

Revealed Preferences in Food Delivery Apps: Impact of Dynamic Pricing & Discounts

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Abstract: *The rapid growth of digital food delivery platforms in India has transformed traditional retail patterns and reshaped consumer decision making in subtle yet powerful ways. Drawing on the economic theory of revealed preferences introduced by Paul Samuelson, this paper examines how observed purchasing behavior on quick commerce platforms serves as a practical lens for understanding consumer choices without relying on abstract utility assumptions. It discusses how dynamic pricing, geo targeting, surge mechanisms, subscription models, bundling practices, and digital coupons are deployed to balance supply and demand while extracting willingness to pay. At the same time, the analysis considers behavioral responses such as loss aversion, anchoring, impulse expansion of basket size, and strategic timing of purchases, highlighting that observed choices may not always align with consumers' long-term interests. The study also reviews emerging evidence on artificial intelligence driven pricing systems, noting both their operational efficiency gains and their potential to alienate price sensitive users. Beyond commercial outcomes, ethical and policy concerns are addressed, including transparency in pricing, rider welfare in the gig economy, algorithmic accountability, and risks of predatory discounting in competitive markets. The paper positions dynamic pricing and discount strategies as tools that can smooth demand and improve capacity utilization yet cautions that without regulatory oversight, they may deepen inequities and obscure distributional effects in developing economies.*

Keywords: Revealed preferences, Dynamic pricing, Digital food delivery platforms, Consumer behavior, Pricing transparency

1. Introduction

India, a land often faced with several deep-rooted challenges such as economic inequality, infrastructure deficits, social discrimination, unemployment, and political instability is now rapidly witnessing an unprecedented shift into cashless economy and digitization of marketplaces. Contrasting to India's development landscape, and its technological inefficiencies, the retailer sector of the country were able to ideate, implement, and expand exponentially from the traditional *kirana* stores to instant online deliveries catering to consumers demand for groceries, medicines, cosmetics and electronics¹.

This thus reflects the extent to which consumers, in the veil of their busy lives, easily order in rather than cooking or dining out. Each order placed on a food delivery platform acts as a window to the consumer's likes and dislikes in food choices, restaurant preferences, basket size, order frequency, economic capability of the consumer, and many more. This observable and revealed choices, therefore, allow quick commerce platforms to access and leverage granular data on consumer ordering, and infer crucial patterns to continuously craft pricing strategies, and discounting mechanisms to optimize business outcomes and profits.

Thus, this paper is an attempt to understand revealed preferences as an economic theory and its impact on consumer behavior, analyze the different pricing and discounting strategies on stimulating demand, policy implications, and the way ahead with artificial intelligence in building personalized pricing and recommendation systems.

2. Literature Review

2.1 Economic theory of Revealed Preferences and how it applies to Digital Marketplaces.

For years, the economic concept of utility had been the cornerstone for understanding consumer behavior. It explains the satisfaction or pleasure a consumer derives from consuming goods or services using a very abstract approach, thus making it difficult to quantify or measure in real life. Therefore, by the 20th century, Paul Samuelson, driven by the dissatisfaction from the traditional utility theory, in his seminal paper "*A Note on the Pure Theory of Consumer's Behaviour*" introduced revealed preferences. A theory that delves in understanding consumer behavior from the lens of past purchasing patterns without requiring any prior knowledge of their internal thoughts or utilities². In its true essence the theory states that if an individual consistently prefers one option over another, then preferred option will be taken as evidence of what they truly prefer.

Economists often assume that these revealed preferences are also normative preferences (economic actor's true interest), however there are many cases where economic agents passively accept default options, or have limited personal experience, where the consumers are not likely to learn what is in their best interest, or feel overwhelmed with many options, and settle for something easy rather than optimal, or get manipulated into framing and nudging effect of these platforms³.

In digital marketplaces, however consumers often reveal their preferences based on their perceived losses and gains. These preferences again do not have to truly reflect their normative interests. But it can inform normative analysis indirectly. For

¹ A Review of E – Commerce in India: The Past, Present, and the Future by Shrey Nougara hiya, Gaurav Shetty, Dheeraj Mandloi :: SSRN

² Revealed Preference Theory: Understanding Consumer Behavior through Observed Choices - FinanceFacts101

³ How are preferences revealed? - ScienceDirect

example, factors like quick delivery, wide assortment, discounts, and user-friendly interface act as gains and attract customers. Further this attraction translates into repeated purchases, bigger basket size, reduced price sensitivity, and platform loyalty. Whereas if the customers are dissatisfied with the platform due to factors like hidden charges, quality issues, poor customer support, and privacy concerns, then it will lead to reduced purchases, offer dependency, increased complaints and finally platform switching behavior⁴. These subtle patterns in usage behavior of the app, helps strategists to design pricing, stimulate demand, push for platform loyalty, expand avenues, and optimize revenue.

2.2 Dynamic Pricing models and Discount Strategies

In modern economy, a form of market that is frequently explored and experimented with is the *two-sided market* or *two-sided networks*. Such markets tie together two distinct groups of users; one is the service providers or the owners of the resources while the other is the consumers who want to procure these resources or use their services. In online markets, it is the *platforms* that brings both sides of the market together, providing infrastructural facilities and rules that facilitate the two groups' transactions⁵. For two-sided networks pricing becomes a complicated affair, because it chooses a price for each side, factoring the impact on profit maximization for supplier's side and willingness to pay for demander's side, and therefore to accommodate both parties' interest, these *platforms* use varying pricing models and discounts to act as a catalyst in managing consumer gain and stimulating demand.

Dynamic pricing algorithms, therefore, mean frequent and automated price fluctuations in response to changes in market demand conditions, ensure supply-demand balance and extract willingness to pay, while discounting strategies are meant to stimulate demand among price-sensitive customers, increase sales of low performing restaurants, sell off-seasonal items and maintain retention. Thus, together they create a fine-tuned system of price discrimination tactics where pricing controls supply-side pressure, while discount pushes demand side growth.

Some of the explicit models of dynamic pricing and discount strategies are mentioned below:

The different pricing & discount models.

- 1) **Geo Targeting:** Discriminating individuals based on location, for example charging higher prices for consumers from posh neighborhoods, or areas with fewer restaurants while charging low for consumers located near clusters of restaurants.
- 2) **Surge Pricing:** Increasing prices when orders exceed delivery capacity, for example, during heavy rain, or festival times, and consumers who order despite this are revealed to be attaching more utility to immediacy than cost.

- 3) **Competition based Pricing:** Frequently automated prices to counteract competitor's offers. For example, if Zomato offers 50% offer up to Rs100, then Swiggy quickly responds with 60% offer up to Rs 120, creating a situation where consumers' switching patterns reveal which incentives are more effective.
- 4) **Subscription-based Pricing:** It is a system of designing incentives for regular customers by providing free deliveries, exclusive discounts or faster service. For example, in real life, Zomato Gold and Swiggy One are such methods to improve cost-effectiveness for loyal customers and encourage longer term engagement.
- 5) **Time based Pricing:** Fluctuating delivery prices according to the time of day. For example, during peak hours there is higher delivery fee to manage the capacity of available drivers.
- 6) **Discounts funded by Platforms:** Offering flat coupons like Rs 100 off on Rs 500 above purchases or percentage-based discounts, mainly to stimulate demand for outlets not performing well or not in seasonal food items.
- 7) **Time-limited Promotions:** Offering time-limited offers to create urgency among consumers, and mostly planned during low demand hours, like early evenings, or late afternoon periods.
- 8) **First Order & Threshold based Discounts:** Discounts for first-time buyers, to acquire mostly new customers, and give them the illusion of low-priced products. Sometimes there are thresholds in discounting. For example, on bigger value baskets, such as Rs 250 off on order above Rs 1000.
- 9) **Loyalty & Subscription Benefits:** To maintain loyalty of consumers, platforms give cashback points, free delivery vouchers, or progressive rewards. For example, order 5 times and get an off Rs 50. These strategies are used to keep consumers locked onto one platform.
- 10) **Bundling & Combo Discounts:** Multiple items are packaged together and are priced cheaper compared to if ordered separately. This is most commonly seen in hotels, where they bundle complimentary breakfast plus room, which will seem cheaper than paying for it separately. But this tactic locks the guests into their in-house restaurant options and does let them explore other options. In food delivery apps, this can be seen mostly in meal deals, or family combos.

However, it is important to analyze the distinct use of digital coupons, a widely used promotion tool for demand simulation, as they are more of a common and powerful medium within the subset of pricing strategies. Coupons, for example, play an important role in forcing consumers to shift from offline to online platforms, as coupons cannot be availed in any tangible outlets. It not only drives offline customers online but also plays with the illusion of mental accounting (making the customers believe that he or she has saved money by preferring an online platform) and thus influences them in switching⁶. This also results in channel competition, as coupons steal customers from rival platforms, but again aggressive couponing can reduce profits if rivals respond and

⁴ How the consumer's attitude and behavioural intentions are influenced: A case of online food delivery applications in India | International Journal of Culture Tourism and Hospitality Research | Emerald Publishing

⁵ HBR-Strategy-for-2-side-market-Egg-and-Chicken-Dilemma-Startup.pdf

⁶ Digital coupon promotion and platform selection in the presence of delivery effort - ScienceDirect

push the market in an oligopolistic setting with Bertrand pricing dynamics.

Another important and often mysterious aspect of online instant deliveries is framing the delivery fee and how, this supposed to be static fee, varies across food delivery apps, time periods, and location. The delivery fee is not very simple as we think it is, it is also subject to dynamic changes depending on distance, platform load, peak time periods and many more. Delivery fee mechanism follows more of the *law of demand* principle, where with excess load in order, and limited driver supply, the wait time increases, and to moderate the wait time, to maintain their unique selling point of quick deliveries, they increase the delivery fee⁷.

Further to add in dynamic pricing and delivery fee, it is interesting to know that a study⁸ adopted data of pricing algorithm to measure the impacts of time-varying prices in the context of a Nordic restaurant chain. The algorithm adjusted delivery fees every 10 minutes, replacing a flat 5.90 euros with variable charges ranging from 2.90 euros to 5.90 euros on weekdays and up to 7.90 euros to 8.90 euros on weekends. It finds that on average, final price the consumer pays for the order has been reduced especially in low demand periods. In reaction to that dynamic pricing adjusted itself immediately and weekday delivery fees fell by 8.3% while weekend fees fell by 2.1-2.7%. Hence it smoothened the demand over time adjusting prices, reducing demand volatility and among consumers strategic timing behavior was observed where purchases frequency moved with price changes. Overall, we can conclude that dynamic pricing doesn't necessarily have affect consumers, it is a constantly improving mechanism and can enhance capacity utilization, reduce operational strain, and improve consumer welfare in markets with demand and supply constraints.

Henceforth, dynamic pricing models and discount strategies are not just tools to maximize revenue but also methods to collect constant micro level data of customers' heterogenous revealed preferences and improve their models in increasing brand loyalty and high frequency ordering behavior.

2.3 Insights on Impact of the Strategies on Consumers, and how Consumers Counter-react.

There are many subtle psychological factors that we as consumers feel when faced with such patterns in pricing and discounts. A popular one is loss aversion (derived from prospect theory), where missing out a discount feels like a loss, and creates FOMO driven purchases, or an anchoring effect where we assume discounted price as the 'real' price and when the item is sold at full price, we perceive it as too costly. Another can be shifting reference prices, where frequent changes of prices can confuse consumers as to what an item's true value is. Apart from this, consumers also often impulse buy, and tend to expand basket size only to unlock certain coupons and often are nudged by taglines like '500

people already grabbed the offer', especially in limited discounts, it creates a scarcity effect, pushing quicker decisions. Therefore, these platform strategies not only influence behavior, but also play with our emotions, trust and even with our perception of true economic value of goods.

Not always consumers get influenced by such nudges, with increasing awareness consumers also counter-react⁹. Consumers shift their time of purchases to off-periods, and mostly weekdays to increase their price cut, find loopholes in coupons, and use platforms like reddit to find hidden codes. Sometimes consumers also become informed and wait few minutes if they know prices reset every 20 minutes, basically get used to the gamification of the system.

2.4 Machine Learning and Dynamic Pricing

A study examined the role of AI-powered real time analytics in optimizing dynamic pricing strategies where data of 200 e-commerce platforms were collected, and found strong positive correlation ($r=0.65$, $p<0.01$) between AI integration and price effectiveness in operational efficiency. However, the interesting part is that the analysis reveals customer price sensitivity weakens this relationship, as AI drive pricing adjustments can alienate price-sensitive customers. Conversely market competition intensity amplifies the benefits of AI in dynamic pricing, indicating that firms in highly competitive environments can derive greater advantages from real-time analytics¹⁰.

3. Methodology

This paper has been written with the aim of analyzing all available literatures studying revealed preferences as an economic theory, general model of dynamic pricing and discounting techniques used in business models and then understanding the evolution of quick commerce platforms using revealed preferences to frame pricing and discount mechanisms. We approached these themes qualitatively, and no quantitative methods were used as the literature scope in of the topic itself was fresh and unexplored. In the process, we as a team, divided the themes amongst ourselves, collected notes, jotted down important statistics and examples, and a person in the final compiled the paper together.

4. Research Gap

The study of intersection between revealed preferences as an economic theory and use of dynamic pricing strategies by food delivery platforms is itself a naïve topic. There are many behavioral, microeconomic, and social-political aspects left unexplored. We are thus mentioning some of them below, which also further increases the scope of the research in the field.

- There are very few literatures of revealed preferences used in pricing techniques by quick commerce platforms in the context of developing countries. While algorithms can

⁷ Modeling the online food delivery pricing and waiting time: Evidence from Davis, Sacramento, and San Francisco - ScienceDirect

⁸ dynamic_pricing_20230104 (1).pdf

⁹ Food delivery competition in the digital economy: Price war strategy in a developing country - ScienceDirect

¹⁰ Optimizing Dynamic Pricing through AI-Powered Real-Time Analytics: The Influence of Customer Behavior and Market Competition | Qlantic Journal of Social Sciences

segment and discriminate people according to their willingness to pay, there was no insight on distributional effects (second welfare theorem, pareto efficiency) analyzed here. For example, if low-income people are unfairly targeted with predatory discounts, or high delivery fee.

- There is also not much research on the data privacy or ethical/fairness effects of such practices. These apps infer data on such personalized level, and there is a lack of research into whether the consumers are aware of their data being monetized at a very micro level by these platforms or not.

5. Policy Implications

Gig economy in general has been subjected to many ethical debates, where riders spend abnormally enduring hours delivering, taking dangerous routes at high speeds to deliver quickly, and face immense pressure with targets and achieving high rating. Interestingly, a Brazilian study has revealed that all the high delivery fee, which is paid by the consumers, never directly reflect in the rider's wallet, while they have a complicated pay system, which often is an interplay between platform's pricing systems and how many orders they can take. Hence, forcing pricing strategies through hidden mediums with no transparency, and exploitation of riders, with the pressure of quick delivery, along with liberty to exercise daily psychological stimulants on consumers all call for policy intervention on ethical and moral grounds¹¹.

5.1 Policy Recommendations

- 1) Mandate transparent pricing. Proper breakup of menu price, delivery fee, GST, and service fee should be clearly mentioned. How much of the cost directly goes to the rider must also be mentioned.
- 2) Avoid manipulative and vague promotions. For example, offers like "up to 50% or 60% off" with important conditions written in fine print or small font somewhere in the corner. Platforms should clearly state all conditions clearly, as these tactics are designed to exploit impulse buying.
- 3) Enforce competition laws to prevent 'predatory discounting' such as keeping extremely low prices below cost to drive out competition. This in the long-run does not affect financial giants, but affects small, local restaurants, and businesses out.
- 4) Guarantee minimum earnings during promotions. No dynamic pricing model, or discounts should directly affect the riders. They should receive minimum earning guarantee to account for the increased intensity and risk.
- 5) Audit algorithms and cap dangerous performance metrics. Platforms should be forced to change enforce rules to prioritize safety over speed, and harsh penalties for minor delays should be regulated and eliminated.

6. Conclusion

In conclusion we can state that revealed preferences is an improved theory on classical's utility concept developed by

Paul Samuelson in 1938, using which quick commerce giants employ pricing algorithms and coupons, to smoothen demand over time, reducing demand volatility. We also see dynamic pricing and discounts as double edged swords, where it helps platforms continuously fluctuate their offers to retain and encourage platform loyalty on the one hand, while preying on nano-scale data of consumers, without their knowledge or consent. Thus, through this paper, we have tried to shed light on ethical aspects of regulating these platforms, as well as using the techniques in moderation for economic good.

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¹¹ Food delivery competition in the digital economy: Price war strategy in a developing country - ScienceDirect

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