The Influence of a Shortened Magazine Supply Duration on Newsstand Magazine Sales

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This article examines how shortened magazine supply duration of magazines affects newsstand sales. Based on a quasi-experimental design, panel data are gathered from a total of 33 newsstand vendors in cooperation with a magazine wholesaler in southwestern Germany. As results show, a shortening in magazines’ supply duration does not lead to a significant decrease in a newsstand vendor’s or a wholesaler’s overall revenues. Furthermore, diverse categories of magazines are affected differently by a shortening of supply durations.

The magazine retail industry has been confronted with declining sales (Gonser & Van Dyke, 2001). In the United States, decreasing magazine sales have been reported since 1996. Over this 6-year period, the industry-wide unit sales decreased by about 5% per annum (Love, 2002). Nevertheless, each year a multitude of new magazines are introduced onto the magazine market. Koschat, Berk, Blatt, Kunz, and LePore (2003) reported that in the United States several thousand magazine titles compete for customers in over 200,000 sales locations. Because publishers generate revenue not only from magazine sales but even more so through the sale of advertising space (Corden, 1953; Ferguson, 1983; Picard,
pressure is placed on wholesalers to accept new titles into their sales program to generate high circulation and, hence, higher advertising revenue. Limited supply space and limited sales capacity on the retailer's side can create a problem in the optimal assortment of magazines.

Schemes for overcoming the problems of the magazine retail industry have concentrated on cost-saving measures. “Cost-to-serve” wholesale distribution models, improved warehousing and distribution, and reorganization of logistics chains have been especially discussed in this context (Harrington, 2004; Koschat et al., 2003; Monti, 2000; Salop, Noether, & Schouten, 2001). The trade-off between controlling single copy returns and minimizing missed sales by sold-out titles has been investigated by means of elasticity models (Folio, 2003; Niemeier, 1990). The demand for magazines has been considered in models—for example, in connection with price and exogenous factors such as seasonal fluctuations (Artto & Pylkkänen, 1999). In addition, the correlation between magazine prices and the amounts charged for advertising in magazines has been investigated (Hakfoort & Weigand, 2003), as well as the relation among price, circulation, and revenue from advertisements (Kalitta & Ducoffe, 1995). The relation between the willingness to purchase magazines and the sociodemographic characteristics of readers from different market segments has also been studied (Koschat & Putsis, 2000). Companies counter the problem of low revenues with marketing activities that extend to regional billboards or sales promotion activities. The success of these marketing practices has not yet been verified, however. Managing size and variety of newsstand purchasers’ assortment, the so-called assortment management, may have a substantial impact on sales figures and newsstand vendors’ revenue but has not yet been sufficiently researched (Radice, 1998).

Newsstand vendors’ assortment management is concerned with the optimal selection of titles, the optimal number of copies per title, as well as the time span over which a particular magazine is made available. In this connection, it is assumed that modifications of the magazine assortment can affect demand and, in turn, impact revenues and sales. Although the solution to the problem of finding the optimal combination of magazines (number of magazine titles and number of copies per title) appears unpretentious and is largely determined by optimizing contribution margins of magazines in a limited display space, the problem of controlling the magazines’ supply duration is much more complex.

The potential influence of varied magazine supply durations on sales can be explained by two major effects. On the one hand, a newsstand’s appearance depends on the number of titles it presents (assortment size) as well on the number of copies per title. Consequently, optimizing magazines’ supply durations could result in a capacity effect (freed-up sales space) that the newsstand vendors could take advantage of to increase their total sales. First, consumers’ search costs can be reduced through a more attractive and better organized assortment
presentation, which may lead to increased purchase intentions. Second, freed-up sales space can be used to increase the number of generally available magazine titles (assortment size), which in turn positively impacts revenues.

On the other hand, it is straightforward to hypothesize a direct effect of magazines’ supply duration on overall revenue. It is assumed that over a magazine’s regular time of supply, demand decreases; after a certain point in time (before the appearance of the new issue), demand falls below a threshold value. If magazine titles are kept in the assortment beyond this point, they claim sales space that could be used for magazines that are more in demand. In this way, a magazine at the end of its regular time of supply, with its lower sales, suppresses the higher sales potential of other magazine titles at the start of their supply period. This effect depends on the topicality of the magazine title and moderates the direct effect of supply duration on total revenues. In addition, the mentioned direct effect is also moderated by the consumers’ willingness to substitute stocked-out titles. For these two reasons, it seems plausible that controlling a magazine’s supply duration at the retailer level could influence sales volume and, therefore, revenue.

This article is an important attempt to investigate the potential effect that reduced magazine supply durations have on retailers’ overall revenues and category-specific magazine sales. The shortening of magazine supply durations bears resemblance to stock-outs as well as to assortment reductions, which are well-known topics in research on retail management. A shortening of magazine supply durations differs from assortment reductions in that magazines are taken out of stock temporarily and not permanently. Furthermore, and contrary to a typical stock-out, a shortening of magazine supply duration represents a carefully planned and not an accidental stock-out. Finally, this article focuses on retail and wholesaler operations. Publishers’ reactions to shortened supply durations are not explicitly considered.

MARKET STRUCTURE OF THE PRESS RETAIL INDUSTRY IN GERMANY

The German press retail market is a three-stage distribution system composed of publishers, press wholesalers, and press retailers (see the dashed box in Figure 1). At present, about 80 press wholesalers serve approximately 100 sales areas, providing roughly 120,000 press retailers with press products (Bundesverband Deutscher Buch-, Zeitungs-, and Zeitschriften-Grossisten [The Federal Association of German Press Wholesalers], n.d.). The appendix provides a breakdown of the different branches of press retailers along with their share of total revenues. There are approximately 280 magazine and newspaper publishers in Germany, and one half of them operate nationwide. Approximately 6,000 magazines
and professional or academic journals (Verband Deutscher Zeitschriften Verleger [VDZ] [The Association of German Magazine Publishers], n.d.) and roughly 400 daily, weekly, or Sunday newspapers (Bundesverband Deutscher Zeitungsverleger [The Federal Association of German Newspaper Publishers], n.d.) are published in Germany. Around 60% (4,000) of these press products pass along the three-stage distribution chain, from publisher to wholesaler to retailer (Blauer Globus–Pressefachhandel, n.d.). Most of the remaining 40% are distributed free of charge or are sold by subscription exclusively. Approximately 400 bookstores at train stations and airports throughout Germany, as well as a leasing system called “Lesezirkel” (e.g., providing magazines to doctors’ and lawyers’ offices), are also supplied directly by publishers. In addition to the four distribution channels mentioned thus far, German publishers also export their products to German-speaking countries, such as Austria and Switzerland, and to areas frequented by German tourists. All of these distribution channels are depicted in Figure 1.

To enforce freedom of information legislation and to insure having a diverse press, several rights and obligations for press wholesalers have been established. Each wholesaler has the exclusive right to sell press products to the retailers of a specific sales area. In other words, German press wholesalers can be said to be regional monopolists. These monopolies are contractual rather than state guaranteed, and the wholesalers are obliged to provide their press retailers all of the aforementioned 4,000 newspapers and magazines, regardless of the size.
of the journal’s print run and regardless of the retailer’s location—be it urban and central or rural and remote.

Price maintenance agreements, which guarantee that magazines and newspapers are equally priced nationwide, are another important facet to the German press retail market. Publishers establish the selling prices. Wholesalers, or press retailers, as the case may be, are obliged to sell the products at prices stipulated (Müller, Gläß, & Gröschel, n.d.).

Because none of the three components of the press industry (publisher, wholesaler, retailer) seems to have total control over the three-stage distribution system, one could come to the conclusion that power is equally shared among the three entities. However, big publishing companies (e.g., Bauer Verlagsgruppe, Springer Verlag, and Hubert Burda Media) have massive market power and control the distribution chain. This is an important factor for this study to take into consideration because the study focuses on the effects of shortened magazine supply durations from the perspectives of press retailers and wholesalers.

Despite publishers, wholesalers, and retailers sharing the goal of selling as many press copies as possible, there may be conflicting interests among the parties. Although retailers and wholesalers presumably could benefit from, or at least not be harmed by, a reduction in supply durations, this may or may not hold true for publishers. This is because publishers do not merely sell magazines or newspapers. Their primary product is, in fact, advertising space. A publisher’s strategy, hence, may be to push as many magazine titles as possible in the market to increase the revenue generated through selling advertising space. From the retailer’s point of view, however, a new title likely means loss of scarce sales space. Because new magazine titles require sales space and retailers do not have the opportunity to arbitrarily increase the space available to them, they are concerned with the negative effect new titles may have on their overall revenue. New magazine titles usually do not generate revenue comparable to established press and, as a consequence, the assured revenue generated by well-selling, established magazine titles is compromised by the newcomers. The more titles publishers put on the market, the more critical this becomes. To maintain their earning level, retailers have to think about ways to react to the increasing pressure the addition of new magazine titles exert on their overall revenue. Shortening the supply durations of magazine issues is a promising approach for retailers to balance shelf capacity and the burgeoning amount of magazine titles they have to offer.

The issue of supply duration from the publishers’ side bifurcates, depending on the nature of the press the publishers produce. Big publishing companies are typically focused on newspapers and magazines with short supply durations, whereas press items that benefit from longer supply durations are typically produced by small publishers. To the extent that shortened supply durations are perceived negatively by clients buying advertising space, big publishers would
take a poor view of retailers’ move to shorten supply durations. On the other hand, shortened supply durations benefit big publishing enterprises insofar as retailers thereby are able to showcase more press in a given time span.

Smaller publishers, who are the primary producers of press that benefit from a long supply duration, are heavily dependent on wholesalers and retailers. Whereas shortened supply duration would be harmful if applied to the press they produce, shortened supply duration of other press could mean that space is made free to better showcase the press produces by smaller publishers.

Overall, the reduction of supply durations can be seen as a promising attempt to mitigate these conflicting interests. For retailers and wholesalers, it would be beneficial because sales space could be freed up significantly. Publishers would benefit as the number of magazine titles sold by retailers is not harmed or could even be expanded.

THEORETICAL CONSIDERATIONS AND RESEARCH HYPOTHESES

A newsstand vendor’s business can be described as a business in which an available sales space is used to sell press products, particularly magazines. The effects of changes made in magazine supply durations on newsstand vendors’ overall revenues are illustrated by the model depicted in Figure 2 and are subsequently discussed. Two opposing paths through which changes in magazine supply durations could affect newsstand vendors’ total revenue are distinguished. Path A represents the direct effects of changes in magazine supply durations on revenue; Path B models the capacity-related effects and its influences on perceived attractiveness of newsstand vendors’ assortments and their impact on buying behavior.

According to Path A, prolonged magazine supply duration means making press available to the buying public for a longer period and could, in turn, lead to increased sales. Contrarily, a reduction in the supply duration would mean a shorter period of availability and could result in fewer sales of a particular title. Because the occasional shopper is able to purchase only those magazines that are generally available at the newsstand and which are not out of stock at the time of his or her visit to the newsstand, a positive relation between magazine supply duration and total revenues of newsstand vendors can be assumed: item available, item purchased, revenue realized.

This relation can presumably be moderated by at least two factors—topicality and substitution effects—and we assume, further, that these factors depend on specific magazine categories. The corresponding effects are summarized as category effects (see Figure 2). At first, and depending on the sales pattern of individual magazines over time, shortened supply durations can result in a more
or less pronounced decrease in sales of individual issues. This is assumed because the sales pattern of a magazine issue over its supply duration can be assumed to lie between two extremes. At one end of the scale is the scenario whereby demand for a magazine issue is concentrated on its first day on the shelf with demand dropping to nil for the remainder of its supply duration (Case 1). At the other end of the scale is the magazine issue for which demand is distributed uniformly over its supply duration. In this scenario, the same number of issues would be sold on each day over the entire period that the issue is offered (Case 2). Realistically, it can be assumed that actual sales courses of magazines lie somewhere between these two extremes. Thus, one would expect the sales crest to appear at the supply duration’s beginning and demand to decrease over the course of time.\footnote{Besides these depicted sales patterns, increasing sales that appear toward the end of a magazine’s supply duration are also possible theoretically. In the extreme case, a magazine issue is only sold on the last day of its supply, whereas there would be no demand before their day. However, such theoretical sales courses are not considered.}

Looked at from a more theoretical perspective, press products and newspapers can be considered perishable goods, such as groceries or fashion goods. Their value decreases over time, and they eventually spoil and can no longer

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**FIGURE 2** Effects of supply duration of magazines on total revenues of newsstand vendors. *Note.* Thin arrows represent influences discussed in the theoretical section and bold arrows represent relations tested empirically.
be sold. Such an analogy may be made because most magazines are highly topical, and their information value usually perishes relatively quickly—as in current classified magazines or TV guides, for example. Occurring parallel to the intrinsic loss of value of the product—and this phenomenon has been shown for other perishables (see Tsiros & Heilman, 2005)—a decreasing willingness of consumers to buy some press items over time (e.g., daily newspapers, yellow press) is also to be expected. For other press items, it is conceivable that product utility, although it may decay over time, never reaches zero (e.g., men’s magazines) or even remains constant (as might be the case for collectible issues of a magazine), and the willingness to buy those products never drops to zero. Case 2 depicts such magazines. We can assume, therefore, that the nature of the press dictates the sales courses typical for titles within a magazine category. The effect of reducing supply durations on magazine sales may vary depending on category-specific qualities of the magazine.

For magazines belonging to Case 1, a reduction in supply duration should not have a strong impact on sales. By contrast, a shortened supply duration of magazines belonging to Case 2 would be expected to have a distinct impact on their sales. In sum, the closer to Case 1 a magazine title falls, the less the effect of changes in magazine supply durations on its sales volume.

Having discussed the “perishability” of some press, we turn now to look at substitution effects (see “Category effects” in Figure 2). The immediate negative sales effect of shortening the supply duration of a particular title may be compensated for by consumers’ substitution behavior within the same magazine category. Shortening magazine supply durations bears resemblance to stock-outs (Fitzsimons, 2000). In retail settings, consumers may react to stocks-outs of preferred products in one of several ways, including (a) switching to another store, (b) substituting another product, (c) postponing the purchase until the store has restocked the item, or (d) deciding not to purchase the item at all (Schary & Christopher, 1979). Several factors—such as deal proneness, store loyalty, or average quantity bought per shopping trip—influence consumers’ responses to stock-outs (Verbeke, Farris, & Thurik, 1998). Likewise, consumer traits as well as situational and product-specific variables influence the reaction to stock-outs of preferred brands. With this in mind, it is not surprising that empirical studies show that consumer reaction to stock-outs vary significantly for different product categories (see Emmelhainz, Emmelhainz, & Stock, 1991, or Zinszer & Lesser, 1981). Managerial reports (see VDZ, Pressevertrieb Mecklenburg-West, 2002) show that approximately 80% of German newsstand vendors’ customers come to press outlets to buy a specific newspaper or magazine title. If the preferred product is out of stock, approximately 50% of these customers go elsewhere to buy the item, 25% of them substitute something else for the preferred item, and 20% do not buy anything at all. However, the number of consumers substituting
a magazine for their preferred one may vary in different magazine categories. For the most part, these variations are due to variations in the ratios of impulsive to intentional purchases from one magazine category to another. In this context, VDZ et al. showed that monthly and biweekly women’s magazines have a very high share of impulsive buyers (50% and 80%, respectively). On the other hand, computer magazines, for example, have only a moderate proportion of impulsive buyers (35%) and, at the bottom of the scale, there seem to be almost no spur-of-the-moment purchases of TV guides. Furthermore, pronounced spur-of-the-moment purchases can be expected with respect to adult magazines. Taken altogether, reducing magazines’ supply durations have a negative impact on total revenues. Furthermore, it is expected that category-specific effects (substitution and perishability) moderate this relation.

Corstjens and Corstjens (1995) provided a theoretically based explanation for consumers’ reactions to stock-outs and argued that consumer reactions to stock-outs depend on a trade-off between the cost of brand switching and the cost of store switching. Campo, Gijsbrechts, and Nisol (2000) generalized Corstjens and Corstjens’s approach by considering a conceptual framework that builds on individual utility maximization in which substitution costs, transaction costs, and opportunity costs are considered. For example, the aforementioned substitution of a preferred magazine by another magazine would incur substitution costs (costs of brand switching) and transaction costs (mainly search costs). Opportunity costs are not relevant in this context.

Contrary to what occurs along Path A, the effects of changes in supply durations work in the opposite direction along Path B (Figure 2). The longer magazine titles are available, the more these titles claim available sales space capacity, all else being equal. Increases in available sales space capacity may have a positive effect on the assortment size of newsstand vendors because increases in available sales space allow retailers to widen their assortments in terms of the numbers of magazine titles they offer. Thus, an increase in free sales space is solely a sufficient but not a necessary condition for an increase in assortment size.

Furthermore, it is assumed that wider assortments are related positively to the assortments’ attractiveness. The intuitive notion here is that consumers are likely to find whatever it is they may be looking for when a wide assortment of titles are offered them. Research on consumer behavior shows that customers typically prefer more choice over less choice because wider assortments allows for flexibility when making purchase decisions, offers possibilities for (future) variety-seeking behavior, and creates perceptions of freedom of choice. In addition, a wide assortment range fosters the perception of having all relevant choice options available (for a short review of corresponding research, see Chernev, 2003).
However, recent research indicates that consumers can experience too much choice. Compared to locations with smaller assortments, confronted with a wide array of items from which to choose, consumers may be less inclined to buy anything (Iyengar & Lepper, 2000). Chernev (2003) stated that greater retail assortments may cause consumer frustration because the exposure to too many choices can result in information overload or high search costs. However, as these studies focused on four- to fivefold increases of choice alternatives and as such increases seem unrealistic in the context of our study, these results do not apply to our considerations. Therefore, one can assume that an increase in assortment size or in the number of magazines generally available leads to increased magazine sales and has a positive influence on the revenue of a newsstand vendor.

The use of sales space capacity also has an effect on the visual presentation of the assortment (Smith & Agrawal, 2000). Although sales space is limited by the total space available to a vendor and is often fixed, the number of magazines offered in a given sales space is not. If customers were completely loyal and magazines were always available, shelf space allocation would have no impact on sales. However, a substantial number of customers come to their purchase decisions at the point of sale, where shelf space made available for specific magazines may influence consumers’ choices. Additional shelf space can be used for a better visual presentation of magazines leading to greater product visibility and more consumer attention, which stimulates impulse buying (Drèze, Hoch, & Purk, 1994). According to this reasoning, overly filled newsstand shelves have a negative effect on magazine sales. A more visually attractive presentation of magazines can be realized by a shortening of magazines’ supply duration. For example, a monthly title could be removed from the shelves after 3 weeks, all else being equal.

Both aspects of Path B—assortment size as well as visual presentation—exert positive effects on the perceived attractiveness of the newsstand, which affects total revenues positively. A reduction of magazine supply durations has a positive effect on both assortment size and visual presentation, which has a positive effect on the perceived attractiveness of the assortment. Consequently, this has positive effects on newsstand vendors’ total revenues. Where magazine supply durations are prolonged, the reverse applies.

In addition to the effects of the two paths, through which changes in magazines’ supply durations affect total revenues, crossover effects between assortment size (Path B), and substitution of titles within categories (Path A) are also plausible. Campo et al. (2000) showed that the costs of switching from one item to another item significantly decrease (increase) when acceptable alternatives are available in the product category (with consumer loyalty). Many customers visit press retail outlets to buy specific magazines, so item substitution is not likely
to be the prevalent reaction to magazine stock-outs. This phenomenon can be explained by high item substitution costs.

Because the main thrust of our research on the possible effects of reduced supply duration is related to the capacity effect, we set out with an assumption with respect to assortment size. As discussed in detail earlier, we assumed that a reduction in supply duration has positive effects on sales space capacity usage that, in turn, allows for a greater number of generally available magazine titles (assortment size). On the one hand, assortment size has a direct positive effect on the assortments’ attractiveness (more choice) and on revenues, subsequently. On the other hand, visual presentation is harmed by greater assortment sizes. Thus, there is also an indirect negative effect. We assume that the direct effect is stronger than the indirect effect. Consequently, a positive net effect of assortment size on overall revenue is expected. Therefore, the first hypothesis reads as follows:

H1: Due to its impact on attractiveness, the number of generally available magazines (assortment size) has a positive net effect on a newsstand vendor’s total revenue.

The immediate negative sales effects of shortened supply durations (Path A, Figure 2) could be offset by the positive impact of a more attractive assortment as well as by substitution effects. The underlying principles to explain these assumptions have been presented earlier. As a main result of the theoretical considerations, it is expected that shortened supply durations do not necessarily lead to negative net effects on the newsstand vendor’s total revenues. Broniarczyk, Hoyer, and McAlister (1998) showed that (moderate) assortment reduction would not necessarily result in sales cutbacks. In accordance with Broniarczyk et al., we argue that this is to some extent attributable to a more attractive assortment of retail items. Because the average sales effect of a shortened magazine supply duration should be less pronounced than that of permanent assortments reductions, we hypothesize that the considered net effect (immediate sales cutback vs. more attractive assortment) is neutral. Thus, Hypothesis 2 reads as follows:

H2: The shortening of magazines’ supply duration has no net effect on newsstand vendors’ total overall magazine sales revenue.

One further relevant aspect of the discussion about the effects of a reduced supply duration that works through Path A is that the direct effect of a reduced supply duration on sales is moderated by the two factors that we term “category effects” (Figure 2). It was assumed that moderating effects result from different
sales courses that depend on differences in the topicality of given magazine categories as well as by substitution effects of magazine titles in given magazine categories. What follows from this is that different effects of identically shortened supply duration should be observable in different magazine categories. However, as these two effects were not separable in the setting of this study, we aggregated these effects in one single hypothesis. Therefore, Hypothesis 3 is formulated as follows:

H3: Due to varying sales courses and substitution effects, shortened supply durations have differing effects on category-specific magazine sales.

QUASI-EXPERIMENTAL DESIGN AND DATA COLLECTION

Over a 14-week period, the weekly panel data of a total of 33 newsstand vendors was collected in cooperation with a magazine wholesaler in southwestern Germany. We used panel data to build our study on a sufficiently broad basis as well as to account for possible time effects that are quite common in retailing settings (e.g., seasonal effects). This approach is appropriate as influences of omitted variables that are constant over entities but differ with respect to time can be absorbed. In a retailing setting, such time influences might be seasonal anomalies as beginning- or end-of-the-month effects or holiday time period effects. Given our data, we could not control for those general time effects directly, and the fixed-effects model was estimated. In addition to panel data on the newsstand vendors’ weekly revenue (measured in euros) and weekly category-specific magazine sales numbers used as dependent variables, data was also collected vis-à-vis sales space (measured in square meters), the number and types of offered magazine titles (assortment range), as well as branch categories to be used as independent control variables. These control variables were included because they characterize different kinds of retailers that may differ in their typical customers’ profile. Although these profiles were not captured directly, branch category can be regarded as a feasible proxy for them. During the 14-week period, a total of 2,239 different magazines and a total of 91,132 observations were available. Data were aggregated with respect to retailers and

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2 At first glance, a sample of 33 news vendors appears to be quite small. However, panel data was collected over a period of 14 weeks. Furthermore, weekly sales data with respect to 13 magazine categories was collected. The limitation on the number of participating outlets guaranteed that the experimental and the control group fit together as perfectly as possible.

3 Variables like overall customer traffic or demographic profile of the outlet’s surrounding area were not available in the data set made available by the wholesaler.
TABLE 1
Distribution of Newsstand Vendors According to Branch Categories and Sales Space

<table>
<thead>
<tr>
<th>Branch Category</th>
<th>Experimental Group</th>
<th>Control Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>Supermarket 800–1,499 m²</td>
<td>5</td>
<td>31.3</td>
<td>4</td>
</tr>
<tr>
<td>Supermarket 400–799 m²</td>
<td>5</td>
<td>31.3</td>
<td>5</td>
</tr>
<tr>
<td>Gas station under 50 m²</td>
<td>2</td>
<td>12.5</td>
<td>2</td>
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<tr>
<td>Gas station 50–75 m²</td>
<td>2</td>
<td>12.5</td>
<td>2</td>
</tr>
<tr>
<td>Gas station over 75 m²</td>
<td>2</td>
<td>12.5</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>100.0</td>
<td>17</td>
</tr>
</tbody>
</table>

weeks, which reduced the number of observations to 462. To this dataset panel, fixed-effects regressions were applied.

The 33 newsstand vendors were divided into two groups. In one group of 16 newsstand vendors (experimental group), the magazine titles were taken off the shelves after approximately three fourths of their regular supply duration. Magazines with supply durations less than 2 weeks were not taken off the shelves before the end of their regular supply duration. In the second (control) group comprising 17 newsstand vendors, the magazines were available during their entire time of regular supply.

To obtain valid results, a quasi-experimental between-subject design (Shadish, Cook, & Campbell, 2002) was applied as newsstand vendors were divided into the two groups according to a quota plan. This guaranteed an approximately equal distribution of newsstand vendors of different sizes and retail branches (supermarkets and gas stations) in both groups. Table 1 shows the resulting branch-specific distribution of the newsstand vendors. Furthermore, no significant mean differences could be detected with respect to sales space (in square meters), \( M_{\text{exp}} = 19.31, M_{\text{con}} = 19.00, F(1, 460) = 0.54, p > .10 \); and number of generally available titles, \( M_{\text{exp}} = 527.25, M_{\text{con}} = 517.94, F(1, 460) = 0.42, p > .10 \). Altogether, one can assume a good fit of experimental groups. It has to be mentioned that we focused on supermarkets and gas stations because

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4Because a general uniform publication day would reduce substitution possibilities, it is important to mention that the main publication days of weekly and biweekly magazines in Germany are Monday and Thursday. Moreover, a big part of magazines published is issued on other weekdays.
5To avoid problems of internal validity typically caused by repeated testing, we implemented a between-subject design instead of a repeated-measure design.
6The mean number of generally available magazines (assortment size) of 563.9 indicates that the considered retail outlets have quite large magazine assortments. The average assortment size of all branches of German press retailers in 2003 was 216.2 titles (VDZ, 2003).
these outlets have a percentage share in press retailers’ total revenue of roughly 35.0% and thus make up a significant part of the wholesalers’ clientele (see the appendix).

RESULTS

Table 2 presents the results of a panel regression analysis based on the 462 retrieved case numbers in which the effects of the shortened duration of the magazine supply, the number of generally available magazines (assortment size), the available sales space, and the branch category on the weekly revenue of newsstand vendors were quantified. To control for unobserved time effects in panel analysis, we used the fixed-effects panel regression approach (Wooldridge, 2002). To test for the appropriateness of the fixed-effects model instead of a random effects model, the Hausman test was applied and resulted in $\chi^2(7, N = 462) = 0.03, p = 1.00$. This means that the assumption of time effects being uncorrelated with the regressors is not supported, which means that a random effects model would not be misspecified (Greene, 2003). As regression coefficients as well as model parameters did only differ marginally between these methods, the fixed time effect approach was applied. With an empirical $F(13, 441)$ statistic of 10.50 in the fixed-effects model, the theoretical $F(13, 441)$ statistic of 1.764 is clearly exceeded so that time effects have to be controlled for to obtain correct estimates of the coefficients in the regression. As Table 2 shows, a sig-

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized Coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
</tr>
<tr>
<td>Constant</td>
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<td>80.63</td>
</tr>
<tr>
<td>Number of generally available magazines</td>
<td>2.00</td>
<td>0.16</td>
</tr>
<tr>
<td>Available sale space (square meters)</td>
<td>3.80</td>
<td>3.45</td>
</tr>
<tr>
<td>Supermarket 800–1,499 m²</td>
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<td>37.23</td>
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<td>Gas station under 50 m²²</td>
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<td>57.78</td>
</tr>
<tr>
<td>Reduction in time of supply</td>
<td>-5.11</td>
<td>27.25</td>
</tr>
</tbody>
</table>

Note. Fixed effects (within regression), $R^2$ (within) = 0.61, $F(7, 441) = 101.19, p < .000$. 
significant influence of the number of generally available magazines (assortment size) on sales revenue can be proven, whereby H1 is not rejected.

For a shortening of supply duration, nonsignificant negative effect on weekly revenue can be shown. This means that a shortened supply period does not lead to a decrease in the newsstand vendor’s weekly revenue. Therefore, it can be assumed that a reduction in the time of supply does not endanger overall weekly revenues, so it is suggested to accept H2. Possibly existing negative direct effects may have been compensated for by the aforementioned substitution effects and the better visual presentation of magazines. As mentioned earlier, pronounced substitution effects cannot be expected. Thus, the compensation of the immediate negative effect of supply durations’ curtailment should be mainly due to the more attractive visual presentation. As only net effects were considered in the panel regression model, this aspect should be the object of future research.

In the section entitled “Theoretical Considerations and Research Hypotheses,” magazines’ sales courses over time were conceptualized using different idealized demand patterns. Although the regression model depicted in Table 2 measures the estimated influence of shortened supply durations on weekly revenue on an aggregate level, the following regression models analyze the sales effect of shortened supply durations on the level of different magazine categories. On the basis of the results of the corresponding analyses, indications regarding which magazine categories are more or less well-suited for shortened supply durations can be gained.

As mentioned earlier, one can expect that a curtailment in the supply duration has a more or less pronounced negative direct sales effect. Table 3 presents dummy regressions analyses on the influence of shortened supply duration on category-specific magazine sales. In addition, to control for order size effects, the number of copies ordered per title is introduced as a control variable. As suggested by H3, the previous results show that a shortening of supply durations has varying effects across different magazine categories. For example, the sales of classified newspapers or TV guides are not significantly reduced by shortened supply durations. Due to the undisputed currency of the contents of classified newspapers and TV guides, it could be argued that only a few customers seek to buy corresponding publications at the end of the publication’s regular supply period.

Consequently, shortening the supply durations of such publications does not significantly influence their sales. A different pattern is shown, for example, among women’s magazines. In this magazine category, average sales per magazine are significantly reduced when supply duration is curtailed. In this case, there appears to be a significant number of customers who still buy the magazines at the end of the usual sales period. Thus, the assumed substitution effects—as well as the effects of a better visual presentation—cannot compensate for the direct negative effect of supply duration curtailment. It is interesting to note that
the shortening of supply duration had a negative impact on sales of erotica and women’s magazines that commonly deemed to be easy to substitute (VDZ et al., 2002). This empirical result seems to indicate that the category-specific impact of varying sales courses dominates the effects of intracategory substitution and better visual presentation. It follows that H3 can be supported.

In conclusion, these results show that for a shortening of supply durations to be advantageous for newsstand vendors and magazine wholesalers, it should be used in magazine categories in which no pronounced negative net sales effects can be expected. Furthermore, substitution purchases and better visual presentation cannot be of significant importance in these magazine categories. Based on the results of this study, a shortened supply duration presents itself especially

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**TABLE 3**
The Influence of Supply Durations’ Reductions on Category-Specific Magazine Sales

<table>
<thead>
<tr>
<th>Magazine Category</th>
<th>Constant</th>
<th>Number of Titles Offered</th>
<th>Reduction: Yes–No</th>
<th>Adjusted (R^2)</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erotica</td>
<td>–0.49**</td>
<td>0.65**</td>
<td>–0.33**</td>
<td>.60</td>
<td>(F(2, 2239) = 1,656.635, p &lt; .000)</td>
</tr>
<tr>
<td>Audio, video, photo, film Automotive</td>
<td>0.07</td>
<td>0.31**</td>
<td>ns</td>
<td>.09</td>
<td>(F(2, 286) = 14.673, p &lt; .000)</td>
</tr>
<tr>
<td>Hobbies/culture Computer/technical Fitness</td>
<td>–0.20**</td>
<td>0.46**</td>
<td>ns</td>
<td>.36</td>
<td>(F(2, 1,452) = 401.793, p &lt; .000)</td>
</tr>
<tr>
<td>TV guides</td>
<td>–0.73**</td>
<td>0.71**</td>
<td>ns</td>
<td>.82</td>
<td>(F(2, 5,459) = 12,059.995, p &lt; .000)</td>
</tr>
<tr>
<td>Tabloids</td>
<td>–0.76**</td>
<td>0.76**</td>
<td>–0.41**</td>
<td>.80</td>
<td>(F(2, 4,897) = 9,616.598, p &lt; .000)</td>
</tr>
<tr>
<td>Youth/comics</td>
<td>–0.83**</td>
<td>0.74**</td>
<td>–0.18**</td>
<td>.77</td>
<td>(F(2, 6,977) = 11,802.911, p &lt; .000)</td>
</tr>
<tr>
<td>Women</td>
<td>–0.92**</td>
<td>0.80**</td>
<td>–0.33**</td>
<td>.90</td>
<td>(F(2, 9,391) = 40,551.214, p &lt; .000)</td>
</tr>
<tr>
<td>Entertainment</td>
<td>–0.77**</td>
<td>0.81**</td>
<td>–0.59**</td>
<td>.90</td>
<td>(F(2, 6,261) = 28,295.552, p &lt; .000)</td>
</tr>
<tr>
<td>Fashion</td>
<td>–0.18**</td>
<td>0.36**</td>
<td>ns</td>
<td>.37</td>
<td>(F(2, 1,648) = 481.779, p &lt; .000)</td>
</tr>
<tr>
<td>Classified newspapers</td>
<td>–0.15</td>
<td>0.19*</td>
<td>ns</td>
<td>.07</td>
<td>(F(2, 37) = 2.437, p &lt; .101)</td>
</tr>
</tbody>
</table>

* \(p < .10\). ** \(p < .05\).
favorably for magazines in the categories of audio, video, photography, film, hobby, culture, computer, technical, and fashion magazines as well as for classified newspapers and TV guides (see Table 3). The first four categories represent magazines that are read by hobbyists who, due to their high involvement, appear to buy the magazines shortly after their first date of publication. The two latter categories are also always bought shortly after their date of publication due to their obvious currency, so that a curtailment in supply duration is also unproblematic here. Less suited to a shortened supply duration are, in particular, magazines in the categories of erotica, automotive, fitness, women, and entertainment as well as youth magazines, comics, and tabloids (see Table 3). These magazines are apparently sold relatively uniformly over the course of their supply duration.

DISCUSSION

As demonstrated, a shortening in magazines’ supply duration does not lead to a significant decrease in a newsstand vendor’s or a wholesaler’s overall revenues. It seems to be that the direct negative effect of shortened magazine supply duration is compensated for by moderate substitution effects as well as by a better visual presentation. On the basis of our results and information from managerial reports, it is assumed that the improved attractiveness of the assortment caused by the better visual presentation compensates negative effects of supply time reduction. In addition, it was shown that diverse categories of magazines are affected differently by a shortening of their supply duration. Although early removal of titles whose contents have a high degree of currency (e.g., computer magazines) does not cause a negative effect on revenue, this does not apply to magazines whose contents are less time sensitive (e.g., men’s magazines). Therefore, the supply duration of magazine titles of the former category can be shortened in contrast to those belonging to the second category. Because in this study the revenue effects between these two magazine categories balance each other out overall, one could expect positive net revenue effects when magazines’ supply durations would be controlled on a category- or issue-specific basis. As this aspect has not been included in this study, further research should investigate these effects.

There are several managerial implications of this research. First, press retailers can reduce the supply duration of magazines without harming their overall revenue. In this context, retailers and wholesalers should be aware of the aforementioned possible negative reactions of publishers. Second, the free space attained by the supply curtailment can be used to (a) increase the number of generally available titles or (b) improve the visual presentation of the remaining items. The empirical results of this study indicate that both practices may
increase newsvendors’ overall revenue. A combination of both policies is also conceivable. Because the number of generally available magazines (assortment size) has a substantial positive effect overall, a positive net effect could be expected from a curtailed supply duration combined with an expanded selection of generally available magazines (assortment size). Third, the shortening of supply durations has to be carefully controlled on a category-specific level. For example, magazines for hobbyists (e.g., computer magazines) or TV guides can be taken off the shelves before the end of the regular supply duration. This does not apply to all magazine categories. Supply curtailment lessened sales of, for example, women or youth magazines. Because of their relatively even sales courses, corresponding magazine categories should not be considered. Altogether, a combination of a carefully controlled, category-specific shortening of supply durations; a better visual presentation of magazines; and a moderate increase in the number of generally available titles seems to be a promising business strategy for press retailers.

This article focuses on retail and wholesaler operations\textsuperscript{7}; thus, the publishers’ perspective is not explicitly considered. The impact of a shortening of supply duration on publishers’ advertising revenues should be the topic of future scientific research. Furthermore, this study’s scope is limited to a fraction of retail establishments that might not be representative of all press retail channels in Germany or any other European Union nation. Thus, future studies should try to generalize the study’s findings with respect to other press retail branches in the European Union and the United States. On the other hand, the conceptual framework of this study may apply to other media products. Similar patterns of consumer reactions to a variation of supply durations can be expected for books, DVDs, CDs, and video games. Thus, several options to generalize the findings of this study exist.

REFERENCES


\textsuperscript{7}Potential goal conflicts of publishers and retailers or wholesalers, respectively, are discussed in the section entitled, “Theoretical Considerations and Research Hypotheses.”


Chernev, A. (2003). When more is less and less is more: The role of ideal point availability and assortment in choice. *Journal of Consumer Research, 30*, 170–183.


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**APPENDIX 1**

**Distribution of Different Press Retail Branches in Germany**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Retail Outlets</th>
<th>Percentage Share in Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialized press dealers</td>
<td>17,120</td>
<td>27.5%</td>
</tr>
<tr>
<td>Cornershops and neighborhood stores</td>
<td>35,514</td>
<td>9.1%</td>
</tr>
<tr>
<td>Grocery stores and supermarkets</td>
<td>13,392</td>
<td>20.6%</td>
</tr>
<tr>
<td>Department stores</td>
<td>3,707</td>
<td>12.2%</td>
</tr>
<tr>
<td>Newspaper kiosks</td>
<td>13,660</td>
<td>9.4%</td>
</tr>
<tr>
<td>Gas stations</td>
<td>14,075</td>
<td>14.3%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>21,332</td>
<td>6.9%</td>
</tr>
<tr>
<td></td>
<td>118,800</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

*SI special-interest, MD&M Pressevertrieb GmbH & Co. KG. (2002).*