Strategic alliances between Czech SMEs and its effects on firm's competitiveness*

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Abstract

This paper aims to study the effects of using strategic alliances by Czech SMEs. It reviews available literature and provides an analytical framework to employ for analysing the propensity of SMEs to engage in strategic alliances and its effectiveness on their competitiveness. We conducted surveys with representatives of SMEs to gather data. Although we found a positive effect of strategic alliances on the SME's competitiveness for both domestic and international business, the effect was very weak. The increased competitiveness was a result of increased differentiation, cost decrease, popularity increase, market share increases, and profit increase.

Keywords: Strategic alliances, Small and Medium Enterprises, Czech SMEs, Internationalization Performance, Competitiveness
JEL Codes: M16, M10, L14

1. Introduction

Strategic alliances (SA) are formed to achieve strategic goals in any for-profit company aiming for sustainable competitive advantage in any competitive market, and translate it into increasing revenues/profits or shareholders value (Vítková/Volko/Vápeníček 2005). These cooperative agreements between two or more organizations for attaining mutually beneficial goals can take various forms depending on the need of resources or the intensity of collaboration between the partners (Pellicelli 2003). Turbulent and unpredictable environment or economy has been considered a good precursor for strategic alliances. Under uncertain environments, strategic alliances offer a flexible solution, which is at the same time close enough to bring some synergistic effects and decrease risks as compared to mergers or acquisitions, which involves great capital costs (Kogut 1998; Smallbone/Welter 2001).

Small and medium enterprises form the foundation of the Czech Republic economy. However, there is a dearth of articles discussing alliance/network dynamics

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(network development) in the context of transition economies as in the case of the Czech Republic, which is projected to grow by 3.2 % in 2019 (IMF 2018; OECD 2018). This is particularly important considering the emerging role of these markets in the world economies. However, these SMEs lack the resources, such as financial and human resources, and the expertise to promote their products in the market due to limited capabilities and lack of resource management (O'Farrell/ Hitchins 1988; Buckley 1989; Forrest 1990). Hence, there is a need to enhance the performance of small and medium firms', so that they can compete with big corporations and international companies. Before this study, there was no comprehensive research on strategic alliances, and assessment of the effectiveness of alliances on competitiveness among small and medium enterprises in Czech. This paper aims to fill this gap, and further highlight the yardstick for the analytical framework for small and medium enterprises' assessment, and also undertook the analysis of the effectiveness of strategic alliances on SME's competitiveness. Therefore, a survey with representatives of small and medium enterprises was used to better understand the importance of strategic alliances, the motives for such participation, and the effectiveness of competitiveness in the foreign market. In addition, our results further extend the body of limited research in strategic alliances through our finding on the effectiveness of SA in SME's competitiveness in context of the Czech Republic. Our findings slightly contradict the previous findings of a strong positive effect of strategic alliances on competitiveness in both domestic and international operations, as we only found a weak positive relationship between strategic alliances and competitiveness. Furthermore, it provides a useful guideline for managers to focus on a specific segment of value chain such as manufacturing, product development, and purchasing to gain maximum benefit of strategic alliances.

2. Literature review

Strategic alliances are effective ways of achieving the company's strategic goals in dynamic markets with significant business opportunities. For example, strategic alliances are sought in a situation where a company may not able to achieve certain opportunities without the help of others due to high associated risks or due to increased costs. Cools and Roos (2005) found that risk and cost sharing are the main reasons for alliance formation. Nonetheless, other factors such as position in the market, the industry under which the company is operating, the structure of the market, the market characteristics, and others are equally important factors to consider for alliance formation. Strategic alliances should be different under different circumstances and should offer a feasible review of the varied factors driving the formation of the alliances based on the features of the industry (Pellicelli 2003). Once the alliance is appropriately formed, other factors also influence its result, be it at the strategic or operational level. For example, while one company can learn a particular technology, another can learn the

whole set of competencies to use in their business or at least to benchmark with their own. Too much collegiality might also be harmful in cooperation, for example, employee loyalty and self-discipline must be enforced not to lose more than what is obtained (Hamel/Doz/Prahalad 1989; Hamel 1991).

There are some disadvantages and threats associated with being involved in strategic alliances. Vítková et al. (2005) divided them into three major groups, *alliance formation mistake*, *poor strategic alliance management,* and *short-sight caused by a significant focus on the alliance*. Hamel et al. (1989) expanded that business collaboration itself is a competition, only just in a different form. Cooperation has its limits, and it is a continually evolving bargain that the companies should be aware of so that the strategic alliance does not become a disadvantage. Learning from a partner is paramount in the relationship. A real example of the unbalanced distribution of gains is the collaboration between the Asian and American companies. The primary vision of the Asian companies was to acquire skills from the partnership, and learn to apply these skills in real world and subsequently do the partner's business by themselves, whereas the American companies which were only expecting to outsource their activities eventually found themselves in the disadvantaged position. Hence, skills acquisition is the key, and alliances are not intended as a long term as one party may suffer.

Small and Medium Enterprises (SMEs) are the focal point of the Czech's economy. For example, in 2018, the Czech SMEs created 54.7 % of the total value-added products /services (grew by 22.1 % in 2013–2017 and it is expected to increase by 15.7 % from 2017–2019) and 67.2 % of the total employment. The productivity of the Czech SMEs (value-added per person employed) is around EUR 22,800 (European Commission 2018). These statistics show the importance of SMEs in the Czech's economy. These companies are active contributors to the country's Gross value added at basic prices (GVA), with an average of 57 % in the EU, 53 % in the UK to 86 % in Greece. The European Commission considers SMEs and entrepreneurship as keys to ensuring economic growth, innovation, job creation, and social integration in the EU (European Union). The SMEs can be divided into three minor groups; micro companies (staff headcount < 10, turnover $\leq$ € 2 m), small companies (staff headcount < 50 and turnover $\leq$ € 10 m), medium companies (staff headcount < 250 and turnover $\leq$ € 50 m) (Eurostat, 2015). Today's markets are characterized by complex environments, and companies have to be innovative to remain competitive. However, it has been observed that many of the Czech enterprises are not as innovative as required (EIS 2017), and this may affect the development of the overall economy. This trend is more common with SMEs (CSU 2012).

Hyder (2014) explained that smaller firms are more vulnerable to the adverse effect of changes in product, market, and technology. One of the reasons for this is less diversification among small firms; the focus on a single market and product

(Buckley 1989), which is a key problem as seen during the financial/economic crisis. At the same time, big firms might not want to cooperate because small and medium enterprises are highly apprehensive about their primarily products/markets, and a loss of such competence can have an adverse effect on their operations or survival (Hamel et al. 1989). Additionally, as competition in the domestic market increases, strategic alliances might provide an important strategic option for moving SMEs abroad (Baird/Lyles/Orris 1994; Hu/Korneliussen 1997). However, this again might not be a successful move due to several inefficiencies of the SMEs.

In today's fast-changing business environment, companies are to be very innovative to reduce the competition against them and keep potential competitors (i.e. suppliers, customers, new potential entrants to the market and possible substitution) at bay (Vodacek/Vodackova 2004). However, in many European countries, enterprises do not evolve and innovate at a sufficient pace, this is true in the Czech Republic where the innovation performance is below average (EIS 2017), and many of the enterprises threatened by weak innovation activity. This does not only negatively affect their long-term competitiveness but also impact the whole economy as is seen in SMEs, which are usually affected due to lack of financial resources, technology, and know-how. Statistically, studies in the Czech Republic has shown that the smaller the enterprise, the less likely it is to be innovative (CSU 2012).

There could be several other challenges confronting SMEs, which include technical incompetence, shortage of qualified employees, capital, and international experience among others. Hyder (2014) showed that SMEs lack the technical capacity and the necessary competence for product development, as well as research for new products to sustain their competitive edge. In addition, SMEs lack resources, such as financial, human, and expertise to launch their products into the market due to limited capabilities and lack of management for the limited resources (O'Farrell/Hitchins 1988; Buckley 1989; Forrest 1990). Furthermore, many SMEs lack the preparedness for information access and processing, as well as high-risk aversion (tendency to refuse any external help) which leads to distrust and suspicion of their suppliers or competitors (Vítková et al. 2005) that eventually result to limited forms of cooperation. All of these factors highlight the strong need of an alliance for SMEs.

To consider the importance of Strategic alliances on small and medium companies, this paper focused on understanding the effect created by strategic alliance on the competitiveness of SMEs in the Czech Republic. Some recent studies on the role of alliance/networking in the Czech Republic further reinstated the previous knowledge that networks/relationships assist the Czech Republic firms' to succeed at the international market (Musteen/Francis/Datta 2010; Musteen/ Datta 2011; Musteen/Datta/Butts 2014). Although these studies attempted

to explain the role of alliance/networks in internationalization process of Czech SMEs, not much emphasis was given to explore how these alliance/networks were developed, given the existence of various types of environmental uncertainties in the international market, and the specific industry dynamics.

Based on the available data, we observed that many companies are joining forces to enhance their competitiveness by engaging strategic alliances on the global level. Therefore, we determine to analyze the effect of strategic alliances in Czech Republic, since existing research on this topic has been scarce. It is well-known that Czech companies mainly occupy second phase in competitiveness development, which is competitiveness based on the effectivity (as opposed to the first, which is based on the resources, and the third, which is based on the R&D). For a country to be competitive on a global level, it must move to the third phase and compete based on the knowledge which it creates. Porter (1980) definition of competition is too broad, therefore, we focused only on rivals in the market as the competition. The business goals of any company can be achieved by developing a competitive advantage. Competitive advantage over competitors can take the form of price, quality, service or any combination of these if the customers value it (EU 2018). Vodacek and Vodackova, (2004) proposed that it is possible to have an in-depth study to understand how some company reduces the competitive forces of rivals on the market and keep out other potential competitors (i.e., suppliers, customers, new potential entrants to the market and possible substitution).

Given that any alliance and collaboration which is focused on mutual development of knowledge is an essential driver of competitiveness, the first question to be answered is "*How much does the Czech SMEs engage in SA"*: is it a frequent practice or one limited to the Czech market? Secondly, *"What are the main value chain segments for alliances among Czech SMEs?"* From the theoretical overview we observed that there are diverse forms of alliance with different applicability across different industries, in addition to that, it shows alliances improve international business which subsequently improves exports of goods or services to other countries within the EU or around the world. The third question to be answered is *"What is the effectiveness of alliances on competitiveness in domestic and international business?"*

3. Method

Evaluation of the Competitiveness

Survey questions

There are many existing measurements of company completeness which can be used to evaluate the competitiveness of a company as mentioned previously. Financial indicators such as net profit or economic added value (EVA) are used to

assess the performance of companies in the market. Apart from not being very helpful for the chosen survey method, these measurements might not be entirely indicative of a company's competitiveness in terms of processing knowledge and research, as the system of wealth creation is purely driven by innovation and technological progress (Gruber/Heinemann/Brettel/Hungeling 2010; Zulkiffli/Perera 2011). Moreover, since Intellectual capital is the key in this world, and clear financial indicators, such as the one expressed in EVA (Operational profit minus the cost of capital times the capital) indicate only the change of the shareholder's wealth and might exclude valuable information, it is necessary that some more subjective evaluation be used. Firstly, the competitiveness was assessed by directly asking about the effect of cooperation on the company's competitiveness. Secondly, focus was given to the two main factors driving increased competitiveness, which are cost savings (Has the alliance help to save costs?) and differentiation (Has the alliance helped to differentiate you from your competitors?). Differentiation can be seen in terms of quality, design, durability or any other criteria valued by the customer. Thirdly, the researcher used additional questions for which the response might be very subjective in the evaluation. The questions include the following:

- Has the alliance helped to increase the share of your company's market?
- Has the alliance helped to increase the profitability of the product and services sold (or of the company in general)?
- Has the alliance helped to gain popularity/improved image with customers?
- Has the alliance helped to decrease the degree of imitation of the products and services of your company?

The questionnaire contains in total 30 questions which are divided into five groups. These groups are as follows:

- General information about cooperation (Does the company cooperate or not?)
- Cooperation question specifying the types of collaboration (How much does the company cooperate? What kind of cooperation does it engage in? etc.)
- Effectiveness assessment of the cooperation on the company
- Descriptive information about the company

Survey evaluation methodology

To answer the proposed research questions, and given the nature of the data, which is mostly binary character, the correlation between the binary variables has to be determined. For this purpose, there are some appropriate methods to evaluate the measure of association between two nominal variables such as Jaccard index (Intersection over Union), simple matching coefficient (SMC), Phi coefficient, Tetrachoric Correlation or Cramér's V. Due to its appropriateness and simplicity, the Phi coefficient (also known as "mean square contingency co-

efficient") was selected to assess the level of association of the variables. The possible values of the Phi coefficient range from -1 to 1. A Phi coefficient that equal to 0 indicates that there is no systematic pattern. A positive Phi coefficient would suggest that most of the data is in diagonal cells of the contingency table as shown in Table 1. As it ranges from −1 to +1 and zero indicates no relationship, the ±1 indicates perfect agreement or disagreement. The Phi coefficient has been used extensively in many previous research (Zámečník/Rajnoha 2015; Campos/Rebs 2018; Berber/Đorđević/Milanović 2018).

Table 1: Interpretation of Phi Coefficient*

**The coefficient is calculated using the Microsoft Excel software on the following basis*:

$$\varphi = \frac{n_{11}n_{00} - n_{10}n_{01}}{\sqrt{n_{\bullet 1}n_{\bullet 0}n_{0\bullet}n_{1\bullet}}}$$

	$y = 1$	$y = 0$	total
$x = 1$	n_{11}	n_{10}	$n_{1\bullet}$
$x = 0$	n_{01}	n_{00}	$n_{0\bullet}$
total	$n_{\bullet 1}$	$n_{\bullet 0}$	n

Value	Strength of relationship
-1.0 to -0.5 or 1.0 to 0.5	Strong
-0.5 to -0.3 or 0.5 to 0.3	Moderate
-0.3 to -0.1 or 0.3 to 0.1	Weak
-0.1 to 0.1	None or very weak

Source: (Plumer, 2014)

The effect on competitiveness in most cases will be the dependent variable while the independent variables will be the various types of cooperation, be it based on value chain position, partner nature, relationship length, or other. To avoid any misunderstanding, it is appropriate to point out that the negative relationship (negative phi coefficients) in the analysis does not imply a negative effect on the company due to any of the types of cooperation. It means that there will be no effect. It is given by the form of effectiveness on the competitiveness data in the analysis, which is a company's statement of whether the cooperation has affected it or not.

Sample selection process

The final sample of respondents were reached through a careful selection process to guaranty that only small and medium companies in the Czech market were enlisted and answered the survey questions. The fundamental source of the companies' data is the Bisnode MagnusWeb database from the company Bisnode. The selection process of the sample involves the following steps:

Selection of the companies in the Bisnode MagnusWeb and data export

In this selection step all the Czech companies having at least one and less than 250 employees were selected with valuable information such as, the city of operation, the number of employees, NACE (Nomenclature des Activités Économiques dans la Communauté Européenne) codes, financial data (Revenues, assets, liabilities, costs, etc.) and contact data (phone number and email address). A total number of 215, 772 samples were selected. To reduce the sample size, companies with email contact were chosen and a mail containing the survey link was sent to them. This further reduced the samples to 138, 387 companies. Manufacturing companies, regardless of the manufacturing sector they were operating in, were filtered in the dataset to be contacted. Further reducing the sample to 19, 391 companies.

To further reduce the sample so that not all the small and medium enterprises were contacted, and exclude samples which are not very relevant for the survey, the sample was further reduced so that it contains only companies with number of employees above five. Therefore, the companies with number of employees ranging from one to five was filtered out. The final outcome was 11, 868 companies.

Random sampling was conducted with the 11, 868 companies to select 1, 500 companies to which the questionnaire would be sent. The sample was chosen randomly from the larger set so that there is the same probability for each entity to be selected. The sampling was done using Excel software from the Microsoft Office package. The formula used for the sampling is called "RANDBETWEEN." All the selected companies were sent an email with a cover letter and link to the survey prepared in Google Forms. In summary, we reduced the initial sample of all the companies in Czech market to 11, 868 companies, which were selected based on the number of employees, availability of email address and main NACE code of the companies, and thereafter we randomly selected the final 1500 companies for the survey.

4. Survey results

The respondents were from a range of different sectors, but the predominant sector was manufacturing (83 %). Other sectors were service (7 %), trade (4 %), R

& D (3 %) and agriculture/mining (1 %). The manufacturing sector was dominated by machinery, while equipment industry occupied 19 % and other manufacturing occupied 10 %. From the survey sample, 70 % of the companies have been in the market for more than 21 years, and many of them are located in Prague (15 %). The survey received a response rate of 7.66 %.

How much do Czech SMEs engage in strategic alliances?

Based on the survey, it was observed that small and medium companies in Czech are engaged in some forms of cooperation, whether in the form of contract or no contract, in the form of joint ventures or merger and acquisition. Majority of the companies (55 %) responded that they are engaged in some form of cooperation with other companies on their projects, 43 % say they do not engage in any cooperation, and 33 % of the companies showed involvement in strategic alliances. In absolute numbers, 38 companies indicated to be involved in a form of strategic alliance. A similarity test was performed to find the correlation between cooperation (Yes/Not cooperating) and the forms of cooperation (if a company cooperates, in which form was it done?) i.e. if there is a strong relationship between cooperation and strategic alliance. Based on the assessment, a strategic alliance can be seen as an association strongly related to cooperating. About (90 %) of the companies that engaged in strategic alliance have been cooperating in the last five years on more than one project, and about 42 % of the companies cooperated on two to five projects in the previous five years, and 40 % of the companies have engaged in cooperation on more than ten projects in the last five years, which implies that cooperation in the form of strategic alliances was widespread.

What are the main value chain segments for alliances among Czech's SMEs?

There are four main types of cooperation which were mentioned by more than (30 %) of the respondents. Manufacturing is by far the most frequently used form of collaboration, with over 70 % of the companies using it, this is followed by product development (42 %). R&D approximates 40 %, and sales, 34 %. The other types include marketing, and logistics & construction companies, 26 % indicated in both forms, distribution and purchasing cooperation, 24 % indicated in both forms as well. According to the survey, the main reason for alliance formation indicated by the respondents are as follows: for quality improvement (53 %), cost saving (42 %), acquisition of knowledge (39 %), and finally, for additional services and time saving (37 %). Other reasons mentioned were access to new markets, increased productivity, procuring new contacts and others. Also, we observed that strategic alliances are most commonly embraced by suppliers (74 %), this follow competitors (47 %), and client or distributor (34 %). Domestic cooperation is the most frequent type of cooperation engaged in by com-

panies in Czech Republic (90 %), second to it is geographic partnerships with companies within the European Union (60 %).

What is the effectiveness of alliances on the competitiveness of domestic and international business?

Majority of the SMEs (almost 90 % of respondents) stated that alliances had a positive effect on their company. Expressed as a percentage of the total, and comparing the strategic alliances (SA) to cooperation in general, strategic alliances more often had positive effects on SMEs, in fact, it will be surprising to find a non-existent negative effect of SA on companies. The results are convincing even as in this case where it is evident that almost 80 % of the companies who cooperated have increased performance, thanks to alliances. Furthermore, 13 % of the companies were not aware of the performance of their company and only 5 % stated that the effect was negative.

As seen from the results, strategic alliances bring to the companies one of the two sources of competitive advantage in most of the cases. It increased differentiation or cost savings, which in turn improves the company's competitiveness on the market. Differentiation is the most stated answer to the first question with 63 % response. The second most favourable advantage was cost savings with 55 % response. Competitive advantage must show itself in any form to be useful in a company. Therefore, a further assessment was done to see the result of the competitive advantage achieved through strategic alliance formation. The three main results achieved as mentioned by respondents are increased market share (45 %), increase profitability (42 %), increase popularity (37 %), and lastly, reduced imitability (11 %).

All of these results above show that strategic alliances can be a useful strategic tool for companies to improve their competitiveness and position in the market. However, we were also interested in finding what would happen if there were no alliances. A question "*Do you think you would achieve such results even without cooperation?*" was raised. The outcome indicated that 66 % of the companies would not achieve the same results without cooperation, and only 8 % stated that they would. This revealed that there is a positive effect of alliances on competitiveness, which would possibly not be without alliances.

Also, we evaluated the relationship between the type of cooperation and the impact on competitiveness with the question "*Did you increased your competitiveness?*" The result indicates a weak relationship between the free form of cooperation and the effectiveness on competitiveness. This relationship is negative as there are relatively high numbers of companies that did not indicate whether the free form of cooperation helped to increase their competitiveness. Another important finding showed a weak positive relationship between cooperation in the

form of strategic alliance and the effectiveness on the competitiveness. This was shown by a Phi coefficient of 0.12 as depicted in Table 2.

Table 2: Phi coefficient for various parameters

Cooperation type	**Phi Coefficient** *(cooperation (Yes/Not cooperating) and the form of the cooperation*	**Phi Coefficient** *(Have you increased your competitiveness?)*	**Phi Coefficient** *(Do you think your company would reach the same results even without the cooperation?)*	**Phi Coefficient** *(International business)* *(Did the cooperation help improve your export activities?)*
Free form of cooperation	0.41	(0.27)	(0.23)	(0.14)
Contract based	0.40	0.07	0.01	0.08
Join venture	0.15	0.09	(0.08)	(0.06)
M&A	0.08	0.11	0.12	(0.06)
Strategic alliance	**0.42**	**0.12**	**0.00**	**0.09**

It is critical to determine if cooperation in the form of strategic alliance help companies improve competitiveness more they would without. The free form of collaboration again shows a weak negative relationship and impact on the competitiveness (considering the additional question) because many respondents believe that cooperation in this form did not bring increased competitiveness, or if it did, they would be able to achieve it by themselves. The most important result of this analysis is that cooperation in the form of strategic alliance showed no relationship with the variable as mentioned above, as the phi coefficient is 0.00 (Table 2), thus we can clearly conclude that alliances do/did not improve a company's performance more than non-alliances.

In Table 3, starting with the free form of cooperation, there is a weak correlation showing that there was no impact of free form of collaboration that improves differentiation or increased the market share. In addition, it shows a weak positive relationship with popularity increase. Also, there is no relationship whatsoever between the contract-based alliance and the given parameters. The joint venture is weakly positively related with differentiation and loosely negatively related to cost savings and market share increase (which is little surprising), meaning that cooperation in joint venture did not strategically improve in a company's market share or competitiveness. On the other hand, mergers and acquisitions are positively related with cost savings, and market share increase and weakly negatively associated with differentiation and profitability of the offered product. These statistics confirm that alliances do not improve a company's per-

formance more than non-alliances, since there is a low correlation between co-operation in the form of strategic alliance and the effect on competitiveness.

Table 3: Phi coefficient for motives of various forms of cooperation

Parameter	Phi coefficient (Strategic alliance)	Phi coefficient (Free form)	Phi coefficient (Contract-based)	Phi coefficient (JV)	Phi coefficient (M&A)
Cost savings	(0.01)	0.09	0.04	(0.19)	0.16
Differentiation	0.15	(0.27)	0.06	0.10	(0.21)
Popularity increase	(0.03)	0.13	(0.09)	0.03	0.04
Market share increase	0.05	(0.12)	0.06	(0.10)	0.21
Profitability of the offered product	(0.02)	0.01	0.06	0.00	(0.16)
Imitability decrease	(0.08)	0.03	(0.04)	0.02	(0.07)

The position in the value chain was determined for the effectiveness of strategic alliance on competitiveness. The strongest correlation between increased competitiveness and cooperation is in product development. This is followed by purchasing and manufacturing. For international businesses, as far as the value chain position of the alliance is concern, it is evident that there are moderate and weak relationships between these variables. Manufacturing and product development are the two independent variables with the highest positive relationship with dependent ones. Marketing shows an even higher relationship, but this correlation is negative. There are also other weak relationships observed as in the case of purchasing and logistics with their Phi coefficient above 0.10 as shown in Table 4.

Table 4: Phi coefficient for value chain position in strategic alliance

Value chain position	Phi coefficient (Domestic business)	Phi coefficient (International business)
Manufacturing	0.13	0.24
Marketing	(0.13)	(0.37)
R&D	0.02	(0.03)
Product development	0.18	0.24
Sales	(0.04)	0.01
Distribution	(0.02)	(0.15)
Purchasing	0.14	0.11

Value chain position	Phi coefficient (Domestic business)	Phi coefficient (International business)
Logistics and infrastructure	(0.13)	0.15
Finance	(0.03)	0.05

The primary purpose of strategic alliance depicts a strong correlation. Interestingly, the weak positive relationship, in this case, is only associated with the new contacts. A weak negative relationship also exists in some cases, an example is Time saving which has a Phi coefficient of -0.41 (Table 5). The coefficient is negative because a great number of the companies that did not engage in alliances because of time-saving, stated that the cooperation has helped to increase their competitiveness, i.e. if you don't cooperate just for time-saving, it will help you. This is an interesting fact that companies should note while considering a strategic alliance. The relationship is moderate when an alliance is formed for the purpose of Acquiring new knowledge, in which the Phi coefficient is 0.32 (this is mainly because of a very limited number of the others). A weak positive relationship is observed where the purpose was for cost savings, expansion to new markets and search for new contacts. On the other hand, a weak negative relationship is observed where the purpose is for quality improvement and increased productivity. Therefore, it is recommended that companies should engage only in alliances with positive effects and avoid the ones with negative impacts. It is also recommended that companies should at least know those alliances with negative impacts, and find a solution to improve them.

Table 5: Phi coefficient for purpose of strategic alliance

Purpose of SA	Phi coefficient (Domestic business)	Phi coefficient (International Business)
Cost savings	(0.01)	0.23
Quality improvement	0.03	(0.19)
Additional services to add value	(0.14)	0.05
Time saving	(0.41)	0.05
Acquisition of new knowledge	0.02	0.32
New markets	0.07	0.22
New contacts	0.22	0.14
Increased productivity	(0.13)	(0.11)
Other	(0.17)	(0.35)

This relationship shows the different results based on the value chain of partners. The strongest relationship is shown in the relationship with clients. Nonetheless, the relationship is negative, and would, in this case, suggest that not cooperating with clients would result in more competitiveness. All the other results show

some weak relationship. Partner's value chain position did not play an important positive role in international business (Table 6).

Table 6: Phi coefficient for value chain position

Value chain position	Phi coefficient (Domestic business)	Phi coefficient (International business)
Competition	(0.16)	(0.15)
Supplier	0.13	(0.02)
Client	(0.31)	0.01
Distributor	0.10	0.01

Our study also reveals that cooperation is more useful if it involves partners outside the Czech Republic, in which the result was close to 0. The strongest relationship is observed with partners within the EU. For these partners, the result showed a moderate relationship with a Phi coefficient of 0.34. A weak relationship was also observed for cooperation with partners from Europe but outside of the European Union. The results, therefore, suggest that the best way for companies to form alliances would be to do so with those in Europe, and if possible, with those inside EU (Table 7).

Table 7: Phi coefficient for partner by country

Partner by country	Phi coefficient
CZ	0.03
EU	0.34
Rest of the world	0.01
Rest of Europe	0.14

In summary, we can conclude that there are some positive effects of strategic alliance formation on competitiveness as shown from the survey response that competitiveness was increased due to the strategic alliance formation. We also gathered from the results that increased competitiveness leads to increased differentiation or decrease cost, popularity increase, market share increase, and profit increase respectively. The analysis was focused on comparing the effectiveness of strategic alliance with the non- alliances. The similarity analysis with the Phi coefficient did not show any relationship between the formation of strategic alliance and increased competitiveness for those companies that said they would not have achieved their results without cooperation. There are some promising findings which show that strategic alliances are weakly positively related to improved competitiveness. In the value chain segments, it is recommended that alliances be formed for manufacturing, product development and, purchasing. These companies, with whom others form a partnership, should

mainly be suppliers or distributors. Partnership with companies within the EU is one of the most strongly correlated indicators and should be considered in decision making.

5. Conclusion

From our first research question "*how much do Czech SMEs engage in strategic alliances?"* We found that about 33 % of Czech's SMEs are involved in strategic alliances. However, the number of projects involving strategic alliances varied; 90 % of firms cooperated for one project, 42 % cooperated for 2 to 5 projects, and 40 % cooperated for more than ten projects in the last five years. This statistic shows that the occurrence of strategic alliances among Czech's SMEs is increasing gradually. However, further research is needed to explore the engagement of strategic alliances industrial wise. For example, it would be interesting to investigate if the existence of strategic alliances is more common in those industries where there is a high interdependence among supply chains partners such as automotive, FMCG (fast-moving consumer goods) or it is just a common trend among Czech SMEs. Moreover, it would also be interesting to explore the key reasons encouraging Czech SMEs to engage in strategic alliances such as saturation of the domestic market or increasing international opportunities, etc.

In our second research question "*what are the main value chain segments for alliances among the Czech SMEs?"* We found that the manufacturing segment was the most prominent for establishing strategic alliances followed by product development, R & D, and sales. The findings are convincing as these segments require a lot of interdependences among the various actors, and therefore, strategic alliances could reap the benefits of cooperation. Moreover, the main reasons for establishing strategic alliances was for quality improvement, followed by cost-saving, and, knowledge acquisitions. Furthermore, suppliers, competitors, clients, and, distributors were found to be the most popular actors for establishing strategic alliances. However, further research is needed to investigate exactly how strategic alliances help to achieve quality improvement or cost saving. For example, is it because of technology, know-how sharing or because of timely access to relevant new information? Moreover, it would be useful to explore how Czech SMEs handles the trust component in their alliances as we know that many strategic alliances failed because of the lack of trust.

In our third research question "*what is the effectiveness of alliances on the competitiveness of domestic and international business?"* We found a weak positive relationship between strategic alliances and the competitiveness of companies (a Phi coefficient of 0.12). We measured competitiveness through either differentiation or cost saving. We discovered that strategic alliances helped more in differentiation than in cost saving. The effect of differentiation or cost saving was vis-

ible in the increased market share, followed by the rise in profitability, popularity, and a decreased imitability. We also found that strategic alliances affect competitiveness differently for domestic and international business. For example, for domestic business, the most effective value chain segments for the strategic alliance were product development, purchasing, and manufacturing, while for International operations, they were manufacturing, product development, purchasing, logistics, and infrastructure. The key reason to engage in the strategic alliance was access to new contacts for domestic business while it was cost saving followed by acquisition of new knowledge, new markets, and new contacts for the international business. Moreover, the ideal value chain positions to attain maximum benefit from strategic alliance were with suppliers and distributors for domestic business while there was no perfect value chain position for international business. The findings also showed that partnership with companies from the EU was one of the strongest variables correlated with improved competitiveness. We strongly believe that further research is needed to answer this research question holistically. We attempted to measure the effect on competitiveness; however, new research could be focused on measuring the effect of strategic alliances on the financial performance of SMEs. This might provide useful guidelines for Czech executives to fine-tune their strategic alliances to achieve the best financial performance. Furthermore, new insights could be provided on how strategic alliances might help to mitigate environmental uncertainty both domestically, as well as globally.

Combining the results of the three research questions, we can conclude that there is some positive effect of strategic alliance on the competitiveness of Czech SMEs; however, the effect was weak and different for domestic and international business. Therefore, future research on this subject should be tailored for more assessment, and additional questions should be addressed to the companies seeking for which purpose the contacts were sought, and what was the result of the search. A summary of key findings could be found in Appendix 1. However, we recommend that these findings should be interpreted carefully due to the limited sample size of our study and that future research be conducted on a larger sample.

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Appendix 1: Summary of findings

Strategic alliances might weakly help in creating differentiation and market share increase	
	Parameters for a successful strategic alliance
Domestic operations	■ The most effective value chain segments for strategic alliance are product development, purchasing and manufacturing. ■ The ideal purpose to get maximum benefit from strategic alliance is new contacts. ■ The ideal value chain positions to attain maximum benefit from strategic alliance are with suppliers and distributors. ■ The ideal partners for strategic alliance should be from the EU and rest of the Europe.
International operation	■ The most effective value chain segments for strategic alliance are manufacturing, product development, purchasing, logistics and infrastructure. ■ The ideal purposes to get maximum benefit from strategic alliance are cost saving, acquisition of new knowledge, new markets, and new contacts. ■ There is no ideal value chain positions to attain maximum benefit from strategic alliance. ■ The partners for strategic alliance should be from the EU and rest of the Europe.