



Dynamic Pricing

How Is AI Making Retail Pricing Smarter?



Majaz Mohammed
Vice President,
Supply Chain & Merchandising,
Tredence Inc.



Ankit Tyagi
Senior Manager,
Pricing & Merchandising,
Tredence Inc.



Current economic challenges have forced retailers to relook at tailwinds to keep their businesses floating and flourishing!

Dynamic pricing is one of the few tailwinds that has received considerable attention in recent years, especially after COVID-19.



On average, a 1% price increase translates into an 8.7% increase in operating profits (assuming no loss of volume, of course). Yet we estimate that up to 30 percent of the thousands of pricing decisions companies make every year fail to deliver the best price.

McKinsey
& Company

Dynamic pricing, though a buzzword, is not at all new. Back in the days, when people bought most things through barter and then haggling, it was nothing but dynamic pricing that ruled. In fact, up until recently, all B2B and auction businesses used this age-old pricing behavior. Enough said, dynamic pricing is a study of determining optimal selling prices of products or services in a setting where prices can easily and frequently be adjusted.

Now, retailers are increasingly becoming cognizant that customers' purchase behavior is changing very rapidly, being deeply influenced by reference prices and easy one-click access to pricing portals across various retail platforms. This phenomenon has forced large retailers to adopt price optimization strategies using dynamic algorithms, as pricing is a key factor that captures customer attention of shoppers and influences their choice of retailers.

Various studies show that dynamic pricing has proven itself to grow revenue by 42% and increase margins by 11%.

These numbers cannot be ignored by retailers fighting for every cent and dollar. The potential to grow is seemingly limitless.



In the not-so-distant future, virtually nothing will have a fixed price. Say goodbye to the familiar \$1.99 and hello to a price between, say, \$1.39 and \$2.17, based on changing supply and demand. This is the phenomenon of dynamic pricing, and it is already rapidly changing the way we buy goods and services and dramatically reshaping our economy.

Forbes

Challenges in Implementing Dynamic Pricing with Legacy Systems

Legacy solutions, however, are not capable of effectively implementing dynamic pricing due to several limitations inherent in their design and architecture. Here are some challenges to implementing dynamic pricing using conventional approaches:

1. Siloed Data Integration

Legacy systems often work in silos, making it difficult to integrate real-time data from different sources such as competitor data, customer insights and market trends, which is key to adjusting cross-elasticity, competitor-elasticity, and price discrepancy. Due to the lack of real-time data, dynamic pricing using silo data is usually based on rigid business rules which are not flexible to make prompt changes to keep up with the fast-changing market.

2. Batch Processing

Many conventional systems are designed for batch processing, which means they update data and perform calculations at fixed intervals. Dynamic pricing, on the other hand, requires real-time or near-real-time processing to adjust prices rapidly in response to changing conditions.

3. Scalability Issues

Dynamic pricing involves analyzing large volumes of data and making rapid price adjustments. Legacy systems might lack the scalability needed to handle the increased computational load, leading to performance issues and delays in pricing updates.

4. Competition Benchmarking

Competition price indexing is one of the critical components in pricing domain. In Legacy system, competition indexing often takes a back seat, if not ignored completely. Legacy system rely on static models that fails to adapt to ever changing marketing dynamics cannot continuously monitor competitor's pricing which serves as a dealbreaker and a leverage for dynamic pricing powered by machine learning.

5. Last Mile Integration Issues

Legacy system has a vast drawback in integration with other product and customer analytics platform such as Item linkages, UOM normalization, Customer attributes inflow pipelines. All these analytical pipelines serve as critical catalysts to come out with the right price of a product/service for the right time.

There are multiple other challenges such as lack of personalization, real-time insights, response time and integration issues that do add pain to using legacy systems to do dynamic pricing.

For example, one of the large grocery retailers – a traditional brick-and-mortar store relies on a legacy pricing system with fixed pricing for its products. In this scenario, the prices of items remain constant for extended periods or change only during traditional sale events. This legacy system would cost the retailer missed revenue opportunities, ineffective clearance sales, lack of personalization, inefficient inventory management and competition disadvantage with a list of intangible losses that go unaccounted for.

Having mentioned that, as such retailers sit on a gold mine of abundant datasets, AI/ML can overcome the challenges faced by legacy systems and can prove to be a boon for the retail industry.

Advantages of AI/ML-powered Dynamic Pricing

Here are a few key advantages of using an AI/ML-powered approach:



1. Real-time insights

AI/ML algorithms can process and analyze vast amounts of real-time data quickly, allowing retailers to make pricing decisions based on up-to-the-minute market conditions, demand patterns, and competitor pricing.



2. Personalization

Enables retailers to personalize prices based on individual customer preferences and purchase history. This level of customization enhances customer experience and increases the likelihood of conversion.



3. Adaptability

Dynamic pricing powered by AI/ML can adapt to changing market dynamics and trends, enabling retailers to respond quickly to shifts in demand, changes in competition, and external factors like holidays or weather conditions.



4. Automated Decision Making

AI/ML can automate pricing decisions, reducing the need for manual intervention. This leads to increased efficiency, fewer errors, and frees up pricing teams to focus on strategic tasks.



5. Price Testing and Experimentation

AI/ML can facilitate A/B testing and experimentation with different pricing strategies, helping retailers identify what works best in real-world scenarios.



6. Custom Optimization

ML power dynamic pricing not only optimizes for Revenue, margins and volume but also has a leverage to optimize Shrinkages, Empty shelves and Customer Retention (CRR).



7. Direct business impact

AI/ML algorithms facilitate immediate business impact and can support in achieving many objectives such as:

7.1 Improved topline (7%~42% improvement)

AI will identify the right price for the right product at the right place, ensuring that the item aligns with the consumer's purchase gamut. This enables faster movement of items. Most researchers agree that it's quite possible to achieve up to 42% revenue increase using dynamic pricing.

7.2 Intact Bottomline (5%~11% improvement)

With correct business guardrails AI ensures that the suggested prices are in line with the retailer's expectations.

7.3 Markdown Cadence (15%~20% savings in capture rate)

Identification of the dynamic relationship between price discounts with expected sales helps in determining the right set of markdown cadences on a weekly basis, making sure retailers don't end up paying more than what is required.

7.4 Dynamic Elasticity

Latest AI models enable retailers to measure accurate impact on demand with every unit change in prices.

7.5 Reduced Empty Shelves and Shrinkages (11%~13% savings)

ML-powered optimization engines provide optimum prices considering the effect of seasonality and demand sense.

7.6 Better Inventory Planning

ML-enabled accurate measure of demand using the suggested prices enables the planners to allocate the inventory needed for a better sell-through. Specifically, the study found that firms can reduce their inventory by up to 50% by using dynamic pricing while maintaining the same level of service.

7.7 Brand Perception

Research has found that dynamic pricing can improve brand value by 20% by enhancing customer perception of product quality and increasing brand loyalty.



Use cases of AI/ML in Dynamic Pricing

Multiple other use cases could be tied to AI/ML powered dynamic pricing like:

1

Forecasting Accuracy

AI/ML models improve demand forecasting accuracy by considering the dynamic nature of the price response function daily. A better forecast accuracy enables planners to plan the inventory for better order placement, replenishment, and sell-through.

2

Price Ladder Strategy

A price ladder involves offering products or services at different price points within a specific range. This strategy encourages customers to trade upwards from lower-priced to higher-priced options, based on the perceived value of the offerings. Using dynamic elasticities in each ladder, retailers can create a tiered offerings range of products or services.

3

Competitive Indexing

Retailers using AI/ML for dynamic pricing can gain a competitive edge by staying ahead of market trends and offering competitive prices in real-time. This can attract price-sensitive customers and drive market share growth.

The Significant Impact of AI/ML on Retail Pricing

In conclusion, the integration of AI and ML into dynamic pricing strategies represents a revolutionary leap forward for the retail industry. The advantages are clear and impactful: real-time insights, optimized pricing strategies, personalized customer experiences, rapid adaptability to market shifts, and a distinct competitive edge.

As retailers continue to navigate the ever-evolving landscape of consumer preferences and market dynamics, AI/ML-driven dynamic pricing empowers them with precision, flexibility, and data-driven decision-making. This is an imperative, not only to survive but to thrive in a dynamic and competitive marketplace.

With AI/ML as their pricing ally, retailers are poised to unlock new levels of profitability, enhance customer satisfaction, and redefine the art and science of pricing strategies in the digital age.

About Tredence Inc.

Tredence is a global data science and AI solutions provider focused on solving the last-mile problem in AI – the gap between insight creation and value realization. Tredence leverages strong domain expertise, data platforms and accelerators, and strategic partnerships to provide tailored, cutting-edge solutions to its clients. Tredence is 3,000-plus employees strong with offices in San Francisco Bay Area, Chicago, London, Toronto, and Bengaluru, with the largest companies in Retail, CPG, Hi-tech, Telecom, Healthcare, Travel, and Industrials as clients.

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