HULT
INTERNATIONAL BUSINESS SCHOOL

Apprentice Chef Analysis

A2: Classification Modelling Case Study (Individual) – Machine Learning

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Date: March 13th , 2020

Insight 1

"People don't know what they want until you show it to them" – Steve Jobs

31% of ecommerce site revenue is generated from personalized product recommendations (Barilliance, 2019), and McKinsey reports that 35% of Amazon's marketplace revenue is generated by their recommendation engine (Salesforce, 2020). A similar phenomenon occurs with our cross-sell promotion, by segmenting customers into 3 groups based on how often they follow recommendations we can see different behavior towards the promotion

Followed_recommendation_pct (%)	Number of customers (%)	Cross sell conversion (%)
0% - 10%	29%	53.3%
20- 40%	31%	40%
>40%	40%	100%

Simply put, users who follow our recommendations very often are extremely likely to participate in the promotion.

Insight 2

Assuming awareness for "Halfway there" is delivered through email. We can observe the relationship between domain group and cross sell success. Following the marketing team's domain classifiers, we can again segment customers by domain type and observe the promotion success.

Domain type	Number of customers (%)	Cross sell conversion (%)
Junk	20%	41.6%
Personal	44%	69.9%
Professional	36%	80.0%

The same is echoed by the correlation of "junk_emails" with "cross_sell_success" being (-0.28) while "valid_emails" (personal and professional) were the opposite (+0.28).

Simply put, users signing up with a junk mail are less likely to participate than those with a valid email and those who sign up with a professional email are the most likely to group to participate.

Recommendation

I would recommend **incentivizing sign-ups with "professional" emails**.

It goes without saying that we want to minimize collecting junk emails because not only does it show weak intent to commit to our brand, it's unlikely that these users ever see any marketing/promotion related emails. (HubSpot, 2013)

That leaves our valid emails (personal/professional). Personal emails represent our biggest customer group and contribute 43% of revenue compared to professionals 40%. However, **the professional group are more likely to convert on the promotion (80%)** and this can be explained by the following infographic (Carter, 2019)
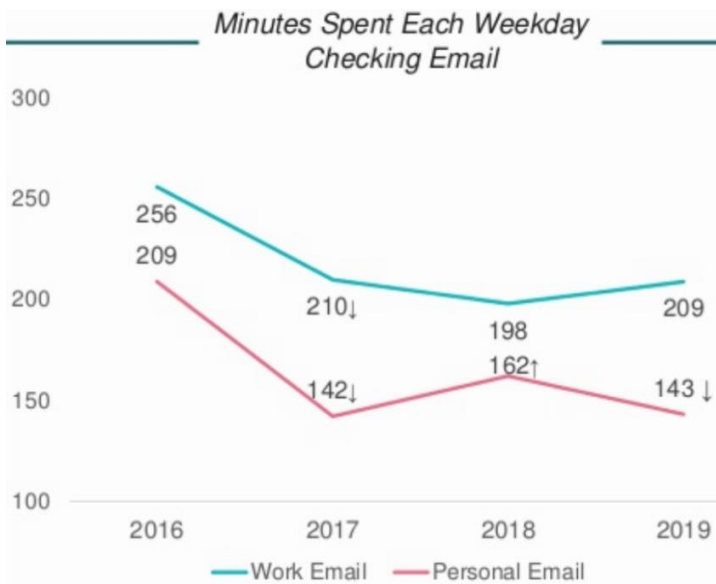
Source: SmartInsights.com
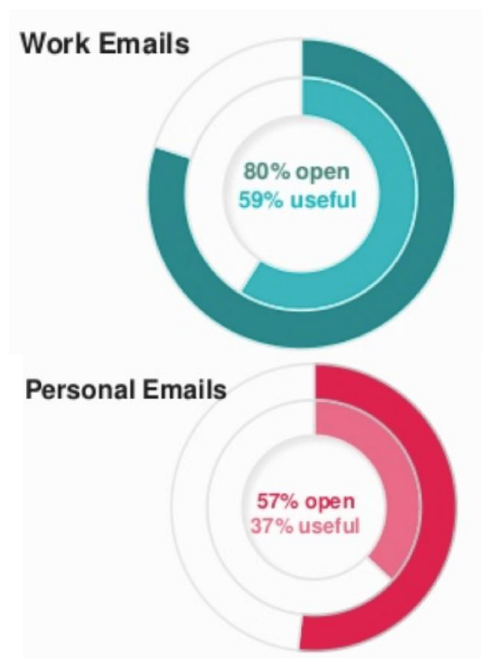
People spend more time reading work emails than checking personal emails. Moreover, the essence/theme of the promotion is about taking a break from the work week which may relate to this audience more. Besides being more likely to convert, **the professional group brought in ARPU of $2139** compared to personals $1983 and junk's $1824.

To get more professional emails we could:

1. Incentivize sign-ups with professional emails by giving suitable discounts
2. Knowing which companies our current users work for, we could explore win-win partnerships with these companies so we can penetrate deeper into their organizations
3. Design sign-up forms to reject "junk" domains

Best model: Gradient Boost on significant with **AUC score = 0.818**

Referencess

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