AI-Powered Revenue Management

By Ahmet Kuyumcu

Artificial intelligence (AI) is ubiquitous and set to be a significant driver of the world's economic activity in the next decade. It's a constellation of many technologies working in tandem to enable machines to sense, comprehend, act and learn with human-like levels of intelligence. Tools like machine learning (e.g., your credit card company sends a text about potentially fraudulent activity) and natural language processing (e.g., your phone helps you with the next likely word in a sentence) are part of the AI landscape. They'll continue to affect everything we do as we collect more data and enhance algorithms for better decision-making.

As in other industries, AI will transform every layer of self-storage operation, too, including customer service, tenant access, security, finance, sales, marketing and revenue management (RM). An essential tenet of RM is to take what you have (data) and generate information about what you don't have (a prediction of customer behavior) to improve your decision-making (pricing). Being primarily a predictions technology, AI will profoundly enhance RM for self-storage businesses.

AI-powered RM is all about intelligent pricing, demand forecasts, competitor rates and price sensitivities, while considering any number of other inputs, including demand drivers such as seasonality, promotions, sales channels, demographics and special events to maximize profit.

Self-storage operators must routinely resolve many complex and uncertain pricing questions such as:

- What to charge for each size/type unit
- When to increase/decrease street rates
- When to offer promotions and which to offer
- How to measure the impact of the price and promotion on demand
- How to respond to competitive rice changes
- How much and how often to increase existing tenant rents
- Which stores and channels to target and effectively spend marketing dollars

AI-powered RM will reduce the uncertainty by answering each question, allowing storage operators to better predict when they should push prices higher to capture upside or lower them to prevent volume loss. Further, automation will mitigate pricing complexity, accelerate decision-making and enable granular insights.

AI is also self-enforcing as new pricing strategies are deployed. The system will learn from the new input data, train it, improve its accuracy with feedback and, in turn, continuously provide new insights and recommendations.

This article discusses three critical components for AI-based RM: demand forecasting, competitive pricing and rate increases for existing customers.

Demand Forecasting

Despite the importance of RM, many self-storage operators still set prices reflexively using intuition based on recent events. The correct approach is to be proactive, to price units *ahead of* time based on data-driven forecasting. With copious and varied data now available, opportunities exist to gaze into the future, forecast demand at different price points, and set rates accordingly.

Consider the accompanying line graph, where the solid portion of the lines shows actual cumulative move-ins and move-outs, and the dotted portion shows the daily cumulative forecasts for both. On June 1, we observed 12 move-outs and two move-ins. The reactive human tendency would be to drop rates based on occupancy loss.
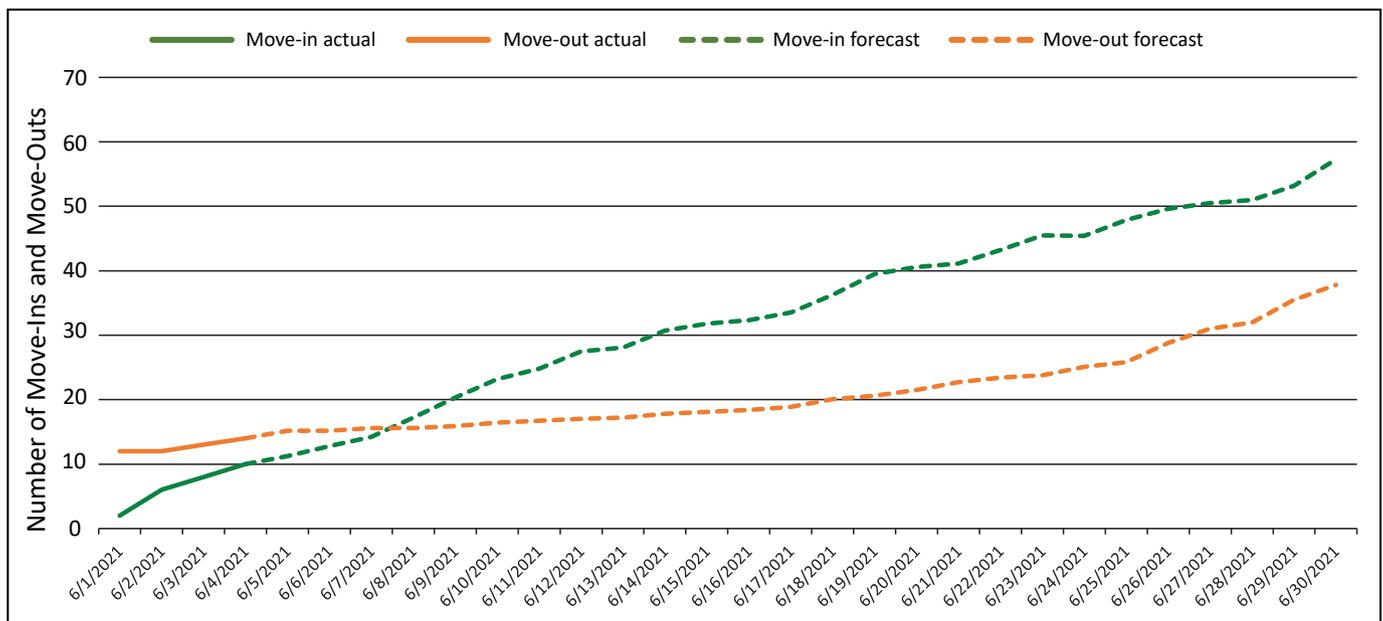
However, the correct approach in this situation is to maintain or raise rates, since we expect 19 more move-ins than move-outs by the end of a busy summer month.

Conversely, this activity will change during late summer, where much higher move-outs than move-ins are expected. Even with strong occupancy levels, rates should drop in anticipation of higher move-outs to capture new rentals with higher rates.

Proactive pricing is a key profit driver and a central component of an AI-based RM system. There are many forecast types—move-ins and move-outs, upgrades/downgrades to higher/lower-valued unit types, conversions, and cancellations. Each forecast type is based on many parameters such as price, promotion, unit type and size, customer segment, competition, season, and other market conditions. For the forecast to be accurate, the model parameters must be continuously validated against actual data.

Accurate forecasts provide critical input and confidence into pricing decisions and prepare you for low-demand periods while capitalizing on high ones. AI-based RM makes this possible using data patterns that eliminate guesswork and knee-jerk reactions.

Competitive Pricing

Pricing is *relative*. Real-time competitive data is now a click away for self-storage customers making comparative purchasing decisions based on relative prices, not actual prices in isolation. Often, facility operators don't know how to cope with a new competitor opening down the street. While ignoring competition is dangerous, overreacting by lowering your prices can be just as unsafe.

The accompanying chart summarizes an output of our AI models based on tens of thousands of stores, unit types and matching competitors across many markets. Competitive price changes have different degrees of impact to own customer demand, from high impact 25% of the time to no impact 31% of the time. There are even cases where competitive impacts differ by unit types within the same store.

AI-powered RM systems will understand the differences in each competitor at store and unit-type level, sense or even predict the competitive price changes, and respond to the shifting market conditions without delay. Moreover, they'll use competitive qualities and

Impact to Own Demand

None 31% · High 25% · Medium 26% · Low 19%
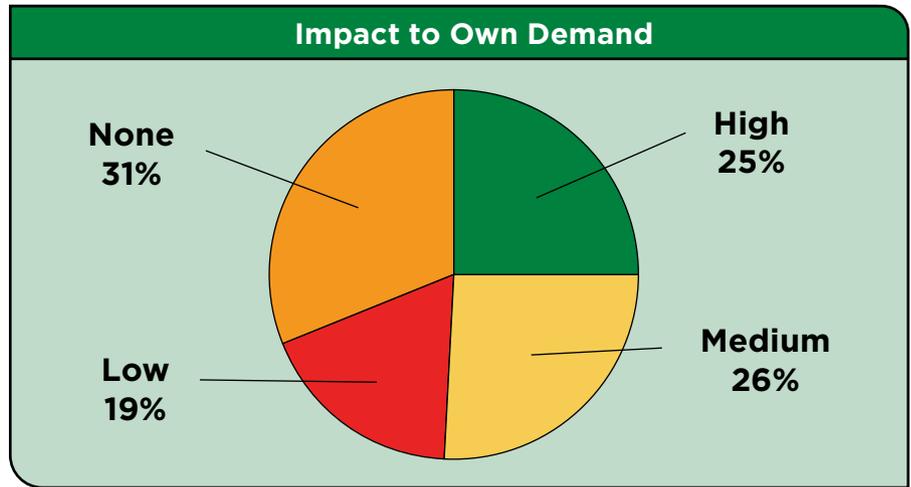
positions to employ different competitive response strategies.

Rate Increases for Existing Customers

To optimally raise rates for existing self-storage customers, facility operators must estimate a tenant's tendency to move out in response to a rent increase. You establish this by comparing two customer segments: "eligible" customers receiving a rent increase and "baseline" tenants who aren't receiving an increase during the same period. The difference in move-out percentage, along with the change in revenue between the eligible and baseline segments, allows you to estimate the revenue opportunity in raising rents for existing tenants.

In the following example, a group of eligible customers pay 12.8% higher rents due to an increase and have a move-out ratio of 7.5%. However, a comparable baseline group with no rent increase has a move-out ratio of 5.4%. This results in a 2.1% higher propensity to move out for eligible customers, which must be used to optimize the revenue opportunity for increases.

clustering algorithms will identify the best customer segments with varying sensitivities to price increase and compare them with their baseline. The common attributes include commercial vs. individual, auto-pay vs. manual, length of stay, the number of units rented by a tenant, and distance between where they live vs. where they store.

Change Management and User Buy-In

People deal poorly with uncertainty. If we have rich data on a self-storage unit type, AI-based RM decisions are always superior to those made by humans. You should be aware of the biases and errors humans are likely to introduce into the process, enabling you to counteract these natural tendencies. Most often, people resist giving up control over something as crucial as pricing.

Success requires key executive's enduring commitment, favoring fact-based decisions over intuitive conclusions. From initiation, the CEO must send a powerful message organization-wide, asking all team members to support the new AI and data-driven pricing direction. In addition, AI-based RM must integrate into existing

Customer Segment	Rent Increases	Move-Out Ratio
Eligible customers	12.8%	7.5%
Baseline customers	0.0%	5.4%
Difference	12.8%	2.1%

AI-based RM will use this type of analysis and evaluate differences in customer behavior across many attributes that determine how sensitive a customer is to rent increase. Its classification and

processes for sales, training, certification and bonuses based on system compliance.

On the other hand, there are circumstances under which AI-based RM decisions benefit from human intervention.

Under these conditions, human judgment will be better than a system using inappropriate data. These decisions usually occur when history doesn't represent the future or important system data is missing, such as a new competitor sharing your market. There might also be thin data resulting in a poor prediction. For these cases, user influence is the most appropriate to have humans and machines together, achieving better results. Machines will also learn over time with more data, reducing the need for user intervention.

What Lies Ahead

AI is fundamentally a predictions technology that'll enable the discipline of RM to reach new heights. It'll help you understand the totality of the self-storage market, showing you where to spend your marketing dollars as well as when and how to offer promotions, to whom, and via which channels. It'll show you how to estimate and respond to competition, raise existing customer rates, control move-outs, and increase the expected lifetime value of your tenants. It'll also tell you what unit mix is optimal for each store, where and when to purchase or divest properties, and much more.

AI-powered RM will dominate many industries, including self-storage. The continuous flow of data along with its variety, velocity and accuracy will continue to increase, giving us better predictions, more significant insights and accurate pricing.

The business imperative is clear. Potential results from pricing are too positive to be left to manual processes or managed by backward-looking, rule-based systems. In fact, the near-universal adaption of AI for self-storage RM is an inevitable outcome. All noteworthy operators will either adapt to AI or end up being acquired by others who do. **ISS**

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