school diploma, 3 people had a certificate of higher vocational training, 33 people had a college degree, 69 had a university degree and 5 people indicated a PhD as the highest level of education. As one person could have more than one qualification, we recorded 123 qualifications in total. In order to make the number of elements related to one share more reliable in the analysis, we introduced three categories in connection with the qualifications: exclusively economist qualification, non-economist qualification(s), mixed qualifications.

Based on the professional background, willingness to express their opinion related to creativity was demonstrated mostly by the representatives of the financial sector, 23 people. They were followed by business
service providers e.g. people dealing with counselling, accounting and auditing, 19 people. Commerce was represented by a sample of 10 people. Some industries were completely left out of the analysis as none of their representatives got into the sample: e.g. furniture industry, processing industry, machine industry, extractive industry, transportation, chemical and pharmaceutical industry.

The ownership structure of the addressed companies was not representative of the Hungarian corporate structure, but this was not our objective. During the investigation of creativity-related requirements from fresh graduates, we found that half of our samples consisted of companies with a foreign background that appreciated fresh graduates and creativity. In the analyses, the type of ownership was also divided into three categories: Hungarian, foreign and mixed ownership.

Headcount in the companies surveyed was as follows: 14 people represented a real micro enterprise, where the number of employees did not exceed 9. Eleven companies had a headcount below 50, 19 companies had more than 50 employees but their number did not reach 250. According to statistical categorization, we had to regard 66 companies as big companies where the number of employees exceeded 250. The small and middle-sized companies, headcount 1-249, were considered to be one category and we contrasted them with the big companies where the number of employees was at least 250 people.

The questionnaire filled in by the HR experts consisted of the following parts:

- In the first part we collected background information about the respondent and his/her company.
- In the second part we wanted to know the definition of creativity and its importance in the case of fresh graduates.
- In the third part we examined those functional areas where the respondents deemed creativity to be important.
- In the fourth part we mapped the HR methods which are most preferred in the selection of a new employee.
- The last, fifth part included 13 statements about creativity as a continuation of the EU research, where we measured the degree of agreement.

One hundred-twelve people started to answer the questionnaire, but 13 did not complete it. In the evaluation process we strived to include the answers from the incomplete questionnaires, as well, if they were assessable in themselves. In those cases, however, when we examined the relation between the answers given to different questions or we grouped the answers according to some criteria, only those answers were evaluated where all relevant data were available.

As a first step, we conducted descriptive statistical analyses to summarize the results, which made transparent those grouping criteria that were worth considering and revealed the points where examining the significance of differences was rewarding. In our present analysis we only included those criteria, where the differences between the results of groups were significant, here we conducted a hypothesis control.

In the process of research we sought answers to the following questions:

- How important do the companies consider creativity in case of fresh graduates?
- In which area do they regard creativity important?
- What tools do they use to measure creativity?

We asked the 13 statements taken over from the EU creativity research from all three samples, high school teachers, university students, HR experts. Respondents could express their agreement with the statements on a 5 point Likert scale. The statements were the following:

- C01 Creativity is only relevant to visual arts, music, drama and artistic performance.
- C02 Creativity is the ability to produce something original.
- C03 Creativity is a skill that can be applied to every domain of knowledge.
- C04 Creativity is the ability to produce something of value.
- C05 Creativity is a skill that can be applied to every school subject / all fields of jobs.
- C06 Everyone can be creative.
- C07 Creativity can be fostered by using brainstorming diagrams, mind-maps and mood-boards.
C08 Creativity is an inherent talent.
C09 Creativity is a characteristic of eminent people only e.g. Einstein or Michelangelo.
C10 Creativity can be assessed.
C11 Creativity varies according to age groups.
C12 Creativity can be taught.
C13 Creativity is about finding connections between things that have not been connected before.

We classified the questions into four big topics adapted to the EU research and the processed professional literature Kaufman – Begetto, 2009, and set up our research hypotheses accordingly.

3. Who is creative? c-C problem, Personality

The small c and big C problem was demonstrated in one of our previous studies Derecskei – Nagy – Zoltayné, 2011a. Now we wished to quantify the opinions regarding the issue of big C and small c - whether the respondent HR experts think only about the big C, meaning that only eminent artists and scientists possess the ability of creativity, or the opposite, they think creativity is inherent in everybody. Our hypothesis H1 was related to this:

**H1: Respondents think about small c, everyone can be creative.**

The statements related to this hypothesis were the following:
- Everyone can be creative. C06
- Creativity varies according to age groups. C11
- Creativity is a characteristic of eminent people only e.g. Einstein or Michelangelo. C09
- Creativity is an inborn talent. C08

**Original - new – useful result. Product**

In this part we enquired about the definition of creativity, more precisely about the product of creativity, supposing that creativity has to manifest itself in a product that is original, new and useful.

**H2: A product can only be regarded as creative if it is original, useful and new.**

- Creativity is the ability to produce something original. C02
- Creativity is the ability to produce something of value. C04
- Creativity is about finding connections between things that have not been connected before. C13

**Area specification Press**

Creativity can appear not only in everybody, but in every field, however, it will be original, useful and new only where it is relevant to the solution of a given problem. This assumes previous learning or knowledge which can derive either from education or experience.

**H3: Creativity can be applied in every field however its usefulness will only be manifested as something of value in the relevant field.**

- Creativity is only relevant to visual arts, music, drama and artistic performance. C01
- Creativity is a skill that can be applied to every domain of knowledge. C03
- Creativity is a skill that can be applied to every school subject / field of jobs. C05

HR experts’ opinion on the field where creativity is most important was asked in a separate question.
Measurability – possibility to teach. Process

The potentials of measuring creativity and their limits are widely discussed in the professional literature. We measured the belief in these methods and the degree to which HR experts found creativity measurable and possible to develop.

H4: Respondents consider creativity measurable and possible to teach.

- Creativity can be fostered by using brainstorming diagrams / mind-maps / mood-boards. C07
- Creativity can be assessed. C10
- Creativity can be taught. C12

In our analysis we will elaborate on the HR experts’ opinion about each of the hiring methods we have collected, and the degree of their usefulness for the measurement of creativity as seen by them.

4. Results

As mentioned in the introduction, we will analyse the HR experts’ responses in most detail. In the first round, we will present the results along the three research questions. We will examine how important HR experts representing companies deemed creativity when hiring fresh graduates, in which field they regarded creativity important, and what tools they used most often to measure it. In each question we will highlight whether the HR responses differed according to our grouping criteria, gender, qualification, ownership type, company size.

5. The importance of creativity in the case of fresh graduates

The central issue of our research was to examine how important creativity is when fresh graduates are hired, and the level of creativity expected by the companies from fresh graduates: We asked respondents to use a 1-5 scale to express their opinions.

Figure 1 demonstrates that no one was of the opinion that creativity is not at all important. Nearly 90% of respondents regarded creativity important or very important in the assessment of fresh graduates.

![Bar chart](image)

**Fig. 1. HR experts’ opinion about the importance of creativity N=110**

Henceforth we will examine in detail the responses given to the importance of creativity according to the four grouping criteria, gender, qualification, ownership and company size.
Women found creativity slightly more important than men. More than 90% of women considered creativity important or very important when selecting a fresh graduate. If we add the figures of these two categories in case of men, the result is 85%. In the interpretation of results we must not ignore the fact that our sample was dominated by women, as the ratio of women to men was 2:1.

It is a very interesting that non-economists mostly technical experts typically indicated the role of creativity as important but not exceedingly important. It is worth noting also that during the structural changes recently implemented in the Hungarian higher educational system, the development of technical higher education is a stressed priority, which in the light of the above results is not very encouraging from the point of view of creativity related expectations, as based on our sample, non-economists mostly technical experts did not consider creativity absolutely necessary in the selection of fresh graduates.

In the investigation of the ownership type it was interesting, that the representatives of foreign-owned companies regarded the role of creativity important but not exceedingly important in the case of fresh graduates. There was quite a big difference between the judgement of companies with Hungarian ownership and the ones with mixed ownership. This outcome is in line with the general opinion that the foreign, mostly multinational companies prefer to shape the new colleagues to their own requirements and in this process too much creativity can even be a drawback.

As we contracted the size categories, our sample basically was divided into two groups, the large companies and the small and medium-size companies SMC. We did not experience any significant difference in the opinion of the two company groups as regards our first research question.

6. The importance of creativity in certain fields

The next set of questions examined creativity with respect to certain corporate functional fields. We focused on the following areas: finance, accounting, controlling, marketing, PR, commerce, sales, procurement, manufacturing, production, administration, personnel management, HR, IT, research, development, training, logistics, supply, production management, quality control, law, legal counselling, customer relationship, leadership, management, design and planning. Not everybody responded to each and every function therefore the number of elements for this question in the sample ranged from 95 to 103.

Unsurprisingly, respondents marked marketing as the area needing the highest degree of creativity. Leadership and management, research, development, planning and design were chosen similarly frequently. Research and development were mentioned only 50 times which we basically consider to be low and which reflects the peripheral role of research and development in Hungary. We find administration, finance, accounting and controlling on the other pole of the assessment, together with production management. According to the respondents the lowest degree of creativity is needed for these areas. Four to five times more respondents were of the opinion that creativity is necessary in the fields of administration, finance, accounting
and controlling at least to a medium degree. Based on the respondents’ opinion, law and legal counselling was also listed among the activities which require only a medium degree of creativity.

Men typically emphasized that creativity is absolutely necessary in the fields of marketing, research and development, design and planning. Women, however, did not stress research so much. In women’s opinion, the areas requiring the lowest degree of creativity are: administration, finance, accounting, controlling, manufacturing, production and production management. Men were of the same opinion as regards these functions, but they classified administration amongst the activities needing only medium degree of creativity. According to most men, finance, accounting, controlling, logistics, supply and quality management also fall into this category.

On the whole, it can be established that answers are not significantly affected by gender when assessing the creativity needed for the different functions. However, it is interesting that women did not only find creativity more important in general, as seen from the results of the first research question, but also stressed its importance in the case of each corporate function.

Hereinafter we studied how the assessment of creativity changes in relation to qualifications. Beside the group of economists and non-economists typically technical experts, we created a mixed group containing those respondents who had more than one qualification. When we considered all answers, we could point out that economists had chosen marketing and PR, leadership and management and design and planning as areas where the highest degree of creativity is required. The non-economist group - primarily technical experts designated marketing, PR, leadership, management, research and development as functions demanding the most creativity. The diversity of the mixed group is demonstrated by the fact that completely new functions were listed in their responses. In their view, in addition to marketing and PR, leadership and management and research and development already mentioned by the other two groups creativity is also absolutely necessary in customer relations and IT.

From here on, we proceeded to inspect the effect of the ownership type on the assessment of creativity in the different functions. A bigger portion of HR representatives of foreign-owned companies tended to think that creativity is absolutely indispensable in the fields of leadership and management than the employees of companies with Hungarian and mixed ownership in the same positions. Although training as an individual function was missing at several companies, it is still striking how much more important the representatives of foreign-owned companies felt creativity is in training than the other two groups. Undoubtedly, the most interesting result was that 30 % of the representatives of the foreign-owned companies regarded creativity absolutely important in HR, as well, and more than 40% said that it was important. These ratios were smaller at Hungarian-owned companies and it was especially interesting that the HR experts of companies with mixed ownership did not believe in the absolute importance of creativity in HR 6.67% in contrast with the 30,19% of foreign-owned companies.

From amongst the HR experts of foreign-owned companies several persons saw the area of administration, finance, accounting, controlling, and production management as fields where creativity is not needed at all. The list of Hungarian-owned companies was much longer and more surprising. It is true that the additional areas were only mentioned once but besides the above areas, personnel management, HR, IT, research, development and training were also listed as fields where creativity is not important.

When comparing company size we highlighted functions to demonstrate the differences which were related to the real processes inside the company and the operation of which – based on experience - are different in big companies and small and medium-sized companies: manufacturing, production, IT, logistics and supply. The answers showed that the representatives of small and medium-sized companies considered all these three areas to required more creativity than did the representatives of big companies. Regarding manufacturing and production three fold, at the IT function one and a half fold, in the area of logistics and supply fivefold more representatives of small and medium-sized companies thought that creativity was indispensable for the given area. The emphasis on research and development by big companies draws our attention to the fact that this
function is much less relevant in the case of small and medium-sized companies, confirming the outcome of the big OECD innovation study about Hungary OECD, 2009.

7. Assessment of creativity

The professional literature acknowledges several methods for the assessment of creativity. It is important to find out which are the most known and most popular methods used in practice. How appropriate are the methods used in the selection process to assess creativity? Is the creativity of fresh graduates measured at all? The information in Table 2 sums up the assessment of methods used in the selection process in view of the measurability of creativity.

Table 2 Responses giving the most frequent indications of extreme and central answers in connection with the measurability and the possibility to assess creativity

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Medium degree</th>
<th>Absolutely</th>
</tr>
</thead>
<tbody>
<tr>
<td>43 – application form</td>
<td>41 – CV</td>
<td>52 – probation period</td>
</tr>
<tr>
<td>29 – qualification</td>
<td>38 – reference</td>
<td>39 – tasks</td>
</tr>
<tr>
<td>17 – salary negotiation</td>
<td>37 – motivation letter</td>
<td>29 – interview</td>
</tr>
</tbody>
</table>

In the list of assessed methods it might seem surprising that according to 29 respondent qualification does not provide any information about the fresh graduate’s creativity. At present the restructuring of higher education is accomplished in view of job market demands, to comply with these, the ratio of different professions and different level graduates is changing. Our results support the fact that it is not the company’s first priority to look at degree when seeking creative graduates, rather they are interested in the fact whether or not the applicant has a degree and if yes, whether that degree was awarded by a prestigious institution.

The responses demonstrate that HR experts like to see the creativity of the applicants with their own eyes which is why they set a probation period in such high numbers, i.e. 52, which is nearly half of the sample. Other popular methods are: the completion of tasks and conducting a job interview. According to the sample creativity to a medium degree.

More than one-third of the men did not take up the task to judge whether graphology is suitable for the measurement of creativity. The ratio of uncertainty was slightly lower among women. Moreover, 8.7% of them thought that the graduate’s handwriting is absolutely suitable for the judgement of creativity level. Probably, it is worth noting that none of the men who shared this view. Men trusted interviews more. Exactly one-third of the respondents thought that the interview will reveal how creative the person is. A probation period seems to be deemed the most reliable method to measure creativity by both men and women, but women trust this method to a somewhat greater degree than men.

An interesting question was whether the qualification of the respondents had any impact on their choice of selection method to measure creativity. We had to realize that in the case of some methods there was a definite tendency in the judgement of the qualification groups. It was clear that some methods were only known by the economists, while respondents with other qualifications could not judge the usefulness of the method as they were not acquainted with it.

Supposedly, this was the case with the AC, assessment centre, where only 8.77% of the economists did not know this method, while the same ratio among non-economists was 21.62% and in the case of the mixed group it was still higher, 50%. Knowledge of the method brought about its preference: 36.84% of the economists found this method absolutely suitable for the measurement of creativity, and a further 47.37% considered it to be very good. The AC, assessment centre is a method that is suitable for the measurement of competences. It is primarily used in selection decisions – e.g. in the selection of fresh graduates – that is why the opinion of HR experts about the method was relevant to us. This method forecasts whether the future employee will pay off.
In essence, it consists of try-out tasks during which the most important tasks of the job are modelled. If the emphasis is on the selection, the assessment becomes the most important component of the method. It is mostly used for the selection of leaders, but it is also suitable for the survey of the graduates’ competences. It can be used particularly well for testing interpersonal skills.

A similar tendency could be seen in the evaluation of creativity measurement tasks. More than 90% of the economists found this method either absolutely appropriate 41.38% or very good 51.72%. Non-economists were slightly more sceptical, only one-third 33.33% considered this process to be absolutely appropriate. This ratio shrank even further in the mixed group where this figure was only 25%.

The assessment of interviews produced a very interesting twist, as nearly half of the economists 48.28% found interviews very good, but only 24.14% thought that they were absolutely suitable for the measurement of creativity. It was the non-economist group that found the interview absolutely acceptable for the measurement of creativity level in the highest ratio 35.14%.

When studying the prevalence and popularity of creativity measurement methods one of the exciting issues was the impact of the ownership type on the most frequently used methods. It is very important for fresh graduates to be acquainted with the methods HR experts will use to test them and survey their creativity. As we had expected, the responses showed that there is a difference between the practice of foreign-owned and Hungarian-owned companies.

Both foreign and Hungarian-owned companies like to use creative tasks, but Hungarian companies take this method more seriously. The Hungarian companies’ HR experts considered this method to be totally suitable for measuring creativity in a higher ratio 44.12% than the representatives of foreign-owned companies 35.71%.

The interview method was more favoured by Hungarian-owned companies than the foreign ones. 41.18% of the representatives of Hungarian-owned companies stated that the interview is absolutely suitable for measuring creativity, however only 16.67% of the foreign companies’ representatives shared this opinion.

A similar bias was experienced in connection with the motivation letter. While the motivation letter was found very good or absolutely suitable for the measurement of creativity by nearly 40% of the representatives of Hungarian companies in the sample, less than 30% at foreign-owned companies’ representatives agreed with this.

Test writing was also more popular amongst Hungarian-owned companies. It seems that this is a widespread technique found absolutely suitable for the assessment of creativity by 26.47% of the HR experts of Hungarian-owned companies.

Based on the answers it is clear that there are basic differences between the HR practices of Hungarian-owned and foreign-owned companies, at least, as regards measurement of creativity. The outcome of an earlier study in the area of learning and forgetting at companies with mixed ownership, conducted by Katalin Szabó and Éva Kocsis, Szabó – Kocsis, 2003, showed a similar result as did the study of Katalin Németh Pál on the measurement of innovation activities Némethné, 2010.

Our last comparative analysis focused on company size. As mentioned earlier, based on company size we created two groups within the sample: large companies over 250 employees and a small and medium-sized company group (below 250 employees). This grouping is explained by our evident hypothesis that the small and medium-sized companies use different techniques for the measurement of creativity in the hiring process of fresh graduates than the big ones.

From the evaluation of the assessment centres AC it was clear that SME-s lack knowledge on this technique. 29.27% of their HR specialists were not familiar with the method, while only 8.33% of those from the big companies indicated that they could not evaluate its usefulness. Probably as a result of the routine acquired during its application the representatives of the big companies deemed the AC, assessment centre more reliable.

The “poor man’s shilling is but a penny” effect can be seen in the prevalence of the use of tasks by small and medium-size companies. 80% of the respondents from small and medium-size companies consider this
method to be absolutely suitable for determining creativity. The HR experts of big companies, however, were not that enthusiastic about this solution.

8. Comparison of the responses of the three samples

In the last part of our analysis we compared the responses of the university students, 292 students, the high school teachers participating in the survey, 373 teachers, and last but not least those of the HR experts, 112 persons, regarding the 13 creativity-related statements of the EU research. As a first step, we compared the relative frequency of the responses.

C01 – Creativity is only relevant to visual arts, music, drama and artistic performance

University students were most definite in disagreement with this statement 56.16%. It is interesting that the teachers did not identify with the statements either 40.95%, but they were less definite in their answers, marking the „I disagree” response. On the whole we can state that in general, all three groups disagreed with the statement. As it is a narrowing statement, we can interpret the disagreement in a way that the respondents defined creativity as a notion reaching far beyond the arts.

C02 – Creativity is the ability to produce something original

The degree of agreement with this statement was also convincing, but its intensity varied amongst the three groups. Teachers could identify with this statement to a much greater degree than students. Their nearly 24% full agreement was but half of that of high school teachers.

C03 – Creativity is a skill that can be applied to every domain of knowledge

The opinion of teachers and HR experts was identical 60.83% and 60.82%. Both respondent groups confirmed the prominent role of creativity in the area of knowledge and learning. In comparison, the students’ opinion may appear to be sceptical, as they considered the role of creativity less important in these areas 45.21%. This can be regarded as a form of criticism: probably on the basis of their own experiences the acquisition of knowledge in the course of their studies did not require use of their creative skills to the extent they had expected.

C04 – Creativity is the ability to produce something of value

The definition of creativity in the professional literature includes the point that something new, original and valuable has to be produced with creativity. It seems that it was the group of high school teachers who most agreed with this thought. We do not find it surprising, that this aspect of creativity has not as yet become trivial for students, however, it is more surprising that HR experts do not consider the value creating role of creativity absolutely important either.

C05 – Creativity is a skill that can be applied to every school subject / all fields of jobs

Teachers’ optimism was reflected in their significant agreement with this statement 64.39%. HR experts assessed this issue more realistically 38.78%, however, the students’ answers radiated a straightforward pessimism 20.55%. Obviously, the differentiation between „small c” and „big C” in creativity theory Kaufman, Begetto, 2009, was not well-known to several of the respondents, namely that small “c” means everyday creativity, while the capital “C” represents the creativity resulting in inventions of an era.
C06 – Everyone can be creative

In this question teachers’ optimism was also encouraging 44.81%. Obviously, if they agree with this statement in such high percentage, their „only” task is to exploit it. HR experts were the most doubtful, and we suspect that their opinion was based on previous experiences. Only half of the students agreed with this sentence, which again is a reaction lacking optimism.

C07 – Creativity can be fostered by using brainstorming diagrams / mind-maps / mood boards

Brainstorming techniques were visibly most well-known amongst high school teachers and they also seemed to believe in them. Students and HR experts were not averse to these methods, but did not really consider them to be all that significant.

C08 – Creativity is an inborn talent

This approach appears as a separate school in creativity theory, which states that creativity is an inborn talent Zoltayné, 2005, and as such, it can be inherited. In all three groups only approximately half of the respondents could accept this statement and of them the HR experts were the most reserved.

C09 – Creativity is a characteristic of eminent people only e.g. Einstein or Michelangel)

This was a statement that did not split the respondent groups because its rejection was firm. In the case of a narrowing statement this means that everybody voted for its expansion, naturally only up to a certain limit. Previously, we have seen that the statement „everybody is creative” met only with moderate agreement. In view of this, according to the respondents, the truth lies somewhere between the two concepts: not only eminent people can be creative, i.e. it can be found in more people, however, this trait is not present in everyone.

C10 – Creativity can be assessed

This statement produced very interestingly scattered responses. It is mostly the HR experts who have an interest in measuring creativity, thus they tried to believe in it to the highest degree, obviously, in their case this much more sceptical about the degree to which it can be measured.

C11 – Creativity varies according to age groups

The validity of this statement is well-known from professional literature Pléh, 2010. The change in creativity can be described as a hyperbole, as in general, the number of creative ideas decreases with the increase in years. It seems that high school teachers have congruent experiences regarding this.

C12 – Creativity can be taught

The responses to this statement are reassuring, especially the fact that mostly high school teachers believed in the development of creativity 48.66%. The degree to which it can be developed is another issue. More than 80% of students also agreed with the notion that creativity can be developed, but their answers were the less definite from amongst the three respondent groups.
C13 – Creativity is about finding connections between things that have not been connected before

From the four M-s of creativity theory Method, Memory, Magic, Mutation, this statement can be linked to the Method principle, according to which a creative product can be produced by joining already existing elements in a new way Zoltayné, 2005. This approach was mostly accepted by the teachers and least approved of by students. This is strange, as during their studies, students are frequently expected to view the acquired knowledge from a new aspect, e.g. when writing a thesis.

For better transparency, we transformed the responses given to each statement to a ratio scale. For the presentation of results we drew a star diagram in two steps. In the first step we transformed the possible answers to a ratio scale as follows:

Table 3. Transformation of judgement to a ratio scale

<table>
<thead>
<tr>
<th>Judgement</th>
<th>Matching values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>1</td>
</tr>
<tr>
<td>Agree</td>
<td>0,5</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>0</td>
</tr>
<tr>
<td>Disagree</td>
<td>-0,5</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>-1</td>
</tr>
</tbody>
</table>

We wish to note that from the point of view of our analysis, it is the ratio of matching values that matters not their absolute value. The results of calculations with 1 and -1 made the differences and similarities of the opinions very transparent.

Fig. 2. Typical responses given in connection with each statement

Figure 2 demonstrates that respondents rejected only the two narrowing statements, which suggests that respondents wished to expand the notion of creativity beyond the restrictive limits of eminent people and art. The students’ scepticism regarding the measurability of creativity, which was related to statement C10, is also
visible. Based on this, it was not difficult to forecast their opinion about the creativity measurement methods used by the HR experts. Moderate agreement was characteristic in regard to the other statements. All three groups could identify with statement C03 the most, according to which, creativity can be applied to every domain of knowledge. Teachers strongly identified with statements C02, C05, C06 and C12. With this, they confirmed that creativity is an ability to produce something original, that it can be applied to all types of jobs, it can be found to a greater or lesser degree in everyone and they were most convinced that creativity can be taught.

On our cobweb diagram Figure 3 we compare the average opinions which demonstrate the differences of opinions between the three respondent groups even more precisely and confirm the outcome that it was mostly high school teachers who could identify with the statements about creativity.

![Cobweb diagram showing average opinions of various groups](image)

**Fig. 3.** Concrete values of general answers given to each question

### 9. Summary and Conclusions

In our research we tried to map the creativity-related expectations fresh graduates face. For this purpose we used three samples. We processed the responses of 337 high school teachers, 112 HR experts and 292 university students. We explored the HR experts’ opinions in most detail in connection with the importance of and measurability of creativity, the statements of the EU project and the definition of creativity. Based on this, we focused our attention on the HR experts’ opinion in this article, as in our present research they represented the expectations of the job market.
HR experts stated that amongst the different fields of corporate functions, the highest degree of creativity is needed in the marketing area. Leadership and management were mentioned almost as frequently as were research and development and planning and design. We found administration, finance and accounting, controlling and production management at the other end of the assessments. According to HR experts these areas require the smallest degree of creativity.

When evaluating creativity measurement methods, we found that 29 HR experts do not consider qualification as a source of information regarding the creativity of fresh graduates. HR experts like to see the applicants’ creativity with their own eyes, therefore they preferred probation period in such a large number. Testing by tasks and conducting an interview were also popular techniques. While the most widely-used methods in the process of hiring a new employee are the CV, references and motivation letter the HR expert sample group was of the opinion that these reveal the applicants’ creativity only to a medium degree.

We categorised HR experts into subsamples according to gender, qualification, the owner and size of the represented company. When the sample was split by gender, women considered creativity more important than men. More than 90% of women assessed the role of creativity as important or very important. An additional interesting outcome of the survey was that women did not only find the role of creativity more important in general than men, but also projected them to the individual corporate functions.

Non-economists mostly technical experts typically regarded the role of creativity important, although not exceedingly important. An interesting issue was whether the qualification of respondents influence their preference in the use of creativity measurement methods. In the case of some methods, we had to realize that there was a definite tendency in the qualification groups, e.g. the AC, assessment centres are mostly known by the economists, while respondents with other qualifications could not even evaluate the usefulness of the method as they probably were not acquainted with it.

When examining the ownership background of companies, it turned out that the representatives of foreign-owned companies regarded the role of creativity important, rather than exceedingly important in the case fresh graduates. There was quite a big gap between the assessment of companies with Hungarian and mixed ownership. This opinion is in line with the general opinion that foreign-owned companies - primarily the multinational companies - prefer to shape newly-hired colleagues to meet their requirements and in this process too much creativity can turn out to be a disadvantage. Based on the obtained results we can discover a sort of gap between the HR practice of Hungarian and foreign-owned companies, at least, regarding the measurement of creativity. Companies with Hungarian and mixed ownership still trust the CV, the motivation letter and the interview, while foreign-owned companies use much more modern methods to test creativity.

As we had contracted the size categories, our sample was divided into two groups, that of the big companies and the small and medium-size companies. It was interesting that we did not experience a significant difference in the opinion of the representatives of the two company groups in the assessment of the importance of creativity. When creativity measurement methods were assessed, however responses diverged and the lack of knowledge of the small and medium-size companies was evident.

The other focus of our research was the comparison of the opinions of the three groups high school teachers, university students, HR specialists on the 13 creativity-related statements used in the EU research. The comparison confirmed that respondents rejected only the two narrowing statements K01, K09, which suggested that they wished to extend the concept of creativity beyond the limits of eminent people and art. This reinforced our hypothesis H1, in which we supposed that respondents think about the small c, the creativity that is inherent in everyone. Students’ scepticism was surprising in connection with the measurability of creativity, which appeared in statement K10. Based on this, we can establish that our hypothesis H4 referring to the measurability and possible development of creativity was only partly reinforced by the high school teachers and HR experts. Regarding the creativity measurement techniques applied by HR specialists we made a presumption on the opinion of fresh graduates based on the opinion given by the student sample group. All three groups could mostly identify with statement K03, that is, creativity is a skill that can be applied to every domain of knowledge, which at the same time confirms our hypothesis H3.
In our hypothesis H2 we formulated that a result can only be regarded to be creative if it is new and useful. This was accepted by the respondents of all three groups. Teachers were the ones who most definitely supported statements K02, K05, K06 and K12 and thus acknowledged that creativity is the ability that makes possible the production of something original, that it can be applied in all fields of jobs, can be discovered in everyone and is possible to develop.

10. Classifying outcomes according to hypotheses

We compared the 13 statements to identify the significant differences between the opinions of the sample groups. To this end, we conducted an ANOVA examination using SPSS. In several cases it was the high school teachers’ opinion that differed mostly from that of the two other groups university students, HR specialists. This raises the methodological question of whether the person of the questioner, the research surveying teachers was conducted by the researchers of the EU, affects the opinions voiced in any way or if the teachers are truly so much more optimistic and open. Below we will summarize our results based on the responses given to the questions and classified according to the hypotheses. We also carried out previous tests, Levene test, everywhere, referring to the scattering homogeneity and will highlight the points where due to the lack of this, the ANOVA result was not applicable.

Referring to the 4 hypotheses formulated in this article, we can sum up the results as follows:

- The respondents think about the small c, the creativity that is inherent in everyone as a skill. **H1**
  It was the high school teachers who mostly believed that everyone can be creative however; ANOVA is not applicable due to the Levene test.
- A product can only be regarded creative if it is useful and new. **H2**
  In this set of questions students seemed to agree the least, however, we wish to note that we found a significant difference between the opinions of groups only in the last statement.
- Creativity can be applied to all fields, its usefulness, however, can manifest as value only in the relevant area of specialization. **H3**
  In contrast with the high school teachers, students agreed the least with the statement that creativity can be applied to all fields, but ANOVA is not applicable because scattering homogeneity was not realized.
- Creativity can be assessed and developed. **H4**
  With regards to creativity, teachers were the most optimistic, and the HR experts were the ones to most believe in its measurability. As regards measurability there was a significant difference in the opinions of groups and it was the HR experts were more confident in this. It is possible that these results reflect the professionals’ ‘wishful thinking’, i.e. teachers wish to think that their work is not useless, that they are able to develop students’ creativity, while HR specialists believe that they are able to assess the creativity level of fresh graduates and can thus succeed in their job.

11. Future research orientation

The research database provides further opportunities for statistical analysis. It also supplies, however, a great deal of useful information for all three respondent groups already in its present state as we aimed at a 360 degree, full-scale investigation: teachers can see the requirements of HR specialists and students. Students can prepare for the selection process HR experts can receive feedback from the market. At the same time the outcome of the research can be interesting and useful for other target groups as well, for example for decision-makers in higher education. With our article we aspired to connect science and practice, we tried to grab the essence of job market reality with scientific diligence. Joining the EU research not only provided us the opportunity to conduct an international comparison, but we hope that it will also serve as a basis for long-term longitudinal international research.
References

Derecskei Anita, Nagy Viktor, Zoltayné Paprika Zita, 2011a: A kreativitás megítélése HR szemszögéből, Műhelytanulmány, Budapesti Corvinus Egyetem, Versenyképesség Kutató Központ, TÁMOP-4.2.1.B-09/1/KMR-2010-0005 projekt

Derecskei Anita, Nagy Viktor, Zoltayné Paprika Zita, 2011b: A kreativitás megítélése a hallgatói versenyképesség szempontjából, Műhelytanulmány, Budapesti Corvinus Egyetem, Versenyképesség Kutatóközpont, TÁMOP-4.2.1.B-09/1/KMR-2010-0005 projekt

Derecskei Anita, Nagy Viktor, Zoltayné Paprika Zita, 2011b: A kreativitás megítélése a hallgatói versenyképesség szempontjából, Műhelytanulmány, Budapesti Corvinus Egyetem, Versenyképesség Kutatóközpont, TÁMOP-4.2.1.B-09/1/KMR-2010-0005 projekt


