Fairness through transparency — The influence of price transparency on price fairness perceptions

Sandra Rothenberger

The study examines and identifies factors that influence consumers’ perceptions of price fairness. In the formation and perception of price fairness judgments, price transparency plays an important role in customers’ judgment processes. Cognitive fairness judgments require a certain amount of information processing, so more information and transparency about prices should affect the outcome of fairness judgments. The more clear information consumers have about the vendor’s price, the higher their price fairness perceptions will be regarding the superiority of the offer. Price fairness in turn leads to more favorable evaluations of satisfaction perceptions and increases customers’ attitudinal loyalty toward repurchase and recommendation. Structural equation modeling of a survey of 1,459 passengers of a major European train company serves to test the relationships among the constructs and groups.

Keywords: price transparency, price fairness, satisfaction, attitudinal loyalty, price sensitivity.

JEL Classifications: M32.

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Abstract

The study examines and identifies factors that influence consumers’ perceptions of price fairness. In the formation and perception of price fairness judgments, price transparency plays an important role in customers’ judgment processes. Cognitive fairness judgments require a certain amount of information processing, so more information and transparency about prices should affect the outcome of fairness judgments. The more clear information consumers have about the vendor’s price, the higher their price fairness perceptions will be regarding the superiority of the offer. Price fairness in turn leads to more favorable evaluations of satisfaction perceptions and increases customers’ attitudinal loyalty toward repurchase and recommendation. Structural equation modeling of a survey of 1,459 passengers of a major European train company serves to test the relationships among the constructs and groups.

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Introduction

Customer satisfaction is gaining ever more importance as a performance indicator as theoretical and empirical studies continue to show that an increase in customer satisfaction correlates with an increase in shareholder value (Anderson et al. 2004). More and more companies measure customer satisfaction continuously and make it one of their primary
objectives and a central component of their mission statements. Furthermore, it influences employee compensation and the implementation of comprehensive customer satisfaction management programs. Such practices are based on the assumption that greater customer satisfaction leads to improved economic returns through increased repurchase intentions, word-of-mouth effects, cross-buying, and reduced price sensitivity (Anderson et al. 1994; Matzler et al. 2005). Theory and practice in customer satisfaction measurement emphasizes performance measurement (Varki and Colgate 2001), but even though quality and customer satisfaction comprise multiple attributes, price as an influence on customer satisfaction has received very little attention (Matzler et al. 2004). At best, measures of price perceptions use a single item, along with various measures of product or service attributes. However, the central importance of price in influencing purchase decisions and post purchase behavior makes this neglect of price aspects in customer satisfaction measurement surprising. In a qualitative study focusing on switching behavior in services, Keaveney (1995) reports that more than half of customers switched because of poor price perceptions (compared with those of competitors). Varki and Colgate (2001) arrive at similar results in their study of the banking industry; specifically, price perceptions directly influence customer satisfaction, the likelihood of switching, and the likelihood of recommendation.

Pricing judgments include two basic dimensions: an economic and a psychological (Vaidyanathan and Aggarwal 2003). Whereas the economic dimension focuses on costs, target return on investment, and the demand and supply side of the industry, the psychological dimension concentrates on the consumer’s perception of a price or price change. Money-back guarantees (e.g. Heskett et al. 1990), fixed prices (e.g. everyday low prices, Ortmeyer et al. 1991), honest pricing (i.e. price fairness Ayres and Nalebuff 2003), and customer advocacy (e.g. giving the customers open, honest and complete information on products and complex fee structures to finding the best product for them; see Urban 2003) represent some of the tools aimed at increasing satisfaction with pricing policies and the company’s offer. Customer
value and perceived price fairness also have been identified as central determinants of consumers’ reactions to prices (Campbell 1999; Varki and Colgate 2001).

Several authors argue that companies should orient their strategies to deliver superior customer value, defined as a “consumer’s overall assessment in the form of information of the utility of a product based on perceptions of what is received and what is given” (Zeithaml 1988) through more information, which drives customer satisfaction, retention, and profitability (Slater 1997; Woodruff 1997). Although the get and give components of this approach are conceptualized in terms of benefits and sacrifices, most studies use quality and monetary prices as components of value perceptions, as Monroe (1990) argues that the perceptions of value represent a trade-off between the quality of benefits the customer perceives in the product relative to the sacrifice he/she perceives by paying the price (Monroe 1990). Several studies have shown empirically that price information and quality perceptions influence value judgments (Bolton and Drew 1991; Ralston 2003; Varki and Colgate 2001) and concluded that price perceptions have an important influence on customer value, so managers should actively manage those perceptions. Viswanathan et al. (2007) show in an automotive retailing context that consumers who use product- and price-related information revise their vehicle preferences, suggesting that such information adds value by helping consumers make better product choices.

Another important construct that builds on price perceptions is perceived price fairness. Much literature pertains to the antecedents and consequences of price fairness perceptions (Campbell 1999; Xia et al. 2004), most of which defines fairness as a judgment about whether an outcome (or the process to reach an outcome) is deemed reasonable and just (Bolton et al. 2003; Xia et al. 2004). This definition implies that a consumer’s judgment relates to a reference point, standard, or norm.
In general, according to the theory of distributive justice (Homans 1961), consumers form judgments by comparing their information and investments (e.g., price paid) to the benefits (quality) they receive. Equity theory (Adams 1965) suggests various comparative factors that might influence a fairness judgment, such as other persons, a class of people, organizations, or the individual’s own previous experiences (Jacoby 1976). That is, equity or inequity judgments have several antecedents (Oh 2003). Buyers seem to compare their gains to the gains of the exchange partner (Oliver and Swan 1989), so if they think the seller earns exceptionally high profits and that any price increase is not attributable to cost and/or quality increases, they perceive the exchange as unfair (e.g. Bolton et al. 2003; Campbell 1999; Dickson and Kalapurakal 1994; Frey and Pommerehne 1993). In a bank setting, Urbany et al. (1989) find that customers perceive a price increase as unfair if they think it serves only to increase profits. Moreover, buyers perceive an exchange as unfair if they discover that other buyers in another exchange relationship with the same seller receive a lower price for the same product (Martins and Monroe 1994). Some authors also indicate that consumers use social norms and personal and societal approval to arrive at fairness judgments (e.g. Maxwell 1999).

Hence, research suggests four factors influence price fairness judgments. First, a price fairness judgment can be based on comparisons with transactions involving different parties. Second, information that provides reasons for a certain price or a price change may influence price fairness perceptions (price transparency). Third, the customer’s previous experience may have an effect on what he or she perceives as reasonable, acceptable, or justifiable. Fourth, the consumer’s general knowledge or beliefs about the seller’s practices and actions that are generally acceptable or justifiable may help form price fairness judgments (Xia et al. 2004). In turn, price fairness may be defined as the extent to which consumers believe that the difference between a seller’s price and a reference point (e.g., comparative others, social norms) is justifiable, reasonable, and acceptable.
The study examines and identifies specific factors that influence consumers’ perceptions of price fairness and finds several compelling effects. In the formation and perception stages, price transparency takes on a key role in customers’ judgment process. Because fairness judgments are cognitive processes that require a certain amount of information processing, information and greater transparency about prices influence the outcome of fairness judgments. When consumers have more information about the vendor’s price, their price fairness perceptions about the superiority of the offer rise, which then prompts their more favorable evaluation of their satisfaction perceptions and increases their attitudinal loyalty in the form of repurchase and recommendation intentions.

**Literature Review and Implications: An Integrated Framework**

Several theories attempt to clarify the impact, beyond service and quality satisfaction, of price transparency and price fairness on loyalty. Unfortunately, research in the area of factors that may influence price fairness judgments has been relatively sparse until quite recently. Voss et al. (1998) argue that satisfaction is a function of price, performance, and expectations, so perceived price fairness might be one of the dominant determinants of satisfaction (Voss et al. 1998). Similarly, to better understand the relationship among price transparency, price fairness, satisfaction, and attitudinal loyalty, several terms must be reviewed.

*Price transparency, price fairness, and satisfaction*

Extensive research centers on the different effects that price can have on price perceptions (e.g. Krishna et al. 2002) and how companies might frame their price offers attractively (Bearden et al. 2003). Research addresses aspects such as advertised reference prices (Grewal et al. 1998), individual differences in reference price utilization (Chandrashekaran 2001), semantic cues associated with sale and comparative price claims (Liechtenstein et al. 1991),
the situational context (Grewal et al. 1996), and factors that shape the formation of internal reference prices (Yadas and Seider 1998). But little research considers the effect of complete and accurate price information on price fairness perceptions.

Increasing access to information, access to more alternatives, more simplified transactions, increasing communication between customers, and general distrust and resentment on the part of customers represent five trends that can enhance customer power (Urban 2003). These trends further prompt customers to demand more open, honest, and complete information about products and their prices. Thus, price information and accordingly price transparency should be considered important aspects of pricing policies.

Price transparency exists when the customer can easily obtain a clear, comprehensive, effortless overview of a company’s quoted price (Diller 1997). As a consequence of high price transparency, customers’ search and evaluation costs diminish, which should lead to higher satisfaction. Several companies already have installed software-based advisors that help customers gather all the product- and price-related information they need for their buying decisions. Real-world experience shows that the programs are highly effective for increasing satisfaction, trust, and sales (Urban 2003).

Collecting and analyzing such price information can be explicit as well as implicit and remains highly subjective (Xia et al. 2004). If consumers lack information about the seller’s profits or costs, they generally use the product benefits they expect to receive as a comparison standard (Oh 2003; Thaler 1985). If they have information about the profits of the exchange partner, customers seem to compare their gains against the gains of that partner (Oliver and Swan 1989). Thus, the availability of information about the exchange partner’s prices, fee structures, differentiated prices, and so forth should influence their price fairness judgments.

Support for this argument also emerges from signaling theory, which is based on information economics and relevant in situations in which different parties in a transaction
possess asymmetric information (Spence 1974). In a buyer–seller relationship for example, a consumer who lacks information must either gather additional information, which is costly, or make inferences regarding the nature of the unknown or missing information (Biswas et al. 2002). In such a case, the seller can convey or “signal” information so that the consumer believes the information is true and reliable, which works if there is a cost or “bonding” component that penalizes the signaling firm when the information is untrue or invalid.

Giving customers open, honest, and complete information about prices and complex fee structures, especially in situations of intensive price competition, strongly fluctuating prices, and complex price mechanisms, may lead customers to infer that the prices are fair and that they will be more satisfied with the service. Hence,

\[
H1: \text{Price transparency through comprehensive, complete, and clear price information positively affects the judgment of price fairness perceptions.}
\]

\[
H2: \text{Price transparency has a positive impact on customers’ satisfaction judgments.}
\]

These hypothesis are based on the assumption that complete, accurate, and honest price information from a company offers benefits in the form of satisfaction and fairness to consumers, because it makes more informed decisions possible (see also Bearden et al. 2003).

**Price fairness and satisfaction**

As mentioned previously, when a company provides more price information and therefore greater price transparency, more customers perceive the price as fair. Therefore, price transparency should lead directly to price fairness perceptions, which in turn have significant impacts on satisfaction.

Research in consumer behavior reveals that fairness perceptions have a positive influence on satisfaction perceptions (Bowman and Narayandas 2001; Cao et al. 2003; Huffman and Cain 2001; Kim and Mauborgne 1996; Ordonez et al. 2000; Smith et al. 1999),
in part because these perceptions depend on the supplier’s commitment to provide enough information about the price, as well as adequate quality goods and services relative to the price paid (Oliver and Swan 1989; Oliver and Swan 1989a; Szymanski and Henard 2001). Not only fairness perceptions but also price transparency directly influence satisfaction judgments (Voss et al. 1998), because consumers may judge the price paid relative to consistency in product or service performance. When consumers compare their perceived gains or benefits from the transaction with their perceived monetary sacrifice and judge that their sacrifice is greater than the benefits, they likely become dissatisfied (Spreng et al. 1993). Therefore, information on price (price transparency) should influence consumers’ satisfaction judgments both directly and indirectly through price fairness perceptions.

**H3: Price fairness perceptions positively influence satisfaction judgments.**

Perceived price fairness also represents a psychological factor that exerts an important influence on consumers’ reactions to prices (Etzioni 1988; Kahneman et al. 1986a; Kahneman et al. 1986b). Price fairness judgments can be somewhat implicit and highly subjective; in turn, consumers’ subjective belief that the price is favorable and meets their image and service expectations influences their price fairness judgments directly. Fairness judgments entail an evaluation process regarding whether a price that differs from a reference point (compared with alternative services and products or social norms) is justifiable, reasonable, and acceptable. If consumers are confident that a company’s price is favorable, they likely perceive it as fair.

Empirical research indicates that customers’ perceived price fairness directly influences their overall satisfaction and therefore post purchase attitudes and behaviors. Voss et al. (1998), in studying the effect of price perceptions in a hotel check-in scenario, find that they directly influence overall customer satisfaction. Bolton and Lemon (1999) also report
that price disconfirmation, payment equity, and the actual price significantly affect overall customer satisfaction in the entertainment and cellular phone industries.

Substantial research in fairness literature links price fairness judgments and attitudinal intentions. Oliver and Swan (1989) show that perceptions of unfair prices lead to dissatisfaction and therefore a lack of positive attitudinal intentions, and other studies note that unfairness judgments lead to negative consumer reactions for the firm, including lower purchase intentions, complaints, and negative word of mouth (e.g. Campbell 1999; Huppertz et al. 1978; Xia et al. 2004). Thus, price fairness judgments directly influence customers’ postpurchase attitudes, including positive or negative recommendation and repurchase intentions.

*Satisfaction and attitudinal loyalty*

The evaluation of satisfaction in terms of service quality judgments equates to a consumer’s overall impression of his or her relative satisfaction with the organization and its services (Bitner and Hubbert 1994), such that satisfaction refers to a judgment made on the basis of a specific service encounter (Bolton and Drew 1991; Cronin and Taylor 1992). Various researchers attempt to understand the relationship between satisfaction and service quality, as well as its impact on customer purchase intentions (Bolton and Drew 1991; Cronin and Taylor 1992). For example, research shows that delivering high service quality is essential for every travel transportation company, because service quality significantly drives passenger satisfaction, passenger loyalty, and choice of transportation (Wells and Richey 1996; Young et al. 1994).

Customer satisfaction represents a focus of most service operations, because companies assume a strong relationship between satisfaction and consumer behavior. Higher customer satisfaction leads to greater repurchase and recommendation intentions and behavior.
(Ostrowski et al. 1993). In a competitive environment, satisfying customers in also has a positive effect on long-term survival (Rhea and Shrock 1987).

Regarding the relationship between service quality and customer satisfaction, there has been significant debate about their distinction and association. Previous studies generally agree that customer satisfaction and service quality are conceptually distinct (Bitner 1990; Boulding et al. 1993; Cronin and Taylor. 1992) but have not reached consensus regarding their causal order. Some researchers argue service quality leads to customer satisfaction (Cronin and Taylor. 1992; Parasuraman et al. 1988; Spreng and Mackoy 1996), whereas others posit that customer satisfaction is an antecedent of service quality (Bitner 1990; Bolton and Drew 1991; Oliver 1980). Yet other researchers even claim no relationship between service quality and customer satisfaction (Churchill and Surprenant 1982; Fornell 1992; Teas 1993; Teas and Agarwal 2000). However, on the basis of the dominant evidence previously offered, this study proposes that

\[ H4: \text{Satisfaction judgments positively affect customers’ attitude toward loyalty in the form of repurchase and recommendation intentions.} \]

Empirical research also emphasizes the importance of distinguishing customer satisfaction into two different loyalty components. Attitudinal loyalty reflects the customer’s intention to repurchase or recommend and thus the psychological disposition toward the same brand or brand-set; in addition, it involves the measurement of consumer attitudes (Evanschitzky and Wunderlich 2006; Fournier 1998; Jacoby and Chestnut 1978). In contrast, behavioral loyalty represents a cognitive process that measures past purchases of the same service or product and/or the probabilities of future purchase, given past purchase behaviors (Evanschitzky and Wunderlich 2006).

The insights obtained by previous research therefore suggest the overview of the constructs used in this study, with their items and relations that appears in Figure 1.
Figure 1. Theoretical constructs of price transparency

Method

Questionnaire and data collection

To measure the relationships among the constructs of price transparency, service satisfaction, price fairness, and attitudinal loyalty, a sample of 1,459 passengers of a major European train company was tested. A standardized questionnaire with closed-ended response questions, using six-point statement or satisfaction scales, was developed. Based on the literature review and model definitions (see Figure 1), the research team generated several items to measure the constructs, then presented these items to the market research department of the train company. The team members discussed the chosen items, added items if necessary, and reworded or deleted items to improve the questionnaire. The next pretest of the questionnaire was administered to 10 train passengers. Their recorded statements mentioned that some formulations were unclear, so those items were reworded before the data collection for the large-scale empirical study with random sampling.
On randomly selected routes in Germany, Austria, and Switzerland, wagons and seat numbers were selected randomly, and questionnaires were placed on those seats. Passengers completed the questionnaires during their travel; of the 2,600 questionnaires distributed, 1,459 were returned, for a response rate of approximately 56.12%.

Measures

Multiple-item scales developed for each of the four constructs shown in Figure 1 use seven-point Likert scales. Each scale underwent a three-step item reliability and purification procedure. First, the inter-item and item-to total correlations were computed for each item to ensure all items have a significant correlation coefficient at the 0.01 level. Second, Cronbach’s alphas were calculated for each construct. In the case of a low alpha value, the lowest item-to-correlation was removed. Third, an exploratory factor analysis was conducted for each of the constructs using an Eigenvalue of 1.0 as the cutoff point.

The development of the measurement scales relied on review and implications derived from the literature. The price transparency scale consists of the following items: (1) The price information is comprehensible; (2) The price information is complete; (3) The price information is true; and (4) The price information is clear. Price fairness measures whether (1) Price meets service expectation; (2) Price meets image perception; (3) Price meets quality expectation; and (4) Price meets overall expectations. The satisfaction scale includes (1) The train is reliable (punctuality); (2) The train catering offer; (3) The railroad network; and (4) The service satisfaction during travel. Finally, the measure of attitudinal loyalty consists of the following items: (1) I would repurchase a train ticket and (2) I would recommend the train company. A seven-point semantic scale (1 = very satisfied; 7 = not very satisfied at all) measured respondents’ response. All items appear in the Appendix.

Results

Specification of the model
The conceptual model in Figure 1 may be translated into an AMOS model that consists of measurement (confirmatory factor analysis) and a structural equation (simultaneous linear regression). Maximum likelihood estimation serves to determine the relationships among the variables, and two-stage analysis provides the test of the framework (Anderson and Gerbing 1988). Specifically, this analysis develops the measurement model by conducting confirmatory factor analyses on the applied multi-item scales, and then estimates the measurement model and structural equation paths simultaneously to test the proposed (overall) model. This two-stage method ensures the reliability and validity of the constructs before attempting to draw conclusions about relations among constructs.

**Measurement model**

Table 1 shows the results of the measurement model, including the standardized factor loadings, construct reliabilities, and proportion of extracted variance.

<table>
<thead>
<tr>
<th>Construct/Indicator</th>
<th>Standardized Factor Loading*</th>
<th>SE</th>
<th>t-Value</th>
<th>Construct Reliability</th>
<th>Extracted Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price transparency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>0.90</td>
<td>-</td>
<td>-</td>
<td></td>
<td>0.89</td>
</tr>
<tr>
<td>(2)</td>
<td>0.86</td>
<td>0.02</td>
<td>45.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>0.77</td>
<td>0.02</td>
<td>36.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>0.86</td>
<td>0.02</td>
<td>45.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>0.63</td>
<td>-</td>
<td>-</td>
<td></td>
<td>0.48</td>
</tr>
<tr>
<td>(2)</td>
<td>0.44</td>
<td>0.03</td>
<td>13.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>0.64</td>
<td>0.04</td>
<td>18.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>0.76</td>
<td>0.05</td>
<td>20.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price fairness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>0.86</td>
<td>-</td>
<td>-</td>
<td></td>
<td>0.72</td>
</tr>
<tr>
<td>(2)</td>
<td>0.52</td>
<td>0.03</td>
<td>20.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>0.88</td>
<td>0.02</td>
<td>41.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>0.75</td>
<td>0.02</td>
<td>32.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudinal loyalty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>0.53</td>
<td>-</td>
<td>-</td>
<td></td>
<td>0.51</td>
</tr>
<tr>
<td>(2)</td>
<td>0.64</td>
<td>0.14</td>
<td>13.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*First item for each construct is set to 1.

**Table 1.** Confirmatory factor analyses results
All factor loadings are significant ($p < 0.01$), which demonstrates that the chosen generic questions for each latent variable reflect a single underlying construct. The reliabilities and variances extracted for each variable indicate the model is reliable and valid.

Nearly all composite reliabilities exceed 0.50, whereas the variance extracted estimates are less than 0.50, with the exception of price transparency. These reliabilities and variances are computed using indicator standardized loadings and measurement errors (Hair et al. 1998; Shim et al. 2001). All items load significantly (t-value > 1.96) on their corresponding latent construct, which indicates convergent validity. These initial model considerations further demonstrate that the constructs exist and that they are tapped by the measures. The measurement model also fits the data well. The comparative fit index (CFI = 0.968) is above the recommended threshold of 0.90 for satisfactory goodness of fit (Bentler and Bonett 1982). The root mean squared error of approximation (RMSEA) value of 0.053 is below the recommended level of 0.08. Hence, the one-dimensionality criterion is satisfied (Frambach et al. 2003).

Exploratory factor analysis investigates the discriminant validity of the constructs in the framework; the results show that the hypothesized discrimination between constructs remains in existence. Testing of the discriminant validity of the applied constructs involves applying the approach proposed by Fornell and Larcker (Fornell and Larcker 1981). In Table 2, the diagonals represent the variance extracted for each construct reported in Table 1. The other entries represent the squares of correlations among constructs. An examination of the matrix displayed in Table 2 shows that none of the non-diagonal entries exceeds the diagonals of the specific constructs.

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Price transparency</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Satisfaction</td>
<td>0.22</td>
<td>0.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Price fairness</td>
<td>0.36</td>
<td>0.31</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>4. Attitudinal loyalty</td>
<td>0.22</td>
<td>0.40</td>
<td>0.42</td>
<td>0.51</td>
</tr>
</tbody>
</table>
Table 2. Discriminant validity of construct

**Fit of the full structural model**

The chi-square statistic is 377.088 (df. = 73, \( p < 0.001 \)), and the \( p \)-value is less than 0.05, so the model fails to fit in an absolute sense. However, because the chi-square test is very powerful, even a good fitting model (i.e., just small discrepancies between observed and predicted covariance) could be rejected. Thus, researchers recommend complementing chi-square with other goodness-of-fit measures. As noted previously, the CFI value of 0.968 exceeds the 0.90 cutoff, and the point estimate of RMSEA at 0.053 is less than 0.08. Also, the parsimonious fit measure \( \chi^2/df = 5.166 \) falls within the proposed threshold limits for this measure (Carmines and McIver 1981; Jöreskog 1970). Thus, the overall proposed model receives sufficient support.

<table>
<thead>
<tr>
<th>Construct</th>
<th>( R^2 )</th>
<th>( \chi^2 )</th>
<th>( df )</th>
<th>( \chi^2/df )</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price transparency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price fairness</td>
<td>.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudinal loyalty</td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( ***p < .01, **p < .05, \text{n.s.}=\text{not significant} \)

**Figure 2.** Structural model results
Hypotheses testing

Standardized regression weights from the estimated structural model appear in Table 3:

<table>
<thead>
<tr>
<th>Path from/to</th>
<th>Standardized Regression Weights</th>
<th>t-Value</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price transparency → Price fairness (H1)</td>
<td>0.60</td>
<td>21.95***</td>
<td>Accepted</td>
</tr>
<tr>
<td>Price transparency → Satisfaction (H2)</td>
<td>0.20</td>
<td>5.68***</td>
<td>Accepted</td>
</tr>
<tr>
<td>Price fairness → Satisfaction (H3)</td>
<td>0.49</td>
<td>12.28***</td>
<td>Accepted</td>
</tr>
<tr>
<td>Satisfaction → Attitudinal loyalty (H4)</td>
<td>0.72</td>
<td>14.26***</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

*** p < 0.01, ** p < 0.05, n.s. = not significant

Table 3. Structural model estimation results

All four hypotheses receive support. Price transparency has a high positive influence on price fairness perceptions (H1), as conformed by the standardized regression weight of 0.599 and the $p$-value of 0.001. In addition, price transparency can influence satisfaction in terms of service quality judgments (standardized regression weights = 0.204, $p$-value= 0.001), in support of H2, though a comparison of the intensity of influence of price transparency versus price fairness on service quality judgments reveals that the direct influence of price transparency on service quality judgments is lower (see Table 3.). Furthermore, the model supports the hypothesis that price fairness perceptions positively influence satisfaction judgments (H3) (standardized regression weight = 0.493, $p$-value = 0.001). Finally, the
influence of service quality judgments on attitudinal loyalty (H4) also is supported as highly positive (standardized regression weight = 0.716, \( p \)-value = 0.001).

*Testing for moderator effects*

Relations among constructs may vary across consumer characteristics and willingness to pay, prompting the possibility of moderating effects by three variables: payment, income, and price sensitivity. The price sensitivity and income moderating variables are median split into two subgroups, low versus high, and the payment variable consists of either myself or others.

To examine the equality or possible invariance of the structural paths, constrained (equal loadings) and unconstrained models were estimated with an AMOS 6.0 multi-group procedure (Jöreskog and Sörbom 1993; Verhoef and Langerak 2001). This procedure separately examines individual paths across subsamples to test whether the estimated coefficients for each subgroup are equal according to a chi-square difference test.

The fit measures are similar for both the constrained and unconstrained analyses. The values of CFI in all models remain above 0.90, and the values of RMSEA in all cases are below the recommended threshold of 0.08. Thus, the individual paths may be examined separately across subsamples. The estimation results of the unconstrained models, shown in Table 4, reveal size effects and show that payment and income have no significant influence on any of the path coefficients in the unconstrained models. However, price sensitivity indicates two significant moderator effects. Price transparency has a significant positive impact on satisfaction in the price sensitive group (\( \beta = 0.30, p < 0.01 \)) but not in the price insensitive group (\( \beta = 0.09, \text{n.s.} \)). Greater price sensitivity furthermore leads, through a higher satisfaction judgment, to a significant positive impact on attitudinal loyalty in the form of repurchase and recommendation intentions (\( \beta = 0.82, p < 0.01 \)). In contrast, in the group with low price sensitivity, though it suggests a significant positive impact on attitudinal loyalty, the effect is lesser than that of the high price sensitivity group (\( \beta = 0.53, p < 0.01 \)).
Table 4. Multi-group analysis results for unconstrained model

<table>
<thead>
<tr>
<th>Path from/to</th>
<th>Payment</th>
<th>Income</th>
<th>Price Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Myself</td>
<td>Others</td>
<td>Low</td>
</tr>
<tr>
<td>Price transparency →</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price fairness</td>
<td>0.64***</td>
<td>0.52***</td>
<td>0.58***</td>
</tr>
<tr>
<td>Price transparency →</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>0.21***</td>
<td>0.19***</td>
<td>0.23***</td>
</tr>
<tr>
<td>Price fairness →</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>0.48***</td>
<td>0.52***</td>
<td>0.45***</td>
</tr>
<tr>
<td>Satisfaction →</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudinal loyalty</td>
<td>0.70***</td>
<td>0.75***</td>
<td>0.68***</td>
</tr>
</tbody>
</table>

Notes: Bold cells imply the chi-square difference test shows that the coefficients in the two groups are unequal. *** p < 0.01, ** p < 0.05, n.s. = not significant.

Discussion and Implications

This study examines the direct effect of price transparency on price fairness and satisfaction, as well as its indirect effect on attitudinal loyalty. The results confirm that when customers are more informed about the price, their price fairness perceptions and satisfaction judgments increase, which positively affect their attitudinal loyalty indirectly.

Main effects

Price fairness is a central construct in pricing theory and practice, and price fairness perceptions are crucial for understanding customers’ behaviors in terms of both their
satisfaction judgments and their post purchase actions. Consumers note that clear, comprehensive, complete, and true information about a company’s quoted price has a positive, strong impact on their price fairness perceptions. The results further indicate that consumers who have a better understanding of the quoted price, and therefore a better price fairness perception, reveal higher satisfaction with the offered services and therefore greater attitudinal loyalty. Thus, price transparency indirectly and positively influences satisfaction judgments. The direct influence of price transparency on satisfaction is weaker than that through the possibility of creating price fairness perceptions. If customers believe that a price is favorable, the likelihood of their positive price fairness judgments increases.

These findings are important for both the theory and the practice of pricing. First, from a theoretical point of view, this study contributes to literature on the antecedents of price fairness, which previously has not addressed either price information or price transparency as possible antecedents of price fairness judgments. Because fairness judgments involve a certain amount of cognitive effort and information processing, these two constructs should be considered logical extensions of the price fairness literature.

Second, this study introduces the concept of price satisfaction, which illuminates the influence of price fairness perceptions on consumers’ satisfaction. Further studies should build on this concept by including related constructs, such as customer value, or extending the model to include perceived quality as another component of customer value. It also would be interesting to replicate these findings in other industries in which price information and price uncertainty play major roles. Signaling theory in pricing (Biswas et al. 2002; Srivastava and Lurie 2004) suggests that delivering price information becomes particularly relevant when consumers do not have full price information and in markets with intense price competition and the related price fluctuations. However, it is unclear how the constructs in this study might apply in situations in which consumers have easy access to all price information, there
is little price competition, or prices do not fluctuate. Another interesting environment for studying such effects is the Internet, which strongly influences price perceptions of consumers (Suri and Long 2003).

With regard to the important practical implications of this study, though price fairness judgments are highly subjective, consumers usually have little knowledge of the seller’s actual costs and profit margins (Bolton and Warlop 2003). Therefore, delivering a clear, complete, and comprehensive overview of prices can increase customers’ price fairness perceptions by indicating that the company has nothing to hide. Price fairness, in turn, increases perceived satisfaction. If it faces unfavorable price comparisons with its competitors, a company should focus on product differentiation to justify the higher price on a certain offer. Customers perceive high price reliability if no hidden costs exist and if prices do not change unexpectedly. When prices do change though, customers should be informed properly and promptly to build trust and thus enhance the chances of a long-term relationship. Studies show that consumers generally consider practices like demand-based pricing, including dynamic pricing, which is unfair and harmful to trust (Garbarino and Lee 2003; Garbarino and Lee 2003). In many industries (e.g., cell phone operators, rental car companies), hidden pricing is common, and companies that announce a low price but hide various charges in the fine print appear to assume such tactics are a good idea (Ayres and Nalebuff 2003). In the long run though, these practices are harmful not only to customers, who become frustrated when they figure out what the product or service really costs, but to the whole industry, because they induce unfair price competition (Ayres and Nalebuff 2003).

Moderating effects

It is reasonable to assume that moderating effects, including price consciousness (Sinha and Batra 1999), involvement (Chandrashekaran 2001), or price presentation (Krishna et al. 2002), may play roles in price perceptions and therefore should be included in additional
studies. Literature on price-matching guarantees indicates that the effectiveness of a guarantee depends on whether the consumer’s search costs are high or low (Srivastava and Lurie 2004), as well as the extent to which other cues indicate high or low prices (Biswas et al. 2002).

This study explores the moderating effect of consumer characteristics, including payment, income, and price sensitivity, on the relationships among price transparency, price fairness, satisfaction, and attitudinal loyalty. Price sensitivity, measured with items like price consciousness, price knowledge, and price shopper, represents the most important determinant for the fairness through transparency construct. Within this moderator affecting group, price sensitive customers have greater price information needs and higher price fairness perceptions, so they represent higher attitudinal loyalty through their better satisfaction perceptions.

Income and payment have no moderating effects on the construct, which confirms the lack of a significant difference between high income and low income customers for the fairness through transparency construct. Even the payment variable confirms that no significant difference exists in the relationship among price transparency, price fairness, satisfaction, and attitudinal loyalty, regardless of who pays.

References


Appendix
Measurement scales

<table>
<thead>
<tr>
<th>Construct</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Price transparency</em></td>
<td>Information on prices is comprehensive</td>
</tr>
<tr>
<td></td>
<td>Information on prices is complete</td>
</tr>
<tr>
<td></td>
<td>Information on prices is true</td>
</tr>
<tr>
<td></td>
<td>Information on prices is clear</td>
</tr>
<tr>
<td><em>Price Fairness</em></td>
<td>The ticket price corresponds to the service</td>
</tr>
<tr>
<td></td>
<td>The ticket price corresponds to the image</td>
</tr>
<tr>
<td></td>
<td>The ticket price corresponds to the quality</td>
</tr>
<tr>
<td></td>
<td>The ticket price meets my expectation</td>
</tr>
<tr>
<td><em>Satisfaction</em></td>
<td>I am satisfied with the reliability</td>
</tr>
<tr>
<td></td>
<td>I am satisfied with the catering</td>
</tr>
<tr>
<td></td>
<td>I am satisfied with the railroad network</td>
</tr>
<tr>
<td></td>
<td>I am satisfied with the service in general</td>
</tr>
<tr>
<td><em>Loyalty</em></td>
<td>I will repurchase a ticket again</td>
</tr>
<tr>
<td></td>
<td>I will recommend this train to others</td>
</tr>
</tbody>
</table>

Moderators
Price sensitivity
I am a smart shopper
I look always for/after a good price/performance ratio
I am very price conscious

Income

Payment
I paid the ticket
Someone else paid the ticket