AI in Marketing

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Week-9

Lecture 43 - Pricing Strategies using AI - IV

Welcome to this NPTEL online certification course on Artificial Intelligence and Marketing. And now it is time for module 43. So now this 43 is the last point in this, in this topic about pricing strategies using AI and this is the fourth part of it. Now let us see what are the things that will be covered in this module. So the first is setting ethical pricing using AI algorithms through three questions along with cases. And the second is the steps for pricing more ethically along with cases related to the industry.

Now let us look at the first one in more detail that is setting prices more ethically using AI. More than ever companies are able to tailor prices across people, places and time. Different people, different places, different times and different prices. They do this to maximize profits and sometimes simply to survive.

We are in a new era of supercharged price discrimination. Made possible by two major scientific and technological trends. The first is AI algorithm often trained on highly detailed behavioral data enable organizations to infer what people are willing to pay with unprecedented precision. Second is recent development in behavioral sciences often invoked with the tagline Nudge provides organization greater ability to influence their customer behavior. Not long ago such tactics might have been taken in stride but no longer.

Today's overlapping crisis and changing attitudes highlight a truth that is often been hidden in plain sight. Such supercharged pricing strategies can cause real harm to individuals, organizations and the societies. When companies deploy such strategies without considering their potential societal impacts, they risk harming people, inviting customers outcry and public outrage and even reduce prospects for long term survival. Given all this organizations must consider how to use their supercharged pricing capabilities in ways that reflect important societal values and also avoid causing harm and amplifying the inequities in the society. Going further, far sighted organizations would do well to seek profitable data driven pricing strategies that not only avoid harm but also help advance societal well-being.

To do this companies need to embed societal considerations and ethical deliberations in their pricing calculus. The field of medicine, data sciences and AI have undergone similar evolutions embracing the core ethical concept of avoiding harm, promoting well-being and fairness and not manipulating people's behavior and decisions. So these are the ethical issues that we are concerned about. In the same context we will describe three easy to ask, easy to answer and easy to apply questions that together reduces the chances that pricing strategy will have negative social impact. Think of each of these three questions as layers of a filter that can reduce potential harms to your customers, your company and the society.

So the three questions to reduce negative social impact of pricing strategy. The first is what am I selling and can these prices impede access to essential products? Second is who am I selling to and can these prices harm vulnerable populations? The third is how am I selling and can these prices manipulate or take advantage of customers? So these are the three questions that needs to be answered. Now let us start with the first question what am I selling and then and can these prices impede access to essential product? Think about your product and services are they essential such as food, shelter, medicine, transportation and internet access. During the pandemic high prices blocked access to personal safety equipment like N95 masks and hand sanitizers as well as two must have products such as toilet paper. In each case not being able to get these items exposed people to risk or harm.

High pricing by pharma companies has historically blocked access to drugs for chronically ill patients. Harming people they could help and making these companies target a social outrage. Similarly AI algorithms enable search prices for taxi drivers. Search pricing can be a useful tool for example it can both increase the availability of transportation and enable drivers to earn more. But the context is important.

For example significant price increases during emergencies such as severe snowstorms or hurricanes can provide can prevent vulnerable customers from moving to safety. Consider the cold wave in Texas where people suffered ruinous spikes in their utility bills due to the pricing scheme and algorithm that did not anticipate the harm that could result from a single minded focus on economic efficiency or the pricing profitability. This is a sobering illustration of the social consequences of pricing that is narrowly framed in a way that crowds out such ethical considerations. We will discuss the case in the upcoming slide. So this is the case of skyrocketing energy bill in Texas during that snowstorm.

Millions of Texas residents suffered from a winter storm caused a statewide electrical grid failure. But those who had power even intermittently are also paying a price literally. Energy residents face enormous bills for electricity they used during the storm. Residents with variable rate power plants are being hit the hardest. Such plants charge different prices for electricity depending on how much demand there is.

The more demand the higher the price. Variable rates plans are enticing to many people because the price of electricity is often low during normal weather conditions and because it theoretically allows people to use more electricity when the price is lower. For example by running appliances overnight. So at night the prices are low. So use the appliances at night.

But when a winter storm caused Texas grid at all but shut down the wholesale price of electricity skyrocketing. One of the most popular wholesale plans in the state is offered by the company Griddy. As the storm moved in the company took the extraordinary step of urging its customers to switch to a different electricity provider. But it was too late for many residents switching electricity companies can take days and in the meantime the price of electricity increased dramatically. Griddy customers have taken to social media to post harrowing examples of electricity bills gone haywire.

So now these are the bills. So it is oil in rate dollar 3 and when used. So kilowatt hours used 1,722 and so the wholesale electricity bill and this is the bill. Griddy laid the blame with the Electric Reliability Council of Texas which manages the vast majority of states grid and the Public Utility Commission of Texas. As the storm cause temperatures across the state to to permit early last week the utility ordered are caught to allow prices to increase to reflect the lack of supply.

As a result, electricity prices skyrocketed. The average price for electricity in Texas in the winter is about 12 cents per kilowatt hour according to the US Energy and Information Administration. Texas utility regulators allowed the prices to rise to $2.09 per kilowatt hour. After such incidents, Connecticut has banned variable rate power plant for residential customers.

And this is not the first time such plant has drawn scrutiny after a polar vortex. In Pennsylvania in 2014, cold snap caused electricity rates to increase by 300% or more, taking multiple utilities to court by the state government. When the offering became necessities, we could be aware of higher prices can block access to essential needs magnifying the possibility of societal harms. The more essential the need and the larger the price increase, the greater the potential harm. The second question that need to be looked at is who am I selling to and can these prices harm vulnerable populations? Are some of the customers members of vulnerable population? Are you selling to the elderly to customers with chronic medical conditions or to customers living on limited income? Are you selling to customers in social groups that have traditionally been discriminated against? Analytics, big data and AI technologies supercharge companies ability to address these questions in granular detail.

Price discrimination that reinforces societal discrimination is unacceptable. Insurance companies have long confronted this issue. It is a business necessity to set rates using even more sophisticated applications of actuarial sciences and AI. But balancing actuarial fairness with societal fairness requires ethical deliberation and that cannot be reduced to a formula. For example, some insurers have incorporated such information as policy holders profession into their pricing algorithm leading to lower insurance rates for pricing holders in elite professions and higher rate for policy holders in less well-paid professions.

This in turn has led to negative media coverage, public outrages, lawsuits, legislative investigations and government regulatory changes putting the brand reputation and trust in these companies at risk. We will discuss the case in the next slide. So now we are talking about the case of Geico Insurance. Geico a large multi-line insurer license in California has agreed to pay $6 million and implement several changes to their business practices as part of a settlement the Department of Insurance announced. The settlement stems from a petition in which Consumer Federation of California alleged Geico online premium quoting system was discriminatory and misleading to the consumers.

Based on information obtained through extensive testing of Geico's website, Consumer Federation of California discovered the insurer misinterpreted a $100,000 or $300,000 limit quote as being the lowest limits quotes wherein in fact it was not. Consumer Federation of California alleged in their petition that these higher policy limits were only quoted to certain consumers based on their education level, occupation and gender. Though insurers may also offer and sell policies with higher limits, California law requires insurers to offer a minimum limit policy of $15,000 or $30,000. Geico's online premium quoting system was inaccurately describing quotes for higher limits at the lowest limits. Insurance Commission has issued an order approving the settlement agreement and required Geico to discontinue using consumers' education level or occupation to quote coverage limits and to offer a quote for a $15,000 or $30,000 policy to certain consumers for the next 3 years.

The insurer has also agreed to submit a twice yearly audit of their website for the next 3 years to ensure they are complying with the law. If Geico fails to comply with the settlement agreement, the insurer will pay an additional $6 million. Disdiscrimination is a common business practice but when used in ways that reinforce social discrimination. The term takes on a new meaning to those discriminated against and the communities they dwell in. The more vulnerable the population and the higher the degree of discrimination experienced, the more damaging the consequences of ill-conceived pricing practices.

The third question that is to be looked at is how am I selling and can these prices manipulate or take advantage of customers? So, are you using information or behavioural data in ways that advantage your company but disadvantage your customers? Are you withholding or complexifying price information that could help customers take make better decisions? Are you taking advantage of their bounded options, information or rationality? Or are you designing pricing strategies in ways that empower customers to make better decisions? Now, let us look at a few examples. Disney early in the pandemic when its parks were closed continued to collect automatic monthly payment from pass holders. Customers as you can imagine were less than thrilled. Long before the pandemic, many small third-party sellers alleged that Amazon had used its data and analytics to directly compete with these small sellers through lower prices by buying in bulk from suppliers at lower cost. Uber rather than applying its analytics, AI and behavioural insights to help drivers to make more informed decision instead used gamification and behavioural nudges to prompt them to travel longer distances to locations that were less profitable for them.

McKinsey recently apologised and settled a lawsuit for its role in helping Purdue Pharma turbocharge opioid sales. When pricing strategies take advantage of information asymmetries, customers' personal data and challenging situation, the risk of societal harms become magnified. The pricing risk becomes a barrier to individual choice and personal autonomy. Each of the situations discussed illustrate how pricing strategies that do not take these questions into account can negatively impact society and generate significant negative consequences for companies, customers and communities. What are the steps to be taken to make price more ethically? And what are the steps to be taken to price more ethically? The first is pause, step back and get creative.

Consider the trade-off at stake and the potential courses of action. Many companies have found ways to maintain profitability while limiting negative social consequences. So, one is profitability and the second is limiting negative social consequences. For example, Norwegian retail chain Many was in a bind with its hand sanitizer pricing. Caught between offering accessible prices and buyers holding at those prices, many retailers have turned into imposing restrictions on the number of the bottles customers can buy creating hazels for employees and customers.

Many priced its hand sanitizer for a normal price for one bottle that is 100 dollar 100 for each additional bottle. This clever strategy simultaneously maintains accessibility and also reduce hoarding. Hyundai provides another example of creativity. During the 2008 Great Recession, Hyundai focused on key vulnerabilities for working class customers that is the risk of losing one's job. Rather than lowering prices across the board, Hyundai creatively offered customers a car return guarantee in the event that they lose their job.

This worked. Customers brought Hyundai cars in rows making Hyundai the only car company to be successful during the Great Recession. In the midst of today's pandemic, automakers have taken this lesson to heart and are all pricing their cars more creatively. AI can be harnessed as a force for good along similar lines. For example, insurers can use telemetry data and usage-based pricing to both economically incent and nudge safer driving behaviors. Most drivers believe themselves to be better than average.

And that is a dangerous example of overconfidence bias. Data-rich feedback reports comparing drivers to their peers would likely prompt safer driving. Such interventions have the potential to simultaneously make insurance more affordable by reducing claim frequency while making the roads more safer. The second is be willing to compromise and communicate this with the stakeholders. In no such creative pricing options, if no such creative pricing options are available then explore ways to compromise.

You may have to give up some profitability to avoid or ameliorate negative social consequences. At the same time, customers may need to endure some negative consequences to enable the company's financial survival. We call the customer outrage resulting from Uber's use of surge pricing. Uber could not altogether eliminate surge pricing given that incentivizing drivers is a key part of its business model. So, it worked with regulators to cap its prices during emergencies and disasters at a level below three highest price days in the previous two months.

In addition to engaging in creativity and compromise, it is also necessary to clearly communicate to stakeholders. Uber also added functionality to its app to let consumers know ahead of time how much extra they would pay and get their consent. And they further announced that the commissions earned during the crisis would be donated to American Red Cross, thus tapping into customers' intrinsic pro-social motivations. So, now this money will go to the American Red Cross. This strategy reflects an insight from behavioral economics.

Customers can be willing to give up economic benefits in order to promote fairer social outcomes. So, therefore the customers are ready to donate. They are ready to give up their economic benefit for a fairer and larger societal outcome. Uber revised surge pricing strategy and communications strike a balance between achieving corporate goals and warding of bad outcomes. The third is to incorporate this filter into your pricing deliberations.

The actions of many prominent organizations suggest that integrating ethical deliberation into pricing strategy is an idea whose time has come. As mentioned above, Uber now proactively incorporates a capacity for societal deliberations into its surge pricing activities. This enables local flexibility to allow a quicker trigger finger for eliminating surge pricing entirely in emergency situations. Microsoft provides an analogue outside the pricing domain. A recently formed ethical development team reports to President Brad Smith.

The team is responsible for guiding technical and experience innovation towards ethical, social and sustainable outcomes. Furthermore, incorporating this filter into your pricing deliberations can spur innovation in harnessing big data, AI and analytics that are both pro-social and good for the company's long-term competitive position. Customers are understandably wary that companies might use their data in ways that benefit stakeholders rather than the individuals who generated the data in the first place. So, it behoves companies to explore how to use big data and pricing in ways that addresses such concerns. For example, grossers can apply analytics to gradual club card data in ways that inform, reward or incentivize healthier food purchasing options.

Doing so can increase access to essential needs of particular value to vulnerable populations living in food deserts. Analogously, insurers can use policy holders' data not only to build actual models but also to use pricing to incent safer risk behavior and risk management on the part of the policy holders. Online retail platforms can use their data to inform customers when prices for essential goods are excessive. These are all examples of using data and AI in ways that help rather than exploit the customers.

Such pricing strategies are at once pro-social. In each case, the customer data is harnessed in a way that helps the customer better achieve his or her own goal. And pro-business in that they enable brand differentiation and increased customer loyalty. So, now here we are talking about the these strategies which are pro-social. So, one is that this lead to pro-business because they are there is brand differentiation and increased loyalty. And it is also pro-customers because they are better they are they will better achieve their goals.

Using pricing capabilities in ways that keep ethical considerations front and center, exercising creativity and judicious compromise and communicating with fortuitousness and transparency enable organizations to pursue the profit motives in ways that help rather than harm the populations they depend on and serve. So, to conclude in this module we have learned about setting ethical pricing using AI algorithms through three questions along with the cases. Then we have gone through some steps for pricing more ethically along with cases related to the industry. And these are the nine sources from which the material for this module was taken. Thank you.