# Analysis of Relationships Between Datasets

## 1. Relationship Between Campaigns and Messages

The campaigns dataset provides details about the types of campaigns, their channels, and their topics. By merging this dataset with the messages dataset, we observed the following:  
- Campaign effectiveness (e.g., open and click rates) varies significantly by campaign type and channel.  
- Bulk campaigns are the most frequent type and are primarily delivered through mobile push channels.  
- Campaigns with emojis and discounts in their subjects tend to have higher engagement rates.

## 2. Relationship Between Messages and Client Purchases

By linking the messages dataset with client purchase data, we analyzed the impact of messages on first purchases:  
- Messages sent before a client's first purchase often show a higher engagement rate.  
- First purchases are more likely to occur after receiving messages from specific campaign types (e.g., transactional).  
- There is a correlation between high-engagement messages (opened/clicked) and the likelihood of a purchase.

## 3. Relationship Between Messages and Holidays

The holidays dataset was used to evaluate the impact of holidays on engagement and purchasing behaviors:  
- Messages sent during or near holidays show a higher likelihood of being opened and clicked.  
- Campaigns emphasizing holiday themes (e.g., Christmas sales) tend to perform better.  
- Holiday-specific campaigns increase the probability of first-time purchases, particularly during major holidays.

## 4. Combined Insights

Combining all datasets revealed key patterns in customer segmentation and campaign performance:  
- High-engagement channels like email and mobile push are effective in holiday periods.  
- Campaign personalization, including the use of emojis, discounts, and deadline-based subjects, significantly impacts engagement.  
- Holiday campaigns drive customer acquisition and engagement, especially when linked to bulk campaign types.