7Learnings

PREDICTIVE PRICING

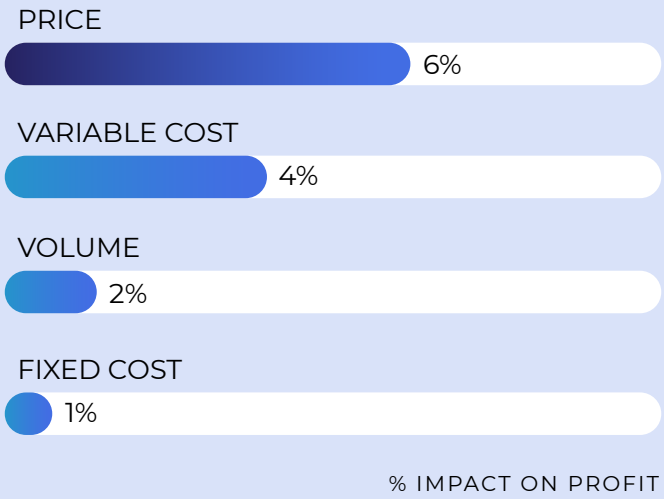
The next generation of price optimization for retailers

www.7learnings.com

WHY RETAIL PRICING **NEEDS TO CHANGE**

WHY IT PAYS TO INVEST IN PRICING TECHNOLOGY

AVERAGE IMPACT OF PROFIT AFTER 1% IMPROVEMENT OF TOOL



Pricing has a significant impact on company profits.
Accordingly, it is highly worthwhile for retailers to invest in pricing technology.

McKinsey (2019): Pricing: The next frontier of value creation in private equity

These days there are numerous factors that retailers must take into account when setting optimal prices. This includes large, growing product assortments; massive data inputs across the supply chain; and the ease with which consumers can see price transparency across competitors. And as market and competitive conditions change,

companies must continuously review and adjust their prices once they have been set. Doing so is the only way they can exploit their profit potential and hold their ground against the competition. The practice of price setting is nothing new; it has always been a standard part of retail operations. But it is becoming increasingly difficult, due to digital transformation.

Digital transformation is accelerating the pace at which business conditions are changing, and increasing the economic pressure on retailers due to global competition. Retailers who want to remain competitive in the future must question their previous business processes and methods. But digital transformation not only presents challenges, it also offers opportunities. The pace of innovation in price optimization has increased enormously in recent years, driven by changes in the market and new technological opportunities. Specifically, three developments have been key:

GROWING TRANSPARENCY

Digital channels are increasingly important sales channels for retailers, and not just since the Coronavirus crisis. But the internet is not just an opportunity: customers can compare prices much more easily when shopping online than in brick-and-mortar stores. With just a few clicks, they can find out what competitors are charging for the same or a similar product. It is imperative for retailers to respond to this. They must monitor the market more regularly and be able to respond quickly to changes in the competition, if they want to achieve the best possible sales despite the increased transparency in pricing.

BIG DATA

The mountain of digital information has virtually exploded in recent years, especially in e-commerce. Retailers are able to collect huge quantities of data, via customers leaving a digital data trail with every website visit, every purchase and every payment. Retailers therefore have a wealth of knowledge at their disposal that only very few have actually used to optimize their prices and sales.

MACHINE LEARNING

Machine learning technologies have evolved rapidly in recent years. Today, they are so powerful that they can be used in a variety of ways in retail. Price optimization is among the most attractive use cases, because the barriers to implementation are low and the impact on business success is high. Retailers using machine learning reliably outperform competitors who aren't utilizing this technological support.

For years, price optimization has been part of the package of measures many retailers use to counter growing competitive pressure. However, the pricing rules of traditional approaches are comparatively rigid and take into account only a fraction of the price-relevant factors, so that companies systematically lose profits. Digital transformation has brought new technologies to the market that enable much more differentiated and intelligent price optimization.

THE EVOLUTION OF PRICE OPTIMIZATION: **FROM RIGID RULES TO AI-ENABLED**

Digital technologies, as already addressed, are the key drivers of innovation in retail price optimization. Machine learning and artificial intelligence in particular have opened up new possibilities for data analysis. Algorithms are able to analyze huge, complex data sets without human intervention and therefore significantly increase the efficiency of price adjustments. To understand what quantifiable results are achievable for retailers with these new technologies, it is helpful to understand the evolution of price optimization.

THE FIRST GENERATION: PRICE OPTIMIZATION VIA INTUITION

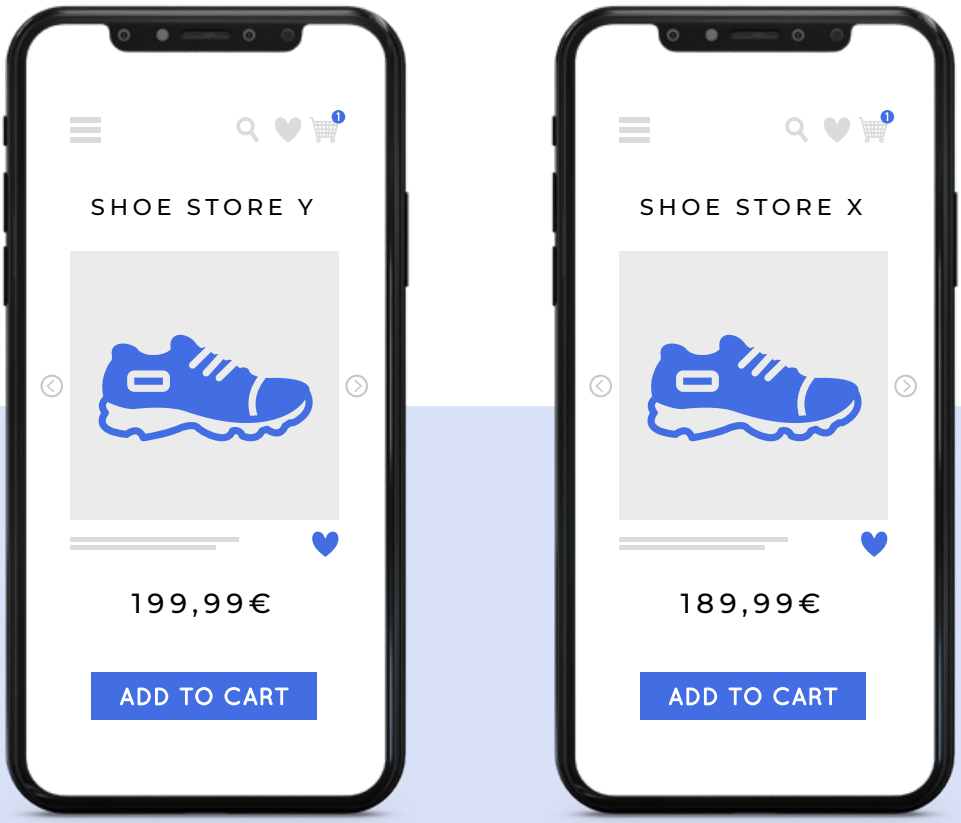
The first generation of price optimization is mainly based on manual price adjustments. Often, this was based on a cost-plus strategy. Retailers devised pricing rules that added fixed margins to product costs. Category managers monitor the market and then adjust prices manually, often based primarily on their intuition. Is there a seasonal increase in demand? Has the competition lowered its prices? Because competitive analysis involves some effort, adjustments are made infrequently - usually no more than once or twice a year.

This manual price optimization makes it impossible to react quickly to changes in the market. Some retailers still use this approach today. However, they regularly lose customers to competitors who are more agile and intelligent. More and more retailers are now using dynamic pricing. According to a PwC study, one in five companies already calculates its prices in this way. Prices are dynamically adjusted to changing competitive conditions several times a week. However, there are major differences in the methods of dynamic pricing.

THE SECOND GENERATION: RULE-BASED DYNAMIC PRICING

In rule-based pricing, retailers store individual pricing rules in an application to ensure their profit margins. Usually, these rules are formulated according to the following scheme: if X happens, adjust the price by Y or keep the price at level X compared to variable Y. The application crawls data sources several times a day (e.g. Google Shopping, comparison platforms, competitors' online stores) to change prices if the market data should require it.

AN EXAMPLE OF A PRICE RULE



The price of the sneaker Alpha should always be 5 percent lower than the price of competitor Y.

Rule-based pricing is usually oriented to the competitor.

Rule-based price optimization quickly becomes very complex. The larger the data range, and the more numerous the rules, the more difficult it is for managers to keep track of whether the rules are still fundamentally correct, or whether the instructions contradict or block each other. This is all the more true because many companies still manage their rules in Excel and do not use user-friendly software. According to a McKinsey study, companies with rule-based pricing fail to determine the best price in 30% of cases.

Nevertheless, compared to the first generation of price optimization, rule-based pricing offers many advantages that translate into higher sales and profits for companies.

AT A GLANCE: THE ADVANTAGES OF DYNAMIC PRICING

MORE FLEXIBLE AND AGILE ADAPTATION OF PRICES TO MARKET CHANGES

AUTOMATED PRICE CHANGES

SIMPLIFIED AND CENTRALIZED PRICING GOVERNANCE

EFFICIENT SETTING OF PURCHASE INCENTIVES

The limits of rules-based pricing

Omnichannel retailing takes place in highly complex and dynamic environments. Diverse factors affect pricing: for example, a company's own inventory levels, marketing activities, competitors' prices, or weather conditions. Manually creating pricing rules for thousands of products, taking into account as many factors as possible, is an enormously time-consuming and costly process. Once created, the rules must also be maintained. A high level of manual monitoring is required to respond to fluctuations, at least for key factors. Each rule must be examined individually. In the best case scenario, there is a process in which pricing rules are regularly tested (e.g., with A/B tests). No matter how well the pricing rules are formulated, only a limited number of factors can be taken into account due to this manual approach. Otherwise, the system would no longer be maintainable at all. Due to this limitation, essential factors that are decisive for the willingness to buy remain unconsidered. Retailers therefore miss out on significant sales and profit potential.

In addition, price rules are usually only formulated for product categories, and optimization down to the individual product level is not possible with this method. Since price sensitivity often differs greatly within a category, further sales potential remains untapped due to this.

Many price rules refer to competitors. As a result, retailers run the risk of entering a downward spiral in their pricing, as one company tries to undercut the other.

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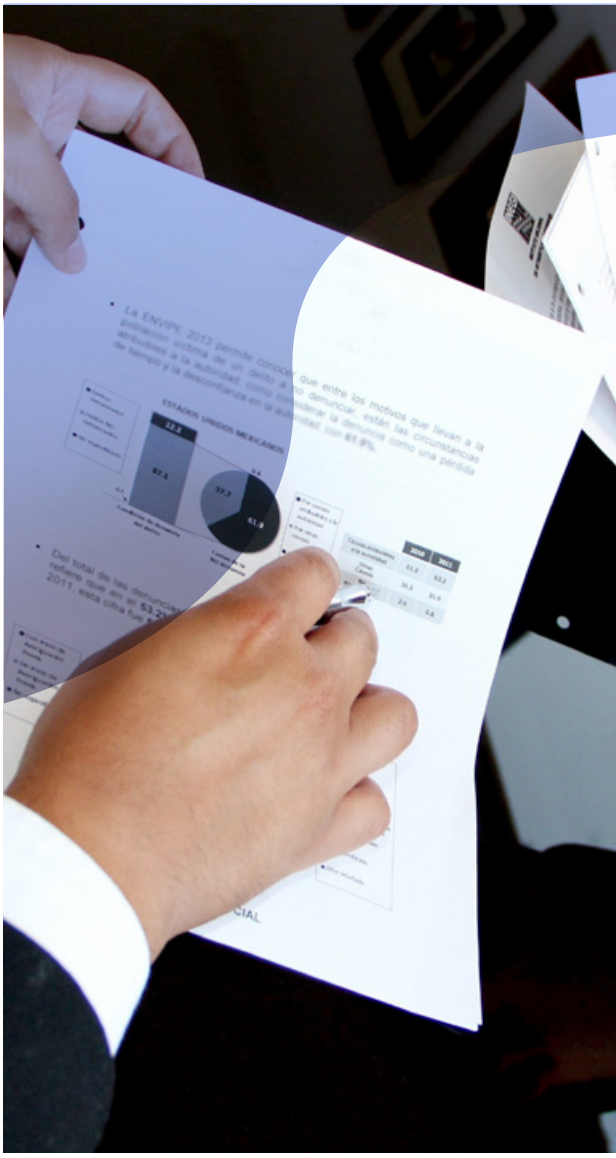
With machine learning, we are witnessing a leap in the performance of price optimization that will permanently transform retail."



Because of all these weaknesses, rule-based pricing is not the ideal method for price optimization in retail. Retailers not only lose sales, they also lose productivity because they have to invest a lot of time in monitoring and adjusting prices.

For several years now, a new generation of price optimization has been conquering the market. Machine learning-based price optimization overcomes the weaknesses of rule-based applications. With machine learning, we are witnessing a leap in performance in price optimization that will permanently transform retail.

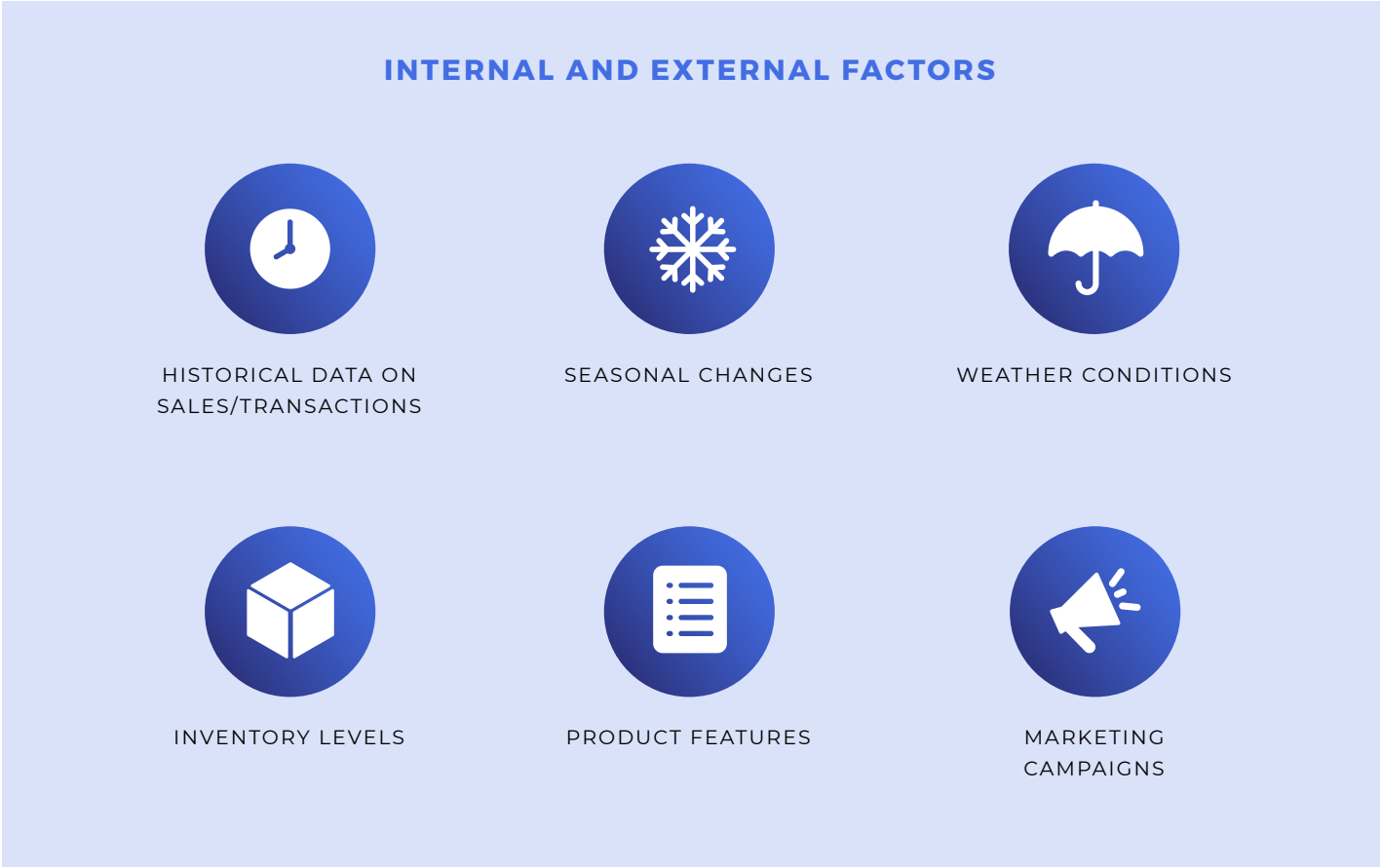
THE THIRD GENERATION OF PRICE OPTIMIZATION: MACHINE LEARNING-BASED PRICING APPLICATIONS

Artificial intelligence, AI, is a top social topic currently. In the software world in particular, more and more providers of price optimization tools are advertising with an “AI” label. However, there is often no intelligence at work in the applications; rather, the programs execute manually stored instructions or "if-then" formulas. Essentially, these are the rule-based systems described above. Buyers of AI software need to look closely and understand the logic of price optimization.

The AI label is used in these instances for good reason: after all, with the use of AI comes the hope of greater efficiency, better results and cost savings. Companies are realizing that employees can no longer see all the interconnections of what's happening in the marketplace. It stands to reason that artificial intelligence is superior to human assessment and capabilities in this regard.

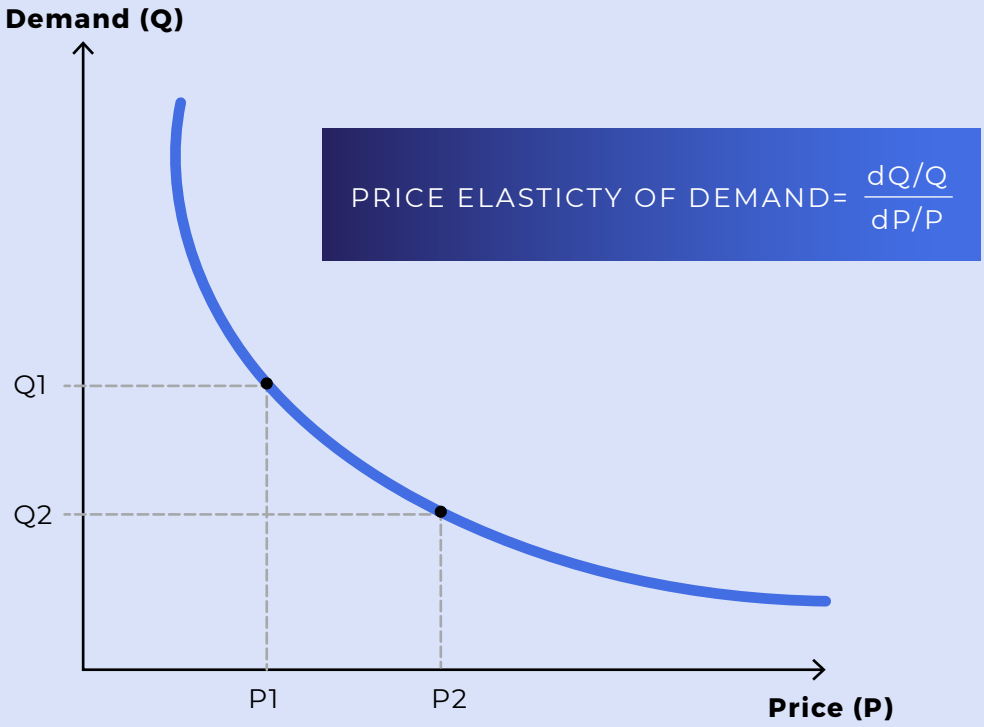
Machine learning-based pricing tools use algorithms that learn from their results in a (semi-)automated way. These applications get better over time at finding the optimal price point for the business, finding the sweet spot between "too cheap" and "too expensive."

The latest machine learning applications consider both internal and external data in their algorithms. They can process much larger and heterogeneous datasets than previous technologies. Factors these algorithms evaluate include:



Using this data, machine learning algorithms calculate price elasticity, measuring how demand will change as a result of changes in the general conditions. Using this, the software adjusts the prices in the online store accordingly. These tools can also be used to find out which products are particularly stable in terms of demand, making them suitable for margin optimization, or which play a critical role in overall sales and should only be adjusted cautiously.

PRICE ELASTICITY OF DEMAND



In this graphic, we can see the demand curve and the formula to calculate price elasticity of demand

Based on price elasticity, machine learning algorithms provide recommendations for price optimization. Retailers do not need to set any rules, and there is no need for regular manual monitoring. The application itself recognizes which factors are relevant and in what form, and changes its price rules accordingly. As a result, companies can make the

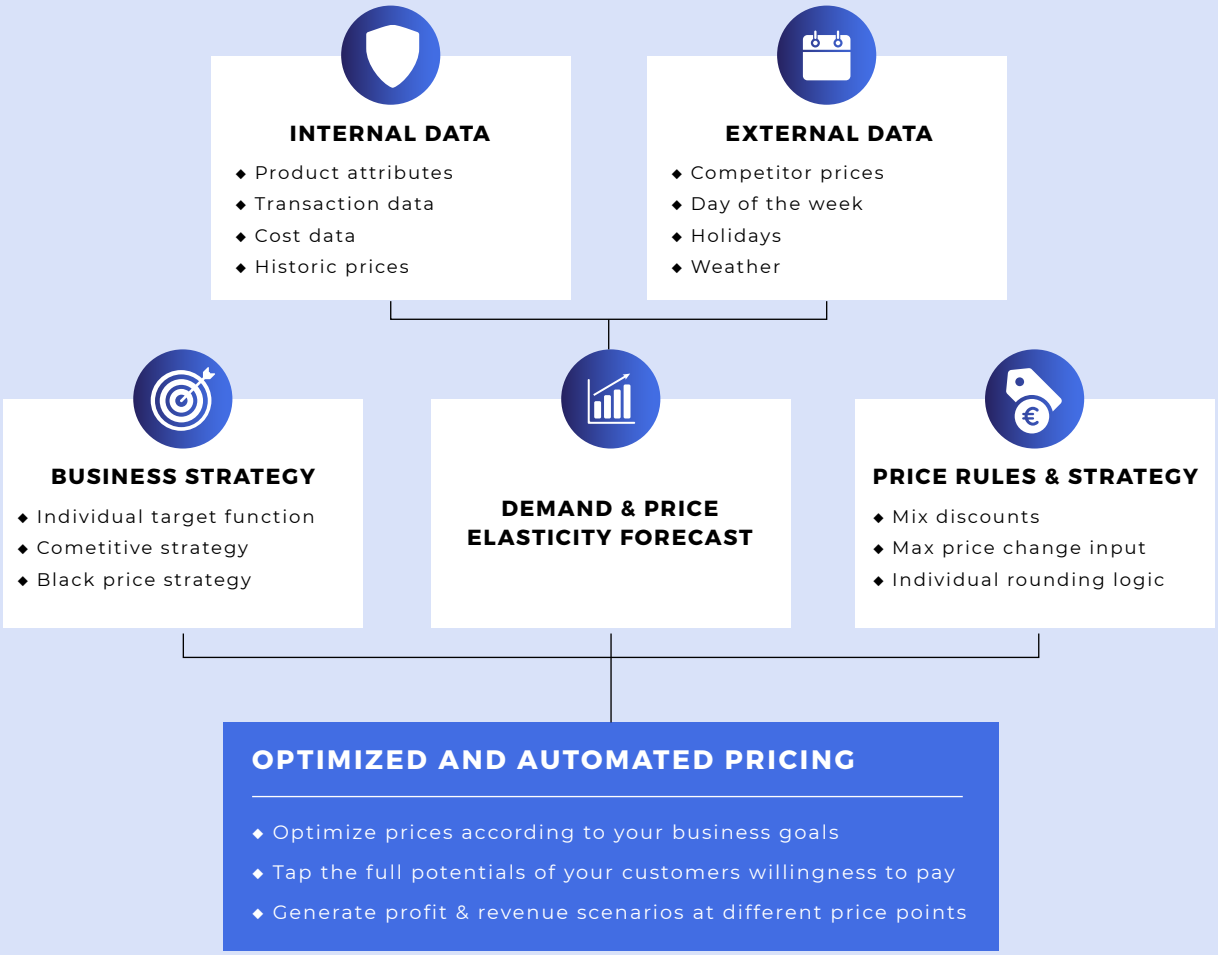
most of their profit potential. On average, margin increases of 3.9 percent can be achieved (PwC study, 2019).

The most successful online retailers already consistently rely on dynamic pricing. Amazon, eBay and Zalando are among the users, as are About You and Walmart. Although the users of pricing tools have so far mainly included international names, the number of German companies is growing, and medium-sized businesses are also increasingly turning to the technology.

PREDICTIVE PRICING: THE NEXT GENERATIONOF PRICE OPTIMIZATION

7Learnings takes its price optimization solution one step further. We use price elasticity and forecasting algorithms to predict the effect of price changes on KPIs defined by the business. Managers can control prices for the entire assortment intuitively and based on targets. We call this approach **predictive pricing**.

HOW DOES PREDICTIVE PRICING WORK?



Predictive pricing turns the previous process of pricing around: retailers no longer need to set up a complex set of rules for pricing in hopes of optimizing their KPIs. Instead, they define their goals and the technology determines which prices will help them achieve them as quickly as possible.

As in machine learning-based pricing, price optimization with predictive pricing can be differentiated down to the product level. Even products in the long tail category that are in low demand, or those in the low-price segment can be optimized, since no manual effort is required for monitoring. The benefit of predictive pricing is that prices are optimized in advance.

For example, if a product runs out of stock, the application registers this at an early stage and can raise the price before a supply bottleneck occurs. If product inventories have to be reduced because new goods will soon be delivered, the predictive pricing software also takes corrective action to ensure that the defined KPIs continue to be achieved.

In addition to higher-level targets, companies can also select targets for individual categories or products. For example, should a product achieve a certain sell-through rate? The AI application detects deviations from set sales targets earlier than conventional machine learning applications and controls prices so that the product realizes its full profit potential.

With predictive pricing, online retailers benefit from all the advantages of machine learning, supplemented by the advantages of accurate forecasts. This is because the applications not only evaluate current data, but also anticipate its development, so that price adjustments are made earlier than with other available methods. Whereas such future scenarios and their effects previously had to be simulated manually, the management effort of doing so is now reduced, while the quality of the price optimization increases.

However, users do not have to rely blindly on the algorithm's price recommendations, as they retain control at all times. Managers can vary their targets and simulate how resulting price adjustments will affect all relevant KPIs. Completely manual price optimizations also remain possible.

The results of predictive pricing speak for themselves. With profit increases of more than 10 percent, AI-based pricing is well on its way to establishing itself as the gold standard in retail and omnichannel retail.

“With the help of intelligent price optimization, companies save time and strengthen their growth: they reach their sales targets faster, strengthen their brand and expand their market position.”

PREDICTIVE PRICING VS. **RULE-BASED PRICING**

Rule-based pricing has led to improved profits and revenues in companies in the past, but predictive pricing is the next evolutionary step. Let's summarize the differences again:

Pricing rules consider only a few parameters that affect price elasticity, meaning that companies can't achieve the best margins. How the application should react to changes in factors must be firmly defined in advance. Changes to factors and associated price adjustments must be manually controlled and managed by employees. All of this costs time and money.

Predictive pricing, on the other hand, can take a variety of factors into account and automatically learns which are relevant and which are less important. The application can reliably forecast how factors will develop and can react to them early in the pricing process. It is guided by the business goals and KPIs defined by the user and selects, without human intervention, which price adjustments are best suited to achieve the goals. Manual adjustments are not necessary, therefore management effort is reduced to a fraction of the previous time spent.

Compared to previous methods, the artificial intelligence used by predictive pricing allows for more sophisticated and largely automated price optimization, resulting in significantly higher revenues and profits.

AT A GLANCE: RULE-BASED VS. PREDICTIVE PRICING

	RULE-BASED/REPRICING	PREDICTIVE PRICING
Automation of pricing process	(✓) administration & monitoring of price rules required	✓
Utilization of **competitor prices**	✓	✓
Algorithm **learns** from historic sales	–	✓
Utilization of price **elasticity**	–	✓
Goal driven steering	–	✓
Delivers sales, revenue & profit **forecast**	–	✓

Sales and profits in predictive pricing are on average 10% higher than in rule-based pricing. This is shown by 7Learnings A/B tests with customers from different industries.

AT A GLANCE: THE ADVANTAGES OF PREDICTIVE PRICING

Higher profitability
Up to 10% higher profits compared to a rule based approach.
Proven in A/B tests with clients.

Intuitive steering based on targets
Prices are optimized towards set targets. Price for whole assortment can be optimized in one run.

Less manual work
Effort to administer and implementprice rules will be drastically reduced

Forecasting function included
Software calculates sales, revenue and profit scenario for price recommendation.

Holistic optimization
Considers all relevant input factors (e.g. stock, competitor price).
Best approach for products sold exclusively.

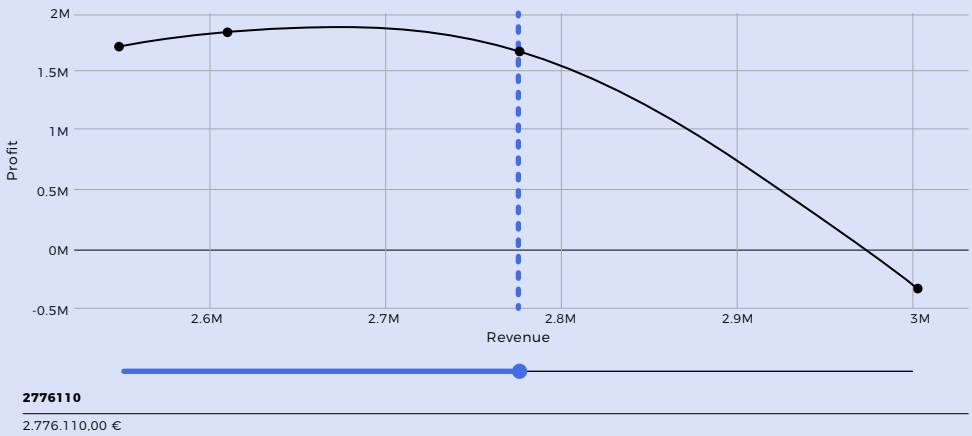
Continuous improvement
Software detects changes in performance and changes price recommendations accordingly.

PREDICTIVE PRICING
WITH 7LEARNINGS

We are a team of industry leading pricing experts and data scientists, who are passionate about pricing science and using it to help businesses thrive. Our goal is to help retailers shift from time-consuming price management methods to more effective predictive pricing software, based on leading machine learning technology. Thanks to our innovative price optimization tool, retailers can access more reliable forecasts that help them make better business decisions.

7Learnings offers companies a simple and smart way to optimize their prices. Using the latest deep learning technology, our application predicts demand, sales, and price elasticity for any product. And with just one click, our customers can generate market-driven prices that maximize profits while taking into account limiting factors such as current inventory levels. Our software is simple to use and integrates seamlessly into your backend system, helping you streamline your operations while creating immediate business impact.

PREVIEW REVENUE-PROFIT CURVE FOR SELECTED SCOPE AND RULES



In the 7Learnings pricing application, customers select a point on the revenue-profit curve according to their business goals. The optimal pricing scenario is then generated with just one click.

Retailers can configure the 7Learnings predictive pricing software based on their business goals and their individual KPIs. With the help of intelligent price optimization, companies save time and strengthen their growth: they reach their sales targets faster, strengthen their brand and expand their market position.

OUR RESULTS SPEAK FOR THEMSELVES. HERE ARE SOME INSIGHTS FROM OUR CUSTOMER SUCCESS STORIES:

vitafy

The Munich-based online retailer Vitafy specializes in fitness, health and nutrition products, offering a vast amount of different brands including three private labels.

RESULTS

> 10%
UPLIFT
IN PROFIT

> 12%
UPLIFT
IN REVENUE

> 18%
INCREASE
IN SALES

The 7Learnings predictive pricing solution enabled Vitafy to tap the full potential of its data without having to invest in technology development or a costly data science team. Within weeks, the pricing solution delivered measurable results. Vitafy can now, within minutes, simulate various price scenarios for individual categories, forecasting revenue, sales and profit outcomes for its respective targets. The highly automated pricing process frees up time for more strategic tasks.

apo.com

Apo.com is one of the fastest growing online pharmacies in Europe and offers more than 100.000 different products to over 4 million customers. Their brands include “apo-discounter.de”, “apo.com”, “apotheke.de” and many more.

RESULTS

- Achieved double-digit increase in profitability with a simultaneous uplift in revenue
- Greatly simplified the pricing process by automating price optimization and demand forecasting
- Supported Apo.com in translating their overarching strategy into its operational pricing process

CUSTOMER TESTIMONIALS

As an online retailer, it is very important to get your pricing right. 7Learnings did a great job in automating our pricing process while increasing profitability and sales significantly."

Oliver Roskopf

Chief Marketing Officer @ Vitafy

The 7Learnings solution has significantly increased our profitability and greatly simplified the pricing process."

Dirk Wappler

CEO & Co-founder @ Apo.com

THE PATH TO THE FUTURE
OF PRICE OPTIMIZATION

E-commerce can be a lucrative revenue driver for retailers, provided they succeed in the often global competitive environment. Optimal pricing is essential for this.

Predictive pricing gives retailers a hard-to-catch competitive advantage over competitors who rely on outdated technologies to optimize their prices. Intelligent algorithms are superior not only to rule-based pricing tools, but also to simple machine learning applications.

Sooner or later, AI-based applications will become the standard in pricing. The sooner companies familiarize themselves with the technology, the better. For many decision makers, the buzzword of “artificial intelligence” evokes the association of being expensive and only affordable for global market leaders. This, however, is a misconception. It's true that in-house development of AI-based pricing applications can be costly, but in-house development is not necessary to reap the benefits of this technology.

7Learnings has more than ten years of experience in developing machine learning-based pricing applications. We have advanced the technology to predictive pricing and have created an easy to use software that makes it possible for any company to implement cutting edge machine learning-based pricing optimization. All of this is possible irregardless of what backend infrastructure has been previously used, and at a fraction of the time and cost of developing it in-house.

If you have any questions about the use of predictive pricing in your company, please feel free to contact us. Please reach out to us to arrange a non-binding consultation appointment, in which we will present our pricing tool to you in an online demo.

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