

FORMAL AND INFORMAL COOPERATION WITHIN SUPPLY CHAINS AND COMPANY PERFORMANCE

Competitive paper

Milena Ratajczak-Mrozek¹, Łukasz Małys²

¹ *Poznan University of Economics, Poland,
Faculty of International Business and Economics,
Department of International Marketing
milena.ratajczak@ue.poznan.pl*

² *Poznan University of Economics, Poland,
Faculty of International Business and Economics,
Department of International Marketing
lukasz.malys@ue.poznan.pl*

Abstract

Contemporary marketing concepts underline the importance of developing relationships with a variety of entities from the business environment for a company's effective market performance. The vast majority of research in this area concentrates on cooperation within supply chains which could have the most significant impact on company performance. The necessity of including informal contacts as well as formal contacts in the analysis is underlined. Due to the varying nature of both cooperation forms, they can have different effects on the way in which a firm functions.

The aim of the article is to analyse the performance of companies characterized by varying approaches to formal and informal cooperation within the supply chain. Authors have identified and compared the market performance of three groups of companies: cooperation with external entities only formally, cooperating only informally and cooperating both formally and informally.

The paper presents the results of an empirical study of 193 companies based in Poland. Data was obtained from an internet survey. The survey time frame covered a period from September to November 2010.

The two main contributions of the paper are as follows. The first is the inclusion of informal cooperation into supply chain management analysis. The second is relating cooperation within the supply chain, to a company's performance. The conclusions may be of practical importance. By presenting the positive relations between cooperation and performance, companies may determine the sources which may increase their advantage over competitors.

Keywords: cooperation, informal cooperation, supply chain management, company performance, competitiveness, network relationships, Polish companies

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INTRODUCTION

Traditionally, the significance and influence that factors such as product, product quality, price and market knowledge have on a company's performance is frequently underlined. In addition to these factors, contemporary theories underline the necessity of cooperation and developing partnerships (relations) with external entities which can significantly influence company success (see Wilson, Mummalaneni 1986, p.44-58; Fonfara 2009, p. 3).

Of all the groups of entities with which firms may cooperate, the most attention is paid to those entities constituting links in the supply chain (see Håkansson, Johanson, Wootz 1976, p. 319-332; Ford 1984, p. 101-113; Gadde, Snehota 2000, p. 305-316; Hollensen, 2003, p. 197-254; Golicic 2007, p. 719-739; Barry, Dion, Johnson 2008, p. 114-135). Entities forming the supply chain have a direct influence on the quality of the company's product offering. The efficiency of the supply chain as well as the cooperative links between individual entities can have a significant influence on competitiveness and subsequent company performance. Particular attention should therefore be devoted to analysing cooperation within the supply chain.

Cooperation between independent entities can have a formal (contractual) as well as informal nature. Theory points to the need to include both of the identified types of cooperation in any analysis pertaining to a company's external relationships. Most studies, however, concentrate solely upon the formal aspect (Håkansson, Johanson, 1988, p. 375-376). As a result the following key question raises itself: "Does the inclusion of informal cooperation alongside formal cooperation within the supply chain have an impact on company performance?"

The aim of the article is to analyse the performance of companies characterized by varying approaches to formal and informal cooperation within the supply chain.

Cooperation between entities within the supply chain is not the sole factor influencing financial and non-financial company results. However, the analysis aims to indicate a certain tendency and to verify if the inclusion of informal cooperation alongside formal cooperation within the supply chain can have a positive influence on a company's performance.

The paper presents the results of an empirical study of 193 companies based in Poland, conducted in 2010.

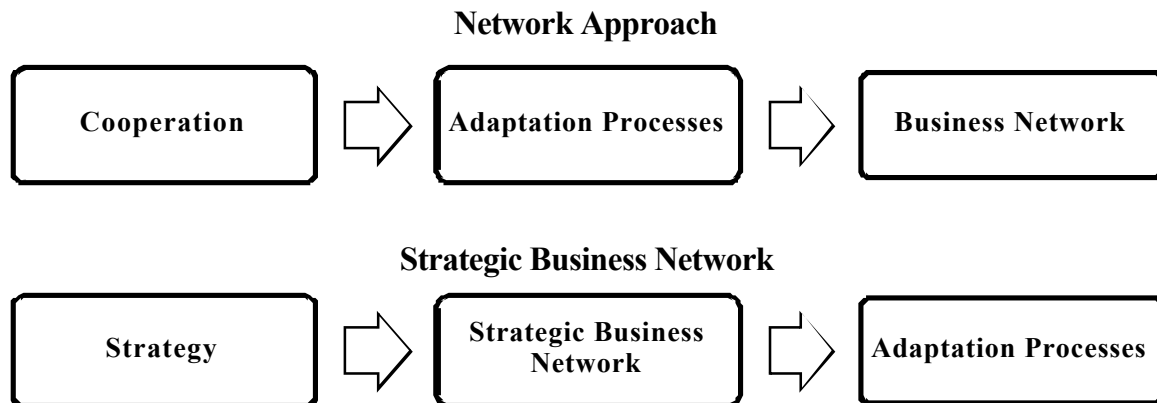
THEORETICAL BACKGROUND

The literature pertaining to industrial marketing indicates a wide range of company cooperation concepts. It is shown that cooperation can be developed in clusters (DeBresson, 1996, p. 161), joint ventures, strategic alliances (Ancarani, Shankar, 2003, p. 2-3), logistics networks (Wimmer, Mandják, Esse, 2010, p. 2-3) and virtual organizations (Anderson, Håkansson, Johanson, 1994, p. 1) etc. A detailed analysis, however, reveals that each of the identified structures constitutes a specific type of a business network, enriched by additional

assumptions or, in some cases, considered from the perspective of a dyadic relationship (Ratajczak-Mrozek, 2010, p. 16-21; Anderson, Håkansson, Johanson, 1994, p. 1-2)

The available literature points to two theoretical trends relating to the emergence of business networks – the main network approach (the IMP Group research trend) as well the strategic business network concept. Figure 1 illustrates the fundamental differences regarding the creation of networks in both approaches.

Figure 1: Comparison of the Traditional Network and Strategic Business Network Approaches.



Source: K. Fonfara (ed.), *Zachowanie przedsiębiorstwa w procesie internacjonalizacji. Podejście sieciowe*, , Polskie Wydawnictwo Ekonomiczne, Warszawa 2009, p. 41.

According to mainstream IMP Group research, a business network emerges as a result of interactions between independent entities developing stable relationships. Whilst cooperating, entities adjust to each other, create co operational norms and build trust. A business network develops in an evolving, unplanned manner. None of the entities has a dominant role. According to this approach, the business network is an effect of historical cooperation (Turnball, Ford, Cunningham, 1996, p. 44-62; Ford, Håkansson, Johanson, 1986, p. 26-41).

A strategic business network is consciously formed by a network leader as a result of a chosen strategy. The main firm in the network (focal company) specializes in areas of the value chain in which it is most competent. The remaining necessary resources are sourced from other entities via subcontracting or outsourcing. The network leader pursues the strategy, creates relationships and deliberately selects partners. Links in a network built in this way are generally permanent and formalized in their nature. The cooperating entities are selected based upon the ability to efficiently realise targets. During cooperation, the participants of the strategic business network adapt their behaviour to that of other partners, thereby expanding cooperation to also include informal links (Jarillo, 1988, p. 31-41).

It is worth underlining that both of the approaches regarding the creation of business networks are not opposed to each other. The approaches should be considered complementary (Ratajczak-Mrozek, 2010, p. 14-15).

An important issue from the perspective of the development of cooperation are the participants of the business network themselves. Relationship Marketing theory indicates the significant importance of developing relationships with a wide range of entities from the surrounding business environment in order that a company may successfully function within

its market. Among the most frequently referred to groups of entities are customers, suppliers, competitors, influential entities, complementors (Hollensen 2003, p. 197-253; Christopher, Payne, Ballantyne 1996, p. 21-30; Buttle 1996, p. 2-5).

It is suggested that the maintenance of close cooperation between firms can lead to: efficiency gains in customer service as well as the ability to win new customers (including those in foreign markets); the acceleration of new product development and market delivery; the widening of the knowledge base; the exchange of technologies; the improvement of a company's image etc. The ability to begin and maintain cooperation may therefore have a significant positive impact on a firm's competitiveness and in effect also improve the market results achieved (Hausman, 2001, s. 600; Gadde, Snehota 2000, p. 305-306).

Research carried out to-date devotes most of its attention to the cooperation between firms within a supply chain – between customers and suppliers (see: Håkansson, Johanson, Wootz 1976, p. 319-332; Ford 1984, p. 101-113; Gadde, Snehota 2000, p. 305-316; Hollensen, 2003, p. 197-254; Golicic 2007, p. 719-739; Barry, Dion, Johnson 2008, p. 114-135). On one hand, this is as a result of more intense cooperation between firms and entities forming the supply chain as opposed to other entities from surrounding groups. On the other hand, this is linked to easily noticed positive effects which can be tied to cooperation within the supply chain. Particular attention should be paid in fact to the analysis of cooperation between entities within the supply chain and above all, between customers, suppliers and subcontractors.

Close cooperation with customers has a wide range of benefits for firms. Firstly, it allows for the reduction of service costs. The retention of existing customers is much cheaper than winning new ones. Additionally, it allows for the development of a product offering matched to individual customer needs thanks to including them in product conception and development processes. It also facilitates the development of customer loyalty resulting from elements not tied directly to the product, which can have a particularly important effect during times of rapidly spreading product innovation (Hollensen 2003, p. 202-223; Ritter 1999, p 467).

Cooperation with suppliers can also lead to an improvement in firms' competitiveness. Attention is drawn to the role which suppliers can play in the process of designing as well as developing a product by sharing knowledge and skills. Attention is also drawn to the huge importance of utilised materials on end-product quality. The ability to reduce costs (purchased materials as well as services are the most significant items of expenditure for most firms) is also significant. Close cooperation with suppliers can lead to a significant reduction in costs thanks to the implementation of the appropriate logistical solutions, just-in-time delivery etc. At the same time, cost reduction for the purchaser does not have to mean a reduction in supplier revenues (Hollensen 2003, s. 223-231; Gadde, Håkansson 1994, p. 27-35)

The integration of business processes between original suppliers and the end-user aimed at improving efficiency in operations as well as increasing value for the consumer has significant importance in supply chain management. Company (or organisation) borders are important from the perspective of delivered value. Coordination of actions within specific links in the supply chain as well as between them is of key importance (Mandják, Piricz, Kivágó, 2010). Coordination and the close cooperation of independent entities within a supply chain can therefore lead to improved competitiveness for the whole network as well as its individual participants and in effect improve a company's own performance.

The cooperation of independent entities within a supply chain can have both a formal (based upon written contracts) as well as an informal dimension. The inclusion of these two dimensions critical for the analysis of the bonds between a company and other entities in the

supply chain as well evaluating the impact of cooperation on companies' performance. There are, however, very few studies which simultaneously tackle all of these issues.

Formal cooperation between independent entities is easy to identify and describe. The basis for this type of cooperation are written contracts. Formal cooperation can be based on formal contracts between suppliers and purchasers or formed by entities sharing common interests (Henriksen, 1995, p. 254). Researchers most frequently concentrate their attention on formal cooperation. A detailed analysis of cooperation, however, requires the inclusion of both formal contracts as well as informal agreements (Håkansson, Johanson, 1988, p. 369).

Informal contacts may include simple personal contacts between company representatives as well as the farther reaching form of co-operation of experts, which is particularly essential in the case of complex production processes. Informal contacts are connected to the concept of social networks and social capital, which in turn facilitate trust, reduce asymmetry of information and in consequence decrease transaction costs (through, among other things, reduction of time and a decrease in the scope of activities performed under the transaction) (Gulati, Nohria, Zaheer, 2000, pp. 209-210) and also lead to a more effective transfer of information and know-how (Cross, Parker, Prusak, Borgatti, 2001). Strong social relationships provide access to trustworthy information (Uzzi, 1997, p. 35), whereas more accurate information improves decisions and limits risk (Van Alstyne, Bulkley, 2004, p. 152).

Informal cooperation can be developed independently or accompany the conclusion of formal agreements. In the case of the latter, it allows for the easier resolution of disputes or misunderstandings which can materialise during the execution of the contract and which could not be anticipated or included in the contract. This is possible thanks to the development of inter-organisational trust within the framework of informal interactions (Van Alstyne, Bulkley 2004, p. 152).

Informal cooperation can also occur independently of written contracts. As indicated by a few studies carried out in this area, this type of cooperation can cause fewer difficulties than exchanges based upon detailed contracts (Young, Wilkinson 1989, p. 114-123).

The need to include both of the mentioned aspects in the analysis results from the significant characteristic differences between formal and informal cooperation (see Table 1). Firstly, formal cooperation is easy to identify for both entities involved in the interaction as well as for the market environment. Informal cooperation is more difficult to observe and analyse. Secondly, informal cooperation is based upon trust, which in order to build requires both time and interaction between both of the affected sides. Under formal agreements, the exchange is included within contracts which do not always lead to the formation of trust based partnerships. Thirdly, informal contacts are developed by entities directly involved in the exchange, who often dictate both their direction and success. Formal agreements are often concluded by representatives of senior management, who are not involved in operations, as well as by direct interactions accompanying the fulfilment of contracts (Håkansson, Johanson, 1988, p. 375-376).

Table 1: Differences between formal and informal cooperation.

Formal cooperation	Informal cooperation
<ul style="list-style-type: none"> • Easy to identify by surrounding and cooperating entities. • Contractual (development of cooperation progresses quickly). • Cooperation does not always have a partnership nature; the interorganisational trust may be at low level. • Initiated by senior management, usually not engaged in a direct exchange. 	<ul style="list-style-type: none"> • Difficulty in characterising as well as identifying links. • Initiated via interaction (its development requires more time). • Cooperation based upon trust. • Developed by entities directly engaged in cooperation (often by middle managers and line employees).

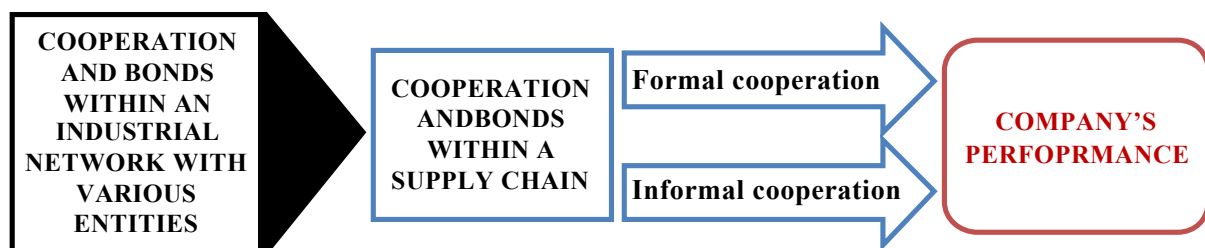
Source: Own work based upon H. Håkansson, J. Johanson (1988), *Formal and Informal Cooperation Strategies in International Industrial Networks*, in F.J. Contractor, P. Lorange (eds.), *Cooperative Strategies in International Business*, Lexington, Mass. and Toronto: Heath, Lexington, p. 375-376.

Despite differences in the nature of formal and informal cooperation, both ways can have a positive impact on firms in the supply chain and, in effect, on companies' performance. Analysis carried out on this subject to-date is insufficient. Research regarding the effects of cooperation concentrate on the isolated effect on firms (e.g. positive impact of cooperation on the learning process, benefits from a logistics perspective, product development etc.) There is, however, a lack of comprehensive research relating to the effects of both formal and informal cooperation within supply chains on companies' performance.

CONCEPTUAL FRAMEWORK

A conceptual research framework was developed based upon the different aspects of companies' relations and cooperation previously discussed. It embraces three elements: cooperation in industrial networks and a company's bonds with different types of entities; cooperation and bonds within supply chain including formal and informal cooperation and, finally, – a company's performance (see Figure 2).

Figure 2: Company Cooperation Within a Supply Chain - A Network Approach (Conceptual Framework).



Source: Authors' work.

A firm cooperates within industrial network with various bonds with different types of entities (suppliers, customers, subcontractors, influential entities, competitors as well as centres of knowledge creation). Vertical relationships which link a firm with other entities forming the supply chain play a significant role. The analysis below is mostly devoted to these bonds and cooperation within the supply chain.

Relationships within the supply chain are examined from the perspective of both formal and informal cooperation. It has been assumed that the following groups of firms with a different approach to cooperation within the supply chain with respect to formal and informal relationships can be identified:

- solely formal cooperation with the supply chain,
- solely informal cooperation with the supply chain,
- both formal and informal cooperation with entities in the supply chain.

It is assumed that different approaches to cooperation within the supply chain can lead to varying company performance. It is assumed therefore that a company's performance is determined both by formal and informal cooperation within the supply chain. Cooperation with entities in the supply chain is not the sole factor influencing a company's financial and non-financial performance, however, the analysis aims to indicate a certain tendency and to verify if the inclusion of informal cooperation with entities forming the supply chain alongside formal cooperation can have a positive impact on a company's performance.

This article includes elements presented as part of the conceptual framework which are accompanied by successive stages of empirical results. The empirical section is structured as follows. As part of the first stage, the proportion of firms cooperating with various types of surrounding entities (suppliers, customers, subcontractors, influential entities, competitors as well as centres of knowledge creation) was examined.

In the second stage, the analysis was narrowed down to cooperation within the supply chain and a group of firms with varying approaches to formal and informal cooperation with constituents of the supply chain were identified. Additionally, a group of firms not cooperating within a supply chain was also identified.

The third and most important stage of the analysis relates formal and informal cooperation within the supply chain to a company's performance. The measure of the company's performance covers its profits, sales volume and market share achieved in the last year compared with those of its closest competitors. The analysis of the company's performance was carried out both at an individual level with respect to all of the three above mentioned results, as well as at an aggregated level.

Finally the conclusions and implications for further research are discussed.

METHODOLOGY OF EMPIRICAL RESEARCH

Data collection

Data was obtained from an internet survey. The questionnaire was designed based upon the research project's conceptual framework, some of the author's earlier research (Fonfara, 2008) and numerous interviews with company representatives. The purpose of the interviews was a preliminary verification of the scope of the questionnaire content, the degree to which the content was understood and the way in which it was interpreted. In most of the questions a Likert scale was used.

The survey time frame covered a period from September to November 2010. The address list was prepared on the basis of a national data base by the company Kompas

Poland. The dataset included companies representing all industries from all over Poland. The sample was selected randomly, which enabled the possibility of making the generalizations on the whole population. Out of 234 answers, 41 were incomplete. The paper presents the data concerning 193 companies based in Poland.

Sample characteristics

Respondent characteristics are presented in Tables 2, 3 and 4.

Table 2: Respondent Characteristics by Company Size.

COMPANY SIZE (no. of employees)	Number	%
below 10	63	32.6%
10-49	59	30.6%
50-249	55	28.5%
over 249	16	8.3%
Total	193	100.0%

Table 3: Respondent characteristics by form of ownership.

FORM OF OWNERSHIP	Number	%
Private company – owned by domestic entities	146	75.6%
Private company – owned by foreign entities	14	7.3%
Private company – owned by domestic and foreign entities	9	4.7%
State-owned company	23	11.9%
Total	192	99.5%

Table 4: Respondent characteristics by industry.

INDUSTRY	Number	%
Manufacturing	65	33.7%
Construction	23	11.9%
Services	52	26.9%
Retail trade	10	5.2%
Wholesale trade	15	7.8%
Other	27	14.0%
Total	192	99.5%

Over 90% of the research sample was made up of micro, small and medium-size enterprises (according to the criterion of 249 employees). The remaining part (less than 10%) are large and very large enterprises. Private entities definitely dominate (almost 90% of the

sample). The size and ownership structure of the researched companies is consistent with the structure of the entire Polish economy that is mainly made up of small and medium-size enterprises. It is also significant that for such companies one way of gaining competitiveness and improved performance (also within the supply chain) may be by seeking synergy effects arising from cooperation and network relationships.

Most of the analysed firms (63.7%) had a foreign operation and the remaining 36.3% limit their operations to the Polish market.

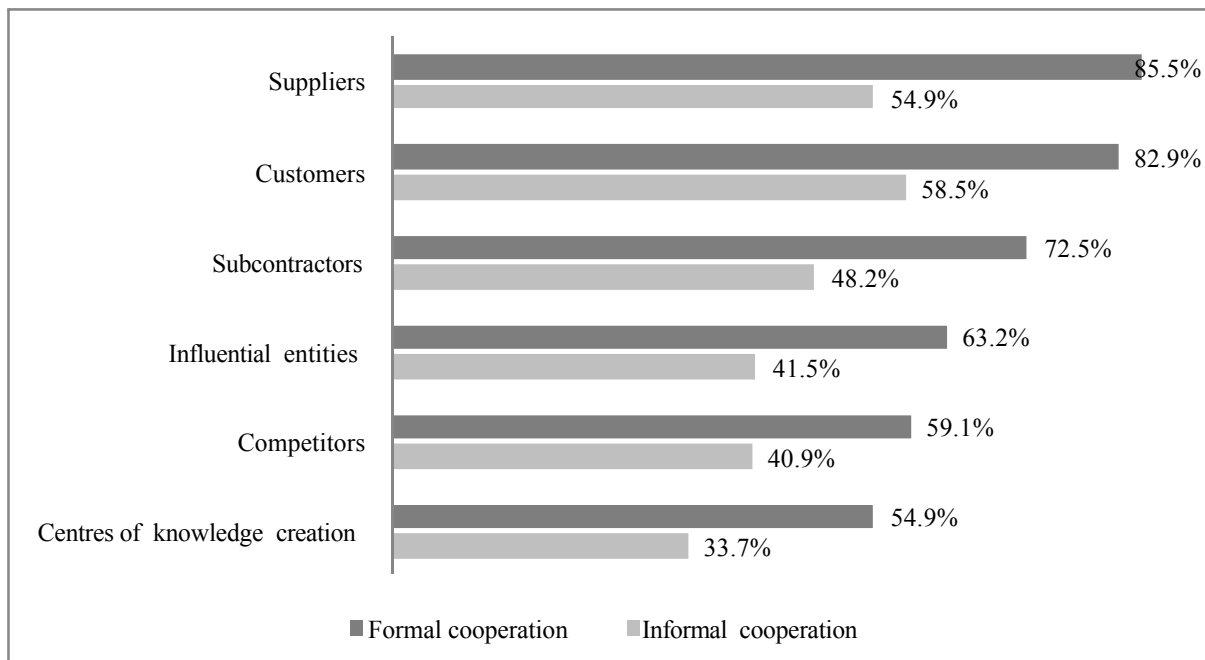
DATA ANALYSIS AND RESULTS

Cooperation Between Various Entities from the Business Environment (including customers, suppliers and subcontractors)

The first stage of the analysis included the investigation in to the proportion of firms cooperating with various entities from the surrounding business environment. Six groups of entities were identified: suppliers, customers, subcontractors, influential entities (sector organisations, administrative organs), competitors as well as centres of knowledge creation (institutions of higher education and research & development institutions).

Chart 1 presents the proportion of the studied firms which declared cooperation formal and informal cooperation with all of the indicated entities.

Chart 1: The Proportion of Firms Utilising Formal and Informal Cooperation with Selected Types of Entities.



Decidedly more firms indicated the use of formal cooperation with all of the identified groups from the surrounding business environment. The most significant proportion of firms cooperate (both formally and informally) with entities from the supply chain – suppliers,

customers and subcontractors. This suggests that close cooperation with these entities is important for the functioning of the firms.

Formal cooperation with all of the identified entities from the surrounding environment was declared by more than 50% of the studied firms (in the case of cooperation with customers and suppliers, cooperation was declared by more than 80% of firms). This suggests significant activity regarding the development of formal relationships with external entities by Polish firms.

The utilisation of informal cooperation was declared by a smaller proportion of firms. Each time more than 50% of firms indicated informal cooperation solely with customers and suppliers, whilst more firms maintain informal contacts with customers.

The presented results could have been influenced firstly by the desire to limit risk and by managers who prefer to document cooperation within a formal framework. Secondly, the results may be caused by the aversion to disclose the importance of informal cooperation due to its underestimation in business practice or desire to maintain the contacts lying behind informal cooperation a secret (see: Lipson 1991, p. 6-7).

Segregation into Groups of Entities With Varying Approaches to Formal and Informal Cooperation With Supply Chain Participants

The process of cooperation within the supply chain requires consideration of the existing feedbacks and complex relations within the supply chain with both customers and suppliers and/or subcontractors. Therefore, it was necessary to investigate the researched relationships at the general consolidated level of the whole supply chain.

The next stage of the analysis deals with the identification of company groups with varying approaches to formal and informal cooperation, holistically throughout the whole supply chain. The split was carried out based upon the analysis of responses pertaining to cooperation between various entities. Three types of entity were taken in to account: customers, suppliers and subcontractors. In each case both formal and informal cooperation were looked at. In order to be classified within the formal (informal) supply chain cooperation group, entities had to demonstrate formal (informal) cooperation with at least two entities. One of these had to be customers, otherwise cooperation would only be demonstrated to exist between one very similar supply chain link.

Based on this, respondents were classified in to the following four groups:

- no cooperation within the supply chain,
- informal cooperation within the supply chain,
- formal cooperation within the supply chain,
- both formal and informal cooperation within the supply chain.

The six variables describing the particular characteristics of the identified groups of companies were subjected to a reliability analysis. The Cronbach coefficient is statistically acceptable, amounting to 0.75 (exceeding the conventional level of 0.7), thus confirming that the suggested scale is a reliable measuring tool.

The research confirms the presence of different attitudes towards supply chain cooperation among the proposed groups of companies.

The respective proportions of these groups is presented in Table 5.

Table 5: Groups of Companies with Varying Approaches to Cooperation within the Supply Chain and their Respective Proportions Relative to the Sample

Company Group	Number	%
Lack of Cooperation	29	15.0%
Solely Informal Cooperation	10	5.2%
Solely Formal Cooperation	65	33.7%
Both Formal and Informal Cooperation	89	46.1%

Among the Polish firms analysed, companies with a comprehensive approach to cooperation within the supply chain (formal and informal cooperation) clearly dominate. Such a large result suggests advance cooperation going beyond formal boundaries. This is testimony to the fact that a relatively large number of firms appreciate the need for a comprehensive approach to cooperation with entities forming their supply chain as well as building contacts and relationships with them.

The second largest group are those firms which emphasise solely the formal aspect of cooperation. It can be said that these are entities with a traditional approach to cooperation within the supply chain. A formal contract exists to ensure that agreements are fulfilled and in order to minimise the firm's risk.

The final two groups are more sparsely populated. These are, first of all, firms choosing to cooperate only informally within the supply chain. Such a small result should not come as a surprise. Informal relationships are often treated as additional or complementary with respect to the formal aspect of cooperation.

Conversely, the category of firms described as non-cooperative within the supply chain may not require or have any cooperative links with their counterparts, for example, as a result of their operational profile. As a result, in their case, this group of firms was excluded from the remainder of the analysis pertaining to company performance.

The Financial and Non-Financial Performance of Companies Characterised by a Varying Approach to Formal and In-Formal Cooperation Within the Supply Chain

Taking in to account the various groups of firms with different approaches to cooperation within the supply chain, an attempt to verify if these approaches has any bearing on the financial and non-financial performance of these companies can be made.

The analysis of the company's financial and non-financial performance covered the profits, sales volume and market share achieved by the respondents in the last year compared with those of the closest competitors. Due to the difficulties in comparing firms with different characteristics (taking into account elements such as size, ownership and sector among others) a subjective assessment method of comparison against competitors was adopted, based upon the relative assessment of the companies themselves. The application of such an evaluation method facilitates the comparison of firms, with different characteristics, in terms of their overall performance.

The 5-point Likert scale was used for the assessment. The respondents, by answering the questions posed in the questionnaire relating to three aspects of their performance (total income, total sales, market share) were to provide their own self-assessment in relation to

their closest competitors (1 – considerably worse, 2 – worse, 3 – almost the same, 4 – better, 5 – considerably better). A score in excess of 3.0 means that the firm deemed its performance to be better than that of its competitors. The higher the average score (and the closer it is to 5.0) the better the firm’s perceived performance with respect to its competitors. It should be noted, that due to the applied scale, the relative differences of the rating may seemingly appear to be rather small. It is, however, largely caused by a small dispersion of the minimum and maximum rating (1 – 5).

Cooperation with entities in the supply chain is not the only factor influencing a company’s financial and non-financial performance. However, the data presented is intended to indicate a certain tendency and to verify if the inclusion of informal cooperation alongside formal cooperation can have a positive impact on a company’s performance.

Table 6 presents the results of the questionnaires where companies’ rated their performance against that of their competitors. It shows the average results of the three aspects of firms’ performance (financial and non-financial) split up as per the varying approaches to cooperation within the supply chain.

Table 6: The Average Results Of The Three Aspects Of Firms’ Performance (Financial And Non-Financial) Split Up As Per The Varying Approaches To Cooperation Within The Supply Chain.

Company Group	Total Income	Total Sales	Market Share
Solely Informal Cooperation (N=10)	3.44 n=9	3.00 n=8	2.83 n=6
Solely Formal Cooperation (N=65)	2.91 n=43	2.98 n=45	2.87 n=39
Both Formal and Informal Cooperation (N=89)	2.94 n=64	3.06 n=67	3.02 n=61

N – The number of firms in a given group

n – The number of responses regarding the specific result

Scale of results from 1-5 (1 – considerably worse, 2 – worse, 3 – almost the same, 4 – better, 5 – considerably better)

The varying number of responses (n) to the questions posed regarding the specific performance effects deserves some attention. This may raise questions regarding any deductions, however, the aim of this article is to provide an indication of tendencies among firms with varying approaches to cooperation within the supply chain and not to provide absolute figures. On the other hand, due to the very similar number of responses in each case, it would seem that the most accurate comparison can be carried out among the firms cooperating both formally and informally within their supply chains as well as the group limiting their cooperation to only the formal type.

There are significant differences in assessment in terms of the “Total Income” category. The average value of this performance effect, in relation to other competitors, assigned by firms cooperating only informally (3,44) is significantly different to the assessment made by firms in the remaining two groups (values close to 3,0 where a value of 3,0 implies “almost the same”). It seems, therefore, that firms which emphasise close, informal relationships with entities in the supply chain can apply a wider margin as a result

and thereby achieve greater profits. Alongside such an interpretation, the differences in group sizes should be taken in to account.

In terms of “Total Sales” the average value is the highest for the group of firms placing emphasis on both the formal and informal aspects of cooperation within the supply chain. This fact could be the result of a comprehensive approach to cooperation. Informal contacts serve to support the formal aspect which, from the customer perspective, facilitates a higher quality of service, the maintenance of and, indeed, an increase in order volumes, as well as the winning of new customers. In turn, informal contacts with suppliers facilitate (among others) a shorter delivery time as well as price discounts. This would thereby translate into greater bargaining power with respect to customers.

Also, in the case of “Market Share” (linked to total sales) the highest results were achieved by the group of firms cooperating both formally and informally within the supply chain. Moreover the difference, in light of the presented results, is relatively large. Furthermore, the “Market Share” result exceeds a value of 3 for only this group of firms which means that they perform “better” than their competitors.

An Aggregated Measure of Performance For Companies Characterised by a Varying Approach to Formal and Informal Cooperation within the Supply Chain

It is crucial for the research to relate complex, aggregated companies’ financial and non-financial performance to the identified groups of companies with different attitudes towards cooperation within supply chain. The aggregated measure of the companies’ performance altogether covers the profits, sales volume and market share achieved by the respondents in the last year compared with those of competitors. In terms of aggregated performance, the respondents’ companies were divided into three groups: worse than the competition – WTC (the group consisted of companies whose average aggregate performance was 1-2.7 on the Likert scale), the same as the competition – STC (2.71-3.3 on the Likert scale), and better than the competition – BTC (3.31-5 on the Likert scale). The adopted analysis method was based on previous research (Fonfara, 2008).

The three variables describing the particular characteristics of the identified groups of companies were subjected to a reliability analysis. The Cronbach coefficient is statistically acceptable, amounting to 0.88 (exceeding the conventional level of 0.7), thus confirming that the suggested scale is a reliable measuring tool.

The respective proportions of WTC, STC and BTC split by the approach to cooperation within the supply chain is presented in Table 7.

Table 7: The Respective Proportions of WTC, STC and BTC Split by the Approach to Formal and Informal Cooperation within the Supply Chain.

Company Group	Number of all firms of a given type	Number of firms of a given type which responded to questions regarding performance*	PERFORMANCE		
			WTC**	STC**	BTC**
Solely Informal Cooperation	10 5.2%	7 70.0%	4 57.1%	2 28.6%	1 14.3%
Solely Formal Cooperation	65 33.7%	43 66.2%	20 46.5%	8 18.6%	15 34.9%
Both Formal and Informal Cooperation	89 46.1%	63 70.8%	25 39.7%	11 17.5%	27 43.9%
Total	164* 85.0%	113 58.5%	49 43.4%	21 18.6%	43 38.1%

* The number of respondents who answered all the questions covering variables which describe a particular group.

** WTC – worse than the competition (average aggregate variable describing performance 1-2.70)
 STC – the same as the competition (average aggregate variable describing performance 2.71-3.30)
 BTC – better than the competition (average aggregate variable describing performance 3.31-5.0)

The group of companies referred to as emphasising solely informal cooperation within the supply chain is dominated by companies (57%) whose performance is worse than the competition's. At the same time, only 14% of these firms ascribed themselves as being better than the competition. It could be tentatively assumed (owing to a small number of answers) that this group does not cope as well within the market place as the competition. This group clearly rated its aggregated performance the worst of all three company groups.

Firms which limit their cooperation with entities in the supply chain to only the formal kind note a more than two-fold greater (with respect to firms concentrating solely on informal cooperation) share in the BTC group (35%), whilst still maintaining relatively large and dominant share in WTC (47%)

Firms with a comprehensive approach to cooperation within the supply chain (namely formal and informal) performed better than the remaining two groups. In this case, the share of BTC (44%) surpassed then share of WTC (40%). The BTC share is also the highest of the three analysed groups whilst the WTC share is the smallest.

It is interesting that generally all of the analysed firms rated their performance as relatively low in comparison to their closest competitors. In all of the three groups, the sum of the scores from WTC and STC (namely firms worse or the same as their competitors) surpassed 50% each time.

CONCLUSIONS AND FURTHER RESEARCH

The analysis indicates that of all the firms cooperating within the supply chain, firms utilising both formal and informal cooperation clearly dominate. At the same time, this is a strategy which allows for achieving the best company performance.

It appears that informal cooperation plays a very important supporting role for formal cooperation. Firms utilising a solely traditional, formalised approach to business contacts within the supply chain achieved the worse results. A much better strategy is therefore to widen the spectrum of cooperation by building close relationships with external entities.

It is important to remember that cooperation with entities within the supply chain is not the only factor influencing a company's financial and non-financial performance. However, the data presented above confirms that the inclusion of informal cooperation alongside formal cooperation can have a positive impact on the results achieved by companies. However, due to the presence of certain limitations in the analysis, caused above all by an insufficient number of responses, it would be appropriate to carry out further studies on this subject.

The analysis is not free of certain limitations which simultaneously suggest further areas for study. First of all, the analysis included only three groups of entities forming the supply chain. Meanwhile, it is important to go beyond the boundaries of such a short supply chain and to investigate the whole supply process required for producing one item, for example, modular production (where often are much longer).

Secondly, the industry aspect requires further analysis. Some important questions come to light. Does formal or informal cooperation dominate any industry? Is informal cooperation within the supply chain more important in some industries? Due to the limited sample size, at this stage it is not possible to answer these questions.

Finally, due to the applied survey approach more detailed analysis of particular formal and informal relations was impossible to conduct. It would be important to know which characteristics of both formal and informal relations predispose to better market performance. It would be worthwhile carrying out an in-depth case study of one selected supply chain and to learn what motives lie at the foundation of formal and informal cooperation in a more detailed way.

The two main contributions of the paper are as follows. The first is the inclusion of informal cooperation into supply chain management analysis. The second is relating cooperation within the supply chain, to a company's performance. The conclusions may be of practical importance. By presenting the positive relations between cooperation and performance, companies may determine the sources which may increase their advantage over competitors.

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