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# Exploring the emotional side of price fairness perceptions and its consequences

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## ABSTRACT

In the present research, we examined whether emotional responses determine price fairness perceptions and resulting behaviours. The relationships among negative emotional response, price fairness perception, self-protective behaviour, and negative word-of-mouth were hypothesized and empirically investigated. Furthermore, the moderating role of moral foundation was addressed and tested. Results indicated that there is a strong relationship between negative emotions and price fairness perceptions. While the latter had no significant effect on self-protective behaviour, it had a noticeable one on negative word-of-mouth. There was also a significant positive relationship between the two types of behaviours, where self-protective behaviour positively influenced negative word-of-mouth. Furthermore, the relationship between price fairness and negative word-of-mouth was significantly greater among respondents who scored higher on the moral foundation scale. Such results indicate that behaviour of those with a higher moral foundation appears to rely more on price fairness, while the behaviour of the second group (respondents with lower moral foundation scores) is determined primarily by emotional response. Our research contributes to the knowledge of consumer behaviour by providing an insight into different customer reactions regarding what they perceive to be unfair prices.

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Emotional response; price fairness; self-protective behaviour; negative word-of-mouth; moral foundations

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M30; M31; D91

## 1. Introduction

The concept of price fairness presents a challenge for researchers even after more than 25 years of extensive, albeit relatively narrow, research efforts. The importance of this concept stems from its influence on consumer behaviour, particularly on purchase decisions. This finding has often been replicated (Bolton et al., 2003; Campbell, 1999; Huppertz et al., 1978; Kahneman et al., 1986) and expanded with the identification of several additional consequences of perceived price fairness, such as negative

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word-of-mouth (Bougie et al., 2003; Xia et al., 2004), selecting an alternative offer, and aggressive behaviour (Bougie et al., 2003). The question of whether an observed price is fair or unfair arises in situations when customers are able to recognize price differences between the target price and some form of reference price, provided by either (a) a competitive seller, (b) previous experience, or (c) another customer, be it a complete stranger or a friend (Bolton et al., 2010; Bolton et al., 2003; Xia et al., 2004). While previous research also identified several other important precursors that influence price fairness perceptions, the basic idea is that these perceptions are a function of price comparisons. This process is mostly automatic, but it can also be very deliberate. When that is the case, drawing price comparisons can be exceptionally simple and facilitated by several means of information-gathering platforms and social media available to consumers. Due to the aforementioned combination of trends and increases in utilization of dynamic pricing strategies, the price fairness debate is relevant for both academics and practitioners.

One of the main unanswered questions applies to the role of emotions/affective reactions in price fairness perceptions. While some authors regard this concept as a distinctively cognitive (Peine et al., 2009), the conceptual model proposed by Xia and colleagues (2004) views emotions as an integral part of the concept and a mediator variable of behavioural responses. There is a general agreement from several scientific areas that emotions motivate behaviour (Baumeister et al., 2007; Frijda et al., 1989; Loewenstein, 2000) in the consumer context (Bagozzi et al., 1999; Barsky & Nash, 2002; Jansson-Boyd, 2010; Peine et al., 2009). However, the nature of emotional elements that co-create price fairness perceptions as proposed by Xia and colleagues (2004) seems unclear, despite some previous efforts of explaining this issue (Bougie et al., 2003; Campbell, 2007; Heussler et al., 2009; Zeelenberg & Pieters, 2004). Additionally, past research was most often founded on fragile theoretical foundations, methodologic shortcomings, and/or matters only broadly related to price fairness.

The aim of the present study is twofold: to discover whether emotional responses to price differences determine price fairness perceptions, as well as to test the scope of this relationship. If price fairness perceptions are, in fact, affected by emotional responses, practitioners may take such findings into an account when applying dynamic pricing techniques, offering products at different price rates to different customer segments, and/or plainly changing prices through time, without eliciting negative emotional reactions and causing customers to react negatively. The findings may also encourage them to think about their customer evaluations not only in terms of satisfaction and dissatisfaction, but through a more nuanced perspective. The main goal of this study also aligns with the increasing focus on emotional aspects of consumer behaviour (Bagozzi et al., 1999; Christodoulides et al., 2011; Jansson-Boyd, 2010; Verhagen et al., 2013).

In an attempt to explore the nature of affective responses, the current paper suggests a different perspective of price fairness perceptions, regarding them as moral judgments. The study provides a review of a theoretical background that forms the foundation for hypothesis development and the construction of the conceptual model. This is followed by an overview of the experimental research and results, and concludes with an extensive discussion of findings, applications, and suggestions for further research.

## **2. Literature review**

### **2.1. Price fairness perceptions as moral judgments**

Morality and ethics are unsurprisingly far-reaching topics for marketing practice, as marketing, of all other business functions, “receives the most scrutiny, generates the most controversy, and faces the most criticism about ethics” (Singhapakdi et al., 1999, p. 269). Considering the fact that an ethical image highly influences the success of an organization (Laczniak & Murphy, 2006), it may come as a surprise that not much research has been placed into understanding how pricing decisions contribute to general views of a company’s ethics and morality. The majority of theoretical and empirical work in this area revolves around dynamic pricing (e.g., Faruqui, 2010), which essentially discusses its fairness toward different customer segments. Furthermore, the concept of fairness appears to be a repeating topic in business literature in general because consumers often evaluate business action from the point of equity (Szymanski & Henard, 2001), a concept that is deeply associated with notions of fairness, with the latter also being a significant predictor of corporate ethical image (Singer, 1996; Xia et al., 2004). Consequently, this paper proposes that price fairness perceptions should be viewed as functions of moral reasoning. This statement represents a new perspective on the issue of price fairness that is currently broadly defined as a consumer’s assessment and associated emotions regarding whether the difference (or lack thereof) between a seller’s price and the price of a comparative other party is reasonable, acceptable, and/or justifiable (Xia et al., 2004).

In order to exercise this proposition, price fairness perceptions and their relationships to other concepts should be influenced by some type of moral or ethical beliefs, and applying the theory of moral foundations (Greene & Haidt, 2002; Haidt, 2008; Haidt & Joseph, 2004) might provide grounds to empirically test this assumption. Moral foundations are defined as interconnected sets of values, practices, institutions, and psychological mechanisms that regulate and enable social coexistence (Haidt, 2008). The development of moral foundations is a result of innate psychological mechanisms and cultural norms and practices (Boyd & Richerson, 2005) facilitated and enabled by the process of socialization in the core family environment. Graham et al. (2009) identified five moral foundations: harm/care; ingroup/loyalty; authority/respect; purity/sanctity; and fairness/reciprocity. The saliency of each foundation differs among members of different groups and communities and, more importantly, co-influences individuals’ behaviours and moral judgments related to the moral content of particular issues (Graham et al., 2009). For the purpose of present research, we focus only on one of the five moral foundations – fairness/reciprocity as it co-aligns with the concept of price fairness.

### **2.2. Emotional responses and moral reasoning**

The nature and characteristics of emotional responses represent a continuous source of controversy and separation in the broader academic world. Most prominent theories of emotions, such as appraisal theory, regard emotional responses as second to cognitive appraisals of different events (Frijda et al., 1989; Peine et al., 2009).

However, new research in the field of neuroscience and moral psychology suggests that this might not necessarily be the case.

The fields of moral psychology and morality in general have long been dismissive of the idea that emotions should have anything to do with moral reasoning and decision-making (Pizarro, 2000). Contrary to this perspective, evidence suggests that emotions facilitate moral reasoning (Damasio, 1994), aid in focusing attention to morally relevant topics (Pizarro, 2000), and provide a foundation for post hoc cognitive evaluations (Chen et al., 1996; Tetlock et al., 2000). Greene and Haidt (2002) explained that perceptions of different behaviours or situations (stimulus) evoke immediate feelings of approval or disapproval (affective response). Because these feelings emerge instantly, effortlessly, and have an affective valence, they are described as “affect-laden intuitions” (Greene & Haidt, 2002, p. 517). In the context of price fairness, those instant affective responses relate to the price difference (stimulus) between two offerings, allowing the price fairness evaluations, as a higher-level evaluative judgment, to take place afterwards. This idea aligns with the multicomponent models of judgment, which suggest that high-level evaluations are affected by both cognitive and affective influences (Ajzen, 2001; Bargh, 2002; Peters & Slovic, 2000).

This claim is also supported by Campbell’s (2007) findings. She showed that negative affect mediates the relationship between inferred motive for a price change and perceived price unfairness. Heussler et al. (2009) took a different approach, where they showed that respondents in positive emotional states evaluated the differences more favourably in terms of price fairness, compared to those in negative emotional states.

While these examples offer evidence that emotions play an integral part in the forming of price fairness perceptions, they may have some drawbacks. Campbell’s (2007) measures of emotional responses were based on a bipolar scale of positive versus negative feelings that bounds the respondent to dichotomous self-reporting and neglects the amplitude and variety of emotional states. On the other hand, the manipulation of respondents’ emotional states of Heussler et al. (2009) affected price difference perceptions just as well as the resulting price fairness perceptions.

Additionally, despite some notions that positive emotions might play a role in such evaluations (e.g., Martins & Monroe, 1994), there seems to be a general agreement that evaluations of morally questionable situations and behaviours are intertwined with predominantly negative emotions and feelings.

With all of this in mind and combined with the aforementioned perspective—that price fairness perceptions are in fact moral judgments—we form our first hypothesis:

H1: Negative emotions influence price fairness perceptions.

There is wide agreement concerning the motivational role of emotions (Baumeister et al., 2007; Loewenstein, 2000; Peine et al., 2009). Bougie and colleagues (2003) showed that the relationships between consumer behaviour and anger, on one hand, and dissatisfaction, on the other, are distinct; speaking in other terms, dissatisfaction does not encompass all the nuances of negative emotions. Similarly, Zeelenberg and Pieters (2004) explained that different consumer behaviours cannot be assigned to mere dissatisfaction; however, one should look into specific emotions and emotional states, which provide more explanatory value to behavioural reactions. Xia et al.

(2004) explained this relationship in the context of price fairness perceptions, by viewing emotions as stimuli that direct the behavioural response toward financial self-protection, monetary compensation, and/or coping with negative emotions. Hence:

H2: Negative emotions influence self-protective behaviour.

Furthermore, previous research also showed an interesting relationship between emotions and negative word-of-mouth. Emotions seem to influence the type of WOM – negative or positive (Nyer, 1997) – as well as the extent of word-of-mouth (Zeelenberg & Pieters, 2004). Research shows that angry consumers use negative word-of-mouth as an emotional coping mechanism to vent feelings or to take revenge; disappointed consumers use such behaviours in order to warn others, and consumers who experienced regret use it to strengthen social relationships (Wetzer et al., 2007). To explore this relationship in the context of price fairness perceptions, we formed the following hypothesis:

H3: Negative emotions influence negative word-of-mouth.

### ***2.3. Price fairness perceptions and different types of consumer behaviour***

As proposed by the present paper, the perspective, that price fairness perceptions are moral judgments influenced by individualistic views on importance of fairness and reciprocity (moral foundation), may also change our understanding of how such perceptions influence consumer behaviour. Discussions of fairness in the business context often give rise to a particular paradox: Fairness in its most basic form should always be impartial and equitable, but, when it comes to judging the fairness of price differences, the valuations seem to be strikingly subjective (Oliver & Swan, 1989). Some authors go as far as to say that, when it comes to fairness, people tend to be egocentrically averse to inequity (Fehr & Schmidt, 1999). In practice, this means that whenever a consumer faces an unfavourable target price compared with a favourable reference price, they will evaluate the difference as unfair. However, when faced with the opposite scenario, fairness would not be an issue for them.

Previous research identified several types of behavioural reactions (Bougie et al., 2003; Xia et al., 2004): deciding against the purchase of the product, complaining, aggressive behaviour, vandalism, and other types of repercussions. The intensity of these behaviours appears to be positively correlated with the severity of perceived price unfairness; therefore, the behavioural reactions were previously classified into three groups: no action, self-protection, and revenge. However, this classification ought to reflect the motivation behind certain types of behaviours. Xia et al. (2004) proposed that behavioural reactions are aimed at financial self-protection, financial compensation, and coping with negative emotions. Hence, we hypothesize:

H4: Price fairness perceptions influence self-protective behaviour.

While all of these goals are self-oriented, there is reason to believe that, in some instances, people would also orient their behaviours toward the protection of others. This might be especially true when it comes to consumers engaging in negative word-of-mouth communication. Research by Wetzer et al. (2007) suggested that while

people might engage in negative word of mouth to cope with negative feelings or to seek revenge, they might also try to engage in such behaviours in order to warn others or even to strengthen social bonds. In their view, the goal of negative word-of-mouth is dependent on specific emotions—connecting revenge with coping with anger, and other-oriented behaviours with feelings of disappointment and regret. If saliency of moral foundation fairness/reciprocity influences emotional responses and price fairness perceptions, we can hypothesize that:

H5: Price fairness perceptions influence negative word-of-mouth.

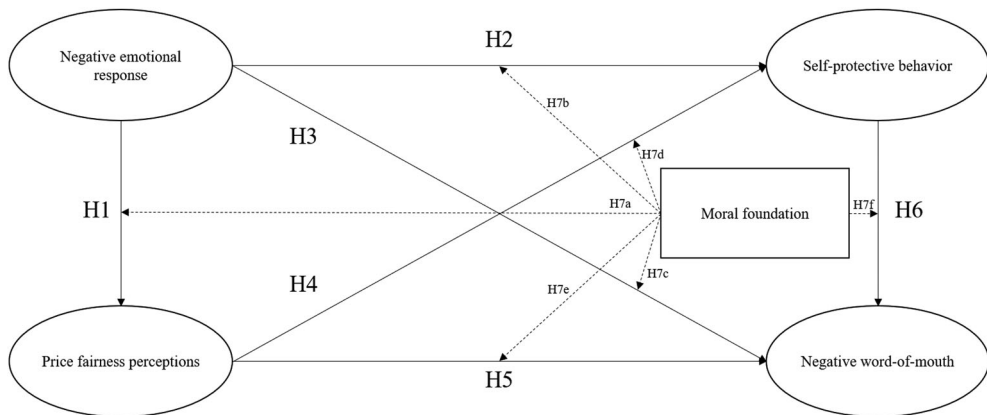
In addition, some people might be more prone to react to what they perceive as unfair pricing. Kim and Chen (2010) researched the effects of personal characteristics on consumer complaint behaviour. They found that customer involvement, self-importance, and general attitude toward complaining are all significant predictors of complaint behaviour. Stephens and Gwinner (1998) reported on the relevance of general beliefs/norms and education, while Sujithamrak and Lam (2005) found that complaints in a hotel restaurant setting more often come from older, well-educated customers with higher incomes. This makes it reasonable to assume that some consumers may never take action after an unpleasant experience, while some will take any action necessary. The classification of behavioural reactions to perceived price fairness (Xia et al., 2004) distributes these reactions based on the saliency of the perceived price difference in those of no action, self-protection, and, finally, revenge. Accordingly, we expect that self-protective behaviours such as complaints and refund demands precede negative word-of-mouth, and that people who take self-protective actions will be more likely to spread negative word-of-mouth. Hence:

H6: Self-protective behaviour influences negative word-of-mouth tendencies.

Contrary to the popular notion that price fairness perceptions are partial and subjective, Martins and Monroe (1994) proposed that consumers may evaluate price differences as unfair even in situations when their target price is lower (favourable) than the reference price (unfavourable). These perceptions could be accompanied by feelings of guilt, disappointment, and anger, and thus motivate retributive behavioural actions in order to restore equality.

There is scarce empirical evidence to support this proposition. Nevertheless, researching how relationships between price fairness perceptions, emotional responses and behavioural reactions are moderated by individual's moral foundation might shed new light on the observed relationship. We highlight three key perspectives: (1) saliency of the fairness/reciprocity foundation might influence price fairness perceptions and (2) emotional responses in situations of advantaged inequality, and furthermore (3) saliency of said foundation might also influence behavioural reactions to perceived price unfairness.

Consequently, moral foundations could potentially moderate negative emotions and price fairness relationships to negative word-of-mouth. Previous research (Wetzer et al., 2007) showed that certain people engage in negative word-of-mouth in response to negative feelings and experiences. In these settings, greater saliency of moral foundation could lead to greater likelihood of informing individual's social group about negative aspects of service encounter. The same principles apply to the



**Figure 1.** Conceptual model of relationships among negative emotions, perceived price fairness, moral foundation, and behaviour.

Source: Authors.

relationship between self-protective behaviour and negative word-of-mouth. Therefore, if saliency of moral foundation fairness/reciprocity influences emotional responses and price fairness perceptions relationships, we propose the following hypothesis:

H7a: Moral foundation moderates the relationship between negative emotional response and price fairness perceptions.

H7b: Moral foundation moderates the relationship between negative emotional response and self-protective behaviour.

H7c: Moral foundation moderates the relationship between negative emotional response and negative word-of-mouth.

H7d: Moral foundation moderates the relationship between price fairness perceptions and self-protective behaviour.

H7e: Moral foundation moderates the relationship between price fairness perceptions and negative word-of-mouth.

H7f: Moral foundation moderates the relationship between self-protective behaviour and negative word-of-mouth.

The conceptual model is shown in [Figure 1](#).

### 3. Methodology

#### 3.1. Sample and procedure

Our research sample consisted of  $N = 313$  ( $F = 67\%$ ) respondents who participated in an online scenario-based experiment. The average age was 24, and the majority of respondents reported previous experience with shopping online (96%). Data collection was carried out between August and October 2016 via an online survey tool. Respondents received a link to the survey via e-mail, and the final sample represents 21% of all invitation recipients.



Respondents first read the short scenario describing a web-based shopping situation. The scenario provided a description of a random laptop computer, along with its specifications, image, and target price (694.90 €). Based on an initial random assignment of respondents into two experimental groups, they were later provided with a reference price that was either higher (799.10 € = advantaged inequality) or lower (590.70 € = disadvantaged inequality) than the target price and was in both cases framed in terms of a price paid by a friend. This followed findings from previous research, which identified social comparisons to be most effective in manipulating price fairness perceptions (Xia et al., 2004). Our scenario stated the following: *Imagine that you are buying a laptop computer. You have searched through several offers, and during your search on a certain online shop you stumble upon the following ad [description of a laptop computer with its price – target price]. The product suites you and you decide on purchasing this laptop. After the purchase and during a chat with your friend, you realize that your friend bought the exact same laptop computer for [reference price].*

Afterward, respondents evaluated the fairness of the price difference, their emotional reactions, and the likelihood of listed behavioural responses. When finished, they completed the moral foundations questionnaire and provided demographic information.

## **3.2. Measures**

### **3.2.1. Price fairness scale**

The price fairness scale consisted of three items: fairness, acceptability, and reasonability. Items were derived from the popular definition of price fairness by Xia et al. (2004). Respondents rated price differences provided in a scenario along these three items on a scale from one (e.g., completely unfair) to five (e.g., completely fair).

### **3.2.2. Negative emotion scale**

Construction of the negative emotion scale was twofold. In the first attempt, through a pilot study, selected items for negative emotions from Richins (1997) Consumption emotions set were tested in relation to price fairness. As Richins stated: “Future research may reveal that ... some emotion states in the CES are probably irrelevant to some of the phenomena studied in consumer behaviour research” (p. 142). She continued:

Neither is it expected that researchers will necessarily use the CES in its entirety for a particular study. For some contexts, theory or common sense may suggest that certain emotions are unlikely to be experienced; in these cases, the researcher may choose to omit the descriptors for those emotions from their measuring instrument (p. 142).

Since Richins’ Consumption emotions set consists of a total of 34 emotions/descriptors (including descriptors such as ‘lonely’, ‘romantic’, ‘passionate’, etc.), we excluded some of them from our pilot study, where we’ve tested the remaining items and checked whether they relate to perceptions of price fairness. Those that did not were omitted from our main research inventory and those that remained were four emotional states: irritated, angry, discontent, and sad.

Respondents were asked whether they would experience each emotion state in relation to the scenario on a five-point scale (1 – definitely not; 5 – definitely yes).

### 3.2.3. Behavioural response scale

The behavioural response scale for an online shopping environment had six items in total: three (e.g., *I'd file a complaint*) to measure self-protective behavioural responses (sp-BR), and the other three (e.g., *I'd advise others not to shop at this seller*) to measure negative word-of-mouth (n-WOM). Respondents rated the likelihood of reacting in a listed way on a five-point scale, ranging from one (not likely) to five (very likely).

### 3.2.4. Moral foundations questionnaire

The original moral foundation questionnaire (Graham et al., 2009; Haidt, 2008) consisted of two scales: moral relevancy scale and moral reasoning scale. Each scale included items for five moral foundations, of which the present research adopted only the three items of moral relevancy scale for “fairness/reciprocity” foundation. Respondents rated how important certain questions are in regard to fairness/reciprocity when it comes to moral decision making on a five-point scale (1 – not at all; 5 – very important).

## 4. Empirical data and analysis

### 4.1. Validity and reliability of the scales and invariance testing

The conceptual model was analysed with covariance based structural equation modelling (CB-SEM) with the AMOS 24.0 software package, using the two-step procedure (Anderson & Gerbing, 1988): first to test the measurement model in order to establish the reliability and validity of the latent variables, and second, to test the structural model and examine the hypothesized relationships (Hair et al., 2013; Fornell & Larcker, 1981).

To test convergent validity, the average variance extracted (AVE) was calculated. Values of AVE exceed the suggested limit of 0.5 (Table 1), therefore showing the appropriate convergent validity. Table 1 also shows that all factor loadings exceed the value of 0.6, and values of  $R^2$  also appear satisfactory according to Hair et al. (2010) cut-off point for removal at 0.25. Tests of internal consistency also showed values of composite reliability (CR) greater than 0.7, showing sufficient measurement reliability (Table 1). Further, the fit indices for the structural model (Table 1) are in the range of appropriate fit.

Fornell–Larcker’s (1981) criterion showed that values of squared correlations exceed values of AVE in every instance (Table 2), supporting the notion of discriminant validity between the constructs, which was reaffirmed with the more restrictive test of heterotrait-monotrait ratios of correlations (HTMT) (Table 2). All HTMT ratios of correlations fall below the suggested threshold 0.85 (Henseler et al., 2015).

In order to test the hypotheses, additional invariance tests were required. To test the moderating role of fairness/reciprocity foundation (MF), two groups were created based on a median split of moral relevancy scale total scores due to high central tendencies values: (1) group MF low (values below median score) and (2) group MF high (values above median score), and the model consisted of four latent

**Table 1.** Standardized loadings,  $R^2$  values, composite reliability (CR) and average variance extracted (AVE).

Construct	Indicator	<i>M (SD)</i>	$\lambda$	$R^2$	CR	AVE
PF	PF1 – Fairness	2.89 (1.10)	0.88	0.776	0.897	0.745
	PF2 – Acceptability		0.91	0.819		
	PF3 – Reasonability		0.80	0.614		
NE	NE1 – Irritated	2.84 (0.91)	0.75	0.569	0.880	0.650
	NE2 – Angry		0.89	0.797		
	NE3 – Discontent		0.85	0.722		
	NE4 – Sad		0.71	0.510		
sp-BR	SP-BR1	2.27 (1.02)	0.84	0.710	0.766	0.529
	SP-BR2		0.76	0.580		
	SP-BR3		0.55	0.298		
n-WOM	n-WOM1	2.84 (1.17)	0.80	0.640	0.790	0.558
	n-WOM2		0.78	0.615		
	n-WOM3		0.65	0.417		
MF	MF1	3.70 (0.82)	0.79	0.620	0.832	0.623
	MF2		0.75	0.563		
	MF3		0.83	0.683		

Note: Fit indices:  $\chi^2/df = 154.088/94$ ;  $p < 0.01$ ; NFI = 0.941; IFI = 0.976; TLI = 0.969; CFI = 0.976; RMSEA = 0.045. PF – price fairness; NE – negative emotions; sp-BR – self-protective behaviour; n-WOM – negative word of mouth; MF – moral foundation.

Source: Research results.

**Table 2.** Values of squared root of AVE (Diagonal, displayed in italics), correlations between constructs and HTMT analysis (displayed in brackets).

	1.	2.	3.	4.	5.
1. Price fairness	<i>0.863</i>	–	–	–	–
2. Negative emotions	–0.647 (0.643)	<i>0.806</i>	–	–	–
3. Self-protective behaviour	–0.304 (0.275)	0.434 (0.410)	<i>0.728</i>	–	–
4. n-WOM	–0.529 (0.529)	0.567 (0.579)	0.526 (0.577)	<i>0.747</i>	–
5. MF	–0.071 (0.076)	0.213 (0.198)	0.085 (0.071)	0.217 (0.213)	<i>0.789</i>

Source: Research results.

variables and a total of 13 items (MF from initial analyses was excluded from the model because the variable was used as a moderator).

First, testing for the differences between the groups according to the fairness/reciprocity foundation was applied. According to the recommended practices in the literature (e.g., Steenkamp et al., 1998; Vandenberg & Lance, 2000), we tested the measurement invariance across the two groups. This was first applied within the measurement model and then within the structural model. A test of configural invariance or a test of a weak factorial invariance was deployed (Horn & McArdle, 1992), where factor loadings were allowed to be free for each of the two groups. All fit indices suggested a good fit of the configural invariance model (Table 3). In order to test the differences in paths or invariance of paths, metric equivalence had to be established (Vandenberg & Lance, 2000). Therefore, the metric invariance or a test of strong factorial invariance was performed in the second step to establish whether the factor loadings were invariant across groups. As can be observed from Table 3, the differences in  $\Delta \chi^2/df$  for the configural invariance model and the full metric

**Table 3.** Invariance test results.

<i>Model</i>	$\chi^2$	<i>df</i>	$\Delta \chi^2/df$ sig.	<i>NFI</i>	<i>IFI</i>	<i>TLI</i>	<i>CFI</i>	<i>RMSEA</i>
<b>Measurement model</b>								
Configural invariance	160.432	118		0.928	0.980	0.973	0.979	0.034
Full metric invariance	174.418	127	0.123	0.921	0.977	0.972	0.977	0.035
<b>Structural model</b>								
Configural invariance	160.432	118		0.928	0.980	0.973	0.979	0.034
Full metric invariance	174.418	127	0.123	0.921	0.977	0.972	0.977	0.035
Constrained paths	196,218	133	0.000	0.912	0.970	0.964	0.969	0.039
Partially constrained paths	176,127	130	0.880	0.921	0.978	0.973	0.978	0.034

Source: Research results.

invariance model are statistically insignificant at  $p < 0.05$ , meaning that full metric equivalence was achieved.

The same tests were also applied for the structural models. As for configural invariance, it can be observed that the model fits the data well and model fit indices are above 0.95; only the NFI index is below that margin but above 0.90. After testing for metric invariance, full metric invariance was achieved. When all paths were constrained to be equal across the groups, the  $\Delta \chi^2/df$  between the full metric invariance model and the constrained paths model was statistically significant, meaning that the full metric invariance model was better than the constraint path model. In a search for a more valid model with partially constrained paths, the following paths were unconstrained: (a) the path from price fairness to self-protective behaviour, (b) the path from price fairness to negative word-of-mouth, and (c) the path from self-protective behaviour to negative word-of-mouth. The final model with partially constrained paths exhibits the best fit from all alternative structural models, with the following fit indices:  $\chi^2(130) = 176.127$ ,  $RMSEA = 0.034$ ,  $CFI = 0.978$ ,  $TLI = 0.973$ , and  $IFI = 0.978$ . The partially constrained model shows  $\Delta \chi^2(df) = 20.1$  (3) and, hence exhibits a statistically significant improvement over the model with fully constrained paths. In comparison to a full metric invariance model, the chi-square difference is  $\Delta \chi^2(df) = 1.7$ , which is statistically insignificant, meaning that a partiality constrained model is as good as a full metric invariance model. Furthermore, in both instances, some fit indices appear higher in our final solution.

#### 4.2. Hypothesis testing

Present paper investigates the relationships among negative emotions, perceived price fairness, and behaviour.

After establishing a good fit of the model, seven hypotheses were tested. Results, as presented in Table 4, show that negative emotions affect both perceived price fairness and the two types of behavioural reactions ( $p < 0.01$ ). Consequently, Hypothesis 1 – 3 can be accepted. On the other hand, results also show that price fairness perceptions had no significant effect on self-protective behaviour but a noticeable one on negative word-of-mouth. There was also a significant positive relationship between the two types of behaviours, where self-protective behaviour positively influenced negative word-of-mouth. These findings support H5 and H6, while H4 must be rejected. The relationship between price fairness and negative word-of-mouth was significantly stronger among respondents who scored higher on a moral foundation scale. This

**Table 4.** Structural paths for the entire sample and for both groups (low moral foundation and high moral foundation).

Standardized path coefficients	All	Sig.	MF low	Sig.	MF high	Sig.
H1: NE → PF	−0.640	0.000	−0.532	0.000	−0.752	0.000
H2: NE → sp-BR	0.388	0.000	0.464	0.000	0.275	0.033
H3: NE → n-WOM	0.248	0.003	0.176	0.109	0.290	0.019
H4: PF → sp-BR*	−0.038	0.647	0.164	0.177	−0.199	0.075
H5: PF → n-WOM*	−0.269	0.000	−0.086	0.439	−0.456	0.000
H6: sp-BR → n-WOM	0.357	0.000	0.515	0.000	0.156	0.097

Note: \* Significant difference between groups. NE – Negative emotions; PF – Price fairness; sp-BR – Self-protective behaviour; n-WOM – Negative word-of-mouth.

Source: Research results.

shows that behaviour of those with higher moral foundation scores appeared to rely more on the price fairness perceptions, while the behaviour of the second group (respondents with lower moral foundation scores) was determined more by the emotional response. For the latter, the probability of spreading negative word-of-mouth was also more dependent on the probability of reacting at all (for the purpose of self-protection), while this was not the case for the respondents in the first group. At the same time, while there are some differences in relationships between negative emotions and other concepts, none of them appear significant. Moral foundation of “fairness/reciprocity” appears to moderate additional relationship (between price fairness and self-protective behaviour) while having no significant moderating impact on negative emotions and their paths to other constructs. In light of these results, H7d and H7e can be supported. However, we had to reject H7a, H7b, H7c, and H7f.

## 5. Results and discussion

This research explored the nature of emotional responses concerning consumers’ price fairness perceptions, and provided evidence that price fairness perceptions may be regarded as moral judgments. Our findings confirmed previous reports and expand on this knowledge by showing that mere emotional reaction to price difference may significantly contribute more to self-oriented types of behaviour (complaints, refund demands, official reports) than a cognitive evaluation in the form of price fairness perception. This falls in line with findings of several other authors (e.g., Nyer, 1997; Wetzer et al., 2007; Zeelenberg & Pieters, 2004) who have recognized the gravity of emotional responses in a consumption-related context. On the other hand, more other-oriented behaviours, such as negative word-of-mouth, were determined by both factors almost equally on the whole sample. This piece of information could indicate that price fairness perceptions are heavily dependent on emotional phenomena and in some occasions, even to their whole extent. This notion was previously exercised by Heussler et al. (2009) who manipulated respondents’ feelings prior to evaluating the fairness of price differences. The authors’ results showed that a “20% increase in price can be absorbed by positive emotions” (Heussler et al., 2009, p. 336), meaning that the emotional state of the customer is extremely important in their evaluation of price. When negative emotions such as irritation, anger, discontent, or even sadness occur in the buying process, the customer will most likely take a defensive posture, which might make both the existing and future exchange process

significantly more difficult. It is possible that behaviours such as complaining will appear at the point of sale both in brick and mortar stores, as well as in online stores; however, as the results also showed, customers with unfair price perceptions are less likely to complain at the point of sale but will pass the negative information through negative word-of-mouth instead.

The original assumption of this paper was that price fairness perceptions should be viewed as functions of moral reasoning. Consequently, we expected that some type of moral or ethical beliefs should moderate price fairness as well as other related concepts' relationships (notably emotional responses to price difference and behavioural consequences of perceived price fairness). Our results show that moral foundation does in fact moderate price fairness relationships to self-protective behaviour; it does not, however, moderate the emotional part of our model, namely the relationships between negative emotional response and price fairness perceptions, self-protective behaviour and negative word-of-mouth. Respondents with stronger moral foundation did not differ from their counterparts with weaker moral foundation in their emotional responses and how they connect to their fairness perceptions or their behaviour. This could mean that individual's moral foundation may not affect their immediate reactions to unfair price differences, but they could affect how they respond later (e.g., via spreading negative word-of-mouth). It also shows that cognitive evaluation of fairness and any kind of other-oriented behaviour takes more time, and according to Kim and Chen (2010), supposedly requires higher customer involvement.

## 6. Conclusions

This study investigated the relationship between price fairness perceptions and consumer emotions. Our research model was developed according to theory, and afterward was empirically verified and confirmed to be valid. As such, it provides a good basis for further research of customer behaviour in relation to price perceptions. It also identifies irritation, anger, discontent, and sadness to be significant predictors of price fairness perceptions and confirms the notion of at least two types of behavioural reactions in such situations. More importantly, it shows that behavioural reactions to what customers perceive to be unfair price differences may derive from two different paths. Greene and Haidt (2002) explained that the process of evaluating a morally questionable situation starts with what they've termed to be "affect-laden intuitions" (p. 517). Arguably, some cognitive processes cannot be fully excluded from those primary notions of fairness, but, as some authors proposed, the role of emotions at this stage is in facilitating attention and providing a foundation for post hoc cognitive evaluations (Chen et al., 1996; Pizarro, 2000; Tetlock et al., 2000). Be that as it may, our results show that, in some occasions, the emotional response to price differences may be the primary motivator of behaviour in situations of price unfairness. Conversely, some people may not think about what is happening nor do they wish to wonder why they are (i.e., discontent), and they simply act on it in order to protect themselves from exploitation. Any further action (such as spreading negative word-

of-mouth), on the other hand, appears to require some deliberate introspection into their feelings.

From a managerial point of view, our conclusions highlight the importance of the quality of pre-purchase and service processes, as well as that of nonmonetary costs (e.g., long shipping times/shipping related complications, technical difficulties, payment issues, and additional perceived efforts and energy spent during an exchange process), even for purchases of tangible products. We thus recommend that managers should look into how their services affect the emotional experiences of their customers in order to prevent negative emotions and thus lower the chance that customers take repercussions on the point of sales. Some examples of proactive action could include guarantees, the possibility of returning the product, or, even better, adding additional benefits such as saving time, reducing risks, facilitating the purchase process, etc. We should also stress the importance of appropriately dealing with customer complaint behaviour, as our results show that one of the strongest predictors of negative word-of-mouth appears to be a customer's immediate self-protective response. Hence, successful resolution of complaints may lead to prevention of further negative actions later on, especially for those with lower moral foundation. In order to do so, companies should educate and train their sales staff, especially with regard to the emotional responses of the customer during their interaction. Equally, regarding the online environment, companies should pay special attention to their interaction through their various social networks, as well as to their potential virtual consultants in the purchase and post-purchase processes. Our research also shows that perceptions of price fairness have an impact on negative word-of-mouth, especially in groups with a more pronounced sense of fairness and reciprocity. This group of customers can therefore spur fierce negative word-of-mouth if something goes significantly wrong during the purchase process, and it may be beneficial for companies to include moral and ethical elements in their marketing strategies to accommodate for such customers. In other words, companies have to show customers how these elements are important for both the company and the customer.

There are some limitations to consider about this study. First, all results are based on hypothetical scenarios, which researchers often use for this kind of research. Respondents were left to speculate on how they would feel and how they might react to a certain price difference. This limits us in generalizing the results to real-life situations and thus leads us to question the ecological validity to at least some extent. However, it should be noted that in order to gather relevant data on price evaluation, and especially on emotional responses through any other method, could prove too demanding for the respondents or too unreliable for the researchers. We would suggest gathering data on the emotional state of respondents before the start of the experiment in order to establish baselines. Second, in developing our scenarios, we limited ourselves to one price difference. This may be worthwhile to correct in future endeavours in order to acquire a better understanding of how reference prices at different price levels affect price fairness perceptions and other relevant concepts. The present research is also limited to negative emotions and their role in price fairness perceptions, though positive emotions may also play a part, especially prior to price fairness assessment, as noted by Heussler and colleagues (2009), or maybe even in

moderating the relationship between post-purchase complaints and negative word-of-mouth.

Finally, our findings should also be replicated with other product categories, and future research should also include other important factors that may influence price fairness perceptions, such as sales experience, involvement, product knowledge, and so forth. While we have based our basic assumptions on the theory of moral foundations, other theoretical backgrounds from the field of morality could and should be applied to what will hopefully be exciting future research.

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## References

- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology*, 52, 27–58. <https://doi.org/10.1146/annurev.psych.52.1.27>
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modelling in practice: a review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The role of emotions in marketing. *Journal of the Academy of Marketing Science*, 27(2), 184–206. <https://doi.org/10.1177/0092070399272005>
- Bargh, J. A. (2002). Losing consciousness: Automatic influences on consumer judgment, behavior, and motivation. *Journal of Consumer Research*, 29(2), 280–285. <https://doi.org/10.1086/341577>
- Barsky, J., & Nash, L. (2002). Evoking emotion: Affective keys to hotel loyalty. *The Cornell Hotel and Restaurant Administration Quarterly*, 43(1), 39–46. [https://doi.org/10.1016/S0010-8804\(02\)80007-6](https://doi.org/10.1016/S0010-8804(02)80007-6)
- Baumeister, R. F., Vohs, K. D., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review*, 11(2), 167–203. <https://doi.org/10.1177/1088868307301033>
- Bolton, L. E., Keh, H. T., & Alba, J. W. (2010). How do price fairness perceptions differ across culture? *Journal of Marketing Research*, 47(3), 564–576. <https://doi.org/10.1509/jmkr.47.3.564>
- Bolton, L. E., Warlop, L., & Alba, J. W. (2003). Consumer perceptions of price (un)fairness. *Journal of Consumer Research*, 29(4), 474–491. <https://doi.org/10.1086/346244>
- Bougie, R., Pieters, R., & Zeelenberg, M. (2003). Angry customers don't come back, they get back: The experience and behavioral implications of anger and dissatisfaction in services.



- Journal of the Academy of Marketing Science*, 31(4), 377–393. <https://doi.org/10.1177/0092070303254412>
- Boyd, R., & Richerson, P. J. (2005). Climate, culture, and evolution of culture. In C. Heyes & L. Huber (Eds.), *The origin and evolution of culture* (pp. 67–82). MIT Press.
- Campbell, M. C. (1999). Why did you do that? The important role of inferred motive in perceptions of price fairness. *Journal of Product & Brand Management*, 8(2), 145–153. <https://doi.org/10.1108/10610429910266995>
- Campbell, M. C. (2007). “Says who?!” How the source of price information and affect influence perceived price (un)fairness. *Journal of Marketing Research*, 44(2), 261–271. <https://doi.org/10.1509/jmkr.44.2.261>
- Chen, S., Shechter, D., & Chaiken, S. (1996). Getting at the truth or getting along: Accuracy-versus impression-motivated heuristic and systematic processing. *Journal of Personality and Social Psychology*, 71(2), 262–275. <https://doi.org/10.1037/0022-3514.71.2.262>
- Christodoulides, G., Michaelidou, N., & Siamagka, N.-T. (2011). Segmenting Internet users using emotions. *European Advances in Consumer Research*, 9, 424–426.
- Damasio, A. R. (1994). *Descartes’ error: Emotion, rationality and the human brain*. Putnam.
- Faruqui, A. (2010). The ethics of dynamic pricing. *The Electricity Journal*, 23(6), 13–27. <https://doi.org/10.1016/j.tej.2010.05.013>
- Fehr, E., & Schmidt, K. M. (1999). A theory of fairness, competition, and cooperation. *The Quarterly Journal of Economics*, 114(3), 817–868. <https://doi.org/10.1162/003355399556151>
- Fornell, C., & Larcker, F. (1981). Evaluating structural equation models with unobservable variables and measurement errors. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, 57(2), 212–228. <https://doi.org/10.1037/0022-3514.57.2.212>
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, 96(5), 1029–1046. <https://doi.org/10.1037/a0015141>
- Greene, J., & Haidt, J. (2002). How (and where) does moral judgment work? *Trends in Cognitive Sciences*, 6(12), 517–523. [https://doi.org/10.1016/S1364-6613\(02\)02011-9](https://doi.org/10.1016/S1364-6613(02)02011-9)
- Haidt, J. (2008). Morality. *Perspectives on Psychological Science*, 3(1), 65–72. <https://doi.org/10.1111/j.1745-6916.2008.00063.x>
- Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus*, 133(4), 55–66. <https://doi.org/10.1162/0011526042365555>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*. Pearson Education Limited.
- Hair, J. F., Celsi, M. W., Oritinau, D. J., & Bush, R. P. (2013). *Essentials of marketing research*. McGraw Hill.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Heussler, T., Huber, F., Meyer, F., & Vollhardt, K. (2009). Moderating effects of emotion on the perceived fairness of price increases. *Advances in Consumer Research*, 36, 332–338.
- Horn, J., & McArdle, J. (1992). A practical and theoretical guide to measurement invariance in aging research. *Experimental Aging Research*, 18(3-4), 117–144. <https://doi.org/10.1080/03610739208253916>
- Huppertz, J. W., Arenson, S. J., & Evans, R. H. (1978). An application of equity theory to buyer-seller exchange situations. *Journal of Marketing Research*, 15(2), 250–260. <https://doi.org/10.2307/3151255>
- Jansson-Boyd, C. V. (2010). *Consumer psychology*. Open University Press.
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1986). Fairness and the assumptions of economics. *The Journal of Business*, 59(S4), S285–S300. <https://doi.org/10.1086/296367>

- Kim, J. H., & Chen, J. S. (2010). The effects of situational and personal characteristics on consumer complaint behavior in restaurant services. *Journal of Travel & Tourism Marketing*, 27(1), 96–112. <https://doi.org/10.1080/10548400903539773>
- Laczniak, G. R., & Murphy, P. E. (2006). Normative perspectives for ethical and socially responsible marketing. *Journal of Macromarketing*, 26(2), 154–177. <https://doi.org/10.1177/0276146706290924>
- Loewenstein, G. (2000). Emotions in economic theory and economic behavior. *American Economic Review*, 90(2), 426–432. <https://doi.org/10.1257/aer.90.2.426>
- Martins, M., & Monroe, K. B. (1994). Perceived price fairness: A new look at an old construct. In C. T. Allen & D. Roedder John (Eds.), *Advances in consumer research*. Association for Consumer Research.
- Nyer, P. U. (1997). A study of the relationships between cognitive appraisals and consumption emotions. *Journal of the Academy of Marketing Science*, 25(4), 296–304. <https://doi.org/10.1177/0092070397254002>
- Oliver, R. L., & Swan, J. E. (1989). Consumer perceptions of interpersonal equity and satisfaction in transactions: A field survey approach. *Journal of Marketing*, 53(2), 21–35. <https://doi.org/10.2307/1251411>
- Peine, K., Heitmann, M., & Herrmann, A. (2009). Getting a feel for price affect: A conceptual framework and empirical investigation of consumers' emotional responses to price information. *Psychology and Marketing*, 26(1), 39–66. <https://doi.org/10.1002/mar.20261>
- Peters, E., & Slovic, P. (2000). The springs of action: Affective and analytical information processing in choice. *Personality and Social Psychology Bulletin*, 26(12), 1465–1475. <https://doi.org/10.1177/01461672002612002>
- Pizarro, D. (2000). Nothing more than feelings? The role of emotions in moral judgment. *Journal for the Theory of Social Behaviour*, 30(4), 355–375. <https://doi.org/10.1111/1468-5914.00135>
- Richins, M. L. (1997). Measuring emotions in the consumption experience. *Journal of Consumer Research*, 24(2), 127–146. <https://doi.org/10.1086/209499>
- Singer, M. S. (1996). The role of moral intensity and fairness perception in judgments of ethicality: A comparison of managerial professionals and the general public. *Journal of Business Ethics*, 15(4), 469–474. <https://doi.org/10.1007/BF00380366>
- Singhapakdi, A., Rawwas, M. Y. A., Marta, J. K., & Ahmed, M. I. (1999). A cross-cultural study of consumer perceptions about marketing ethics. *Journal of Consumer Marketing*, 16(3), 257–272. <https://doi.org/10.1108/07363769910271496>
- Steenkamp, J. E. M., Baumgartner, H., & Steenkamp, J.-B. E. M. (1998). Assessing measurement invariance in cross-national consumer research assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*, 25(1), 78–107. <https://doi.org/10.1086/209528>
- Stephens, N., & Gwinner, K. P. (1998). Why don't some people complain? A cognitive-emotive process model of consumer complaint behavior. *Journal of the Academy of Marketing Science*, 26(3), 172–189. <https://doi.org/10.1177/0092070398263001>
- Sujithamrak, S., & Lam, T. (2005). Relationship between customer complaint behavior and demographic characteristics: A study of hotel restaurants' patrons. *Asia Pacific Journal of Tourism Research*, 10(3), 289–307. <https://doi.org/10.1080/10941660500309697>
- Szymanski, D. M., & Henard, D. H. (2001). Customer satisfaction: A meta-analysis of the empirical evidence. *Journal of the Academy of Marketing Science*, 29(1), 16–35. <https://doi.org/10.1177/0092070301291002>
- Tetlock, P. E., Kristel, O. V., Elson, S. B., Green, M. C., & Lerner, J. S. (2000). The psychology of the unthinkable: taboo trade-offs, forbidden base rates, and heretical counterfactuals. *Journal of Personality and Social Psychology*, 78(5), 853–870. <https://doi.org/10.1037/0022-3514.78.5.853>
- Vandenberg, R., & Lance, C. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, 3(1), 4–69. <https://doi.org/10.1177/109442810031002>

- Verhagen, T., Nauta, A., & Feldberg, F. (2013). Negative online word-of-mouth: Behavioral indicator or emotional release? *Computers in Human Behavior*, 29(4), 1430–1440. <https://doi.org/10.1016/j.chb.2013.01.043>
- Wetzer, I. M., Zeelenberg, M., & Pieters, R. (2007). “Never eat in that restaurant, I did!”: Exploring why people engage in negative word-of-mouth communication. *Psychology and Marketing*, 24(8), 661–680. <https://doi.org/10.1002/mar.20178>
- Xia, L., Monroe, K. B., & Cox, J. L. (2004). The price is unfair! A conceptual framework of price fairness perceptions. *Journal of Marketing*, 68(4), 1–15. <https://doi.org/10.1509/jmkg.68.4.1.42733>
- Zeelenberg, M., & Pieters, R. (2004). Beyond valence in customer dissatisfaction. *Journal of Business Research*, 57(4), 445–455. [https://doi.org/10.1016/S0148-2963\(02\)00278-3](https://doi.org/10.1016/S0148-2963(02)00278-3)