AI-Assisted Power BI for Business Analytics

Figure 1: AI-Assisted Power BI for Business Analytics

Capstone Project Guide

AI-Assisted Power BI for Business Analytics

Course: Advanced Business Analytics - Virginia Tech MBA **Weight**: 30% of Final Grade **Team Size**: 3-4 students

Overview

The capstone project is your opportunity to demonstrate mastery of AI-assisted analytics. Your team will identify a business problem, build a Power BI solution using Copilot and AI features, and present strategic recommendations to the class.

> **Remember**: "A Power BI report is not the deliverable. Insights are."

The capstone journey: Define → Build → Discover → Present

Project Requirements

1. Business Problem Statement (20% of grade)

Clearly articulate:

- **The Challenge**: What business problem are you solving?
- **The Stakeholder**: Who needs this analysis and why?
- **The Questions**: What specific questions will you answer?
- **The Impact**: What decisions will your insights enable?

Deliverable: 1-page problem statement following BRD format

2. AI Utilization (25% of grade)

Demonstrate effective use of AI capabilities:

Requirement	Minimum
Copilot-generated report pages	2+ pages
AI visuals	2+ (Key Influencers, Anomaly Detection, Smart Narratives, or Decomposition Tree)
Natural language Q&A	5+ meaningful queries
Documented prompts	Include in appendix

Document your AI journey:

- Which prompts worked well?
- Which prompts required iteration?
- When did you need to refine AI outputs manually?
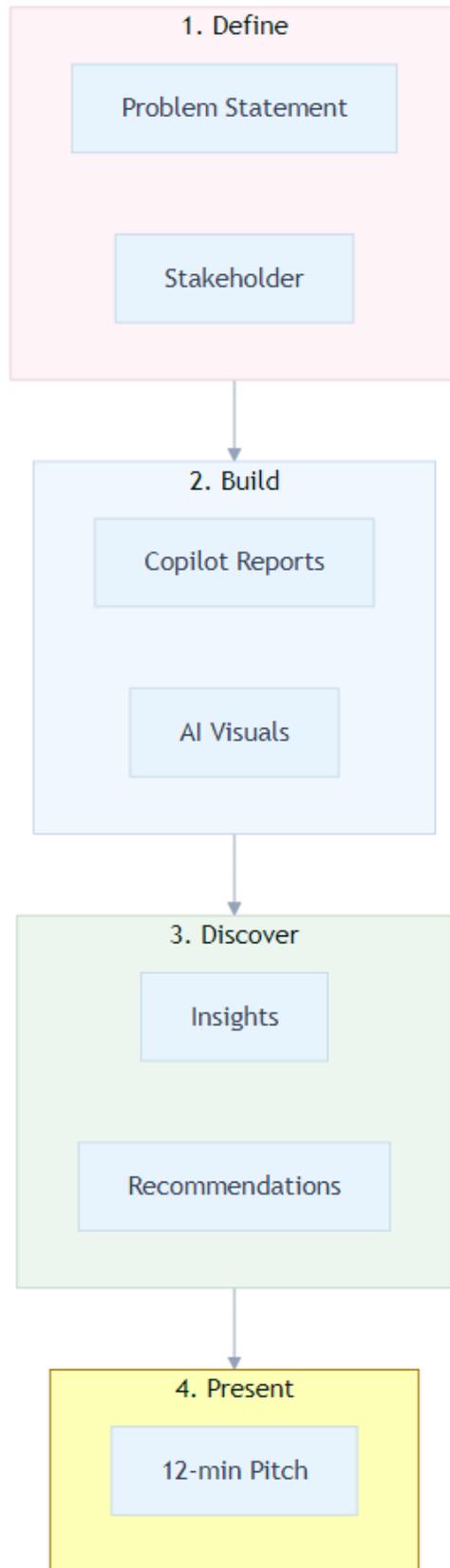- What did AI miss that human judgment caught?

Figure 2: Capstone Phases: Define, Build, Discover, Present

3. Insight Quality (25% of grade)

Your analysis should surface:

- **At least 3 actionable insights** with business recommendations
- **Evidence-based findings** tied to specific data
- **"So What?" analysis** - why do these insights matter?
- **"Now What?" recommendations** - what should the business do?

Format: Use the Insight Framework:

Component	Question to Answer
Finding	What did you discover?
So What	Why does this matter to the business?
Now What	What action should be taken?

4. Visualization Design (15% of grade)

Apply course design principles:

☐ Maximum 5-7 visuals per page
☐ Clear visual hierarchy (most important top-left)
☐ Color used purposefully (not decoratively)
☐ Appropriate chart types for questions asked
☐ Mobile-friendly layout (if applicable)
☐ Professional formatting and branding

5. Presentation (15% of grade)

Format: 12 minutes presentation + 8 minutes Q&A

Structure:

Section	Time	Content
Business Problem	2 min	Why this matters, who cares
AI Journey	3 min	Key prompts, AI capabilities used
Key Insights	4 min	Top 3 findings with evidence
Recommendations	2 min	Actionable next steps
Live Demo	1 min	Show report interactivity

Q&A Preparation:

Expect Socratic questioning on:

- Why do you trust this AI-generated insight?
- What would change your recommendation?
- How would you validate this finding?
- What are the limitations of your analysis?

Dataset Options

Option A: Course Datasets (Recommended)

Use one of the provided datasets with a new business angle:

Dataset	Suggested Angles
CloudRevenue	Churn prediction, pricing optimization, regional expansion
M365Marketing	Channel optimization, creative testing, ROI analysis
SupportInsights	Escalation prediction, agent performance, self-service improvement

Option B: Public Datasets

Use a public dataset with instructor approval. Good sources:

- Kaggle Datasets
- UCI Machine Learning Repository
- data.gov
- Microsoft Open Data

Approval Required: Submit dataset description by Module 4

Option C: Your Own Data

Use data from your organization (with permission):

Requirements: - Written approval from data owner - No personally identifiable information (PII) - Data anonymized if necessary - Instructor review before use

Approval Required: Submit data proposal by Module 3

Timeline

Milestone	Due Date	Deliverable
Team Formation	End of Module 2	Team roster (3-4 members)
Problem Statement	End of Module 3	1-page BRD
Dataset Selection	End of Module 4	Dataset + approval (if needed)
Progress Check	Module 5	Working prototype demo
Final Submission	Before Module 7	Report + Executive Summary
Presentation	Module 7	12-minute team presentation

Deliverables Checklist

Before Module 7 (Final Submission)

- ☐ **Power BI Report** (.pbix if Desktop, or Service workspace link)
- ☐ **Executive Summary** (2-3 pages using template)
- ☐ **Presentation Slides** (optional - can present from report)
- ☐ **Prompt Documentation** (appendix showing key AI interactions)
- ☐ **Team Contribution Statement** (who did what)

During Module 7

- ☐ 12-minute presentation
- ☐ 8-minute Q&A
- ☐ Peer evaluation submission

Evaluation Rubric

Business Problem (20 points)

Score	Criteria
18-20	Compelling, well-defined problem with clear stakeholder and impact
14-17	Clear problem statement, good stakeholder identification
10-13	Adequate problem definition, some gaps in stakeholder clarity
6-9	Vague problem statement, unclear business value
0-5	Problem poorly defined or missing

AI Utilization (25 points)

Score	Criteria
23-25	Exceptional use of Copilot and AI visuals; insightful prompt documentation
18-22	Strong AI utilization; good variety of features; clear documentation
13-17	Adequate AI use; meets minimum requirements
8-12	Limited AI utilization; missed opportunities
0-7	Minimal or no AI features demonstrated

Insight Quality (25 points)

Score	Criteria
23-25	Deep, actionable insights with clear business impact; excellent recommendations
18-22	Strong insights with good business relevance; solid recommendations
13-17	Adequate insights; recommendations present but could be stronger
8-12	Surface-level insights; weak connection to business value
0-7	Missing or trivial insights

Visualization Design (15 points)

Score	Criteria
14-15	Professional, polished design; excellent visual hierarchy; purposeful color
11-13	Good design; clear visuals; appropriate formatting
8-10	Adequate design; some clutter or inconsistency
4-7	Poor design; cluttered; inappropriate chart choices
0-3	Unprofessional or missing visualizations

Presentation (15 points)

Score	Criteria
14-15	Confident, clear, engaging; excellent Q&A responses
11-13	Good delivery; solid Q&A handling
8-10	Adequate presentation; some hesitation in Q&A
4-7	Unclear delivery; struggled with questions
0-3	Unprepared or incomplete presentation

Sample Project Ideas

CloudRevenue Dataset

Project: "Churn Risk Early Warning System" - Use Key Influencers to identify churn predictors - Build dashboard for account managers - Recommend intervention strategies by customer segment

M365Marketing Dataset

Project: "Marketing Mix Optimization" - Analyze channel performance using AI visuals - Use Anomaly Detection to find campaign outliers - Recommend budget reallocation strategy

SupportInsights Dataset

Project: "Proactive Escalation Prevention" - Use Key Influencers to predict escalation risk - Build agent performance dashboard - Recommend training and staffing investments

Public Data Example

Project: "City Transportation Efficiency" - Use NYC taxi data or bike share data - Analyze demand patterns with Smart Narratives - Recommend service optimization strategies

Tips for Success

Start with the Business Problem

Don't start with "what can I build?" Start with "what decision does someone need to make?"

Document Your AI Journey

Your prompt iterations are valuable learning. Keep notes on: - What you asked - What AI returned - How you refined the prompt - When you accepted vs. modified AI output

Practice Your Presentation

Rehearse as a team. Time yourselves. Anticipate tough questions.

Use the Executive Summary Template

The EXECUTIVE-SUMMARY-TEMPLATE in the templates folder provides the structure stakeholders expect.

Show Your Thinking

In Q&A, explain *why* you made choices. "We chose a bar chart because we're comparing categories" is better than "we just liked how it looked."

Frequently Asked Questions

Q: Can we use Power BI Desktop? A: Yes, but you must also publish to Service for the demo. Copilot features require Service.

Q: What if our dataset doesn't have clear patterns? A: Real business data is messy! Document what you tried, what you found (even if "no significant relationship"), and what additional data might help.

Q: How technical should the presentation be? A: Present to business stakeholders, not technical reviewers. Lead with insights, not methodology.

Q: Can we exceed the visual limits for drill-through pages? A: Yes - the 5-7 visual limit applies to summary pages. Detail pages can have more, accessed via drill-through.

Q: What if team members don't contribute equally? A: Document contributions in your Team Contribution Statement. Peer evaluations factor into individual grades.

Resources

- BRD-TEMPLATE - For your problem statement
- DATA-DICTIONARY-TEMPLATE - If using your own data
- EXECUTIVE-SUMMARY-TEMPLATE - For final deliverable
- PROMPTING-JOURNAL-TEMPLATE - For documenting AI interactions

"The best capstone projects tell a story: a problem, a journey, a discovery, and a recommendation. Make yours memorable."