

Assignment Answer

Question 4:

Take one domain and build Business Understanding.

Selected Domain: E-Commerce Retail

1. Introduction to Business Understanding

Business Understanding is the foundational phase in any analytical or data science project (e.g., CRISP-DM methodology). It focuses on:

- Understanding project objectives and requirements from a business perspective
- Converting business goals into analytical/data problems
- Assessing the situation, resources, and risks
- Developing a preliminary project plan

"The business understanding phase is critical because it ensures that the analytical work aligns with organizational goals and delivers actionable value." (*CRISP-DM Guide*)

2. Domain Overview: E-Commerce Retail

Aspect	Description
Industry	Online Retail / E-Commerce
Key Players	Amazon, Flipkart, Shopify stores, D2C brands
Core Activities	Product listing, order processing, payment gateway, logistics, customer support
Data Sources	Website analytics, CRM, transaction logs, inventory DB, social media, customer reviews
Key Challenges	Customer churn, cart abandonment, inventory optimization, personalization, fraud detection

3. Business Objectives

Primary Goal:

"Increase customer retention and average order value (AOV) by 15% over the next 2 quarters."

Supporting Objectives:

Objective	Business Impact	Success Metric
Reduce cart abandonment rate	Increase completed transactions	↓ Abandonment rate from 70% → 55%
Improve product recommendation relevance	Boost cross-selling & upselling	↑ AOV by 15%
Enhance customer segmentation	Enable targeted marketing campaigns	↑ Email CTR by 20%
Optimize inventory forecasting	Reduce stockouts & overstock costs	↓ Inventory holding cost by 10%

4. Situation Assessment

4.1 Current State Analysis

- **Business Process:** Customers browse → add to cart → checkout → payment → delivery
- **Pain Points Identified:**
 - High cart abandonment at payment stage
 - Generic product recommendations → low conversion
 - Inconsistent inventory visibility → delayed shipments
 - Limited personalization in marketing emails

4.2 Resource Inventory

Resource Type	Availability
Data	Transaction logs (✓), Web analytics (✓), Customer demographics (✓), Product catalog (✓)
Technology	Cloud data warehouse (✓), BI tools (✓), ML platform (△ Partial)

Resource Type	Availability
Human	Data analysts (2), Business stakeholders (✓), Data engineers (1)
Budget/Timeline	Moderate budget; 3-month pilot project

4.3 Risk Assessment

Risk	Likelihood	Impact	Mitigation Strategy
Poor data quality	Medium	High	Implement data validation pipelines
Stakeholder misalignment	High	Medium	Weekly sync meetings & clear KPIs
Privacy/compliance issues	Low	High	Anonymize PII; follow GDPR/CCPA guidelines
Model overfitting	Medium	Medium	Use cross-validation; A/B testing framework

5. Business Success Criteria

Quantitative Metrics:

- ✓ Customer Retention Rate: Increase from 45% → 52%
- ✓ Average Order Value (AOV): Increase from \$45 → \$52
- ✓ Cart Abandonment Rate: Decrease from 70% → 55%
- ✓ Recommendation CTR: Increase from 2.1% → 3.5%

Qualitative Metrics:

- Improved customer satisfaction scores (CSAT/NPS)
- Enhanced stakeholder confidence in data-driven decisions
- Scalable framework for future analytics initiatives

6. Analytical Problem Translation

Business Question	Analytical/Data Problem	Technique/Approach
Why do customers abandon carts?	Classification: Predict abandonment likelihood	Logistic Regression / XGBoost

Business Question	Analytical/Data Problem	Technique/Approach
Which products should we recommend?	Collaborative filtering / Association rules	Matrix Factorization / Apriori
How to segment customers effectively?	Unsupervised clustering	K-Means / RFM Analysis
What inventory levels minimize cost?	Time-series forecasting	ARIMA / Prophet / LSTM






7. Preliminary Project Plan

Phase-wise Timeline (CRISP-DM Aligned)

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gantt
    title E-Commerce Business Understanding Project Plan
    dateFormat YYYY-MM-DD
    section CRISP-DM Phases
    Business Understanding      :done,    des1, 2024-01-01,
7d
    Data Understanding         :active,   des2, after des1,
10d
    Data Preparation           :          des3, after des2,
14d
    Modeling                   :          des4, after des3,
21d
    Evaluation                  :          des5, after des4,
7d
    Deployment                 :          des6, after des5,
10d
  
```

Key Deliverables:

1.  Business Requirements Document (BRD)
2.  Data Dictionary & Source Inventory
3.  KPI Dashboard Mockup
4.  Risk Register & Mitigation Plan
5.  Project Charter with Stakeholder Sign-off

8. Stakeholder Mapping

Stakeholder	Role	Expectations	Communication Frequency
CEO / Leadership	Sponsor	ROI, strategic alignment	Monthly steering committee
Marketing Head	Business Owner	Campaign effectiveness, CTR	Bi-weekly sync
Operations Manager	End User	Inventory accuracy, fulfillment	Weekly standup
Data Science Team	Executor	Clean data, clear problem statement	Daily standup
IT / Security	Enabler	Compliance, infrastructure	As-needed + milestone reviews

9. Conclusion

Building robust **Business Understanding** in the E-Commerce domain requires:

- ◆ Clear alignment between business goals and analytical capabilities
- ◆ Thorough assessment of data, resources, and risks
- ◆ Translation of vague business questions into well-defined analytical problems
- ◆ Measurable success criteria agreed upon by all stakeholders

✔ **Outcome:** A validated project foundation that ensures subsequent phases (Data Understanding, Modeling, Deployment) deliver tangible business value — not just technical accuracy.
