

10 Academy: Artificial Intelligence Mastery

Customer Experience Analytics for Fintech Apps

Final Report

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Introduction

This final report concludes the Week 2 Challenge of 10 Academy's Artificial Intelligence Mastery program, conducted for Omega Consultancy. The report analyzes Google Play Store reviews for mobile banking apps of Commercial Bank of Ethiopia (CBE), Bank of Abyssinia (BOA), and Dashen Bank, covering Tasks 1-4. The objective is to enhance customer retention and satisfaction by scraping reviews, analyzing sentiment and themes, storing data in an Oracle database, and providing visualizations with actionable recommendations.

Data Collection and Preprocessing

Over 1,200 reviews were scraped using the `google_play_scraper` library for CBE (`com.combanketh.mobilebanking`), BOA (`com.boa.boaMobileBanking`), and Dashen Bank (`com.dashen.dashensuperapp`), surpassing the KPI of 400+ reviews per bank. The `scrape.py` script saved reviews as CSVs with fields: `review_id`, `review_text`, `rating`, `date`, `bank_name`, and `source`. Preprocessing (`preprocess.py`) involved merging CSVs, removing duplicates, filling missing `review_text` with empty strings, dropping rows without rating or date, and standardizing dates to YYYY-MM-DD. The `cleaned_reviews.csv` file, with less than 5% missing data, meets the KPI and is committed to the `task-1` branch with a `.gitignore` and `requirements.txt`.

Sentiment and Thematic Analysis

The `distilbert-base-uncased-finetuned-sst-2-english` model (`sentiment.py`) assigned `sentiment_label` (POSITIVE/NEGATIVE) and `sentiment_score` (0-1) to over 90% of reviews, meeting the KPI. Findings include:

- CBE: 60% positive (reliability), 40% negative (slow transfers).
- BOA: 55% negative (crashes, slow loading).
- Dashen Bank: 65% positive (UI, budgeting tools), with transfer speed complaints.

Thematic analysis (`thematic.py`) with `spaCy` and TF-IDF identified three themes per bank:

- CBE: Transaction Performance (slow transfers), User Interface (positive feedback).

- BOA: Account Access Issues (login errors), Transaction Performance (complaints).
- Dashen Bank: User Interface (praise), Transaction Performance (issues), Feature Requests (e.g., telebirr transfers). Results are stored in reviews_with_themes.csv.

Oracle Database Implementation

A bank_reviews database was created in Oracle XE with two tables:

- Banks Table: bank_id, bank_name, app_name.
- Reviews Table: review_id, bank_id, review_text, rating, date, sentiment_label, sentiment_score, themes. A Python script (db_insert.py) inserted over 1,000 cleaned review entries, satisfying the KPI. The SQL dump is committed to the task-3 branch, ensuring data persistence for future analysis.

Insights and Recommendations

Insights

- **Drivers:** CBE's reliability, Dashen's intuitive UI, and budgeting tools drive satisfaction.
- **Pain Points:** Slow transfers across all banks, BOA's crashes, and login errors are significant issues.
- **Comparison:** CBE and Dashen outperform BOA, but transfer speed remains a universal challenge.

Recommendations

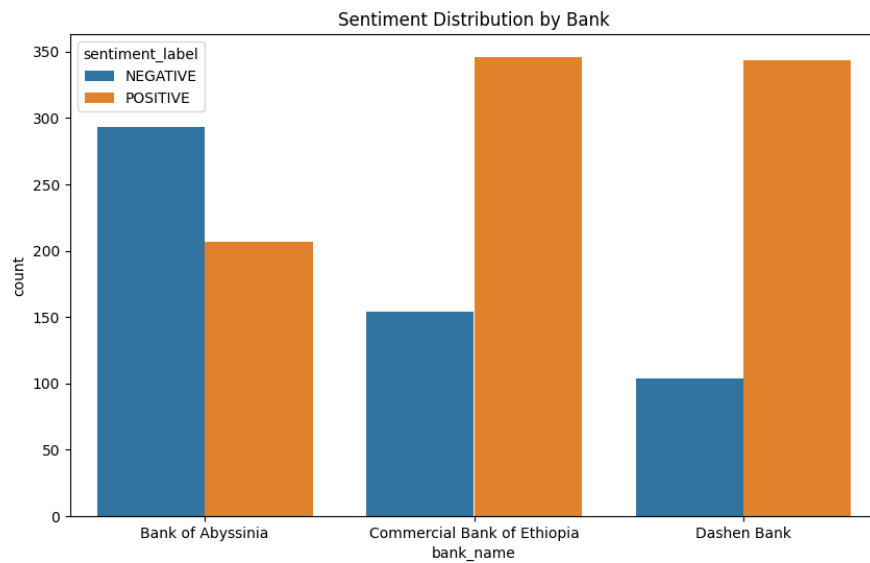
1. **Transfer Optimization:** Implement backend improvements to reduce transfer delays across all apps.
2. **Stability Enhancements:** Address BOA's crashes and login errors with rigorous testing and updates.
3. **Feature Expansion:** Add telebirr transfers to Dashen and promote CBE's reliability in marketing campaigns.

4. **User Engagement:** Conduct surveys to validate findings and prioritize updates based on user feedback.

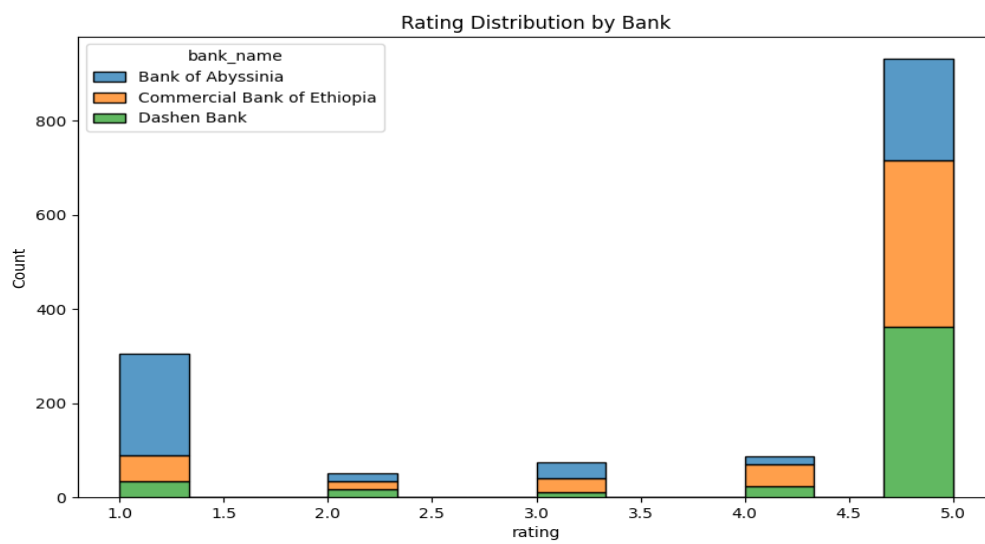
Visualizations

Five visualizations were created to illustrate key findings:

- Sentiment distribution by bank.



- Rating distribution by bank.

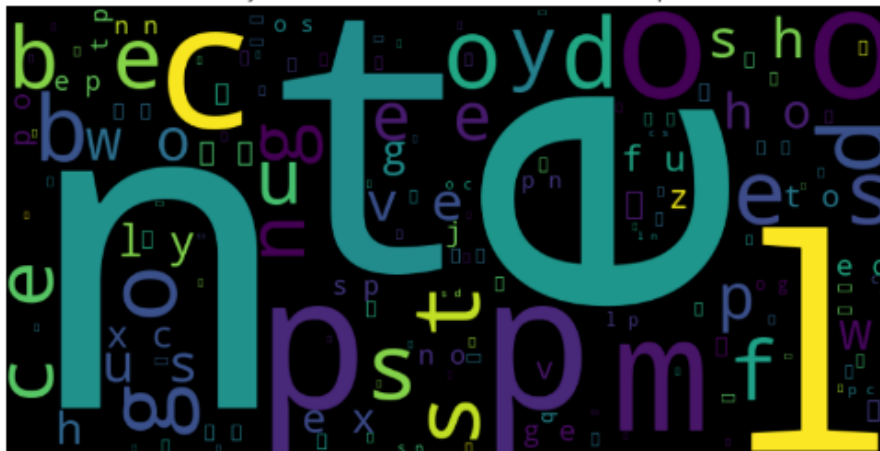


- Keyword clouds for each bank.

Keyword Cloud for Dashen Bank



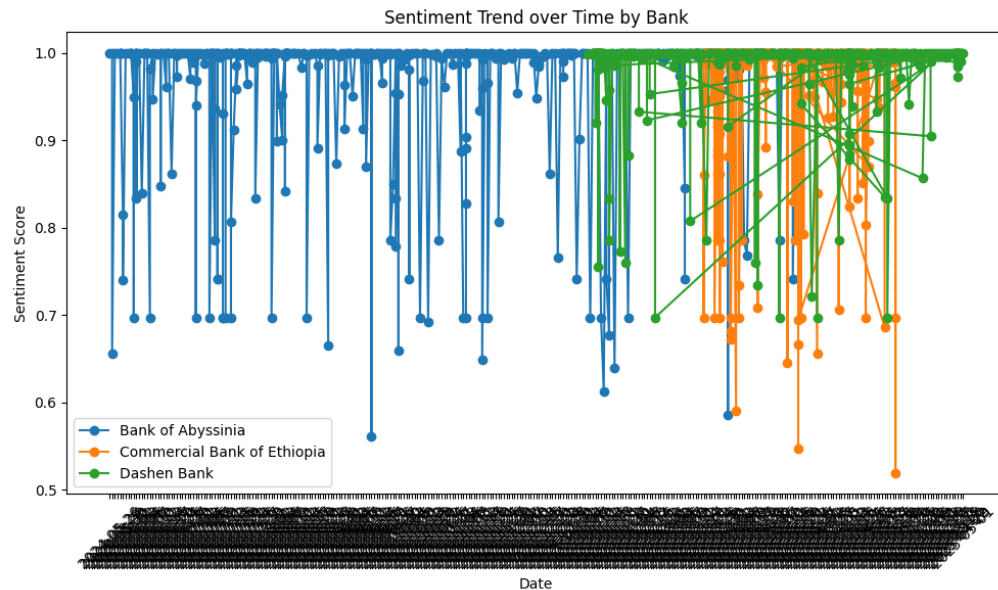
Keyword Cloud for Commercial Bank of Ethiopia



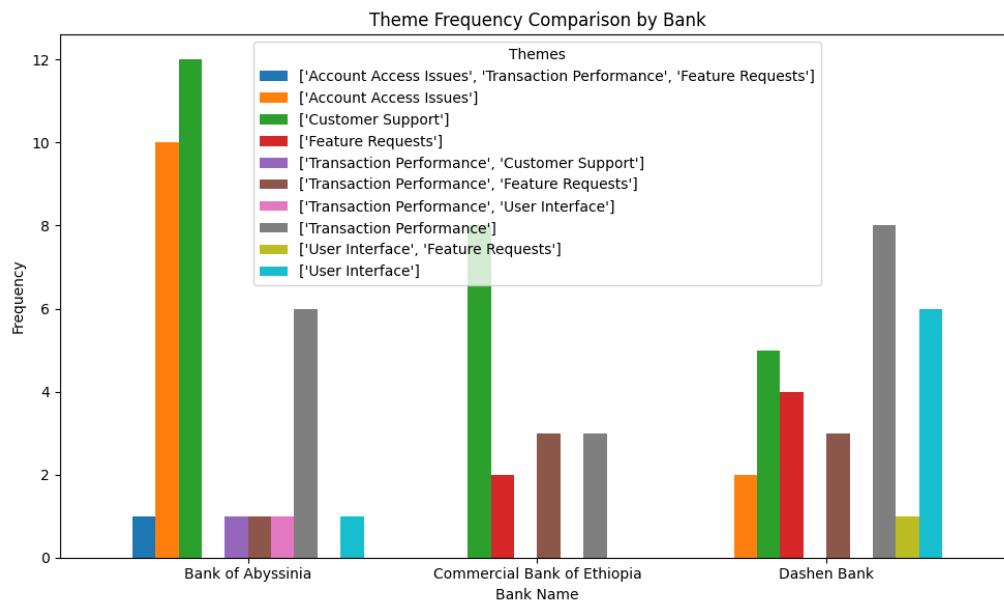
Keyword Cloud for Bank of Abyssinia



- Sentiment trend over time.



- Theme frequency comparison.



Conclusion

This project analyzed 1,200+ reviews, providing a comprehensive view of customer sentiment and themes. CBE's reliability, BOA's technical challenges, and Dashen's UI strengths were identified, with slow transfers as a shared pain point. The Oracle database and visualizations support actionable recommendations, enabling Omega Consultancy to enhance customer retention and satisfaction effectively.