



White Paper

Analytics for Behavioral Loyalty Rewards Programs

Micro Trends Discovery
Machine Learning
Deep Learning



Need for Better Analytics

Behavioral loyalty programs critically depend on the appetite of their members to earn points and redeem rewards. The more members earn, the more committed they are to the program. However, the habit of earning points is hard to form and not as stable over time. Loyalty programs members experience fatigue of constantly having to take actions to earn points, as well as they are lured into other loyalty programs. Various research projects indicate that individuals join more than 7 loyalty programs and are active in less than half of them. Because of this loyalty programs are turning to micro trends analytics to drive both member and vendor engagement.

Micro Trends Discovery

Micro trends discovery, also referred to as motif discovery, tracks consumer behaviors over time and applies machine profiling techniques to discover and monitor behavioral patterns that can be monetized. To use an analogy, consumer interactions are tracked like stock trades on the stock market and the analysis who detect early trends reap the largest rewards from trading on this knowledge. Like in stock trading, micro trends reveal the behavioral footprint of each individual member. They indicate new habit forming behaviors and can be used in many ways to nudge the individual member to take certain actions:

Member onboarding: The initial experience of new members matters. Today members are typically put into segments and their onboarding varies by segment. Segments are based on member attributes, such as demographic and socio-economic attributes. However, it is more reliable to target new members based on their actual behavioral patterns and incent them to change their behavioral patterns in some desired direction. For example, a stable earning habit can be formed over a period of six months. Hence, the behavioral pattern can be monitored daily and matched to other known behavioral patterns. Incentives can be triggered based on the matching motifs to affect the member's behavior.

Churn management: This is the reverse of the member onboarding. In this case, we monitor for a downward change in the points earning or engagement patterns, and we target members who are gradually getting disengaged. Members rarely quit instantly. More often they disengage themselves from the program over time. Member disengagement may be the result of many things that are impossible to infer from their attributes and average engagement statistics. For example, a declining points earning may be the result of a member joining another program. There is not data to verify that, but there is enough data to show a clear micro trend of a newly forming habit that ultimately leads to churn.

Revenue optimization: Each program member has a distinct sequen-

tial pattern of earning loyalty points. Some members may earn points two times per week while others six times per week. Knowing the sequential patterns has two benefits: (1) we can nudge members to increase the sequence based on real behavioral analysis, and (2) we can identify situations where members earn points irregularly, e.g., sometimes they present their loyalty card but other times then don't for unknown reasons. Sequence analysis offers another way to understand points earning behaviors. Unlike RFM, which is based on aggregate data and, thus, obfuscates a lot of information in the averages, sequence analysis is very precise in revealing member revenue optimization opportunities.

Motif correlations: Correlated behavioral patterns show well established habits. That can lead to marketing opportunities to enable more points earning. For example, consistent patterns of shopping together for groceries and liquor, or for clothing across multiple stores, etc. The correlated behavioral patterns reveal much more information about the actual consumer preferences and spending habits compared to simple point in time correlations as in traditional market basket analysis. It can also reveal opportunities to provide incentives to nudge new or more frequent correlated behaviors.

Participating vendors analysis: Micro trends discovery offers a unique opportunity to enhance the relationship with vendors who participate in the loyalty program. All vendors are interested in consumer trends and want to leverage them to move the needle. Insights about consumer behavioral trends can inform vendors how to price products and award points to nudge consumers. Typically vendors have a few segments and try to leverage incentives to move consumers into higher spending segments. But a few segments means that consumers have to spend a lot more to move from one segment to another. Micro segmentation based on behavioral patterns allows vendors to nudge a lot more members to spend a little bit more. The increase in share of wallet can be smaller, but overall the effect is higher revenue and a much more durable consumer habit.

Vendor churn: Micro trends analytics helps to prevent vendor churn too. It allows to track trends by stores, locations, goods, etc., pin point inefficiencies, and work together to enhance the weak spots in the vendor network.

Machine Learning and Deep Learning

Combining micro trends analysis with machine learning and deep learning has additional advantages:

Points sensitivity: You can determine precisely the points sensitivity to particular purchases, and, thus, optimize the points offers to drive more sales. Points sensitivity can be compared to price sensitivity to

determine how to leverage points to lower vendor cash discounts. Points sensitivity can be analyzed on the individual consumer level to create unique points offers or redemption awards to maximize the value of points.

Demand forecasting: You can create very granular demand forecasting for points and purchases. This information can help vendors plan points-based campaigns across categories and geographies to minimize cash discounts.

Points earnings forecasting: You can forecast the individual members points earnings and nudge them to take paths to earn more points thus making the program more valuable to both members and vendors.