

Could Algorithmic Pricing Backfire on Retailers? Price Ethicality and Consumers' Fairness Perceptions

Zainab Atia

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Abstract

Algorithmic pricing has become a phenomenon in the age of technological advancement. As retailers are widely transforming their businesses and relying more on algorithms in pricing their products, this on its turn has given rise to many ethical implications accompanied with its usage.

Applying theories and principles rooted in consumer behavior and marketing to include theory of attribution and emotions to explain price ethicality and fairness perceptions by consumers; this research explores the different reactions of consumers following an unfair price judgment. In specific, the current study examines the impact of perceived price ethicality on consumers' positive and negative emotions which is shown to mediate the relationship between their relative attribution and other behavioral reactions (e.g., *loyalty, word of mouth, brand switching, and complain*). A research model based on two algorithmic pricing mechanisms (*dynamic and personalized*) and consumers' perceived fairness is proposed to describe and propose the hypotheses in testing the mentioned antecedents. Additionally, the study introduces the role of explainability as a moderator in mitigating consumers' unfair perceptions. In testing the relationships, this paper will run 2-way between-subject design experiments to collect data.

This research extends the understanding of consumers' reactions towards unfair pricing techniques adopted by retailers today, by providing empirical evidence in testing their attributions and emotions, with an end goal of supporting ethical businesses overall performance and enhancing consumers' purchasing experience and wellbeing.

Keywords: *Algorithmic pricing, dynamic pricing, personalized pricing, price ethicality, fairness perceptions, explainability, attribution, emotions, behavioral reactions.*

Introduction

Over the past few years, firms have witnessed a massive increase of sophisticated algorithmic deployment which has become quite pervasive in today's modern society. With the wide availability of data for retailers, the ability to track consumers using algorithmic pricing has become an integral option in online platforms (Katsov 2018).

The adoption of algorithms in retail has been pioneered and widely used in literature across varied fields including marketing, computer science, engineering, economics, and public policy. However, what is more alarming today is the comprehensive understanding and focus of this technology and its associated ethical influence on consumers' ethical perceptions and behavioural responses (Buhmann et al. 2020; Calvano et al. 2019; Elegido 2011; van Pinxteren et al. 2019; Seele et al. 2019). Therefore, the perceived ethicality with its applied principles such as transparency and fairness do pose an important criterion in examining consumers' wellbeing and overall purchase experience (Du and Xie 2020).

Having said this, as research have examined consumers' price fairness perceptions extensively (Campbell 2007; Bolton et al. 2010; Xia, et al. 2004), there still seems to be a lack of consensus regarding the antecedents and factors influencing consumers' fairness judgment, especially within the new application of algorithmic pricing in retail. Also, as price fairness literature is rich in exploring this phenomenon, yet majority of literature remains generic in examining pricing contexts and its influence on consumers' judgment. Therefore, following Seele et al., (2019) identification of the two algorithmic pricing mechanisms (*dynamic and personalized*), this paper conceptualizes this distinction further to review the ethicality of the technology on consumers' fairness judgment, while explaining this relationship from the attribution theory perspective. In addition, the paper will further

review consumers' generated emotions as a result of an unfair pricing condition which shows the aggravated impact on their behavioural responses.

Theoretical Background

Throughout literature, many scholars have investigated the role of attribution theory in explaining how consumers evaluate price fairness (Campbell 1999; Choudhary et al. 2005; Grewal et al., 2004; Xia et al., 2004). While, this theory might not be directed towards theories of fairness and related consumer behavior; though it provides a solid marketing base for understanding how consumers' rationalize uncertain situations and act upon it (Weiner 1980). According to theorists, individuals seem to be likely to attribute causal explanation for an event when the outcome is surprising or negative (Weiner 1985). Attributions are hence likely to happen since consumers often think about responsibility for a price to be paid (Gelbrich 2011). Two dimensions will be examined here under this theory namely; the external attribution to retailers and internal attribution to consumer's abilities. As such, consumers attempt to make inferences (internal or external) about observed actions which influence on its turn their responses in price fairness judgments (Bolton et al., 2003; Vaidyanathan and Aggarwal 2003). Typically in this case, consumers would therefore seek out for information to determine whether the seller is responsible for such unfavourable or negative purchase condition. Put more simply, consumers would tend to determine in such situations, whether the cause of a price difference is due to the seller or because of themselves (Grewal et al. 2004). Admittedly, psychological researchers show that emotions foster variety of actions and tendencies by consumers depending on the negative or positive state of emotion they are experiencing (Soscia 2007). Thus, the causality of the event provides a building block for the generated emotions in consumers' purchasing experience.

As such, a consumer who feels dissatisfied because of themselves will react differently than one who feels dissatisfied because sellers were judged responsible during their purchase (Soscia 2007). In that case, with an internal attribution consumers might experience more of guilt and remorse rather than anger and rage for the external agency affecting their emotional attribution.

Having said this, relative to an unfair pricing judgment sad or disappointed consumers will be prone to react often with a negative word of mouth, whereas angry consumers will behave differently and more instantaneously through switching to another seller instead (Antón et al., 2007). In that sense, the more recent broadening point of view suggests that a price advantage renders consumers positive emotions depending on their causal attribution as a starting point (Gelbrich 2011). We therefore postulate that consumers' attribution to prices serve as a theoretical explanation that helps in understanding their relative ethical judgment which mediates the relationship of their emotions and behavioral responses.

Empirical Context and Methodology

Based on the insights gathered from the literature review, an initial conceptual model will be framed which will further be developed and polished during the main research and data collection stage. The purpose of this model is to illustrate the overall direction of research in planning the preliminary experiments to be conducted later. This will allow the researcher not to solely focus on understanding the difference between the presented algorithmic pricing models on consumers' judgment and their behavioural responses; instead to relate its analysis to the overall research substantive objectives;

whereby possible managerial practices will be drawn to experts and practitioners within the field.

To test this research hypotheses and presented model, therefore, this paper will run a set of experiments using an online laboratory setting on Prolific Academic (ProA), which aims mainly to capture the linkage between the objectives of research presented earlier with the methods to be carried later. This study will utilize on Qualtrics for designing survey-based experiments, both stimulus materials and questionnaires. A random sample will be assigned in either a dynamic or a personalized algorithmic pricing setting which will be presented in explaining the purpose of the study. The studies presented will manipulate algorithmic pricing types (*dynamic and personalized*) to measure their effect on the dependent variables accordingly (*unfairness perceptions, emotions, and consumers' behavioural reactions*) under varied contexts and settings, which will be further presented during the pilot and data collection stage.

Potential Findings and Contribution

As new modest research within the area of marketing and consumer behavior, the current research advances the literature of algorithmic pricing, pricing ethics, consumers' generated emotions and behavioural reactions. With its empirical focus, this paper aims to contribute to literature through manipulating the two distinctive pricing models and their effect on consumers' ethical perceptions, which has mainly been examined from either perspective previously in literature (Haws and Bearden 2006; Wu et al. 2012; Garbarino and Maxwell 2010). In order to examine this further, the study begins with Soscia (2007) and Gelbrich (2011) models and tries to extend them in two directions. First, it investigates the attributional causality of a situation (*internal and external*) influence in predicting different

consumers' blend of emotions elicited. Second, through understanding the mediating relationship of the identified emotions, the paper will further examine the irreversible immediate behavioural outcomes consumers might engage in following an unfair pricing and a negative elicited emotional state (*anger and guilt*). As such, this paper will add to literature through manipulating the algorithmic pricing models while measuring their distinctive effect on the mentioned antecedents. Additionally, this paper will be the first to empirically investigate the moderating role of explainability in the context of algorithmic pricing, and its role in mitigating consumers' ethical transgression (if found).

From a managerial perspective, this research offers significant implications for marketers, manufacturers of algorithms and retailers. More specifically, these implications pertain in providing a better human-machine interactive environment (whether online or offline) to improve on both businesses' overall performance and consumers' wellbeing. As we are advancing towards more technologically aiding tools in business strategies; managers can therefore provoke any related negative perceptions of their algorithmic usage, and further integrate new pricing in support of their agile adaptation and new implemented ecosystems. For instance, a manager can adopt a hybrid approach of pricing that relies on both humans and machines simultaneously, while improving on user experience and reducing associated resistance gradually. Through defining the correct balance of pricing, whether using dynamic or personalized (or both), managers can approach consumers more ethically while taking their expectations at a critical stance. From the perspective of managers and retailers, it is important to understand how consumers react to prices given by algorithms to further optimize their strategies, and contribute to ethical responsible business environments. Thereby, this work recommendations readily mitigate relative unfair judgments by users, which could potentially hinder them from

having a positive purchasing experience. From another perspective, the information will help consumers to learn more about how businesses generate pricing and how such pricing components could vary and influence their decisions. Therefore, through allowing more explainable pricing systems, businesses can harness on consumers' generated positive emotions which fosters their loyalty and extends on their postpurchase behaviour.

Finally, the significance of this paper also lies in its substantive contribution to the area of algorithmic pricing which enables policymakers and involved stakeholders to set the pace in aligning their accountability and responsibility to take action and foster further development and ease of adoption to algorithms.

Academic Biography

Zainab Atia is a PhD candidate undertaking her research within Management Sciences and Marketing Division at University of Manchester's Alliance Manchester Business School. Her research interests lie in the areas of Marketing Management, Consumer Behavior, Sustainable Marketing and Ethics. Previously Zainab did her MSc as part of Leeds Business School at University of Leeds (LUBS) and was the course representative for over a year for the Management Consulting studies. Prior to joining academia, she worked as analyst and consultant in UK, Ireland, and the Middle East.

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