Data Driven Decision Making Cheatsheet

1. Real-World Insight & Storytelling

- **Fruit Seller vs. Mr. X**: Shows the impact of informal market intelligence and adaptive decision-making.
- **Sparrow Extermination in China**: A cautionary tale about ecological imbalance caused by uninformed policy decisions. Led to a famine due to chain effects (loss of natural predators → increased crop-eating insects)
- **Lesson**: Data must be holistic—ignoring indirect consequences leads to failure.

2. Big Data in Retail: The Walmart Example

- **Walmart** handles:
  - 100M+ transactions/day
  - 10,000+ stores globally
  - 10B+ transactions/year
- **Excel Limit**: 1 million rows → inadequate for such scale
- **SKUs**: 10K–100K per store
- **Challenge**: Traditional tools are not enough for big data
- **Implication**: Big data requires advanced tools (e.g., Hadoop, Spark, SQL engines).

3. Business Analytics Categories

Type	Function
Descriptive	What happened? (summary stats, visualization)
Diagnostic	Why did it happen? (correlation, root cause)
Predictive	What will happen? (regression, forecasting)
Prescriptive	What should we do? (optimization, simulation)

4. The 5 Vs of Big Data

Volume	Massive data quantity (e.g., Walmart, Amazon)
Velocity	Speed of data generation (e.g., tweets, orders/sec)
Variety	Different forms (text, image, video, sensor)
Veracity	Accuracy/trustworthiness of data
Value	Ability to convert data into actionable insights

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5. Sources of Big Data

- **Internal & External Sources**:
  - Transactions
  - Social media
  - Sensors
  - Mobile Devices
  - Enterprise Content

6. Tools

- **Excel** (limited use due to volume)
- **Python / R** for statistical and predictive modeling
- **SQL** for structured queries
- **Business Intelligence Platforms**: Power BI, Tableau

7. Decision-Making Models

Model	Key Idea
Rational Decision Model	Assumes full data & logic
Bounded Rationality	Decisions within limits of information/time
OODA Loop	Observe–Orient–Decide–Act
SWOT Analysis	Strengths, Weaknesses, Opportunities, Threats
Porter's Five Forces	Competitive analysis framework

8. Statistical Concepts Covered

- Mean, Median, Mode
- Standard Deviation
- Variance
- Correlation
- Regression Analysis (Linear & Logistic)
- Hypothesis Testing (T-test, ANOVA, Chi-square)
- Probability Distributions (Normal, Binomial, Poisson)

9. Case Examples from the Document

- **Customer Profiling**: Demographics + behavioral data = segmentation
- **Competitor Analysis**: Using location intelligence for expansion decisions
- **IBM Big Data Jobs Forecast**: 4.4M global jobs by 2015, highlighting the boom

10. Takeaway Lessons

- **Avoid local optimization**: Like sparrow killing, decisions must consider wider impact.
- **Data Alone Isn't Enough**: Interpretation, relevance, and quality are crucial.
- **From Insight to Action**: DDDM must inform practical, executable strategies.

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