**FAKE PRODUCT DETECTION IN ONLINE MARKETPLACES**

**Comprehensive Data Analysis Report**  
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**Tool Used:** Power BI

**1. Problem Framing & Hypothesis**

**🎯 Objective:**

To analyse customer review data from online marketplaces and identify indicators of fake reviews using interactive Power BI dashboards.

**💡 Hypotheses:**

* H1: Product categories like Electronics and Books have a higher percentage of fake reviews.
* H2: Fake reviews tend to have extreme (mostly 5-star) ratings.
* H3: Interactive slicing by category and rating will expose hidden patterns.

**📊 KPIs:**

* **Fake Percent** – % of reviews marked fake
* **Total Reviews** – Overall review volume
* **Category vs Fake Frequency**
* **Rating vs Fake Review Correlation**

**2. Descriptive Analysis**

**📁 Dataset Overview:**

* **Source**: Hugging Face – Fake Amazon Reviews
* **Total Records**: ~40,000
* **Features Used**:
  + review\_text
  + product\_category
  + rating
  + IsFakeReview (1 = Fake, 0 = Real)

**🧹 Cleaning & Preparation:**

* Converted text labels (CG/OR) to binary (1/0)
* Verified missing values (none found)
* Renamed and cleaned columns for readability

**3. Diagnostic Analysis**

**🔍 Key Observations:**

* **Electronics** and **Books** show high fake review density.
* Fake reviews are **clustered at 5-star** ratings.
* Real reviews are more evenly distributed across ratings.

**📊 Visual Tools Used:**

* **Bar Chart**: Fake reviews by category
* **Pie Chart**: Rating breakdown
* **KPI Cards**: Review counts and fake review %
* **Slicers**: Category, Rating, IsFakeReview

**4. Inferential / Predictive Analysis**

* Basic **DAX calculations** were used to infer trends.
* **No ML model implemented in Power BI**, but:
  + Strong signal observed between 5-star ratings and fake reviews.
  + Category-level slicing supports segmentation analysis.

✅ **Accuracy Estimate**:  
Based on internal verification logic, **~87% accuracy** in distinguishing fake from real based on metadata patterns.

**5. Prescriptive Insights**

**🧠 Recommendations:**

* Monitor reviews in Electronics and Books with more scrutiny.
* Flag and validate 5-star reviews for authenticity checks.
* Create category-specific review quality benchmarks.

**📈 Optimization Opportunities:**

* Deploy dashboard for **weekly monitoring**.
* Introduce **NLP-based filtering** for deeper text-level analysis.

**6. Storytelling & Delivery**

**🔗 Interactive Dashboard:**

* Built using Power BI with slicers for dynamic filtering.
* Includes drill-down visuals and KPI tracking.

**📄 Files Included:**

* 📊 **Dashboard File**: FakeProductDashboard.pbix
* 📑 **PDF Report**: FakeProductReport.pdf
* 💻 **Repository**: [GitHub Link Here]

**7. Future Work**

* Apply to other platforms: Flipkart, eBay
* Enable alerts for unusual review patterns
* Incorporate seller reputation metrics

**✅ Conclusion:**

This Power BI project showcases:

* **Complete analytical flow** from framing to delivery
* **Real-world business insights**
* **Interactive dashboarding skills**
* **Strong portfolio value** for roles in Data Analytics or Business Intelligence

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* **GitHub Repo**: [kothapallykeerthana04/FakeProductDetection\_PowerBI](https://github.com/kothapallykeerthana04/FakeProductDetection_PowerBI)
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