Cluster Analysis of Retailers' Benefits from Their Cooperation with Manufacturers: Business Models Perspective

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Abstract—A number of studies discussed the topic of benefits of retailers-manufacturers cooperation and coopetition. However, there are only few publications focused on the benefits of cooperation and coopetition between retailers and their suppliers of durable consumer goods; especially in the context of business model of cooperating partners. This paper aims to provide a clustering approach to segment retailers selling consumer durables according to the benefits they obtain from their cooperation with key manufacturers and differentiate the said retailers' in term of the business models of cooperating partners. For the purpose of the study, a survey (with a CATI method) collected data on 603 consumer durables retailers present on the Polish market. Retailers are clustered both, with hierarchical and non-hierarchical methods. Five distinctive groups of consumer durables' retailers are (based on the studied benefits) identified using the two-stage clustering approach. The clusters are then characterized with a set of exogenous variables, key of which are business models employed by the retailer and its partnering key manufacturer. The paper finds that the a combination of a medium sized retailer classified as an Integrator with a chiefly domestic capital and a manufacturer categorized as a Market Player will yield the highest benefits. On the other side of the spectrum is medium sized Distributor retailer with solely domestic capital – in this case, the business model of the cooperating manufactrer appears to be irreleveant. This paper is the one of the first empirical study using cluster analysis on primary data that defines the types of cooperation between consumer durables' retailers and manufacturers – their key suppliers. The analysis integrates a perspective of both retailers' and manufacturers' business models and matches them with individual and joint benefits.

Keywords—Business model, cooperation, cluster analysis, retailer-manufacturer relationships.

I. INTRODUCTION

IN recent years, a number of studies on the topic of the retailers – suppliers relationships were carried out, majority of which took a retailer's point of view [1]-[3]. Researchers are focused on a perspective of both, the supply chain management [4] and relationship marketing [5]. Scholars use various terms to describe those relations, indicate their different types and present various definitions thereof. Considering the character (competition vs. cooperation), [6]

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distinguish the following types of retailer – manufacturer relations: cooperation, competition, coopetition, and coexistence. According to this typology, retailer's relationships with a manufacturer who is its supplier can be of two types: cooperation [7] or coopetition [8], [9]. Cooperation between retailer and manufacturer is characterised by strong formal or informal relationships, high frequency of relations, high level of trust between them, interdependence [6] and simultaneity of the joint and individual partners' objectives [10]. In turn, coopetition between retailer and supplier comprises simultaneous horizontal cooperative relations as well as horizontal and vertical competitive relations [11]. Coopetition is characterised by a high frequency of formal and informal relationships, and a medium level of trust between the partners [6], [12]. According to [8], coopetition means that retailer and manufacturer work together to achieve joint benefits, yet at the same time, they compete to obtain individual benefits. Coopetition between retailer and manufacturer/supplier takes place when retailer simultaneously sells both retailer's brand/brands produced by the cooperating manufacturer and also this manufacturer's brand/brands, or when a manufacturer sells its products simultaneously both in the retailers' stores and own stores (e.g. manufacturer's on-line store) [13].

Cooperation and coopetition between retailers and manufacturers enable cooperating enterprises to achieve individual and joint benefits and to improve the operational and financial performance [14]. However, the topic of joint and individual benefits for retailers from their cooperation or coopetition with manufacturers [8] is not sufficiently explored. Moreover, many authors stipulate that, due to the consolidation of retailers, growing share of products labeled private brands and growing profitability of private labels, relationships between retailers and manufacturers and benefits of cooperation and coopetition between them need to be considered from the perspective of the business models concept [15].

Studies on the retailers-manufacturers cooperation and coopetition are focused primarily on the FMCG market [11], [16] and there are just a few papers that concern the benefits of cooperation and coopetition between retailers and manufacturers-suppliers of consumer durables [17], [18].

The aim of this paper is to provide a clustering approach to segment retailers selling consumer durables with the use of benefits that they obtain form their cooperation with key manufacturers and organize retailers' in terms of their and of

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business models of cooperating partners. This study is based on a survey of 603 retailers operating in Poland and representing various categories of consumer durables. The data were collected using the CATI method.

The article is structured as follows. First, the topic of benefits retailers obtain from cooperation with manufacturers is placed within the literature on the topic of relationships between the two parties. Second, is a discussion on retailer and manufacturer business models. Third, an empirical analysis is carried out, which leads to conclusions on the studied topic.

II. RETAILERS' BENEFITS FROM THE COOPERATION WITH MANUFACTURER

According to [19], the retailer's cooperation with their suppliers can contribute to the improvement of operational performance, integration-based improvements, capability-based improvements and better financial performance. From the perspective of the resource-based theory, retailer's cooperation with manufacturer enables the creation of relation-specific resources thanks to the acquisition of complementary assets from the cooperating partner and, as a result, it allows to achieve the competitive advantages [20]. Retailers' cooperation with manufacturers helps to format or maintain the competitive advantage because it contributes to the improvement of the level of customer service [21], level of quality [22], delivery and logistics service performance [23] as well as enables to reduce risk through sharing it with a partner [24]. It also allows to extend the product portfolio [25]. According to the transaction cost view, cooperation allows to establish the retailer's competitive advantage by lowering transaction costs [21], [22]. It enables the creation of relationship-specific investments, information sharing and involvement of manufacturers in value-added activities [26]. Cooperation and coopetition between a retailer and a manufacturer can contribute to achieving both, individual and joint/shared benefits/outcomes [27]-[29]. Joint benefits from the coopetition that can be achieved by both the retailer and supplier include better financial results due to an increase in sale as a result of, e.g. joint marketing activities [30], and an increase in customers' loyalty as a result of a joint launch of new products or brands [31]. Coopetition aids to create the competitive advantages that cooperating partners would not reach alone [31]-[34]. Scholars underline that cooperative, competitive and synergy (simultaneous emphasis on cooperation and competition) dimensions of a coopetition between a retailer and a supplier have an impact on both joint and individual benefits in a form of the procurement flexibility improvement, understood as the degree to which a retailer can maintain and use an extended group of suppliers as partners in the procurement [8], [35]. To achieve individual or joint benefits, a retailer and its supplier need to develop an appropriate level of mutual trust, share information of crucial importance [36], make joint decisions and in some cases integrate supply chain processes.

According to the studies on the vertical relationships in the supply chain, cooperation leads to better outcomes than relationships oriented toward rivalry [37]. The stronger the cooperative dimension of the retailer-supplier relationship, the greater the joint benefits achieved by the parties [8]. In turn, stronger competitive dimension of these relationships does not influence the changes in the joint benefits [8]. The benefits from the retailer-manufacturer cooperation are also determined by the level of dependence [30], trust between partners [38] and formality of cooperation [39].

III. BUSINESS MODELS CONTEXT OF RETAILERS' COOPERATION AND COOPETITION WITH MANUFACTURERS

Since the 1990's the concept of business models has been elaborated on in many publications. Reference [40] proves a diversity of approaches to this concept, yet also certain common elements. Scholars define a business model, among others, as: (1) a manner, in which an organization creates a value proposition for customers [41]-[43], (2) a manner, in which an organization together with its stakeholders establishes a value for each involved party [44], (3) a way in which an organization obtains revenues/income [45]-[47] or profits [48], (4) an architecture of organization or a configuration of its competences [45], (5) a business logics of a business [43], (6) an organization's strategy [49] and (7) a conceptual instrument, business logic [43]. Based on the literature review, [50] conclude that a business model is a logic underlying company's business activities in a given business unit and it includes a value proposition addressed to the target groups along with a stipulation of basic resources, processes as well as external relations of this company used for establishing, offering and delivering value and ensuring firm competitiveness.

In recent years, the business models of both, retailers and manufacturers have been changed [13] causing the traditional boundaries between them disappear. The evolution of the retailers and manufacturers role in the supply chain is related to a growing bargaining power of retailers. In the last decades, due to the concentration processes in retail trade, retailers' bargaining power has strengthened. In many European countries, retail trade has been dominated by 3-4 retail networks [51]-[54]). Until the 1970s, manufacturers' brands decidedly dominated [55], [56]. Nevertheless, in the 1970s retailers started introducing private labels and sales of store brands had significantly increased [57], [58]. An increase in retailers' bargaining power has also been triggered by the advances in information technology and an easier access of retailers to information about customers [59], increased use of multichannel distribution [60] and plural governance [61]. For years, the retailers and manufacturers had been classified into separate strategic groups [62]. Nonetheless, due to the aforementioned changes, the approach of retailers and manufacturers to the competition between them has changed [63].

Reference [64] distinguishes the following types of business models: Traditionalist, Market Player, Contractor, Distributor and Integrator (Table I [13], [64]). According to [13], manufacturers, since production constitutes an element of their internal value chain and is carried out by this company,

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implement Traditionalist, Market Player or Contractor business models. Meanwhile retailers, since production does not constitute an element of their internal value chain, use following business models: Distributor and Integrator.

TABLE I
CHARACTERISTICS OF RETAILERS' AND MANUFACTURERS' BUSINESS MODELS

	Business Model	Characteristics
Retailers; business models	Distributors	• the value proposition for customers is distinguished by a favourable relation of functional and emotional benefits of products to their costs, • market knowledge (about suppliers and customers) constitute a unique resource/competency, • the internal supply chain is short and focused on the sales function, • trade intermediary is a source of the revenue.
	Integrators	• the value proposition for customers is distinguished by favourable functional features of products, strong brands, patents, etc., • internal supply chain is focused on R&D, designing, marketing, sales and after-sales services, while manufacturing is outsourced, • partner relationships are created with members of a supply chain, • sources of revenue are: sales of its own brand-name products and offering its own unique know-how and technology by means of franchising and licensing.
Manufacturers' business models	Traditionalists	• the value proposition for customers is distinguished by functional benefits of products and the relationship of these benefits to costs, • lack of unique resources, • passive role in the supply chain, • weak bargaining power in relationships with partners in the supply chain, • relatively long internal supply chain: R&D, production, marketing, sales and after-sales services, • sales of manufactured products constitute sources of revenue.
	Market Players	• the value proposition for customers: functional or/and emotional benefits of products/brands and relationships with other members of the value chain, • unique resources: advanced technologies, strong brand, patents, unique design or recipes, and managerial skills, • relatively long internal supply chain: R&D, production, marketing, sales and after-sales services, • partner relationships in the supply chain, • sources of the revenue are: sales of manufactured products, supplemented by income from licensing technology, brand names and franchising.
	Contractors	• the value proposition for customers: functional benefits of products, • unique resources: production facility and equipment, • internal supply chain is focused on the production or services for third parties, • passive role in the supply chain, • sources of the revenue: sales of manufactured products or services.

Given the highlighted business models, we can conclude that cooperating with each other retailer and manufacturer can represent various configurations of business models: Distributor-Traditionalist, Distributor-Market Player, Distributor–Contractor, or Integrator-Traditionalist, Integrator-Market Player, Integrator–Contractor. Moreover, both, manufacturers and retailers can at the same time implement more than a single business model in a given business unit [13]. The business model of the cooperating manufacturer can determine what complementary resources can be made available to the retailer and the potential of customer value creation or co-creation. Furthermore, according to the definition [64], the business models of both retailer and its partner determine in what processes in the value chain they cooperate: in R&D, production, logistics operations or marketing including joint promotional activities, sales or in after-sales services [65]. However, the benefits for the retailer from the cooperation/coopetition with the manufacturer in terms of the configuration of the retailers' and manufacturers' business models have not been studied yet. Authors are focused mainly on the retailers' benefits from the cooperation with manufacturers in the production of private labels. According to the characteristics of business models presented by [64], cooperation between retailers and manufacturers in the manufacturing of private labels should be more common among retailers using Integrator business model and manufacturers implementing a Contractor business model as

its partners, but sometimes the cooperation in this area can be undertaken also by manufacturers representing the Market Player (e.g. in the case of co-branding) or the Traditionalist business models. Scholars indicate a number of individual benefits for retailers from their cooperation with manufacturers in private labels' production such as: an improvement of the retailer's image [66]-[68], higher customers' loyalty towards retailer's stores and brands [69]-[71], an improvement of the retailer's profitability [72], [73], an increased profitability of a particular category of products [74], [75], an increase in the retailer's market share [76], [77] and an improvement of the retailer's competitiveness [78]. On the other hand, retailers tend to collaborate in planning and satisfying customers' needs and category management or in co-branding with Market Players who are owners of strong national brands [79] then with Traditionalists or Contractors. The model of retailer' cooperation in joint promotional activities depends inter alia on the manufacturers' brands equity. Studies confirm that the retailers' cooperation with suppliers in planning and satisfying customers' needs improves the supply chain efficiency, and customers' satisfaction [80]. Category management leads to increased sales, profitability, the effectiveness and efficiency of promotional activities as well as better use of the sales area [81]. The retailer's cooperation with manufacturers in the promotional activities in a form of manufacturers' promotional support is aimed at lowering costs by sharing them with

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partner [82], [83]. Alliances between private labels and national brands can not only strengthen the image of store brands, but also allow to extend the portfolio of products offered by the retailer [84], [85]. Ingredient co-branding in a form of an alliance of a retailer's brand and national ingredient brand, can have a positive impact on the image of retailer's brand due to a higher perceived quality of the national brand [86].

IV. Methods of Data Collection and Statistical Analysis

To achieve the set-out research goal, this study makes use of data collected using the CATI method on 603 medium and large Polish retailers of durable consumer goods. The data were collected in the period of November 2015 – January 2016. In the study, the respondents (managers responsible for the relationships with suppliers) were asked a set of questions about the cooperation with their key manufacturer-supplier (as part of a multi-construct survey). In particularly, they were asked to agree-disagree (Likert scale proxy variables; 1 – fully disagree, 2 – disagree, 3 – agree nor disagree, 4 – agree, 5 – fully agree) on whether a given statement representing a particular benefit applies to their firm. This set of data serves as clustering variables – retailers are clustered both, with hierarchical and non-hierarchical methods, according to the strength of the presence of 15 benefits (individual and joint) they gain thank to their cooperation with key manufacturers. Respondents were also asked a series of questions describing their and that of their key manufacturer business models as well as some other descriptor questions. This second set of data provides a set of exogenous variables for our study.

Crucial prior to the cluster analysis is the collinearity assessment, i.e. the examination of Pearson linear correlation coefficients (r). For the study, the level of statically significance, $\alpha = 5\%$ is selected. The results show that in the vast majority of the cases the value of $r < 0.5$; in fact out of all 105 pairs (95 of which are statistically significant) only in four cases $0.5 \leq r < 0.6$ and in two cases per $0.6 \leq r < 0.7$ and $0.7 \leq r$ intervals. As a result, the lack of cross-collinearity requirement of data is considered to be met.[1]

The cluster analysis undertaken in this study has two steps: one, hierarchical clustering and two, nonhierarchical clustering (specifically, k-means). The reasoning for the two methods is as follows. First, the minus of using k-means as the first or the only method is that it requires a pre-assumption on the number of clusters. This would not be the problem if the number of observations was small (in this case n = 603) and if the cases were labeled by names, which would allow for

preemptive clustering.[2] The use of a dendrogram can help solve this issue. Second, the output of the hierarchical method (specifically, centroids) will be used as initial cluster centers for the k-means analysis. Third, the cluster centers coming from the both methods will be compared to test the stability of the clustering results – described in more detail [87] and used by [88], [89].

TABLE II
CENTROIDS FROM THE HIERARCHICAL CLUSTERING[3]

Cluster number:	1	2	3	4	5
Benefits / Number of cases per cluster:	168	172	74	179	10
Limited risk	4.83	3.65	3.84	3.98	1.60
Obtained or strengthened our cost advantages over other retailers	2.29	3.31	3.84	3.44	2.30
Increased the effectiveness of our actions	4.43	3.84	4.22	3.97	2.00
Strengthened relationships of our firm with consumers	4.68	3.97	4.18	3.85	1.70
Strengthened out auction / business position as compared with other cooperators	2.35	3.22	3.82	3.15	1.70
Strengthened the image of our stores	4.03	3.92	4.05	4.02	2.30
Created a unique offer as compared with other retailers	2.65	2.56	3.51	3.53	1.80
Increased the quality of our products and services	3.99	3.66	4.08	3.99	2.10
Increased the exposition of products in our stores	3.43	3.76	4.11	4.01	2.60
Obtained production- and / or marketing-related know-how	3.13	3.15	3.92	3.83	2.00
Increased our market share	2.60	3.21	4.08	3.26	2.10
Reached range benefits (geographical expansion, including international, new target markets, new distribution channels).	3.74	1.99	3.70	1.09	1.30
Reached along with our key manufacturer a high level of shared profits	2.10	2.60	3.77	1.93	1.80
Worked out a high level of profits with our key manufacturer	4.08	2.51	3.74	1.93	1.30
Increased common profits shared with our common manufacturer	1.99	2.26	3.43	2.92	1.30

When conducting the hierarchical cluster analysis, Ward's method is used as the clustering method with Squared Euclidean as a centroids distance measure. After the

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[1] Other include: (1) the ability of selected variables to sufficiently differentiate segments, (2) the reasonability of the relationship between sample size and number of clustering variables and (3) the data underlying the clustering variables of high quality [87]. Since the first two require the results of the cluster analysis to be verified, at this point it is only mentioned that both of the mentioned requirements are met (with 5 clusters and n = 603). The last requirement is met given that a) the asked questions are all theory-practice based, b) are free of respondent error and c) given their recentness do reflect the current market situation [87].

[2] In this sample, given the nature of the research, cases are labeled by ID numbers and respondents are kept anonymous to the researchers.

[3] In order to try to limit the number of clustering variables, a grouping procedure was initiated yielding the following aggregates: 1. Limited risk, 2. Efficiency benefits (Obtained or strengthened our cost advantages over other retailers & Increased the effectiveness of our actions), 3. Strengthened relationships of our firm with consumers, 4. Market share benefits (Strengthened our auction / business position as compared with other cooperators & Increased our market share), 5. Positioning benefits (Strengthened the image of our stores & Increased the exposition of products in our stores), 6. Created a unique offer as compared with other retailers, 7. Quality benefits (Increased the quality of our products and services & Obtained production- and / or marketing-related know-how), 8. Reached range benefits (geographical expansion, including international, new target markets, new distribution channels), 9. Profit benefits (Reached along with our key manufacturer a high level of shared profits & Worked out a high level of profits with our key manufacturer + Increased common profits shared with our common manufacturer). However, these groups proved to be poor clustering variables. When solutions of k-means have been compared with those of the hierarchical procedure for 5-, 6- and 7-cluster solutions, the difference in assignment of elements in initial and final cluster centers for each solution exceeded the 20% threshold, i.e. the results were not stable. As a result, a decision was made to use the clustering variables in their un-aggregated form.

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examination of the resulting dendrogram, a 5-cluster solution appears to be the most appropriate.

As mentioned earlier, the additional output of the hierarchical method is a set of initial centroids (Table II), which are not analyzed at this point as their validity / stability needs to be confirmed.

With the said centroids serving as initial cluster centers, the non-hierarchical clustering k-means analysis is carried out for a pre-specified number of five clusters (with the final cluster being presented in Table III). Next, ANOVA analysis is conducted to statistically determine if clustering variables' means significantly differ across at least two of the five segments.

TABLE III
CENTROIDS FROM THE NON-HIERARCHICAL K-MEANS CLUSTERING

Cluster number:	1	2	3	4	5
Benefits / Number of cases per cluster:	165	147	84	196	11
Limited risk	4.85	3.61	3.87	3.96	1.73
Obtained or strengthened our cost advantages over other retailers	2.28	3.17	3.88	3.47	2.45
Increased the effectiveness of our actions	4.42	3.78	4.25	3.99	2.09
Strengthened relationships of our firm with consumers	4.68	3.92	4.21	3.89	1.82
Strengthened out auction / business position as compared with other cooperators	2.34	3.09	3.90	3.18	1.82
Strengthened the image of our stores	4.02	3.91	4.06	4.02	2.27
Created a unique offer as compared with other retailers	2.66	2.38	3.50	3.54	1.73
Increased the quality of our products and services	4.00	3.56	4.15	3.99	2.00
Increased the exposition of products in our stores	3.41	3.78	4.00	4.03	2.45
Obtained production- and / or marketing-related know-how	3.15	2.97	3.90	3.86	1.91
Increased our market share	2.58	3.07	4.12	3.30	2.18
Reached range benefits (geographical expansion, including international, new target markets, new distribution channels).	3.79	2.07	3.45	1.12	1.36
Reached along with our key manufacturer a high level of shared profits	2.11	2.41	3.85	2.02	1.91
Worked out a high level of profits with our key manufacturer	4.07	2.41	3.75	2.02	1.55
Increased common profits shared with our common manufacturer	1.99	2.16	3.35	2.92	1.36

The final step is to confirm the stability of the obtained clusters. To do so, we calculate the differences between the results for the two methods. Given that the differences in cluster centers on average differ only by 0.33% (0.026 when differences are expressed in absolute values to avoid cancelling out) of the hierarchical value (admittedly, with the maximum of 18.88%) and that a change in cluster membership does not go beyond 20% [87], the results can be said to be stable. Given the size of the sample, results of the k-means will be analyzed in the subsequent parts.

From the results of the k-means clustering, it can be seen that the retailers can be divided into one group, which exhibits a very low level of benefits coming from relationships with their key manufacturers (cluster 5); however, this group consists only of 11 respondents. Another group (cluster 3)

with 84 members shows a relatively high level of obtained benefits (with the exception of limited risk). It is very interesting to see that retailers in clusters 1 (n = 165) and 4 (n = 196) admit to obtaining benefits opposite to one another, i.e. benefits highly enjoyed by cluster 1 members are not or only modestly enjoyed by firms from cluster 4 and vice versa. Lastly, there is cluster 2 (147) where the level of enjoyed benefits is on average or below level.

In order to establish the hierarchy of clusters in terms of the degree of enjoyed benefits, each cluster is assigned a rank from 5 to 1 (using Roman numerals), where the higher the rank the higher the degree of obtained benefits. First, clusters are ranked on individual categories. Next, the average rank is calculated for each cluster (Table IV).

TABLE IV
FINAL RANKING OF CLUSTERS

Cluster number	1	2	3	4	5
Average rank	3.33	2.67	4.47	3.33	1.13
Final rank	IV	II	V	III	I

Note: Clusters 1 and 4 have the same average rank; therefore, the order between them has been decided by an additional ordering variable, i.e. the count of highest marks; 5 for cluster 1 and 2 for cluster 4.

Therefore, with $benefits_X$ representing the degree, to which the examined benefits are obtained in cluster X, it is possible to write: $benefits_3 > benefits_1 > benefits_4 > benefits_2 > benefits_5$. At this stage, heterogeneity of retailers as a derivative of their benefits from the retailer-manufacturer cooperation is established.

Next, we want to see which of the descriptive variables may act as good differentiating factors for the cluster rank. These (exogenous to the initial clustering analysis) variables are:
1. Retailer's business model (Integrator or Distributor),
2. Key manufacturer business model (Traditionalist, Market Player or Contractor),
3. Retailer's size (expressed as a number of employees and as a number of stores),
4. Foreign capital share in a retailer's total capital,
5. Scope of retailer's operations (local – one or few voivodeships, Poland-wide or international).

For the purpose of operationalization, all variables have been transformed into dichotomous variables; where the arithmetic mean is interpreted as the share of the category coded with "1" within the sample (in this case, a cluster).

Prior to the interpretation, it is important to see if the said means statistically differ at least across two of the five clusters – this is done with another ANOVA test.[4] The first step in the ANOVA procedure is to test for the normal distribution of variables (the Kolmogorov-Smirnov test with Lilliefors significance correction is used). The results show that none of the exogenous variables is normally distributed. This could have been neglected (given a relatively large n) if the samples were of equal size [90]. It needs to be noted at this point that because the data reflect the true distribution (e.g., of business models) in the population, placing an (artificial) equal-sample

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[4] All statistical tests are evaluated at α = 5%.

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restriction could lead to incorrect results.

The next step is to see if the variation in each group is homo- or heterogeneous. The results of the Levene test point to the presence of heterogeneity in variances. This issue can be easily mended with the application of Welch[5] correction [90].

And so, the initial results of the ANOVA test show that in at least two cases the values of means for all of the used exogenous variables differ across clusters, with the exception of (1) the number of stores (p-value = 0.509) and (2) the variables describing the scope of operations (p-values for Local = 0.127, for Poland-wide = 0.104 and for International 0.477). These results are confirmed by the Welch correction. Unfortunately, robust tests of equality of means cannot be performed for the size of the firm, the international aspect of range and the presence of foreign capital due to the fact that in at least one of the clusters has 0 variance[6].

Because of the issues with the Welch correction and the fact that the exogenous variables are not normally distributed we follow [92] and the Kruskal-Wallis [93] nonparametric test for K independent samples is carried out. The results of this test confirm the findings on the topic of relevance of the exogenous variables (e.g., the statistical insignificance of those describing the range of operations of retailers), with the exception that they contradict (p-value = 0.038) the findings of F-statics from uncorrected ANOVA for the number of stores (p-value = 0.509) and the adjusted Welch statistics (p-value = 0.470). Given the issues with normality and heterogeneity of variance, a decision is made to follow the results of the Kruskal-Wallis test in terms establishing the difference in the mean number of stores across our clusters[7].

The conclusion coming from the above analysis is that clusters do statistically differ in means of the following exogenous variables:

1. Retailer's business model,
2. Each of the key manufacturer's business models across at least two of the five clusters,
3. Size of the retailer as measured by the number of employees and the number of stores,
4. Share of foreign capital.

The cluster with the highest rank of V (i.e., cluster 3) has the highest share of retailers classified as Integrators (55%, Table V), a relatively (especially compared with cluster 1) low share of large firms (13%) and the second (after the one in cluster 1) average number of stores (18.13 stores). Similarly, this cluster with the highest assigned rank has the second (again, after cluster 1) share of retailers with foreign capital (15%). As for the key partner, the business model employed chiefly is the Market Player.

Cluster 1 (rank IV) is characterized by the second highest

share of Integrators (39%), the highest share of large firms (27%), the highest average number of stores (22.03 stores) and the highest presence of retailers with foreign capital (16%). As for the business model of the cooperating manufacturer, it is chiefly the Traditionalist (49%) (followed by the Market Player with 33%).

TABLE V
CLUSTER' PROFILES FROM THE PERSPECTIVE OF STATISTICALLY SIGNIFICANT DIFFERENT ARITHMETIC MEANS OF EXOGENOUS VARIABLES

Endogenous variables / Clusters	1	2	3	4	5
Business model: Integrator	0.39	0.37	0.55	0.35	0.18
Manufacturer's business model: Traditionalist	0.49	0.39	0.18	0.51	0.36
Manufacturer's business model: Market Player	0.33	0.27	0.54	0.32	0.27
Manufacturer's business model: Contractor	0.18	0.34	0.29	0.17	0.36
Firm size: Large	0.27	0.13	0.13	0.14	0.00
No. of stores	22.03	13.27	18.13	14.14	12.36
Foreign capital share	0.16	0.06	0.15	0.14	0.00

When examining the values of the means of exogenous variables in clusters 4 (rank III) and cluster 2 (rank II), they are very similar with the exception of the share of the foreign capital (14% vs. 6%, respectively). Interestingly, the distribution of partner's business models is nearly the same in cluster 4 as in cluster 1.

Cluster 5, one with the lowest rank, i.e. a rank of I, has the lowest shares of Integrators (18%), large firms (0%), average number of stores (12.36 stores) and retailers with foreign capital (0%). The distribution of business models describing their key manufacturers is very similar to that seen in cluster 2, i.e. Market Players have the lowest share (27%). Therefore, the following conclusion can be drawn:

1. High benefits from cooperation are more likely to be obtained when a medium sized Integrator retailer with chiefly domestic capital cooperates with a Market Player manufacturer (see cluster 3). These results fall very well within the classification of retailer and manufacturer business models presented earlier in this paper.
2. If the retailer is a medium sized Distributor with chiefly domestic capital, benefits will occur if the manufacturer is classified as a Traditionalist (e.g., clusters 1 and 4, and to a lower degree cluster 2).
3. On the other side of the spectrum, the lowest benefits will be expected when a medium sized Distributor retailer with only domestic capital cooperates with (to a similar degree) any of the business models implemented by a partnering manufacturer.

Therefore, it appears that business models do play a significant role in shaping the level of benefits obtained by the retailer from its cooperation with a key manufacturer, but other exogenous variables (e.g., the size of the firm and the presence of a foreign capital) also play an important role. However, our selected exogenous variables cannot account for the type of benefits obtained, as is evident by relatively similar in terms of means of the said variables clusters 1 and 4. Firms from those clusters obtain opposite benefits.

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[5] For discussion and details see [91].

[6] This issue cannot be mended as the groups were pre-assigned with the cluster analysis in the first part of this study.

[7] Notably, the p-value for the presence of foreign capital is above the 5% level of statistical significance; however, since it has been shown to be statistically significant in prior tests and its value exceeds the established 0.05 cutoff point relatively in a small manner (it equals 0.061), the hypothesis that there is a statistically significant difference of means of this variable across at least two studied clusters is accepted.

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V. Conclusions

Given the relevance of cooperation and coopetition between retailers and manufacturers, a thorough understanding of their major characteristics and the cooperation benefits is crucial. In this regard, our paper contributes a comprehensive overview of retailers' cooperation/coopetition benefits in the context of the business models of cooperating firms.

The study provides detailed observations of retailers in five clusters and their benefits from cooperation/coopetition with their key manufacturers. Cluster analysis shows that the said benefits are not same across all groups. Incorporating business models of the retailer and the manufacturer (as well as other exogenous variables) it is found that business models are significant determinants of the studied benefits, but they need to be combined with such variables as the size of the retailer and the presence of foreign capital within the retailer. More specifically, it is the Integrator retailers with some foreign capital cooperating with Market Player manufacturers who will gain the highest benefits from this cooperation. These conclusions fit the classification of retailer and manufacturer business models (presented early in this paper) very well.

Findings of this study also have practical implications. The results contribute to the transparency of cooperation and coopetition between retailers and manufacturers – their key suppliers. The results help managers of retailing companies to better position their firms in the cooperation landscape. Furthermore, the analysis offers managers a conceptual classification of cooperation between retailers and manufacturers of consumer durables in terms of retailers benefits and both, retailer's and manufacturer's business models.

One limitation of our study is that (given our conclusions) there are other exogenous variables that mix with the key explanatory variables (i.e., business models) than those taken under consideration in our study. However, this conclusion can only be reached ex post; therefore, accounting for it ex ante is impossible. Another limitation is derived from the design of the study and comes in a form of subjectivism of answers provided by the respondents. Because the measured constructs are not of quantitative nature, but rather qualitative, this source of possible error is kept in mind, but cannot be eliminated.

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