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A qualitative investigation of company perspectives on online price discrimination

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A B S T R A C T

Online price discrimination (OPD) or personalized pricing has triggered many debates in the existing literature, due to its potential adverse effects on (trust in) markets and certain consumer groups. The implicit assumption underpinning these debates is the actual use of OPD in practice, although empirical research has not provided evidence of its common use. The aim of this study is to explore company perspectives regarding OPD and possible explanations as to why this practice is not widespread. Semi-structured interviews were held with 14 data scientists, sales managers, marketing directors and policy experts from Dutch companies. The findings indicate that companies are reluctant towards using OPD, particularly selective price increases. They rather seek other forms of data application for personalized marketing. Next to economic, technological, legal, and ethical considerations, consumer backlash was another key factor in the decision to engage in OPD. While companies do not seem convinced that the current regulatory initiatives are sufficiently effective, they support self-regulation and ethical codes. However, as more covert or indirect forms of OPD are expected, continued attention and scrutiny by regulators is warranted.

1. Introduction

Online price discrimination (OPD) has been a widely debated topic among various disciplines, attracting ample research attention in economics (Armstrong, 2006), law (Sears, 2021) and business ethics (Seele, 2019). The rapidly increasing flow of (personal) data, combined with technological developments such as data mining and algorithmic decision-making, are expected to open the door to advanced and complex forms of pricing, allowing companies to personalize prices based on consumer data and online consumer behavior (Odlyzko, 2009; OECD, 2018a; Townley, 2017).

An extensive body of research has raised potential challenges and questions regarding law and (further) regulation with regard to the direction in which this practice seems to be heading (Odlyzko, 2003; Seele, 2019; Moriarty, 2021), which revolve around the potential disadvantages that OPD could have for consumers and the relationship between companies

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and consumers. Moreover, anecdotal evidence and empirical research show that this pricing method often provokes resistance among consumers; that is, consumers may perceive OPD as unfair and unlawful (Turow et al., 2009; Poort and Zuiderveen Borgesius, 2019).

Scholars have focused almost exclusively on the consumer. However, whether OPD has negative consequences for consumers is a moot point, regardless of the challenges and concerns, if companies do not engage in this practice. Apart from anecdotal instances of (alleged) OPD, most quantitative studies have failed to find evidence for the existence of OPD (Vissers et al., 2014; EC, 2018; German Ministry of Justice and Consumer Protection [BMJV], 2021). This is somewhat surprising because, from a business economics perspective, OPD and the technologies used to differentiate among consumers offer several advantages for companies, such as a more efficient decision-making process (Townley et al., 2017), revenue optimization (Shiller, 2014), and the ability to provide more relevant offers for consumers (OECD, 2018a). Given the advantages that OPD offers companies, the question remains why so little of it seems to be happening, at least overtly. Hence, it is imperative to empirically investigate how companies perceive OPD. Though the existing literature has brought forward ethical, legal, technological and economic explanations as to why OPD is not as widespread, there is no empirical research on company perspectives regarding their perceptions of the practice and any factors that may play a role in their decision to engage in OPD.

Given that prior research has overlooked the role of companies, the main aim of this research is to shed light on company perspectives regarding OPD, in particular their own justifications of these practices and possible explanations as to why this practice is not (at least not obviously) widespread. We set out to examine company behavior and what motivates companies in the online environment, thereby contributing to a more thorough understanding of OPD and its determinants. Since the decision to engage in OPD ultimately lies with companies, our research adds a novel and valuable perspective to the existing, consumer-central debate on this data-intensive phenomenon. Moreover, we examine this phenomenon against the backdrop of the European legal framework, in a Dutch context. Scholars have examined the extent to which European law applies to OPD (Papandropoulos, 2007; Botta and Wiedeman, 2020; Sears, 2021), the perceptions of European consumers regarding this practice (Poort and Zuiderveen Borgesius, 2019), and the prevalence of this practice in Europe (Mikians et al., 2012; Vissers et al., 2014; EC, 2018; BMJV, 2021). Yet, most anecdotal examples of OPD flow from the US market (Baker et al., 2001; Valentino-DeVries et al., 2012). Therefore, in order to broaden our understanding of OPD, we explore the perspectives of Dutch companies. We do so by conducting semi-structured, in-depth interviews with experts in the fields of marketing, e-commerce and data science in the Netherlands. It is important to investigate said company perspectives, also to advance the regulatory debate. For legislators and regulatory authorities, insights into company perspectives are key to understand the state of the art and the direction in which OPD is heading, in order to explore possible avenues for regulation.

In Section 2, we review the current literature on OPD. Here, we briefly define OPD and the current debate on OPD. Also, we provide an overview of the explanations that the literature has brought forward regarding the lack of empirical evidence on OPD. In Section 3, we discuss the methodology used for the semi-structured expert interviews. In Section 4, we present the results of the interview analyses. In Section 5, we discuss implications of our findings for various stakeholders, in particular companies and legislators. Furthermore, we discuss the limitations of our research and provide avenues for future research on OPD, after which we conclude in Section 6.

2. Literature review

2.1. Online price discrimination

The practice of price discrimination is generally defined in economic terms as the situation in which a seller charges different prices for different customers for the same product, where the difference in price cannot be explained by a difference in (marginal) costs (Varian, 1989). Not every situation in which prices differ among consumers, constitutes price discrimination. Common company behaviors, such as fluctuating prices based on demand and supply, are often inappropriately defined as price discrimination. In many cases, price differences are a result of (subtle) cost differences (Lott and Roberts, 1991). When a seller charges two consumers two different prices for the same product because one consumer lives abroad and the seller has higher shipping costs as a result, this cannot be regarded as price discrimination (McAfee, 2008). Instead, with price discrimination, the difference in price is based on the information the company has about (prospective) clients (Carroll and Coates, 1999). The reasoning behind this pricing strategy is that consumers value products and services differently and therefore vary in their willingness to pay for products and services (OECD, 2016).

Based on the level of information that companies hold, they can opt for direct or indirect price discrimination (Miller, 2014). With direct price discrimination, companies use consumer characteristics as a basis for price discrimination: consumers with the same characteristics receive the same prices. In the case of indirect price discrimination, companies offer a 'menu' of options to all consumers, from which consumers can choose the option that is most suitable for them. Here, consumers 'self-select' themselves into groups with differing levels of preferences (Carroll and Coates, 1999).

The process of OPD starts with the collection and preparation of data on which to base the different prices. To arrive at such different prices, it is important to be able to distinguish between consumers and their (assumed) price sensitivity. After all, if all consumers have the same willingness to pay, price discrimination is not profitable (Stole, 2007). Here, companies do not necessarily need to estimate the maximum willingness to pay of each consumer: pricing strategies where only a part of the willingness to pay is estimated based on consumer data, can also be considered OPD (OECD, 2018a). Consumer segmentation can take place at the group level, in the form of group profiles, but also at the individual level, in the form of individual profiles (Custers, 2013). The level of segmentation de-

pends largely on the level of (real-time) data that a seller is able to collect about (prospective) clients, as well as the technology that is available to companies to analyze such data (Miller, 2014).

Scholars note that online pricing is becoming increasingly reliant on consumers' personal information and automated algorithmic pricing mechanisms (EC, 2018; Seele, 2019) because of (1) an increase in data on which to base prices and (2) advancements in technology to analyze such data and optimize prices accordingly. Companies are increasingly able to collect large amounts of data of existing and potential customers, often without consumers' knowledge (Odlyzko, 2003; FTC, 2014; OECD, 2015). Unlike in pre-digitalization times, data are not mainly volunteered by consumers but can be observed and inferred by companies and include many new and possible sensitive types of data such as age, income, transactional data and clicking behavior (OECD, 2018a). In addition, technological advancements such as data mining and pricing algorithms allow for sophisticated and cost-efficient methods to analyze the big volume of data and translate results into differentiated prices (OECD, 2018b). OPD is not limited to selective price increases, as it also encompasses experimenting with personalized discounts. In fact, the OECD (2018a) expects that companies are more likely to engage in personalized discounts rather than personalized price increases in the future.

2.2. The current (regulatory) debate

The increasing availability of big data for pricing has triggered a debate with two camps. On the one hand, from an economics perspective, price discrimination represents a value-free concept without the more normative (often negative) connotations that the common understanding of the word 'discrimination' might suggest in other disciplines (Steppe, 2017). In many cases, differentiating between consumers and their assumed price sensitivity has proven to be an effective method to increase revenue (Odlyzko, 2003). The use of big data, algorithmic decision-making and data analysis techniques such as data mining and profiling can facilitate a more efficient, faster and more accurate decision-making process for companies (Townley, 2017). For example, Shiller (2014) suggests that if Netflix were to use personal customer data to set its prices, the company could increase its total profits by as much as 12%. In addition to economic incentives that might steer companies towards exploring OPD, customer data provide companies with valuable insights into consumer preferences (Seele, 2019). In line with the more general discussion on personalization, such insights can be used to provide (prospective) clients with more relevant offers, including discounts for consumers who might otherwise not have been able to purchase a product or service (OECD, 2016).

On the other hand, scholars have raised questions regarding the broader trend of personalized marketing communication and the direction in which related strategies seem to be heading (Odlyzko, 2003; Barocas and Selbst, 2016; Strycharz and Duivenvoorde, 2021). As part of the future of personalized marketing communication, OPD might have a disruptive effect on the market due to its complex, dynamic and data-intensive nature which has raised questions regarding (further) regulation (Miller, 2014; Moriarty, 2021). For example,

some scholars have raised concerns regarding the algorithms and data used when setting prices, which can result in systematic disadvantage of certain consumer groups, based on legally protected characteristics or new points of data that can be observed online (Custers, 2013; Barocas and Selbst, 2016). Another concern is related to effect that OPD might have on consumers' trust in the digital market. Particularly if this practice is conducted in a non-transparent or deceptive manner, this could evoke a sense of unfairness among consumers, potentially inhibiting consumer participation in digital markets (Miller, 2014; OECD, 2018a). Furthermore, the accumulation and analysis of consumer data has the potential to facilitate a growing information asymmetry between consumers and companies, with the latter having an informational advantage (Moriarty, 2021). As Strycharz & Duivenvoorde (2021) brought forward, the trend toward more personalized offers through consumer data could result in the exploitation of various consumer vulnerabilities, such as consumers' emotional states and (lack of) knowledge about certain practices. Due to its complex and dynamic nature, consumers and regulatory authorities will likely face difficulties detecting OPD and proving that the observed price difference is based on consumer data (Barocas and Selbst, 2016; OECD, 2018b).

In light of the concerns and questions that have been raised, in particular in response to consumer protection, the European Parliament has adopted Directive 2019/2161 in 2019.[1] The main goal of this directive is to modernize the current EU consumer protection rules and to ensure a high level of consumer protection by improving awareness among consumers, traders and legal practitioners about consumer rights.[2] Directive 2019/2161 contains the first initiative towards specific EU regulation for personalized pricing (i.e., price discrimination on the basis of consumers' personal characteristics). According to information requirements in Directive 2019/2161 the consumer has to be informed whether the price is personalized on the basis of automated decision-making.[3] In line with existing literature, the underlying assumption is that the technology to personalize prices is available to sellers and that they will indeed make use of such technology, if they are not doing so already.[4] The directive was only recently implemented in national legislation of EU Member States, so it remains to be empirically investigated whether this regulatory initiative is effective in mitigating the risks that are associated with OPD.

2.3. Explaining (the absence of) OPD

Previous empirical research has attempted to bring the prevalence of OPD to light, but has failed to find systematic evidence that the practice is as established and individualized as some scholars suggests (Vissers et al., 2014; EC, 2018;

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[1] Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules.

[2] Consideration 1 and 3 Directive 2019/2161.

[3] Consideration 45 Directive 2019/2161.

[4] Consideration 45 Directive 2019/2161.

BMJV, 2021). Interestingly, observed price variations were generally marginal and often took the form of targeted discounts rather than complex individualized price discrimination. As the OECD (2018b) reports, the observed differentiation in OPD is often based on one variable or a limited set of variables, rather than a sophisticated, multi-data customer profile. This implies that OPD is not yet as advanced as the literature expects it to be, particularly in the European market. Scholars have provided explanations as to why (individualized forms of) OPD is not yet as widespread. Four main lines of reasoning can be identified, namely ethical, legal, economic and technological explanations (Hindermann, 2018).

First, one of the most prominent *ethical* explanations that are given relates to consumer backlash. Companies may refrain from most forms of OPD out of fear for consumer backlash (Council of Economic Advisers, 2015). As Odlyzko (2009, p.47) stated, "the main constraint on price discrimination comes from society's dislike of the practice". Previous studies on consumers' attitudes towards OPD found that most consumers perceive OPD and personalized pricing to be unfair and unethical (Turow et al., 2005, 2009; Poort and Zuiderveen Borgesius, 2019). Anecdotal instances of (alleged) OPD that came to the light, such as in the case of Amazon in 2000, were met with a lot of consumer outrage (Ramasastry, 2005). While this perceived risk of consumer backlash could keep companies from engaging in OPD altogether, it might also result in companies opting to conceal their engagement in OPD (Odlyzko, 2003).

Second, OPD might be limited due to the current *legal* framework. Apart from the recent regulatory initiative of Directive 2019/2161, few restrictions to OPD are offered by the current legal framework (Sears, 2021). There are four areas of law that may pose constraints on companies' engagement in OPD: data protection law, anti-discrimination law, competition law and consumer protection law (van der Rest et al., 2020). The current legal framework for data protection law prohibits the processing of certain categories of (sensitive) personal data (Zuiderveen Borgesius and Poort, 2017), while anti-discrimination law prohibits companies to limit the provision of goods or services on grounds such as gender, race or nationality (Sears, 2021). Moreover, competition law may prevent companies from engaging in OPD when the use of the practice constitutes an abuse of dominance. However, there is no evidence of widespread enforcement on the basis of this provision and there are in fact major obstacles to overcome before personalized pricing can be challenged successfully under competition law (Botta and Wiedemann, 2020; van der Rest et al., 2020). Consumer protection law can play a role in leveling the information asymmetry between companies and consumers. Under the existing legal framework, however, there is no evidence of enforcement with regard to OPD (Sears, 2021).

Third, companies that wish to engage in OPD or experiment with their pricing strategies might face *economic* hurdles. From an economics perspective, healthy competition within a digital economy might prevent companies from charging a higher price than the market price since consumers might opt for alternatives, especially when consumers actively compare sites (Hindermann, 2018). In addition, assessing and estimating consumers' willingness to pay requires access to data and the financial means to collect and analyze such data: smaller companies will most likely not have the means to implement the data and technology needed to engage in (advanced forms of) OPD (Arora et al., 2008).

Fourth, companies wishing to engage in OPD will likely run into *technological* challenges in at least three stages of the process: collecting data, transforming data into insights, and operationalizing results (Arora et al., 2008). Particularly in multi-channel environments, data collection and integration across channels may prove to be difficult for most companies (Neslin et al., 2006). Companies may find that the number of consumers they can collect data on, as well as the extent of integration of consumer data (with a 360° view on consumers as the ideal) is limited, or prohibitively expensive (Arora et al., 2008). Even when companies manage to collect the data needed, the next step would be to develop valuable insights from the data (Dean, 2014). Operationalizing the insights from data might pose difficulties as well, as it requires close coordination across departments within a company (Arora et al., 2008).

3.   Method

3.1.   *Sample and procedure*

In this qualitative and exploratory study, we address the research question "How do companies perceive OPD?" Since the current level of knowledge regarding this subject shows inconsistencies in the assumptions that flow from the literature and the (lack of) empirical evidence, we aim to add novel and real-life perspectives to the debate. Qualitative interviews are a suitable method to do so, as they can provide descriptions of the life world of participants, gaining more insight into the meaning they give to certain phenomena (Kvale and Brinkmann, 2009). To gain insights into the perspectives of companies with regard to OPD, we conducted semi-structured in-depth interviews with 14 data scientists, sales managers and marketing experts from different companies based in the Netherlands. The semi-structured design of the interviews allows for both flexibility and in-depth exploration of participants' attitudes and experiences (Berg, 2008).

We used purposive sampling to recruit participants, which entailed recruiting participants that fulfilled certain characteristics (Neuman, 1997). The main inclusion criterion was that participants had to work for companies that pride themselves on being data driven or providing data-driven solutions to other companies. In other words, we included companies that in theory have access to large amounts of consumer data. Moreover, we approached experts in the field of price setting and consumer data, including regulatory authorities that have previously published papers on the subject of OPD. In total, we interviewed participants from marketing and data science companies ($n = 7$), e-commerce and retail companies ($n = 5$), an advocacy group ($n = 1$) and a regulatory authority ($n = 1$).

We chose to confine our research to the Netherlands as an exploratory starting point, as we sought to have one market context as the base for our research. By choosing one market context, we pursued to keep environmental factors such as the legal framework and economic environment relatively constant. We aimed to include companies of different sizes, as

Table 1 – Overview of Participants

Participant	Occupation	Company type*	Company size
Participant 1	Consultancy Director	Marketing and data science	Small (1-50 employees)
Participant 2	Director	Marketing and data science	Small (1-50 employees)
Participant 3	Senior Enforcement Official	Regulatory authority	Large (250+ employees)
Participant 4	Policy Advisor	Advocacy group	Medium (51-250 employees)
Participant 5	Managing Director	Marketing and data science	Small (1-50 employees)
Participant 6	Data Scientist	Marketing and data science	Small (1-50 employees)
Participant 7	Sales Manager	E-commerce and retail	Medium (51-250 employees)
Participant 8	Data Governance Manager	E-commerce and retail	Large (250+ employees)
Participant 9	Digital Sales Manager	E-commerce and retail	Large (250+ employees)
Participant 10	Sales Manager	Marketing and data science	Small (1-50 employees)
Participant 11	Consumer Insights Manager	Marketing and data science	Large (250+ employees)
Participant 12	Managing Director	Marketing and data science	Small (1-50 employees)
Participant 13	Website Optimization lead	E-commerce and retail	Large (250+ employees)
Participant 14	Marketing Manager	E-commerce and retail	Large (250+ employees)

company size may influence perspectives on OPD. We classified companies as small (1–50 employees, $n = 6$), medium (51–250 employees, $n = 2$) and large (over 250 employees, $n = 6$). To cover as many perspectives as possible, we ensured we interviewed participants with varying backgrounds of expertise and age. The variation of occupations included data scientists and data governance managers ($n = 4$), sales and marketing managers ($n = 4$), directors ($n = 4$), enforcement officials and policy advisors ($n = 2$). In line with our inclusion criteria, we drafted a list of 21 companies and approached the companies by email. The email explained the topic and goal of our research. Participants who agreed to participate in the interview received an informed consent letter together with the topic list before the interview took place. Table 1 shows

an overview of the participants. We applied the principle of data saturation (Saunders et al., 2018) to determine the appropriate number of participants for this study. After 14 interviews, we found that the interviews did not yield any further insights that would enhance or change the conclusions of the present study. Therefore, we decided to stop data collection at this point.

Data were collected by the lead author. The semi-structured in-depth interviews were conducted with the help of a topic list, which was drafted on the basis of an in-depth literature review on OPD. The topic list covered the following seven themes: (1) digitalization, datafication and the trend of personalization, (2) consumer segmentation, (3) OPD, (4) reasons to engage in OPD, (5) reasons to not (yet) engage in OPD, (6) legitimacy, and (7) future perspectives on OPD. Each theme contained subquestions, which covered the scope of the theme while leaving room for further in-depth discussion. For example, the third theme included questions such as 'What is your association with the term "online price discrimination"?' and 'Can you think of examples of online price discrimination?'. Theme 7 included questions such as 'In what ways do you expect online price discrimination to manifest itself in the future?' and 'Which sectors, products or markets do you think will experience the fastest growth within the trend of price personalization?' The full topic list with corresponding questions can be found in the Appendix. The length of the interviews ranged from 42 min to one hour and 45 min. Participants received an informed consent form, in which they agreed to the interview proceedings being recorded and anonymously transcribed. Out of the 14 participants, one participant made use of the opportunity to opt out of the recording; instead, notes were taken during the interview. The rest of the interviews were recorded and transcribed, which resulted in 143 written pages of transcriptions. The lead author transcribed and coded all interviews, after which a research assistant cross-checked coding and categorization. Analysis results were collectively discussed throughout, so that questions could be adjusted where necessary. The semi-structured interviews were conducted and transcribed in Dutch; quotes that are presented in the Results section are translated from Dutch to English.

3.2. Qualitative analysis

The transcripts were systematically coded with Atlas.ti. We started with *open coding,* breaking up the data from the interviews and creating codes to label quotes from the interviews. During the open coding process, we made sure to make use of *constant comparison.* That is, when assigning codes, we assessed whether a new code had to be made or whether an existing code could be used. All quotes were assigned one (or multiple) codes, resulting in 77 codes. Next, we assessed how the codes were connected (*axial coding*) and what categories the codes belonged to (*selective coding*). For instance, we created a category for 'reasons not to engage in OPD', which consisted of seven different codes. The codes that fell under this category were 'competition and market situation', 'consumer backlash and reputational damage', 'economic limits', 'ethical limits', legal limits', 'organizational limits' and 'technological limits'. We assumed to have reached saturation when the in-

Table 2 – Key Findings From Company Interviews

Theme	Insights
The trend of personalization and datafication (Section 4.1)	Trend towards more data-driven solutions Relevance, efficiency and effectiveness Consumer need for personalization
OPD (Section 4.2)	Predominantly neutral connotation Pragmatic perspective on OPD Awareness of ethical concerns
Factors that play a role in the decision to engage in OPD (Section 4.3)	Company-related, consumer-related and environmental factors Emphasis on (risk of) consumer backlash
Current application of OPD and expected applications (Section 4.4)	Price increases less likely to occur than price decreases Personalized discounting most likely to be experimented with Possible lack of transparency due to consumer backlash
Regulation of OPD (Section 4.5)	Emphasis on healthy economy and well-functioning market Emphasis on self-regulation, transparency towards consumer and consumer empowerment Emphasis on company awareness and knowledge Doubts regarding the effectiveness of current regulatory initiatives and legal framework

terviews did not yield new insights and the *open coding* process did not result in new codes (Saunders et al., 2018).

4.   Results

Analysis of the interviews indicated five overarching themes in the perspectives of companies. Table 2 provides an overview of the themes as well as the key insights.

4.1.   *Trend of datafication and personalization*

Companies are increasingly interested in becoming more data driven in their business conduct (i.e., datafication) and implementing consumer data in their marketing strategies (i.e., personalization). Participants highlighted the advantages of data-driven business conduct, which can be summarized as efficiency, relevance, and effectiveness. First, *efficiency* refers to the implementation of personalized strategies in a more cost-efficient or timesaving manner. Participants emphasized that the current state of technology expedites more efficient and large-scale decision-making, allowing companies to utilize more data points than ever before. Moreover, technology facilitates operational efficiency, where decision-making processes and resource allocation are designed in a more optimized way to reduce costs.

> *"There are three reasons why you should be data-savvy. [...] Two, save costs. You know more about what your customers are going to do or want, so you can buy better or organize your processes*

more efficiently. Three, you lower your marketing costs by handling your marketing funds more efficiently." (Participant 2, director)

A second advantage of data-driven business conduct is higher *relevance* in that companies are better able to present the (potential) customer with content that matches with consumer preferences. Current technology allows companies to develop more complex models, taking more variables into account in their strategies than before. As a consequence, participants expect to provide consumers an experience that is more in line with their personal preferences and hence more relevant. Though participants were aware of instances where consumers react negatively to OPD or other personalization initiatives, they noted that consumers often expect to be treated in a personal manner, particularly when they have frequent interactions with a company. Consumers' needs for personalization and personalized treatment are a complementary explanation for why companies are increasingly looking to become more data driven and provide more personalized offers.

> *"I'd rather not call it personalization myself, because that sounds like I'm targeting you, but it's more about relevance. What you want as a company is to give a relevant in-app or website experience [...] If you're not relevant, you're insignificant and irritating."* (Participant 2, director)

Third, as a result of more relevant content, companies in turn expect an increase in revenue as well as attracting new customers and building more long-lasting relationships with current customers. Thus, pricing strategies can become more *effective* due to datafication and personalization. Participants emphasized the economic motivation that forms the basis of the trend towards personalization. While relevance and customer satisfaction are highly valued among participants, the main motivation to become more data driven is to increase sales.

> *"Of course, it can help to optimize and improve your product development. So there are also positive things about it. But in the end, it is of course about more sales, more profit and perhaps better customer satisfaction."* (Participant 6, data scientist)

However, participants mentioned the risk of 'getting it wrong', where companies act on incorrect assumptions about consumers. Participants emphasized that it is important to remain cautious of the level of personalization and the data used for developing personalized pricing, as consumers might react negatively to communication that is not relevant, too specific or addresses sensitive topics.

> *"People also increasingly expect that the things that they receive, especially when it comes to a personal email or personal advertising, fit their interests. Because it is happening more and more, also in other industries, people expect it to be correct. If you are then wrong, you really miss the point."* (Participant 11, consumer insights manager)

4.2.   *Defining OPD*

When asked about their perceptions of the term OPD, most participants viewed the practice as predominantly neutral,

placing emphasis on the importance of entrepreneurial freedom and negotiation. Price discrimination in and of itself is an economic pricing strategy that has been around for decades and knows many variations, such as targeted discounts, quantity discounts, and loyalty programs. Several participants mentioned the example of purchasing a car, where customers who enter the car showroom in a suit are likely to give the salesperson a visual impression that the customer is less sensitive to price. According to the participants, the ability to then fluctuate prices accordingly is a central pillar for many companies in their business conduct.

> *"I am an entrepreneur, and I just say that it is business. I view it differently. For example, I visit a certain hotel a lot and can book it all through the app. What do I do? I call the hotel and ask them what they can do for me. They like me and give me a lower price. That's just a normal way of negotiating. But I should not tell everyone else about it. I think that is free spirit of commerce."* (Participant 2, director)

According to the participants, what sets apart OPD is the data that can – in theory – be used to segment consumers and engage in price discrimination. Online, various (new) data points become available that companies can consider and use, such as consumer browsing behavior and purchasing history. Participants were well aware of the more negative connotation that OPD might evoke in other disciplines than data science, economics and marketing. Participants noted that while they themselves view the term 'discrimination' as the long-standing practice of dividing their (prospective) clientele into segments and typifications, they realize the term can provoke concerns among consumers, the media and regulatory actors. During the interviews, some used 'differentiation' rather than 'discrimination' to refer to the same practice.

4.3.   *The decision to engage in OPD*

Participants brought forward several factors that influence the decision whether or not to engage in OPD. Analysis of the interview data resulted in three overarching factors: company-related factors, consumer-related factors, and environmental factors. Fig. 1 provides an overview.

Company-related factors. In the process of OPD, there are three main stages that can be distinguished: data collection, analysis, and implementation. Participants noted that throughout this process, there are several company-related factors that influence a company's ability to engage in OPD. First, to generate a large dataset, companies need frequent interactions with their (prospective) customers. Without a steady stream of data, companies are unable to run consistent analyses and draw reliable conclusions about their clientele. Preferably, these data contain recent information on consumer purchase history. Second, companies must be able to run analyses on the collected data. One of the participants highlighted the amount of manpower and investments needed to run effective analyses on consumer data in order to discriminate online prices accordingly:

> *"You only have a certain allocation of your development funds. […] You have to be really advanced, if this is what you want to bet all your IT and data-analysis capacities on. That would mean*
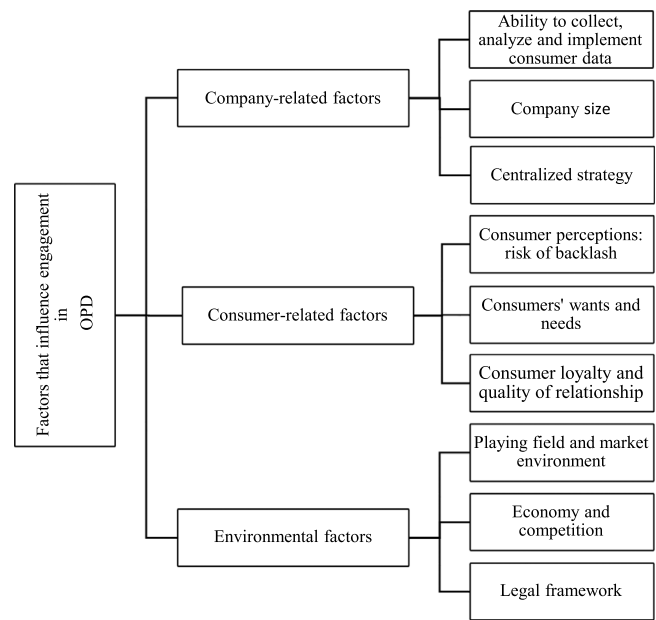

Fig. 1 – Overview of (limiting) factors influencing engagement in OPD.

> *that you have already effectively taken care of all the other things that need to be taken care of."* (Participant 6, data scientist)

Moreover, assessing consumers' willingness to pay from the available data is relatively complex. Participants with a data science background noted that, in theory, it is possible to run multiple tests on consumers and assess at what price they stop purchasing. However, they also emphasized that willingness to pay is an abstract variable, which tends to fluctuate over time. Even when companies manage to estimate consumers' willingness to pay, a steady stream of data is needed to continuously adjust analyses.

> *"Products and preferences change. […] You really prefer as much recent data as possible. The more we know about you, the better we can make the offer. []"* (Participant 8, data governance manager)

Third, there are factors that relate to the ability to implement findings into pricing strategies. Participants emphasized that targeted forms of OPD are complex, as there are practical limits to the number of additional segments a company can create before it becomes too much to keep up with. Every segment requires its own communication and pricing, which need to be determined iteratively. Moreover, participants stressed that it is important not to rely too heavily on data, as data alone might paint an incorrect picture of consumers' preferences. Triangulating the insights from data analysis with other modes of consumer research should ensure a higher level of relevance for consumers.

Size of the company is another prominent factor that influences companies' engagement in OPD. Among the participants there was a general consensus on the availability of big data analysis tools, which are becoming increasingly available also to smaller companies. However, the implementation of OPD requires investments and long-term dedication. Partic-

ipants agreed that smaller companies may therefore be less likely (or able) to engage in OPD. Participants stated that bigger companies are more likely to have access to high-quality and real-time data. In addition, bigger companies can profit from the so-called network effect, where an increase in readily available consumer data allows companies to improve the quality of their goods or services, which in turn attracts more consumers. As one participant put it:

> *"It becomes a kickstart. The more relevant you are for your customers, the bigger the chance that they will come back and provide you with even more data. That's a flywheel that a company like Amazon has made use of before anyone else."* (Participant 8, data governance manager)

There might also be disadvantages for bigger companies. Within large organizations, there are many different departments that need to be managed. Ideally, the personalized pricing strategy is streamlined across all departments. In practice, as participants brought forward, this is not always the case. Often, there is a disconnect between the data science department and departments such as marketing and sales, in terms of objectives, metrics, and definitions regarding the implementation of consumer data in the companies' business conduct. Creating an environment in which OPD can flourish often requires large-scale reorganization and investments.

> *"There are a lot of moving parts. The challenge for a marketing department is to keep that overview and to understand how to link it all together. A marketeer is not schooled as an IT specialist, which makes the playing field difficult. Even if they want to, they will not always get it. I hear that often."* (Participant 5, managing director)

Consumer-related factors. One of the main arguments that participants referred to as an explanation for why OPD does not seem to be happening on a large scale, is the risk of consumer backlash. Almost all participants expressed familiarity with instances of (alleged) OPD and the backlash that other companies endured. While a price difference might remain unnoticed at first, it only takes one consumer to start comparing prices and raising questions. As one participant put it:

> *"Suppose we would give certain price-conscious consumers $10 off on every product, there would be someone on a forum like Reddit saying 'Look, I was able to buy this for that price'. That would come to light quickly. First in a small group, then it will spread."* (Participant 13, website optimization lead)

Participants stressed that nowadays even an allegation can cause major backlash and reputational damage because of the speed at which it can reach a broad audience. An allegation of adjusting prices based on consumer data can spark consumer debate and unwanted media attention, which will undeniably have an effect on consumers' perceptions of a company. Somewhat paradoxically, fear for such consumer backlash might lead to more covert price discrimination strategies.

> *"If someone guarantees them that the consumer will not find out, they'll do it tomorrow."* (Participant 6, data scientist)

Participants argued there are observable differences among consumers in their wants and needs. While some consumers are willing to pay a premium if this means that they build a sustainable and reliable relationship with a brand, other consumers value a consistent low price over the experience they have with a brand. Price-sensitive consumers might put in more time and effort to compare prices and negotiate and may therefore be more likely to spot price differences. Such differences among consumers may impact their perceptions of price fairness. One participant highlighted that consumers' perceptions of fairness are an important factor in explaining what causes consumer backlash.

> *"Unfairness, that's the core. If people feel like the justice is gone, that's when there will be backlash."* (Participant 8, data governance manager)

Participants mentioned that consumer backlash could result in a negative attitude towards the company and decrease consumers' loyalty, ultimately making them decide to purchase a product or service elsewhere. It is therefore important to build sustainable relationships with consumers, particularly in terms of consumer trust. On the long term, developing and maintaining a sustainable relationship with consumers is thought to be more rewarding than trying to extract consumers' (maximum) willingness to pay. According to participants, delighting consumers with a well-functioning and relevant product or service favorably influences consumer loyalty and is an effective method for companies to secure their position in the market.

> *"You want to delight your customers. If you are happy because of what we offer you, then we can outdo competitors. If you then have to choose between two similar options, you will choose us because of that advantage. That's where your profit is. Not in earning 10 cents more."* (Participant 8, data governance manager)

Thus, consumers' loyalty and the quality of the relationship they have with a brand or company form additional parameters that companies keep in mind when engaging in OPD and other personalization tactics. While companies need a certain level of loyalty and consumer engagement to collect data on consumer preferences, participants expect that loyal consumers will feel more let down than 'regular' consumers when presented with an irrelevant or unfavorable offer.

Environmental factors. In addition to company- and consumer-related factors, our results pointed to environmental factors that shape the legal and economic playing field in which companies conduct their business. Some participants remarked that many of the instances of (alleged) OPD involved American rather than European companies. One participant wondered whether there are not more instances of OPD in Europe, as the technology should in theory be available to European companies as well. Indeed, several participants noted that the geographical location is not directly linked with the ability to engage in OPD. However, geographical location can be an indirect indicator of the playing field companies find themselves in. Big tech companies from the United States, such as Amazon, Apple and Google have acquired high market power partly through their extensive data collection, leading the way in terms of international competitiveness. Large companies are able to make use of network effects, where they are able to increasingly expand

their knowledge and big data capabilities at a higher rate than other, smaller companies.

> *"I do not see Dutch or European companies having an information position of power like big American companies have anytime soon."* (Participant 8, data governance manager)

Participants emphasized that a healthy economy and fair competition are other environmental factors that may impede widespread OPD. As long as consumers have alternatives and the ability to compare prices, companies will probably not be able to engage in all forms of OPD, at least not for an extended period of time. Moreover, companies are likely to be called out on their pricing tactics by competitors or regulatory authorities. While companies may get away with OPD strategies on the short term, participants deemed it unlikely that it is possible to maintain such practices on the longer term. One of the participants remarked that the type of market in which the company operates influences the degree to which OPD is possible. In markets where there are many suppliers for a product and product scarcity is relatively low, companies might find it more difficult to justify an increase in price. That being said, some of the participants noted that the current online environment at times obfuscates consumers' ability to compare prices, facilitating nontransparent behavior by companies. Companies may be able to hide behind the guise of dynamic pricing, which refers to the practice of fluctuating prices based on market conditions rather than consumer characteristics. As consumers find themselves into more demarcated online domains, they may find it more difficult to detect price differences and the cause of the difference in price.

The (national) legal system may also pose restrictions on the extent to which companies can engage in OPD. When asked about the current regulatory impediments to OPD, almost all participants mentioned **data protection law** (particularly the EU General Data Protection Regulation, GDPR) and the limitations that flow from its legal provisions. Some participants emphasized that they are 'GDPR-proof', referring to the lawful handling of personal data and leaving out legally forbidden characteristics in their modeling. One of the participants noted that with the existing limits in data protection law, the GDPR in particular, he believes it is unlikely that European countries will make major advancements in OPD. However, among most participants, there remain questions on the applicability of data protection law on new technologies such as OPD. As one participant pointed out:

> *"There is a lack of clarity and certainty about the European regulatory framework. Article 22 of the GDPR, who actually understands that? [...] I think in that sense, the rules do not help, or at least there is a lack of case law and guidance."* (Participant 4, policy advisor)

Regarding **competition law**, participants mentioned concerns and challenges in relation to the current market environment, rather than specific legal provisions that could form a boundary for the application of OPD. Most participants stated that competition law could potentially play a large role in leveling the playing field in which companies find themselves, as well as mitigating market power of large companies. As for **consumer protection law,** participants expressed concerns about vulnerable consumers and the deception that can

take place online, but did not express knowledge about (the existence of) specific legal provisions.

Only one participant expressed familiarity with the current legal framework in the area of **non-discrimination law**, stating that the law explicitly prohibits discrimination in relation to the access to products on the basis of characteristics such as gender. However, this participant also mentioned that the boundary between legitimate differentiation and prohibited discrimination is rather complex to navigate.

4.4. *Current and expected applications of OPD*

When asked about their current price setting strategies, participants mentioned that they do not make use of selective price increases based on personal characteristics. Price increases that do occur are justified by higher costs, according to participants. They also mentioned that personalized discounts, rather than selectively raising prices, might mitigate a great part of the backlash that OPD evokes. Some participants indicated they indeed make use of discounts and benefits for loyal members. They justified such practices by transparency; consumers are aware that they receive benefits based on their long-term membership and frequent interactions with the company.

While discounts are common business practice, participants expected that discounts based on purchasing behavior will gain popularity. One participant mentioned that offering discounts to consumers who are more price sensitive or hesitant about a purchase has proven to be an effective method. The challenge, according to this participant, lies in accurately identifying those price-sensitive consumer groups. However, as one participant brought up, the economic welfare concerns are similar to those with selective price increases, even though their acceptance of the discount practice might be relatively high, as consumers still end up paying different prices:

> *"Also, it will be difficult to address because everyone wants a discount. Nobody is against discounts. If you, as a legislator or regulator, are going to say that those discounts are not okay, people will question what you are saying. 'What are you saying, discounts are not okay?'"* (Participant 3, senior enforcement official)

Overall, most participants emphasized that they expect other forms of data application to become more viable in the future. Companies are likely to implement the data-analysis findings for other purposes, such as optimizing their current customer segments and improving their communication with consumers. Moreover, participants noted that fear of consumer backlash could lead to more covert or indirect forms of OPD.

An example of indirect price discrimination is that of 'loyalty bundles', which are becoming increasingly popular among companies (UK Competition and Markets Authority [CMA], 2015). By providing certain loyalty programs, companies can (indirectly) identify consumers who are willing to pay a premium in exchange for better or faster service. One participant noted that offering consumers the choice to opt-in for certain premium features constitutes a discriminatory instrument, which is aimed at increasing loyalty and removing a certain threshold to interact with a company. For companies,

it can be a mode of indirect price discrimination, as it allows companies to identify which consumers value service over a low price.

4.5.   *Regulating OPD*

When asked about (legal) regulation and safeguards that should be taken with regard to OPD, companies emphasized the importance of a healthy and well-functioning market. Large tech companies, such as Google, Amazon and Apple are heavily embedded in the current digital market structure. On the long term, participants expected smaller (national) companies to be unable to compete with large international companies, in terms of data savviness. They noted that there is a challenge, particularly for competition law, in curbing the informational position of power that some companies are increasingly obtaining.

Participants mentioned two types of markets that might require more regulatory safeguards. First, markets where consumers are required to purchase a product or service, such as the energy or insurance sector. In such sectors, the obligatory nature of the product may create an environment in which companies can exploit consumer vulnerabilities. There is also the risk of a lock-in effect, where consumers are dependent on suppliers and cannot switch to a competitor without substantial costs or (perceived) inconvenience. Second, low-involvement products (e.g., when consumers make repeat purchases) are unlikely to elicit active price-comparing behavior among consumers. Nudging consumers to compare prices or reflect on such purchases on a deeper level might therefore not be effective in empowering consumers.

In terms of consumer protection, participants noted that vulnerable consumers for whom it would be important to be resilient (e.g., because they have relatively less disposable income) may make up the least resilient group of consumers in practice. While participants did not provide a clear definition of vulnerability, some participants indicated that vulnerable consumers are those that are fairly easily misled online, for instance, due to a low level of education or a low level of knowledge regarding the online environment.

> *"You could also look, for example: which parties currently work a lot with vulnerable consumers? That could also be an approach, that those parties should then be aware that they should not abuse those vulnerabilities."* (Participant 3, senior enforcement official)

Participants placed particular importance on empowering and informing consumers, arguing that consumers should be protected more in terms of resilience and knowledge about marketing practices and possible applications of data. However, one participant working at a regulatory authority made an important observation regarding the current level of compliance and legal expertise of companies regarding OPD and personalization tactics more generally:

> *"The risks of the practice require companies to be much more alert, to have more lawyers or check and balances in their system and processes. You just see that it's missing at the moment. Many companies have too few people with this expertise in their legal and compliance departments. Right now, it's very much GDPR fo-*

> *cused in compliance, or competition focused. But consumer protection is lacking."* (Participant 3, senior enforcement official)

At the same time, participants expressed worries about the extent to which legal regulation could address concerns related to consumer protection, informational positions of power and the complex character of current technology. According to some participants, legal regulation is not always in tune with the actual state of the art.

> *"The government needs to be more informed about the current state of technology. Call a random professor on AI in the Netherlands and ask them to run you through it. (...) Right now, they are going to pursue a policy based on (wrong) assumptions, I find that scary."* (Participant 2, director)

Participants were asked about their views on the recent legislative initiative as put forward in Directive 2019/2161, which proposes a requirement for companies that engage in personalized pricing on the basis of automated decision-making to inform consumers about this. Participants expressed mixed reactions. While all participants endorsed the notion of increased transparency, they expressed concerns regarding the practicality and achievability of this initiative. One of the participants mentioned that consumer protection is not the only area in which transparency obligations are required. Ultimately, consumers are being flooded with large amounts of information, and participants deemed it unlikely that consumers can digest all the information that is presented to them. That being said, there was also a participant who believed that an information requirement – although not necessarily useful for consumers – could lead to more insights into company conduct.

Participants emphasized the proactive responsibility of companies to take a stance in counteracting any risks or concerns with regard to OPD. Participants noted that the general public seems to become more aware and concerned about the use of their personal data, particularly in light of various data scandals. Among participants, there was consensus that companies that are more advanced in their big data capabilities should bear a large share of the responsibility in ensuring that data processing is done correctly. Yet also smaller companies need to be aware of the techniques they use to reveal patterns in the data and implement the findings because all companies have a responsibility to provide consumers with information on how they use the data, in an effort to change the public's perception.

> *"(...) If you do not know how to organize that data flow yourself, how can you explain it to a consumer who knows even less about it?"* (Participant 5, managing director)

All in all, participants seemed to prefer a self-regulatory approach, in which companies themselves take the initiative to develop guidelines and frameworks for ethical, legal, and responsible business conduct. One of the participants noted that in the Dutch insurance industry, there has already been an initiative for ethical industry standards. Insurance companies agreed upon a binding self-regulatory ethical framework for data-driven applications, using Artificial Intelligence (AI) and related systems. At present, insurance companies have the obligation to use this framework to assess whether

their applications meet ethical requirements. For instance, applications should ensure the prevention of legally prohibited discrimination and have fallback options in case the system fails. Another participant agreed that developing and applying ethical frameworks across industries could prove an effective safeguard against unwanted backlash and ethical concerns. In addition to ethical and legal (self-)regulation, a few participants suggested exploring avenues for technological regulation. They proposed setting up independent audits focused on the fair and ethical use of algorithms.

> *"Perhaps we can create a quality mark in which algorithms are examined by us for ethics. The input (data) and the algorithm (code) itself, as well as the conclusions and actions attached to it. A kind of algorithm audit, like Accountancy does with Finance."* (Participant 6, data scientist)

5.　Discussion

The main aim of this research was to gain insights into the perceptions of companies regarding OPD, as the current literature has been lacking company perspectives. We focused on companies' views of OPD, factors that influence the decision to use OPD and that may explain why this practice does not seem widespread yet, and possible modes of regulation of company behavior. Qualitative analysis of interviews with 14 experts (e.g., data scientists, sales managers, marketing experts and policy advisors) resulted in five overarching themes: (1) trend towards datafication and personalization, (2) companies' views on OPD, (3) factors influencing the decision of companies to engage in OPD, (4) current and future applications of OPD, and (5) companies' views on regulation of OPD. Below we discuss the key insights (see also Table 2).

OPD is part of a broader trend towards personalization, with companies becoming increasingly aware of the (economic) advantages that consumer data can offer in terms of more effective, efficient, and relevant business conduct. Different elements of the marketing mix are becoming increasingly personalized and reliant on consumer data. Online behavioral advertising is a typical example of a practice in which advertisements are adjusted to online browsing behaviors of consumers (Smit et al., 2014). Interestingly, companies observe that consumers expect a certain degree of personalization, especially when they are loyal customers. As the trend towards datafication and personalization progresses, it seems only logical that companies will use the available technologies to personalize prices as well.

Despite this trend towards more data-driven marketing strategies and the relatively value-free connotation that OPD had for the participants in our study, it seems that companies have reservations towards using OPD. While the technology to experiment with pricing is generally available to companies, we found three sets of factors – company-related, consumer-related, and environmental factors – that explain why they are reluctant to engage in more advanced forms of OPD. Underlying these factors is the distinction between companies' *ability* to engage in OPD and their *willingness* to engage in this practice. Even if companies would have the technological and economic ability to deploy such price discrim-

ination, the fear of consumer backlash is a likely barrier for companies to implement OPD, at least openly. It seems that companies are relatively skeptical that OPD and other personalized forms of consumer data-based pricing will become widespread in years to come, at least not in the form of selectively raising prices for consumers. Participants deemed other applications of consumer data, such as optimizing marketing communication, to be more feasible, practical, and viable at present. Companies that do experiment with consumer data in their pricing strategies are likely to make (further) use of personalized discounts and more indirect forms of price discrimination, or conceal price differences under the guise of alternative explanations such as market conditions or cost differences.

As companies' data savviness expands and the trend towards personalization continues, the question rises to what extent regulation can (and should) respond to these developments. Our participants saw a big responsibility for companies themselves to be aware of possible risks tied to the practice of OPD as well as personalization in a broader sense. This responsibility entails as much transparency towards the consumer as possible, but also developing a high level of in-house knowledge and control on the current technology. While participants expressed familiarity with the current legal framework, companies seem to focus mainly on data protection law; in particular the lawful handling of personal data and leaving out legally prohibited (usually sensitive) characteristics in modeling are priorities. Looking ahead, securing a fair and adequately functioning market is a key point that requires extensive attention. On the one hand, companies should be allowed to compete, innovate and exercise their freedom of entrepreneurship. On the other hand, it is critical to maintain consumer trust and secure participation in the market. In this context, the relationship between companies and consumers was often mentioned by our participants. In line with the risks of exploitation addressed by Strycharz and Duivenvoorde (2021), companies agree that vulnerable groups of consumers (i.e., people who are more susceptible to possible deception or manipulation) deserve special attention. Although legal regulation could impose important restrictions, companies do not seem all that convinced that current regulatory initiatives are sufficiently effective. With regard to the information requirement as part of Directive 2019/2161, participants appeared skeptical; transparency is applauded, but they doubt whether such a requirement would assert much effect in practice.

5.1.　*Contributions to the literature*

One of the central questions (and mysteries) surrounding the literature on OPD is the prevalence of the practice. While the literature suggests that OPD is increasingly possible from a technological perspective, instances of OPD – particularly more advanced and individualized forms – remain relatively rare. Building on a few anecdotal examples, OPD seems to be in its infancy, which is confirmed by findings from previous quantitative studies (Vissers et al., 2014; EC, 2018; BMJV, 2021). Scholars have attempted to formulate several explanations as to why OPD is not yet as widespread (Hindermann, 2018; Council of Economic Advisers, 2015). Our aim was not to exam-

ine the prevalence of OPD directly, but to gain insights into the views, attitudes and behaviors of companies, as the decision to engage in OPD ultimately lies with them. These insights are important to further the existing knowledge on OPD and the direction in which it is heading in the European market, adding a novel context and empirical perspective to the regulatory debate. We explored company perspectives on the general trend towards personalization, the connotation of OPD, factors that influence companies' decision to engage (or not) in OPD, the current (and expected) application of OPD, and regulatory avenues. In doing so, this research offers novel and real-life insights into how companies navigate the online business environment and what are the motivations and justifications underlying company behavior. We believe our qualitative study adds a much-needed perspective to (normative) discussions about OPD. Specifically, we see at least two contributions to research on OPD that follow from our findings.

First, we contribute to this stream of research by adding another national context to the four main lines of reasoning that influence companies' decisions to engage in OPD, as deducted from the existing literature (Hindermann, 2018). Our research demonstrated that also in the Netherlands there are ethical, legal, economic and technological considerations that companies take into account in their decision to engage in OPD. Dutch companies consider internal factors, such as their data-savviness, funds and manpower, but also external factors, such as consumers' perceptions, the market environment and the legal framework. Confirming the assumption in existing literature (Odlyzko, 2009), the current study found that, indeed, ethical considerations and the risk of consumer backlash play a role in the decision to engage in OPD. In addition, we found support for the notion that long-term personalized OPD strategies are difficult to maintain, due to the means that are needed to engage in the practice. In line with what the existing literature has brought forward, our participants mentioned financial means (see also Arora et al., 2008), knowledge to develop insights (see also Dean, 2014) and centralized data-collection (see also Neslin et al., 2006; Arora et al., 2008) as necessary means.

Second, our novel findings regarding companies' views on the current and expected applications of OPD advance our understanding of the practice by adding a perspective to the existing regulatory debate that had not been explored before. That is, OPD concerns a practice that has thus far mostly been explored from a consumer-centric viewpoint. Our study contributes to a preliminary understanding of what motivates companies in the current (digital) market and how they perceive OPD, ultimately providing insights into what can be expected as the ubiquity and pervasiveness of the digital environment progresses. Participants' perceptions and justifications of OPD empirically confirm the business perspectives that the existing literature has brought forward, namely that of the potential (economic) benefits that this pricing strategy can have for companies (Odlyzko, 2003; Shiller, 2014). The three main advantages that our study participants mentioned (i.e., efficiency, relevance and effectiveness), as well as their personal experiences, provide further practical context to the benefits of OPD mentioned in existing literature (Odlyzko, 2003; OECD, 2016; Seele, 2019). In line with the expectations as brought forward by the OECD (2018a), participants

expected personalized discounts to become more prevalent in the future and provided reasons as to why this may be the case.

5.2.　Practical and normative implications

We see implications for various stakeholders, in particular companies and legislators. For companies who (are interested to) engage in OPD, this research provides an overview of the perspectives of other companies and experts on this practice. They may gain valuable insights and further context on the current state of OPD within the digital market. Perhaps more importantly, this research provides an overview of technological, ethical, legal, and organizational challenges to bear in mind, should a company want to engage in OPD. For example, companies should pay close attention to optimizing and streamlining their organizational structure to ensure that findings from the data science department are integrated successfully across all domains.

By providing new insights into the perspectives of companies regarding OPD and the current state of the digital market, this research can prove valuable also to legislators and regulatory authorities, in their undertakings to secure a fair market. Our findings on company perspectives regarding (further) regulation and enforcement shed light on possible avenues of regulation and how regulation might be perceived by companies. For example, participants emphasized the importance of self-regulation and ethical codes, rather than specific legal regulation, and they expressed doubts as to the effectiveness of the legislative proposal for an information requirement. In addition, our study provides indications for the direction in which OPD may develop. We found that companies are likely to experiment with personalized discounts. While the acceptance of personalized discounts might be relatively high among consumers compared to selective price increases, legislators and regulatory authorities should pay close attention to further developments in this area, as such discounts evoke similar concerns (OECD, 2018b). For instance, companies might manipulate or target vulnerable consumers under the guise of personalized discounts. This finding is in line with reports from the European Commission (2018) and OECD (2018b), in which the complexity and risk of non-transparency of OPD and the accompanying technology is emphasized. If consumer backlash is indeed the driving force for an increase in nontransparent forms of OPD, the detection of the pricing strategy might be in jeopardy, making further investigation by consumers and regulatory authorities virtually impossible.

5.3.　Limitations and suggestions for future research

Though the use of qualitative research sheds light on and provides rich insights into company perspectives, a first limitation of this study is that we have not investigated the actual behavior of participants. Consumer backlash plays a big role in company decision-making and companies are aware of the negative connotation that OPD might have for some consumers. Therefore, we cannot rule out the possibility that participants gave socially desirable answers, also possibly gloss-

ing over some sensitive subjects or trade secrets. In this research, we tried to limit socially desirable responses by putting participants at ease and ensuring anonymity throughout the process. We ensured to ask (control) questions that focused on perceptions of other companies in their field instead of asking about their own business conduct. Behavioral research is necessary to investigate how company decision-makers actually act within the 'safe' bounds of their organizations. For instance, this could be done by participatory observation in company departments and meetings where pricing strategy and sales operations are decided on.

A second limitation relates to our overview of factors that exert an influence on company behavior. Our findings here do not speak to the issue of causality. Qualitative analyses are not appropriate to establish causal relationships between company-, consumer- and environment-related factors on the one hand and decisions of companies to engage in OPD on the other hand. Moreover, although we managed to provide an overview of influential factors, it is difficult to compare the various factors in terms of their magnitude of influence. Experimental research is needed to assess the relative and causal influence of the factors identified in this study in order to provide more insights into the decision-making process of companies. This could be done by presenting participants with cases in which they are asked to implement OPD and assessing how they would do so.

That being said, it followed from the interview analysis that consumer backlash was 'top of mind' for our participants and thus one of the main determinants of company behavior. We therefore believe that the notion of consumer backlash deserves further research. As previous research (Turow et al., 2009; Poort and Zuiderveen Borgesius, 2019) and anecdotal evidence (Baker et al., 2001) showed, consumers tend to react negatively to OPD because of perceived unfairness. Future research could focus on what constitutes unfairness and try to elucidate why consumers react negatively to OPD. Such studies will help us understand why OPD is not (yet) as widespread and they may inform company behavior and future regulatory avenues, as it will advance our knowledge on how to meet economic objectives and implement new technologies without denying consumers a fair market.

Finally, a limitation of this research concerns the size and nature of our sample, as only a limited number of participants from Dutch companies were interviewed. We aimed to cover many different perspectives, also interviewing one of the regulatory authorities for further data (source) triangulation. While our research aimed to add a novel national context to the current debates, it raises questions regarding the generalizability of this study, since only Dutch companies were interviewed. As alluded to earlier, the regulatory debate surrounding OPD in the Netherlands is mainly that of European law. We therefore believe that the regulatory implications and considerations regarding European law, as discussed in this article (see also Sears, 2021), are likely to surface in other European markets as well. That being said, while we reached saturation with regard to the answers and explanations that were given by Dutch companies, we recommend that this research is replicated in other (European) countries, to assess to what extent perceptions and justifications regarding OPD are universal across countries and to explore potential national regulatory initiatives in the context of OPD.

6. Conclusion

OPD, in particular on an individual level, is still in its infancy. At least, that seems to be the case. Our qualitative research builds on and extends the small but growing body of empirical literature, as we elucidated company perspectives on OPD. We observed that while companies are aware of the economic benefits that OPD could have for their businesses, complex and individualised forms of OPD are not yet the highest priority. Next to investigating general perceptions regarding this practice and its future, we identified several company-, consumer- and environment-related factors that may explain why we are not yet seeing more of OPD. Company-related factors play a role because the implementation of an OPD strategy is preceded by data collection and analysis; companies need frequent and recent data, manpower and investments, as well as a streamlined company strategy, before they can even consider implementing OPD in their pricing strategies. As a consequence, implementation might prove to be more viable for bigger companies, as they are more likely to have the ability to garner the needed resources. However, companies have reservations about the feasibility, viability and desirability of the practice, in particular in the long term. When it comes to consumer-related factors, we observed that consumer backlash is an important influence on company behavior. For companies, there is a trade-off between experimenting with personalized prices and maintaining a sustainable relationship with the (prospective) consumer. Finally, there are environment-related factors that play a role in the prevalence of OPD. European companies find themselves in a different legal playing field than American companies. While the European legal framework does not explicitly prohibit OPD, it does lay down strict boundaries, for instance when it comes to the handling and processing of personal data. However, a rather large gray area remains where companies can experiment with their prices.

All in all, it seems that companies either might not be able to engage in OPD due to economic, technological or internal restraints, or they might opt not to do so out of fear for possible consumer backlash. While our results suggest that companies are cautious about implementing OPD, this is not to say that OPD will not become more prevalent in the future. Price discrimination already constitutes a common practice in our market society, as some forms have been around for many decades. Especially more covert forms of price discrimination, carried out under the guise of personalized discounts, are expected to gain popularity, which requires future research and regulatory attention. The main challenge for legislators will be to strike a balance between the freedom of entrepreneurship and ensuring a fair and well-functioning market for all players involved.

Appendix

Topic list and example questions

Theme	Example questions
1 – Digitalization, datafication and the trend of personalization	To what extent are you aware of the personalization that takes place online?
	What are your thoughts on the trend of personalization?
	If you look around you, how do other companies perceive this trend? Are they actively involved in this?
	What do you think is the current public perception of data-driven companies and agencies?
	How do you view the role of data in our current digital society?
	Future perspectives:
	What role will personalization play in our future digital environment?
2 – Consumer segmentation	Does your company distinguish between (prospective) consumers?
	If so, on what level?
	If so, for which purpose(s)?
	If not, why not?
	What kind of assumptions do you have about your (prospective) consumers, if any? How do you view them?
	Does the view you have of your consumer differ between online and offline?
	If applicable:
	What is your company's current pricing strategy? E.g., fixed prices or dynamic pricing?
	To what extent is the pricing driven by what you know about the customer?
	How do experience this method of pricing? What are the benefits and challenges?
3 – Online price discrimination (OPD)	What is your association with the term "online price discrimination? Do you have a certain connotation when hearing the term?
	Can you think of examples of online price discrimination?
	One of the examples of online price discrimination is charging individual consumers different prices, based on willingness to pay. What is your opinion on this practice and its feasibility?
4 – Reasons to engage in OPD	Can you think of reasons why companies would want to engage in OPD?
	Can you think of reasons why companies would want to increasingly use consumer data in their pricing?
	If all companies were to use consumer data in their pricing and engage in online price discrimination, what do you think would happen?
5 – Reasons to not (yet) engage in OPD	Can you think of reasons why companies would not want to engage in OPD?
	Can you think of reasons why companies would not want to increasingly use consumer data in their pricing?
	If applicable: why are you not currently engaging in OPD?
6 – Legitimacy	Keeping the interests of the consumer in mind, what (legal) safeguards are needed in order to structure online price discrimination as well as possible?
	Keeping the interest of companies in mind, what (legal) safeguards are needed in order to structure online price discrimination as well as possible?
	Are these safeguards sector-specific? Are there sectors where, for example, stricter enforcement should be applied?
	The European Parliament has introduced a provision imposing an information obligation. Companies that adjust prices based on consumer data and automated decision-making must inform consumers in advance.
	How do you view this initiative? Is this realistic/effective? Do you expect companies to adhere to this?
7 – Future perspectives on OPD	We have discussed several case studies on different forms of personalized pricing. Which of these manifestations do you consider most realistic in the future? Why?
	Which sectors/products/markets do you think will see the fastest growth within the trend of (price) personalization? Why?
	What subject(s) do you think should be a focus for further research in the context of price personalization and the parties involved?

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Data will be made available on request.

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