
CASE STUDIES

“Case Studies” presents a case pertinent to contemporary issues and events in investment management. Insightful and provocative questions are posed at the end of each case to challenge the reader. Each case is an invitation to the critical thinking and pragmatic problem solving that are so fundamental to the practice of investment management.

AI APPLICATIONS IN MASS CUSTOMIZATION: FROM PREDICTIVE ANALYTICS TO GENERATIVE AI

Seoyoung Kim^a



Bob, who is the head of retail client services (RCS) at his boutique investment management firm, has enjoyed his standing as a beacon of success in *mass customization*.¹ Under his direction, Bob’s fledgling RCS division grew substantially and dramatically through his clever and innovative use of predictive analytics to attract and retain smaller retail clients—at one point, even generating greater revenues than the firm’s flagship business catering to high net worth (HNW) families.²

But now, Bob has come to the uncomfortable realization that he has rested on the laurels of his past achievements for far too long. In recent years, the RCS division has seen a steady decline in growth, and now, to his alarm, is suddenly seeing an outright accelerated decline. Spencer, his VP, points

out that they have become complacent from their successes as early movers in using social-media analytics. Namely, they simply underestimated the ease at which other boutique firms would follow suit and, worse, become much better at generating seemingly bespoke solutions for the masses.

Spencer further points out that continued reliance on predictive or interpretive *artificial intelligence* (AI) is no longer sufficient to sustain their competitive advantage—the next generation of success in mass customization now also requires expertly navigating *generative AI* models, which are designed to generate new content and ideas rather than focusing on interpretative or predictive analyses. Although earlier attempts at generative AI mostly produced entertaining adlibs and frustrating customer-service bots, newer models released within the last 12-to-18 months are markedly superior in their ability to emulate the idiosyncrasies of human-produced content and

^aAssociate Professor of Finance, Santa Clara University and a Senior Editor at the Journal of Investment Management. E-mail: srkim@scu.edu.

human ideation. As a case in point, Spencer admits to Bob that several of her recent ideas were derived from brainstorming sessions with ChatGPT.

For instance, one session gave her the idea to complement the personalized AI-driven financial advice and product recommendations with AI image generators to customize the color palette and imagery in emails sent to certain clients as well as the cookie-enabled webpages accessed by those clients. Another session prompted Spencer to explore segmenting clients based on predictive insights gleaned from the images on their Instagram and Pinterest accounts. Moreover, she was delighted by the sample framework produced from a very simple and generic prompt to “provide a structured framework of best practices in using predictive analytics for mass customization in financial services” (shown in Appendix A).

With some finessing, Spencer anticipates increasingly successful sessions with ChatGPT, including the generation of improved and better specified checklists for the current RCS team as well as guidelines to onboard new members going forward. In fact, Bob’s approval of her recent ChatGPT-inspired insights had motivated her to begin training in *prompt engineering* to contextualize, specify, and iteratively refine prompts to elicit better responses and generate more relevant content.

In turn, Bob congratulates Spencer on her perseverance to prove her indispensability, particularly in the face of Bob’s prior dismissal of the initial ChatGPT buzz. He cautions her, though, that he is particularly concerned with potential compliance and ethics violations arising from content generated by this black box AI, and the two agree that even the remotest of corner cases must be identified and comprehensively tested to avoid unintended consequences from unwittingly relying on a seemingly sentient bot.

Questions

- (1) What ethical or legal concerns may arise from the use of generative AI to complement the firm’s existing use of social-media analytics?
- (2) When might images and color schemes provide better predictive insights than textual narratives to segment clients and anticipate their needs?
- (3) What other types of inputs would be particularly helpful in generating valuable content and insights in furtherance of improved mass customization in financial services?

Appendix A. ChatGPT Output from Prompt

“Provide a structured framework of best practices in using predictive analytics for mass customization in financial services”

ChatGPT

Certainly! Here’s a structured framework of best practices for using predictive analytics for mass customization in financial services:

- (1) **Define Objectives and Goals:**
 - Clearly define the objectives of your predictive analytics initiative, such as improving customer satisfaction, increasing cross-selling opportunities, or optimizing product recommendations.
 - Set specific goals and KPIs that align with your objectives, such as customer retention rate, revenue per customer, or product adoption rate.
- (2) **Data Collection and Integration:**
 - Collect relevant data from various sources, including customer transactions, demographics, browsing behavior, social media interactions, and customer feedback.
 - Integrate and consolidate data from disparate sources into a centralized data

repository or data warehouse, ensuring data quality, consistency, and accessibility.

(3) Customer Segmentation:

- Utilize predictive analytics models to segment customers based on factors such as demographics, behavior patterns, financial preferences, and life stages.
- Identify high-value customer segments with specific needs and preferences that can be targeted for mass customization.

(4) Predictive Modeling:

- Develop predictive models using advanced analytics techniques, such as machine learning algorithms, regression analysis, or clustering methods.
- Train predictive models on historical data to predict future customer behaviors, preferences, or needs, such as product preferences, risk tolerance, or likelihood of churn.

(5) Personalization Strategies:

- Tailor financial products, services, and marketing communications to individual customer segments based on predictive insights.
- Implement personalized recommendations, offers, and experiences across various touchpoints, including digital channels, branches, and call centers.

(6) Testing and Optimization:

- Implement A/B testing or multivariate testing to optimize mass customization strategies, testing different product configurations, pricing strategies, or messaging variations.
- Continuously monitor and analyze the performance of predictive models and personalization strategies, iterating and refining based on feedback and results.

(7) Compliance and Ethics:

- Ensure compliance with regulatory requirements, data privacy laws, and ethical

guidelines when collecting and analyzing customer data.

- Implement data governance and security measures to protect customer information and maintain trust and transparency.

(8) Customer Engagement and Feedback:

- Solicit customer feedback and preferences through surveys, interviews, or social media interactions, incorporating qualitative insights into predictive models and customization strategies.
- Foster ongoing engagement and communication with customers, providing opportunities for feedback, support, and relationship-building.

Actionable Insights:

- Use predictive analytics to anticipate customer needs and proactively offer personalized financial advice, product recommendations, or investment strategies.
- Leverage customer segmentation to target specific customer segments with tailored marketing campaigns, promotions, or loyalty programs.
- Implement dynamic pricing strategies based on predictive insights, adjusting product pricing and offers in real-time to maximize revenue and profitability.

Avenues for Further Exploration:

- Explore the use of emerging technologies, such as artificial intelligence, natural language processing, or blockchain, to enhance predictive analytics capabilities and enable new forms of mass customization.
- Investigate partnerships with fintech startups or technology vendors specializing in predictive analytics solutions, leveraging their expertise and innovations to accelerate your customization efforts.

- Experiment with innovative approaches to mass customization, such as gamification, augmented reality, or virtual reality experiences, to engage customers in new and interactive ways.

By following this structured framework and leveraging actionable insights, financial services organizations can harness the power of predictive analytics to drive mass customization initiatives, deliver personalized experiences, and enhance customer satisfaction and loyalty.

Notes

- ¹ Mass customization in financial services refers broadly to scalable tailor-made solutions achieved by algorithmically customizing financial products and services to meet specific preferences of individual clients.

- ² For historical context on Bob's meteoric rise, see *Using Social Media Analytics in the Management of Investment Management* (Kim, 2019).

Reference

- Seoyoung, K. (2019). "Using Social Media Analytics in the Management of Investment Management," *Journal of Investment Management* **17**(2), 1–2.