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Internationalisation of Hungarian SMEs in the IT industry

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Introduction

Information and communication technologies (ICT) is not only one of the most R&D intensive industries in Hungary - as well as in Europe - but it is in the centre of globalization. Nowadays the internationalization activities are beyond production or marketing factors and include also R&D and innovation activities. These features qualify the industry as a very good field to investigate the internationalization of R&D and innovation activities. The participation in such international collaborations is a good measure of international competitiveness of the Hungarian enterprises.[1]

ICT is a broad industry and the various sub-sectors have some distinctive characters. Considering these differences this research concentrates on the information technologies (IT) – leaving out communication – and more specifically on computer services and software development. In these fields Hungarian entrepreneurs might have some comparative advantages based on highly skilled workforce and they do not require high initial investments, like the hardware industry. It is also expected that the vast majority of firms in these service-like sub-sectors are SMEs, thus providing us a large pool of RDI-intensive SMEs to survey their internationalization patterns.

So far most of the theories/empirical research concentrated on the role and activity of multinational enterprises in internationalization and less knowledge is available on SMEs. Their role in internationalization is not less important but complementary and the large number of SMEs makes the understanding of their international success factors extremely crucial. This paper would like to contribute to this part of the literature. It is based on empirical research that builds on the results of an online survey supported by in-depth interviews at internationally successful Hungarian SMEs.[2]

The structure of the paper is the following. The next chapter shortly reviews the relevant theories on internationalization, R&D and innovation and SMEs to provide the theoretical basis of the investigation. The third section characterizes the role of ICT industry n the economy. The fourth section gives detailed information on the empirical research results and the last part provides the main conclusions.

Internationalization of R&D and innovation

Researchers took up the question of internationalization of R&D and innovation at the early 1990s following the globalization by multinational corporations that spread into new geographical areas and new corporate functions. [1, 2] Ever since the investigation of internationalisation is mainly coupled to the investigation of multinational corporations as they are the main actors driving and embodying this process.

In the last two decades different categorizations and theories have emerged to describe the process of internationalization of R&D and innovation. These attempts argue about home base exploiting and home base augmenting strategies. [e.g. 3] In the first case the intra-firm relations play a substantial role while external relations remain relatively unimportant. In the second case rather external linkages are the driving force, like supplier-customer relations, interactions with local players etc. This bipolar approach has been modified and complemented from many sides which added further details to the process of internationalization and described further types of foreign R&D activities. In [4, 5] identified different 'levels' or extent of internationalization.

These efforts depicted a scale of international RDI activities from simple adaptation to a truly global RDI system.

However this phenomenon does not left unaffected the life of SMEs. In the era of knowledge-based economies the participation in the internationalization process and R&D collaborations are very important because they are an important source of knowledge and experiences which determine international competitiveness. The growing knowledge intensity of current products and services increase the importance of a large and flexible knowledge base. [6] While firms concentrate more and more on their core competences this means that there is a growing need for external knowledge sources even at the largest (multinational) enterprises. SMEs, who have more limited human resources, are even more exposed to external knowledge sources and with the development of IT solutions it is easy as never for them to access also foreign sources. There are some evidences that SMEs investing in R&D and innovation activities can be more productive if they can utilize these external knowledge sources. [7] There are various theories existing which try to describe the internationalization process of SMEs (from the 'Uppsala-model' to network-theories) both as an incremental and as a radical process (e.g. 'born globals'). [See e.g. 8] These theories emphasize the varied behavior of SMEs and there is no single road to success. R&D and innovation efforts as well as internationalization in this field is also influenced by their industry in which they operate. International literature suggest that SMEs are more active in the internationalization of their RDI activities in high-tech industries where the highly skilled labour force play the decisive factor in competitiveness. [9] There are also evidences that SMEs in the transition economies of Central and Eastern Europe are more internationalized than SMEs from large Western-European economies but this is also influenced by the managerial capabilities as well as geographical location of firms. [10] Thus the investigation of the RDI internationalisation of SMEs in the Hungarian information technology sector should be a good field to find enough target firms for our investigation. Measuring the extent and forms of these processes might contribute to a better understanding of the international competitiveness of this industry.

The Hungarian IT industry in international context

Information and communication technology is an important and constantly growing part of the economy in Europe as well as in the USA or Asia. It contains a broad set of activities from IT hardware manufacturing through software development and various services. In the whole industry there are more than 450 thousand enterprises with more than 2 and a half million employees generating a turnover of 30 million euros in Europe. The industry is growing above the average in the manufacturing industry and it is one of the most export-oriented industries in Europe. [11]

Overall, the most important part of the industry is communication-, software- and IT-services, covering 60% or the whole ICT market. (epp.eurostat.ec.europa.eu) It is slightly different in Hungary because many large IT hardware manufacturers have established subsidiaries in the country, Therefore the share of hardware manufacturing, software development and services are quite balanced. [12]

Besides the role of multinational corporations the other important feature of the industry in Hungary is the available highly skilled workforce. They are an important target for these multinationals, who are establishing subsidiaries in the country to hire skilful engineers or set up collaborations with local SMEs. For these small independent enterprises the highly skilled workforce is the biggest competitive advantage and it is one of the most important features that sometimes makes them successful international players (e.g. Graphisoft with ArchiCAD, or very

lately Prezi.com). Hungarian owned SMEs have comparative advantages in those activities, that are knowledge-intensive not resource-intensive (e.g. services, software development).

Altogether there are approx. 12 700 enterprises in the Hungarian ICT industry employing 52 thousand people in 2007. An important feature of the Hungarian industry is the export-orientation and in some sub-parts the high share of foreign affiliates in the industry's performance. This share is very high – in international comparison – in the field of production of communication devices (share of foreign affiliates is around 95%) and in general in the field of ICT R&D expenditures (over 82%). The share of foreign firms is much smaller in our field of investigation, among IT service companies (under 20%).

In the OECD member countries the ICT industry is spending on R&D 2,5-3-times higher than some other, traditionally R&D-intensive industries (e.g. automotive). The largest enterprises are devoted 6% of their income to R&D and innovation. [13] However European enterprises seem to under perform their US- and Asian-counterparts who are spending even more in this field. The largest European investors in ICT R&D are Germany, France, UK and Sweden [14] The Hungarian ICT industry is lagging behind the EU-average. Although the industry's importance is comparable to that in other EU-countries the R&D and innovation expenditures are significantly lower than elsewhere in Europe. Even in Central and Eastern Europe, the Czech Republic is spending 6-7-times more on ICT R&D than Hungary. [15] Even the R&D intensity indicators showing a similar picture. R&D intensity in Europe is around 6%, while it is 11% in USA, and in Japan, South-Korea and Taiwan it is 12-16%. [14] Among European countries Finland, Sweden or Denmark spend the highest share of business R&D expenditures in the ICT industry (0,5-1,5%, BERD-to-GDP) while this share in Hungary is among the lowest (0,1%). [13] Looking at the details it becomes clear that not only the expenditures are limited but the scale of human resources, too. It is only Slovenia and Mexico where less researchers are employed in the ICT sector than in Hungary and the picture is only slightly better if we look at the number of ICT researchers to the total number of researchers. [15]

Investigating the business R&D activity in the Hungarian ICT industry we can say that it is higher in the manufacturing sub-sector where only a smaller share of R&D laboratories exists. (Table 1) This might be the result that the number of hardware manufacturers is smaller than the number of enterprises in the other sub-sectors, but their size is much bigger – and therefore they are much more resourceful than those mainly SMEs who are active in the other sub-sectors. The difference in the number of research labs does not mirror in the number of employees. This number is very similar in the two sub-sectors which also strengthen the view that there are more but smaller research establishment in the field of information, communication (services).

Table 1. Selected data of business R&D in selected sectors related to ICT, 2008

Sector	Number of R&D laboratories	Actual number of R&D employees (Headcount)		Number of R&D employees (FTE)		R&D expenditures (M EUR)
		Total	Reseearchers	Total	Researchers	
Manufacturing of computers, electronical and optical products	27	843	654	777	618	30,2
Information, communication	98	1150	884	875	662	18,4
Total National	1155	14043	9408	11373	7912	518,7

Source: KSH, 2009, pp. 86-87.

The two sub-sectors analysed in Table 1 provide 10% of all business R&D places in Hungary and this number can be even higher if we took into consideration those laboratories that are listed under different 'sectors', e.g. other natural science, engineering R&D surely contains some further laboratories working on ICT projects. But even this 10% show that the ICT industry plays a very important role in business R&D compared to other industries. (Even if we know that this 'role', the R&D expenditures and R&D intensity fail to come about the EU average.) However these data also seems to suggest that multinational companies are playing a more significant role in the industry than the numerous Hungarian SMEs.

There are hardly any sector-specific data available on the RDI activity of SMEs. The European Union Innovation Scoreboard 2009 provides data only on the macro-level. According to this source 33% of EU-27 SMEs are engaged in product- or process innovations, while this share is 17% among Hungarian SMEs. (There are some other Hungarian research that underlines the lower-than-average innovativeness of Hungarian SMEs. [See e.g. 16, 17]) If we look at organization and marketing innovation, the picture is slightly better: 40% of EU-27, and 26% of Hungarian SMEs are involved in these kinds of activities. Among the innovative SMEs only 9,5% of them (EU-27) are engaged in collaborations, while 6,5% of them in Hungary. [18] There are very few evidence whether the ICT sector performs above or below the national average. The few data [19] suggests that the SMEs in the ICT industry are more innovative than the average and they establish more R&D collaborations, too.

Altogether these data underline the important role of the industry in the Hungarian economy. However it seems that the relatively low ICT R&D expenditures and the small domestic market are the two most important challenges of the Hungarian industry, which also slow down the growth of the industry.

Research methodology

It has been already mentioned that the ICT industry covers a whole range of different activities. This makes difficult any attempts to 'identify' and characterise the industry. It is from research to research varied what is considered as part of the ICT industry, depending on the research aim or the available statistical data. The OECD has established in 1998 a widely used categorization dividing the ICT sector into manufacturing and service sub-sectors, which are related to the electronic storage, transfer and display data and information [20] Beyond this definition one may identify computer and –parts manufacturing, products related to broadcasting as well as computer services or communication. Looking at the impact of ICT industry in a broader sense researchers take into consideration IT user industries in the manufacturing / service sector which are heavily relying on the latest ICT developments. [e.g. 21]

The Hungarian categorization of the ICT industry follows the international recommendations with slight differences. The Hungarian Central Statistical Office collects data in four categories: a) post and communication, b) internet-services, c) information technology services, d) use of information and communication instruments and e) content-management. However in this approach ICT and ICT-user industries are not separated. According to the Hungarian Government's action plan ICT industry is consisted of three groups: a) IT hardware and software companies, b) telecommunication service providers and c) professional IT service companies. [13]

This article– based on the underlying research – concentrates on those sub-sectors from the above definitions that possibly contain a large number of local SMEs, providing a proper field to

investigate the internationalisation of their RDI activity. Therefore, according to the TEÁOR'08 (Hungarian version of NACE rev. 2.1.) these categories were included:

- ❑ Manufacturing of computer, electronic and optical instruments (26)
- ❑ Other manufacturing (32)
- ❑ Information technology services (62)

These selected fields exclude 'C' (communication) from ICT therefore from the next section of the paper it will refer to IT and IT industry when characterising the subject of the analysis. It will look at the R&D and innovation activities of Hungarian SMEs in the selected sub-sectors to highlight the main forms and extent of the globalisation in the field.

The empirical research relied on online survey (mid-2009) as its main method which was complemented with in-depth interviews at some of the internationally most successful Hungarian IT SMEs. There were 230 IT SMEs contacted through e-mail to fill in the questionnaire and at final there were 49 answers available for analysis. Their quantitative information was enriched by six interviews, which is presented in an integrated way.[3] They serve to provide more details on certain aspects of our investigation and to provide some explanations behind the numbers. During the compilation of target SMEs for the questionnaire we were looking for companies possibly involved in RDI activities and/or being involved in any kind of internationalisation. The questionnaire included various topics: innovation activity, networking, competitiveness, internationalisation and motivation behind internationalisation. The following part of the paper will concentrate on: a) innovation activity and b) internationalisation.

Empirical results

During the research we have received 49 valuable answers from a wide variety of firms. Three quarters of them provided us with some of their basic financial and personnel data. According to those the income of the respondents varies greatly, between 1 and 1350 M HUF (0,004 and 5 M €), their R&D expenditures between 7 and 60 M HUF (26 and 222 thousand €). The data shows a slight increase between 2004 and 2008, but still most of the respondents left blank or put 0 on these questions. The personnel data reveals that 43% of the respondents are small enterprise, and 24-24% micro enterprise or enterprise without employee. The small increase in the size of enterprises can also be traced on their personnel data. Majority of the respondents employed 1-4 person in R&D positions in 2008, but 36% of them employed none.

The vast majority of the respondents in our online e-survey are engaged in IT (computer) services. According to the relevant TEÁOR'08 categories (Hungarian version of NACE) 94% of them have information technology services as the main business and 6% of them could be categorized as IT hardware manufacturers. This strengthens our selection principles to focus on such sub-sectors where a large number of relevant SMEs could be found. It is also a sign that hardware production is losing ground remaining a territory for resourceful large companies which can exploit the scale economy. It is much easier to set up a new business in fields requiring less capital and where a few capable employees can utilize their knowledge and flexibility on the market. Those managers who were interviewed during the research also strengthened this statement and their own existence is a good example for that.

Information technology is a quick changing industry which is usually characterised by the constantly large number of new entrants on the market and by the high fallout rate. In our sample

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[3] The interviewed SMEs include: Graphisoft Kft, IND Group, Morphologic Kft, 4D Soft Kft, NNG Kft, Balabit Kft.

almost 49% of the respondent enterprises have been established after 2001 and 16% of them even after 2008. This information seems to strengthen the views about the quick life cycles in the industry, the potential of an innovation to provide new opportunities to anybody and the danger of losing positions without constant reforms. However there is an almost equal number (16%) of firms that have been established before 1991 which means that there are many opportunities to remain successful even in this industry. The interviewees also underline that the real success can also be maintained over time and many of them are belonging into this category of 'old' enterprises. One of the important factors of their long-standing success is – apart from the unique product/service – human resources and human resource management.

Innovation activity
Our focus on SMEs that are possible involved in RDI activities resulted that the vast majority (90%) of the respondents have introduced innovation in the last three years or in the last twenty years. Unfortunately this is not true for the total SME-sector in Hungary. Looking at the responses it is also clear that in many cases enterprises have introduced more than one innovation, often combining the different types of innovation. The most common types are product- and process innovations and the combination of these two types, while the number of cases mentioning organization- or marketing innovations is much smaller. Altogether there were 30 product innovation, 41 process innovations, while 8 organizational and 5 marketing innovations mentioned by the respondents.(Table 2) It is not surprising that in a more service-oriented field the number of process innovations is higher than product innovations. It is more interesting that in such a competitive environment enterprises do not engage in organizational and marketing innovations, which might be crucial for their market success.

Table 2. Innovation developers by type of innovation

Innovation developers / Type of innovation	In-house	In collaborations
Product innovation	18	12
Process innovation	19	22
Organizational innovation	8	0
Marketing innovation	3	2

Source: KKVENT_8.

The majority of the respondents develop these innovations in-house, but a significant share of them (43%) relies on external partner(s). (This share is significantly higher than that average cited in the previous chapter.) If we look at the different types of innovations than it can also be seen that enterprises introduce more process innovation developed in collaboration than process innovations developed in-house. We can take it as a small shift towards innovation patterns seen in the most developed countries but it is still striking that the purchase of innovations developed elsewhere is not mentioned at all by the respondents. The interviewed managers from SMEs told that they try to keep knowledge – central to their growth, development – within the organization and only collaborate if necessary. This can be the reason also why firms are reluctant to sell their latest development and why firms do it on their own rather to buy it. In most cases their innovation requires such specified knowledge that it would be difficult to obtain elsewhere than in-house. Apart from the unique solutions which their innovation generally require the available

constrained capital of the enterprises makes it also difficult to purchase R&D results from an external partner.

Innovation is not a one-step activity; it is a process in which different partners may have different roles over the whole period. It might also happen that enterprises sell their R&D results instead of or besides utilizing itself. Only the minority (44%) of the respondent IT SMEs reported that they have sold their R&D results to third parties. The buyers are domestic and foreign SMEs (32-32%) in the first place ahead of domestic large and multinational firms. This is basically the only aspect of the whole innovation process when foreign actors play a significant role in the life of domestic SMEs. The e-survey asked about the potential partners in idea generation, R&D, and the previously analysed collaborations but in most part of the innovation process domestic actors, like other Hungarian firms (suppliers, customers) or higher education institutions play the role of main partners and only after them are foreign partners listed.

The responses to the questionnaire strengthened the general impression that the networking activity in the Hungarian economy remains below the average of the developed economies. (See on networking activity e.g. 22). This weakness of the Hungarian economy is even truer for the innovation system which can be seen also among the IT SMEs. Only 5% of our respondents are members in any kind of network (distribution, supplier etc.) and only 3% are members in international networks. Among domestic networks RDI-type of partnerships are dominating but on the international level these are less numerous and distribution-type partnerships become the most common networks. This is an important problem because the RDI networks are usually a useful way to follow the latest developments in the industry, the main trends, hot issues and collect a wide array of useful market information. The only positive trend we can see out of these data is the weak sign of learning (or at least the potential of it): domestic network memberships are 3-5 years long in general, while international memberships are only 1-2 years long. This suggests that enterprises start to collaborate on the local level and after they have accumulated some experiences they will go to the international scene. The relatively short time in international networks mean it will need a couple of more years to see a growing number of international RDI network-memberships. However this is not only a matter of enterprise decision, some external factors need to positively contribute to this process, too.

Internationalisation

It is interesting to look at the various types of internationalisation of SMEs. There are many forms, which could be taken into consideration: from indirect export to foreign investments/subsidiaries, which require various efforts from the SMEs themselves. The e-survey contained questions about some of the main types of internationalisations to be able to assess the extent and relevance of them. (These included export/import, supply, transfer of intellectual property, and foreign investments.)

The responses highlighted that among the main type of internationalisation only exporting affects a larger share of the SMEs, but even in this form only 31% of firms (15) are involved. Importing is much less common among IT SMEs compared to exporting; only 12% of them reported this activity. A possible explanation for this could be that IT software/service industry is less dependent on foreign materials and SMEs try to build on their human value added rather than physical ingredients. If they need something from abroad that is mainly knowledge but this is not captured by import data. Looking at the extent of export/import in the activities of SMEs we will see a varying picture. The export remains under 10% of the income in one third of the exporting companies, but it is above 70% of the income in 27% of the companies. This diversity is also

apparent in importing: it remains below 30% of the income in half of the companies, and above 50% in the other half of the importing companies.

These data show a lower-than-expected rate of exporting enterprises which is somewhat in controversy with our expectations about a globalised industry. Considering the important and integrating role of large multinational companies one would expect more interaction with such international/foreign players or simply a global orientation in business. Interestingly this was seen only at the interviewed SMEs who take it natural to target the global market with their products/services. These firms realised that the domestic market is too small to develop above a certain level and they come up with a niche-product/service which can be sold also globally. They see it as the key for their longstanding success.

Although their number is not too high, it might be interesting to take a closer look at the content of export/import deals. It seems that there are clear relationships between the type and volume of exports/imports. Those respondents, who are exporting at a low level mainly selling high-tech parts and intermediary products abroad. On the contrary, those SMEs who are export oriented (export reaches more than 70% of turnover) mainly selling high-tech products or services. (Table 3) Interestingly services play an important role only in exporting and it was hardly mentioned by importing SMEs.

Table 3 Product categories in export

Product categories	below 1%	1-10%	11-70%	71-100%
Parts / Intermediary products	9			
High-tech parts / intermediary products	9			
Products	4		1	5
High-tech products	5		1	4
Services		4	3	6

Source: KKVENT_8.

Regarding any other forms of internationalisation the answers are not convincing. Only 20% of the respondents mentioned to be a supplier of foreign or foreign-owned companies. In the international transfer of intellectual property Hungarian forms take part in two forms. More firms (24%) mentioned that they have purchased know how from abroad and a small share of the respondents (10%) have developed know how together with a foreign partner. Internationalisation based on foreign direct investments is a complex and resource-intensive form which is not really typical among IT SMEs. Among the respondents of the e-survey only one case can be found when an enterprise established a foreign subsidiary. Considering the size of SMEs, their limited resources and the uncertainty that is attached to such a decision this low share of such activities is not surprising.

In order to better judge the picture on internationalisation is it useful to know what kind of motivations lie behind the decisions of managers to go abroad (or not). The SMEs rate knowledge-related factors as the most important motivations for internationalisation. (Table 4) The 'access to new knowledge' is the most important motivation for the most SMEs, although the 'speed up of the RDI process by accessing modern infrastructure' received higher average rating but was mentioned fewer enterprises. (That is why it is omitted from the table.) Following the knowledge acquisition the improvement of competitiveness and access to information are the two highest rated motivations. (All of these factors' average rating is above 2,5 so we can call them very important.)

Table 4 Main motivations of international activities

Motivation	Average	Very important	Important	Not important
Access to new knowledge	2,6	18	3	3
Improving competitiveness	2,6	16	12	
Access to information	2,5	13	12	
Access to new technology	2,4	15	3	6
References	2,4	13	14	1
Following the main trends	2,4	12	9	3
Becoming well-known	2,4	10	18	
Hiring highly skilled workforce	2,3	12	8	5
Entrance into new markets	2,3	10	12	3
Domestic economic policy	2,1	6	11	4
Broadening R&D employees	2,0	5	10	6

Source: KKVENT_8.

Note: Only motivations listed which received response from at least 40% of our sample.

Towards the middle of the ranking we will find further factors related to competitiveness and knowledge, complemented with factors like 'obtaining references' or 'becoming well-known' for business partners. Contrary to these, some traditional factors, like the geographical proximity, cost cutting, local economic policy or other market-driven motivations are less relevant for internationalisation. It was already mentioned previously that human resources is relative competitive in Hungary therefore it is understandable that factors related to human resources receive low rating also in this ranking.

If we concentrate on the internationalisation of R&D and innovation activities we may find a similar picture but with some notable differences. In this field the most important motivation is the 'development of business relationship' instead of knowledge-seeking. This is a sign that R&D and innovation collaborations, internationalisation is a result of development process, which builds on some pre-requisites like trust, previous business partnership, knowledge on each others' capabilities etc. If this basic relationship reaches a certain level R&D and innovation can be involved to further improve the current situation of the partners. [e.g. 23, 24] Apart from this we find among the most important motivations for internationalising RDI the 'access to special knowledge' and the 'broadening of financial resources for innovation' followed by two time-related factors: 'quicker development' and 'quicker innovation process'. This latter factor has however only average importance while the previous four can be seen as very important. Even less important were for our respondents the human resources – again – and perhaps more interestingly the 'availability of state support'. They were mentioned so few respondents that we omitted from the table. (Table 5)

Table 5 Top5 motivations of RDI internationalisation

Motivations	Average	Very important	Important	Not important
Developing existing business relationship	2,7	13	6	
Access to special knoweldge, technology	2,6	12	6	1
Access to financial means supporting innovation	2,5	9	6	1
Opportunity to speed-up development	2,5	7	6	
Speed-up innovation process	2,2	3	9	1

Source: KKVENT_8.

Even if a company has decided to go abroad there are many factors influencing their actual decision of 'where to go', where it is desirable to broaden the activities of the SME. If one expects a strategic approach to this decision than it will not be fully confirmed by the answers for this e-survey. Three aspects seem to guide the SMEs decision all related to the local (potential host) 'capabilities'. These are the linkages to research institutions, knowledge centres in the target country and the possibilities for RDI collaborations. All these aspects receive relatively high average ratings but relatively few respondents mentioned them. More firms mentioned but received rather average ratings some market-related aspects (size of market, attractiveness of market) or existing partner-related considerations. Geographical and policy-related issues follow them. Less important factors are those related to travel, clusters and previous experiences at the target country. (Table 6)

Table 6 Factors affecting the choice of foreign target country

Factors	Average	Very important	Important	Not important
Relationship with scientific institutions	2,8	6	3	1
Knowledge centres in the target country	2,8	6	3	1
Opportunities for RDI collaboration	2,8	6	3	1
Size of market	2,4	11	4	3
Foreign invitation	2,4	9	4	2
Attractiveness of market	2,4	8	10	
Existing personal relationship	2,3	7	10	1
Existing business relationship	2,3	6	12	
Geographical proximity to buyer(s)	2,3	4	8	
Economic integration (EU)	2,3	10	4	4
Government support, other allowances	2,2	3	7	1
Good transport from Hungary	2,0	6	4	4
Agglomeration, cluster issues	1,9	3	3	4
Previous economic experiences at the target country	1,6		9	5

Source: KKVENT_8.

Note: Factors are listed here only if more than 10 respondents reflected on them.

Looking at the motivations is only one side of the 'coin'. There might be just as relevant barriers that are good to know if we are looking at the main reasons of modest internationalisation among enterprises. Based on the responses it can be said that the main barriers of international expansion are the high costs attached to this step and some problems arising from the local (Hungarian) economic environment. Only after these factors are 'human resources' and 'lack of information' mentioned. 'Foreign language knowledge' and the lack of proper foreign partner' very much divided the SMEs. Some of them rated these aspects as very important while some of them see it as no difficulty. This might be in relation with the level of internationalisation at those enterprises, which was highlighted by the interviewed SMEs. They mentioned that when they started to internationalise their activities sometimes they were lacking human resources and their foreign language knowledge was week but these factors soon become irrelevant after a couple of years and with the accumulated experiences. Therefore it should be firms making their first steps on the international market who feel foreign language and proper partners are an important issue while firms doing business on the international market for years are mainly overcome these

issues. Only a few firms mentioned and does not attach to much importance to factors as foreign exchange risk, host country economic system or the openness of human resources to work abroad. (Table 7)

Table 7 Potential barriers of international expansion

Barriers	Average	Big problem	Problem	No problem
High costs	2,8	10	1	
Problems of Hungarian economic environment (regulations, administration, etc.)	2,5	10	6	1
Lack of human recources for managing the expansion (knowledge, experiences)	2,2	7	2	3
Problems of acquiring knowledge	2,2	6		4
Lack of financial sources	2,1	6	8	4
Lack of information	2,1	6	4	4
Lack of foreign language knowledge	2,0	7		7
No appropriate foreign partner	2,0	6	2	6

Source: KKVENT_8.

Note: Barriers are listed here only if more than 10 respondents reflected on them.

The interviewed successful SMEs shared their experiences that in most cases the current business opportunities drive the decision of where to appear with their products/services. There are hardly any SMEs who follow any kind of strategic approach in internationalisation, but after they have made the decision the small difficulties will not hold in the process. Obviously the hiring of external experts to guide this process would improve on the position of the enterprises but neither the interviewed nor the e-survey respondents mentioned to do so. When looking for external support most of them rely on the domestic institutional system. These are mainly professional organisations, or the International Trade Development (ITDH) organisation or the National Development Agency in the field of RDI. Many firms take part in R&D and innovation support programs, but only a few mentioned that they demand state support for their international expansion through ITDH. Even less firms demand any kind of support from the host country's institutional system (only 3 SMEs mentioned this). This seems to suggest that although there is an institutional framework in Hungary to support internationalisation but maybe its efficiency and/or effectiveness does not attractive enough for SMEs to draw on their services.

Summary
Internationalisation, especially in the field or R&D and innovation, become a key phenomenon of economic development during the last two decades. Those successful firms who strive for sustainable growth have been taken part in the internationalisation and nowadays they are not only multinationals but also small- and medium sized enterprises. The international presence might provide feedback on enterprises' competitiveness, because it requires more and better capabilities than serving the domestic market. If a firm can face these challenges one can take it as a sign of better-than-average capabilities. On the macro level, an economy with many internationalised firms is potentially more competitive in the globalised world.
The IT sector is one of the most globalised industry, which is a mean and subject of networking. Its role in the Hungarian economy is very important, the latest government programs identified this field as a possible lead market to mobilise the whole economy. However the statistical data regarding the growth of the industry and about it's R&D and innovation activity suggests that the

present situation cannot be maintained without improved efforts from the enterprises as well as from the government. According to theories in the international literature R&D and innovation activities positively influence the performance of enterprises and it – partly - depends on RDI collaborations. The e-survey among Hungarian IT SMEs strengthened this view only partially.

Among the weaknesses one can identify the weak integration into the global economy of SMEs. Analysing the main forms and extent of internationalisation and especially R&D and innovation would help to better understand the present situation, to identify the main strength and weaknesses and the break-out points. The utilisation of this knowledge might help improve the whole economy's global competitiveness.

Among the respondents the SMEs who have some kind of RDI collaborations is slightly higher than the national average but the majority of these collaborations are domestic. It seems that these SMEs are still at the beginning of a process: they already realised the advantages of collaborations but they still would like to remain in their 'safety-zone', so collaborate with their closest partners. Yet, there are very few SMEs who move further than that and established international RDI linkages. Those, who have done this, usually achieved a sustainable success on both the national and international markets. It is promising, and a sign of the potential of the domestic research capabilities, that among the buyers of research results one can equally find domestic and international actors.

Another weakness of the RDI collaborative efforts of Hungarian IT SMEs is that those partnerships usually remain on the level of information bilateral collaborations. There were very few respondents who reported network memberships and even less in the field of RDI. This can be a sign of the lack of strategic approach, short-sighted management and mainly ad hoc (or periodical) collaborations. Less than one fifth of SMEs are member of any network and less than half of these networks involve RDI. Here we can again catch again the sign of 'learning', because the most important motivations to enter a network is knowledge-seeking so we can expect that the number of such initiatives will grow in the future.

This view is supported by the interviewed SMEs who usually found a global niche market with a good product/service to gradually build their international business. They invested a lot to strengthen basic and core competences (like absorptive capacity, human resources), which is key for the long-run success. Their story supports both theoretical strands in the literature: a) gradual or b) born global internationalisation. The difference partially is the result of the product/service, because in some cases the Hungarian market is simply too small to serve even an SME. However in either case it required time to build up their success stories on the international level. The e-survey respondents are rather young compared most of the interviewed SMEs and this suggests that they still have time to learn and establish an international name. They are in a pre-internationalised phase, which does not go beyond export/import activities, but there are some signs that respondents started to build relationships that might help them in the future to take part in the internationalisation of RDI and other complex forms of internationalisation.

Our research suggests that to improve on the internationalisation of Hungarian SMEs it is essential to improve on the availability of capital (a permanent weakness of the national economy) and on the overall economic environment. It is interesting, that while firms are satisfied with their professional human resources, most of them lack management capabilities to command the international expansion. Higher education system has to provide enough highly skilled human resources in both fields. Still there is a need for further efforts to make SMEs aware of the importance of R&D and innovation and if they start to strengthen their activities it will launch a self-propelling process leading to the desired higher internationalisation.

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