Empowering Parents: Personalized Recommendations For Italy's Top Pregnancy App

MBAn Students: Jan Reig Torra, Gavin Findlay
Faculty Advisor: Thodoris Lykouris
Angelini Stakeholders: Francesco Tortora, Artem Ugarov, Lida Sorino

The Company

Angelini Industries is a multinational conglomerate headquartered in Italy. One of its divisions, Angelini Consumer, wants to build the “lonely Planet Guide for Young Families”, through its entities:

- **iMamma**
  - App & Website (+2M downloads)
  - Track pregnancy/baby growth

- **Pharma Shop**
  - E-commerce platform

- **Lovely Mind**
  - Educate Subscription Boxes

Angelini possess a valuable, untouched data collection. The primary business goals involve:

- Uniting raw data sets and extracting business insights/KPIs
- Leveraging data to convert content consumers into purchasing customers

**Objectives**

- Pipeline for preprocessing & cleaning data
- Unite data from 3 sources & illustrate relations
- Identify KPIs to measure success and visualize them

**Main Deliverables**

- Dashboard
- Sales Forecasts
- Customer Segmentation & Panel Data Model
- Recommendation System

**Dataset**

**User Database**

- Information input by user, from 2016 onwards
  - Demographics
  - Tracking Inputs – Pregnancy / Children Section

**Web Analytics Data**

- User behavior in the App and Website from Piwik.
  - Click data, events, and visits
  - Available from May 2023

**Orders & Transactions Data**

- E-commerce data from Salesforce
  - Orders & Transactions with iMamma & Lovely Mind
  - Products added to Babylist

**Key Insights:**

- Accuracy 89.86%            Recall 64.08%            

---

**The Dashboard**

- Customized dashboard for measuring business performance
- Linked to Data Lake for live updates

**Understanding the Customer Journey**

**Customer Segmentation and Clustering**

- Orders Data → User product-order vectors
  - Hierarchical Clustering
  - Interpretative Clustering
  - Classification Tree
  - Profile customers with similar orders based on demographics

**Recommendation System**

- Limited sales data (less than 1% of users have ordered, & most only ordered once)

**Business Impact**

- Data-driven decisions
- Metric monitoring

**Panel Data Model**

Elucidate customer journey

- Make interventions at the right time

**Outlet Sales Forecasting Model**

Out-of-sample MAPE 3.48%

**Next Steps**

- Link the Dashboard with the Data Lake
- Incorporate app web analytics data when it becomes available
- Implement the personalized recommendation system, & A/B test vs “most-popular” recommendations to measure performance