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Abstract

The paper is focused on developing a predictive, statistical model depicting the relationships among companies' involvement in internationalization, engagement in cooperation with business partners and their financial performance.

Data were collected through a CATI survey of managers of medium-sized Polish manufacturing enterprises. The principal statistical technique employed was binary logistic regression. The regression equation model contained four statistically significant dichotomous predictors: (1) sales abroad above 30% of total sales, (2) cooperation with foreign suppliers, (3) cooperation with domestic distributors, and (4) Export-Only Early-Internationalized status of the company. The two former variables were correlated positively with the profit margin, while the two latter shown negative associations.

The principal limitation of the study was a relatively small sample size of 110 units that, while enough to detect patterns with strong and medium-strong effect sizes, might not have provided sufficient power to identify weaker associations. Generalizations were also constrained by the selection criteria of the sample to medium-sized Polish enterprises from traditional manufacturing B2B industries.

The study yielded a regression model that permitted isolation of the main factors linked to the degree of sales profitability, which could assist managers in their efforts to enhance profit margins and in competitor analysis. The originality of the approach involves using a comprehensive list of 25 potential predictors in analysis that represented salient dimensions of cooperation and internationalization. The predictive capacities of the model were found to be sufficient to make it useful for both scholars and practitioners. The research relied on a sample drawn from the population that has rarely been studied on similar subjects.

Keywords: cooperation, internationalization, profitability, medium enterprises, Poland

JEL: C25, C83, F23, M16

Introduction

The factors accounting for success or failure of SMEs in their internationalization efforts have been researched by numerous scholars. Many studies examined the antecedents of export performance of SMEs from the perspective of individual countries [Altıntaş, Tokol, Harcar, 2007; Brouthers, Nakos, Hadjimarcou, Brouthers, 2009; Maurel, 2009; Rundh, 2010]. Among numerous endogenous (firm-specific) and exogenous variables that appeared to positively affect exporting outcomes were specific elements of marketing strategies including product adaptation, price competitiveness and extent of the distribution network [Gornez, Velanzuela, 2005], labor skills, technological innovation and exporting experience [Alvarez, 2007], export managers' morale and job satisfaction [Coudounaris, 2011], reliance on foreign networks to enhance internationalization capacities [Mais, Amal, 2011], and hard and soft infrastructure of the country of origin, particularly transportation and communications systems and institutional business environment [Portugal-Perez, Wilson, 2012]. On the other hand, it was established that, among other factors, hampering effect on success of exporting activities could be attributed to limited absorptive capacity for foreign market knowledge often linked to the small size of the internationalizing company [Malhotra et al., 2005], lack of exporting knowledge and experience of managers [Bianchi, Wickramasekera, 2013], and cultural distance of the foreign market from the domestic center of operations [Gerpott, Jakopin, 2007].

The central theme in the extant internationalization literature has been export as the main mode of expansion into foreign markets with other forms of internationalization such as alliances with foreign partners, investments in subsidiaries in external markets, and foreign sourcing of supplies investigated less frequently. Grandinetti and Mason [2012] tried to bridge this gap by including FDI and various forms of cooperation with diverse foreign partners in their model of export performance. With data gathered from 147 Italian manufacturing SMEs, they found support for a hypothesis suggesting a positive influence of internationalization modes other than exports on the companies' performance in exporting. Apart from that work, the evidence on links between internationalization modalities and export performance is scarce, fragmented and often inconclusive.

Building on the cooperation perspective in internationalization literature, the aim of our study is to address the apparently underexplored area of knowledge by determining the major drivers of the financial performance of internationalized Polish SMEs resulting from their networking both with local and foreign partners.

The paper is organized as follows. First, the research problem of the study is outlined and broken down into two pertinent research questions. Second, a concise review of relevant internationalization literature follows. Next, the research method is detailed including sample characteristics and an overview of statistical techniques employed in

data analysis. Then research findings are presented with subsequent discussion. The final sections of the paper are concerned with managerial and theoretical implications, study limitations and directions for further research.

Research objectives

Working on the study, we sought to establish which elements of involvement in cooperation and internationalization on the part of Polish medium manufacturing companies brought about systematic differences in sales profitability. We attempted to attain this objective through developing a regression model with the acceptable data fit and the highest possible predictive capacity of sales profitability.

Considering that the study was exploratory rather than confirmatory in nature, we did not propose hypotheses but rather formulated two relatively broad research questions:

- 1) What aspects of involvement in cooperation are the strongest predictors of profit margins controlling for other salient dimensions of cooperation and internationalization?
- 2) What facets of internationalization are the strongest predictors of profit margins allowing for other vital dimensions of cooperation and internationalization?

Taking into account that the research is grounded in internationalization and cooperation theory, the next section of the paper will focus on a review of pertinent past works in management science to highlight the relevance of the study objectives.

Review of the literature on internationalization and cooperation of companies

What factors account for the successful economic performance of the companies? It seems that the majority of scholars in management and business studies more or less explicitly attempted to address this critical question. The investigations, applying numerous methods of research, were focused on both endogenous and exogenous factors accounting for success and failure. Theoretical considerations usually had practical implications serving as guidelines for managers looking for the best practices and strategies to enhance their firms' performance.

As company size was found to determine the range of relevant "right" practices and strategies, it was only natural that the literature on the topic addressed firms of different resource bases. The research on international corporations' success and failure factors and strategies, that was initially limited to large organizations, was gradually complemented by studies employing the perspectives of medium and small companies.

The ongoing globalization of the world economy and markets focused researchers on internationalization efforts of companies and their international performance. The phenomenon of the early internationalized companies, i.e. so-called “born global”, was an especially interesting topic as it contradicted traditional theories of internationalization [Pla-Barber, Escribá-Esteve, 2006].

Succeeding in the foreign, geographically and culturally distant markets was a challenge. It seemed to be particularly difficult for SMEs because of their limited resources as well as their small risk absorption ability. Companies started to look for partners in their efforts to compete internationally, trying to reap economies of scale and to share costs and benefits. Globalization of markets is considered one of the key drivers forcing companies to explore such alternative ways of gaining and maintaining the competitive advantages as cooperation with partners [Todeva, Knoke, 2005].

The research conducted a few decades ago rarely considered cooperation an important factor influencing firms’ performance abroad. Through past literature review, White, Griffith and Ryans Jr. selected 23 variables known to influence manufacturing export performance [White, Griffith, Ryans Jr., 1997]. None of them included cooperation with partners. Towards the end of the 20th century, building and strengthening the networks of cooperating firms started to be considered an important competitive ability, necessary to cope with foreign markets’ unique requirements and possible traps. Cooperation with business partners seemed to enable companies to combine resources and abilities in their struggle to face new challenges. It is widely believed that effective cooperation is at the heart of any successful international alliance [Mehta et al., 2006], which is one of the most advanced forms of inter-company network structures.

There are a number of articles based on empirical research focused on relational aspects of international cooperation, particularly in export-import interactions [Mehta et al. 2001; Mehta et al. 2006; Obadia, 2008]. Cooperation is viewed there as “a quasi-governance mechanism” [Obadia, 2008], “a relational norm, which refers to the mutual expectation that both parties ... work together to resolve problems and achieve shared goals” [Cannon, Perrault, 1999]. They explained the attitudinal antecedents of the cooperation, such as trust, and suggested that through cooperation, companies can influence the behavior of their business partners [Kumar, Stern, Achrol, 1992]. There was an opinion “that productive resources reside in the inter-organizational relationships, rather than within the boundaries of an individual firm” [Hammervoll, 2009 interpreting van de Ven, 1976]. According to Hammervoll, relationship research was relatively rare and incomplete in the past. He also maintained that the bulk of the cooperation literature was concentrated on salient company characteristics as antecedents of networking.

Hypotheses concerning the influence of cooperation on internationalization and performance were tested in various country and regional environments. As an example, the results of an investigation of the Nordic SMEs showed that foreign networking had a significant positive influence on the companies’ export performance. In contrast, do-

mestic networking did not have a considerable impact on sales abroad [Babakus, Yavas, Haahti, 2006]. One conclusion of the study was the advice that to further improve export performance, managers should be more proactive in establishing ties with foreign partners. It was also suggested that the bigger firms, due to their substantial resource base, were more capable of establishing networking relationships, while SMEs faced a size disadvantage in networking efforts. Furthermore, the research established that a firm's size had a positive direct influence on export performance, as well as an indirect impact through foreign networking, which was consistent with other past research [Dhanaraj, Beamish, 2003]. As another example, an examination of 401 Spanish firms for direct and indirect effects of the ability to internationalize on the propensity for cooperative internationalization revealed that the inclination for international growth through alliances decreases as the firm's degree of involvement abroad increases [Camisón, Villar, 2009]. The authors hypothesized that the learning process reduced the company's need to cooperate. They positively tested the proposition, suggesting that when the firms lack the capacity for internationalization, which is usually the case for small companies, they tend to be inclined toward cooperative internationalization. In a similar vein, Fink and Kraus [2007, p. 676] state "SMEs are disproportionately burdened by the minimum investments necessary for internationalization; they need to expand their activities to foreign markets via cooperation in order to obtain access to the resources of other companies". The statement was illustrated by the empirical case of Austrian small and medium companies that chose cooperative internationalization in the neighboring markets of Central and Eastern Europe.

Another study inquiring into the impact of cooperation and internationalization on economic performance considered international joint ventures in China [Chow, Yau, 2010]. The authors found evidence supporting the proposition that inter-organizational harmony directly affects the performance of the company, which promotes cooperation leading to additional performance gains through indirect interaction. In another article by Chinese authors, it was demonstrated that the marketing capacity of companies was an important factor in improving performance on the foreign markets [Zeng, Xie, Tam, Wan, 2009]. One could assume that in such cases firms may look for collaborators to fill in the capacity gaps. Such an assumption would be in line with the results of a research of Japanese SMEs in which partners' local knowledge was found to effectively overcome the deficiencies of internationalizing firms [Lu, Beamish, 2001].

An attempt at explaining the role of internationalization as a potential mediating factor between cooperation and economic performance of Polish companies was made by Strzyżewska [Strzyżewska, Mazur, 2010]¹. She developed a method of quantifying companies' internationalization engagement level and their networking involvement in order to relate them to their economic performance. The economic performance was measured by foreign markets sales profitability. The internationalization engagement index was developed as a compound of such measures as:

- sales in foreign markets as a proportion of total sales
 - share of total fixed assets employed internationally
 - forms of international engagement (export vs. direct investments)
 - length of international engagement
- The cooperation engagement index was based on:
- functional areas of cooperation (e.g., R&D, customer services, promotion etc.)
 - number of partners
 - types of partners in the network (customers, suppliers, distributors, competitors)
 - origin of partners' capital (domestic, foreign)
 - length of collaboration

The understanding of cooperation in this study was restricted to those joint actions of independent businesses that were initiated to achieve mutual benefits. The construct of cooperation explicitly left out common market transactions of buying and selling, even those that were repetitive. Consequently, the employed definition had a distinct relational connotation. In keeping with some other research projects, cooperation was only defined as “similar or complementary coordinated actions taken by firms in interdependent relationships to achieve mutual outcomes or singular outcomes with expected reciprocation over time” [Anderson, Narus, 1990]. The same definition of co-operation was adopted for the purpose of the research reported in the present paper.

The data from 310 Polish manufacturing companies analyzed by Rószkiewicz and Strzyżewska [2011] showed that among the companies characterized by a low level of internationalization index, increases in cooperation engagement had no significant impact on international sales profitability. A synergy effect of internationalization and cooperation in their joint positive influence on foreign sales profitability was observed in the segment of companies characterized by a relatively higher internationalization index. Specifically, the higher values of the internationalization index were associated with stronger positive influence of cooperation on foreign sales profitability. The authors did not research the propensity of Polish companies for cooperative internationalization, so it was not clear how often the firms included in the sample intended to use the opportunity for increasing performance by intensifying their cooperation ties. Other sources indicate, however, that the Polish companies in general were not eager to cooperate [Witek-Hajduk, 2009].

Building on past research [Hsu, Boggs, 2003; Rószkiewicz, Strzyżewska, 2011], the current study is dedicated to providing insights into the relevance of various aspects of cooperation and internationalization involvement in distinguishing between low and high sales-profitability companies. The novelty of the employed approach consists in considering a large number of potential predictors (25 in total) that comprehensively represent salient dimensions of both constructs of cooperation and internationalization. The adopted statistical methods are intended to isolate a limited set of independent variables that will jointly explain the largest portion of variance in sales profitability of companies. The re-

sultant model is apt to have both theoretical and practical uses: for the academic part, it may lead to an increased accuracy in predictions of sales profitability from the company's engagement in cooperation and internationalization. On the other hand, its practical application will stem from suggesting to managers which factors are the most critical determinants of profit margins. It must be noted, though, that the use of model predictors to provide guidance on relevant management practices is dependent on substantiating causal relationships between predictors and the outcome variable beyond mere statistical correlations. Another source of value lies in the geographical and industrial scope of the study: to the authors' best knowledge, the data set used in the study was a unique representation of medium manufacturing enterprises from traditional industries.

The findings discussed in the article are part of a more extensive study on involvement of Polish exporting companies in cooperation and internationalization [Mazur, Witek-Hajduk, Zaborek, 2012]. The raw data file analyzed in this research is the same as the one examined earlier by Strzyżewska and Mazur [2010], though here the analysis was conducted on a smaller but more homogenous subsample of observations. The rationale and specific criteria that were used to select records from the original data file are discussed next.

Sample characteristics

The original net sample comprised 310 medium firms² mostly from B2B manufacturing industries engaged in various operations in foreign markets. The data were collected through a CATI survey of managers of the companies selected at random from a broader database representative of the Polish companies functioning in these industries. The actual interviewing was outsourced to a research agency and completed by professional interviewers from a dedicated CATI facility.

The preliminary exploratory analysis of the data set uncovered possible sources of heterogeneity in the sample that could suppress patterns among variables of interest. It transpired that a group of companies was likely influenced by unique uncontrolled extraneous factors that might have resulted in atypical external and internal characteristics of their respective business environments. Those companies exhibited stark differences from the other sample members on variables reflecting financial performance, engagement in cooperation and internationalization. Consequently, it was decided to exclude them from further analyses based on the following features:

- 1) established prior to 1990;
- 2) net profit to sales ratio beyond 0.4 (such large profit margins, given typical lower levels for studied firms, could signify an entirely different business model or measurement errors caused by imperfect recall or misunderstanding the question by respondents);

- 3) specializing in computer software services (the only service industry represented in the sample).

As a result, the initial sample was reduced in size from 310 to 110 units. The direct consequence of such downsizing were more pronounced patterns of relationships among studied variables, but – on the downside – it limited the scope of possible generalizations to the Polish manufacturing B2B companies that were founded in 1991 and later, with profitability not exceeding the threshold of 0.4. In accordance with the structure of the general population, the most numerous in the sample were firms manufacturing metal items, plastic and rubber products, machines, appliances and chemicals.

Statistical methods

The relationship between internationalization, cooperation and financial performance was examined with binary logistic regression. Even though the nature of both dependent and independent variables did not preclude multiple linear regression, the strong asymmetry evident in the distribution of the net profit margin that was to serve as the dependent variable could result in the model with large standard errors of coefficients and inaccurate p-values. Therefore the original sales profitability measure was dichotomized with 0 ascribed to the companies with sales profitability of less than 5% and 1 denoting the firms whose financial performance as measured by this coefficient was greater or equal to 5%. The cut-off point of 5% was chosen to split the sample into two relatively equal groups, which is considered a preferable arrangement in binary logistic regression [Meyers, Gamst, Guariano, 2005, p. 222]. The structure of the resultant binary variable is given below.

TABLE 1. Frequency distribution of dichotomized sales profitability

	Frequency	Percent
Less than 5% (0)	50	45.5
Equal and more than 5% (1)	60	54.5
Total	110	100.0

Source: Own elaboration.

Considering the large number of possible predictors as suggested in past research and implemented in the questionnaire, it was not possible to include them all in one regression equation. Even if they were all correlated with the dependent variable, it would be risk obtaining an over-specified model, with a possible high degree of multicollinearity

that would increase standard errors of regression parameters and, thus, make the solution unstable from sample to sample. The reasonable option was to employ a statistical procedure to select the best predictors out of the set of 25 possible characteristics. Accordingly, the final form of the model was estimated through backward elimination of independent variables. Backward elimination is an iterative process that starts with all potential predictors included in the model and in each step discards the variable that is the least statistically significant predictor until all predictors are significant and rejecting any of them would considerably diminish predictive capabilities of the solution. In comparison with stepwise regression – which is an alternative method – the backward elimination is considered superior as it provides control for the suppressor effect, which takes place when certain independent variables correlate with a dependent variable only when other (suppressor) variables are present in the equation [Field, 2009, p. 1013]. Since in backward elimination all variables are encompassed at the outset of the analysis, this problem is adequately addressed.

Independent variables

Among 25 independent variables contemplated for the inclusion in the model, the majority were dichotomized factors pertaining to the involvement of companies into various forms of cooperation and internationalization. With those variables a value of 1 denoted engagement in a specific kind of practice or presence of some particular outcome and a 0, lack thereof. The other characteristics examined as possible predictors included the year of founding the company, the year of initiating activities in foreign markets and the number of employees.

Consistent with suggestions in the literature [Diamantopoulos, Inglis, 1988; Hsu, Boggs, 2003] the list of plausible independent variables was complemented by three additional characteristics reflecting the status of the companies with regard to (1) relationship between the year of founding and the year of commencing internationalization, and (2, 3) the complexity of internationalization practices. The former variable distinguished two types of companies:

- Early-Internationalized (hereinafter denoted as EI)
- Late-Internationalized (LI)

The EI companies were conceptually akin to the so-called “born globals”, a label attached to businesses established to operate in international markets that launched their international operations shortly after being incorporated. In past studies there were several definitions of EI companies or “born globals”, distinguished mostly by the maximum time gaps between founding and starting operations internationally. These time limits were usually between two and three years, though some authors used cutoff points as low as one year or as high as eight years [Freeman, Cavusgil, 2007].

For the purpose of the current study it was assumed that to be considered an EI, a company must have undertaken international operations in the same year that it was established. This definition allowed the splitting of the sample roughly in equal halves with 43% of firms falling within the EI category, which led to high variance of the variable that is deemed beneficial for statistical analysis.

To further distinguish the sampled companies, the category of the EI firms was broken down by taking into account the complexity of international operations. Those EI companies that had only the most basic involvement in internationalization consisting only of export activities were labeled as Export-Only Early-Internationalized (EOEI). The companies that, aside from exporting, were also engaged in other forms of presence in foreign markets (e.g., manufacturing, research activities, licensing, etc.) were designated as Advanced Operations Early-Internationalized (AOEI). In conclusion, the three additional binary variables assumed the following levels and designations:

1. Early-Internationalized (1), the other firms (0); the sample contained 43% of companies with the EI label.
2. Export-Only Early-Internationalized (1), the other firms (0); the sample had 25.5% of EOEI firms.
3. Advanced-Operations Early-Internationalized (1), the other firms (0); the sample comprised 29.1% of the AOEI firms.

Binary logistic regression model of sales profitability

Logistic regression with backward elimination employed 21 iterations (each leading to dropping a single variable from the solution) to yield a final model with four independent variables. The outcomes of the test of significance for the overall equation are enclosed in the table.

TABLE 2. Overall test of model coefficients

	Chi-square	df	Significance
21 Step Model	29.416	4	p<0.001

Source: Own elaboration.

The final regression equation was statistical significant at p-level of 0.001. It follows that the model was substantially better at predicting the membership of companies in the outcome categories (i.e., whether their profit margin was greater or less than 5%) than the baseline model containing only a constant term.

The goodness of fit of the model can also be established with the Hosmer and Lemeshow test, which compares expected probabilities with actual membership of observations after being partitioned into 10 groups ordered by the probability estimated from the regression equation [Agresti, 2002, p. 175-176]. The H-L procedure tests the null hypothesis that there is no difference between the observed and model predicted values, so – contrary to the previous test – the non-significant outcome indicates a well-fitting model. In the present study the H-L test yielded a Chi-square value of 7.860 with 9 degrees of freedom and $p = 0.345$, which implies that the model's estimates fit the data at an acceptable level.

The next display provides more information about the data fit of the model. It contains two pseudo R-square measures. These statistics are analogues of the coefficient of determination obtained in ordinary least squares estimation³ and were devised to provide a similar, but not identical, measure of general model quality. Both coefficients are derived through transformation of a -2 log likelihood and the only difference lies in an adjustment applied to Nagelkerke's statistic to ensure its maximum value of 1, which is not always the case for the former measure. Thus, this statistic was used to assess the overall effect size of the regression.

TABLE 3. Pseudo R square coefficients

Step	-2 log Likelihood	Cox and Snell R Square	Nagelkerke R Square
21	116.144	0.244	0.326

Source: Own elaboration.

The value of Nagelkerke R Square suggests that the resultant model is characterized by approximately 32.6% error reduction relative to the baseline solution containing only the constant without using independent variables (i.e., all regression coefficients equal zero). The error reduction here is represented by changes in log likelihoods in predicting the class membership of observations between the outcome and baseline models adjusted for sample size [Pampel, 2000, p. 50].

Another way to assess the quality of the model is through classification tables, which show how well a regression equation predicts actual (i.e., observed) group membership of cases. It is particularly useful to compare the accuracy of classification for a baseline model, where there was only a constant and no variables, to the categorization obtained with the final model comprising four variables. By the way of additional explanation, the baseline model assumes that all observations will fall into the more numerous of the two categories, which gives the most reliable predictions of group memberships in the absence of independent variables.

TABLE 4. Classification outcomes for the baseline model

Observed			Predicted		
			Profit margin $\geq 5\%$		Percent of correctly classified
			NO (0)	YES (1)	
Step 0	Profit margin $\geq 5\%$	NO (0)	0	46	0.0
		YES (1)	0	59	100.0
	Total percent				

Source: Own elaboration.

TABLE 5. Classification outcomes for the final model

Observed			Predicted		
			Profit margin $\geq 5\%$		Sales profitability $\geq 5\%$
			NO (0)	YES (1)	
Step 21	Profit margin $\geq 5\%$	NO (0)	22	24	60.0
		YES (1)	6	53	79.7
	Total percent				

Source: Own elaboration.

TABLE 6. Predictor variables in the final logistic regression equation

Variables	B	Standard Error	Wald Statistic	df	Significance	Exp(B)
Percent of sales abroad > 30% (No/Yes)	.837	.382	4.806	1	.028	2.309
Cooperation with foreign suppliers (No/Yes)	1.728	.515	11.264	1	.001	5.627
Cooperation with domestic distributors (No/Yes)	-1.523	.584	6.802	1	.009	.218
Export-Only Early-Internationalized (EOEI) (No/Yes)	-1.772	.538	10.837	1	.001	.170

Source: Own elaboration.

Table 4 shows that in the baseline model, all companies were assumed to have sales profitability of at least 5% (it was the category with more observations) which resulted in 56.2% of cases with correct group memberships. In comparison, if the estimated logistic regression equation was used in prediction the accuracy was 71.4%, which corresponds to 15.2 percentage points or a 27.04 percent increase in precision level. Such improvement in the quality of classification implies that the final model might be useful in practical applications.

Having demonstrated that the resultant model offers adequate fit with empirical data, it is appropriate to turn to the discussion of its specific parameters. In the table below, there is a list of variables forming the regression equations together with their coefficients and other relevant statistics.

As evidenced by the levels of significance, each included variable is considerably adding to the model's predictive capabilities, which is to be expected with the backward elimination procedure. Considering that all independent variables are dichotomous, and hence no standardization is necessary, regression coefficients can be taken to indicate the relative strength of predictors [Orme, Combs-Orme, 2009, p. 65]. As such, the absolute values of B coefficients show that the strongest predictor was the EOEI status of the company followed by "Cooperation with foreign suppliers", "Cooperation with Polish distributors" and the percentage of total sales realized in foreign markets. The signs of coefficients denote a negative or positive relationship with the dependent variable, which in logistic regression is the natural logarithm of odds defined as the ratio of the probability of success over the probability of failure. Considering that in this study the "success" is for a company to fall into the category of higher profitability and failure is to be classed in the otherwise grouping, a positive relationship indicates that a given independent dichotomous characteristic tends to happen more often in more profitable companies. Therefore, among the firms with higher sales profitability, it was more likely to find those that:

- cooperated with foreign suppliers
- had more than 30% of total sales from operations abroad
- did not cooperate with domestic distributors
- were not labeled as Export-Only Early-Internationalized companies

To more precisely evaluate effect sizes of respective variables, it is convenient to use $\text{Exp}(B)$ scores, which are exponentiated values of B coefficients and designate odds ratios. Odds ratio is interpreted as the amount by which the probability of success (i.e. belonging to the high profitability category) over the probability of failure (i.e., ending up in the low profitability category) changes (i.e., grows or falls) with a one-unit increase in a predictor variable, controlling for effects of all other independent variables (for more extensive discussion of $\text{Exp}(B)$ statistics refer to [Orme, Combs-Orme, 2009, p. 34-37]). Accordingly, assuming that all other predictors are held constant, the model coefficients can be understood as given below:

- Companies whose revenues abroad exceeded 30% of total sales had a 2.3 times or 130% higher chance of being categorized as highly profitable.
- Firms that cooperated with foreign suppliers were characterized by increased odds of being highly profitable by a factor of 5.6 or 460% than those that did not have foreign suppliers among their partners.
- Cooperation with domestic distributors was linked to decreased odds of achieving high sales profitability by 0.218 or 78.9%.
- Export-Only Early-Internationalized businesses had fewer chances for higher margins of profit by a multiple of 0.170 or 83%, as compared to all other types of firms.

Additional insights into the relationship between profitability and engagement in cooperation and internationalization can be gained through information about variables that turned out not to be meaningful predictors of sales profitability. Below, the variables that were excluded from the final regression equation were tabulated, complete with relevant test statistics.

TABLE 7. Variables not included in the model as statistically significant predictors

	Score	df	Significance
Presence in more than 5 markets (No/Yes)	.045	1	.832
Export as the only form of internationalization (No/Yes)	.005	1	.942
Export and other forms of internationalization (No/Yes)	.032	1	.858
Only Polish capital (No/Yes)	.695	1	.405
Having fixed assets abroad (No/Yes)	1.063	1	.303
More than 3 domestic partners (No/Yes)	.162	1	.687
Cooperation with foreign distributors (No/Yes)	.372	1	.542
Cooperation with foreign customers (No/Yes)	.831	1	.362
Cooperation with foreign competitors (No/Yes)	.930	1	.335
Cooperation with any kind of foreign partner (No/Yes)	.114	1	.736
Cooperation with any kind of domestic partner (No/Yes)	.102	1	.750
Cooperation with domestic suppliers (No/Yes)	.291	1	.590
Cooperation with domestic customers (No/Yes)	.745	1	.388
Cooperation with domestic competitors (No/Yes)	2.246	1	.134
Operation in foreign markets after the year 1999 (No/Yes)	.458	1	.499
Operation in foreign markets after the year 2002 (No/Yes)	.081	1	.776

	Score	df	Significance
Firm was established after the year 1994 (No/Yes)	.066	1	.797
Number of employees	.759	1	.384
Early Internationalized (No/Yes)	.212	1	.645
Advanced Operations Early Internationalized (No/Yes)	.471	1	.492
More than 3 foreign partners (No/Yes)	1.724	1	.189
Summary statistics	11.514	21	.952

Source: Own elaboration.

As can be seen from the table, the study investigated the most relevant aspects of involvement in cooperation and internationalization by considering a relatively large set of dichotomous variables. However, most of them turned out to be of no bearing when predicting sales profitability. A more detailed attempt at explanation of those four variables that did matter in differentiating between more and less successful companies will be presented in the discussion section of the article.

A closer look at the export-only early-internationalized (EOEI) companies

One of the most interesting findings of the study was distinguishing a type of company – the EOEI – that was considerably different from the rest in terms of sales profitability. Consequently, it seems legitimate and potentially valuable to examine and explore more thoroughly other characteristics that can be unique for these businesses.

To begin with, it is worthwhile to compare early and late internationalized companies via profit margins measured in percentages rather than represented by a dichotomous variable that was used in logistic regression. Given strong asymmetry in the distribution of profitability, the comparison of various types of firms was performed using the median test instead of ANOVA, which can yield biased and unreliable results if applied to a dependent variable with a strong asymmetry. The medians for the three types of companies are tabulated next.

The median test gives the Chi-square statistic of 7.901 with $df=2$ and $p=0.019$, which provides evidence that the sample differences in medians are statistically significant and most likely hold for the whole population. From Table 8 it is apparent that although LI and AOEI companies were similar to each other in profitability, the EOEI firms generated considerably less earnings per a given amount of revenues.

In respect to other possible areas of dissimilarities between the EOEI and other companies the statistical tests revealed:

TABLE 8. Medians of profit margins for the three types of firms

Late Internationalized	N	50
	Median	8.00
Export Only Early Internationalized	N	28
	Median	5.00
Advanced Operations Early Internationalized	N	32
	Median	8.00

Source: Own elaboration.

- There was no considerable industry specificity to any type of firm (Chi-square=7.8; df=8; p=0.453).
- The groups of companies were similar in size measured by the number of employees (Chi-square=0,698; df=1; p=0.404).
- The EOEI tended to acquire more revenues from abroad markets (64% had more than 30% of total revenues from foreign markets) in comparison with other companies (48%) (Chi-square=2,786; df=1; p=0.093⁴),
- The EOEI were characterized by similar patterns of cooperation with various categories of partners both domestic and foreign, with the exception of foreign distributors who were involved less often with EOEI (respectively 31.7% and 14.3%; Chi-square=3,194; df=1; p=0.074⁵)
- The EOEL, more frequently than the other firms, recorded falling revenues in the last reporting year (74.1% of the EOEL and 55.6% among the rest; Chi-square=2,898; df=1; p=0.089).
- The companies were alike in terms of capital structure (dominance of foreign or domestic owners) and the number of serviced foreign markets.

The finding that the EOEL relied less often on foreign distributors, coupled with the fact that they were characterized by higher percentage of foreign sales and – by definition – they were involved only in export and did not own any assets outside of Poland, can lead to the conclusion that these companies were inclined to take and fulfill orders through their domestic distribution system (e.g., receiving orders and relying on local logistics firms to deliver ordered products to customers). Lack of strong presence in the foreign markets might have made them more susceptible to the fluctuations in the economic cycle as evidenced by more common drops in sales among these companies in the last reported financial year. This conclusion seems to be given more substance since, as was reported above, the EOEL were no different in size from the other companies, so it is not valid to say that the smaller size of EOEL made them more sensitive to economic trends or smaller scale of operations did not warrant involving foreign distribution partners.

Discussion

The logistic regression model specified earlier in the article may be used for creating a profile of a company with the best odds of exhibiting high profit margins. Following the values of regression coefficients, it is possible to conclude that those most likely to have profit margins beyond 5% are firms that simultaneously are not Export-Only Early-Internationalized but also have revenues from foreign operations in excess of 30% of total sales. In addition they should cooperate with foreign suppliers, but not with domestic distributors. In interpreting those outcomes it is vital to note the definition of cooperation adopted for the study and be aware that statistical correlation is not tantamount to causation.

The cooperation, as explained to the managers participating in the survey, should not be confused with routine buying-selling transactions, even if they are conducted repeatedly with the same party. To assert cooperation, the relationships in question should involve some sort of joint effort to achieve mutual benefits and imply shared trust and reciprocity beyond the common market transactions. Therefore, according to this perspective, it seems reasonable to assume that most business contacts resulting in transactions do not satisfy the criteria of cooperation. True cooperation, though less common, carries potential for beneficial, productive relationships but it may also take a dysfunctional form by suppressing productivity and financial performance. The circumstance that could be critical for the nature of outcomes is the extent of voluntary cooperation; even though it should be voluntary by definition, some market conditions may confront companies with both the need to find a partner and a scarcity of alternatives. That could possibly explain the unfavorable effects of cooperation with domestic distributors and foreign suppliers, with the home distributors probably often forced on the firms (to gain access to given market segments) by environmental conditions and lack of viable choices, while the foreign suppliers more frequently are an effect of searching for lower-priced supplies, which may be part of a more discretionary optimization effort. The common problem in survey research, including this study, is that variables identified as predictors in regression model may not have remained in a cause-and-effect relationship. To claim causality, it is not enough to demonstrate statistical association but also three other conditions must be met [Mooi, Sarstedt, 2011, p. 17-18]. Causality requires that the pertinent variables come in the right time order (effects never before causes), other potential factors ought to be controlled for (the method employed in this study – though not perfect – is statistical control), and there should be a substantive explanation for the relationship, so the underlying mechanism is clear and plausible. Regarding the justification grounded in managerial practice, the links between the predictors and the outcome variable found through regression analysis could be explained as follows:

- It seems reasonable that domestic sources of supplies are often more convenient and easier to tap than foreign ones, which can require more organizational efforts and more complex logistic arrangements. As such, the decision to rely on an outside-the-country source of supplies should have been conditioned by meaningful economic benefits, such as lower prices, higher quality or both in contrast to what domestic suppliers had to offer. Such benefits ought to have outweighed potential hassles and inconveniences. Therefore, it seems plausible that companies that decided to draw on external sources of procurement were well-positioned to gain from lower cost structure and higher quality, which was translated into higher profit margins.
- Following the resource-based view of the firm, it can be expected that cooperation with foreign suppliers creates an occasion for knowledge absorption and learning [Das, Teng, 2000]. The new intangible resources, such as information and knowledge, acquired due to inter-organizational relationships established on foreign markets, may increase companies' performance, in particular their export outcomes.
- For many companies, close cooperation with a domestic distributor instead of setting up and/or enhancing proprietary channels may have required giving up some of the profits and transferring them to partners. Such an arrangement would have direct negative effects on profit margins.
- Many of the firms that undertook early internationalization possibly relied on independent distribution networks as a means of delivering products to international markets. One outcome of such arrangements could be entering a profit-sharing scheme with a distribution partner and – as a consequence – depressing own profit margins.
- The companies with sales abroad constituting more than 30% of total sales may have reported higher profit margins for several possible reasons. The two justifications that seem to be most valid was intrinsic higher profitability of foreign sales and benefits from economies of scale. The rationale behind decisions by companies to enter foreign markets may typically be the consequence of the managers' willingness to find the outlet for surplus production that the domestic market cannot accommodate or to benefit from higher price levels in international markets. On the other hand, if the external markets did not offer higher prices and there was untapped growth potential for a company in the domestic market, international expansion may not provide many advantages and managers would be unlikely to pursue it. The other factor that could spell the difference between lower and higher profit margins was the scale of operations in foreign markets; it seems likely that those companies that had more sales in a given geographical market were able to negotiate better contracts with their business partners in that area as well as register lower portion of market specific fixed costs attached to each sold unit of product. Both circumstances are apt to promote higher profit margins.

Implications of the study

The theoretical implications of the study can be established by how well the findings address the gaps identified in the internationalization literature. Those gaps were articulated by the two research questions set forth at the beginning of the paper. Concerning the first question, it can be said that cooperation with one kind of partner – foreign suppliers – clearly leads to higher profit margins, probably through lower costs of goods and services sourced abroad and additional knowledge acquired in the process. On the other hand, some forms of cooperation (i.e., with domestic distribution partners) seem to be associated with diminished profitability. Of the two forms of cooperation included in the model, the strongest effect on the profitability could be ascribed to the relations with foreign suppliers, as suggested by the absolute values of B coefficients.

Answering the second research question, there is evidence that the scope of foreign operations could be a factor in achieving higher profitability ratios. Conversely, getting involved only in export activities without support from other forms of internationalization may depress profits through forfeiting some of the margins to distribution partners. The negative correlation of the EOEI companies with profit margins suggests that there was a synergy effect between different modes of internationalization that supported each other to foster higher profit ratios. The strongest effect, although negative, may be attributed to EOEI status, which has the greatest absolute B score in the regression equation.

The practical dimension of the findings is linked to possible applications of the obtained regression model and guidelines for the manager that could be drawn from the statistical significance of certain variables as predictors of export profitability, and lack thereof with regard to other factors. The predictive capacities of the regression equation may be of benefit in evaluating the outcomes of commitment to certain modes of cooperation and involvement in foreign operations; it can also provide some assistance in competitor analysis. What is implied by the analysis of 25 variables as potential predictors of export performance is that not all forms of cooperation can be expected to bring discernible financial benefits and managers would be well advised to take a selective stance by carefully evaluating the possible consequences of each long-term business relationship they consider forging. It seems likely that the best results could be achieved by finding foreign supply partners while cooperation in distribution may be less productive in comparison to developing proprietary channels, which is probably more feasible now with the wide availability of internet and other innovative information technologies. The outcomes of regression analysis also hint at benefits afforded by the economies of scale and possible positive synergy effects from different modes of internationalization implemented jointly.

Limitations of the study

Despite a relatively clear pattern of relationships identified by the regression equation this outcome should be considered with a certain amount of skepticism due to the study limitations. Even though cooperation with other types of stakeholders appeared to be statistically insignificant, the interpretations offered above are not intended to imply that they were truly meaningless from the profitability standpoint. It is safe to say that the two types of collaboration included in the model were the strongest differentiators of profitability among the researched companies. For some relationships that from theoretical standpoint may have had a strong impact on financial performance, the incidence of cooperation was too low to be observed as a meaningful factor (e.g., only less than 10% managers declared that their firms cooperated with either domestic or foreign competitors). The same caveat also applies to other forms of relationships, which may have brought about positive effects but the strength of the association was too weak to be detected with the sample size employed in the study. A case in point was cooperation with foreign customers, with 60.7% of those declaring profit margins above 5% having reported that kind of collaboration, as compared with 46.9% of those within lower profit margins. It seems that there was a pattern, but with evidence from only 110 firms it was still too likely to be due to chance ($\text{Chi-square}=2,062$; $\text{df}=1$; $\text{p}=0.151$) and not sufficiently probable to be found in the general population. A more conclusive answer to this, and other similar questions, could be provided by a more extensive sample. This emphasizes the most serious limitation of the study, which stems from the net sample size, which was large enough to detect relatively strong effects but may not have identified weaker patterns.

The other constraint is related to the criteria used to reject some firms from the original sample at the exploratory phase, as it restricts the scope of generalizations to those companies that were retained, that is: medium enterprises involved in B2B manufacturing, and not business services, established after 1990 and reporting profit margins of under 40%.

Finally, it should be noted that the cross-sectional design followed by the study allowed only a single measurement of each company and – in contrast to the alternative longitudinal approach where each company would be studied at several points in time – it did not permit viable analysis of how the companies evolved on their involvement in cooperation, internationalization and how those variables affected profit margins.

Directions for further research

One suggestion for further research is to replicate the study with a more numerous set of observations which would amount to increased power of statistical tests and could possibly lead to discovering more subtle relationships depicting more complete picture

of determinants of export performance. Furthermore, it would be interesting to see if the discerned relationships were not only specific to Poland and could also be found in the economies of other countries.

Another avenue for additional research could be offered by adopting longitudinal design, i.e. studying individual companies over several points in time. If such a study were to be undertaken as an extension of this project, it would add considerably to the findings presented in the paper, most notably by validating causality of identified relationships.

Follow-up studies of both cross-sectional and longitudinal type could also provide additional level of detail by including complementary measures of profitability (e.g. ROA, ROE) and extending the studied scope of cooperation and internationalization to include new aspects and dimensions, e.g., perceived quality of cooperation or geographical layout of serviced foreign markets.

Notes

¹ It must be noted that the database used in the cited study was also used in the current research, although the net sample was narrowed down from 310 to 110 firms according to the criteria presented later in the paper.

² The criterion for distinguishing medium companies was an employment level between 50 and 250 full-time work places.

³ In logistic regression the estimation is conducted with maximum likelihood procedure which rules out calculating coefficient of determination. To make up for that pseudo R squared statistics were computed.

⁴ The difference was meaningful at the significance level of $\alpha=0.1$ and not at a more strict level of $\alpha=0.05$. However, given that smaller sample sizes (which was the case in the present study) are apt to diminish the power of statistical tests, it seems appropriate to report also the findings at $\alpha=0.1$. The argument here is that with not very numerous sample sizes, weaker but real effects may not be detected, but if the pattern in the sample holds and the sample size increases the outcomes of the same statistical tests may turn out to be significant with probabilities of making type I errors (p) of less than $\alpha=0.05$. More on the influence of sample size on the power of statistical tests can be found in [Dattalo, 2008, p. 11–37].

⁵ Ibidem.

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