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## Value-based pricing and cognitive biases: An overview for business markets

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## ABSTRACT

To investigate how cognitive biases inhibit value-based pricing practices among managers in business markets, this article considers five different cognitive biases—perceived lack of control, herding, fixed-pie bias, ambiguity aversion, and egocentric fairness bias—and their effects on value-based pricing. Despite recent calls for more research on the psychological aspects of pricing, few studies have focused on business markets. Drawing on research in psychology and marketing for its theoretical foundation, this overview extends the limited body of existing research. The article's key contribution is to explain how psychological challenges affect value-based pricing practices, with implications and suggestions for further research.

## 1. Introduction

Value-based pricing is defined as the extent to which managers' pricing decisions take account of how customers perceive a product's benefits in relation to its price (Ingenbleek, 2014). In business markets, those benefits may involve cost decreases or revenue increases (see, for example, Anderson & Narus, 1998; Forbis & Mehta, 1981). Marketing scholars generally regard value-based pricing as an excellent means of achieving profitable pricing (e.g., Hinterhuber, 2004; Monroe, 2003; Nagle & Holden, 2002), and this view is strengthened by recent empirical evidence that links value-based pricing to better new product performance (Ingenbleek, Frambach, & Verhallen, 2013) and firm performance (Liozu & Hinterhuber, 2013). However, most firms continue to focus primarily on cost-based or competition-based pricing (Hinterhuber, 2008; Indounas, 2009; Kurz & Többens, 2012; Liozu, 2017).

Existing studies have frequently sought to explain this paradox (Liozu, Hinterhuber, Perelli, & Boland, 2012) by highlighting the organizational challenges of using value-based pricing. Among other issues, the literature notes organizational challenges such as the need for top management support (e.g., Liozu et al., 2012); implementation of appropriate pricing processes (e.g., Nagle & Holden, 2002); availability of data on customer value (e.g., Töytäri, Rajala, & Brashear Alejandro, 2015); and alignment of the sales force with value-based pricing (e.g., Forbis & Mehta, 1981; Nagle & Holden, 2002). While these and other organizational challenges go some way to explaining the paradox, pricing practice research has often overlooked psychological challenges on the assumption that managers act rationally (Iyer, Hong Xiao,

Sharma, &amp; Nicholson, 2015).

In practice, however, Herbert Simon (1957) showed 60 years ago, that managers' rationality—where it operates at all—is bounded by environmental complexity and the limitations of human information processing. To cope, managers often try to simplify decisions through the use of heuristics (Tversky & Kahneman, 1974) such as satisficing (Cyert & March, 1963). Indeed, heuristics can be useful “rules of thumb” for making frugal decisions when faced with such challenges (for a review, see Gigerenzer & Gaissmaier, 2011). For example, Wübben and von Wangenheim (2008) show how, in the context of customer base analysis, simple managerial rules of thumb produce results similar to those from advanced stochastic models. However, heuristics can also lead to cognitive biases—that is, systematic misrepresentation of information—and so to flawed decisions. As Ariely put it, “cognitive biases often prevent people from making rational decisions, despite their best efforts” (Ariely, 2009, p. 80).

Although recent conceptual frameworks have taken account of the role of cognitive biases in managerial pricing practices (e.g., Hinterhuber, 2015; Iyer et al., 2015), these have not focused specifically on value-based pricing in business markets. An exception (to some extent) is Hallberg's (2017) investigation of value appropriation in buyer-supplier relationships, which considers cognitive biases but not as the central issue. Consequently, it remains unclear how cognitive biases may inhibit managers from focusing on value-based pricing practices. This is a significant gap in the literature, given ongoing calls for a focus on customer value in business markets (e.g., Anderson & Narus, 1998; Forbis & Mehta, 1981; Hinterhuber, 2004). Value-based pricing involves searching, interpreting, and

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<sup>1</sup> *Manager* is used here as broad term to refer to a range of personnel (e.g., marketing managers, pricing managers, sales managers) who are typically involved in the pricing process and who have partial or full pricing authority. Function-specific qualifiers (e.g., marketing, pricing, sales) are omitted for clarity and on the grounds that cognitive biases transcend titles—that is, they are challenging for any manager involved in pricing.

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communicating information about customer value (Ingenbleek, 2014; Nagle & Holden, 2002). Given the neglect of the distinct cognitive challenges related to these activities, the present article seeks to explain how a number of cognitive biases challenge managers' use of value-based pricing in business markets, and to propose directions for further research.

Specifically, the article contributes by taking a fresh look at the value-based pricing paradox, asking why so few firms adopt value-based pricing practices (Hinterhuber, 2008; Indounas, 2009; Kurz & Többens, 2012; Liozu, 2017) despite their theoretical advantages. Additionally, the article fills a critical void in the pricing literature (see Iyer et al., 2015; Kienzler & Kowalkowski, 2017) by exploring managerial pricing decisions through a theoretical lens other than economics.

The remainder of the article is structured as follows. The next section outlines the theoretical foundation of value-based pricing. There follows an overview of five cognitive biases that challenge managers' use of value-based pricing, building on research in psychology and marketing. The paper concludes with a discussion of theoretical and practical implications, along with directions for further research.

## 2. Theoretical foundation: value-based pricing

While firms' pricing practices are for the most part idiosyncratic (Hinterhuber & Liozu, 2012; Smith, 1995), these practices can be distinguished by type and by the extent to which managers use information regarding costs, competition and customers' perceived value to make pricing decisions (Ingenbleek, Debruyne, Frambach, & Verhallen, 2003). The pricing literature typically distinguishes three types of pricing practice: cost-based, competition-based, and value-based pricing (e.g., Hinterhuber & Liozu, 2012; Nagle & Holden, 2002; Shapiro & Jackson, 1978). However, these pricing practices are not mutually exclusive, as managers typically combine different kinds of information when setting prices, blending cost-, competition-, and value-based pricing (Ingenbleek et al., 2003). For example, managers setting the price for a new product may combine information from accounting data (e.g., R&D and production costs); from focus group interviews with customers (e.g., potential revenue increase from enhanced productivity); and from market analysis of competitors (e.g., product portfolios, prices).

Marketing scholars generally favor and advocate pricing practices that emphasize value-based pricing (e.g., Hinterhuber, 2004; Monroe, 2003; Nagle & Holden, 2002) on the basis that the maximum achievable price is determined by customers' perceived value rather than by competition and cost considerations (see Ingenbleek et al., 2003; Monroe, 2003). Value-based pricing is customer-focused (Nagle & Holden, 2002), and there is empirical evidence of its advantage over other pricing practices (e.g., Ingenbleek et al., 2013; Liozu & Hinterhuber, 2013). While value-based pricing poses certain challenges, it is more feasible than managers may believe. For example, published information about conducting a value analysis (e.g., Hinterhuber, 2004; Nagle & Holden, 2002) should enable managers to adapt market research methods to their particular context and requirements.

Pricing practices that emphasize customer perceived value require managers to deal with issues of subjectivity (Morris, 1987), uncertainty (Hogan, 2001), and difficulty (Hinterhuber & Liozu, 2012). *Subjectivity* refers to how customers value the same product differently—that is, customer value is unique to the individual customer (Morris, 1987). However, economic considerations often require managers to group customers together—for example, according to their similar perceptions of value (Nagle & Holden, 2002)—to derive “different customer segments [that] perceive different values within the same product” (Ulaga & Chacour, 2001, p. 529). In this way, subjectivity both necessitates and aggravates segmentation. Customers' perceptions of value remain *uncertain*—that is, hypothetical—until they obtain benefits and

make sacrifices in their use contexts (Hogan, 2001). Accordingly, “value is not created and delivered by the supplier but emerges during usage in the customer's process of value creation” (Grönroos & Ravald, 2011, p. 8). This means that information about customers' perceived value is more *difficult* to collect, interpret, and understand than other information commonly used in pricing practices (Hinterhuber & Liozu, 2012).<sup>2</sup>

As a consequence, managers responsible for pricing decisions have to cope with psychological challenges of cognition and judgment regarding customer perceived value. Ingenbleek et al. (2013, p. 562) argue, “pricing is much more complex than normative pricing models suggest and [...] to deal with this complexity managers cannot analyze all available information, but [must] instead engage in simplifying practices”. While the pricing practices literature acknowledges the relevance of environmental complexity and humans' limited information-processing abilities (see Simon, 1957), the question of how this affects managerial pricing practices remains relatively unexplored.

## 3. Cognitive biases and their effect on managerial pricing practices

The present article draws on Tversky and Kahneman's (1974) heuristics and biases program and the cumulative body of associated research. Given the diverse range of cognitive biases identified in that body of research, inclusion in this overview was determined by two criteria. First, the bias had to be theoretically relevant to managerial pricing practices in business markets. Second, the pricing practice literature had to provide sufficient direct or indirect empirical evidence of its nature and effects. On that basis, the following overview focuses on five cognitive biases—perceived lack of control, herding, fixed-pie bias, ambiguity aversion, and egocentric fairness bias—and their effects on value-based pricing. In particular, it describes how these different cognitive biases can inhibit value-based pricing practices among managers in business markets.

### 3.1. Perceived lack of control

Control is an important concept in psychology and sociology, frequently operationalized as a subjective, domain-specific, and outcome-oriented construct related to locus of control (LOC) (Skinner, 1996). LOC is defined as an individual's belief about who can control and influence outcomes (Rotter, 1966). According to Rotter, individuals with an internal LOC are confident that they can actively influence external events through their own actions and behavior. Conversely, he argues, individuals with an external LOC perceive luck, coincidence, or influential others as shaping external events that they must passively bear. It should be noted that LOC can vary on a continuum anchored at one end by a purely internal focus and at the other end by a purely external focus (Rotter, 1966).

Research in psychology has frequently investigated the illusion of control—that is, overestimation of one's perceived control in chance situations (for seminal research, see Langer, 1975). In contrast, perceived lack of control is defined as the tendency to underestimate one's control over events. The evidence suggests that people tend to underestimate their control in situations where they actually have control (e.g., Gino, Sharek, & Moore, 2011).

In the context of pricing, perceived lack of control manifests as a subjective perception of managerial control over pricing that leads to a concrete price outcome. As such, a range of evidence suggests that LOC

<sup>2</sup> It should be noted that, under certain circumstances, cost and competition information can also be difficult to obtain. For example, it is more difficult to calculate the costs of services than of goods (Hoffman, Turley, & Kelley, 2002), and costs for highly customized solutions are often hard to estimate (Sharma & Iyer, 2011). Additionally, information about competitors' prices may prove impractical as a direct point of reference for highly differentiated products in business markets.

affects managerial pricing practices.<sup>3</sup> More precisely, managers with an external LOC react positively to pricing practices that emphasize cost- or competition-based pricing. For instance, [Hinterhuber \(2004\)](#) states:

“[M]anagers generally do not seem to believe in their ability to significantly influence their industry’s pricing structure. A common managerial lament is the following: ‘In our industry, prices are mostly dictated by the market. Therefore, we focus on costs and volumes.’” (p. 766).

Indeed, there is evidence that some firms have a limited focus—that is, they refer only to “information which is readily under the control of the firm” ([Carricano, 2014](#), p. 173). Similarly, according to [Dolan and Simon \(1996, p. ix\)](#), many managers believe they have no control over pricing and that “we determine our costs and take our industry’s traditional margins’ or ‘the market sets the price and we have to figure out how to cope with it.’” This judgment may be associated with what [Ingenbleek \(2014, p. 41\)](#) terms “the market mechanism”—the metaphorical “invisible hand” of the market that determines prices. Investigating export pricing, [Myers \(1997\)](#) is even more explicit:

“Skeptical managers, however, often view pricing as little more than a gray area of sales, characterized by buyer psychology and economic black magic. [...] [E]ffective and precise pricing is seen as dependent more on luck than on managerial decision making.” (pp. 277–278).

[Wijbenga and van Witteloostuijn \(2007\)](#) find that entrepreneurs with an external locus of control prefer low-cost strategies—that is, strategies with a focus on costs and low prices.

Managers characterized by perceived lack of control over pricing are passive and rely on docile pricing practices such as adding a margin to costs or matching market prices. In contrast, value-based pricing requires managers to actively and confidently influence pricing through their behavior—a view associated with an internal LOC ([Rotter, 1966](#)). For instance, [Nagle and Holden \(2002\)](#) argue that value-based pricing requires active gathering and dissemination of information about customer perceived value rather than relying on more easily accessed information (e.g., variable costs, competitors’ current prices).

[Liozu et al. \(2012\)](#) highlight organizational confidence as a factor in effective implementation of pricing practices that emphasize value-based pricing. In one recent study, [Burkert, Ivens, Henneberg, and Schradi \(2016\)](#) find that firms that successfully capture value (which is the purpose of value-based pricing; see [Nagle & Holden, 2002](#)) are likely to organize pricing systematically. Anecdotal and empirical evidence indicates a link between perceived managerial control and firms’ pricing practices, but pricing research has yet to systematically investigate such a connection.

*Proposition 1: The extent of managers’ internal (external) LOC is positively (negatively) related to the extent to which firms practice value-based pricing.*

### 3.2. Herding

Herding is defined as individual disregard of private information, instead basing decisions on the observed actions of the majority ([Banerjee, 1992](#); [Bikhchandani, Hirshleifer, & Welch, 1992](#)). In so doing, individuals assume that decisions taken by the majority constitute valuable information for their own decision-making ([Banerjee, 1992](#)). In the classic example of this phenomenon (see, for example, [Banerjee, 1992](#)), individuals have the choice of dining at restaurant A or restaurant B, both situated in the same street. Consider that the

individuals arrive sequentially, and the first individual decides arbitrarily to dine at restaurant A. The second individual has private information that favors restaurant B (e.g., a recommendation) but finds that restaurant B is empty; on that basis, the second individual wrongly infers that restaurant A is better and decides to dine there—and so on.

In the context of pricing, managers who engage in herding deliberately disregard private information (e.g., about customers’ purchase history) and instead conform to market prices. The assumption underlying this herding effect is that market prices constitute a viable point of reference. Managers may resort to herding because they believe that competitor prices reveal information about the market, or that pricing like one’s competitors seems a justifiable tactic ([Urbany, 2001](#)). [Dolan and Simon \(1996\)](#) note that many firms evade responsibility for pricing decisions by following market or competitor prices instead. Managers “do not want to stand alone when they increase the prices if the competition does not move” (Head of Global Pricing, cited in [Carricano, Trinqucoste, & Mondejar, 2010](#), p. 472). In other words, managers fear accountability in the event of an unfavorable outcome. This suggests that herding’s foundations may be motivational as well as cognitive. On the other hand, in an investigation of industrial service firms, [Indounas \(2015\)](#) finds that leaders—firms that “set the rules of the game” (p. 524)—do not hand over pricing responsibility to the market but instead price strategically. In other words, these firms consider pricing to be a matter of meticulous managerial activity.

Prior research indicates that, in a pricing context, managerial herding exists in the form of close matching of competitors’ prices. For instance, [Rusetski \(2014\)](#) finds that, with limited information, 15% of the investigated managers *always* matched competitors’ prices, regardless of product differences. Similarly, [Dolan and Simon \(1996, p. 4; italics added\)](#) report that managers commonly maintain that ‘we *have* to match our competitor’. In many industries, then, competitors’ prices are seen as the most important information within the pricing process (e.g., [Avlonitis & Indounas, 2006](#); [Matthyssens, Vandenbempt, & Goubau, 2009](#)). This tendency to engage in herding may even transcend individual managerial bias to become institutionalized—for example, [Lancioni \(2005\)](#) finds that a major task of pricing committees is to react to competition, representing circumstantial evidence of herding.

Clearly, a firm’s success depends in part on thorough competitive analysis, and an emphasis on competition-based pricing can constitute “good practice” for firms selling products with lower product advantage ([Ingenbleek et al., 2003](#)). However, companies that simply match competitors’ prices irrespective of cost and customer considerations are mimicking those competitors rather than analyzing them; this is not competition-based pricing but rather indicates a herd mentality. To be specific, competition-based pricing considers a wider range of information beyond competitors’ prices, such as market structure and competitors’ power (see [Ingenbleek et al., 2003](#)). It follows that price herding does not constitute competition-based pricing and vice versa.

Moreover, price herding is not necessarily the polar opposite of value-based pricing, as managers may choose to strategically match the prices of competitors or market segments with similar value propositions. That said, the weight of the evidence suggests that price herding is habitual rather than strategic (see [Rusetski, 2014](#)). Consequently, a herd mentality is myopic, as it typically neglects distinct product characteristics ([Shapiro & Jackson, 1978](#)), erodes industry profits ([Smith, 1995](#)), and increases the likelihood of price wars ([Hinterhuber & Liozu, 2012](#)). That being so, it becomes important to understand product differences and to withstand competitive price pressure.

The fundamental issue with price herding is its reactive nature and its disregard for potentially useful information about cost and customer value. Moreover, a strong emphasis on market and competitor prices diverts managerial attention from the effort to comprehend customer perceived value. It also distracts from efforts to comprehend the strategic actions of competitors (e.g., their pricing strategy) and to observe or anticipate market developments (e.g., changes in market structure or

<sup>3</sup> Note that a related but different stream of research employs attribution theory and investigates self-serving judgment and choice in managerial pricing (see, for example, [Bertini, Halbherr, & Koenigsberg, 2017](#); [Forman & Hunt, 2013](#)).



segments). This potential detrimental effect of price herding suggests the following proposition.

*Proposition 2: The extent of managerial price herding is negatively related to the extent to which firms practice value-based pricing.*

### 3.3. Fixed-pie bias

The fixed-pie bias has been defined as “the judgment that one's own interests are diametrically opposed to [those of] one's opponent” (Gelfand & Christakopoulou, 1999, p. 250). Commonly found in the negotiation literature, this bias prevents integrative negotiations to increase the metaphorical “pie” for both parties (Bazerman & Moore, 2009; Bazerman & Neale, 1983). As prices in business markets are often negotiated (e.g., Indounas, 2009; Nagle & Holden, 2002), the fixed-pie bias also occurs in the context of pricing. For example, according to Hinterhuber (2004), “[t]he dominant assumption [of managers regarding pricing] is that what is gained by the firm is lost by the customer and vice versa, and that pricing is, in the end, a zero-sum game” (p. 766).

At the heart of the fixed-pie bias lies a fundamental misconception about the dynamics of value creation and value capture in business relationships (see Bazerman & Moore, 2009). Typically (and perhaps not surprisingly), price negotiations commonly overemphasize the latter element (Voeth & Herbst, 2006), based on the prototypical pricing process used by many firms and their neglect of the contextual nature of value.

To understand the procedural aspect, it is useful to consider firms' pricing practices. A focus on cost-based pricing is common in business markets (e.g., Liozu et al., 2012; Morris, 1987; Noble & Gruca, 1999; Shipley & Jobber, 2001). As cost-based pricing is myopic (beginning with the product and ending with the customer), marketing must demonstrate value to defend prices (Nagle & Holden, 2002). As a consequence, production costs are fixed, and potential customer value is also fixed (or at least constrained). Certainly, pricing appears to be a zero-sum game in such a situation; as price is the only flexible element, one firm's gain is the other's loss. In contrast, value-based pricing begins with the customer and their perception of value; costs and prices are flexible and contingent on customer needs (Nagle & Holden, 2002). In other words, the only costs imposed on customers are those necessary to provide the benefits that customers actually want.

With regard to the contextual nature of value, Ingenbleek (2014) notes: “The fundamental reason why two actors would engage in exchange is, however, that they can receive something that has a higher value in the context of the receiving actor than in the context of the actor that offers” (p. 39). In this way, pricing can be a positive-sum game. This is illustrated by Anderson, Kumar, and Narus (2007), who demonstrate that manufacturing firms can increase both customer value creation and profits. Similarly, Hinterhuber (2004) cites the example of a Japanese industrial equipment manufacturer offering both substantial net benefits for customers and obtaining a price premium. However, discussing supply chain pricing in industrial markets, Voeth and Herbst (2006) suggest that despite a focus on ongoing business relationships, pricing remains transactional and distributive, positioning business partners as antagonists focused on individual rather than joint profits. The question then arising is why this is the case.

Referring to evidence that the human brain evolved to deal with simple forms of exchange in small mobile hunter-gather societies (i.e., fixed-pie rational), Rubin (2003) suggests that evolutionary psychology can account for a focus on transactional and distributive exchange in human relationships. Specifically, he argues, while positive-sum games may be cognitively harder to understand, an intuitive understanding of these more complex forms of exchange may have evolved if our ancestors had need of it. Thus, evolutionary psychology may explain the focus on transactional and distributive exchange in business relationships beyond organizational challenges.

As a customer-focused practice (Nagle & Holden, 2002), value-based pricing can potentially turn business relationships into win-win situations (Töytäri et al., 2015) through a better understanding of customers' perceived value (Ingenbleek, 2014), so increasing profits for both customers and suppliers (Anderson et al., 2007). However, the more common managerial view is to perceive pricing as a win-lose situation (Hinterhuber, 2004; Hinterhuber & Liozu, 2014). On this view, superior customer value creation and capturing part of that value in the form of reasonable profit are contradictory objectives, thus inhibiting value-based pricing in business markets.

*Proposition 3: Managerial perception of pricing as a fixed-pie problem is negatively related to the extent to which firms practice value-based pricing.*

### 3.4. Ambiguity aversion

Ambiguity is “the subjective experience of missing information relevant to a prediction” (Frisch & Baron, 1988, p. 152). People tend to avoid decisions based on ambiguous information. The now classic Ellsberg (1961) paradox describes a situation where, given the same expected utility, individuals prefer a choice of known probability to a choice of unknown probability. There is also experimental evidence that individuals are likely to ignore ambiguous information despite its potential utility (van Dijk & Zeelenberg, 2003). This tendency is commonly referred to as *ambiguity aversion* or *the ambiguity effect*.

Although research has traditionally regarded pricing as simple, it is in practice a difficult process (Dutta, Zbaracki, & Bergen, 2003) involving vague and uncertain information (Indounas & Avlonitis, 2011; Urbany, 2001). As pricing decisions are based on uncertain information concerning risks, managerial ambiguity aversion has practical ramifications for price-setting, aggravated by the need to allocate limited managerial resources (e.g., attention, time, money) to different managerial tasks.

In such circumstances, it is perhaps unsurprising that managers often avoid ambiguity when making decisions (Cyert & March, 1963) and instead rely on simple heuristics (Tversky & Kahneman, 1974). As Oxenfeldt (1973, p. 49) argued more than 40 years ago, “[b]ecause of the large number of highly uncertain and variable factors, executives responsible for pricing closely adhere to methods that they have found to be effective in the past.” For many firms, both now and then, that means relying heavily on cost-based pricing practices (Liozu et al., 2012; Morris, 1987; Noble & Gruca, 1999; Shipley & Jobber, 2001), commonly referred to as the cost-plus heuristic (e.g., Urbany, 2001).

Managers often lack precise information about customer perceived value, which is difficult to collect and evaluate (Hinterhuber & Liozu, 2012). In contrast, cost information (e.g., unit cost) is often readily available and may appear precise and unambiguous (Forbis & Mehta, 1981; Urbany, 2001). Although information about customer perceived value remains the most useful for profitable pricing (see Ingenbleek et al., 2003; Liozu & Hinterhuber, 2013), it is imprecise, ambiguous, and hard to quantify. For that reason, more certain information is given more weight in decision-making (see Cyert & March, 1963).

Managerial aversion to ambiguity apparently fuels this preoccupation with information that is precise rather than useful for price-setting purposes. Cost information, for example, seems precise but is frequently inaccurate. As Nagle and Holden put it, “[i]n most industries it is impossible to determine a product's unit cost before determining its price [...] [b]ecause unit costs change with volume [...], which changes with changes in price” (Nagle & Holden, 2002, p. 2). Additionally, cost information is often inaccurate because only average values are reported in accounting systems (Smith, 1995). Nevertheless, in markets characterized by uncertain demand (note the implication for volume), firms tend to focus on cost-based pricing (e.g., Noble & Gruca, 1999).

It seems, then, that while cost-based pricing is inherently ambiguity-averse (Guiltinan, 1976), value-based pricing requires managers to

accept some degree of ambiguity or vague information. Consequently, only managers who can tolerate ambiguity will be able to commit to value-based pricing practices. In other words, managers should remember “that it is better to be approximately right than to be precisely wrong” (Hinterhuber, 2016, p. 75).

*Proposition 4: Managerial ambiguity aversion is negatively (positively) related to the extent to which firms practice value-based (cost-based) pricing.*

### 3.5. Egocentric fairness bias

“[P]erhaps few ideas have wider currency than the mistaken impression that prices are or should be determined by costs of production” (Backman, 1953, p. 119). The prevalence of this notion is perhaps surpassed only by the incorrect perception among both customers (e.g., Dickson & Kalapurakal, 1994; Indounas, 2009; Töytäri et al., 2015) and suppliers (e.g., Diamantopoulos, 1991; Dickson & Kalapurakal, 1994; Shipley & Jobber, 2001) that cost-based prices are fair. Research in psychology suggests that egocentrism leads to biased fairness judgments (Messick & Sentis, 1979)—a proposition corroborated by marketing research on price fairness. As Xia, Monroe, and Cox point out, “price fairness judgment is subjective and usually is studied from the buyer’s perspective. Therefore, the judgment tends to be biased by the buyer’s self-interest” (Xia, Monroe, & Cox, 2004, p. 2).

Indeed, there is widespread evidence of a price fairness bias. For example, as compared to sellers, buyers judge the same pricing practices to be less fair (Dickson & Kalapurakal, 1994). Buyers also consider practices emphasizing cost-based prices to be fair. Cost-based pricing tends to be “characterized by low price[s]” (Töytäri, Keränen, & Rajala, 2017, p. 238), and from the buyer’s point of view, “a fair price often means that the price is low” (Pricing Analyst, cited in Carricano et al., 2010, p. 472). Additionally, research in consumer markets shows that customers use heuristics to infer suppliers’ costs but tend to underestimate these (Bolton, Warlop, & Alba, 2003; Nasr Bechwati, Sisodia, & Sheth, 2009). Professional buyers may exhibit a similar bias in markets with low cost transparency. Indeed, customers tend to make biased judgments when evaluating procedural and distributive fairness of prices, yet some managers accept these judgments as valid. It seems reasonable to infer that these managers adopt a buyer’s perspective and so judge cost-based prices to be fair.

However, cost-based pricing may be unfair to both buyers and suppliers. “[I]t is not necessarily fair to customers because this [fairness] depends on the price-benefits balance” (Shipley & Jobber, 2001, p. 310). Similarly, Smith (1995) suggests that a fair price is proportional to customer value. It also seems clear that cost-based pricing is not necessarily fair to suppliers. According to Anderson and Wynstra, for example, “[a]n increasingly common complaint from marketing and sales managers in business markets is the difficulty they have in getting a fair return on the superior value that their offerings deliver to present and prospective customers” (Anderson & Wynstra, 2010, p. 50). In short, prices based primarily on factors other than customer value are not fair to either customer or supplier.

To understand the notion of cost-based pricing as fair, one must understand its underlying assumptions. According to Ulaga and Chacour, “[e]conomists assume that [...] higher product quality [i.e., benefits] can be produced only at higher cost, because additional labor, materials, or capital are required” (Ulaga & Chacour, 2001, p. 530). However, this assumption regarding costs and benefits is not always accurate. Consider, for instance, scale effects that reduce costs while holding benefits constant, or learning effects that increase benefits while holding costs constant. As deviations from the norm also have a negative influence on price fairness perception (Dickson & Kalapurakal, 1994; Maxwell, 2002; Xia et al., 2004), the predominant focus on cost-based pricing in many industries may better explain the biased perception of value-based pricing as unfair.

Pricing, then, should be based on value rather than costs. Drawing on service-dominant logic (Vargo & Lusch, 2004), Ingenbleek (2014) argues that pricing is a co-creational practice, characterizing it as

“a negotiation process in which buyers and sellers jointly assess the value in context for the buyer. In this process, prices eventually get influenced by various customer resources, including their ability to trust the seller, anticipate future transactions (‘give now, take later’), argue about price fairness, and resolve conflicts.” (pp. 44–45).

As pricing is based on both parties’ joint evaluation, such practices allow both buyer and seller to capture a fair share of value. Nevertheless, firms seem concerned that customers view practices that emphasize value-based pricing as unfair (Carricano et al., 2010). It is therefore perhaps unsurprising that even managers who focus on value-based pricing use costs to justify prices. For instance, in a study of industrial firms that emphasize value-based pricing, Liozu et al. (2012) cites interview excerpts in which some managers continue to use cost-based justifications for prices. For example, one manager said:

“We have to look people in the eye and say, ‘we deserve to be paid more for our products’. We have to look them in the eye and you have to have confidence ... and say ‘we got engineers, we got scientists ... and so ours do cost more.’” (p. 201; italics added).

On the bright side, there is evidence that managers can influence perceived price fairness (Xia et al., 2004)—for example, by actively communicating potential customer value (Nagle & Holden, 2002). In fact, because price fairness is biased in favor of the buyer, managers need to disregard subjective evaluations when setting prices and instead invest greater effort in customer value education and communication (see Hinterhuber & Liozu, 2012).

*Proposition 5: Managerial overemphasis on customer price fairness perception is negatively related to the extent to which firms practice value-based pricing.*

## 4. Discussion, implications, and further research

Despite widespread advocacy of value-based pricing (e.g., Hinterhuber, 2004; Monroe, 2003; Nagle & Holden, 2002), practice continues to focus on cost-based or competition-based pricing (Hinterhuber, 2008; Indounas, 2009; Kurz & Többens, 2012; Liozu, 2017). To explain this paradox, prior pricing practice research has primarily investigated organizational challenges to value-based pricing in business markets, and psychological challenges have been overlooked. In contrast, the present article contends that psychological challenges have a real impact on value-based pricing.

Table 1 summarizes how five cognitive biases exert a negative influence on value-based pricing, including short descriptions, evidence from prior research, and implications for pricing practices. The cited references relate to foundational research that helps to understand the nature of the cognitive biases; the interested reader may consult these for further information. Table 1 also summarizes debiasing strategies<sup>4</sup> for practitioners and suggests measurement scales for use in empirical research.

The present overview contributes to the existing literature in three ways. First, it offers new insights into the value-based pricing paradox. Given the influence of cognitive biases on managerial pricing practices, the present article contributes to a more nuanced view of why value-based pricing is not more widely adopted in practice, augmenting earlier findings regarding organizational challenges associated with value-based pricing (e.g., Liozu et al., 2012; Töytäri et al., 2015). Put differently, the combination of organizational and psychological

<sup>4</sup> I would like to thank a reviewer for this thoughtful suggestion.

**Table 1**  
Overview of cognitive biases.

Cognitive Bias	Description	Foundational literature & theory	Indicative pricing practice research	Implications for pricing practices	Debiasing strategies	Operationalization <sup>a</sup>
Perceived lack of control	The tendency to underestimate one's control over events	Rotter (1966) <i>Social learning theory</i>	Managers focus on costs (Dolan & Simon, 1996; Hinterhuber, 2004) and internal information (Carricano, 2014).	Value-based pricing requires managers to actively influence pricing by gathering and disseminating information about customers' perceived value (Nagle & Holden, 2002).	<i>Considering the opposite</i> reduces biased judgments (Larrick, 2004; Lord, Lepper, & Preston, 1984) <i>Considering alternative explanations</i> helps to decrease biased evaluations (Dubé-Rioux & Russo, 1988)	Managerial-oriented scale available from Hodgkinson (1992)
Herding	The inclination to base decisions on observed actions of the majority	Banerjee (1992) and Bikhchandani et al. (1992) <i>Social learning theory</i>	Managers focus on competitors' prices (e.g., Avlonitis & Indounas, 2006; Matthysens et al., 2009). Some may simply match competitors' prices (Dolan & Simon, 1996; Rusetzki, 2014).	Considering competition is important (see Ingenbleek et al., 2003), but simply matching competitors' prices is reactive and myopic, mimicking competitors rather than analyzing them.	<i>Mindfulness</i> can decrease herding and improve information interpretation (see Fiol & O'Connor, 2003) An antagonist playing <i>devil's advocate</i> can debias decision-making by questioning assumptions (Schwenk, 1984) <i>Diverse analogical reasoning</i> educates managers about value creation, so reducing the fixed-pie bias (see Moran, Bereby-Meyer, & Bazerman, 2008) <i>Considering the opposite</i> (See above.)	No scale available, but Bearnden, Netemeyer, and Teel's (1989) consumer susceptibility scale could be a starting point (see Lin & Lu, 2015 for similar usage)
Fixed-pie bias	The perception that the metaphorical "value-pie" is fixed and that pricing is a zero-sum game	Bazerman and Neale (1983) <i>Negotiation theory</i>	Managers perceive pricing as a zero-sum game (Hinterhuber, 2004) and overemphasize value capture rather than joint profits (Voeth & Herbst, 2006). Customer-focused pricing can increase profits for customers and suppliers (e.g., Anderson et al., 2007).	Enabling superior customer value creation and capturing part of the value in the form of reasonable profit are not contradictory objectives. Value-based pricing accommodates both objectives, to the mutual benefit of customer and supplier.		Różycka-Tran, Boski, and Wojciszke's (2015) consumer scale could be adapted to a managerial context
Ambiguity aversion	The inclination to avoid uncertain information in the decision-making process	Ellsberg (1961) <i>Decision theory</i>	Managers revert to the cost-plus heuristic (Urban, 2001)—that is, they rely on cost-based pricing (e.g., Liozu et al., 2012; Morris, 1987; Noble & Gruca, 1999; Shipley & Jobber, 2001).	Customers' perceived value is difficult to collect and evaluate (Hinterhuber & Liozu, 2012) but is the most useful basis for profitable pricing (Ingenbleek et al., 2003; Liozu & Hinterhuber, 2013).	<i>Adjust decision environment</i> to enable managers to justify decisions based on ambiguous information (see Urban, 2001) <i>Scenario planning</i> involves identifying a set of alternative outcomes (Courtney, Kirkland, & Vignerie, 1997) and weighting pricing information accordingly	Managerial-oriented scale available from Lorsch and Morse (1974, pp.154–55)
Egocentric fairness bias	The tendency to judge outcomes and processes that are favorable to oneself as fair	Adams (1965) <i>Distributive justice</i> ; Thibaut and Walker (1975) <i>Procedural justice</i>	Managers worry that customers consider value-based pricing unfair (Carricano et al., 2010) and use cost-based pricing (e.g., Tóiyári et al., 2015) or cost-based justifications for prices (e.g., Liozu et al., 2012).	Cost-based pricing per se is not fair to either customers or suppliers. Fairness in pricing practice depends on the relation between price and customer value (e.g., Anderson & Wynstra, 2010; Shipley & Jobber, 2001; Smith, 1995).	<i>Cognitive repair</i> by creating proversbs can disseminate knowledge and reduce the effect of biases (Larrick, 2004); <i>fairness is subjective</i> or 'costs impair, only value is fair', for example. <i>Alternative explanations</i> (See above.)	No scale available, but Jap's (2001) equity sharing and equality sharing scale could be adjusted and extended

<sup>a</sup> The list of scales offers some possible starting points for quantitative studies (e.g., surveys and experiments). However, context-rich qualitative studies (e.g., in-depth case studies and observations by shadowing) are also needed to improve understanding of the five cognitive biases in the context of pricing.

challenges should serve to explain the value-based pricing paradox better than either one alone—a view supported by recent research (see Töytäri et al., 2017).

Secondly, the present article contributes to the limited but growing stream of research investigating psychological aspects of managerial pricing practices (e.g., Hinterhuber, 2015; Iyer et al., 2015; Kienzler, 2017; Rusetski, 2014; Töytäri et al., 2017), including cognitive, social, and motivational factors. Specifically, this study explores how cognitive biases can influence pricing in business markets with regard to the distinct cognitive challenges associated with information about customer value. In so doing, it also contributes to the further deconstruction of the notion of managerial rationality as assumed by neoclassical economics and past pricing research (Diamantopoulos, 1991). While most contemporary pricing research does not assume managers to be rational, it rarely focuses on managers' (bounded) rationality. The present study illuminates how that bounded rationality causes managers to struggle with environmental complexity and their own limited information-processing abilities when setting prices.

Finally, the present article offers both theoretical and practical starting points for researchers and practitioners who are interested in the psychological challenges of value-based pricing. For researchers, evidence and theoretical insights into cognitive biases are linked to the pricing practice literature. Practitioners may be more concerned about the potential effects of cognitive biases on their own pricing practices and how those effects can be attenuated. Building on these three contributions, the following section outlines the article's theoretical and practical implications, followed by suggestions for further research.

#### 4.1. Theoretical implications

While this overview of five cognitive biases (see Table 1) that influence business market managers in their use of value-based pricing is not exhaustive, it integrates anecdotal insights and empirical evidence from the pricing practice literature. Specifically, the literature identifies cognitive biases that influence managers when *setting* value-based prices (perceived lack of control, herding, and ambiguity aversion) and when *communicating* value-based prices to customers (fixed-pie and egocentric fairness biases). Four major theoretical implications can be drawn from the insights presented here.

First, although there is little research on managerial pricing practices (Ingenbleek et al., 2003), the limited existing evidence suggests that pricing is often a complex task (Dutta et al., 2003) in which cognitive biases can inhibit value-based pricing.

Second, to properly investigate actual pricing decisions, reference to the literature on psychological challenges in managerial decision-making, and on the five cognitive biases in particular, would introduce greater scientific rigor and practical relevance to pricing research (see Table 1). Acknowledging the potential impact of psychological challenges on pricing practices seems central to overcoming the current limitations of pricing research in business markets.

Third, the implications of the present overview are not confined to individual managers. Carricano et al. (2010) show that dedicated pricing functions are common, and cognitive bias may also present challenges when pricing is a collective decision (see Iyer et al., 2015). Similarly, as value-based pricing extends into the sales force (see Forbis & Mehta, 1981; Hinterhuber, 2004, 2017; Nagle & Holden, 2002), the present overview has also implications for salespeople. For example, price herding may be of relevance to the extent that the discounting behavior of salespeople (within or across firms) converges to perceived market standards. Similarly, salespeople who are prone to a fixed-pie bias may be unable to practice value-based selling (for an overview of value-based selling, see Terho, Haas, Eggert, & Ulaga, 2012) because of their zero-sum mentality.

Finally, hybrid pricing (such as performance-based pricing) has in recent years attracted increasing interest within business markets (e.g., Hinterhuber & Liozu, 2014; Hünerberg & Hüttmann, 2003; Liinamaa

et al., 2016). The cognitive biases discussed here have implications for performance-based pricing based on customer output (for a discussion of this type of pricing, see Hinterhuber, 2017)—that is, pricing that takes account of customers' value-in-use. For example, fixed-pie and egocentric fairness biases are likely to restrict managers' use of performance-based pricing, which increases the value pie for all parties and accepts that customers' actual value-in-use is a fair basis for price setting. Additionally, as performance-based pricing based on customer output is complex, risky, and not the norm for suppliers (see Hünerberg & Hüttmann, 2003), it is likely to be negatively affected by perceived lack of control, ambiguity aversion, and herding.

#### 4.2. Managerial implications

As setting and changing prices can be a complex task for managers, heuristics represent a viable means of coping with such complexity. However, as simplified rules of thumb, heuristics can lead to cognitive bias and inappropriate decisions. For example, the five cognitive biases discussed earlier all have negative effects on the use of value-based pricing (see Table 1). As some share similar foundations (e.g., perceived lack of control and herding are both grounded in social learning), it is reasonable to assume that managers may struggle with a combination of these biases. To use value-based pricing successfully, then, firms must take account of this psychological vulnerability when hiring and training managers with pricing responsibilities.

As a starting point for improved decision-making, managers with pricing responsibility should acquaint themselves with the implications of such biases (see Table 1). Beyond this increased awareness, firms and managers should take practical steps to improve pricing practices. Specifically, debiasing strategies—that is, strategies to attenuate the negative effects of cognitive biases (Soll, Milkman, & Payne, 2015)—can help individuals to make better decisions. Building on prior research (e.g., Larrick, 2004; Soll et al., 2015), Table 1 identifies several debiasing strategies that can potentially improve pricing decisions, both at decision-maker level and in relation to the environment (Soll et al., 2015). For instance, firms can combat price herding by offering decision makers training in mindfulness. There is evidence of a positive link between organizational mindfulness and an emphasis on value-based pricing (Liozu et al., 2012), and mindfulness improves decision makers' perception and judgment in relation to herding (Fiol & O'Connor, 2003). Another potential debiasing strategy would be to change the decision environment by introducing a devil's advocate—that is, an individual who critically questions the assumptions underlying current practices to debias decisions (Schwenk, 1984).

#### 4.3. Further research

This overview of cognitive biases in a pricing context suggests a number of possible avenues for further research. First, it would be useful to further explore and refine the five propositions presented above. Given the relative dearth of research on the psychological aspects of managerial pricing practices and the broad nature of this overview, both qualitative and quantitative research is needed to extend current knowledge. For example, a survey design with scales adapted from Ingenbleek et al. (2003) and Hodgkinson (1992) could be used to investigate the relation between pricing practices and perceived lack of control among business managers responsible for pricing decisions (see Table 1). Similarly, a case study design based on in-depth interviews and observations could be used to investigate fixed-pie bias in buyer-supplier relationships. Table 1 offers further possible starting points for empirical studies.

As noted in Section 4.2 above, heuristics represent a viable approach for coping with complex tasks but may sometimes lead to cognitive bias. In some circumstances, however, heuristics may outperform more complex strategies in terms of cost-benefit trade-offs (e.g., Wübben & von Wangenheim, 2008). Further research might usefully



investigate this issue in the context of value-based pricing practices by pitting heuristics against the normative strategies provided by marketing simulations such as MARKSTRAT.

Finally, further research should investigate the consistency of cognitive biases in the context of managerial pricing practices. For instance, are individual managers consistently ambiguity-averse in their pricing behavior, and if so, do they consistently favor cost-based rather than value-based pricing? If not, what are the contingency factors (e.g., product type, market segment)? Ethnographic methods such as shadowing would enable observation-based assessment of the consistency of managers' behavior.

## 5. Concluding remarks

Value-based pricing is generally considered a superior practice that allows firms to gain a competitive advantage through customer value creation, capturing part of that value in the form of profit. Yet, despite these benefits, pricing practices that emphasize value-based pricing are not widely used in business markets. This overview shows that this value-based pricing paradox is due in part to the psychological challenges that managers face. Based on the evidence assembled here, detailing how cognitive biases and their underlying assumptions affect managerial pricing practices, researchers and managers can advance pricing research and improve pricing practice.

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