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Using word of mouth data from social media to identify asymmetric competition in food retailing

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ABSTRACT

Competition between food retailers is often assumed to be asymmetrical, whereby one retailer may compete with another retailer but not vice versa. Little is known about how (a)symmetric competition among retailers currently is. One way to investigate this is to use word of mouth data. A mixed methods analysis of customer comments on social media confirms the existence of asymmetric competition among German food retailers, mainly between supermarkets and discounters. Overall, consumers compare competitors frequently on the basis of their assortments, the price-performance ratio as well as quality and freshness. The results have implications for competition policy and strategic management.

1. Introduction

Competition is fundamental to the functioning of markets. This also applies to food markets, where retailers are becoming increasingly concentrated (Richards et al., 2018). One focus of competitive investigations is on so-called asymmetric competition (Amit and Schoemaker, 1993; Blattberg and Wisniewski, 1989; Carpenter et al., 1988; Chen, 1996; DeSarbo et al., 2006). The term "asymmetric competition" describes the extent to which companies are unevenly in competition with each other. For example, the customers of a supermarket may see a nearby discounter as a shopping alternative; while the customers of the discounter may not consider the supermarket as an alternative for their food purchases. While the existing body of research suggests that asymmetric competition exists especially between store formats (Cleeren et al., 2010; González-Benito et al., 2005), strategies such as the listing of branded products by discounters are a sign that the competition between and within formats has changed in recent times (Cardinali and Bellini, 2014; German Retail Blog, 2012). Measuring and understanding these competitive interactions is fundamental for retail firms who want to create competitive advantage and public administrators who regulate competition (Dobson et al., 2003; González-Benito et al., 2005; Hossain et al., 2020).

The development of social media puts the consumers' perspective on competition in the foreground and provides new insights into consumer behavior (e.g., Dwivedi et al., 2020; Jansen et al., 2009; Ladhari et al., 2019; Vidal et al., 2015). Customer reviews, i.e. electronic word of mouth, are not only a measure of customer loyalty (Shaikh et al., 2018), but also provide important information about possible alternatives to preferred products or companies (Aggarwal et al., 2009; Do Espírito Santo Serra and Soto-Sanfiel, 2014). Competition has been found to moderate the relationship between customer values and customer loyalty (Chen, 2015). There is also a growing body of research that emphasizes the usefulness of electronic word of mouth for the study of market structures (Lee and Bradlow, 2011; Netzer et al., 2012; Reckmann, 2015). However, no research has been published that explores the use of electronic word of mouth to analyze asymmetric competition among food retailers, taking into account the specific nature of competition in the sector (e.g., Toprowski and Lademann, 2014). This study attempts to fill this gap and to examine asymmetric competition in the food retail sector by using electronic word of mouth data.

There are several important areas where this study makes an original contribution to. First, this is among the first studies to link research on food-related social media data (e.g., Ladhari et al., 2019; Vidal et al., 2015) and word-of-mouth (e.g., Konuk, 2018; Shaikh et al., 2018) with literature on intra- and interformat competition (e.g., Cleeren et al., 2010; González-Benito et al., 2005). By interpreting asymmetric competition in the social media context as reference-dependent comparisons between two competitors in social media comments, we provide new insights into both consumer behavior and retail competition. Secondly, we contribute to the literature on competition in the food

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retail sector (e.g., Chen, 2015; Hossain et al., 2020) by investigating between which retail formats and in which customer values the (perceived) asymmetries in the competition lie. Two research questions guide this study:

1) How can electronic word of mouth be used to investigate asymmetric competition in the food retail sector?
2) How (a)symmetric is competition within and between formats in the food retail sector?

We use the food retail trade in Germany as an example. This sector is characterized by a high degree of concentration. The four largest retail chains share over 85% of the market in terms of sales. The German Bundeskartellamt (Federal Cartel Office) therefore regularly monitors the functioning of competition in this sector (Bundeskartellamt, 2018). Data for this study were collected by searching and filtering Facebook comments. The methodological approach taken in this study is a mixed methodology based on a content analysis and a modified version of the lift value (Netzer et al., 2012). By combining considerations from the marketing literature with concepts from industrial organization, this exploratory study can improve our understanding of the competitive relationships in the food retail sector. Furthermore, the results are of interest for companies in the market. The evaluation of user-generated content can represent a cost-effective alternative to customer surveys. In addition, the results can help retailers to adapt their competitive position (Ringel and Skiera, 2016).

The remaining part of the paper proceeds as follows: The next section will describe the topics word of mouth and asymmetric competition in more detail. The section begins with empirical evidence. It will then go on to describe the theoretical background. The third section is concerned with the sample and the methodological procedure. The fourth section presents the findings of the research. The paper ends with a discussion and conclusion.

2. Background

2.1. Empirical evidence

Evidence suggests that word of mouth plays a decisive role in both consumer behavior and retailer profitability (Berger, 2014; Chevalier and Mayzlin, 2006; Pfeffer et al., 2014). Word of mouth describes the personal communication between consumers about characteristics of products or companies. It includes opinions, news, and information as well as direct recommendations and mentions. It can take place both, personally and online ("Word of Mouse" or electronic word of mouth). Many recent studies (e.g., Konuk, 2018; Shaikh et al., 2018) have shown that positive word of mouth is associated with high levels of perceived customer value and consumer satisfaction. Competition influences how consumers evaluate customer values and thus has an impact on word of mouth as an essential element of customer loyalty (Chen, 2015; Shaikh et al., 2018).

Lee and Bradlow (2011) demonstrate how online customer reviews can be used to analyze and visualize market structures. Netzer et al. (2012) also use online data to investigate market structures. Using two examples, automobiles and diabetes drugs, they find a high degree of consistency between their results and the results of traditional market structure elicitation methods. The authors note that the method has a high external and internal validity. On the basis of word of mouth, it can be examined which companies are perceived by customers as substitutes and which attributes are used to compare competitors (Lee and Bradlow, 2011).

The more similar two brands are, the more they compete. Competitive relationships are often treated as symmetrical. However, it is noted in the literature that the degree to which companies or brands compete is usually not uniform and that the symmetrical view is not sufficient (Chen, 1996). What is important is which company serves as a reference and which not. A large company (e.g., Nestlé) with a large market share may not feel threatened by small companies. Conversely, it could be worthwhile for a small company to base its marketing measures on competing with the market leader in order to gain a larger market share (Chen, 1996). From a consumer's perspective, it is equally essential, which brand acts as a reference brand and which brand he or she considers as alternatives. Translated to the example of food retailing, this means that consumers may not perceive another retailer as an alternative in the presence of asymmetric competition (González-Benito et al., 2005).

There is a relatively small body of literature that is concerned with asymmetric competition in the food retail sector. González-Benito et al. (2005) use survey data from Spanish customers to prove the existence of asymmetric competition between different store formats due to their spatial configuration. They find that competitive intensity is more severe within store formats than between store formats. Gijsbrechts et al. (2008) examine patterns in food shopping behavior (single-store vs. multi-store shopping) using panel data. They assume that consumers have asymmetric preferences for different categories of products, which means that their degree of store preference differs across categories. From their results, the authors derive implications for the positioning of individual retailers in competition. Cleeren et al. (2010) use data on market entries to draw conclusions about competitive structures and asymmetries in the German retail sector. They show that competition is intense within formats and not between formats as long as no more than two discounters are active in a region. The studies clearly indicate the existence of asymmetric competition in the food retail sector. However, it remains unclear whether these market structures continue to exist under the competitive developments described in the introduction. Two of the three studies look at asymmetries at the level of purchasing behavior. Individual aspects, such as price competition or quality competition, are not examined separately. Word of mouth data can provide additional insights in which areas asymmetric competition exists.

2.2. Theoretical background

Asymmetric competition exists where the customers of one retailer perceive the other retailer as a shopping option, whereas the opposite is not the case for the customers of the other retailer. This asymmetry is reflected in electronic word of mouth when customers of one retailer draw comparisons with another retailer, while the reverse is not the case for the customers of the other retailer. As Blattberg and Wisniewski (1989) demonstrate, comparisons between two retailers can be explained by a utility model. They assume that consumer c's utility depends on the perceived quality of a brand q^c, the brand's price p and the consumer's willingness to pay for quality θ^c. If a consumer is faced with the choice between two retailers i and k, his or her preferences for quality θ^c, the difference of perceived qualities (q^c_i-q^c_k) and the price difference (p_i-p_k) decide on the purchase. Based on these considerations, Blattberg and Wisniewski (1989) define a function of relative preferences R^c ($R^c = \theta^c\ (q^c_i\text{-}q^c_k)$). If this function takes a uniform or normal distribution, then price competition is symmetric. If the relative preference distribution is U- or J-shaped, then asymmetric competition can exist. Assuming that the perceived quality of supermarkets is higher compared to discounters and that there is a positive correlation between quality and prices, the competition between formats should be asymmetric and it should be symmetrical within the formats. However, if the qualities converge and customer values are perceived as similar, e.g., if discounters also offer branded products, then competition becomes more symmetrical. In symmetrical competition, both brands would be compared equally often in customer comments, regardless of which company serves as a reference.

Netzer et al. (2012) use the co-occurrence of brands as a measure of competition. They calculate the so-called lift as a normalized measure of the joint appearance of two brands

$$lift(A,B) = \frac{P(A,B)}{P(A)xP(B)} \quad (1)$$

with *P(A)* (*P(B)*) as the probability of occurrence of term *A* (*B*) in a given message, and *P(A,B)* as the probability that both, *A* and *B*, appear in the same message. A lift below (above) 1 suggests that two terms appear together less often (more often) than would be expected based on their separate occurrence. If products are frequently mentioned together, they are more in competition with each other than products that are rarely mentioned together (Netzer et al., 2012).

Commenting on Netzer as well as Lee and Bradlow, Reckmann (2017) argues that their studies do not include asymmetries, but assume symmetrical competition. Similar studies that allow for asymmetric competition (e.g., Ringel and Skiera, 2016) do not define which brand is used as a reference. In these studies, asymmetries result from different co-occurrences in relation to the overall naming of individual brands. To address this gap, Reckmann (2017) develops an approach that differentiates between the reference brand and its competitors. A major advantage of this additional distinction is the possibility to include reference-dependent differences in perceived qualities (see first section on theoretical background). We assume that it makes a difference whether a supermarket buyer or a discounter buyer compares a supermarket with a discounter. While Reckmann (2017) can clearly determine which brand serves as the reference brand, in our case sometimes several brands serve as a reference (e.g., two discounters). His approach is therefore not suitable for our data set. We therefore modify the lift measure by calculating two values. Once for the respective retailer as reference, once for the retailer as external company. We use the following formula

$$lift\left(A^R, B^E\right) = \frac{P\left(A^R, B^E\right)}{P\left(A^R\right)xP\left(B^E\right)}. \quad (2)$$

The indices (*R* and *E*) show that *A* serves as a reference retailer (*R*) and *B* as a comparison (*E* = external company). Therefore, two values are calculated for each pair of retailers (A^R,B^E and A^E,B^R). If the two values differ from one another, an asymmetry is present.

3. Data and method

For our analysis, data on the top 4 companies of the German food retail trade, Edeka group, Rewe group, Schwarz group, and Aldi group, were collected. As some companies operate several formats (e.g., supermarket and discounter) under different brand names, the four subcompanies with the highest turnover were selected (Edeka markets, Rewe markets, Lidl markets, and Aldi markets). While Rewe and Edeka offer full assortments, Lidl and Aldi are discounters. However, Lidl also offers branded products, and Aldi does so to an increasing extent (German Retail Blog, 2012). According to a trade magazine, Lebensmittelpraxis (2019), Edeka markets had the highest turnover in 2018 (43,651 million Euros), followed by Aldi (30,190 million Euros), Rewe markets (26,086 million Euros), and Lidl (24,750 million Euros).

The research data was drawn from Facebook. The aim was to collect comments containing the names of at least two of the four largest retailers (Aldi, Lidl, Edeka, Rewe). Therefore, we used search operators in google (e.g., "intext:edeka intext:lidl site:www.facebook.com"). The following table (Table 1) shows the names and store formats of the four retailers in social media, which were used as search terms. The data were collected between April 2019 and August 2019. They include comments made before this period.

Table 1
Store formats and names of retailers in social media.

	Aldi	Lidl	Edeka	Rewe
Store format	Discounter		Supermarket	
Name	ALDI.SUED; ALDI Nord	lidl	EDEKA	Rewe

Source: Own presentation; Aldi divides its sales area into Aldi South (Süd) and North (Nord).

The data preparation was carried out in several steps. The first phase was a review of the data. The browser search function filtered out the comments that contained the names of at least two retailers. These were noted in a table (see Table 2 for an example) stating the reference and the external company as well as the source. The reference company was defined as the company from which the customer states that she is buying or which she rates positively. Examples include statements such as "*Lidl never, ALDI ever*" (Aldi is the reference company), or "*Lidl is a junk market and EDEKA a great super-market. (…) I love the salad bar in (…)*" (Edeka is the reference company). Where several companies were compared, this was also recorded in our matrix.

With regard to Aldi, the comments rarely addressed differences between South and North, which is why the two regional subdivisions are treated as one company (see also German Retail Blog, 2012).

The inclusion criterion for the comments was that the retailers are compared based on criteria (e.g., price, quality). Subsequently, comments were deleted which, like example 1 ("*Lidl never, ALDI ever*"), did not contain any apparent justification for the preference. 143 relevant comments remained. In the content analysis, we identified the criteria that are the basis of consumers' evaluations. When viewing the comments, it becomes clear that consumers' assessment of retailers was usually based on four categories:

1. Assortment or market-specific features
2. Price-performance ratio
3. Quality and freshness
4. Appearance on Facebook

Examples for "Assortment or market-specific features" include the location of markets, friendliness of employees, but also the presence of certain goods. "Price-performance ratio" becomes visible in evaluations of prices in relation to the quality. "Quality and freshness" includes comments on the freshness or quality of goods (e.g., fruits and vegetables). The last category comprises comments on videos or pictures. The following table (Table 3) shows the number of comments by category as well as the number of mentions of retailers by category. The number of mentions is higher as in some comments more than two retailers were mentioned.

The table indicates that some categories were mentioned more frequently than others. While most comments referred to the assortment and market-specific features, 36 comments mentioned quality and freshness. Category 2 (price-performance ratio) und 4 (appearance on Facebook) were mentioned less frequently. This order was also reflected in the number of companies mentioned in the different categories.

4. Results

First of all, we show how often the different companies served as reference and comparison (external company). Table 4 shows the distribution of mentions among the four retailers.

The table illustrates that the retailers serve as a reference and as an external company with varying frequency. Lidl most often acts as a reference and external company. Rewe appears the least frequently. Aldi is mainly compared with Lidl (73% of the comparisons within Aldi as

Table 2
Example for the data preparation.

	Reference Company	External Company
"*Lidl never, ALDI ever*"	ALDI	Lidl
"*Lidl is a junk market and EDEKA a great super-market. (…) I love the salad bar in (…)*"	EDEKA	Lidl

Source: Own presentation.

Table 3
Distributions of comments and mentions by category.

	Number of comments	Number of mentions
Assortment or market-specific features	68	152
Price-performance ratio	26	59
Quality and freshness	36	81
Appearance on Facebook	13	34
Total	143	326

Source: Own presentation.

Table 4
Distribution of mentions among the retailers.

Reference company						
		Aldi	Lidl	Edeka	Rewe	Total
External company	**Aldi**	–	29	7	7	**43**
	Lidl	35	–	33	14	**82**
	Edeka	9	38	–	1	**48**
	Rewe	4	3	0	–	**7**
Total		**48**	**70**	**40**	**22**	

Source: Own presentation; If several retailers were compared simultaneously, the pairwise comparisons are included (e.g., Aldi vs. Lidl and Rewe equals Aldi vs. Lidl and Aldi vs. Rewe).

reference), while Lidl is compared with both, Aldi and Edeka (41% and 54% within Lidl as reference). Edeka is most often compared with Lidl (83%), less often with Aldi (18%). What is interesting about the data in this table is the comparison between Lidl and Rewe. While Lidl often serves as a comparison for Rewe (64%), Rewe only serves as a comparison for Lidl in three comments (4%).

Comparisons in the individual categories (not reported) show that the asymmetries are sometimes even larger than in the aggregated data. In category 1 (Assortment or market-specific features), for example, Aldi is compared with Lidl in 96% of the comments, while Lidl, in turn, is only compared with Aldi in half of the comments. While the observations in category 1 are largely consistent with the overall results, category 2 (Price-performance ratio) shows deviations. For example, Edeka serves as a comparison for Aldi in half of the comments. Lidl also often compares with Edeka. Rewe, however, is not mentioned in this category. Category 3 (Quality and freshness) largely corresponds to the overall pattern. For category 4, there are few comments. Aldi is exclusively compared with Lidl, Lidl exclusively with Aldi as an external company. Edeka and Rewe are both compared with Lidl.

The previous statements are based on absolute values. The calculation of the modified lift values serves to normalize the results. The calculation of lift values is based on probabilites. These probabilities are derived from the relative frequencies of the individuals retailers' mentions as reference and external company. Table 5 provides an overview over the calculated modified lift values (see formula above).

The lift values confirm most of the findings from Table 4. However, they also clarify that some joint mentions indicate a higher level of co-occurrence than expected. For example, Aldi as a reference and Rewe as comparison appear together more often than would be expected based on their separate occurrence. In contrast, the differences between Rewe and Lidl are diminishing.

Table 5
Modified lift values for the data set.

Reference Company					
		Aldi	Lidl	Edeka	Rewe
External Company	Aldi	–	1.4	0.6	1.1
	Lidl	1.3	–	1.4	1.1
	Edeka	0.6	1.6	–	0.1
	Rewe	1.7	0.9	0.0	–

Source: Own calculation.

The following figure (Fig. 1) illustrates the differences between the lift values of the individual retailer pairs as a measure for asymmetric competition. The thickness of the arrows reflects the calculated lift values.

The figure illustrates differences in the perception of competition from the consumer's perspective. The greatest asymmetry is between Rewe and Aldi. This means that Aldi as a reference company is relatively often compared to Rewe, while Rewe is much less frequently compared to Aldi. It also suggests that Aldi is less strongly represented in the consideration set of Rewe customers than vice versa. Other asymmetries exist between Lidl and Rewe and between Lidl and Edeka. Slight asymmetries seem to exist between Aldi and Lidl as well as Rewe and Edeka. No asymmetries can be found between Aldi and Edeka.

For the individual valuation categories, the differences between the markets are sometimes higher than in the overall comparison. Higher asymmetries exist in the perception of prices between Edeka and Lidl (23.3). A look in the comments shows that Lidl is perceived as much cheaper. A customer writes, for example, "*Nothing is better than Lidl! EDEKA is far too expensive*". Aldi and Lidl show symmetry in the price-performance category. In terms of freshness and quality, asymmetries lie between Aldi and Rewe (16.6) as well as Lidl and Rewe (4.8).

5. Discussion and conclusion

The study offers some important insights into the measurement and state of asymmetric competition in the food retail sector. The starting point of our contribution was the increasing tendency towards concentration in this sector as well as the observation that competition does not always have to be symmetrical. With the rising importance of social media, the observability of consumer perceptions of asymmetric competition increases. While some research has analyzed market structures and asymmetric competition, this is among the first studies that use word of mouth data to examine competition in the food retail sector.

The first question in this study sought to determine how electronic word of mouth can be used to investigate asymmetric competition in the food retail sector. By adapting an existing measure of competition based on the joint appearance of two brands, we explored the ways in which data from social media can be used to assess asymmetric competition in the food retail sector. Customer comments on Facebook were systematically searched, filtered, and coded. The resulting data was used to compare the retailers. With respect to the second research question, the

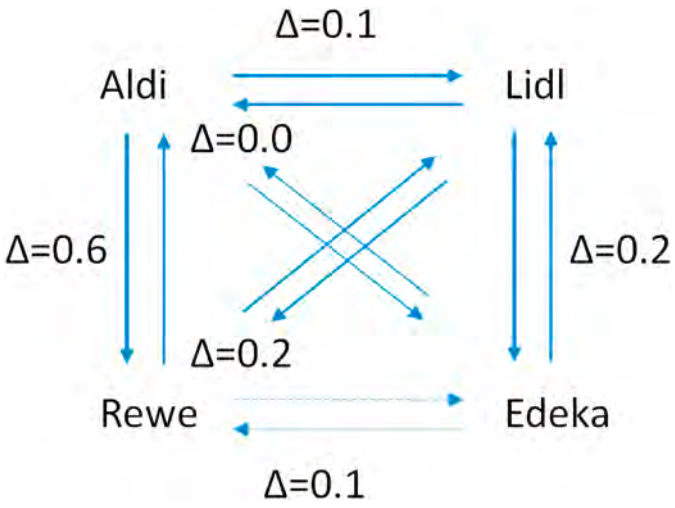

Fig. 1. Level of lifts and amount of difference between the lifts.
Source: Own presentation.

calculated adapted lift values confirmed the existence of asymmetric competition among German food retailers. While Aldi, a discounter, is most often compared to Lidl, Lidl is compared to both, Aldi and Edeka. While Aldi still offers almost exclusively private labels, Lidl has also distinguished itself in recent years with more brand products. This may explain why Lidl is being compared to the supermarket Edeka. In contrast, Aldi's efforts to sell more branded products do not appear to be reflected in a higher number of comparisons with supermarkets. The results of this research support the idea that asymmetries exist mainly between discounters and supermarkets.

One interesting finding is that the "market shares" measured by the share of comparative comments do not correspond to market shares in the food retail sector. The most frequent mentions are for the discounter Lidl, whose stores have the lowest turnover in our comparison. The number of comparisons could be an expression of the activity of the retailers on social media. The identified asymmetries could also reflect the success of advertising campaigns (Shaikh et al., 2018) in which comparisons between the retailers were specifically promoted (see Appendix A1, A2). A reduction of the asymmetries as a result of advertising could lead to a shift in market shares allowing discounters to gain customers from supermarkets.

5.1. Theoretical implications

One major contribution to previous research is the utilization of social media data for the investigation of competitive relationships in the context of food retailing. Our study establishes a quantitative framework for detecting competitive asymmetries in the sector. Our findings are consistent with the theoretical prediction based on Blattberg and Wisniewski (1989) and empirical research (Cleeren et al., 2010; González-Benito et al., 2005), which found that asymmetric competition exists mainly between retail formats. A major advantage of electronic word of mouth in the study of competitive relations is that it avoids the problem of response bias, which is common in survey data. Another advantage is that it is less costly than other methods (Reckmann, 2017).

The comparison of the lift values indicates that especially comparisons between discounters and supermarkets are asymmetric. These results are likely to be related to persisting differences in business models that are reflected in consumers' perception of customer values. However, the deviating case of Aldi vs. Edeka shows that it is worth taking a closer look. The lift value of zero indicates symmetrical competition. On closer inspection, it becomes clear that this means that Aldi does not often serve as a comparison for Edeka customers, nor vice versa. These results therefore need to be interpreted with caution and are likely to be related to the rather low number of cases for this pairing. Recently published advertising campaigns show that discounters still fuel the comparison to supermarkets (Figs. A1 and A2). Given this continuing dynamic, an increase in the number of cases, text-mining approaches or a combination with survey data could provide further insights into asymmetric competition in the food retail sector.

Our results strengthen the idea that competition affects the relationship between customer value and customer loyalty in the form of word of mouth (Chen, 2015). Our results indicate that competing retailers are most frequently compared based on their assortment and market-specific features. These customer values are followed by freshness and quality, price-performance ratio and appearance on Facebook. The order could, on the one hand, be a consequence of advertising campaigns, which focus on certain customer values. On the other hand, it could reflect the consumers' order of preference with respect to customer values. A third explanation is that the order points to the customer values with the biggest differences between the markets. It can therefore be assumed that the price-performance ratio differs less between the markets than the assortment. Surveys such as the ones conducted by Shaikh et al. (2018) and Chen (2015) could help to better understand the role of competition as a driver of electronic word of mouth.

5.2. Practical implications

The results have implications for competition policy. If consumers do not perceive two retailers as alternatives, and if, in addition, one-stop shopping behavior also prevails, then acquisitions of retailers and area expansions are to be assessed differently. More attention must be paid to local conditions. The differences in the categories indicate that a differentiated view is useful. Further work needs to be done to determine the reliability and validity of the proposed lift measure. The results have also implications for managers. The analysis reveals the retailers' position compared to their competitors, and thus entry points for increasing their market shares. This knowledge about their own position can help managers to assess the success of advertising campaigns as well as the agreement between customer perception and self-perception (Lee and Bradlow, 2011). Further areas of application are in strategic management, where the results can be used for positioning and communication (Ringel and Skiera, 2016). Differences in consumers' perception can also be caused by the local operators of the stores. To develop a full picture of asymmetric competition, additional studies will be needed that investigate the causality between communication measures, asymmetric competition, and financial performance.

5.3. Limitations

Our results need to be interpreted with caution. The major limitation of this study is the small sample size. For individual pairs of retailers, there are sometimes low case numbers, so that biases cannot be excluded. A low number of cases can mean two things: that the two retailers are very similar or that they are very different. The reader should also bear in mind that this study is based on a data set covering a single country. A cross-national study could help to validate our findings. In addition, not all formats of the top companies were considered. For example, Edeka and Rewe operate discount stores (Netto and Penny) in addition to their full-range stores. Including these shops could generate further insights. Furthermore, a self-selection bias of customers cannot be excluded. Particularly satisfied or particularly dissatisfied customers could express themselves. Although all four retailers have a Germany-wide branch network, the local structures may differ, so that individual customers may not consider individual outlets for their purchases due to geographical distance. A combination with survey or scanner data could provide further clues.

Appendix A

Fig. A1. ***Example of comparative advertising by Lidl.***
Note: It's a play on words with the message "*More expensive would be decadent*".
Source: Lidl.

Fig. A2. ***Example of comparative advertising by ALDI (July 2020)***
Note: Aldi has compiled a shopping basket and compares it with the prices of its competitors Rewe, Edeka and Lidl. Aldi describes itself as the price leader.
Source: Aldi Süd.

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jretconser.2020.102284.

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