

Use case Overview

Problem Statement

In an increasingly digital world, banks must innovate to engage customers effectively. The leading Australian bank faced several challenges in its marketing campaigns:

- **Low engagement rates** due to generic marketing messages.
- **Difficulty in scaling** personalized content creation.
- **Inability to utilize customer data** for targeted marketing.

The primary objective was to leverage Generative AI to create hyper personalized marketing campaigns that resonate with individual customers, thereby improving engagement and conversion rate

High-Level Solution

To address these challenges, the bank to have a Generative AI-based approach, leveraging customer personas to hyper personalize marketing campaigns.

Key Solution Elements:

- **Data Utilization:** Synthetic data incorporating demographic (age, gender, location), behavioral (transaction history, online behavior), and psychographic (interests, values, lifestyle) markers.
- **Personalized Messaging:** Crafting messages tailored to the interests and motivations of each persona.
- **Visual Creatives:** Designing visuals that appeal to the aesthetic preferences of each persona.
- **Channel Optimization:** Selecting the most effective communication channels for each persona.

The AI-generated content ensured alignment with the bank's brand voice and standards, evaluated based on deployable solutions, code quality, campaign quality, model accuracy, and speed.

This approach could transform the bank's marketing efforts, improving engagement and conversion rates through precise, personalized interactions.

Assumption

As this is an exercise few solutions are simplified such as usage of ML algorithms, deployed basic OpenAI model, email generation UI etc.

Banking customer Journey

Generative AI-based solution can enhance the customer journey for the Australian bank, refer below the various touchpoints:

Awareness Phase:

Utilize Generative AI to create highly personalized digital ads and email campaigns, leveraging customer data to tailor messages and visuals that resonate with individual preferences, thus increasing the likelihood of attracting potential clients.

Consideration Phase: Implement AI-driven chatbots and virtual assistants to provide real-time, personalized assistance, answering customer inquiries with human-like responses that cater to specific needs, boosting engagement and trust.

Decision Making Phase:

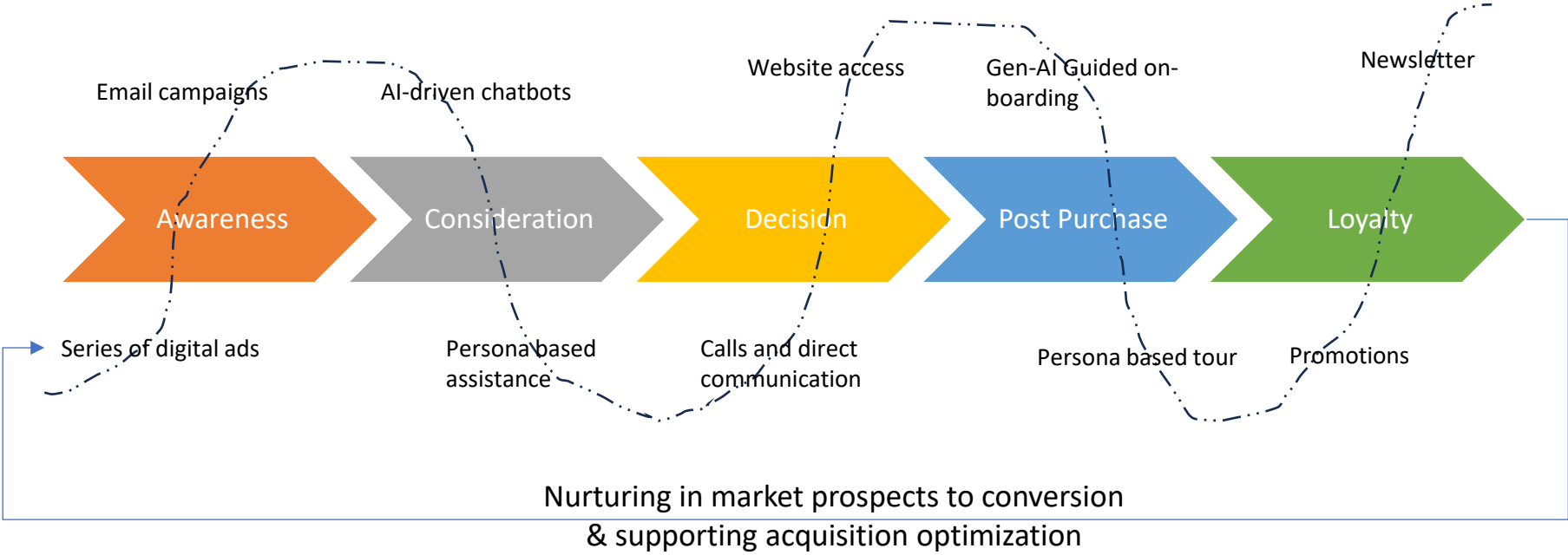
Deploy Generative AI to automate and streamline the application process by generating personalized application forms, automating document verification, and performing risk assessments, making the process quicker and more efficient.

Post-Purchase Phase:


Use AI to generate personalized follow-up emails and notifications, offering tailored advice and support. AI can also analyze customer feedback from multiple channels to monitor satisfaction and address issues promptly

Loyalty Phase:


Employ AI to craft personalized newsletters, promotional offers, and recommendations based on individual customer behavior and preferences, enhancing the customer experience and fostering long-term loyalty. Generative AI can craft nuanced, contextually relevant, and engaging content at every step of the customer journey, providing a seamless and personalized banking experience.



High Level – AI Solution for Hyper-personalized campaign



Data
Preparation
& Processing



Feature
Engineering

Data Preparation & processing Solution steps


1. Import various libraries
2. Define the constants on synthetic data and features
3. Functions to create random values
4. Convert the generated data to a dataframe
5. Label encoding to convert categorical to numerical
6. Scale the data for selected features
7. Split the data for training & testing
8. Identify champion algorithm

Model Training and scoring

1. Use ML model (say classifier or discriminator model)
2. Fit the model on the training data.
3. Make prediction and evaluate the model
4. Load the trained model, label encoders, and saved files using pickle
5. Using flask app Inference & predict the personas



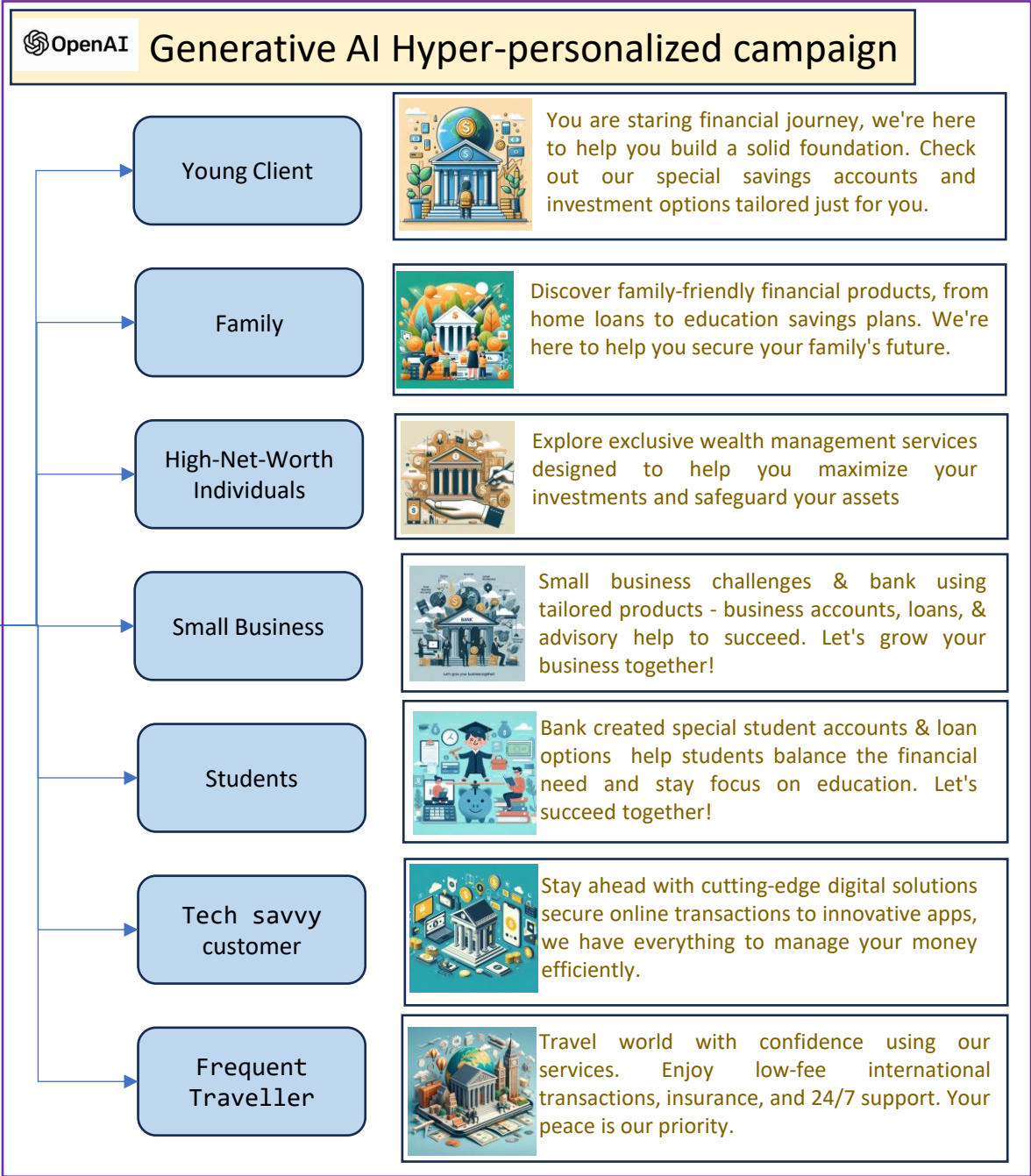
Model
Training



Model
Inference

Generative AI Hyper-personalized campaign

1. Using Predicted retail banking Persona, Construct a prompt with product details, offer, and target audience.
2. Send the prompt to Azure OpenAI and get the generated email content
3. Use the pre-generated campaign banners and email the marketing message to the appropriate personas.



Sample Snapshot – UI layer for real-time prediction using customer front-end

Techniques used for model training:

- Grid Search or Random Search to find the optimal hyperparameters
- Recursive Feature Elimination (RFE) to select the most important features
- Ensemble methods - Combine predictions from multiple models to improve accuracy
- Used cross-validation to get a more robust estimate of model performance

Prediction mechanism:

- Personas can be predicted either using batch-inference or real-time through UI by feeding the feature values.
- Loads pre-trained machine learning models and encoders using pickle

Alternate model

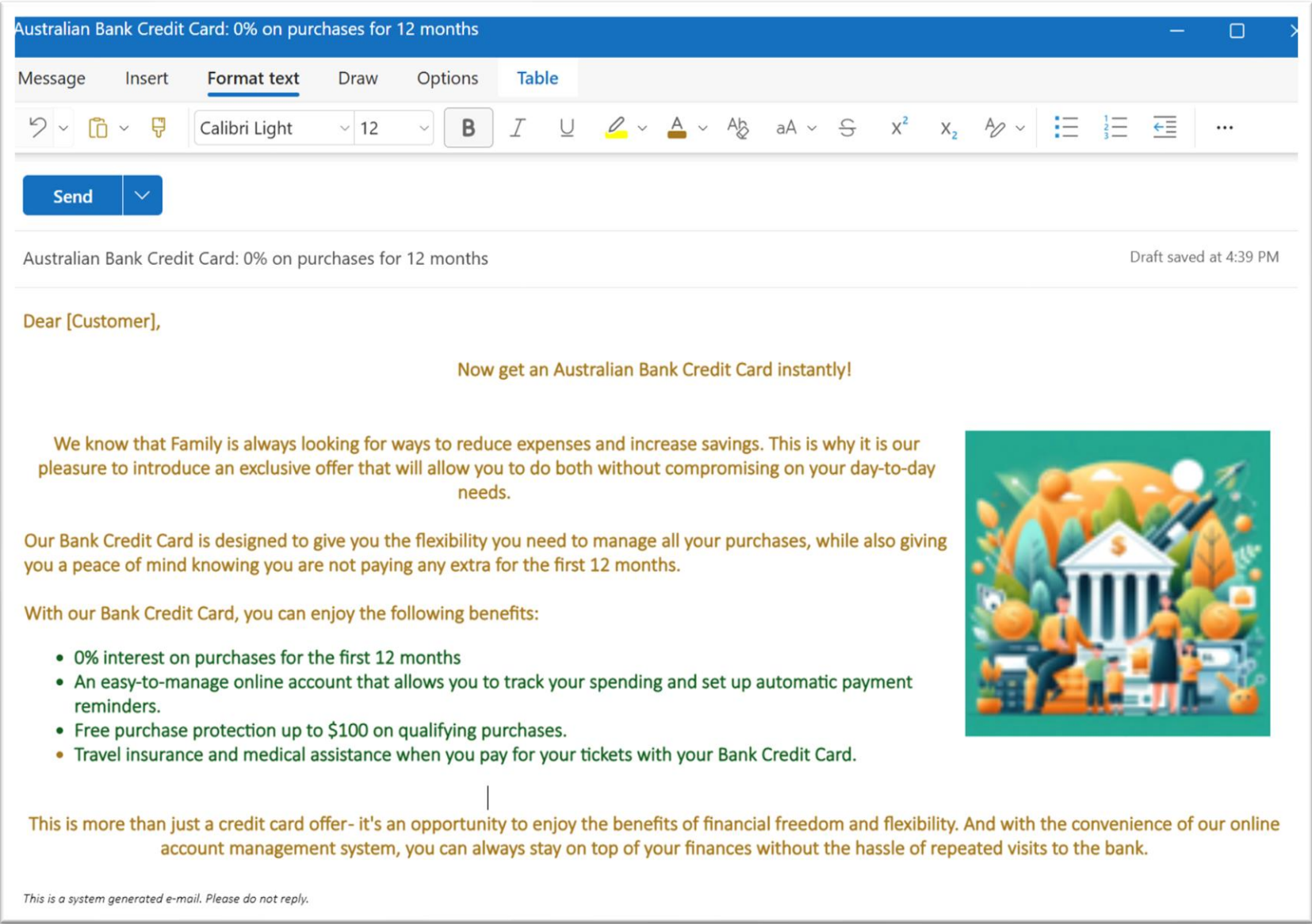
As the model accuracy is around 70% due to high randomness in the synthetics data. Working on alternate model such as GAN based discriminator for better performance.

Sample Snapshot – AI Generated tailored message based on customer personas

Online channel communication:

Techniques used for visual creation and personalized messaging

- Used advanced AI technology powered by DALL-E to transform text prompts into high-quality, detailed images
- Flask based Front-end to predict the persona and generate marketing emails dynamically
- Azure OpenAI services used to Inference the prompt based on personas and generate detailed marketing email content based on text prompts via the GPT-4-turbo model
- There are many CRM tools for messaging the customers as part of the marketing campaign
- Since it is a simple exercise used Outlook for email draft.
- Similar mechanism can be adopted for other personas such as ‘Young Clients’, HNWI, Small Business, Students, Tech Savy and Frequent travelers.



Illustrative image