

THE INTERNATIONALIZATION OF SMEs OPERATING IN THE ENGINEERING INDUSTRY

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Abstract

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The importance of small and medium enterprises (SMEs) in the national economies of EU countries has been always growing. For these reasons, the increasing attention is paid to small and medium-sized enterprises also in the Czech economy. The paper is focused on the globalization of small and medium enterprises, in particular, identifying the key success factors of small and medium-sized businesses that operate in the engineering industry. For the purpose of fulfilling the objective of the article, the level of success of SMEs in foreign markets is established with the aggregate indicator of success. Subsequently the results of the primary research among the Czech engineering companies are presented, based on this research the factors affecting the success of these entities of engineering industry in foreign markets are defined.

small and medium-sized enterprises, foreign markets, success, key success factors, engineering industry

Small and medium-sized enterprises (SMEs) have an important position in the Czech national economy and their importance in the economy has always been growing, as it is the case in other EU countries. SMEs have been significantly contributing to GDP and they have been a major source of employment. European Union market without internal borders increases the competitive pressure on these entities, however, opens up also new opportunities for small and medium sized enterprises to expand abroad. Small and medium-sized enterprises have more difficult position in the process of globalization than large firms; more often the disadvantage is the lack of financial capital, while the advantage is the flexibility.

At the present time Czech SMEs intensively deal with increasing competition from foreign companies and their products on the domestic market. One of the ways to face the growing competition is the expansion into foreign markets. Therefore, the process of SMEs globalization has been discussed not only among companies but also in the technical literature. Czech small and medium-sized enterprises are subjected to examination, which is aimed to identify factors influencing the

success of SMEs in activities abroad. These surveys are carried out with the hope that the determination of key factors influence the success of SMEs in the international process and that can positively affect other small and medium sized enterprises in their plans to engage in the international trade. From these reasons authors of the paper along with a research team were conducting several researches during the past three years. Its task was to identify key success factors of the Czech SMEs in globalization process and operating on various branches. This paper presents the results of two researches that were focused on small and medium sized enterprises in the engineering industry. This paper aims not only on presenting results of performed researches among the engineering SMEs but also on defining key success factors of globalization process of the engineering SMEs on the basis of researched information, both subjective following research result “alpha” and objective following research result “beta”.

MATERIALS AND METHODS

As a result of contemporary globalization trend, the market space expands and business

entity can extend their operation. In addition to multinational corporations, many specialists see a great opportunity also for small and medium sized enterprises in the globalization process. (Kislingerová and Nový, 2005). The involvement of companies in the international environment is generally referred as globalization. The globalization process can be described as a “process of increasing participation in international operations” (Welch and Luostarinen, 1993).

For businesses, it is important to find factors that determine the success in the globalization process. Overall, the business success in the globalization process is influenced by many factors. Many authors focus on determination of these factors. For example according to Man, Lau and Chan (2002) it is generally possible to distinguish three basic aspects leading to the SMEs success, which considers the internal business factors (according to Kaplan and Norton (1996) characteristics of the organization), external factors (external framework conditions) and the unique influence (personality) of entrepreneur.

Harrison, Dalkiran and Else (2000) state that if the company should be successful on the international market, the globalization process should include five basic principles:

1. The company should have a well-developed and clearly defined mission that reflects the true commitment to the international business.
2. The company should have the ability to recognize and adapt quickly to consumer preferences and opportunities in the international market and take advantage of those products that reflect the competitive advantage of a company.
3. The company should understand the consumers' behaviour of different cultures and evaluate the nature of the differences.
4. The company should improve and keep the high quality products that can survive in competition both in domestic and foreign markets.
5. The company should carry out effective market research and its requirements.

Another success factor in the international market is the experience of the founders (or managers) of the company. International experience is defined as understanding and realistic perception of the operations, risks and returns in the foreign markets. With greater business experience, decreases the risk aversion associated with investing more capital. The international experience of firms is measured by various indicators, Eramilli (1991) lists the following characteristics:

1. Geographic scope of activity, which defines the amplitude of corporate experience (i.e. number of different countries where the company conducts its activities).
2. The length of experience (number of years, during them the company has been active in the international area).

The key issue is to evaluate the success or failure of the enterprises' activities in foreign markets.

In general it is difficult to specify the success definition. Even harder it is to evaluate the success in the globalization process. To evaluate the success of SMEs in foreign markets, there can be used the multi-dimensional indicators of the success metering the SMEs international activities defined by Peprný, Kubíčková and Rovný (2010).

The following indicators are stated in this model as success indicators of SMEs international activities: intensity of SMEs international activities (a share of revenues produced by the international activities in the rate of the total company revenue), *total profitability of SMEs international activities* (total profit or loss as a difference between total revenue from foreign activities and total costs related to foreign activities), *relative profitability of international activities* (profitability comparison from activities performed on domestic and foreign markets), *fruitfulness of set goals* (subjective indicator assesses achievement of set goals in foreign markets) and *management satisfaction* (subjective indicator assesses opinion of management on company's globalization success).

Summary of these indicators is a capacity evaluation complex indicator of foreign business activity i.e. *aggregate capacity*. For the final evaluation of the SMEs success of international activities there was used rating system. Indicators are classified by points in this rating system according to the performance of individual businesses. Based on this system the SMEs are categorized as “very successful” SMEs, “successful” SMEs and “unsuccessful” SMEs with regard to the total number of points (Peprný, Kubíčková, Rovný, 2010).

RESULTS AND DISCUSSION

In terms of the long-term research of Czech SMEs globalization, the authors of the research team conducted several surveys in different industries (construction, engineering, viticulture). It was found that small and medium-sized enterprises active in the globalization process are similar even though operating in various industries. In any case the particular industry significantly influences the possibility and willingness of SMEs to be involved in the globalization process. For instance viticulture is specific in comparison to civil engineering or mechanical engineering. The willingness of wineries to be involved in the globalization process is very small (i.e. Kubíčková, Peprný, 2011). It is important to focus on particular industry separately. This paper publishes the results of a survey focused on identifying SMES key success factors in the globalization process operating in the **mechanical engineering industry**.

During the 2010 and in the beginning of 2011 there were conducted two independent high-volume surveys among the Czech engineering SMEs. (see below the “alpha” and “beta” survey). Questionnaires were created in order to collect the primary data within the conducted survey among engineering SMEs. These questionnaires originated

in the virtual laboratory because of the collection and evaluation of primary data of interviewed groups ReLa (Research Laboratory). Identification questions were consonant in both conducted surveys. However, the rest of the questions were different.

In the survey “alpha” were the success factors determined according to the subjective assessment of respondents, at the survey “beta” were the factors determined by using statistical methods – dependence analysis of qualitative features (Pearson chi-square, contingency coefficient, Cramer factor V).

Survey “alpha”

In this survey a total of 800 SMEs operating in the engineering were inquired and total number of 100 correctly completed questionnaires was obtained. The obtained data were processed using standard mathematical and statistical methods. The largest group of respondents was under the legal form of limited liability company (69%), followed by joint stock company (22%). As it was found in this survey, most of the respondents (69%) expand abroad during the five years from their establishment. Immediately after their establishment 24% of respondents expanded abroad, 21% of respondents within two years from their establishment, 24% of respondent within five years. When expanding abroad, most companies have chosen the form of direct export (63%), indirect export (export via an intermediary) used 27% of respondents and 7% of respondents have chosen form of joint ventures. The vast majority of exporters (86%) is focused on export to EU member states. 39% of respondents uses financial support from European funds to finance their export activities, 19% of respondents uses state support (financial and nonfinancial) and 5% of respondents do not take advantage of any of these financial support for the regions (both financial and nonfinancial). On the other hand 34% of respondents do not use any of these options. In most of cases it is the reason of poor information. It is interesting that when expanding abroad, more than 80% of respondents adapted to foreign markets in some way, mostly a product price was adapted (64%) and then the product itself (58%). Within the adaptation to foreign markets there occurred changes in distribution (28%) and promotion (26%). Structure of employees adapted at least.

The output of this survey is among others the summary of factors, which influence the fruitfulness of globalization activities of Czech engineering SMEs according to the interviewed SMEs (see Tab. I). Therefore it is subjective evaluation of factors thanks to Likert scale. The word classification, used in this scale, was transferred into numbers from 1 up to 5, where 5 determines the factor with the greatest influence on SMEs fruitfulness of globalization activities (average value 4.57). Respondents indicated flexibility and adaptability as the second most important factor (average value 4.12) and as

the third a competitive advantage (average value 4.12). Respondents attached the least importance to outsourcing for unimportant processes (average value 2.5).

I: *Factors classification influencing globalization activities of SMEs*

Factors	Average value
Product quality	4.57
Flexibility and adaptability	4.27
Competitive advantage	4.12
Employee qualification	4.10
Presence of experienced managers with the foreign market knowledge	3.67
Marketing knowledge	3.66
Trade mark and company image	3.59
Planning	3.35
Sufficient capital	3.24
Outsourcing for unimportant processes	2.50

Source: survey “alpha”

Survey “beta”

In this survey a total of 713 SMEs in engineering industry were interviewed. A total of 112 correctly completed questionnaires were obtained. The obtained data were processed using standard mathematical and statistical methods. Among respondents were 71.43% of limited liability companies, 14.29% of joint stock companies and the same amount of cooperatives. From these interviewed SMEs, 42.86% expanded abroad immediately after the company establishment (within 1 year), 28.57% of respondents entered the foreign markets within the first two years of their business and 7.14% of respondents expanded abroad within three to four years. 78.57% of respondents expanded abroad within four years from their establishment. These respondents most often chose the direct export respectively in 85.71% of cases. The remaining 14.29% of respondents chose indirect export i.e. via intermediary.

In terms of research there were found arguments, which made the SMEs to enter the foreign markets. Respondents assigned the importance to the particular arguments via values 1 to 5 (value 1 is for the least important argument; value 5 is for the most important argument). The most important argument to expand abroad was the possibility to increase the turnover and sales (average value 4.75), followed by an effort to extend sales and buying markets and their diversification (average value 4.64).

Language skills are indispensable for SMEs globalization of activities. As 64.29% of respondents stated, language skills of key employees were very good prior to entrance into the foreign market. 14.29% of respondents assessed the language skills of key employees as average, the same amount

II: *Dependence values of aggregate capacity over SMEs factors*

Factors	Coefficients	Aggregate capacity
Legal form	Pearson chi-square	43.20
	Contingency coeff.	0.53
	Cramer's coefficient	0.44
	p-value	0.00
Time from the business activity initiation to foreign expansion	Pearson chi-square	47.07
	Contingency coeff.	0.54
	Cramer's coefficient	0.46
	p-value	0.00
Entrance form into the foreign market	Pearson chi-square	24.69
	Contingency coeff.	0.42
	Cramer's coefficient	0.47
	p-value	0.00
Research conduct of foreign market	Pearson chi-square	22.53
	Contingency coeff.	0.41
	Cramer's coefficient	0,32
	p-value	0.00
Language skills of key employees	Pearson chi-square	56.44
	Contingency coeff.	0.58
	Cramer's coefficient	0.50
	p-value	0.00
Experiences of key employees in the foreign market	Pearson chi-square	30.93
	Contingency coeff.	0.47
	Cramer's coefficient	0.37
	p-value	0.00
Customer type	Pearson chi-square	37.69
	Contingency coeff.	0.50
	Cramer's coefficient	0.41
	p-value	0.00
Focused market share of the enterprise in abroad	Pearson chi-square	20.41
	Contingency coeff.	0.39
	Cramer's coefficient	0.43
	p-value	0.00
Goal defined for the export activities	Pearson chi-square	47.36
	Contingency coeff.	0.55
	Cramer's coefficient	0.46
	p-value	0.00

Source: Survey "beta"

of respondents noted low classification and 7.14% very low. Prior to the expansion 71.43% of respondents conducted the research of a given foreign market, 42.86% of them conducted research by their own information sources and 28.57% took advantage of a specialized agency service. Remaining 28.57% of respondents had not conducted the research prior to the entrance in the foreign market. It is important to maintain the communication with the foreign partners in order to sustain the globalization process. As 71.43% of respondents stated, the company management communicates daily with the partners in abroad,

21.43% of respondents several times a week and the remaining 7.14% of respondents communicate with their foreign partners several times a month. By the communication are meant letters, emails, phone calls, video conferences and appointments. 64.29% of respondents supplies the final customer in the foreign market, 28.57% take advantage of intermediaries (i.e. to a wholesale) and 7.14% uses agents of exporters. SMEs most often focus on the whole market by their activities in foreign markets. It was the answer of 50% of respondents, 35.71% of respondents focus on particular market and 14.29% of respondents focus on niche with

special requirements in the foreign market. 64.29% of interviewed follows during the globalization process the price strategy, remaining 35.71% the differentiation strategy. 71.43% of respondents stated as a goal for their export activities to reach the sales maximization, the aim of 14.28% of interviewed is the profit maximization and the same percentage of respondents aims at gaining certain share in the foreign market.

These stated factors were investigated with the aim to find out, how they influence the globalization process of SMEs. First success indicators of SMEs international activities were assessed – *intensity of SMEs international activities, total profitability of SMEs international activities, relative profitability of international activities, fruitfulness of set goals and management satisfaction*. Complex indicator of foreign operation capacity assessment was further reckoned-aggregate capacity (Peprný, Kubíčková, Rovný, 2010).

On the basis of this method was evaluated fruitfulness of international activities of all respondents. The numeric value was substitute by word evaluation. 85.71% of interviewed SMEs are successful in their activities in the foreign markets and 50% of them are very successful.

As soon as the evaluation of aggregate capacity of individual respondents in foreign market was completed, a dependence analysis of aggregate capacity and individual factors was performed. For this statistical analysis an analytical instrument STATISTICA 9.0 was used. The result of this analysis was the determination of factors that influence the fruitfulness of SMEs activities in foreign markets (Tab. II).

CONCLUSIONS

For small and medium sized enterprises, which try to succeed in globalization process in the competition of big multinational companies, understanding of key success factors in the foreign market is useful. By the research among the SMEs, which have been running the business in the foreign markets was found, whether the enterprises are successful in the foreign markets and whether they have some common features which could be subsequently generalized as success determinants.

Authors of the article together with the research team conducted several investigations among the Czech SMEs in different industries. It was found that despite the similarities of the success factors, many industries have their specifics. Therefore in this paper is presented an output of investigation among small and medium sized enterprises operating only in engineering industry. A survey “alpha” aimed at finding of SMEs key success factors in globalization process on the basis of subjective evaluation of individual respondents and a survey “beta” identified SMEs key success factors in globalization process on the basis of subjective evaluation thanks to statistical methods. The results of these surveys are complying and supplementing each other.

SMEs operating successfully in the foreign market are usually limited liability companies which chose as the form of entrance the direct export. Engineering SMEs are motivated to enter the foreign markets due to an increase in turnover and sales and the expansion possibility of sales and buying markets. It results from the research acc. to the subjective evaluation of Czech engineering SMEs that the success in the foreign market is influenced by the adaptability to a foreign market. In the most cases respondents would adapt in case of price and product. The most successful SMEs in the foreign markets are the ones, which have been constantly increasing the market share thanks to the price policy instruments. To objectively specify the success factors, there was taken advantage of a method of success evaluation of SMEs international activities and statistical methods.

By this way success factors were identified, among them belong legal form of SMEs and the length of time since the business has been running. Huge influence on fruitfulness of international activities has the fact whether the company performed a market research of the given market prior to the entrance in the foreign market or not. Among the success factors pertain the previous experiences of key employees that operated in the foreign markets and their language skills prior to the expansion.

Fruitfulness of SMEs international engineering activities is influenced also by the customer type, market section, on which the company focuses and the defined aim for the export activities.

SUMMARY

Paper presents results of two surveys, which were conducted among Czech engineering SMEs with the goal to identify factors influencing the fruitfulness of international activities of these subjects. Determination of these factors can positively influence other SMEs in their future expansion abroad. The survey “alpha” was focused on determination of success factors through the medium of subjective evaluation of Czech engineering SMEs, while the survey “beta” took advantage of statistical methods- dependence analysis of qualitative features. Following the results of these two above mentioned surveys, there were determined key factors (subjective and objective), which influence the international activities of Czech engineering SMEs. Among to the factors that were subjectively identified by respondents’ assessments include product quality, flexibility and adaptability on a foreign market, the existence of competitive advantages, qualifications of employees, the presence of experienced managers with knowledge of foreign markets, marketing and utilization of knowledge in

business management, brand and image of companies, planning to business management, sufficient capital and outsourcing. By using statistical methods have been identified objective of success factors for SMEs, and the legal form of SMEs ($\chi^2 = 43.20$, contingency coefficient = 0.53, Cramer coefficient $V = 0.44$, p-value = 0.00), length of time since the start of the organization's expansion into foreign markets ($\chi^2 = 47.07$, contingency coefficient = 0.54, Cramer coefficient $V = 0.46$, p-value = 0.00). Significant influence on the success of international activities is also whether the company before entering the foreign market survey carried out of the market or not ($\chi^2 = 22.53$, contingency coefficient = 0.41, Cramer coefficient $V = 0.32$, p-value = 0.00), as well as previous experience key employees with exposure to foreign markets ($\chi^2 = 30.93$, contingency coefficient = 0.47, Cramer coefficient $V = 0.37$, p-value = 0.00), and language skills of key staff prior to expansion ($\chi^2 = 56.44$, coefficient contingency = 0.58, Cramer coefficient $V = 0.50$, p-value = 0.00). The success of the international activities of engineering SMEs also affects the type of customer ($\chi^2 = 37.69$, contingency coefficient = 0.50, Cramer coefficient $V = 0.41$, p-value = 0.00), part of the market to which the company focuses abroad ($\chi^2 = 20.41$, contingency coefficient = 0.39, Cramer coefficient $V = 0.43$, p-value = 0.00) and defined objective for export activities ($\chi^2 = 47.36$, contingency coefficient = 0.55, Cramer coefficient $V = 0.46$, p-value = 0.00).

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