What is the Next Best Interaction with Broker-Dealer Firms?

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About MFS

- Present in 18 countries
- 10th largest long-term mutual fund manager in the US
- One of the oldest asset managers in the world
- Part of the Sun Life Financial group

Why it matters

$553 bn assets under management (as of June 2022) + Around 150 US salespeople =

Problem Statement

Optimizing the interactions between MFS' sales team and financial advisors (MFS' clients) working at broker-dealer firms with 3 main focuses:

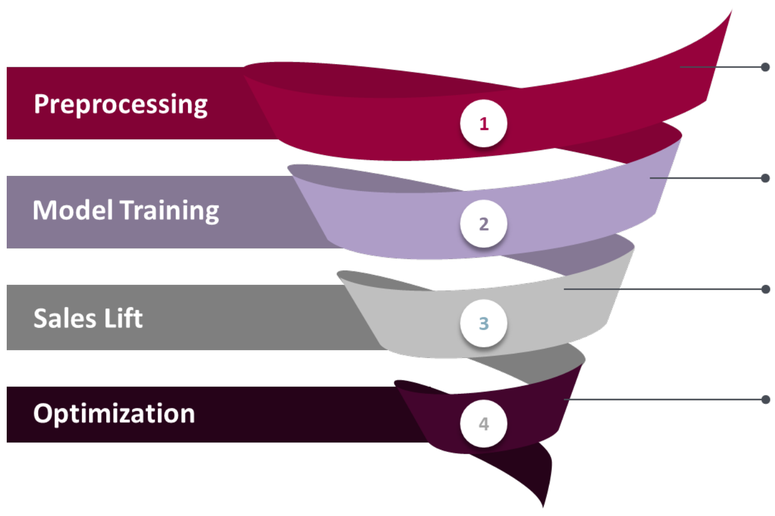
WHO to target?

WHAT topic to discuss?

HOW to target them (call or meeting)?

Examples
- Practice Management
- Thought Leadership
- Asset Class
- Theme
- Products

Modeling Pipeline and Results



Feature engineering: interaction-related features, past sales, firm, tenure, performance, etc.

Predict the next 3-month sales

For each advisor compute the expected sales lift for topical calls and meetings

Use an MIP formulation to obtain the optimal allocation of interactions

Data

- Transaction data: advisor ID, date, product, quantity traded
- Performance and benchmark data: returns, excess returns, aggregate metrics (Sharpe ratios, etc.)
- Interaction data: advisor ID, date, interaction type, interaction content (topics evoked, etc.)

5 years of data

550K advisors

630+ features

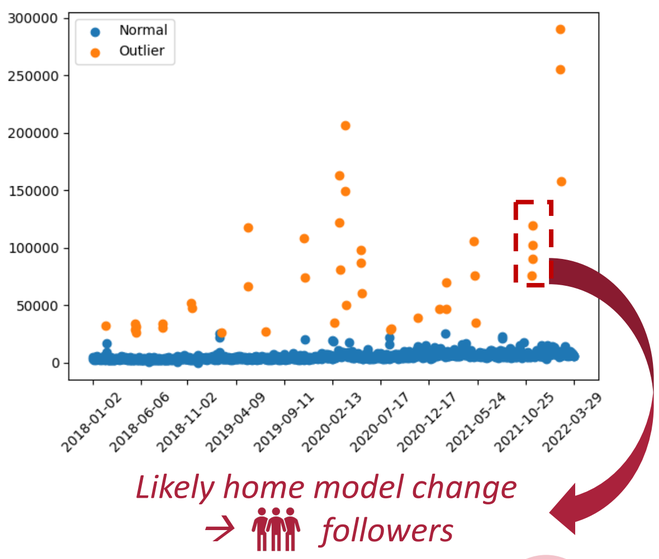
Interactions with top 10 firms account for 85% of total

1 Segmenting broker-dealer advisors

Independent advisors: have the most control over their sales

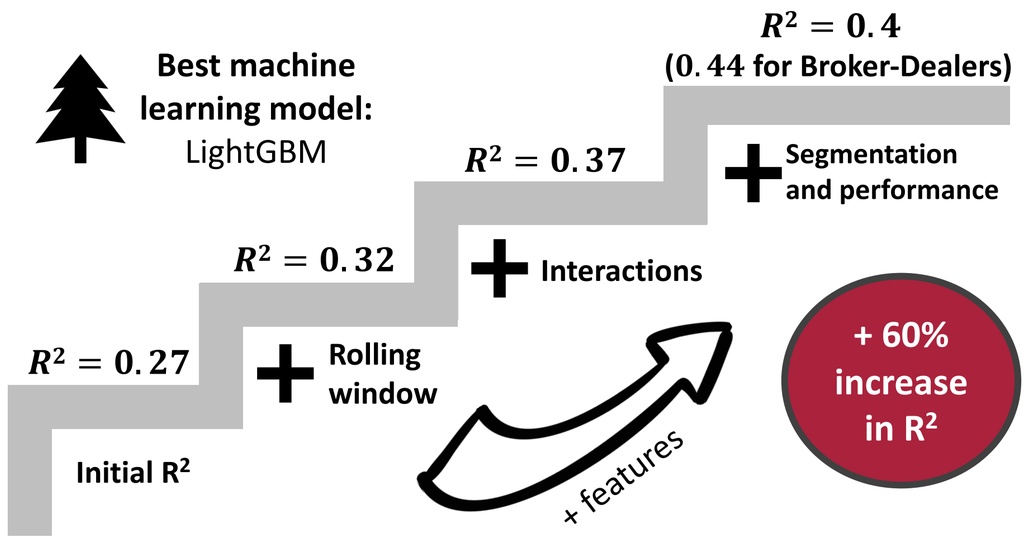
Follower advisors: whose actions are influenced by their home office (investment HQ)

Features that can be included as standalone indicators on internal website

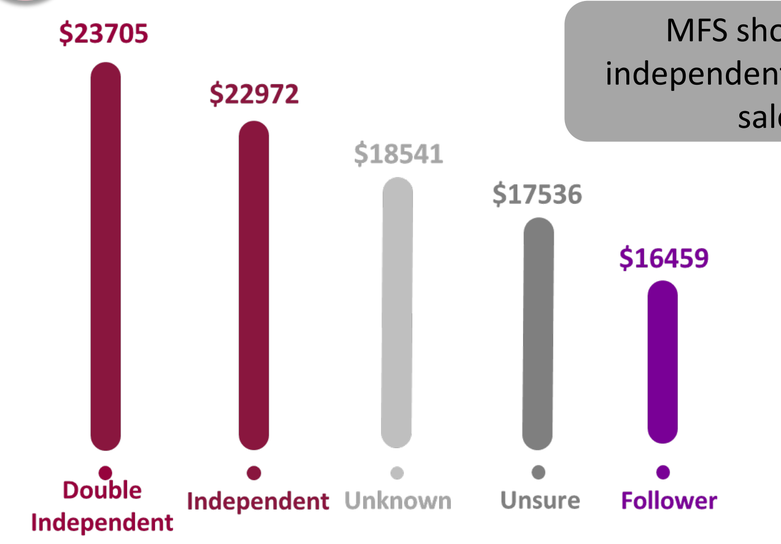


Likely home model change → followers

2 Model Training Results (for the last 12 months)

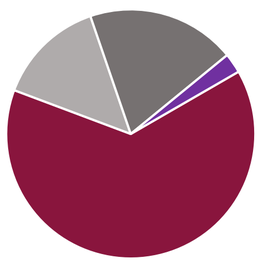


3 Predicting sales lift for calls and meetings



75th percentile monthly call sales lift for the period: Jan 2020 – Feb 2022

MFS should target independents to maximize sales lift



Breakdown of the different advisors for Feb 2022

4 Prescriptive Step

$$\alpha_m^* = \max_{\substack{x\in\{0,1\}^{N_m\times T}\\ w\in\{0,1\}^{N_m\times T}\\ z\in\{0,1\}^{N_m}}} \sum_{i=1}^{N_m}\sum_{j=1}^{T} \alpha_{c,j,i}\, x_{i,j} + \alpha_{m,j,i}\, w_{i,j}$$

s.t.

$$\sum_{i=1}^{N_m}\sum_{j=1}^{T} x_{i,j} \le N_{calls}$$ — The number of calls cannot be higher than the historical ones

$$\sum_{i=1}^{N_m}\sum_{j=1}^{T} w_{i,j} \le N_{meetings}$$ — The number of meetings cannot be higher than the historical ones

$$\forall i \in [\![1, N_m]\!], \sum_{j=1}^{T} x_{i,j} + \sum_{j=1}^{T} w_{i,j} \le 1$$ — Forcing at most one topical interaction per advisor

$$\forall i \in [\![1, N_m]\!], \min_{m_0\in\{m-2,m-1,m\}} |ratio_{aff,m_0,i}| + 0.95 \ge z_i$$

$$\forall i \in [\![1, N_m]\!], \min_{m_0\in\{m-2,m-1,m\}} |ratio_{aff,m_0,i}| - 0.05 \le z_i$$

$$\forall i \in [\![1, N_m]\!], \forall j \in [\![1, T]\!], x_{i,j} + w_{i,j} \le z_i$$

Sanity checks based on past interactions

Variables:

α_{cij} : call sales alpha on topic j with advisor i

α_{mji}: meeting sales alpha on topic j with advisor i

x_{ij}: 1 if we should call advisor i to discuss topic j with 0 otherwise

w_{ij}: 1 if we should meet advisor i to discuss topic j with 0 otherwise

m : current month

+12%

median additional sales on historical backtests

67%

average **interaction match** between model and MFS on historical backtests

45%

average **topic match** between model and MFS on historical backtests