Are We Using AI in the Wrong Place?

In this article, the author explores key questions that businesses need to ask when deploying sophisticated price optimization methods driven by machine learning, algorithms and artificial intelligence (AI) solutions. Dominic O'Regan, Business Consultant at Vendavo, has spent the last 7 years as a price optimization consultant working on projects with industrial manufacturers and distributors throughout Europe, the Middle East, and Asia Pacific. He is passionate about the ability for data models to support key business decisions in the pricing arena. He can be reached at doregan@vendavo.com.

by Dominic O'Regan

I've never met a senior executive who said: "Demand for our products is driven by the same factors, with the same level of influence, across all our markets." Neither have I heard anyone say: "We don't expect anything driving demand to change in the next 12 months." Yet business leaders often choose to deploy seemingly sophisticated optimization engines that have both of these premises at their core.

This fundamental mistake is well known when deploying traditional cost plus, market driven, or even value driven methodologies. It might be that factors, attributes, or value drivers are given different consideration by market or business sector. Often, global structures are 'flexed' within a reasonable tolerance market by market, or sector by sector.

When deploying more sophisticated price optimization methods, the importance of segmentation as a foundation can be overlooked or misunderstood. Companies are beginning to leverage the next generation of optimization where machine learning and AI are leveraged to get the most out of a given segmentation approach, but could this focus on the price setting algorithm and its AI be misplaced? Are we fine tuning the output based on a failing foundation? Are we re-arranging the deck chairs on the Titanic?

Traditional segmentation approaches are hierarchical, consistent, and static.

- **Hierarchical:** Think of segmentation like a computer's file structure. Imagine starting with your customer type, then for each customer type you can separate into segments by customer size, then for each type and size you further segregate by product group, etc. The higher up the hierarchy an attribute is, the more influence that item has on a model.
- **Consistent:** A single order of data types is applied and any groupings are the same. You might have a hierarchy which starts with customer country, and then customer size. Since the model is consistent, the first step after country is the same for all countries and so on, and the size of groups used is also the same.
- **Static:** This approach can't be easily changed. Technically, a segmentation can always be changed, but often the work involved to evaluate alternatives, and deploy the change means that change is a rarity.

Optimization algorithms have been built to operate on this foundation, but the restrictions created by the consistent and static approaches create fundamental flaws. Price optimization tries to work around these issues and fill in the blanks, but what are the flaws?

Consistency

By creating a consistent model, we are deciding that we won't segment in each area of the business based on its price drivers, but rather we will segment the whole business based on the best overall drivers. In effect, you're telling each of your markets that what is driving demand is the same in every other market. Consistency in grouping is also problematic. If you have 3 customer size categories, but a given country has only small customers, they might all be in the same size category. The fundamental flaw with consistency is that it leads to segments which are not perfect in any market, and historical transactions in the segments do not represent truly comparable business.

Stability

The same issue can be caused by stability. When market conditions change but the segmentation model doesn't, we create segments which don't correctly group similar transactions for our price setting. The introduction of new pricing based on segmentation and optimization will change the market signals in the historical price record. In effect, using a segmentation will make that same approach invalid unless it can be adapted.

Optimization to the Rescue?

We are asking that the optimization engines set prices based on groups of transactions which are not truly comparable, while also dealing with segments which have little or no data. Could relying on machine learning and AI to fix these problems simply be wasted effort?

Dynamic Pricing Segmentation

There is a new concept, whereby machine learning and AI are applied to the creation and maintenance of the segmentation. Dynamic pricing segmentation has the potential to create and maintain segments which all have sufficient data, and are always relevant to their market. If you can accurately group and maintain your historical data by market specific willingness to pay, it is easier to use that data to set reliable market or customer specific pricing. ❖