



Algorithmic Price Pressure and Margin Anxiety in Online Marketplace Commerce

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Abstract

Online marketplaces have made it easier for small sellers to reach customers, process payments, advertise products, and manage deliveries. At the same time, these platforms have created an intensely visible and rapidly changing pricing environment. Sellers can continuously observe competing offers, while automated tools can revise prices within minutes in response to demand, inventory, competitor activity, rankings, and customer behaviour. Although algorithmic pricing may improve speed and efficiency, it can also place sellers under constant pressure to lower prices in order to maintain visibility and sales.

This paper examines the relationship between algorithmic price pressure and margin anxiety among sellers operating through online marketplaces. Algorithmic price pressure refers to the commercial pressure created by automated repricing, competitor monitoring, recommendation systems, sponsored listings, marketplace rankings, and price-sensitive customer comparisons. Margin anxiety refers to the continuing concern that sales may increase while the actual profit retained from each sale becomes smaller or uncertain.

The study follows a conceptual and scenario-based research design. It draws on literature related to algorithmic pricing, marketplace competition, platform



governance, digital advertising, and platform-dependent entrepreneurship. Three seller situations—low, moderate, and high price pressure—are compared through a small set of practical indicators.

Keywords: Algorithmic Pricing; Online Marketplaces; Margin Anxiety; Price Competition; Digital Sellers; Dynamic Pricing; Marketplace Ranking; Sponsored Listings; Profit Margins; Platform Commerce

1. Introduction

Online marketplaces have enabled businesses of different sizes to reach large customer groups without developing a complete independent e-commerce infrastructure. Sellers can use marketplace systems for product listing, payment collection, customer reviews, advertising, warehousing, delivery, and dispute management. These services reduce entry barriers, but they also place sellers within a commercial environment whose visibility and transaction rules are largely controlled by the platform. Platform-dependent entrepreneurs may therefore benefit from market access while remaining exposed to significant power imbalances and sudden changes in platform conditions.

Price has become one of the most visible elements of marketplace competition. Customers can compare several offers for similar products within seconds, while sellers can use automated software to observe competitors and revise their own prices. Algorithmic pricing generally refers to the use of computer programs to recommend or automatically set prices in response to market information. Such systems can reduce the time required for pricing decisions and help sellers respond quickly to demand and inventory changes.

The presence of automated pricing does not always lead to the same market outcome. An empirical study of approximately 2,800 products on a major

marketplace in the Netherlands and Belgium found that algorithmic sellers did not consistently increase prominent offer prices and that algorithmic participation was associated with lower prices in certain low-competition situations. This finding demonstrates that algorithms can improve pricing efficiency, but it also indicates that sellers using manual pricing may have difficulty responding to faster competitors.

Price competition is also influenced by marketplace ranking and advertising systems. A competitively priced product may still receive limited customer attention when it appears below sponsored or highly ranked listings. Research on marketplace monetisation shows that platforms can earn both transaction commissions and advertising revenue, while sellers compete for stronger placement through paid promotion. This creates a situation in which a seller may lower the product price and increase advertising expenditure at the same time.

The present paper introduces the concept of margin anxiety to describe the continuing uncertainty experienced by sellers who cannot clearly determine whether an additional sale is strengthening or weakening their business. This anxiety develops when prices change frequently, competitors are monitored continuously, platform fees are complex, and visibility appears dependent on discounting. The study examines how these conditions affect seller pricing behaviour, profitability, decision-making, and long-term commercial stability.

2. Objectives of the Study

2.1 Conceptual Objectives

The study aims to:

1. Explain algorithmic price pressure within online marketplace commerce
2. Define margin anxiety from the perspective of small and independent sellers



3. Distinguish productive price optimisation from harmful price imitation
4. Identify the main pathways through which marketplace systems influence seller pricing

2.2 Analytical Objectives

The analytical objectives are to:

1. Compare sellers facing low, moderate, and high algorithmic price pressure;
2. Examine the relationship between frequent price changes and retained profit margins;
3. Assess how sponsored visibility and marketplace fees intensify pricing pressure;
4. Identify behavioural changes caused by margin uncertainty; and
5. Examine whether higher sales volumes always improve seller profitability.

2.3 Managerial and Policy Objectives

The study further seeks to:

1. Recommend sustainable pricing practices for marketplace sellers
2. Encourage sellers to consider complete transaction costs before reducing prices
3. Suggest transparency measures for marketplace ranking and advertising systems
4. Support a fairer balance between customer price competition and seller sustainability.

3. Review of Literature

3.1 Algorithmic Pricing and Marketplace Competition

Algorithmic pricing allows firms to revise prices using data on demand, competition, timing, product availability, and customer behaviour. It can reduce manual effort and improve the speed of market response. Chen, Mislove, and



Wilson found widespread use of automated pricing among products listed on Amazon and demonstrated that algorithmic sellers changed prices more frequently than conventional sellers. Their study helped establish that marketplace prices are increasingly produced through software-based interaction rather than occasional managerial decisions.

Algorithmic pricing can improve efficiency when sellers use it to respond to genuine changes in costs, demand, or inventory. However, problems can arise when several automated sellers respond repeatedly to one another. Research has shown that certain learning algorithms may produce prices above competitive levels under controlled conditions, although these outcomes depend heavily on algorithm design and market structure.

Pricing automation also shifts managerial responsibility. Instead of deciding every individual price, managers decide which data, objectives, limits, and competitive signals the algorithm should follow. Poorly designed instructions may therefore produce commercially damaging results at greater speed. Spann and colleagues argue that firms must connect algorithmic pricing with wider marketing strategy rather than treating it as an isolated technological activity.

3.2 Marketplace Ranking, Advertising and Seller Visibility

Online marketplaces do not display all products with equal prominence. Product rankings may be influenced by price, delivery speed, reviews, sales history, stock availability, customer response, fulfilment method, advertising, and other performance signals.

Fletcher notes that recommendation systems can produce popularity, incumbency, conformity, and homogeneity biases. Such biases may strengthen

products that have already achieved sales and visibility, making it difficult for smaller or newer suppliers to compete on equal terms.

Sellers may respond by lowering prices or purchasing sponsored placements. Choi and Mela explain that marketplaces must balance transaction revenue with advertising revenue. Their research shows that advertising can improve a product's displayed position and encourage sellers to compete for attention through paid promotion.

The European Union's Platform-to-Business Regulation requires online intermediation services to describe the main parameters that determine ranking and explain their relative importance. The regulation recognises that ranking visibility can materially affect businesses that depend on online platforms to reach customers.

3.3 Margin Pressure and Seller Dependence

Marketplace sellers normally face more than the cost of the product itself. Their transaction costs may include commission, fulfilment, payment processing, warehousing, return handling, advertising, discount contributions, packaging, taxation, and customer service.

When sellers focus only on the displayed selling price, these additional costs may remain hidden. A product can appear profitable when measured against its purchase cost but become unprofitable after advertising, returns, fulfilment, and marketplace charges are included. Platform dependence can make the problem more severe. Cutolo and Kenney argue that entrepreneurs who depend on platforms face power asymmetries arising from platform economics, technological design, and contractual arrangements. Sellers may comply with pricing and



promotional signals because losing visibility could cause an immediate reduction in orders.

Table 1: Selected Literature Related to the Study

Study	Main Area	Relevance
Chen et al. (2016)	Automated pricing on Amazon	Shows frequent and widespread algorithmic price changes.
Choi and Mela (2019)	Marketplace advertising	Explains how sellers pay for stronger product visibility.
Cutolo and Kenney (2021)	Platform-dependent sellers	Identifies power imbalance between platforms and entrepreneurs.
Hanspach et al. (2024)	Automated marketplace pricing	Shows that algorithmic pricing can create different outcomes across market situations.
Spann et al. (2026)	Pricing strategy and regulation	Connects algorithmic pricing with marketing strategy and governance.

The literature provides strong explanations of automated pricing, marketplace power, and digital advertising. However, fewer studies directly examine the emotional and managerial uncertainty that appears when sellers achieve sales

without confidence in the profitability of those sales. This study addresses that gap through the concept of margin anxiety.

4. Research Methodology

4.1 Research Design

The study follows a conceptual and scenario-based design. It does not claim to present the results of a completed field survey. The numerical values used in the analysis are illustrative and demonstrate how algorithmic price pressure may affect different types of marketplace sellers.

The conceptual discussion is based on academic research relating to:

1. Algorithmic and dynamic pricing
2. Marketplace rankings and recommendation systems
3. Sponsored product advertising
4. Platform dependence
5. Price competition
6. Seller profitability

4.2 Areas of Examination

The study examines five practical areas:

- Frequency of competitor price changes
- Pressure to remain among highly visible offers
- Dependence on sponsored advertising
- Reduction in retained profit margin
- Seller concern about future profitability

The study concentrates on seller experience rather than the technical construction of pricing algorithms. This approach is appropriate because small

sellers may experience algorithmic pressure even when they do not personally use automated repricing software.

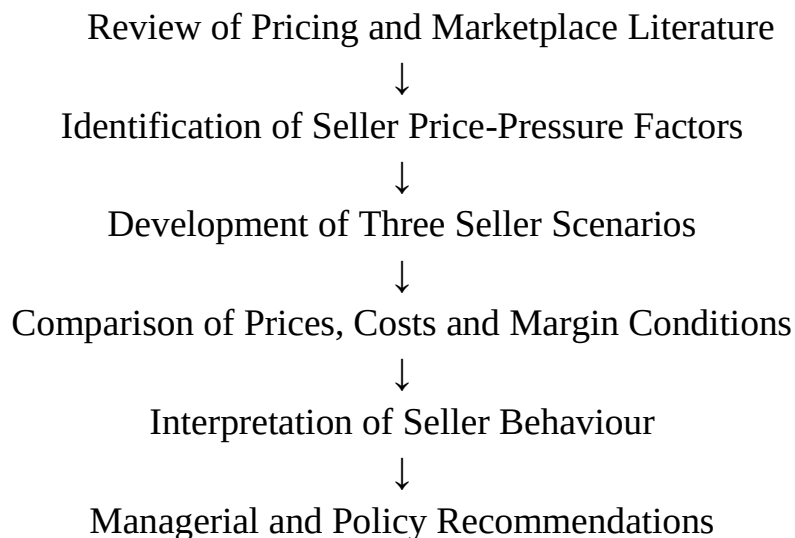
4.3 Development of Seller Scenarios

Three seller situations were developed.

- **Low-pressure sellers** offer relatively differentiated products, have repeat customers, use limited advertising, and change prices occasionally.
- **Moderate-pressure sellers** compete with several similar offers, monitor prices regularly, participate in platform promotions, and depend partly on paid visibility.
- **High-pressure sellers** sell highly comparable products, face automated competitors, rely heavily on sponsored listings, and change prices frequently to preserve marketplace visibility.

4.4 Methodological Process

Graph 1: Research Process



The model does not attempt to predict the exact profitability of every seller. Product categories, national markets, platform rules, customer expectations, and



cost structures differ considerably. The purpose is to identify common pressure pathways that can later be tested through surveys, interviews, and transaction-level data.

5. Analysis

5.1 Pathways of Algorithmic Price Pressure

The first pathway is continuous competitor visibility. In physical retail, a business may check competitor prices periodically. On an online marketplace, competing offers are displayed beside one another and can be monitored automatically. Sellers may therefore feel that every competitor price reduction requires an immediate response.

The second pathway is ranking pressure. Sellers may believe that reducing prices will improve conversion, ranking, or eligibility for a prominent offer position. Even when the complete ranking method is unknown, earlier sales experience can encourage them to treat price reduction as the safest available response.

The third pathway is advertising dependence. A seller who loses organic visibility may purchase sponsored placement. This creates two simultaneous pressures: the product must remain competitively priced, and each sale must absorb an additional advertising cost.

The fourth pathway is promotional participation. Marketplace campaigns may generate large order volumes, but participation often requires discounts, coupons, free delivery, or other contributions. Sellers who fear losing traffic may join campaigns even when the remaining margin is very small.

The fifth pathway is cost blindness. Frequent price adjustments can draw attention towards competitor prices and away from complete transaction costs.

Sellers may react to the visible market price without including return rates, fulfilment charges, damaged goods, advertising expenses, and tax obligations.

5.2 Scenario-Based Findings

Table 2: Illustrative Seller Pressure Scenarios

Indicator	Low Pressure	Moderate Pressure	High Pressure
Price changes per month	3	14	36
Advertising share of sales revenue	6%	14%	25%
Average retained margin	26%	17%	8%
Owner time spent monitoring prices	5 hours	13 hours	28 hours
Margin anxiety	Low	Moderate	Severe

Note: These figures are illustrative and are not the results of a completed seller survey.

In the low-pressure situation, the seller has sufficient product differentiation to avoid reacting to every competitor. Prices are reviewed periodically, and advertising remains a controlled business expense. The seller can estimate the likely profit from each sale with reasonable confidence. Under moderate pressure, price monitoring becomes part of the seller's regular routine. Promotions and advertising generate orders, but the seller must check whether the additional sales cover the higher acquisition cost. Margin uncertainty begins to affect purchasing and inventory decisions.

Under high pressure, the seller changes prices repeatedly and spends a large part of revenue on visibility. Sales may remain active, but the retained margin



becomes too small to absorb returns, damaged inventory, or unexpected platform charges. The seller may report growing revenue while experiencing a shortage of usable profit.

5.3 Behavioural Consequences of Margin Anxiety

Margin anxiety can lead to defensive decision-making. Sellers may reduce prices immediately after observing a competitor change, even when the competitor has a different cost structure, stock position, or business objective.

Some sellers become dependent on promotions. A temporary discount may increase sales and ranking, but returning to the original price can reduce traffic. The seller then continues the discount because normal pricing appears commercially risky.

Severe pressure may also affect product quality. Sellers may search for cheaper packaging, lower-cost materials, or unreliable logistics in an attempt to restore lost margins. Such decisions can increase complaints and returns, creating further financial pressure.

Other sellers may withdraw successful products because sales volume no longer produces reasonable profit. In this situation, the marketplace continues to show strong customer demand, but the seller cannot participate sustainably.

6. Discussion

6.1 The Difference between Price Efficiency and Price Pressure

Algorithmic pricing can be beneficial when it helps sellers respond to changes in demand, inventory, or costs. It can prevent overpricing, reduce unsold stock, and improve the use of market information. The problem begins when the system's main purpose becomes matching or undercutting competitors without protecting a minimum sustainable margin.



Hanspach, Sapi, and Wieting found that algorithmic pricing did not uniformly increase marketplace prices. Their findings suggest that automated pricing can intensify competition and produce lower prices in some conditions. For consumers, this may appear beneficial. For low-margin sellers, however, continuously lower prices may become difficult to sustain.

There is therefore an important difference between efficient pricing and reactive pricing. Efficient pricing considers demand, inventory, customer value, costs, and profit. Reactive pricing focuses mainly on what competing sellers are doing.

6.2 Emotional and Strategic Effects on Sellers

Margin anxiety is not limited to temporary worry. It can reduce the quality of business decisions. A seller who constantly fears losing ranking may focus on daily price movements instead of product development, supplier negotiation, customer service, or independent brand building.

Frequent price changes can also weaken the seller's confidence in financial records. The owner may know total revenue but remain unsure about the actual profit generated by each product, campaign, or platform.

Nunan and Di Domenico argue that algorithmic pricing raises ethical and managerial questions because responsibility shifts from choosing individual prices to choosing and governing the systems that generate those prices. This means that sellers and platforms should evaluate not only whether an algorithm increases sales but also whether it creates sustainable value for the parties involved.

6.3 Practical Implications

Sellers should establish a **minimum acceptable selling price** for every product. This should include:



- Product purchase or manufacturing cost
- Marketplace commission
- Fulfilment and delivery expense
- Advertising expenditure
- Average return and damage cost
- Packaging
- Applicable taxes
- The minimum profit required by the business

A seller should not automatically match a competitor below this level. The competing seller may be clearing old inventory, operating with a lower purchase cost, accepting a temporary loss, or using the product to attract customers for other items.

Automated repricing tools should have clear limits. Sellers should decide:

1. The lowest permitted price;
2. The maximum number of daily price changes;
3. The products that should not be automatically repriced;
4. The minimum margin required after all platform charges; and
5. The conditions under which human review is necessary.

Product differentiation is another important response. Sellers competing only through price remain highly exposed to automated rivals. Better descriptions, packaging, warranties, bundles, customer support, product quality, and brand recognition can give customers reasons to choose an offer that is not the cheapest.

Advertising should be evaluated at product level. A campaign generating high sales may still be harmful when the advertising cost consumes most of the margin.

Sellers should monitor profit after advertising rather than celebrating sales volume alone.

Platforms can reduce unnecessary pressure by providing clearer information about ranking factors, advertising placement, and promotional costs. The EU's P2B framework was introduced to create a more transparent and predictable environment for businesses that depend on online intermediation services.

7. Conclusion

Online marketplaces have created significant opportunities for sellers by providing customer reach, payment systems, logistics, advertising, and commercial data. These benefits, however, operate within a highly competitive pricing environment in which sellers can observe and respond to one another almost immediately.

Algorithmic pricing can help businesses make faster and better-informed decisions. It becomes harmful when sellers use it only to match or undercut competitors. In such situations, the pricing system may increase sales activity while gradually reducing the margin retained from each transaction.

The study identified five main pathways of algorithmic price pressure: continuous competitor visibility, ranking pressure, advertising dependence, promotional participation, and incomplete cost awareness. These pressures can combine to create margin anxiety, particularly among small sellers with limited financial reserves.

The scenario analysis showed that frequent price changes are often accompanied by higher advertising costs, lower retained margins, and greater owner involvement. Under severe pressure, sellers may spend a substantial amount of time monitoring prices while remaining uncertain about actual profitability.

Margin anxiety can also influence long-term strategy. It may encourage excessive discounting, dependence on promotional campaigns, reduction in product quality, delayed investment, and withdrawal from otherwise active product categories.

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