

Product Requirement Document: Monzo User Sentiment & Feature Insights Dashboard

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The Monzo logo, consisting of the word "monzo" in a white, lowercase, sans-serif font, centered on a solid red rectangular background.

1. Executive Summary

In the competitive UK challenger banking market, Monzo's success relies on its ability to deeply understand and act on customer needs. Transaction data reveals user behavior, but app store reviews, spanning a decade of trust, frustration, and expectations, provide an unfiltered view of customer sentiment, including critical user experience (UX) insights. This document outlines the development of a User Sentiment & Feature Insights Dashboard in Power BI, transforming approximately 33,500 app store reviews (2015-2025) into a strategic asset.

The dashboard will empower multiple audiences: Product & Engineering teams, by providing data-driven insights for roadmap prioritization and release quality assurance; HR & Leadership, by aligning training and cultural initiatives with customer expectations; and UX researchers, by

delivering actionable insights to optimize usability, navigation, performance, and accessibility. By leveraging local data processing, Google BigQuery for scalable storage, and Power BI for visualization, this project embeds customer-centricity into Monzo's operational core while adhering to GDPR principles for ethical data handling. For portfolio purposes, it showcases end-to-end data analysis skills, from ETL and NLP to cloud integration, BI visualization, and privacy compliance.

2. Project Vision & Strategic Motivation

Monzo's competitive edge lies in delivering exceptional customer experiences. Public app store reviews capture a longitudinal narrative of user perception, spanning technical reliability (e.g., bugs, performance), feature adoption (e.g., Pots, Flex), human interactions (e.g., support quality), and UX factors like usability and emotional satisfaction. By systematically analysing this feedback in a GDPR-compliant manner, Monzo can maintain its differentiation in a crowded market.

The User Sentiment & Feature Insights Dashboard will serve as a unified lens for this narrative, delivering value across the organization. For Product & Engineering, it transforms subjective feedback into actionable metrics to validate feature adoption and pinpoint usability issues. For HR & People Operations, it highlights service and empathy gaps to inform training and cultural alignment. For UX researchers, it provides a dedicated interface to uncover design friction points, validate interface improvements, and prioritize user-centric enhancements, ensuring Monzo's app remains intuitive and delightful.

3. Project Objectives

The project aims to deliver a robust, actionable, and intuitive insight engine through the following objectives:

1. **Create a Unified Data Foundation:** Integrate and standardize 33,500+ app store reviews from Apple App Store (9,600 reviews) and Google Play Store (23,900 reviews) into a single, reliable dataset, enriched with platform, app version, and UX-specific metadata, stored in Google BigQuery with GDPR-compliant safeguards.
2. **Analyse Customer Sentiment and Themes:** Apply Natural Language Processing (NLP) to score review sentiment (Positive, Neutral, Negative) and tag feedback with Monzo-specific themes (e.g., Pots, Flex, Onboarding, Support) and UX categories (e.g., Usability, Navigation, Performance, Accessibility, Emotional Response).

3. **Develop an Interactive Dashboard:** Build a five-page Power BI dashboard to enable stakeholders to explore trends, compare platforms, dive into thematic and UX insights, and derive actionable recommendations.
4. **Provide Strategic Recommendations:** Synthesize findings into a concise, one-page executive report with clear, data-driven business recommendations, including UX-specific actions.
5. **Showcase Portfolio-Ready Deliverables:** Produce well-documented code, visualizations, and a GDPR compliance narrative suitable for a professional portfolio, highlighting technical, analytical, and ethical expertise.

4. Scope & Boundaries

In Scope

- Historical analysis of approximately 33,500 app store reviews (2015-2025).
- Data cleaning, standardization, anonymization, and enrichment with sentiment, thematic, and UX-specific tags.
- Local data processing using Python, with the final dataset uploaded to Google BigQuery for scalable storage and querying.
- Development of a five-page interactive Power BI dashboard, including a dedicated UX Research Dashboard.
- Delivery of a one-page executive insights report with strategic recommendations, including UX priorities.
- Creation of a GitHub repository with documented code, technical artifacts, and a GDPR compliance note for portfolio presentation.

Out of Scope (Future Enhancements)

- Predictive analytics, such as churn prediction models.
- Real-time review streaming or integration with internal systems like Jira or CRM.
- Direct linkage to individual customer records to avoid GDPR concerns.

5. User Journey: From Raw Data to Actionable Insights

The project follows a structured workflow to transform raw reviews into a strategic tool:

Phase 1: Data Acquisition and Unification

Reviews will be sourced from AppFollow exports, merging iOS and Android schemas into a single dataset, Monzo_Reviews_Master.csv. A platform column will be added to enable comparative analysis between iOS and Android.

Phase 2: Data Refinement and Enrichment

Using Python and Pandas, the dataset will be cleansed to standardize date formats (UTC), ensure ratings align on a 1-5 scale, and extract features like review length (in words). App version numbers will be normalized to a major.minor format. To comply with GDPR, potential identifiers (e.g., usernames, self-disclosed emails) will be stripped or pseudonymized. UX-specific metrics, such as sentiment scores for usability and pain point frequency, will be derived. The processed dataset will be converted to Parquet format and uploaded to Google BigQuery using the google-cloud-bigquery library for secure, centralized storage.

Phase 3: Semantic Analysis and Theme Identification

NLP techniques will enrich the dataset:

- **Sentiment Scoring:** Using VADER, reviews will be classified as Positive, Neutral, or Negative, with cross-validation against AppFollow's proprietary sentiment scores. A sample of 1,000 reviews will be manually reviewed to achieve 80-90% tagging accuracy for UX categories.
- **Theme Tagging:** A combination of keyword extraction (YAKE/KeyBERT) and a predefined Monzo-specific taxonomy will tag reviews with feature-related topics (e.g., Pots, Flex, Support) and UX categories (e.g., Usability, Navigation, Performance, Accessibility, Emotional Response). A multi-label tagging system will enable intersectional analysis (e.g., Usability issues for Pots).

Phase 4: Data Modeling for BI

The refined dataset will be structured as a fact table in BigQuery, optimized for Power BI, incorporating raw fields and analytical dimensions like sentiment labels, feature themes, and UX categories. BigQuery views will be created for pre-aggregated queries (e.g., average UX sentiment by version) to enhance performance. A sample view:

```
CREATE VIEW monzo_reviews.ux_metrics AS
SELECT version, platform, AVG(ux_usability_sentiment) as avg_usability_sentiment,
       COUNTIF(ux_pain_point = 'navigation') as navigation_issues
FROM monzo_reviews.master_reviews
```

GROUP BY version, platform;

Phase 5: Dashboard Development in Power BI

Power BI will connect to BigQuery via the native connector in Import Mode for optimal performance (<5 seconds per filter). The dashboard will guide users from high-level insights to granular details across five pages:

- **Page 1: Executive Overview** - A snapshot of overall sentiment trends, key performance indicators, top user praises or complaints, and a UX Health Score summarizing sentiment across UX categories.
- **Page 2: Platform & Version Analysis** - A comparison of iOS and Android performance, with sentiment trends tied to app releases, including UX-specific filters (e.g., navigation issues by platform).
- **Page 3: Thematic Deep Dive** - An exploration of feature-specific feedback, highlighting dominant themes and sentiment variations, with cross-referencing to UX tags.
- **Page 4: HR & Customer Experience Lens** - A curated view of service-related feedback, identifying opportunities for empathy training and cultural alignment, augmented with UX emotional response insights.
- **Page 5: UX Research Dashboard** - A dedicated page for UX researchers, featuring:
 - **UX Health Metrics:** Visualizations of sentiment scores for usability, navigation, performance, accessibility, and emotional response, with trend lines over time.
 - **Pain Point Analysis:** A heatmap or bar chart showing the frequency and severity of UX issues (e.g., percentage of reviews citing “confusing layout” with 1-2 star ratings).
 - **Keyword Clusters:** Word clouds or ranked lists of UX-related terms (e.g., “intuitive,” “slow,” “clunky”) to highlight dominant feedback.
 - **Actionable Insights Panel:** A prioritized list of UX friction points (e.g., “20% of 2025 reviews mention navigation issues in Onboarding”) with suggested design experiments (e.g., A/B test simplified menus).
 - **Intersectional Filters:** Slicers to combine UX categories with features, platforms, or versions (e.g., “Usability issues for Pots on Android v4.2”).
 - **NPS Proxy:** A breakdown of Promoters, Passives, and Detractors based on UX sentiment to estimate loyalty impact.

Phase 6: Strategic Synthesis

The project culminates in a one-page executive report distilling 3-5 critical insights, including at least one UX-specific finding (e.g., “Usability complaints spiked 15% after the 2024 Q3 UI overhaul, recommending targeted A/B testing”). Recommendations will span product (e.g., prioritize navigation fixes), engineering (e.g., optimize app performance), HR (e.g., empathy training for UX pain points), and UX research (e.g., prototype new onboarding flows).

6. Key Deliverables

- **Monzo_Reviews_Master.parquet:** A unified, analysis-ready dataset stored in BigQuery, anonymized to comply with GDPR.
- **Monzo Insights Dashboard (.pbix):** A five-page interactive Power BI report, with a polished UX Research Dashboard.
- **Executive Insight Report (PDF):** A one-page summary of key findings and recommendations, including UX-specific actions.
- **Technical Documentation:** Detailed documentation of data cleaning scripts, schema mappings, theme taxonomy, UX tagging configuration, BigQuery setup, Power BI DAX measures, and GDPR compliance measures.
- **GitHub Repository:** A well-documented repository containing Python scripts, BigQuery SQL views, a privacy impact assessment, and a README summarizing the project’s problem, solution, tech stack, and outcomes for portfolio presentation.

7. Success Measures

- **Usability:** Stakeholders, including UX researchers, can access key insights within three clicks.
- **Coverage:** The dashboard incorporates 100% of available historical review data.
- **Actionability:** At least three distinct, actionable recommendations are delivered, including one UX-specific action.
- **Data Quality:** The dataset achieves >90% completeness for critical fields, including UX metrics.
- **Performance:** Dashboard filters and views, including the UX page, respond in under five seconds.
- **Portfolio Readiness:** The GitHub repository and documentation clearly demonstrate technical, analytical, and ethical skills, with a compelling narrative for hiring managers.

- **GDPR Compliance:** Data processing adheres to GDPR principles, with anonymization and secure storage to minimize privacy risks.

8. Technical Architecture

Tech Stack

- **Data Processing:** Python (Pandas, NLTK, VADER, YAKE/KeyBERT) for local ETL and NLP analysis.
- **Storage and Querying:** Google BigQuery for scalable data warehousing and SQL-based aggregations, with GDPR-compliant storage.
- **Visualization:** Power BI Desktop, using DAX for measures (including UX-specific calculations) and the native BigQuery connector in Import Mode.
- **Storage Formats:** Parquet for efficient compression and querying; CSV as an intermediate format.
- **Data Source:** AppFollow review exports (iOS and Android).
- **Version Control:** GitHub for code, documentation, and portfolio presentation.

Sample Workflow Components

- **BigQuery Upload Script** (Phase 2):
 - `from google.cloud import bigquery`
 - `client = bigquery.Client()`
 - `dataset_ref = client.dataset("monzo_reviews")`
 - `table_ref = dataset_ref.table("master_reviews")`
 - `job_config = bigquery.LoadJobConfig(source_format="PARQUET")`
 - `with open("Monzo_Reviews_Master.parquet", "rb") as source_file:`
 - `job = client.load_table_from_file(source_file, table_ref, job_config=job_config)`
 - `job.result()`
- **Power BI DAX Measure** (Phase 5, UX Research Dashboard):
 - `UX_Usability_Sentiment_Avg =`
 - `AVERAGE('monzo_reviews_master_reviews'[ux_usability_sentiment])`

Project Timeline

The project is structured for iterative development over 2-4 weeks to ensure a polished, portfolio-ready deliverable:

- **Week 1:** Data acquisition, unification, refinement, anonymization, and BigQuery upload (Phases 1-2).
- **Week 2:** Semantic analysis, theme/UX tagging, and data modeling in BigQuery, including validation of UX taxonomy and GDPR compliance (Phases 3-4).
- **Weeks 3-4:** Dashboard development in Power BI, strategic synthesis, documentation, and GitHub repository setup, with iterative stakeholder feedback (Phases 5-6).

9. Risks & Mitigations

- **Schema Mismatches (iOS vs. Android):** Define clear mapping rules during unification to ensure consistency.
- **Sentiment Model Bias for UX:** Validate VADER results against AppFollow's semantic sentiment scores, with manual review of 1,000 UX-tagged reviews to achieve 80-90% accuracy.
- **Power BI Performance with 33,500 Rows and UX Metrics:** Use Parquet format, BigQuery views, and optimized DAX measures to ensure <5-second response times.
- **Inconsistent Version Numbering:** Normalize versions to a major.minor format, treating patch versions as optional.
- **UX Tagging Overfitting:** Iteratively refine the UX taxonomy with a sample dataset and consider experimenting with transformer-based models (e.g., DistilBERT) for improved accuracy.
- **BigQuery Integration Issues:** Pre-test the native connector and use Import Mode; maintain a local Parquet fallback for flexibility.
- **GDPR Non-Compliance:** Anonymize potential identifiers, limit data scope, and document compliance in a privacy impact assessment to ensure adherence to GDPR principles.

10. Anticipated Business Impact

This dashboard will elevate Monzo's ability to act on customer feedback, delivering:

- **Informed Product Strategy:** Roadmaps prioritized based on user demand and UX-driven enhancements, such as streamlined navigation.
- **Enhanced Release Quality:** Proactive sentiment analysis to assess the stability and UX impact of app releases, reducing negative feedback.
- **Customer-Aligned Culture:** Training programs tailored to address service and UX empathy gaps identified in reviews.

- **UX Research Empowerment:** Actionable insights for UX researchers to reduce friction, improve accessibility, and enhance user delight, potentially boosting app ratings and retention.
- **Strategic Foresight:** A decade-long view of brand perception, including UX trends, enabling leadership to track customer trust and measure initiative impact.

For portfolio purposes, this project demonstrates proficiency in data engineering (Python, BigQuery), advanced analytics (NLP, sentiment analysis), BI visualization (Power BI), strategic insight generation, and GDPR-compliant data handling, making it a compelling showcase for roles in data science, product analytics, or UX research.

11. Data Privacy and GDPR Compliance

To ensure compliance with the General Data Protection Regulation (GDPR), the project incorporates the following measures for handling ~33,500 app store reviews sourced from AppFollow:

- **Public Data Source:** Reviews are publicly available from the Apple App Store and Google Play Store, voluntarily posted by users, and accessed via AppFollow, a GDPR-compliant platform operating under a Data Processing Agreement (DPA).
- **Lawful Basis:** Analysis is conducted under the legitimate interest basis (GDPR Article 6(1)(f)) to improve Monzo's product and UX, with no override of user rights due to the aggregated, non-profiling nature of the insights.
- **Anonymization:** In Phase 2, potential identifiers (e.g., usernames, self-disclosed emails, or locations) are stripped or pseudonymized before processing or BigQuery upload to prevent processing personal data.
- **Data Minimization and Security:** Only necessary fields (e.g., review text, rating, platform, version) are processed, stored in encrypted Parquet format, and retained only for the project's duration. BigQuery's GDPR-aligned infrastructure ensures secure storage.
- **No Profiling or Marketing:** Insights are used solely for internal product and UX improvements, avoiding individual targeting or marketing, which minimizes GDPR requirements.
- **Transparency:** Monzo's privacy policy will be updated to disclose review analysis for product improvement, ensuring user awareness.

- **Documentation:** A privacy impact assessment is included in the GitHub repository, outlining GDPR compliance measures (e.g., anonymization, legitimate interest basis) to demonstrate ethical data handling for portfolio purposes.
- **Validation:** A manual review of 1,000 reviews validates anonymization and tagging accuracy, mitigating risks of processing personal data.

These measures ensure the project aligns with GDPR principles, minimizing privacy risks while maintaining a customer-centric focus. For portfolio purposes, this section highlights ethical data practices, enhancing the project's appeal to hiring managers.