

AI-Powered Mortgage Advisor and Underwriting Agent

Solution Overview

This proposed accelerator, partially implemented, provides applicant-focused, Conversational AI services to educate applicants on mortgage-related topics, provides personalized advisory services such as loan options, loan eligibility, pre-approved loan amount using FICA score if provided, monthly payment estimations. It also advises applicants on required documentation and proof of funds to prepare for mortgage application. Applicants can use information to determine purchase price, loan terms, downpayment amount.

Once the properties are under contract and mortgage applications are submitted and saved to Azure with all required information such as income, liability, FICA Score, employment history, downpayment amount, bank statements, additional AI services can be applied to aid the bank on underwriting process, reducing tedious manual effort and risks, improving accuracy, and accelerating loan decision making processes.

Key Features:

1. Conversational AI for Mortgage Education Loan Assistance

Educate applicants on mortgage options, processes, and terminology. Provide current loan interests, provide personalized interest rates and loan suggestions based on user input. Helps applicants estimate loan eligibility based on income, liabilities, and FICA scores.

2. AI-Powered Document Intake & Verification

Perform document scanning, data extraction, and identity verification. Azure Doc Intelligence (or newer content understanding services) for Identity Documents, US Pay stubs, US Bank statements. It can be integrated with employment verification services to get quick results.

3. Loan Application Submission

Submit loan application with necessary information and the data is saved in Azure (Azure Cosmos DB and Blob Storage).

3. AI-Based Underwriting & Risk Assessment

Assess borrower data and predict risk using AI models (TBD), flag data conflicts, flag high risk applications, flag potentially fraudulent activities if integrated with external fraud detection services.

Solution Architecture

1. Applicant Engagement & Education (Pre-Application)

Users interact with Copilot Studio Chatbot to: Learn about mortgage options and terms (fixed-rate, variable-rate, etc.).

Compare interest rates (integrating with real-time rate APIs).

Estimate eligible loan amount based on income, credit score, and debt-to-income ratio. Narrow down realistic property price ranges based on estimated loan amounts. Can also help applicants to analyze 'what-if' scenarios.

2. Document Intake & Verification

Applicants upload documents (income proof, tax returns, IDs such as passport or driver license), which are processed using:

Azure AI Document Intelligence for OCR and data extraction. Possibly leveraging the new services 'Understand content services' (Preview).

3 Loan Application Submission

.NET C# Application running in Azure that is integrated with Azure Blob Storage, Azure Cosmos DB, and Azure document intelligence, azure open AI services.

4. Underwriting & Risk Assessment

AI model (Model TBD) evaluates creditworthiness and risk. Azure OpenAI provides additional insights into submitted data and documents, flagging risky applications for manual review. Integration with external fraud detection services if desired.

Solution Architecture Components

Component	Technology/Service
Conversational AI	Microsoft Copilot Studio
Workflow automation and services integration	Copilot Studio and Power Automate
Interest Rate Comparisons	Integrate with vendor API real time or websites
Loan Estimation and Guidance	Secure .NET C# Web APIs (custom development) that are invoked from Power Automate flows.
Document Intake and Verification	Secure .NET C# Web APIs (custom development). Azure Document Intelligence, prebuilt models: identity docs, pay stubs, bank statements
Identity / Document Verification	Secure .NET C# Web APIs (custom development) integrated with Azure Cognitive Services (Face API), others TBD
Loan Submission	Secure .NET C# Web APIs (custom development), Azure Cosmos DB
Risk Assessment & Underwriting	Secure .NET C# Web APIs (custom development) integrated with Azure Open AI? Other models? (Model TBD)
Storage	Azure Storage
Database	Azure Cosmos DB

