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Innovation Ability and Diversity in Organizational Culture

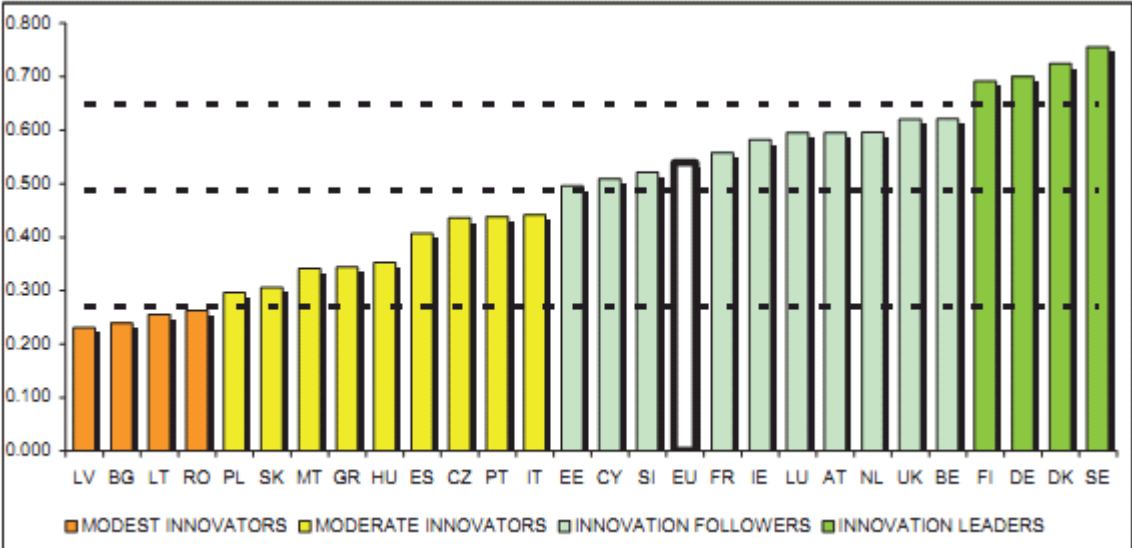
By Balázs Hámori & Katalin Szabó¹

In 2001 a very impressive short article was published in one of the most powerful international scientific journals, the Nature, under the title „Genius Loci. The twentieth century was made in Budapest”. The author, Vaclav Smil justified the striking title as follows: „An improbable number of scientific greats were born in Budapest in the decade between 1898 and 1908. Between them, this group were responsible for some of the twentieth century’s most decisive scientific advances and, consequently, some of its fundamental strategic and political transformation” (Smil, 2001, p. 21) Since the above-mentioned decade many years had come and gone, and now we should explain the backwardness of Hungary in the global innovation competition. What has happened? Why did „the genius loci” disappear from Budapest, from the city which had given the world a whole series of great inventors of historic importance?

What is the explanation for the fact, that the country which can boast of more Nobel-prize holder than China and India together, now takes place among the country group of very moderate innovators. (See figure 1)

Figure 1

EU member states innovation performance



Note: Average performance is measured using a composite indicator building on data for 24 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1. Average performance in 2011 reflects performance in 2009/2010 due to a lag in data availability.

Source: Innovation Union Scoreboard 2011. The Innovation Union's performance scoreboard for Research and Innovation, 7 February 2012, p. 3.

From the above mentioned facts came our research questions, which determine the goal and the direction of our analysis:

- Can we confirm the picture of the weak Hungarian innovation performance drawn from the surveys of the international organizations that are being conducted on large samples and are using the same methodology in every county (Community Innovation Survey)?
- Is the state of the affair in innovation different, if we make investigations at the micro level, taking into consideration not only the major innovations, but also the so-called incremental innovations?
- If the backwardness in some sense seems to be real, what are the reasons for that in Hungary?

Answering the above questions, we did not settle only for the mapping of the well measureable factors (R&D spending, people partaking in life-long learning, etc.) found in the international surveys, because we consider innovation *as a social construct, a complex social process deeply embedded in the culture of the country*. But these cultural factors can not be gained from the macro data, so we decided to conduct a survey in the micro sphere, in order to uncover the influencing factors on the innovation activity at the micro level. We conducted this empirical work as members of a research group, so our results are based to some extent on the common work of that group. Before getting down to our empirical investigation, we had formulated several hypotheses:

- o The innovation activity in the scrutinized area is weak.
- o Mainly incremental (tertiary) innovations are present. The more significant an innovation is, the rarer it is.
- o There are no innovations considered as new on the global level.
- o The organizational and marketing innovations are less common, there are more product and technological innovations.
- o Various types of innovations strengthen each other; they not only one kind of innovation are realized..

Methodology

We carried out the survey between March 24th and August 15th, 2011 among firms of the central region of Hungary by the help of an online questionnaire. The request for the filling out of the 52-item questionnaire was sent out to about 3500 potential respondents. We asked the respondents to provide the number of the various types of innovations during the past 5 years and to answer some questions related to them. We focused on the owners and managers of the SME sector, but we also included large firms in our survey in order to gain a more comprehensive picture of the topic at hand. SMEs amounted to 76% of the total sample. In regards to the sectors, the majority of the respondents were from the industrial (28%) and the business services (36%) sectors.

Altogether we received back 302 fully completed questionnaires. The survey is non-representative, because it is based on the questionnaires filled out on a voluntary basis. But it covers the various sectors, and age-groups and people with different positions at the companies. In our opinion it is upwardly biased as it was answered mainly by people sensitive to the innovation topic. The sample is in many senses better than it could be expected based on international statistics. We have analyzed the innovation activity at the firms by dividing it into 4 areas and 3 types.

We have differentiated four areas of innovation:

1. product/service
2. technology/manufacturing
3. organizational procedure or form, and
4. marketing solutions

We also have made a definite difference between tree types of innovation

- a) The first category includes those innovations that can be considered as *completely unknown solutions in Hungary*.
- b) The second category includes those innovations that are *known in the country, but the firm has not employed them earlier, so it seems to be new at the firm level*.

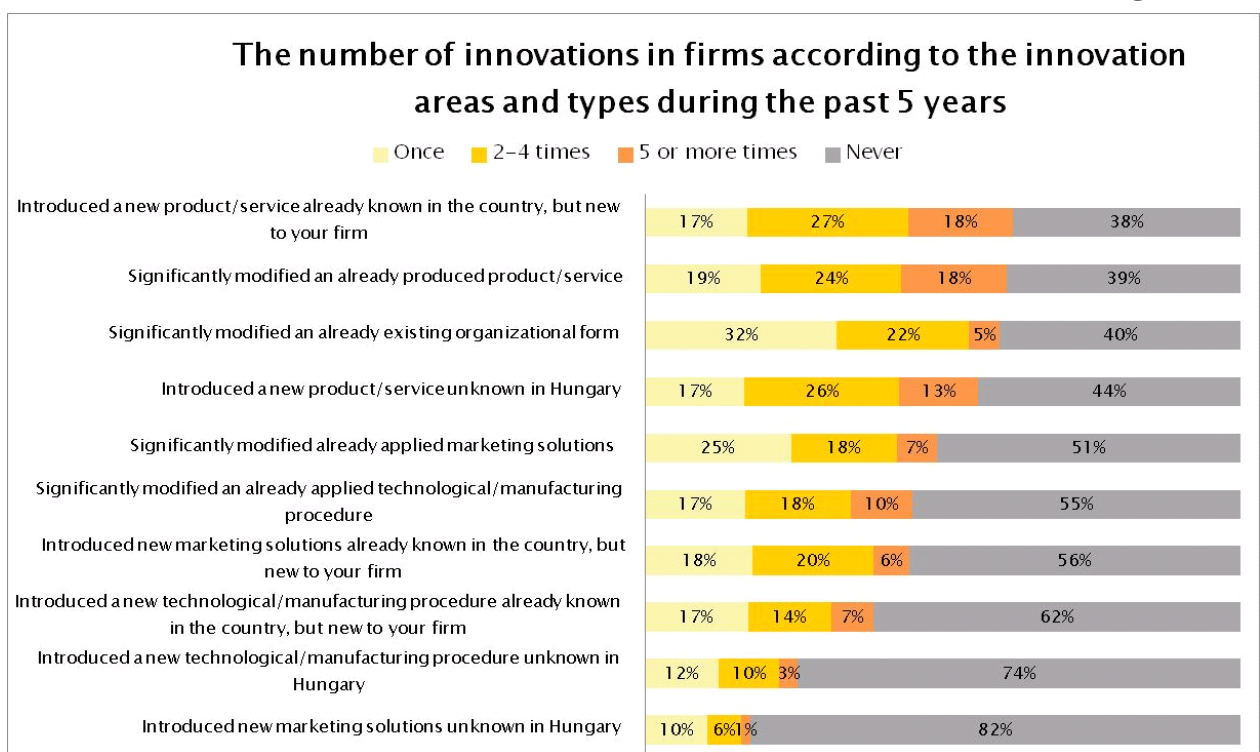
- c) We included in the third category those changes in the products, in the technology, in the organization etc. at the firm that are *not* considered as *new*, *but* they are based on *significant modifications*.

We did not analyze in a separate category those innovations that can be considered as new in global terms, because in such sample size it would not be detectable percentagewise. By introducing the category of „others”, respondents were allowed to indicate such innovations as well.

Results

After processing the data, gained from the survey, we got results, which mostly proved our hypotheses but some of them seemed to be surprising. In this section we attempt to give an overall picture of the innovation activity of the firms in our sample. In Figure 2 two types of the above-mentioned categorizations were combined:

Figure 2



Data source: Own research. Statistical processing the questionnaires was by Erika Hlédik.

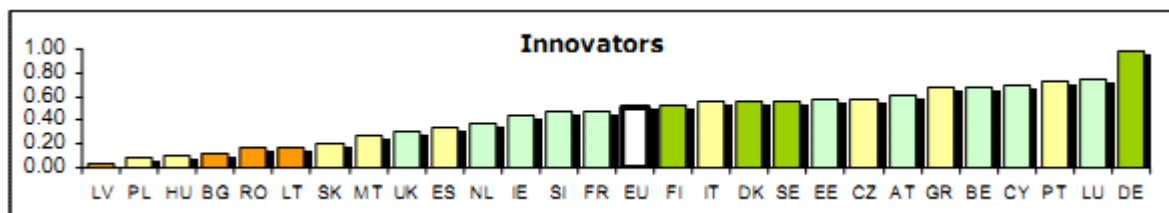
Data source: Own TÁMOP research. Statistical processing by Erika Hlédik.

As we can see in Figure 2, in our survey 90% of the respondents' firms have carried out some kind of innovation during the past 5 years. The so called primary innovations (the introduction of innovative solutions unknown in Hungary) are rare. Inside of this category, the cardinally new organizational and marketing innovations are even rarer; however among incremental innovations organizational innovations are relatively common. The respondents did not indicate innovations considered new globally in the „other” category either.

The numbers in the above figure greatly surpasses the values found in the CIS surveys. (See Figure 3)

Figure 3

The share of innovator firms as part of the total number of firms



Source: Innovation Union Scoreboard 2011. The Innovation Union's performance scoreboard for Research and Innovation. 7 February 2012, p. 13.

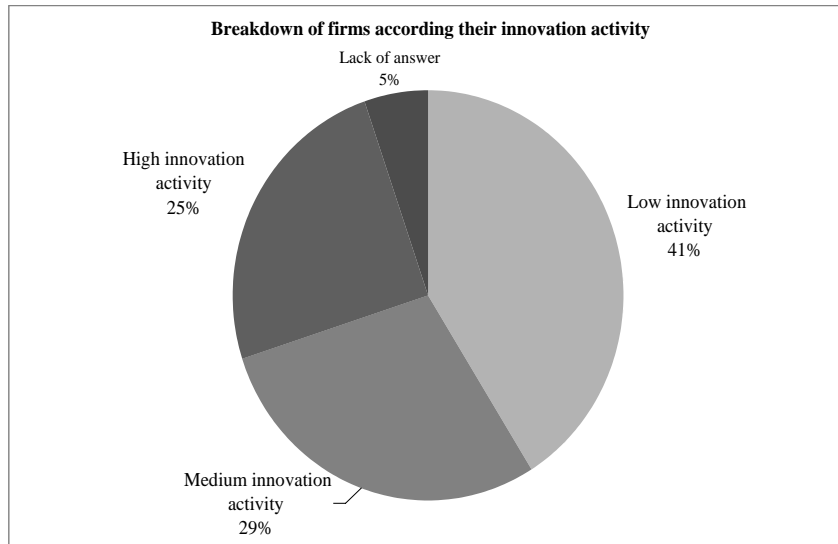
Explanation for the much stronger innovation activity and for the much larger number of innovative firms in our sample compared to the Eurostat data (CIS Survey) can be summarized as follows.

- As we mentioned before the survey is not representative, but based on a kind of self-selection. It is quite understandable, that mainly those sent the questionnaires back, who innovate (8.6 % response rate).
- Another source of the deviation from the data of the CIS-survey can be the extension of the notion of "innovation" in our survey. In theory, the concept of „innovation" contains not only the really important renewal of processes or products etc., but the minor modifications of old products, processes etc. too. But according to the Oslo Manual these types of innovations are hard to measure, and often neglected in the big international surveys.² (OECD, 2005, pp. 40, 47) But we collected data for the later type of innovations as well, and as a matter of fact these are the most frequent types in our survey.
- International surveys in general, consider data for 3 years. We considered 5 years, which can even double the number of innovations.
- The so called „bare-foot" innovations³ can also play a role in the larger numbers of innovations and in the larger number of innovative firms. These are probably not included in other surveys.

- Finally, some of our respondents probably misunderstood the concept of „innovation”, and they consider minor adaptations as innovation too (e.g. a software, which is sold to another client with very small modifications).

As the next step of our empirical work according to the number/frequency and types of innovations, we categorized the firms into three groups: groups with low, medium, and high innovation activity (trisecting). This way we have three almost identically sized groups. When classifying into a category we gave more weight to those firms that created new innovations in Hungary, and less weight to those which carried out innovations that have been already known in Hungary, and even less weight to those who made significant alterations to existing solutions and products. Based on this, for each firm we established a unique index number, which varied based on the number of innovations, the more innovations were introduced the higher was the index number. The „high” group primarily includes those firms that introduced several such innovations that were unknown in the country before, and in their case the number of innovations in almost all innovation types (or areas) was higher on average than in the other two groups. The „low” group includes those who have not introduced innovations that were unknown in Hungary before, and all of their innovation activities were lower than of the two other groups.

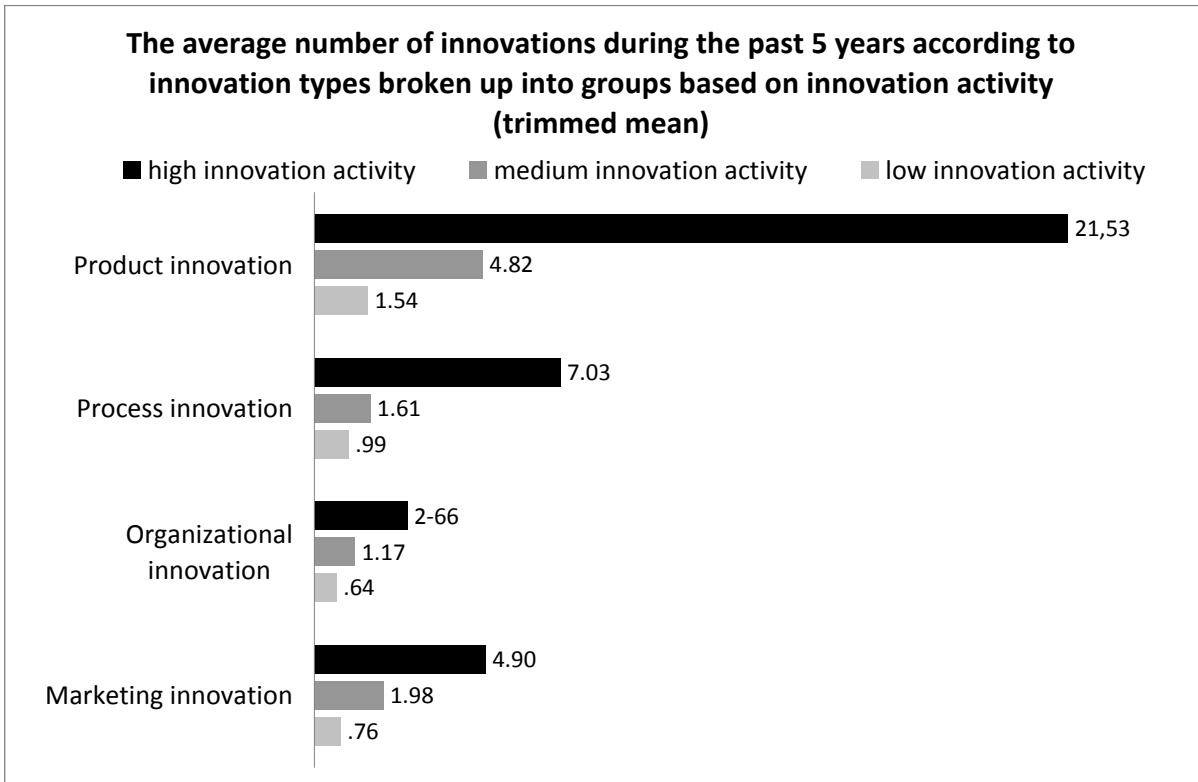
Figure 4



Data source: Own TÁMOP research. Statistical processing by Erika Hlédik.

The next figure indicates the average number of innovation in the above three groups.

Figure 5



Data source: Own TÁMOP research. Statistical processing by Erika Hlédik.

Seeing the quite significant difference between the three groups in innovation activity, we tried to find the factors, what make one group of firms innovative, whilst the others follow far behind. In the course of our research, we investigated three groups of factors: the first group is related to personal features, the second one to company culture, and the third one represents the country's culture. Table 1 shows the investigated factors.

Table 1

Some selected factors, influencing the innovation activity

Personal attitudes, embedded in culture	Factors describing company culture	Social factors
Risk taking behavior, tolerance of uncertainty	Leadership style (democratic or autocratic)	Freedom. autonomous action, free decisions
Tolerance	System of performance evaluation//measuring and rewarding at firm level	The power of law and norms, rule following behavior in society
Personal mobility	Handling of failures at the firm	Market selection on the basis of performance (versus corruption, Nepotism)

Source: Own research

In this paper we limit the discussion only to some selected factors, and we present here a few quantitative results. First, we indicate data concerning the measuring and rewarding system at the firm level. (Table 2)

Table 2

**The different attitudes of the three groups with differing innovation activities towards
measuring and performance evaluation**

Measured by indicators or reporting// the rewarding of the employees depend on them*	Low	Medium	High
<u>Quality</u>	26/16	31/11	35/15
<u>R&D</u>	23/6	34/10	39/8
<u>Human resources</u>	25/23	26/20	43/19
<u>Marketing</u>	31/5	44/5	45/12
<u>Training</u>	39/8	38/3	45/13
<u>Customer satisfaction</u>	40/13	49/10	45/8
<u>Financial performance</u>	50/6	44/9	48/8
<u>Information system</u>	41/4	53/2	61/1

*Note: The first number in every boxes indicates the proportions of firms which measure somehow the the given function or field of the company, the second number shows the proportion of firms, where the rewarding of the employees depend on them

What kind of consequences can be drawn from the data of the above table? These are as follows:

- In the case of most firm functions and areas, bigger part of the innovative firms measure the operations of the given area with indicators or reports than less innovative firms

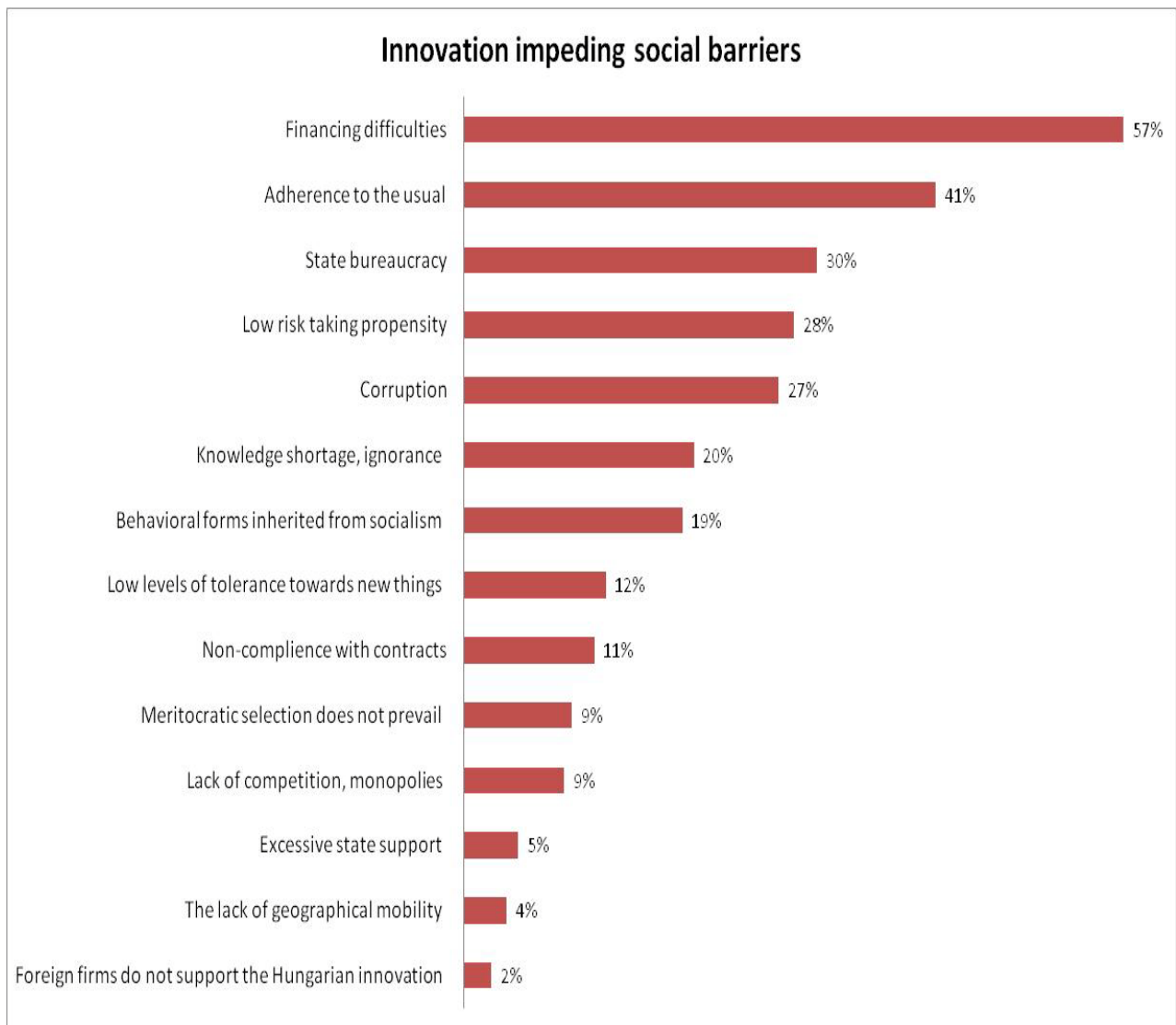
- However, the connection between the innovativeness of the firms and the employee performance evaluation and rewarding is less clear.
- Firms grouped into medium level innovators category in terms of incentives in many areas surpass the most innovative firms.

On the basis of data gained from our survey (but because of the lack of space, we cannot show them here in detail), we are able to sketch out the profile of innovative firms. We found, that they can be characterized by the following features.

- Measuring key organizational factors and/or tying them to employee performance
- Conscious development of innovation supporting organizational structure
- Risk-taking attitude
- Positive attitude towards market competition
- Highly cooperative attitude (because of the barriers to innovation capacities, especially in the case of the SMEs in the agriculture sector)

From the above we can infer some implications about the factors that impede innovation. In our questionnaire we did ask also about all social, personal and economic factors, which supposedly impede innovation activity. Figure 6 shows the data collected.

Figure 6



Data source: Own TÁMOP research. Statistical processing by Erika Hlédik.

Although as Figure 6 shows, the majority of the respondents (57%) mentioned the lack of money as the number 1. barrier to innovations, the behavioral and institutional factors also received prominent places in the figure. Right after the financial difficulties, the respondents indicated human conservatism, the adherence to the usual, and an institutional and at the same time behavioral factor the overgrown bureaucracy (30%) as barriers to organizational innovation. This is followed with almost equal weight by the low risk taking propensity (28%) well know in Hungary for its low levels, and corruption (27%). The surprising result is

that only an insignificant amount of the respondents (2%) mentioned that the multinational companies settled in the country impede innovation, even though this factor is given a much larger weight in the literature and in the media. In accordance with international experiences, (Hewitt-Dundas, 2006), financial difficulties stand as the number 1 factor among the barriers of innovation, especially in the case of small firms. Nevertheless, “soft” factors are also mentioned frequently: the low risk taking propensity of management, the bureaucratic behavioral forms are mentioned as the main impeding factors of innovation.

Conclusions

Our final conclusion (which based not exclusively on the data indicted here, rather in the whole dataset gained from our whole research) is that social context is determinative. Organizational culture is embedded in society, and the personal attitudes also depend strongly on the social environment. In that environment path dependence, the survival of certain elements of socialist institutional structure (favoritism, hyper trophy of bureaucracy) confines the activities of innovative persons and firms. Corporate competitiveness is determined by the relations to the state, and less by productivity and innovation. In our research launching studies (Hámori – Szabó, 2010), we hypothesized that for the reasons behind the low innovational performance of Hungary (except of minor incremental and bare-foot innovations) in an international comparison, we should primarily seek *institutional and behavioral factors*. This hypothesis is supported by most of the data of our survey.

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Notes

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² “There are also limitations to the types of data that can be obtained by innovation surveys... innovation is a continuous process, and therefore difficult to measure, particularly for firms whose innovation activity is mainly characterized by small, incremental changes as opposed to single, well-defined projects to implement significant changes. Innovations are defined in the Manual as significant changes, with the intention of distinguishing significant changes from routine, minor changes. However, it is important to recognize that an innovation can also consist of a series of minor incremental changes.” (OECD, 2005, p. 40.)

³ We define *bare-foot innovation* as an innovation, which does not need any financing. These are mostly witty ideas, where the ideas and the implementation coincide, and bring considerable saving and/or financial reward for the person or firm.