

AI In Product Management
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Lecture - 41
Price Optimization using AI (Part 1)

Thank you. Welcome to this NVTL online certification course on artificial intelligence in product management. Now, we are talking about Module 41, which is price optimization using AI. These five modules will be dedicated to this topic of price optimization using AI. So, to give an overview of this module, we will start by understanding what are the complexities with pricing in modern businesses.

Then we will understand what AI-assisted pricing strategy is and the three ways it can be used. Then we will give an overview of the journey to intelligent pricing using AI and the steps to keep in mind while going through it. We will discuss various principles to follow while implementing AI for pricing and how AI for price optimization works. Then we will understand what explainable AI in pricing is and what the benefits of AI-implemented pricing are. So, we will start by understanding the complexities in pricing faced by modern businesses.

Pricing decisions pose a complex and challenging task for businesses. Over 30% of these decisions fail to optimize prices, resulting in significant revenue losses. It is remarkable that a mere 1% increase in price can generate a substantial 8.7% surge in operating profits. Embracing an effective pricing strategy becomes a compelling opportunity to enhance revenues and maximize profitability.

However, businesses encounter numerous and diverse challenges when it comes to setting prices, and we will discuss some of them. So, the first problem is understanding customer behavior. One of the biggest challenges in pricing is understanding customer behavior. Customers are often unpredictable and can be influenced by a range of factors, including brand loyalty, price sensitivity, and perceived value. Conduct thorough research to understand customer preferences and tailor pricing strategies accordingly. Changing market dynamics: The pricing landscape is constantly evolving with changing market conditions, consumer behaviors, and competitive activity. Businesses must be agile and able to adapt their pricing strategies to changing market dynamics. Competitor pricing: Competitor pricing can

significantly impact a business's pricing strategy. Companies must carefully monitor their competitors' prices and adjust their own prices accordingly. However, blindly matching or undercutting competitors' prices can lead to a price war and erode profit margins. Cost and profit considerations: Pricing decisions must consider the cost of production and distribution, as well as profit margins. Pricing too high can lead to decreased demand, while pricing too low can result in lower profits and the

perception of lower quality. The lack of data and analysis. Many businesses lack the data and analysis required to make informed pricing decisions. Without access to accurate or updated information, pricing decisions may rely on intuition or outdated assumptions, resulting in less-than-optimal outcomes. So now we will introduce pricing using AI.

In today's hyper-competitive marketplace, businesses are continuously seeking new ways to increase revenues and maintain a competitive edge. One approach that has emerged as a promising solution is pricing. Optimization using AI algorithms with the ability to analyze vast amounts of data in real time. AI algorithms offer the potential to identify optimal pricing for products or services at any given time. The right pricing for your product or service is key to maximizing your sales and bottom line.

Price optimization based on real-world data can help you set a price point that balances profitability and customer value. Business owners can leverage artificial intelligence tools to streamline the process of gathering and analyzing this data to set ideal prices. The result is an optimal dollar amount or range for each offering that meets the sweet spot of value, desirability, and business profits. Charging customers who derive greater benefits from a product or service more than others can enhance the profitability of that customer segment.

By using data to make more informed decisions, businesses can adapt more effectively and successfully, which is necessary in our changing market conditions. Therefore, a well-crafted AI-powered pricing strategy helps companies to be competitive in their target markets. It can help them to be resilient to changing market conditions and achieve their profitability goals, striking the right balance between profitable margins and winning competitive deals. is challenging. How are ERP systems and AI pricing software different?

Enterprise resource planning or ERP systems integrate various business processes to improve overall efficiency. On the other hand, smart pricing software uses artificial intelligence to set optimal and intelligent prices by analyzing market and customer data.

The former streamlines internal operations, and the latter enhances profitability through data-driven pricing strategies. We will have a look at the basis of their differences. So the first basis is functionality and specialization.

ERP systems offer broad business management capabilities, including basic pricing functions. They are designed to integrate various business processes but are not specialized in pricing. AI-powered price management provides specialized advanced pricing capabilities. They focus exclusively on optimizing pricing strategies using sophisticated algorithms tailored for this specific function. The next is pricing strategy and adaptability.

ERP systems generally support basic pricing strategies with manual updates and rule-based adjustments. They are less adaptable to rapid market changes and typically require manual intervention for updates. AI-powered price management employs dynamic and real-time pricing strategies, automatically adjusting prices based on market conditions, demand, and competitor actions. They offer a more adaptable and responsive approach to pricing. Analytics and insights: ERP systems include general analytics and reporting features, which cover a broad spectrum of business data, including some pricing insights.

However, they are usually not as in-depth or specific to pricing optimization. AI-powered price management provides advanced analytics and predictive modeling specifically for pricing. They can forecast market behavior, predict the impact of price changes, and suggest optimal pricing strategies based on deep learning and data analysis. Automation and Efficiency: ERP systems handle various business processes with a certain level of automation. But pricing updates often require manual intervention and are subject to human error.

AI-powered price management offers a high degree of automation, particularly for pricing adjustments. They reduce the need for manual updates, thereby minimizing errors. And increasing operational efficiency. Next comes scalability and customization. ERP systems are scalable across various business functions but may have limitations when it comes to handling complex, evolving pricing strategies.

Customization is possible but can be broad and not as deep for pricing needs. AI-powered price management is highly scalable and customizable when it comes to pricing. They can accommodate an expanding array of products and complex pricing structures, adapting as the business and market evolve. In essence, ERP systems provide an

integrated solution for managing various business operations with basic pricing capabilities. AI-powered price

Management systems offer a focused, sophisticated approach to pricing. They bring advanced analytics, real-time adaptability, and a high degree of automation to the table, specifically catering to the dynamic needs of modern pricing strategies. Now, we will look at the AI-powered pricing strategy. AI-powered pricing strategies use artificial intelligence functions like machine learning, and prescriptive analytics to set and adjust prices dynamically based on a variety of factors, including market conditions, consumer behavior, competitive forces, volume or usage-based variables, and reseller or contract-based approaches.

AI pricing uses predictive analytics, real-time data, and advanced algorithms to determine the best pricing approach for each product or service offered. AI pricing helps maximize revenues and profitability while ensuring that prices remain competitive and aligned with market trends. Today, companies are constantly looking for innovative ways to increase profitability and improve their internal processes. With the help of AI, brands can take full control of their pricing ecosystem and

Now, let us look at the three ways AI can be used for pricing. So, one is dynamic pricing. Dynamic pricing using AI-powered predictive analytics involves adjusting pricing in real time based on market demand, inventory levels, and other factors. AI algorithms can analyze real-time data to forecast demand, identify pricing trends, and adjust prices in real time. This approach ensures that brands are always up to date with market changes and can quickly adjust prices to optimize revenues.

By using dynamic pricing, brands offer discounts during slow periods or increase prices when demand is high, maximizing their profits. A B2C example of this is ride-sharing apps using AI-powered predictive analytics to adjust prices based on real-time market demand and traffic conditions for fair pricing. The example in the B2B domain is manufacturing companies using AI-powered predictive analytics to adjust prices in real-time based on supply chain distribution and market demand for competitive pricing.

The next step is price optimization. Price optimization involves the utilization of algorithms that analyze real-time market data, competitive pricing, and customer behavior to identify the best pricing strategy. With the help of AI algorithms, businesses can process large volumes of data to determine the most suitable price points for their products or services to be given at any given moment. The B2C example here is retail

brands using AI algorithms to optimize prices for popular items based on real-time market data and competitor pricing.

The example in the B2B context is that of software companies using AI algorithms to optimize pricing for their products based on real-time market data and customer behavior, ensuring that they are offering the most effective pricing. The next is personalized pricing. Personalized pricing involves offering individualized pricing to each customer based on their preferences, spending habits, and purchasing power. AI-based analytics can help brands analyze customer data such as purchase history, demographics, and online behavior to create a personalized pricing strategy for each customer. This approach can increase customer loyalty and boost sales by offering pricing that matches each customer's unique needs and willingness to pay. By leveraging AI-based analytics, brands can build a strong relationship with customers and improve customer satisfaction. A B2C example in this situation is that of an e-commerce brand

that can use AI-based analytics to analyze customer data and offer personalized pricing based on individual customers' preferences and spending habits. They can use AI to analyze a customer's browsing history and offer personalized discounts on products that they have previously shown interest in. The example in B2B domain is that of a logistic company that can use AI-based analytics to analyze customer data and offer personalized pricing based on individual customer shipping needs. They can use AI to analyze the customer's shipping habit and they can use AI to analyze a customer's shipping history and offer personalized pricing based on their unique shipping requirements.

Now we will talk about the journey to intelligent pricing. The figure on the next slide will explain the four types of pricing and the journey within. Starting from generalized set of pricing based on static rules to pricing tailored in real time based on demand, competition, customer willingness to pay, all run by advanced algorithms and AI. So now on the y-axis, we have ad hoc manual, wait and see.

And on top, we have systematic and automated change fast. On x-axis, on the right-hand side, we have tailored one by one. And on the left-hand side, we have general one-size-fits-all. Now, in this quadrant, we have intelligent pricing. Machine generated mostly non-transparent pricing.

Price is calculated in real time based on multiple variables such as demand, competition, customer willingness to pay using advanced algorithms. Now here we have this personalized pricing. Every single customer gets a specific price to match his or her

maximum willingness to pay. Human generated mostly transparent pricing. Here we have rule based minimum price discrimination based on static rules.

for example price on weekends higher than weekdays and here we have this dynamic pricing all the customers receive the same price but prices vary over time so properly strategized and implemented intelligent pricing can increase margins and support growth to reach that end there are few steps to keep in mind one is think big start small scale fast second is build a business case and the third is build on industry norms. So, we will look at each one of them in detail. So, let us start with think big, start small and scale fast. Use approaches like design thinking workshops to brainstorm on ideal end state for your intelligent pricing strategy.

Then put in place a proof of concept or several to test ideas for a small product segment or market. Then scale successful proofs of concept across the enterprise as quickly as possible. The next is to build a business case. Lead with a business case showing the potential revenues and margin growth from intelligent pricing.

It also highlights the benefits and risks related to the halo effect on customer relationships. Sales teams, partners, and customers will all significantly benefit from intelligent pricing in the short and long term. The next is built on industry norms. The trend toward real-time, data-driven, and more tailored pricing is inescapable. The test for companies will lie in their ability to both master extracting value in the B2B space and also scale.

It applies to transactions with their B2B and B2B2C ecosystem partners. The future of intelligent pricing is one that reaches end-to-end across the value chain. When this happens, companies will realize the full spectrum of benefits, well beyond steering sales and improving margins and revenues. It will increasingly also be leveraged as a powerhouse to foster enduring customer relationships. Ecosystem partners and ultimately fuel innovation, competitiveness, and growth. Now, let us try to understand what explainable AI in pricing is. As already discussed, artificial intelligence in pricing, often referred to as AI pricing or pricing machine, is a sophisticated approach that involves using machine learning models and data analytics to

set, adjust, and price intelligently and optimally. However, due to its technical sophistication, it may be understood only by machine learning or data analytics experts, and a member from a different team might struggle when working together. This is where explainable AI comes in. Price optimization tools with explainable AI can share insights

and explain the logic behind reaching those predictions and outcomes. Thereby, it makes the tool accessible to other stakeholders of the company instead of limiting it to the data scientists.

To break it down with an example, if you sell a highly competitive product, the new price suggestions may be lower. Explainable AI would share insights that show the price of the product is currently down among your competitors and the new price would continue to attract more customers now let us look at ai driven pricing optimization some case studies and we start with that of the walmart walmart is one of the largest world's largest retailers using ai driven pricing optimization to remain competitive by analyzing data from online and in-store sales Competitive prices and other factors, Walmart dynamically adjusts its prices to offer the best deals to its customers. This approach has helped Walmart maintain its position in the retail market while ensuring customer satisfaction.

The next is the example of Uber. Ride-sharing giant Uber employs dynamic pricing using AI. During peak hours or high demand, Uber's algorithm increases the price of rides. This strategy encourages more drivers to become available and passengers can choose whether to accept the higher fare or wait for prices to drop. Uber's search pricing model is a prime example of how AI-driven pricing optimization responds to real-time market conditions.

The third example is that of Airbnb. Airbnb uses AI-driven pricing optimization to help host set competitive rates for their accommodations. The platform considers various factors including location, demand, local events, and historical data to recommend prices. this ensures that hosts can maximize their earnings while extracting guests with reasonable rates amazon is yet another example amazon was the most famous cases of effective price intelligence implementation the company uses a dynamic pricing model changing pricing millions of times per day across its vast product catalog using complex algorithms and big data analysis amazon constantly analyzes competitors prices demand fluctuation, and customer behavior to adjust their prices.

Next comes Best Buy. Best Buy is a renowned electronics retailer that uses price intelligence to stay competitive in the highly volatile electronics market. The company uses machine learning to analyze competitor pricing, customer reviews, and demand trends. Based on this data, they can adjust their prices to remain competitive while maintaining profitability. The next example is that of Zara.

Zara, the Spanish fashion retailer, uses price intelligence in a unique way. Instead of racing to the bottom with competitive prices, Zara uses price intelligence to understand

what customers are willing to pay for speed and fashion-forward design. This understanding of value from a customer's perspective has been key to Zara's success in the fast fashion industry. Southwest Airlines' price intelligence is not limited to retail.

Southwest Airlines uses price intelligence to dynamically adjust ticket prices based on various factors like demand, competitive pricing, and time of purchase. This pricing strategy, known as yield management, has been used effectively in the airline industry for years and has helped Southwest maintain consistent profitability. The next example is that of DHL. DHL, a global logistics provider, leverages price intelligence to optimize pricing.

By using price intelligence software, DHL stays updated on competitors' rates and market forces in real time. This enables them to anticipate price changes due to fluctuations in fuel costs and maintain competitive prices while enhancing customer loyalty and preserving profitability. This data-driven approach positions DHL at the forefront of price intelligence applications in the logistics industry. Now, what are the principles of implementing AI in pricing?

So, companies just starting out with AI in pricing or those considering how to expand their current efforts can advance along the following principles. The first is to reimagine how the work gets done. Second, prioritize use cases. Third, take small steps toward a big change. Fourth, look for early returns.

Fifth, focus on data early and sustain the effort. Sixth, have a clear target vision but also invest in less advanced solutions. And seventh, emphasize the change efforts. Now, let us look at each one of them. So, we will start with the first one: reimagining how work gets done.

Adding AI to existing processes in order to improve performance is inherently limited. Pricing decisions should not be considered in isolation. It is more fruitful to reimagine how work gets done and how pricing use cases fit into commercial productivity more broadly and then invest in making that happen. The next is prioritizing use cases. Start with the most important pricing decisions the company is making today.

While selecting use cases, consider each one's alignment to value, speed to value, the firm's ability to implement and risk deployment. While it is crucial to invest in data infrastructure, don't wait for perfect data before starting, and make sure these efforts have

the active support of senior sponsors. Next step is to take small steps towards a big change. Even a major opportunity can be built with small stepping stones.

Companies can Implement a minimum viable product that incorporates high-quality insights, visual information, greater efficiency and scope, the integration into business processes, test and learn as you go, then scale up the successful experiment. The next step is to look for early returns. Generating ROI in short order will build promoters within scale and marketing and earn the right to fund Earth. further use cases.

Then comes focus on data early and sustain the effort. Conducting an upfront data assessment will help the company select the right focus area within pricing as well as the right region or market in which to pilot a program. A niche market, for example, may have rich accessible data and a high potential return, but limited opportunities to scale. An established market may have solid data and less potential upside locally, but offer opportunities to scale a solution quickly. Once the initial AI pricing solution is built and launched, the company focus should shift to gradually improving both the quality and availability of data in order to unlock the full potential of the solution.

Perfect data does not exist, so there is no need to wait for it or make it an excuse to delay an initiative. Have a clear target vision, but also invest in less advanced solution. The AI vision for pricing transformation will represent a step change for most companies, will represent a steep change in most companies. Although many companies will still manage to get by with Microsoft Excel based solutions and basic pricing strategies, competitive pressures and customers demand will eventually force them to move to the faster, more dynamic and more scalable tools and techniques that AI enables.

Companies need to develop Their aspirational AI vision early on, those that have limited data availability or a lower level of pricing maturity in some markets should start their journey with a less advanced approach in those areas. But at the same time, companies should develop a longer-term vision to work towards or they risk AI being viewed solely as an incremental change. Emphasize the change efforts.

The development and implementation of AI pricing initiatives will require cooperation from day one between the pricing team and the sales force. They will also require an investment in capabilities to build advanced analytics teams. The initiatives may also shift the balance of power regarding pricing decisions because pricing has no natural owner in most companies. Responsibility may rest with finance, marketing, sales, or an

emerging area such as RGM. The accelerated support of C-level executives will make it easier for teams to cooperate and develop comfort with new tools.

Increasingly, companies are seizing the opportunity to apply AI to pricing and launch transformations. They recognize that the improvements are not only financial but also strategic. Companies can free up resources to focus on long-term issues rather than short-term tactical firefighting, and they can build on this success to launch other AI initiatives. Now, let us look at how AI-driven pricing optimization works. AI-driven pricing optimization relies on the analysis of vast datasets and the application of complex algorithms.

In the next slide, we will provide a brief overview of the technical aspects involved. So, the first step is data collection. To make informed pricing decisions, AI systems gather an extensive range of data. This includes competitor prices, historical sales data, customer behavior, market trends, and more.

The data is collected from various sources, including web scraping, API integration, and in-house transaction records. The second is the machine learning algorithm. Machine learning models such as regression analysis, decision trees, and neural networks are used to predict the impact of different pricing strategies on sales and revenue. These models learn from historical data and adapt to changing market conditions. The third is real-time monitoring and AI-driven pricing optimization.

It is not a one-time task but an ongoing process. Prices are constantly monitored and adjusted in real-time based on changes in market conditions and customer behavior. This ensures that pricing remains competitive and profitable. The fourth is rule-based systems. Some businesses use rule-based systems alongside AI to set constraints and guidelines for pricing.

For example, they might specify that prices should not fall below a certain margin. Or that discounts should be limited during peak seasons. The fifth is A/B testing. A/B testing is often employed to assess the effectiveness of different pricing strategies. By comparing the performance of two or more pricing strategies in real-world scenarios, businesses can fine-tune their approach and select the most profitable option.

The sixth is optimization objective. The optimization objective may vary based on a business's goal. Some may prioritize maximizing revenues, while others may aim to gain

market share or maintain a specific profit margin. AI systems are configured to align with these objectives. Ability to use dynamic pricing.

AI enables dynamic pricing along businesses to adjust prices in real time. based on various factors like demand, inventory levels, competitors' pricing, and market trends. This responsiveness ensures prices are always aligned with the market and customer expectations, leading to increased sales and venues. We will discuss dynamic pricing using AI in detail in Module 44. The next comes to optimize prices automatically.

AI algorithms analyze vast amount of data to determine the optimal price points for all your products or services. This price optimization considers customer behavior, production cost, and market conditions to maximize profitability while also maintaining competitiveness. So, the first benefit of AI pricing is the ability to use dynamic pricing. The second is to optimize price automatically. So AI algorithms analyze vast amounts of data to determine the optimal price points for all your products and services.

This price optimization considers customer behavior, production cost, and market conditions to maximize profitability while also maintaining competitiveness. The next benefit is setting competitive prices without hurting profit margins. Competitive prices. Competitive price intelligence involves understanding competitors' pricing strategies and positioning your prices accordingly. AI enhances this process by providing real-time data and predictive insights, enabling businesses to stay ahead of the competition and price intelligently.

This competitive pricing intelligence allows businesses to proactively adjust their prices, ensuring they remain attractive to customers while safeguarding profit margins. The next benefit is better customer segmentation for tailored pricing. AI helps in identifying and understanding different customer segments based on their purchasing power and sensitivity to price changes. By tailoring prices to each segment, organizations can increase conversion rates and customer satisfaction while optimizing revenues from each group. The next benefit is an efficient pricing process that frees up more time. Automating the pricing process with AI reduces the manual effort required and minimizes human errors and other inconsistencies. This efficiency frees up resources, allowing teams to focus on strategic initiatives rather than the time-consuming task of pricing monitoring and adjustments. It also helps mitigate price wars by shifting focus to value. Instead of engaging in detrimental price wars, AI helps organizations adopt more

sophisticated pricing strategies, focusing on value-based pricing rather than just competing on price.

This approach preserves brand integrity and profit margins. Predict future market shifts to prepare with smart pricing. AI uses historical data and predictive models to forecast future market trends, demand patterns, and customer responses to pricing changes. This foresight allows businesses to anticipate market shifts and adjust their pricing strategies accordingly, staying one step ahead of the competition.

Manages growing complexities as your business scales AI systems can scale with the business handling more data and complexity as the company grows. They can also adapt to new markets and products quickly, making it easier for businesses to expand and diversify. Increased conversion AI-powered pricing strategies can help businesses increase online conversions from browsers to buying by predicting what a customer will pay based on their previous purchasing behavior. It is pivotal for modern businesses implementing AI pricing strategies to adopt their pricing in real time to maintain customer loyalty.

The next is accuracy. Competitive pricing for business and consumer products has never been more accessible. AI-powered pricing strategy enables accurate decision-making based on current market conditions such as supply, demand, and competitive forces. Better data analysis. AI-powered pricing strategies reduce the reliance on guesswork or manual market analysis.

analysis and pricing updates dynamic optimized pricing maximize margins and profitability without pricing products or services beyond what the market will bear inventory management effective inventory management is another aspect where ai driven pricing optimization shines by analyzing historical sales data demand forecast and seasonal trends ai can help retailers optimize their stock levels this reduces overstocking and understocking issues leading to cost savings and improved customer satisfaction. Then comes personalized pricing. AI driven pricing optimization can personalize pricing for individual customers. This means that businesses can offer discounts.

Promotion or loyalty rewards tailored to specific customers based on their past behavior and preferences. This level of personalization not only enhances the customer experience but also increases the likelihood of repeat purchases. So, to conclude this module, we have discussed the complexities of pricing in modern businesses. Then, we have

understood what an AI-assisted pricing strategy is and the ways it can assist. We have discussed the journey

to intelligent pricing and the things to keep in mind while following this journey. We have also talked about explainable AI in pricing and the principles to follow while implementing AI for pricing. Finally, we have discussed how AI for price optimization works and the various benefits of AI-assisted pricing. These are the various sources from which the material for this module was taken. Thank you.