AI in Marketing
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Week-9
Lecture 42 - Pricing Strategies using AI-III

Welcome to this NPTEL online certification course on Artificial Intelligence and Marketing. And now we will talk about module 42. So as you can see from this slide, we are talking about the pricing strategies using AI and we are in module 40 and 41 also, we are talking about this pricing strategy using AI. Now this is module 42 and we will continue to discuss about the pricing strategies using AI. Now these are the things that we will cover in this module. We will start with the psychological impact of algorithmic pricing on customers.

Then we will talk about the increasing discrepancy of pricing in the market due to adoption of algorithmic pricing and the four ways to overcome pitfalls of algorithmic pricing along with case studies from the industry. Now let us start with the first thing that is the psychological impact of algorithmic pricing. And we will demonstrate this with the, with an example of the case of root insurance. So root insurance sells auto policies in 30 US states.

To better educate and foster relationships with its customers, the company devised a dynamic pricing program that treats each driver in a personal and transparent manner. So now here we are talking about each driver in a personal and, and transparent manner. So we are, we are now keeping in mind that, that not all drivers are the same. Unlike its competitors, roots does not segment pricing using large, relatively anonymous risk pools generated from demographic data. Instead, it offers drivers a smartphone app that measures their day-to-day behavior behind the wheel.

So now depending upon your everyday behavior as a driver, so this data gets fed into an algorithm to calculate individual safety scores. And these individual safety scores will then, then determine the, the insurance premium. Root then bases insurance premiums primarily on how well drivers perform while giving some weight to traditional factors such as credit scores and insurance fraud statistics. To reduce bias against under-resourced customers, root avoids considering anyone's education or occupation other than the common industry factors and it has committed to dropping credit scores from its rates by 2025. The company also ensures only those people who pass its safety test.

By weeding out bad drivers, root claims it can reduce the expenses associated with accidents and lower the price of insurance for all its customers. So now that is important because now all customers are benefited by, by this policy. Root's model is an effective example of how pricing algorithms and transparency about them can improve customer relationships. First, before a customer ever sees the price of a root policy, she knows what the company does and does not take into consideration. The second is the customer knows why she was offered a specific price that differs from what someone else might be paying.

Third, she knows what root did on her behalf to minimize the final cost of insurance. Making customers understand the mutually beneficial nature of algorithmic pricing is key to success. Making customer understand. So this is in the larger customer interest. So every customer is getting benefited.

That is because overpaying for something can be painful. Research conducted by neuroscientists at Carnegie Mellon, Stanford and MIT has shown that pain centers in the human brain are activated when people see a product with an excessive price tag. Pain centers. The mere act of asking for money, regardless of when or how, instantly shifts the focus of the customer relationship from pursuing aligned interest to reconciling opposing interest. In the worst cases, asking for money can be alienating to the customers.

The challenge for the customer centric organization is to minimize the risk and limit the damage that occurs when market norms drive price increases and intrude upon otherwise well-natured relationships. Now let us look at the increased discrepancy from algorithmic pricing. Before pricing algorithms become widely used, prices were stickier and differed little from one seller to another. Customers had relatively stable expectations and did not perceive prices as personal. When prices changes created discrepancy between actual and expected cost, it was easier for customers to rationalize the increase, believing that they were being implemented universally as part of the carefully crafted corporate strategy.

Technology has made the clashes more frequent, more arbitrary seeming and more startling in size, which unsettles customers and make it harder than ever for them to reconcile what they see with what they expect. And at the same time, many firms have come to believe that whenever customers' price expectations are stable and disruptions are minimal, the company must be leaving too much money on the table. In line with market norms, firms have increasingly turned to algorithms to maximize their profits. Today, even the slowest moving B2B industry are replacing Excel spreadsheets with powerful algorithmic pricing tools. Technology has enabled firms to deepen their relationships with customers and, in parallel, become more efficient and proficient in extracting money from them.

The combination, however, often leaves customers wondering what they should think and which companies they should trust. With their price sensitivities heightened, they work

overtime to try to make sense of price changes. What do the fluctuations say about the quality or desirability of the product or service they are buying? About the motives and values of the seller, what does that firm really think of their patronage? If price change reach an equilibrium, the urgency of these questions can fade. But if the frequency and magnitude of intrusion remains uncertain, these questions will linger and ultimately force customers to draw their own conclusions without explicit guidance from the seller. That is when customers start reacting to algorithms' messages, not the firm's.

And that is a risky proposition for any business. To better control what algorithmic pricing says to customers and how it impacts customer relationships, we will discuss four recommendations along with illustrative examples that will help clarify how each recommendation can be applied. So how to overcome the pitfalls? So there are the following four ways by which the pitfalls in algorithmic pricing can be overcome. The first is, determine an appropriate use case and narrative. The second is, designate a price algorithm owner.

The third is, set and monitor pricing guardrails. And the fourth is, override the algorithms when necessary. Now let us look at each one of them in some more detail. So the first one is to determine an appropriate use case and narrative. In 2020, the Swedish furniture retailer IKEA launched a novel initiative at its location.

For a limited period, the company allowed customers to pay different prices for product according to the time they spent driving to the store. So whoever was coming from larger distances got more discounts. Every item from a sandwich at the restaurant to a complete bedroom set had a price expressed in two units, the local currency and a time amount. So these were the two units. A family that drove say 45 minutes to IKEA store earned a certain value tied to the distance of its trip.

At checkout the family could show the cashier a Google map timeline readout using a feature of Google map, cell phone, app that tracks and records all the routes one takes. The cashier would run an algorithm that factored time spent, distance travelled and the average hourly wage offered by worker to calculate the monetary value of the ride. The store then offered that value as a norm as a form of currency. The longer the trip, the more time credit the family got and the lesser money it needed to fork out. The clear inference shoppers drew from IKEA's program was that the retailer wanted to incentivize them to travel great distances to its store.

Although different customers would pay different prices for the same item and individual customers might see different prices each time they visited depending upon where they came from. They nonetheless felt that they had agency in how much they would pay. That contrast with the helplessness people often experience during pricing surges. Best of all because customers out of pocket cost could only decrease in conjunction with distance

travelled as opposed to increasing as a result of heightened demand. No one ever paid more than the price advertised on the company's website.

So this is how it worked by with your time. So this is the Google map and it shows the way the person has travelled and this is how did it work. So this is 105 hours. In other words IKEA used the distance based algorithm to reward customers rather than paralyze them. It might have lost some immediate revenues.

Shoppers who drove far enough could get steep discount or even obtain some products free. But by choosing a prior use case with built-in centres for people to visit the store, the company probably attracted more remote customers and increased all customers' loyalty and their lifetime value. Models like IKEA are rare. Companies typically employ dynamic pricing to further their short term financial goals with little regard for customers' perception.

So that is a problem. Yet the sheer volume and the intensity of price changes implemented by algorithm sent unequivocal signals to buyers about everything from a company's mission and values to the quality of its offerings. Now these signals can crowd out other efforts to shape the narrative in a brand's relationship with its customers. In the worst cases, algorithm turns the already delicate task of asking them for money into an experience that drives them away. That is why firms cannot leave the management of pricing technology to data scientists alone because that also affects the relationship and the perceptions. The path to improvement is not just technical but organizational and psychological also.

As paradoxical as it might sound, a better algorithm might make matters worse by exploiting customers and studying resentment as happened with Uber during the London Bridge attack. Overcoming the organizational challenges starts with recognizing the algorithm of pricing is not simply a means to generate prices that bring supply and demand into balance. It is in fact a principle that needs to align with one's organization from top to bottom. When customers have the impression that a firm bases its prices solely on supply and demand, the inferences they draw can be harmful. Think of an innovative firm with highly differentiated offerings.

So when that firm with highly differentiated offerings emphasize supply and demand in its pricing algorithm, it is essentially telling customers that the value of its product is mostly related to whether it is available or not. Not how well it solves customer problems or performs relative to competitors. So that differentiation that was there in their offering is lost. Additionally customers can learn to game the system and time their purchase is to coincide with the moment when they believe the price is low.

This again drives commoditization. So it means that differentiated products becomes commodities. Now commodities they are their prices are determined by demand and supply. By contrast IKEA's dynamic pricing model focused on attracting unlikely

customers rather than penalizing likely customers because of a lack of supply. The next is to designate a pricing algorithm owner. In 2019 United Airlines eliminated the mileage tables that frequent flyers relied on to redeem their reward points.

It replaced the tables with an algorithm pricing model explained why it was necessary to tie award travel to supply and demand and emphasized how customers could benefit by spending fewer award lines for off-peak flights. The new system did result though in higher award prices for high demand flights. That certainly frustrated reward customers but the airline communicated all the change in an easily understandable way and it focused its efforts on specific customer base which was also considered to be loyal. In doing so it was able to mitigate significant reputational damage. Additionally because it delegated management of the new algorithm to the team that supervised the loyalty program, United gave clear ownership of the pricing system to a department that was highly attuned to the sensitivities of the most steadfast customers.

That strategy enabled the airline to monitor and quickly respond to glitches with the algorithm or challenges with customer relationships. It is easy to blame the algorithm themselves when they go haywire. But the root cause of the problem usually lies in other areas. For example, inadequate organizational attention or a failure to appreciate customer psychology. So these algorithms they fail because of the following two reasons.

Most firm have an incomplete understanding of what really happens when they ask customers for money. They focus too intensively on the numbers which they view as little more than the passive outcome of the market forces that shape the supply and demand. To use Adam Smith's term the invisible hand does the work not the firm itself. This myOPR leads companies to overlook all the other information that prices convey. Even when organizations do recognize the power of this information and its implications most firms cannot manage it effectively because pricing is an organizational orphan with no clearly defined leadership, responsibility and accountability.

When companies blitantly hands off the heavy lifting of pricing to automation they see to the algorithm not only the control of the maths but also the messaging. While the data analyst and pricing specialist focus on optimizing the numbers who is making sure that the message are optimal. So the answer in many organization is no one. So this is the question and this is the answer. A pricing algorithm on its own has two weaknesses.

First it lacks the empathy required to anticipate and understand the behavioral and psychological effects that price changes have on customers. Second it lacks the long term perspective required to ensure compliance with a corporate strategy or overarching purpose. By emphasizing only supply and demand fluctuations in real time the algorithm runs counter to marketing teams aims for long term relationships and loyalty. This conflict between long range thinking and real time price change does not merely identify the clash

between earning goodwill and earning money. It also increases the urgency of finding a solution before the brand suffers irreversible damage.

If a firm does not manage its pricing price settings and messaging proactively and strategically it can trigger and even accelerate the commoditization of its offerings. So now you see this is this is the the drawback of not giving enough attention to the pricing. So it can trigger and even accelerate the commoditization of its pricing by heightening price sensitivity, undermining price value relationships and tarnishing the brand image and because of all this that leads to commoditization. By but by empowering a team that can plan its initiatives and make in the moment decision about them the company can pivot quickly when predicaments occur. The third step that can be taken to overcome the pitfall is to set and monitor pricing guardrails.

Think about a typical poor experience at a theme park. Guests have to suffer through long lines of rides, food and restrooms plus a lack of personal attention from over-reliant or under-trained support staff. Such as off-putting experience leaves many customers wondering whether their steep in the investment in tickets, parking refreshments and lodging is even worth it. Guests would have a more pleasant visit if they encountered shorter lines and wait times and had better interaction with park personnel. To increase customer satisfaction, Walt Disney World in Orlando Florida changed its dynamic price structure from a manual to an algorithmic one in 2018.

The new program which raised multi-day ticket price overall but decreased the price of a ticket for off-peak dates encouraged customers to plan their trips well in advance or book trips during off-peak periods in order to take advantage of lower prices. So that because of this pricing the demand shifted from peak to off-peak days. Now Disney's program had several merits. The first is it shows that dynamic pricing can serve other objectives beside increasing revenues or volume. Even if total revenue and overall guest count stay constant over time the pricing structure makes the flow of customer steadier which means less volatility in Disney's need for staff and other resources that can lead to significant cost savings.

Second the customer experience improves dramatically because guests can enjoy more rides, visit more attractions and better use their time in the parks. Finally the dynamic pricing program can be explicitly publicized as a commitment to long-term customer satisfaction in spite of overall increase in prices. When Disney World switched to an algorithmic system it also determined that it would be it's in its best interest to no longer dynamically price single day entry to its individual theme parks, Magic Kingdom, Epcot, Animal Kingdom and Hollywood Studios. Pricing for single day tickets across all four properties was set from $1.09 to $1.29 no matter what time of a year a customer chooses

to visit and regardless of the demand. The guardrail limited the amount that Disney could charge for a single day pass but it sets clear parameters that helped customers anticipate their cost and plan their visits. And by observing how they self-selected their trips Disney could sharpen its communication about the park experience and design additional service packages to cater to different customer segment. So different service packages for different segments. Other companies can use guardrails in a similar way not just by protecting customers from wild price swings but also to judge how pricing impacts every area of the organization. When establishing the initial guardrail and continuing to deploy them firms should encourage information sharing among different lines of businesses. That is the best way to attract key learning and use them for the company's benefit. Now there are three primary areas for close collaboration across function to glean insights from algorithm. The first is experimentation, the second is monitoring and the third is strategy.

Let us start with the first one that is experimentation. Controlled periodic testing of prices can help a company measure the extent to which customer value a product or service or any of its features and understand the context of when and how they derive that value. Indeed pricing experimentation can be far more powerful than traditional market research because customers are reacting to actually offering and making real transactions. Their responses to price shifts helps firms discover what works and what does not and at what point buyers first make their purchase decisions. The second is monitoring. Firms can develop a new key performance indicator or compare existing indicators to ensure that the frequency and magnitude of price changes are not eroding.

Customers' royalty and brand reputation. No company wants to be perceived as unfair, manipulative or greedy. Thus it is important to take measures to constrain and manage the output of the pricing algorithm and vital to think through the messages and their consequences in advance. This enables firms to avoid extreme and free floating prices by implementing hard floors and ceilings. Hard floors and ceilings and Disney did with its single day pricing. So, there are, this is the hard floor of pricing and this is the ceiling of pricing and in between lies the prices.

The third is a strategy. This is essentially a long term integrated view of the first two elements. Are the firms product development, branding, positioning and pricing all working in harmony? Product development, branding, positioning and pricing. So, they should be working in synchronization or with the least amount of friction to fulfill the company's strategic objectives. The firm must strive to ascertain directly or indirectly how customers perceive its mission and purpose and whether its price actions reinforce or harm the reputation it is trying to establish. The messages that customers infer from prices should sync up with the explicit messages that a company communicates through its non-price activities to promote itself and its products.

When firms pay attention to all the various ways that price changes can alter what customers believe and how they behave beyond the immediate buy or no buy decision, they can enhance the customer relationship rather than diminish it even when there are, the prices are raised. The firms can tap into the power of price changes to improve their operations and at the same time create a better overall experience for customers. Override the algorithms when necessary. Far from the set it and forget it approach to pricing that was common in the past, organizations with a dynamic strategy must take a more proactive and creative stance to achieve the desired result.

For Disney, IKEA and United Airlines, the aims were simple. The brands wanted to make it worth the customer's while to transact even under less than ideal circumstances. They also wanted to benefit from being able to manage how, when and why changes in prices were communicated. The best pricing algorithms can analyze customer data and other information to generate optimal prices for any given customers at any given time. But from whose perspective are those prices optimal? That question gets at the conflict between earning customer goodwill and earning more money, which represents a complicated organizational challenge that should be overseen by a clear owner and managed when necessary.

Sometimes the algorithms might need to be tweaked. Other times it use might need to be temporarily suspended. The day after the London Bridge attack, Uber announced that it has refunded the payments of all riders who have hired a car in the affected area. It also boasted that its driver has helped tens of thousands of people flee the scene. Both announcements would likely have enhanced the company's reputation had it not just been tarnished by the swift backlash to the price surge. Although it is difficult to quantify the lasting negative impact of that surge on Uber's relationship with its customers, it is clear that a faster response or a more proactive mechanism for preventing the soaring prices would have benefited the brand and the riders served that evening.

All companies should understand what their pricing algorithms are communicating to the customer and how best to control that message. So, this is an example of this. They switched off the surge at 0.15 to ask too late. So, there is an incident around London Bridge and a number of roads in the area closed.

We have asked riders to move away from the area before their request and have switched off surge in the area for the time being. Stay safe and it may have any questions, please get in touch. So, this is how Uber reacted to that. To effectively do so, they must develop a proper use case and narrative for implementing algorithm pricing. Assign an owner to monitor pricing guardrails and empower that owner to manage or override the automation when necessary.

By doing so, companies will be able to optimize dynamic pricing in real time without sacrificing customer loyalty or harming their own reputation. So, to conclude, in this module, we have first explained the psychological impact of algorithmic pricing on customers. Then we have discussed the increasing discrepancy of pricing in the market due to adoption of algorithmic pricing. And finally, we have discussed in detail 4 ways to overcome pitfalls of algorithmic pricing along with case studies from the industry.

These are the 9 sources from which the material for this module was taken. Thank you.