

Customer Cognitive Appraisals of Differential and Dynamic Pricing

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This study examines the mechanisms of cognitive appraisal theory in the context of dynamic pricing. The aim is to investigate the differences in cognitive appraisals by comparing dynamic pricing and simpler forms of price differentiation, as well as differences in appraisals between goods and services. The reactions examined in one qualitative and one quantitative study are the customers' feelings of being exploited, price complexity perceptions, and intentions to spread online word-of-mouth (eWOM). The qualitative results indicate that customers are less aware of dynamic pricing for goods than services and that there is a strong feeling of being exploited, which can lead to negative word-of-mouth. The quantitative results support these findings as customers react more negatively to dynamic pricing than to simpler forms of differential pricing. For goods, intentions to spread eWOM are mainly driven by feelings of being exploited, while for services, the main effect runs through price complexity perceptions.



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1. Introduction

1.1. What is the difference between differential pricing and dynamic pricing?

Differential pricing: We consider temporality as well as all other forms of personalized or non-personalized price differentiation as simple forms of price differentiation (or differential pricing, respectively) when the criteria for price differentiation are used alone or paired. Examples of price differentiation are a restaurant, hotel, or hairdresser that use temporal price differentiation to stimulate demand on certain days of the week, as well as student and senior discounts. In such cases, customers can single out the cause for the price variation and possibly justify why they might pay a higher price. Price promotions such as discounts that fluctuate monthly, weekly or even daily are considered to be differential pricing (Kannan and Kopalle 2001; Kannan and Li 2017; Keller et al. 2022;).

Dynamic pricing: When many price differentiation criteria are used in unison and prices change often, we consider this to be dynamic pricing, as this causes opaqueness surrounding the exact cause of price fluctuations. Developments in technology and digitalization led to the growing popularity of dynamic pricing among companies selling both goods and services (Sahay 2007). Following the conceptualization of Haws and Bearden (2006), we define dynamic prices as prices that vary continuously based on many types of differential pricing criteria combined. Thus, in the context of this research, dynamic pricing is any frequent price variation across time that is not attributable to single or multiple discriminatory pricing criteria discernible to the customer. We consider dynamic pricing as an algorithmic black box that includes multiple criteria to determine prices. Thus, from the customer's point of view, this black box combining many different opaque pricing criteria increases the difficulty of determining the causes of price fluctuation. As noted by Keller et al. (2022) for dynamic pricing, customers have no access to information on pricing criteria and do not know how these criteria are applied by companies. Thus, their perceptions of the retailers' pricing as more or less variable could affect their behavioral intentions. Our example of dynamic pricing would be a hotel that uses a pricing algorithm including day of the week, general supply and demand, time of booking, and even

discrimination based on electronic devices used for the booking (i.e., personalized pricing). For consumers, it would be much more difficult to single out the exact cause for a price increase (Did they book the room too late in the evening? Is there an event in the city causing prices to rise? Is it because they use a specific device to book the room?). Companies may include any criteria in their dynamic pricing algorithms such as supply and demand (Garbarino and Lee 2003), weather conditions, customer loyalty, and competitor prices (Kannan and Kopalle 2001; Sahay 2007).

The use of dynamic pricing in practice: Dynamic pricing is commonly used in service industries such as hospitality, tourism, transport, and entertainment (Moe and Fader 2009). In the early 90s, dynamic pricing for airlines was deemed acceptable by customers, but not for hotel rooms (Kimes 1994), but by the early 2000s, dynamic pricing was considered acceptable across both service categories (Kimes and Noone 2002). In the same period, Garbarino and Lee (2003) found that levels of trust in a company sink after customers experience dynamic pricing for goods (clothes). However, dynamic pricing for perishable goods (Tong et al. 2020), electronic goods, apparel, and even books (Kannan and Kopalle 2001) has been gaining popularity because online retailers can easily adapt prices. For some retailers such as Amazon, prices may vary multiple times a day (Kannan and Kopalle 2001).

Why do firms use dynamic pricing? Dynamic pricing pushes the extraction of customer surplus to extremes compared to simpler forms of price differentiation that combine a few differential pricing criteria (e.g., age and purchase time).

1.2. Why studying dynamic pricing?

Extreme price variation, like in the case of dynamic pricing, means that many customers are price-disadvantaged compared to other customers who paid lower prices. While price-advantaged customers are likely to show positive reactions, the negative reactions of price-disadvantaged customers are worth studying from a marketing perspective (Philp et al. 2018). We focus on the latter segment and their negative responses.

First, we look at felt exploitation. Feelings of exploitation result from recognizing that one gives more than one receives or gains less than one deserves (Vohs et al. 2007). In any variable pricing scenario, customers who realize that another customer has paid a better price for an identical product may feel like they have given more than they have received or received less than they deserve. However, feeling exploited has not been studied yet in the context of dynamic pricing. Therefore, we ask:

RQ1: Do differential pricing and dynamic pricing trigger different levels of felt exploitation?

Second, previous research has shown that varying prices can lead to higher cognitive loads or levels of confusion

and result in lower purchase intention than uniform pricing (Bertrandie and Zielke 2019; Homburg et al. 2014; Xue et al. 2020). Thus, we ask:

RQ2: Do differential pricing and dynamic pricing trigger different levels of perceived price complexity?

Third, customers often use negative online word-of-mouth (eWOM) as a coping strategy to obtain social support after paying a comparatively high price. Such negative eWOM can be detrimental to companies' reputation and may lead to the loss of existing and potential customers. Considering eWOM is essential because companies can experience more considerable losses through negative eWOM than through the loss of individual customers. Therefore, this study aims to examine the following:

RQ3: What are the effects of dynamic pricing as compared to simpler forms of price differentiation on price-disadvantaged customers' intentions to spread negative online word-of-mouth (eWOM)?

We analyse the underlying psychological processes using cognitive appraisal theory.

Fourth, we examine whether negative customer reactions as described above differ for goods and services.

In summary, our contribution is the examination of the effects of dynamic pricing as compared to simpler forms of price differentiation through price-disadvantaged customers' feelings of exploitation and price complexity perceptions on intentions to spread negative eWOM.

2. Background and hypotheses

2.1. Previous research on dynamic pricing

The term "dynamic pricing" is used in an inconsistent way in the literature. We focus on studies in the scope of our definition (Section 1.1) and present an overview in *Tab. 1*.

As illustrated by the *Tab. 1*, the current literature focused mainly on fairness perceptions using justice theories to explain negative customer behavior. In addition, only few studies examined dynamic pricing by comparing goods and services. From these studies, one learns that dynamic pricing, particularly when prices differ between customers, leads to lower trust and fairness perceptions and higher complaint and search intentions. Moreover, pricing criteria based on personal aspects such as loyalty and geographic location lead to lower fairness perceptions than more general criteria such as temporality. Interestingly, fairness perceptions improve when the customer self-attributes the blame for the price increase.

2.2. The role of feeling exploited

Research on feeling exploited in the context of customer relationship management (CRM) found that collecting large amounts of detailed customer information leads to a power imbalance, leaving the customer with feelings of

Study	Price variations	Product type	Effects of on perceptions	... on behavioral intentions	Methodology	Findings
Garbarino and Lee (2003)	between peers	goods	being price disadvantaged and price advantaged in the context of dynamic pricing	post purchase benevolence trust, post purchase overall trust	–	dynamic pricing with price increase vs. price decrease	Dynamic pricing relates negatively to trust both in the case of price disadvantaged and price advantaged customers.
Grewal et al. (2004)	over time, between peers	services	being faced with fluctuating prices in the context of Internet-enabled buyer identification vs. purchase time discrimination	post purchase trust, fairness of the price difference	purchase intentions	3 pricing criteria examined: buyer identification favoring a frequent buyer vs. buyer identification favoring a new buyer vs. purchase timing	Differential pricing based on new customer identification leads to lower levels of trust, fairness, and purchase intention than identification based on loyalty. Fairness perceptions and purchase intentions are higher for the purchase timing differentiation than for the loyalty-based differentiation.
Haws and Bearden (2006)	over time, between peers	goods	paying higher prices in comparison to other consumers vs. price differences caused by different sellers, time, or due to an auction	price fairness judgement, purchase satisfaction	–	3 (price level: +20% vs. equal vs. –20%) × 4 (purchase situation differences: seller, consumer, time, auction)	Higher prices relative to other customers lead to lower perceptions of price fairness and lower purchase satisfaction than higher prices due to time, seller differences, or an auction situation.
Garbarino and Maxwell (2010)	between peers	goods	a norm-violating pricing practice vs. a non-norm violating pricing practice (despite equal pricing)	perceived price fairness, trust	purchase intentions, search intentions, private and public complaint intentions	2 (price difference: different seller vs. dynamic pricing) × 2 (price increase vs. price decrease)	Dynamic pricing leads to lower perceptions of fairness, benevolence trust, purchase intentions, and higher intentions to complain both privately and publicly, and marginally higher search intentions than price differences due to separate retailers.
Weisstein et al. (2013)	between peers	goods	mitigation tactics that avoid customers' negative reactions to online dynamic pricing in price disadvantaged situations	perceived transaction dissimilarity, perceived fairness, trust	repurchase intentions	4 (price framing technique: dollar off, % off, free gift, gift card, no framing) × 2 (loyal vs. new customer)	Price framing leads to higher perceptions of price dissimilarity, fairness, levels of trust and purchase intentions. These variables were also higher in the case of new customers receiving a discount and loyal customers receiving a gift card.
Li et al. (2018)	over time	goods, services	The effects of dynamic pricing compared to dynamic pricing with bundling	perceived transaction dissimilarity, price fairness perceptions	comparison intentions	2 groups: dynamic pricing and dynamic pricing with bundling	Through higher dissimilarity perceptions and lower comparison intentions, dynamic pricing with bundling leads to higher price fairness than dynamic pricing.
Priester et al. (2020)	between peers	goods	personalized or segmented prices, or discriminatory criteria based on location and loyalty	fairness perceptions	–	2 (individual pricing vs. segment pricing) × 2 (location-based pricing vs. purchase-history-based pricing)	Personalized pricing is considered less fair than segmented pricing. Location-based pricing is perceived less fair than purchase history-based pricing.
Schmidt et al. (2020)	over time	services	different browser cookie authorization levels	self-attribution of the locus of cause, price fairness perceptions, offer satisfaction	purchase intentions	browser cookies: no notice vs. accept all without a choice vs. choice of cookies declined vs. choice of cookies accepted	Approval of browser cookies (used for personal data collection) leads to higher levels of self-attribution of price change than refusal. Higher self-attribution leads to higher fairness perceptions, which leads to higher offer satisfaction and higher purchase intentions.
Gunadi and Evangelidis (2022)	over time	goods, services	the direction and frequency of price changes	–	purchase deferral	2 (price: increase vs. decrease) × 2 (single change vs. multiple)	Customer intention to defer a purchase is higher in the case of a recent price increase than price decrease, in particular after a single decrease than multiple smaller decreases.

Tab. 1: Overview of previous research on dynamic pricing

being exploited with respect to trust caused by privacy violations (Nguyen and Mutum 2012). Companies exploit customer information to their benefit while giving little in return, but nonetheless leaving the customers in a somewhat neutral position.

In the context of differential and dynamic pricing, companies often also exploit customers to the companies' advantage. Based on the assumption that individuals also feel exploited when they give more than what they re-

ceive in return (Vohs et al. 2007), we argue that customers who know that they pay higher prices for a product than other customers perceive that they have given more than they have received and therefore might feel exploited.

However, price differentiation (e.g., temporal price differentiation) is widely accepted by customers (Grewal et al. 2004; Kimes and Wirtz 2003), in particular if the differential pricing is framed as a discount (Kimes and

Wirtz 2003) and communicated transparently (Kannan and Kopalle 2001). It is easier to frame differential pricing with one or two criteria as a discount (for example as an early-bird discount or a student or senior discount) than it is, if possible at all, to frame continuously fluctuating dynamic prices as a discount. Moreover, differential pricing with a couple of criteria enables more price transparency than complex dynamic pricing algorithms.

In contrast, due to the higher power imbalance between customers and the company in a dynamic pricing scenario (compared to simpler forms of price differentiation), stronger feelings of being exploited and subsequent retaliatory behaviors might arise in price-disadvantaged customers. We hypothesize:

H1: Dynamic pricing will lead to stronger feelings of being exploited by a company than simpler forms of differential pricing.

2.3. The role of perceived price complexity

Complexity is driven by the number of elements and the heterogeneity of these elements within a stimulus pattern (Berlyne 1960; Estelami 2003; Homburg et al. 2014). For individuals to develop complexity perceptions, they must first perceive the number and diversity of elements within a pattern (Fletcher et al. 1986). Studies on price complexity in the context of drip pricing (Totzek and Jurgensen 2021), partitioned pricing (Layer et al. 2017), and temporally framed pricing (Bambauer-Sachse and Grewal 2011; Lu et al. 2021) suggest that price complexity leads to undesirable customer behavior.

Applying these arguments to dynamic pricing, we argue that customers first need to perceive and evaluate the number and diversity of pricing elements that cause prices to fluctuate in order to develop price complexity perceptions. As dynamic pricing algorithms can compile large amounts of diverse and opaque criteria, we argue that dynamic pricing leads to higher price complexity perceptions than differential prices using only a few criteria.

We additionally consider the moderating role of the product category (goods vs. services). As dynamic pricing is more common for services (e.g., in tourism and hospitality industries) than for goods, service customers are likely to perceive different levels of price complexity depending on whether they are faced with dynamic pricing or simpler forms of price differentiation. In contrast, as both dynamic pricing and simpler forms of differential pricing are rather uncommon for goods, customers are likely to be overwhelmed by the number and diversity of the pricing criteria used. Thus:

H2: For services, dynamic pricing will lead to higher price complexity perceptions than simpler forms of differential pricing. For goods, perceived price complexity is not contingent on the product type (goods vs. services).

2.4. The mechanisms underlying customers' intentions to spread negative eWOM

In the following, we use cognitive appraisal theory (CAT) to develop a better understanding of the mechanisms underlying the effect of dynamic pricing as compared to simpler forms of price differentiation on price-disadvantaged customers' intentions to spread negative eWOM.

Cognitive appraisal theory: CAT states that individuals evaluate an event through two appraisals and that emotions are the results of these cognitive appraisals (Folkman et al. 1986). During the primary appraisal, individuals evaluate whether the event was harmful or beneficial to their commitments, goals, values, peers, or own self-esteem. If after the primary appraisal, the individual considers the event as harmful, they will commence a secondary appraisal, during which individuals examine whether they can do anything to change the outcome of the situation (Folkman et al. 1986), and evaluate options such as accepting the situation, seeking more information, or determining whether the locus of causality is external, internal, or situational (Stephens and Gwinner 1998). After the two appraisals, individuals might go through a coping process, which is defined as the cognitive or behavioral efforts to manage the results of the appraisals. Despite the ongoing debate of whether cognitive appraisals are a necessity for emotional responses (opposing views: Izard 1993; Zajonc 1980, 1984), marketing research has focused on determining the cognitive appraisals that influence consumption emotions. Nyer (1997) affirmed that negative consumption emotions and satisfaction resulted from primary goal-oriented appraisals and secondary appraisals and coping potential. Nevertheless, Watson and Spence (2007) noted in their review of CAT that in the marketing field, sufficient research had been conducted proving the mediating role of emotions in the relationship between primary appraisal and decision-making. Researchers who have used CAT to study customer complaint behavior (e.g., Stephens and Gwinner 1998) and intentions to spread eWOM (e.g., Obeidat et al. 2017) found that, after service failures, primary cognitive appraisals of goal incongruence drove perceptions of being betrayed by a company and desire for revenge. The desire for revenge increased intentions to spread negative eWOM, mediated by secondary cognitive appraisals. The authors argue that perceived betrayal and the desire for revenge are emotional elicitation, caused by the primary cognitive appraisal, but are experienced before the secondary appraisal. In fact, emotions arise from the primary appraisal rather than the event itself (Frijda et al. 1989; Lazarus 1991; Smith and Ellsworth 1985). In other words, one must first acknowledge an event to perceive it as harmful and then experience emotional responses.

Transfer to dynamic pricing: In a dynamic pricing setting, price-disadvantaged customers, who are aware of the fluctuating prices, are likely to form a first appraisal

by evaluating whether being price-disadvantaged is harmful to their financial goals and financial commitments, and to their own self-esteem. Price-disadvantaged customers will recognize that the situation is in their disfavor and are likely to experience feelings of being exploited by the company after the first cognitive appraisal. After the initial appraisal and subsequent development of negative feelings, customers will go through a secondary appraisal where they determine whether they can modify the situation's outcome. During the second appraisal, customers will seek out more information to understand why they are price-disadvantaged and try to determine the locus of causality of the price variation. This can be difficult and require large cognitive efforts, particularly in the case of dynamic pricing, resulting in high perceptions of price complexity. After these two cognitive appraisals and the ensuing affective states, customers faced with dynamic pricing may seek out a coping strategy (Ahmad and Laroche 2017) that is both problem-focused and emotionally focused such as seeking social support (Folkman and Lazarus 1988). Research using CAT in the context of pricing and WOM showed that price increases lead to higher negative price affects, leading in turn to lower intentions to spread positive WOM (Peine et al. 2009) and to use the spread of eWOM as a coping mechanism. Customers may spread negative eWOM specifically to reduce cognitive dissonance after a purchase (Rosario et al. 2020). Cognitive dissonance means in the considered context that customers have conflicting beliefs. For example, when faced with dynamic pricing, customers may believe that their disadvantageous price position is their own fault due to their time of purchase and simultaneously the company's fault due to their implementation of dynamic pricing. By spreading eWOM, they reduce this cognitive dissonance by shifting their own responsibility and reinforcing the idea that the company is to blame. Another common reason to spread eWOM is to seek justice and retaliation (Anderson and Simester 2014; Hennig-Thurau et al. 2004; Rosario et al. 2020).

The moderating role of the type of product: Due to lacking awareness of varying prices for goods, price complexity will be less prominent, while we expect price complexity to be salient for services for which variable pricing is more common. Thus:

H3a: For goods, dynamic pricing will lead to higher intentions to spread negative eWOM than simpler forms of differential pricing, mediated mainly by feelings of being exploited.

H3b: For services, dynamic pricing will lead to higher intentions to spread negative eWOM than simpler forms of differential pricing, mediated mainly by price complexity perceptions.

In order to find answers to the initial research questions and to test our hypotheses, we conducted a qualitative study in the form of a focus group and a survey-based quantitative study that we will present in the following.

3. Qualitative study

The objective pursued with the focus-group study was to better understand if and how price-disadvantaged customers develop feelings of exploitation, price complexity perceptions, and intentions to spread WOM in the context of dynamic pricing.

The focus group discussion with eight business students was held in person, audio-recorded with the participants' permission, and written into a transcript. The participants had to imagine themselves in the context of a price-disadvantaged customer compared to a peer, booking a room at a hotel that uses dynamic pricing, and were asked to share their spontaneous thoughts about the scenario. They agreed that the scenario was realistic and started to share their experiences.

When asked to recall specific experiences of dynamic pricing, respondents quickly gravitated toward the link between dynamic pricing and WOM. For example, one participant recalled an experience at an all-inclusive hotel, where they met other customers who had booked the same package for more than double their price. Through this example of WOM, the participant recalls the other customers' anger and even notes that the disadvantaged customers' anger can become a problem for service providers despite dynamic pricing being a norm within the hospitality industry.

"We paid one thousand per week, and the family next to us at the beach said they paid 2.300 per person for the same package. I think that is where you start talking more about it because it is crazy. And it is also a problem for the hotel because if I was a customer and I had people next to me that paid half the price, I would be so frustrated. I mean, the family was frustrated, they were very angry. I can totally understand why. You go to a hotel, there are people, they pay less than half the price, and they have the same offer; they sit at the same table, you become kind of frustrated, even if you can understand it is dynamic pricing, the frustration is still there."

As a direct response to the previous comment about frustration with dynamic pricing, another participant expressed the opinion that frustration levels with dynamic pricing may be branch-specific and depend on how accustomed the customer is to the use of dynamic pricing within the given industry. Interestingly, the participant considered dynamic pricing to be uncommon in the case of many goods.

"I think it also depends on the industry. In the tourism or hospitality industry, you are frustrated, but you still accept (dynamic pricing). But for some other industries, you probably will not even accept it. Like food, clothes, or even computer or electronic devices, it is only in the flight or hotel industries where you have become used to it. It becomes a kind of norm because we do not have any other choice. It is specific to the tourism industry. Otherwise, you will not accept it."

In response, another participant agreed and noted that for some goods, notably food, the use of discriminatory pricing, such as dynamic pricing would lead to them deciding to abandon the purchase.

"I think it depends on the branch. If someone sells food outside and I have to pay more than the customer just before me, I think I would double-check and say no."

When asked why they perceived dynamic pricing in different product categories as more or less fair, the participants mentioned that services tend to be more hedonistic, and many goods mentioned in the focus group, such as food and clothes, were perceived as utilitarian. Therefore, the participants considered it unfair to apply discriminatory pricing to goods for basic needs. The participants also provided an alternative explanation; they expected dynamic pricing for services to revolve around high demand for a service and dynamic pricing for goods to revolve around excess supply. The participants also debated whether dynamic pricing was already used in grocery stores and whether low price magnitude might explain why dynamic pricing for goods is less visible and thus less prone to WOM.

"I think it is also because you always pay small amounts. You do not feel it that much. I mean, maybe yesterday you bought strawberries for 3.10, and I bought them today for 2.40. We will never take the time to talk about it or compare it. Whereas when you pay larger amounts, you feel (the price difference) at one point. I think it has a lot to do with the amount you pay."

Although the participants generally did not believe dynamic pricing to be a common practice for goods, they did recognize that if retailers were to introduce dynamic pricing, customers might become accustomed to the pricing tactic in the future.

"Regarding food, if tomorrow everyone, every supermarket, every website, every restaurant practiced dynamic pricing, we would end up accepting it."

"I think it is all linked to expectations. You expect to always pay the same price for a litre of milk, and when you pay more, you are angry. You already know that prices change in the travel industry, so your tolerance is higher."

This train of thought also appeared when discussing services in which dynamic pricing is a more recent implementation, for example, ski lifts. The participants' statements show that when customers are familiar with dynamic pricing within an industry, their tolerance toward the pricing strategy is higher. In contrast, if they are unaware or unaccustomed to practice, they question the fairness of the practice. This phenomenon has also been reported in the hospitality industry by Kimes (1994), who found that with time customers became more accustomed to revenue management and perceptions of fairness increased.

"But going back to talking about which industry dynamic pricing is acceptable in; I think that for ski resorts, it being so new, because they introduced it this year or last year, people are not quite ready for that kind of thing in the context of ski resorts."

"Yes, I do not care if the weather is sunny or not. I just want to ski on the day I choose. So why is it that only because of your (e.g., the ski lift's) price-changing scheme, the weather now has to affect me (and the price I pay)?"

When asked whether they would change their purchase behavior after discovering that a company or industry uses dynamic pricing, the respondents mentioned that they feel manipulated by companies that implement dynamic pricing and often try to understand how dynamic pricing works in order to find the best prices. The respondents also noted that power imbalance influences the customers' purchasing decisions.

"It is all about power asymmetry. If you feel like you are in a position of power, you can change something. But if you're in a situation where you're powerless, you have no control; then you just accept the price. Of course, it will still induce some negative emotions, but you will accept it. So it's about how powerful you are."

"I am always trying to understand why the prices fluctuate and how we could avoid it. Sometimes I ask my husband: Okay, look at this website. Which price do you have? Only to see if there is a difference. I really try to understand how they are mani..., because to me it is really manipulation, how they are trying to manipulate us with such offers and such strategies."

These last statements illustrate cognitive appraisal mechanisms within the considered research context. During the primary appraisal, customers determine whether the outcome (price) is beneficial to them or not. Then, during the second appraisal, they will evaluate whether they have the means to change the outcome in their favor (Folkman et al. 1986). At times, customers feel powerless and resigned to accept the outcome (price). Other times customers may try to escape the manipulation or exploitation by companies by understanding the pricing strategies and using them to their benefit.

In conclusion, the focus group supports the conceptual argument that customers spread negative WOM on the topic of dynamic pricing, and this may have adverse effects on companies. Moreover, customers are seemingly less aware that dynamic pricing is already applied to goods as they deem the practice unacceptable in many cases. Finally, customers perceive dynamic pricing as a form of manipulation or exploitation and present contrasting feelings of powerlessness and resignation but also desire a better understanding of pricing algorithms and avoidance strategies.

A limitation to the qualitative study is that a convenience sample of business students was used. Business students

are likely more knowledgeable about dynamic pricing and company motives. However, the students were first asked to think back to a situation in which they experienced dynamic pricing as a customer and to remember their related thoughts as well as the emotional responses they experienced. Interestingly, despite having above-average business knowledge, the participants were less aware of the use of dynamic pricing for goods. Therefore, their reactions in terms of dynamic pricing for goods are most likely representative of the general population.

4. Quantitative study

Experimental design: We used a 2 (pricing tactic: dynamic pricing vs. differential pricing with two criteria) \times 2 (product category: goods vs. services) between-subjects design and two goods (computer and mobile phone) and two services (hotel room and rental car) respectively to cover different product categories.

Scenarios: The test scenario put the respondents in the situation of a price-disadvantaged customer who learns that the prices of the product vary either based on the combination of two forms of price differentiation (temporal: early-bird discounts and demographic: student discounts) or on dynamic pricing (described as continuously fluctuating prices over time, based on many different criteria). For the goods, the study context was individuals seeking to purchase a computer (or mobile phone) for personal use and discovering that a friend received a better price for the same product with the same retailer. For the services, the study context was the reservation of a hotel room (or a rental car) in Barcelona for vacation purposes. These choices are based on realism as the travel industry is known to use dynamic pricing.

Procedure, sample, and measures: Each respondent evaluated either both goods or both services, with the order counterbalanced. The data were collected with the help of an online questionnaire, on the platform soscisurvey.de, during 2018 and 2020. The participants were not paid for their contribution and could end participation at any time. All data were treated anonymously. The survey provided a sample of 232 respondents (predominantly European students, average age: 26.1 years, 48 % women). The four groups were structurally consistent in terms

of age ($F_{3; 228} = .705$; $p > .10$) and gender ($\chi^2 = 5.102$; $p > .10$). We used measures on a seven-point scale (from “totally disagree” to “totally agree”) for perceived price complexity (“The pricing described in the scenario is complex”; “The pricing in the described scenario is confusing”; $r = .769$), the feeling of being exploited by the company (“I believe that the described pricing exploits the customer’s willingness to pay to the maximum”), and intention to spread negative WOM (“I would report my negative experience on the Internet through social media, blogs and forums”).

Results: The initial analyses conducted for each service (hotel room and rental car) and each good (phone and computer) produced the same patterns. Therefore, we collapsed services and goods to form two experimental groups (goods vs. services). Tab. 2 shows the effects of the pricing tactic on feelings of being exploited, price complexity perceptions, and intentions to spread negative eWOM.

The results in Tab. 2 show that felt exploitation is higher for dynamic pricing than for differential pricing. This finding exists for goods and services. H1 is therefore supported. As expected in H2, dynamic pricing (compared to differential pricing) produces a higher level of perceived price complexity for goods but not for services. The pricing tactic has no direct effect on the intention to spread negative eWOM. In order to test H3a and H3b, we conducted mediation analyses (Hayes 2017, model 6). We used model 6, because based on the theoretical argumentation derived from CAT, felt exploitation is the primary appraisal and perceived price complexity is the second appraisal. Tab. 3 shows the results.

The results in Tab. 3 show for goods that the effect of the pricing tactic on intentions to spread eWOM is based on one single mechanism: Dynamic pricing leads to stronger feelings of being exploited than the combination of two simple forms of price differentiation. Stronger feelings of being exploited in turn lead to higher intentions to spread eWOM. Price complexity perceptions do not play a role in this mechanism occurring for goods.

For services, this path observed for goods does not exist, but two other mechanisms can be identified. Dynamic pricing leads to perceptions of higher price complexity than combining two simple forms of price differentiation, and these higher price complexity perceptions in

Tab. 2: Effects of pricing tactic and product category on feelings of exploitation, price complexity perceptions, and eWOM

	Feelings of exploitation		Price complexity perceptions		Intentions to spread negative eWOM	
	goods	services	goods	services	goods	services
Differential pricing	5.52	4.25	4.24	2.58	3.55	1.73
Dynamic pricing	6.13	5.32	4.31	4.22	3.64	2.18
Mean difference	.61 ($t = 2.51^*$)	1.07 ($t = 3.50^{***}$)	.07 ($t = .31$)	1.64 ($t = 6.42^{***}$)	.09 ($t = .36$)	.45 ($t = 1.64$)

* $p < .05$; ** $p < .01$; *** $p < .001$

Goods						
Direct effects	β	<i>t</i>-value	Indirect effects	95% CI		
PT → EX	.607	2.511*	PT → EX → eWOM	.214	.0379	.4652
PT → PC	.045	.191	PT → PC → eWOM	.012	-.0900	.1849
EX → PC	.043	.480	PT → EX → PC → eWOM	.007	-.0244	.0430
EX → eWOM	.352	3.929***	Residual effect	-.143	-.6058	.3193
PC → eWOM	.265	2.790**	Total effect	.090	-.4038	.5824
$R^2_{EX} = .054; R^2_{PC} = .003; R^2_{eWOM} = .185$						
Services						
Direct effects	β	<i>t</i>-value	Indirect effects	95% CI		
PT → EX	1.067	3.503***	PT → EX → eWOM	-.103	-.2740	.0253
PT → PC	1.384	5.354***	PT → PC → eWOM	.352	.0936	.6881
EX → PC	.242	3.247**	PT → EX → PC → eWOM	.066	.0099	.1651
EX → eWOM	-.097	-1.134	Residual effect	.135	-.4906	.7605
PC → eWOM	.255	2.515*	Total effect	.450	-.0936	.9936
$R^2_{EX} = .094; R^2_{PC} = .320; R^2_{eWOM} = .074$						

Notes: PT: pricing tactic (0: differential pricing, 1: dynamic pricing), EX: feeling of exploitation, PC: price complexity perception, eWOM: intention to spread word-of-mouth online; * $p < .05$; ** $p < .01$; *** $p < .001$

Tab. 3: Effects of the pricing tactic through feelings of exploitation and price complexity perceptions on eWOM

turn lead to higher intentions to spread eWOM. Moreover, dynamic pricing for services leads to stronger feelings of being exploited than simpler forms of price differentiation. For services, stronger feelings of being exploited lead to perceptions of higher price complexity, which in turn trigger higher intentions to spread eWOM. Thus, intentions to spread eWOM about dynamic pricing for services are mainly driven by price complexity perceptions. These results provide support for H3a and H3b.

Limitations: The quantitative study is based on student sample. Although in this case, the use of student responses poses less of an issue for the observation of eWOM than it would for purchase intention or willingness to pay, a sample consisting of a broader population might provide more stable results. The use of scenario-based experimentation is another limitation. Ideally, a laboratory experiment using simulations of websites to illustrate the price and perhaps a digital conversation with a friend to represent the reference price would make the experiment more realistic. Finally, dynamic pricing is the continuous variation of prices; a laboratory experiment would have allowed the possibility to have the price fluctuate on simulated websites and in real-time.

5. Conclusion

Marketers can profit from our findings by recognizing that dynamic pricing, compared to simpler forms of differential pricing, leads to stronger feelings of being exploited, higher price complexity perceptions, and higher intentions to spread eWOM. In particular, the feeling of being exploited is even more salient for goods than for services. Therefore, our first managerial implication would be to avoid dynamic pricing in favor of simpler forms of differential pricing whenever possible, particularly for goods. Despite the growing trend to apply dy-

namic pricing in online retail, our study shows that dynamic pricing can trigger negative chain reactions, and negative eWOM can have far-reaching negative consequences such as customer abandonment and reputation damage. Thus, dynamic pricing does not always equal customer-surplus extraction and easy profits; the amount of customer loss and reputation damage that dynamic pricing causes might sometimes outweigh the benefits. Therefore, our second managerial implication is as follows: marketers who still use dynamic pricing should present prices in a way that reduces the feelings of being exploited and price complexity perceptions.

Future research could examine strategies that mitigate the negative effects of dynamic pricing. Particularly in the context of goods where its application is still rare and customers report high levels of felt exploitation, future studies could examine whether customers' feelings of being exploited differ across product categories, in particular with regard to different levels of product complexity. This idea is based on insights provided by the focus group discussion that indicated that customers may have more adverse reactions if the good is utilitarian, or at least of first-necessity, than when the good is hedonistic or of a luxurious nature. For services, it would be interesting to examine how price complexity perceptions could be lowered to ease secondary appraisals. One way of reducing perceived complexity can be simply through clear communication of the criteria and mechanisms that influence price fluctuations. Uber for example already implements this strategy. Furthermore, studies could include other coping strategies than eWOM, as cognitive appraisals of dynamic and differential pricing might lead to other coping mechanisms such as direct complaints to the company or switching intentions. Moreover, future research could explore the importance for marketers to explain and communicate the differentiation criteria transparently. In addition, new studies might examine

which combinations of differential pricing criteria (e.g., inventory-based, demand-based, cost-based, perishability of certain goods) customers would be willing to tolerate. Finally, perceived switching costs could be examined in order to better specify strategies for implementing dynamic pricing for both goods and services.

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Keywords

Dynamic Pricing, Differential Pricing, Price Complexity, Customer Exploitation, Word-of-Mouth