Marketing Mix Effectiveness in a Retail Setting

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Marketing Mix Effectiveness in a Retail Setting

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Advertising Effectiveness at the Point of Sale: A Large Scale Study of Digital Signage

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Buy Now Pay Later: Impact of Installment Payments on Customer Purchases

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Nutritional Quality and Marketing Conduct in the CPG Industry

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Promotions: Pain or Gain? The differential impact of a price promotion ban across brands

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Special session abstract

There is a well-established understanding that marketing mix instruments play a fundamental role in retailing and yield important effects on consumer behavior (Ataman et al., 2010). Successful retailers and manufacturers carefully balance the different instruments and assess which levers to pull to stay competitive in a dynamic retail environment. On the one hand, technological evolutions and changes in shopping patterns have led them to consider new marketing mix instruments, whose effectiveness in driving sales needs to be evaluated. Examples include digital signage (signs and screens that display videos ads and other messages throughout a store visit) and Buy Now Pay Later (BNPL) payment methods (payments with interest-free installments over a relatively short period of time, typically within four to six weeks). On the other hand, many open-ended questions remain about the effectiveness of the popular, well-established instrument of temporary price promotions: practitioners and academics are still in the dark about the heterogenous effectiveness of promotions for certain types of products (e.g., healthy versus unhealthy products), or whether a world without promotions could prove worthwhile. Throughout this session, we cover the effectiveness of new marketing mix instruments implemented in the retail market (digital signage, BNPL payment), and investigate the heterogeneous impact of price promotions (on healthy versus unhealthy products), or an absence thereof.

In a first paper, titled "Advertising Effectiveness at the Point of Sale: A Large Scale Study of Digital Signage", de Jong, Herhausen and Grewal employ an empirics-first approach to investigate whether advertising through digital signage systems at the point of sales in physical stores works and if so, under which conditions it is most effective. Their results reveal that being exposed to an ad at the point of sale increases the purchase probability, but this effect depends on the context (time of the day, weather, product), as well as the content of the advertisement (price promotion, appeal, message).

In a second paper, titled "Buy Now Pay Later: Impact of Installment Payments on Customer Purchases", Maesen and Ang study the impact of BNPL installment payments on retail sales, using both transactional data from a major retailer that introduced NBPL installment payments and four experiments to provide causal evidence for the positive effect of BNPL installment payments on spending and to explain why the effect occurs.

In a third paper, titled "Nutritional Quality and Marketing Conduct in the CPG Industry", Bombaij, van Ewijk, Keller and Guyt aim to investigate whether and to what extent the nutritional quality of a product influences promotion effectiveness, by using 10+ years of

weekly store-level scanner data from 100,000+ products across 50+ product categories across 35,000+ stores that include information on sales, prices, and promotions.

In a last, fourth paper, titled “Promotions: Pain or Gain? The differential impact of a price promotion ban across brands”, Heyrman, Breugelmans, Kotschedoff and Gielens analyze how the competitive landscape in grocery retailing is altered when all promotions are abandoned. Specifically, they use a difference-in-differences approach to investigate the effect of an all (retailer and category) encompassing price promotion ban on brand shares to assess who benefits from a retail environment without price promotions, and who risks losing it all?

Advertising Effectiveness at the Point of Sale: A Large Scale Study of Digital Signage

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While strolling through the aisles of a grocery store, consumers spend more and more on unplanned purchases. Indeed, it is estimated that unplanned purchases are on average $314 a month for US shoppers (Dickler, 2022). Brand managers are especially interested in understanding how to influence consumers at the physical point of purchase, termed by Procter & Gamble as "the first moment of truth", as this moment is found to be essential in driving sales through unplanned purchases (Roggeveen et al., 2016; Stilley et al., 2010). Consequently, research has explored how various marketing stimuli could influence consumers at the point of sales, such as store and shelf layout (e.g. Mohan et al., 2013), attractive product displays (e.g. Joo Park et al., 2006) and in-store promotions of products (e.g. Sun & Yazdanifard, 2015). In particular, a recent stream of literature has highlighted digital displays as a novel method to elicit unplanned purchases (Roggeveen et al., 2016). Digital signage consists of signs and screens that are able to display videos ads and other messages throughout a store visit. Compared to traditional in-store signage, digital signage creates new opportunities for marketers to effectively measure the return on investment on their advertising campaigns and tailor their stimuli to specific stores, days, times or retail settings.

Although digital signage seems to be a promising technology, our understanding of the effectiveness of these (digital) displays is in the nascent stages. Prior research investigating the influence of digital signage in stores on consumers' behavioral intentions predominantly suggests that digital displays have the potential to enhance shopping behavior by increasing their in-store spending, store visits and purchased products (Dennis et al., 2010). However, all studies depend on self-reports to assess consumers' shopping behavior. The only two field studies capturing consumers' actual behaviors on a store level suggest that the effectiveness of digital displays is less straightforward and that its effectiveness depends on the retail format and the message used (Roggeveen et al., 2016; Schweiger et al., 2023). Taking their store-level perspective to an individual shopper perspective, our research addresses the following question: Does advertising through digital signage systems at the point of sales in physical stores work and if so, under which conditions is it most effective?

To adequately answer our research question, we use a novel and unique method to investigate if and when advertising through digital signage is effective by combining data on exposure to certain video ads through digital signage with shopping basket data while respecting the privacy of consumers. Using 237 randomized field experiments with different video advertisements that include a total of 30 million shopping journeys across 10 supercenters that each had five digital displays throughout their aisles from 2018 to 2022, results reveal that being exposed to an ad at the point of sale increases the purchase probability by 8 percent. Moreover, the results highlight that advertising through digital signage is affected by both the context, as well as the content of the advertisement. In short, we find that advertising through digital signage is most effective at later points in the day, with good weather, or for lower-priced products. Against general belief, there is no difference in effectiveness when advertisements are aired on the weekend versus weekdays, or whether the product is on discount or not. With regard to the content of the advertisements, exposure to advertisements containing price promotions, informational appeals or authentic messages is more effective.

Nevertheless, using this novel data collection approach, we are able to explore the effect of advertising through digital signage while ruling out other determinants of unplanned purchases through randomization, such as age, gender, income, personality traits, shopping motives and shopping history. These large-scale analyses driven by an empiric first approach reveal several drivers of ad effectiveness, which provide important contributions to advance literature in digital signage, unplanned purchases and in-store advertising. Next to the theoretical advancements, we offer brand managers important insights into how they can influence consumers at the point of sales by using their in-store advertising as effectively as possible by tailoring their marketing stimuli towards the right context and content combinations and optimizing their return on investment on in-store marketing expenditure.

Buy Now Pay Later: Impact of Installment Payments on Customer Purchases

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Buy Now Pay Later (BNPL) has become an increasingly popular payment method at retailers, allowing customers to pay for purchases in interest-free installments over a relatively short period of time, typically within four to six weeks (Accenture, 2021). Over 45 million US customers and over 15 million UK customers have adopted this form of payment (Accenture, 2021; Sheikh, 2021). Globally, the number of BNPL users has reached 340 million and is projected to reach 1.5 billion in 2026 (Juniper Research, 2021). In recent years, a growing number of major retailers (e.g., ASOS, Adidas, Target, Bed Bath & Beyond, Macy's, TJ Maxx, H&M, and Sephora) partnered with BNPL providers (Afterpay, Klarna, and Affirm) to allow customers to pay for purchases in installments (McKinsey & Company, 2021).

Despite the growing popularity of BNPL installment payments, little is known about their impact on retail sales. Half of retailers indicate little interest in offering BNPL installment payments and are uncertain about its long-term effects (RFI Global, 2022). For instance, less than half of retailers anticipate repeat purchases (38% in Bain & Company, 2021) or continued increased purchased frequencies (43% in RFI Global, 2022) from customers using BNPL. Although BNPL installments can be viewed as a form of temporal reframing (Gourville, 1998), it remains unclear if its effects extend to BNPL. First, previous research relied on experiments revealing mixed effects of how temporal reframing of prices affects transaction evaluations in the short term (Atlas & Bartels, 2018; Bambauer-Sachse & Mangold, 2009; Gourville, 1998, 1999, 2003). Thus, there is a need to examine how BNPL affects actual sales in the long term. Moreover, prior research typically presented aggregated and segregated terms separately without specifying the number of segregated terms. In contrast, BNPL installments present both the aggregate (e.g., $60) and segregated terms together while specifying the number of segregated payments (e.g., 4 installments of $15), further underscoring the need to explore the underlying mechanisms that drive the effects of BNPL installments.

The current research aims to provide retailers with an understanding of how BNPL installment payments can influence retail sales. In Study 1, we analyze transactional data from a major retailer in the United States that introduced BNPL installment payments by partnering with a leading BNPL provider for the first time. Our dataset spans 52 weeks of data, 22 weeks

before and 30 weeks after the retailer's introduction of BNPL installment payments. To examine the change in customers' purchase behavior after adopting BNPL installment payments at the focal retailer, we obtain a random sample of 25,000 existing customers that adopt within four weeks after the retailer's introduction of BNPL installment payments. As a control group of non-adopters, we obtain a random sample of 200,000 existing customers that do not adopt during the entire study period. To improve the comparability of adopters and non-adopters, we match each customer that adopts BNPL to a similar customer that does not adopt based on observed characteristics. Our difference-in-difference analysis reveals that adoption of BNPL installment payment plans is associated with increases in purchase incidence and purchase amounts, especially among credit (vs. debit) card shoppers and among smaller (vs. larger) basket shoppers. These effects remain statistically and economically significant across the entire post-adoption period.

Four pre-registered experiments provide causal evidence for the positive effect of BNPL installment payments on spending and explain why the effect occurs. Consistent with the transactional data, BNPL installment payments increase spending by reducing perceived financial constraints (Studies 2 and 3). Specifically, BNPL installment payments alleviate perceived financial constraints by reducing perceived costs and facilitating budget control (Studies 4 and 5). We also examine alternative explanations for our effect such as perceived benefits, feelings of being misled, price attractiveness (Study 3), and construal level (Study 5). Our paper offers several contributions. First, we present novel empirical evidence that BNPL installment payments can increase retailer sales as the adoption of BNPL installment payments is associated with increases in purchase incidence and amount. Second, we use experiments to reveal perceived financial constraints as an underlying mechanism for the BNPL installment payment effect. While existing research on perceived financial constraints has examined its consequences on customer behavior (Dias et al., 2022; Paley et al., 2019; Tully et al., 2015), we illustrate an antecedent by showing that BNPL installment (vs. delayed lump sum) payments reduce perceived financial constraints. Third, our paper contributes to the literature on temporal reframing (e.g. Gourville, 1998). We further this literature to payments where the aggregate cost of purchases is salient to customers and temporally segregated into an explicit number of installments. Finally, consistent with the temporal reframing literature (Atlas & Bartels, 2018; Gourville, 1998), we find that installment (vs. lump sum) payments reduce perceived costs. Our research extends this finding to a context where the aggregate amount and number of payments are present along with the segregated amounts (e.g., $60 in 4 installments of $15).

Nutritional Quality and Marketing Conduct in the CPG Industry

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Worldwide, obesity is a growing problem, with more than one billion people obese (World Health Organization, 2022). In the US alone, more than 40% of the population is obese (Forbes, 2023), up from 20% only 30 years ago. The consequences include numerous diseases and conditions at the individual level and rising healthcare costs at the societal level. The consumption of unhealthy foods and beverages, i.e., the nutritional quality of the food intake, plays a key role in this trend. Although consumers can typically freely choose their groceries, the selection is heavily influenced by both the availability and visibility of healthy foods (Hawkes et al., 2015).

While most retailers offer a sufficient selection of healthy food (van Ittersum et al., 2023), public health research documents that less nutritious food is promoted significantly more often in many countries, including the US, the UK, New Zealand, and the Netherlands (e.g. Powell et al., 2016; Tawfiq et al., 2022). Promotions make products more visible and are a key contributor to consumers' purchase decisions (e.g. Ailawadi & Neslin, 1998; Ataman et al., 2010); thus, if unhealthy products are promoted more often, consumers are likely to consume more foods of lower nutritional quality.

Nevertheless, retailers will only promote unhealthier products more often if consumers respond to these promotions more strongly than they would for promotions of healthier products. Given the widespread use of promotions on unhealthier products, consumers may respond, on average, more strongly to promotions of products with a lower nutritional value. Yet, Wertenbroch (1998) has documented how vice products are less responsive to price promotions than virtue products, casting doubt on the higher effectiveness of promoting unhealthy products. At the same time, research in marketing has a rich history of documenting substantial heterogeneity in promotional effectiveness. Such factors include, among others, relevant factors at the product, brand, category, and market level (Hoch et al., 1995; Kaul & Wittink, 1995; Van Heerde et al., 2013). To the best of our knowledge, no research exists that studies whether and to what extent the nutritional quality of a product influences the promotion effectiveness.

Formally, we study (a) to what extent a product's nutritional content shapes consumers' response to promotions, and (b) in which situations healthy products generate a greater promotional response than unhealthy products.

In our effort to resolve these questions, we study the US grocery industry, which offers substantial variability in promotion intensity and a wide range of products in terms of their nutritional quality. We use 10+ years of weekly store-level scanner data from 100,000+ products across 50+ product categories across 35,000+ stores that include information on sales, prices, and promotions. We match these rich sales data with proprietary data from Label Insight on the nutritional quality at the product level (e.g., calories, fat, salt, and sugar), giving us unique insights into each product's nutritional profile and allowing us to calculate measures of nutritional quality (e.g., Nutri-Score).

Econometrically, we leverage the rich product-level information to separate out the effect of a product's nutritional quality from other factors. Thereby, we can document whether unhealthier products have a higher likelihood of being promoted. Subsequently, we model how a product's sales react to promotions depending on the nutritional quality by estimating a demand model where marketing activities drive sales. To identify the promotional effect, we use Hausman-style instruments(e.g. Keller et al., 2023). We then explore the heterogeneity in these effects: the richness of the data along the temporal (500+ weeks), geographical (800+ markets within the US), product (100,000+), and store (35,000+ stores) dimensions allows us to derive generalizable insights into the role of nutritional content in promotional conduct.

Our insights offer both theoretical and practical contributions: we contribute by documenting across a deep and broad analysis frame the extent to which unhealthy categories, rather than unhealthy products within a category, are promoted more often.

At a high level, we aim to identify win-win situations in which response to promotions of healthy products is higher than unhealthy products, which would benefit both retailers and consumers.

Promotions: Pain or Gain? The differential impact of a price promotion ban across brands

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Price promotions are a popular marketing mix tool, as they can generate a substantial and immediate increase in sales (Blattberg et al., 1995; Van Heerde & Neslin, 2017). However, given that a considerable part of this sales bump stems from purchases simply shifting over time through stockpiling and/or delayed purchases in expectation of price cuts (Mela et al., 1998; Van Heerde & Neslin, 2017), the net result may be considerably less impressive. Moreover, this initial sales bump tends to be short-lived: price promotions have been found to have no persistent, long-term effect on the promoting brand's market share (Srinivasan et al., 2000), nor on category (Nijs et al., 2001) or brand sales (Pauwels et al., 2002). Moreover, as frequent price promotions increase consumers' price and promotion sensitivity (Mela et al., 1997) and decrease consumers' reference price (Kalyanaram & Winer, 2022), an overall negative effect of price promotions on brand loyalty (Gedenk et al., 2010) and brand equity (Valette-Florence et al., 2011) may occur.

The question can therefore be raised whether retailers and brand manufacturers would be better off to abandon promotions altogether. However, if a single manufacturer or retailer stops using price promotions, others seem to swoop in by offering (more and/or deeper) promotions and thus steal their market share (Ailawadi et al., 2001). In other words, price promotions are the outcome of a prisoner's dilemma (Lal, 1990): a retail environment without any price promotions would be in manufacturers' and retailers' best interest, however, there is a strong incentive to deviate. The question therefore remains who would benefit from a retail environment without price promotions, and who risks losing it all? We exploit an unprecedented policy intervention in Belgium to investigate brand share dynamics when the price promotion element of the marketing mix toolkit is unavailable.

During the first weeks of the COVID-19 pandemic, the Belgian government enforced a price promotion ban in an attempt to put a halt to panic buying and crowding in retail stores (Federale Overheidsdienst Binnenlandse Zaken, 2020). Such a price promotion ban is not a novel or rare policy instrument. In the past, price promotion bans have been put in place to discourage consumption of *specific categories*. For example, in Scotland, multi-buy

promotions for alcoholic beverages were prohibited (Nakamura et al., 2014; World Health Organization, 2009). Similarly, multiple countries including Canada, Brazil, Japan and India, have banned price promotions for tobacco products (Kasza et al., 2011; World Health Organization, 2009). In contrast to these category-specific price promotion bans, the Belgian ban under investigation prohibited all forms of price promotions (including pure price cuts and multi-buy) and encompassed all brands in all categories for all Belgian retailers. Therefore, it offers a compelling research setting to uncover how brands are affected when price promotions are banned across all product categories at all retailers in the market.

In this study we analyze how the competitive landscape in grocery retailing is altered when all promotions are abandoned. Specifically, we use a difference-in-differences approach to investigate the effect of the price promotion ban on brand shares (and to separate it from the effect of the COVID-19 pandemic and lockdown). To that end, we focus on the retailer Carrefour, who is active in Belgium and France, carrying a similar assortment and employing a comparable promotional strategy in both countries. To estimate the model, we utilize household scanner data of 2018 through 2021, provided by AiMark (Advanced International Marketing Knowledge).

Our analyses reveal substantial variation in the effect of the ban on brand share, with some brands losing (a lot), and others being unaffected by, or even benefitting from, an absence of price promotions. Consequently, we dig deeper to understand what typifies the brands who end up losing or gaining market share**.** To this end, we investigate a wide array of brand characteristics drawn from promotional response and broader marketing mix literature (Ailawadi et al., 2006; Bell et al., 1999; Sinapuelas et al., 2015). We use these characteristics to provide useful recommendations to brand managers on how they can shield, or even strengthen, their competitive position in a world without price promotions.

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