# Consumer Pattern Analysis

## Patterns in Retail Data

## Processing Machine Learning in Retail

*As mentioned earlier, retailers have no shortage of data—just the opposite.*

There is typically so much data that it is overwhelming at times. Every day, there is data collected on items sold, product attributes, prices, promotions; the list goes on and on. That being said, to make use of this data requires certain techniques.

Therefore, the data mining stage needs to occur. Predictive analytics and machine learning are most useful in mining data because it is automated. These technologies are able to look at vast amounts of data and come up with patterns and correlations that are much more useful to retailers.

Personalization within data mining is key. Personalizing product offerings on a store level are essential to increasing sales. Knowing what items to carry and when to carry them or promote them can be challenging. However, this information is readily available when machine learning techniques are deployed.



## CHALLENGES & PITFALLS

There are a few things that need to be taken into account when looking at retail data pattern recognition. So here are a few guiding principles.

Clean Data: First and foremost, you need to have good, clean data in order for machine learning techniques to work well. If you have messy data with missing information, the results won't be as good.

History: Second, the more history you have the better. This is simply because the more data you have, the bigger the sample size will be. By having more data, the results will be more accurate.

Multiple Factors: Third, having more "causal factors" present will further increase results and the overall effectiveness of the models being used. Things like weather, promotions, competitor locations, etc. will have an impact on results. The more of this information you can incorporate into the models, the better the overall results will be.

Finally, Machine Learning can be dumb sometimes and needs to be monitored. Even though it is extremely capable, sometimes it makes logical errors. For example, the system can look at platinum bricks and compare all of the data and then recommend that these platinum bricks be sold at $5.00. Platinum bricks cannot even be produced for this amount, so therefore this is an error in the system. It doesn't understand profitability the way humans do, so it needs to be watched and supervised.

# What are the consumer patterns in my business and how can I use them prescriptively?

## HOW TO GET STARTED

If you are considering getting started using data and applying consumer pattern principles within your retail environment, there are a few things to keep in mind.

1. Ask the right questions. Ask things like what are the consumer patterns in my business and how can I use them prescriptively?

2. Normalize your data. Clean up the data and make sure it is in a good, usable condition to conduct an analysis.

3. Retain your history. As mentioned previously, having more data is better. If you don't already have one, you will need a system to keep and store data.

4. Have a data science or analytic resource. You don't always need to have these functions in house. Like human resources and even sales, many job functions can be outsourced.

5. Connect to the operational system and use, be sure to supervise your data and do risk assessments as needed.

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# WHY YOU SHOULD USE MACHINE LEARNING SOFTWARE

Most of the information covered is quite advanced. It can seem overwhelming if this is the first time you are discovering machine learning. While the machine learning itself can be very complex, using it is rather simple.

Additionally, the most profitable retailers are now investing in sophisticated techniques that leverage increasingly powerful computing resources to make smarter decisions aligned with their ultimate goal: greater profitability.

If you want to take your business to the next level, machine learning software and techniques are going to get you there.

4R Systems
801 Cassatt Road, Suite 202
Berwyn, PA 19312 USA

+1 610-644-1234

info@4rsystems.com

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