ONLINE CONSUMERS’ PERCEPTION ON PRICE FAIRNESS

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ABSTRACT
This study adopts illusion of control and lateral consumer relationship to investigate their effects on price fairness in online auction and group buying context. These two variables have been known to have strong influences in fairness perception on human decision making processes and outcomes. Through laboratory experiments, this study demonstrates that consumers’ perception on illusion of control in price determination and advantageous lateral consumer relationship significantly affect price fairness perception in both the online auction and group buying environments. The findings are expected to provide researchers and managers with useful insights to conduct future studies on uncovering the nomological networks associated with price fairness perception and to develop better pricing strategies and design effective dynamic pricing mechanisms.

INTRODUCTION
Price discrimination is not a new concept [33]. Pricing discrimination is a pricing strategy providing an individual or some segments of consumer groups with different prices. It is initially applied in the traditional market based on periodic demand fluctuation and inventory-level [14,18]. Airlines and hotel industries have a long history of practicing this price discrimination. United Airlines segments its consumers into eight distinct groups, ranging from price sensitive consumers (e.g. priceline.com users) to business travelers (e.g. last minute reservations) [54]. Coca-Cola also has tested vending machines that adjust the prices of soft drinks according to the surrounding temperature [32]. Yet, the notion of pricing discrimination becomes more rampant in the e-commerce market. As it is easier to access a huge amount of high-quality consumer demand data and it becomes more convenient and cheaper to change prices in a short time period with the advent of sophisticated internet technologies, e-retailers could have unexploited opportunities to adopt different types of pricing strategies [14].

One of the most popular pricing strategies is called dynamic pricing, which allows identical products (or services) to be sold with different prices [65]. Dynamic pricing allows e-retailers to adjust the price of an identical product (or service) to correspond with willingness to pay by the consumers [46]. Internet auctions such as eBay.com and Ubid.com serve as one of the most popular business models adopting dynamic pricing. Name-your-own-price mechanism such as Priceline.com, and group-buying discounts mechanism such as Mercata.com are also examples of this concept. Dynamic pricing has been known to provide a lot of benefits for both buyers and sellers. Economists have long argued that price discrimination benefits retail firms’ profits because it enables them to capture consumer surplus more easily by differently charging consumers who have different price sensitivity [19,35,55]. With the support of advanced
technologies (e.g. shopbots), buyers also can track competitive prices and have the symmetric information with the sellers, enabling them to actively take part in and influence the pricing decision.

Despite its wide adoption and perceived benefits, complaints from online consumers who resist dynamic pricing, as seen in the case of Amazon.com, are often reported [19,27,35]. The most commonly recognized reason is the negative perception by the consumers toward price fairness in their purchases [10]. It makes consumers to leave the exchange relationship, spread negative information, or engage in other behaviors that damage the seller [6,65]. There have been several studies attempting to explain how people perceive price (un)fairness in the traditional market, but their findings could not be directly applied to explain price fairness in the e-business market because they assume consumers’ passive role in price determination (“just adopting the price determined by sellers”). In the new business environment, the consumers’ perceived price fairness should be investigated assuming their active involvement in dynamic price determination, but not many studies have been reported under the new assumption [19].

The goal of this study is to investigate the factors affecting perceived price fairness of buyers in the online dynamic pricing context. In particular, this study identifies two factors, illusion of control and lateral consumer relationship, and examines their effect on price fairness perception. Consumers’ illusive perception on controlling their behaviors (illusion of control) and lateral consumer relationship that compares one’s outcomes of a particular behavior with those of his referents have been known to have significant influence on fairness perception. A laboratory experiment is conducted to empirically validate our hypotheses under two dynamic pricing contexts: online auction and group buying. Online auction and group buying are the most popular mechanisms implementing dynamic pricing which allow us to capture the perception of price fairness of online consumers under their active participation in pricing decision [3,13,28]. This study helps advance our understanding of consumers’ perception on dynamic pricing in e-commerce market and provides us with useful insights to design effective dynamic pricing strategies to enhance price fairness perception.

**RESEARCH BACKGROUND**

**Dynamic Pricing**

Dynamic pricing has a long tradition and has been applied quite successfully in the market place [52]. A variety of industries (e.g., airlines, transportation, amusement parks, hospitality, apparel, etc) have adopted dynamic pricing. In the traditional market, prices are mainly determined and differentiated by sellers. The role of consumers is, then, to accept or decline the given prices. Therefore, past studies in dynamic pricing have focused on the seller’s side which can be divided into two areas: analytic approach and systematic approach. The former is to determine optimal pricing policies based on the demand curve and optimal inventory level derived from economic models [e.g., 7,20,56,62] and mathematical optimization [e.g., 4,8,15,30,37,43]. The latter is to develop automatic tools for determining enhanced pricing policies for sellers using data mining techniques and artificial intelligence [e.g., 5,45,50,53]. However, there was rigidity in changing prices in the traditional market because of high transaction costs of gathering consumer information and monitoring their purchasing patterns and behaviors [22,64]. It would take
several months for the firms with a large product or service offering to change prices because of their long distribution system.

In recent years, numerous business-to-consumer (B2C) and business-to-business (B2B) companies frequently adopted dynamic pricing strategies in the e-commerce market [14]. There are several factors that contribute to this new phenomenon. First, it is much easier and faster to change prices in the e-commerce market than in the traditional market. While it takes a couple of weeks or months to formulate and change prices for products or services in the latter, it only takes an hour or less to set the price and post the price change into websites due to advanced technologies such as database management systems. Second, it is much easier to gather and analyze rich consumer data crucial for making a precious pricing decision in e-commerce market. With the support of advanced technologies (e.g., cookies, click-stream technology) in gathering and analyzing consumer traffic, consumer demographic, and preference data are stored at the websites enabling sellers to make a real-time setting and adjusting of dynamic pricing at minimal cost [14]. Third, in the e-commerce market, it is much more convenient to segment consumers into smaller units and provide them with customized pricing. For example, by identifying the consumer’s purchasing behavior and demographic information, and customizing and issuing dynamic coupons which include different amount of price discounts in a real-time basis, e-retailers can micro-manage their marketing and pricing. It is possible to vary prices for nearly every sales offer. Fourth, consumers are actively involved in the pricing decision in the new market. Advanced search engines, shopbots, and web aggregators, plus new e-commerce models such as online auction and group buying provide consumers with opportunities to be more actively involved in and influence price determination [35]. For instance, buyers and sellers together negotiate the final transaction price for the goods or services in online auctions (e.g. eBay.com) and name-your-own-price (Priceline.com) type transactions [28]. In addition, price is determined by number of interested buyers in group buying situations.

Therefore, it becomes more feasible for e-retailers to tailor prices to target certain consumers (or groups) [17,49]. Dynamic pricing becomes a critical part of all e-commerce, offering increased revenues, lower costs, and improved processes, which help fuel its growth [2,22]. However, as we see the anecdotal evidence of consumers’ negative reaction toward dynamic pricing, it is necessary to carefully investigate the underlying nature of negative reactions from consumers in dynamic pricing [19].

**Price Fairness**

Price fairness is defined as “a consumer’s assessment and associated emotions of whether the difference between a seller’s price and the price of a comparative other party is reasonable, acceptable, or justifiable” [65, p.3]. As is dynamic pricing so popular in e-commerce market, so is the uproar of consumers’ complaints because of their perceived price unfairness [10]. It has been reported that perception of price unfairness leads to consumer dissatisfaction, leaving the exchange relationship, spreading negative information, or engaging in other actions that deteriorate the reputation or trust of sellers [6,27,57]. Therefore, researchers have been requested to pay closer attention to issues of price fairness [35] which help overcome negative responses of consumers induced by dynamic pricing. Reinartz [51] indicated that consumers’ perceived price fairness is the most important condition that must be upheld for dynamic pricing to work.
The pricing literature in consumer behavior identified price fairness as a psychological factor that critically affects consumers’ reaction to price [23,24]. A variety of marketing and psychology studies have been conducted to investigate consumers’ response to price based on distributive justice theory [58], equity theory [1] and dual entitlement principle [24].

The theory of distributive justice focuses on the perceived fairness of how resources and rewards are distributed. Previous research based on this theory defines distributive justice as “the allocation of rewards on the basis of individual contributions to an exchange relationship” [10, p. 265] and suggests that people develop fairness perception when all parties involved in an exchange relationship share the same rewards to their investment. With respect to price fairness, this theory posits that a consumer perceives price fairness when they paid the same price with other consumers for purchasing the same product or service [39].

Equity theory [1,40] assumes that people perceive the fairness (equity) of transactions by comparing the ratios of their contributions to particular transactions versus the resulting outcomes. Researchers supporting this theory have argued that perceived inequity in transaction makes people dissatisfied and thus they would attempt to behaviorally or cognitively restore equity [1]. Martins [40] proposed several methods of reducing inequity: (1) altering inputs, (2) altering outcomes, (3) cognitively distorting inputs or outcomes, (4) leaving the field, (5) acting on the object of comparison by altering or cognitively distorting the other’s inputs or outcomes, or (6) changing the object of comparison.

Finally, dual entitlement principle proposed by Kahneman et al. [23] argues that perceived fairness is governed by the reference transaction, the outcomes of exchange parties, and the exchange context [10]. Exchange parties believe that they are entitled to a reference price and reference profit [23]. Thereby, if either party does not get its entitlement, the relationship is perceived as unfair. There are several applications of this principle. For example, contrary to the expectation of the loyal consumers for a price advantage in purchasing the same DVD titles at Amazon.com, they actually found themselves paying a higher price than others, resulting in perceived unfairness. Consumers perceived that they did not receive their entitlement. Microsoft experienced similar reactions from its lock-in consumers when it started competitive upgrade pricing policy for MS Word 2.0. Microsoft charged the same price to purchase the new version of MS Word for both other competing software consumers and past MS Word consumers desiring an upgrade. The latter believed that they were entitled to receive lower prices than the former but received the same price, which made them upset and conducting negative actions.

**RESEARCH MODEL AND HYPOTHESES DEVELOPMENT**

Based on the existing research on price fairness and the distinct characteristics of the dynamic pricing in the Internet market, we propose two factors that are believed to significantly influence consumers’ perception of price fairness: (1) illusion of control and (2) lateral consumer relationship. These two variables have been well recognized as factors significantly affecting individuals’ decision makings and subsequent fairness perceptions in a variety of behavioral contexts. Their effects become overt especially in situations where the results of the behavioral decision makings are unpredictable. The fact that the final price is hard to predict in dynamic
pricing context (e.g., auction, group buying) allows illusion of control and lateral consumer relationship to have equally significant influence on consumers’ price fairness perception. Consequently, we predict price fairness perception will trigger consumers’ purchase intention as shown in Figure 1.

Figure 1: Research Model

**Illusion of Control and Perceived Price Fairness**

An illusion of control is defined as “an expectancy of a personal success probability inappropriately higher than the objective probability would warrant” [36]. Why do people overestimate their control? It is because of a control heuristic which is used to judge the degree of influence over an outcome [59]. A control heuristic is defined as “a shortcut or simple rule that can be used to reach a judgment” [59, p. 188]. Two elements are involved in a control heuristic: “one’s intention to achieve the outcome” and “the perceived connection between one’s action and the desired outcome” [59, p. 189]. Based on these two elements, people judge how much control they have. The stronger the intention and the perceived connection, the more control they feel they have. In dynamic pricing, consumers’ involvement or participation is important for the illusion of control because connection between their actions and outcomes cannot be observed unless they participate in the transactions [60].

Previous studies have found the significant effect of illusion of control on human perception and decision making. Langer [36] showed that people overestimated their control even in purely chance situations. In her study, some people were allowed to pick their own lottery tickets and others were not. Later, they were given a chance to exchange their tickets for new lottery tickets with more favorable odds. Despite the fact that the exchange would increase the odds, people who chose their own lottery tickets did not exchange them. It is because people think that their choice of tickets gives them some control over the outcome of the lottery. Davis et al. [11] conducted two production planning experiments using executive decision support system (EDSS) and found that illusion of control significantly affects the EDSS use. Illusion of control makes people illusively perceive that they could have better control in their decision making by using the system. Subsequently, the overconfidence leads people to continue using the system even when it is not beneficial and to avoid using superior systems. Durand [12] found that organizational illusion of control in its ability (resources or dynamic capability) to influence the environment and to control the future makes the firm’s forecasting ability positively biased.
Furthermore, Martz et al. [41] showed that illusion of control consistently appears in resource allocation decision environment using the TradeSmith exercise.

In summary, it has been known that people often overestimate their control in a variety of behavioral contexts which leads to positive emotions and motivate people to attempt risky tasks [59,60]. Therefore, if online consumers perceive illusion of control in dynamic pricing, they would consider price as something they direct and control, instead of something given to them.

One of the major characteristics of dynamic pricing is that prices are determined by the interactions between buyers and sellers at any point during the transactions. Sellers are able to track buyers’ behavior and adjust prices accordingly. At the same time, buyers are able to participate in price determination through acquiring target product information through online discussion boards and consumer forums. They can now monitor the price changes using shopping agents such as Shopbots [cf. 31], evaluate various options [29], and negotiate terms and conditions [9]. Such a participation in price determination makes online buyers illusively perceive that they can control prices which were not possible in the traditional brick-and-mortar market. That is, buyers illusively perceive that their participation in price determination contributes to purchasing products or services at a fair price.

The possible relationship between illusion of control and perceived price fairness has been found in previous studies [61,63,65]. They point out that consumers perceive more fairness when they think they have more chances to affect the pricing decision [58], while they perceive unfairness when sellers control the price. For example, Walker, et al. [63] found that decisions resulting in procedures that offer process controls are perceived fairer and are better accepted than the same decisions resulting from procedures that deny process controls. Vaidyanathan and Aggarwal [61] also suggested that controllability in pricing is an important factor that affects consumers’ perception of a fair price. In this study, we expect that the more people illusively perceive that they control the price in dynamic pricing environment, the higher price fairness they perceive. Therefore, we hypothesize:

H1: In dynamic pricing, the buyers’ illusion of control in price determination is positively related to their perceived price fairness

Lateral Consumer Relationship and Perceived Price Fairness

Price perception is a comparative process [44]. By comparing his/her price paid for purchasing an identical product (or service) with that of comparative others, a consumer perceives price fairness or unfairness [65]. That is, price fairness perception is induced when a consumer compares his/her price paid with price paid by comparative others [65], which is called lateral consumer relationship. The lateral consumer relationship has been supported by several theories such as social comparison theory [38], equity theory [39] and distributive justice theory [21].

Social comparison theory [34,38] suggests that subjective evaluation of outcomes rather than their objective status determines whether one feels fairly or unfairly treated, satisfied, or deprived. The subjective evaluation is obtained by a comparison process in which obtained outcomes are compared to those of comparative referents (“perceptions of what others are
receiving”). Similarly, distributive justice [21] and equity theory [e.g., 39] insist that people expect to receive the same or more amount of rewards they invested in the exchange relationship with others.

Previous studies have found that lateral comparison between consumers is an essential factor that affects the perception of price fairness [e.g., 38]. For instance, Feinberg et al. [16] found that perceived fairness is affected not just by prices the consumers themselves are offered but also by prices available to others.

Advanced technologies adopted into e-commerce market help a buyer easily compare the price that he/she paid with those paid by other parties through online consumer forums or discussion boards. Based on the price information gathered through the Internet, a buyer can judge whether he/she is paying more or less than others for the identical product or service. Consequently, when a buyer finds that he/she paid less than others (so called advantageous lateral consumer relationship), he/she perceives price fairness. Otherwise (so called disadvantageous lateral consumer relationship), he/she perceives price unfairness and reacts negatively to the seller as we observed in the MS Word 2.0 case [48]. It is because buyers want to maximize their own price advantage through transaction [40,47]. We expect the same consumer reactions for price fairness in dynamic pricing. Therefore, we hypothesize:

H2: In dynamic pricing, buyers’ advantageous lateral comparisons with other buyers are positively related to their perceived price fairness.

Perceived Price Fairness and Purchase Intention
Consumers’ perception of price fairness has been known to significantly affect their reactions toward sellers [23]. Moreover, previous studies have found that price fairness perception directly affects consumers’ purchase intention [23,25,26,39]. For example, Campbell [6] and Maxwell [42] showed that the negative perception of price fairness reduces consumers’ shopping intention. Kahneman et al. [24] showed that consumers’ purchase intention is determined by the perception of price fairness. Based on previous findings, we expect the same positive relationship between perceived price fairness and purchase intention in dynamic pricing environment. Therefore, we hypothesize:

H3: In dynamic pricing, buyers’ perceptions of price fairness are positively related to their purchase intention.

RESEARCH METHODOLOGY
This study employs a laboratory experiment since it requires careful controls to test research hypotheses. A 2 x 2 x 2 factorial design is used to test research hypotheses, including illusion of control, lateral consumer relationship, and transaction type. Illusion of control is divided into two levels: (1) high illusion of control vs. low illusion of control. Lateral consumer relationship has two types: advantageous vs. disadvantageous lateral consumer relationship. Finally, auction and group buying are selected as transaction types. Dynamic pricing mechanism has been most widely applied into those environments and their consumers have showed low-level resistance to the prices determined through this mechanism. A gift basket which has a wide perceptive price
variance is selected as a target product and included in the scenario. This product makes it difficult for people to precisely estimate its (original) price and use it as a referral price of fairness perception. The research design and subject numbers assigned in each experiment condition are shown in Table 1. Subjects will be randomly assigned into one of the 8 cells.

Table 1: Research Design

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CONCLUSION

To investigate the effects of illusion of control and lateral consumer relationship on price fairness which trigger purchase intention, this study conducts a laboratory experiment under online auction and group buying context, and validates the hypothesized relationships. The study expects that both illusion of control and lateral consumer relationship significantly influence perception of price fairness, and this price fairness perception is expected as a strong predictor of purchase intention.

REFERENCES


