Assessing Risk - Competition and Data

Lecture 4

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Objectives

- Understand competition among contemporary enterprises
- Apply quantitative techniques to assess risks
- Calculate risk exposure and mitigation thresholds

Why quantify competitive risk?

- “In business, the competition will bite you if you keep running; they will swallow you if you stand still.”
- “War is ninety percent information.”
- Key questions:
  - What’s the probability our market share drops below X% due to Competitor Y’s new product?
  - How much budget reserve is needed to counter supply chain disruptions?

Reasons behind the increased competition among contemporary enterprises:

- Explosion of access to cheap and fast information
- Maturation of industries and businesses
- Loss of traditional means of competitive structuring and advantage
- Sophisticated and better-informed consumers
- Dynamic and rapidly evolving technology

Contemporary Context Facing the Analysts:

- Lack of recognition that analysts are mission-critical
- Decision makers cannot always articulate their decision needs
- Pressure for a quick judgment
- Highly ambiguous situations
- Incrementally received/processed information

Case examples:

- Tesla vs. legacy automakers
- Streaming wars: Disney vs Netflix

Tesla vs. legacy automakers

Tesla:

- Model Y became the world's best-selling car in 2023
- Cutting-edge battery technology, unmatched Supercharger network, and seamless over-the-air software updates

Legacy automakers:

- Ford: F-150 Lightning & Mustang Mach-E
- Volkswagen: ID.4
- Hyundai, Kia

Streaming wars: Disney vs Netflix

Disney's Rise & Impact:

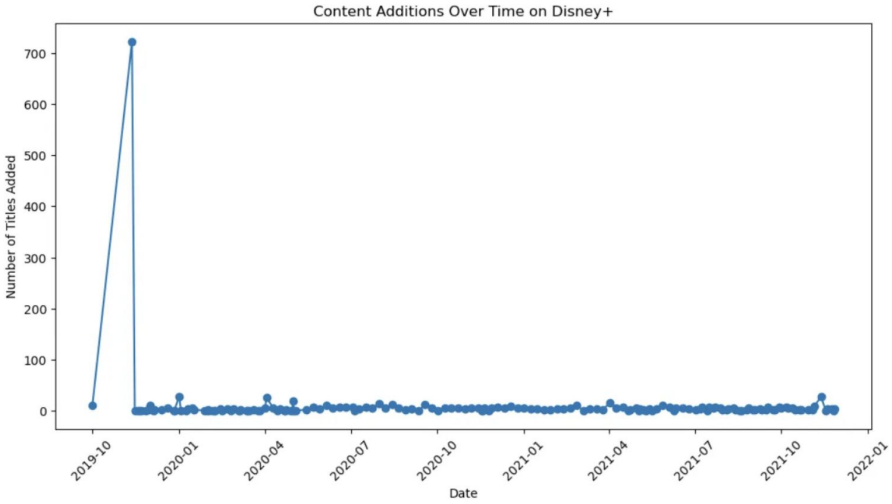
- Launched in late 2019, quickly rivaled Netflix & Amazon Prime Video.
- Aggressive Pricing: Started at $6.99/month (vs. Netflix's $9.99), leveraging Disney's diversified revenue (theme parks, films).
- Strategic Acquisition: Acquired Hulu, expanding market share.
- Pandemic Boom: 58% of users increased paid streaming during quarantine.

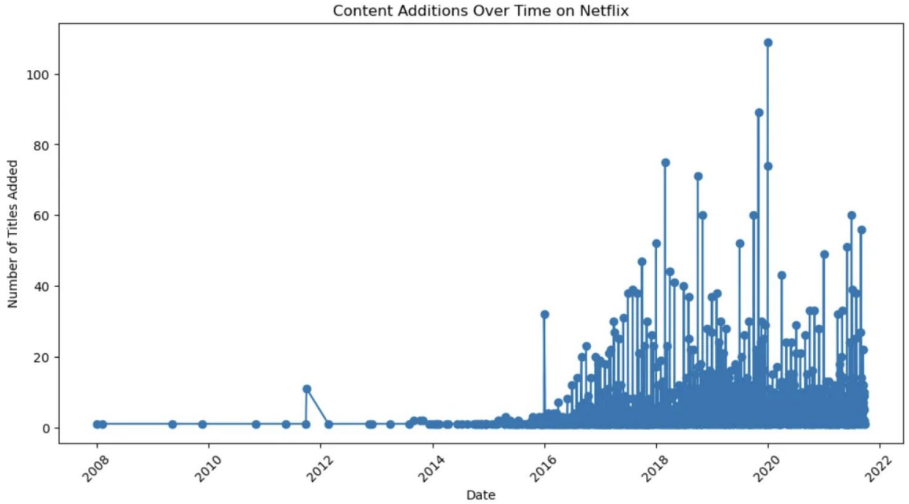
Streaming wars: Disney vs Netflix

Netflix's Defensive Moves:

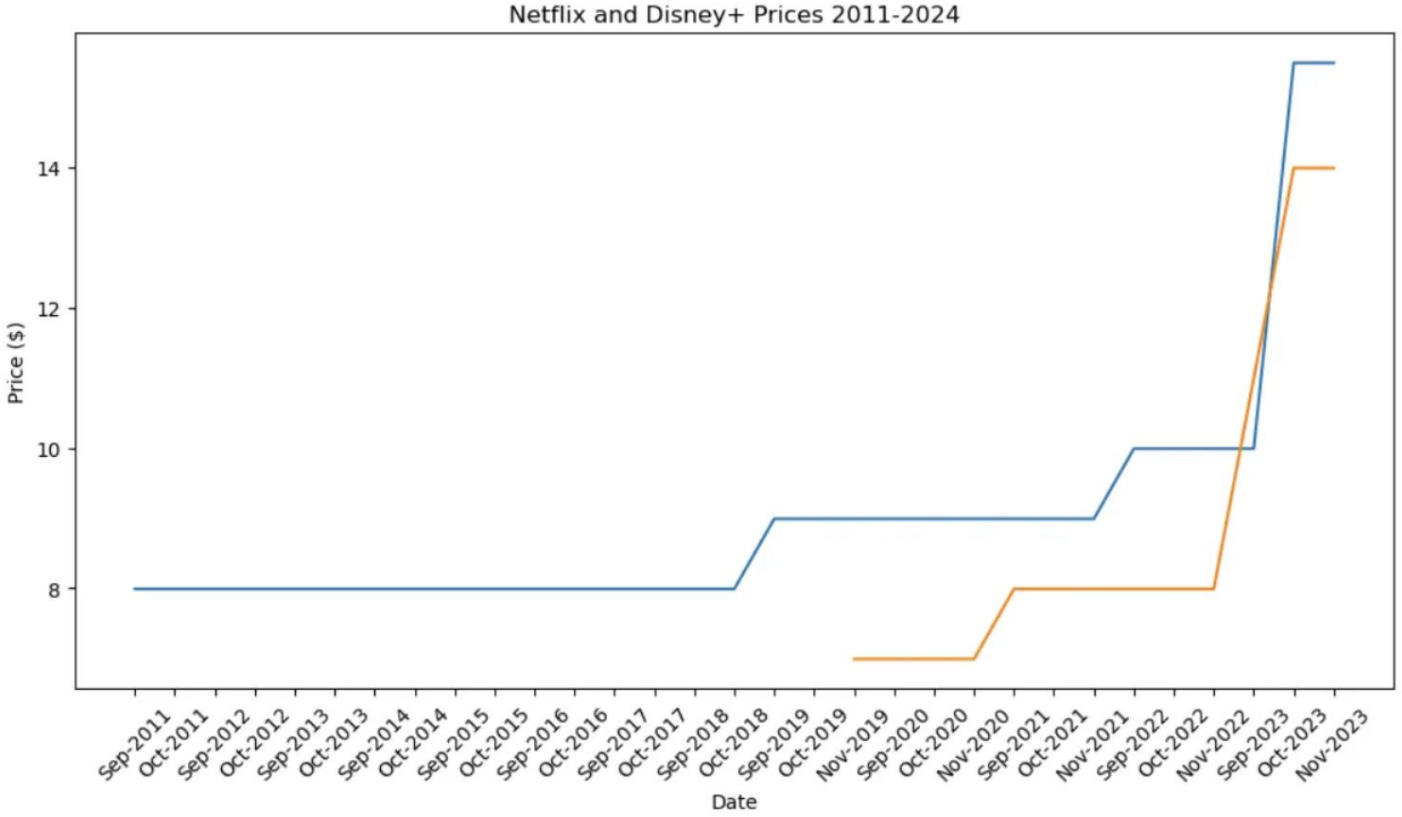
- Promised one original movie per week in 2021 to compete (no major price hike).
- Focused on volume over pricing, likely to retain subscribers amid Disney+'s growth.
- Market Pressure: Disney+'s low-cost model forced Netflix into defensive tactics.

Streaming wars: Disney vs Netflix





Streaming wars: Disney vs Netflix



Quantitative Risk Assessment Techniques

- Uses mathematical models and data analysis to determine the likelihood and potential impact of risks, and how to mitigate them.
- Data:
  - Structured data inputs:
    - Historical competitor entry data (market, region, time, success/failure)
    - Economic indicators, market share, products pricing
  - Unstructured data inputs:
    - News articles, earning calls, press releases
    - Expert reports, industry whitepapers
- Analytics Tools:
  - Python libraries (PyMC3 for Bayesian networks, scikit-learn for regression risk models).

Quantitative Risk Assessment Techniques

Probability Analysis:

- Likelihood of risk events (e.g., competitor entry, pricing wars) using:
  - Historical data (Bayesian inference)
  - Expert calibration (Delphi method)
  - Beta distributions

Probability Analysis

A company is concerned about the risk of a competitor entering its market.

They use historical data to analyze past instances of competitor entry and identify factors that influenced the likelihood of success. Then, they use Delphi method to gather expert opinions from industry analysts and management on the current market conditions and their impact on the likelihood of a competitor entering. Finally, they represent the overall probability of competitor entry using a beta distribution, which would allow them to estimate the range of possible outcomes and prepare mitigation strategies accordingly.

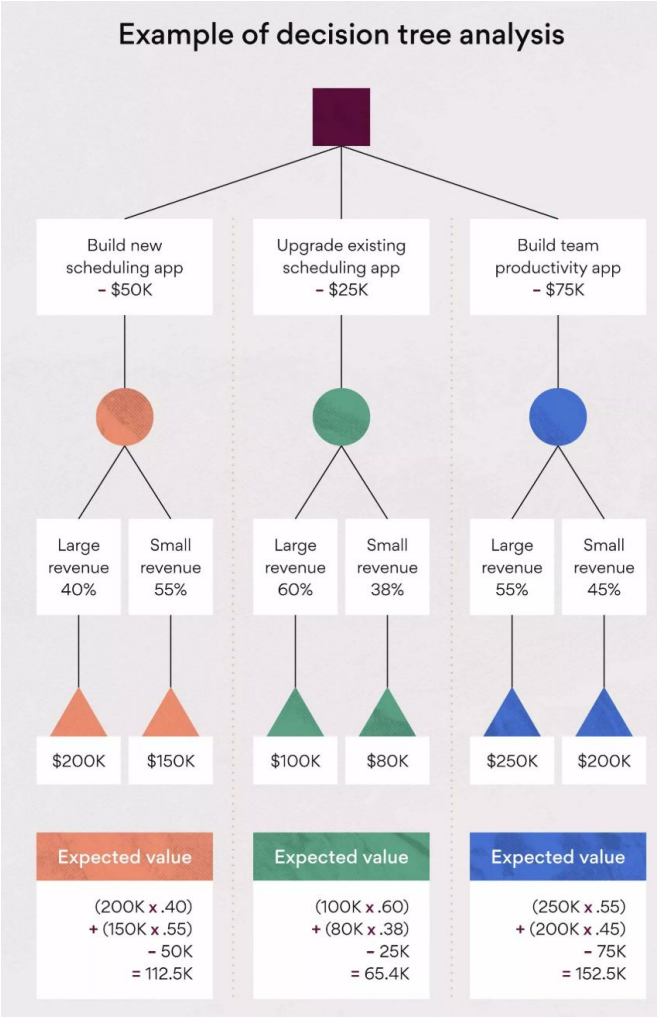
Quantitative Risk Assessment Techniques

Modelling & Financial Metrics

- Monte Carlo Simulation
- Decision Tree Analysis
- Expected Monetary Value (EMV)
- Sensitivity Analysis
- Three-Point Estimate
- Bow Tie Analysis
- Scenario Analysis
- Failure Mode and Effects Analysis (FMEA)
- Fault Tree Analysis (FTA)

Decision Tree Analysis

- This approach uses a branching diagram to represent different decisions and their potential consequences, allowing for a systematic analysis of risk.
- It can help visualize the impact of various choices and identify potential risks at each stage of a process.



Sensitivity Analysis

- Helps to determine which risks have the most significant impact on a project's goals
- By changing the values of key variables, it can identify the risks that, if altered , would have the most substantial effect on project outcomes

Expected Monetary Value (EMV)

- EMV calculates the average financial outcome of a risk by multiplying the probability of an event by its potential impact.
- It is used to determine the potential cost or benefits of a risk and prioritize risk mitigation efforts.

Risk Management Techniques

- Acceptance
- Mitigation
- Avoidance
- Transfer

- Risk Acceptance: involves accepting the risk and collaborating with others in order to share responsibility for risky activities
- Risk Mitigation: represents an investment in order to reduce the risk on a project
- Risk Avoidance: involves developing an alternative strategy, but is usually linked to a higher cost
- Risk Transfer: is a risk reduction method that shifts risk from the project to another party

Risk Transfer

- Financial instruments like options, futures, and insurances can be used to reduce and transfer risks that are undesirable for a firm.
- A portfolio view of risks helps to assess the combination of financial products that provide most cost effective solution to the risk reduction and transfer problem.
- Integrated risk management helps to use natural hedging strategies that exists in the risk portfolio.
- Firms should structure its business policy to reduce accumulation of high amounts of risk in certain areas where risk adjusted returns are not promising.

Risk Exposure

- Value at Risk (VaR) :
  - VaR is used to estimate the maximum potential loss of an investment or portfolio over a specified time period and at a given confidence level.
  - It's a way to quantify the downside risk of an investment
  - Demonstration in class...
- Conditional Value at Risk (CVaR) :
  - It measures the average loss expected beyond a certain threshold, often the Value at Risk (VaR).
  - It's essentially the expected shortfall, meaning the average loss given that a loss exceeds the VaR level.

Risk Mitigation Measures

- Contingency Planning:
  - Reserve analysis
  - Contingency=Risk Exposure×Mitigation Efficacy
- Optimization:
  - Portfolio rebalancing (Markowitz) to minimize competitor concentration risk.
- Demonstration in class...

References:

- Streaming Wars: Analyzing the Competitive Dynamics of Disney+ vs. Netflix: https://medium.com/@rujularao/streaming-wars-analyzing-the-competitive-dynamics-of-disney-vs-netflix-aad4e42f776f

Thank You !