Decision Making

Minerva University

FA51: Formal Analysis

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Decision Making

Scenario

Background context

Sony's PlaySphere X and Microsoft's X-Cube 2 are both revolutionary next-generation consoles that are about to be released. The gaming industry is buzzing with excitement. With their revolutionary features, these consoles promise to change the way games are played, setting the stage for fierce competition.

Consumer Preferences

- Exclusive Content: Gamers' loyalty is increasingly tied to access to exclusive, high-quality game titles that are only available on one console.
- Affordability and Value: In a cost-conscious market, gamers are looking for the best value, balancing the console's price against its features and the cost of games and services.

Strategies

Sony's PlaySphere X:

Sony aims to attract gamers with exclusive games and advanced hardware that sets it apart. It will most likely be focusing on securing games that you can only play on PlaySphere X, which makes the games exclusive (*PS5 Exclusives – All the Games You Can Only Play on Sony's Console*, n.d.). Sony will most likely plan to offer bundled services like online gaming and streaming to make its console more appealing ("The Best PlayStation-Exclusive Games of 2021," 2021).

Microsoft's X-Cube 2:

Microsoft's plan possibly includes making the X-Cube 2 work well with its other

products, offering cross-play, and cloud gaming (Warren, 2024). It will probably be expanding its own game studios and securing exclusive titles, with Xbox Game Pass being a key feature. Microsoft probably intends to attract gamers with competitive pricing for the console and its services (Juba, n.d.).

Potential outcomes

- One console could come to dominate the market if it secures a sufficiently attractive portfolio of exclusive games, drawing in gamers who prioritize unique gaming experiences (Raisi, 2024).
- If the competition intensifies on price, this could lead to a race to offer more for less, potentially eroding profit margins but increasing market share.
- Each console could create a niche for itself; for example, one could become known as the best option for hardcore gamers, while the other might appeal more to casual gamers or those interested in a broader entertainment ecosystem.
- While direct competition will be hard and intense, there could also be areas of collaboration, such as cross-platform play or shared standards for game development, benefiting the industry as a whole.

Scenario Development

In developing our scenario, we first identified Sony and Microsoft as the key players, focusing on their strategic decisions in the gaming console market—a timely context given the anticipation around new console releases. We determined the relevant time period to be the immediate future, as both companies are poised to unveil their next-generation consoles. Their strategies involve deciding between lowering console prices or enhancing console features to attract gamers.

To ground our analysis in reality, we used ChatGPT for brainstorming and generating initial ideas on how these companies historically approach market competition. From this AI-generated data, we discarded information that seemed speculative and retained insights aligned with the known market behaviors of Sony and Microsoft.

The selected primary paper, "Pricing for freight carriers in a competitive environment: A game theory approach," serves as an analogical source to understand how entities in a competitive market can leverage game theory for pricing and resource management. While it specifically deals with the freight transportation industry, its principles of non-cooperative and cooperative game models offer a framework that enhances the depth of the console war scenario by illustrating how competitors may set prices and manage resources to maximize profits. We also used papers about the competitive environment of the gaming console industry, focusing on pricing strategies and market share dynamics. It provided a foundation for estimating the probabilities of different strategic moves by Sony and Microsoft and for understanding how these decisions could impact their market positions.

Decision Tree

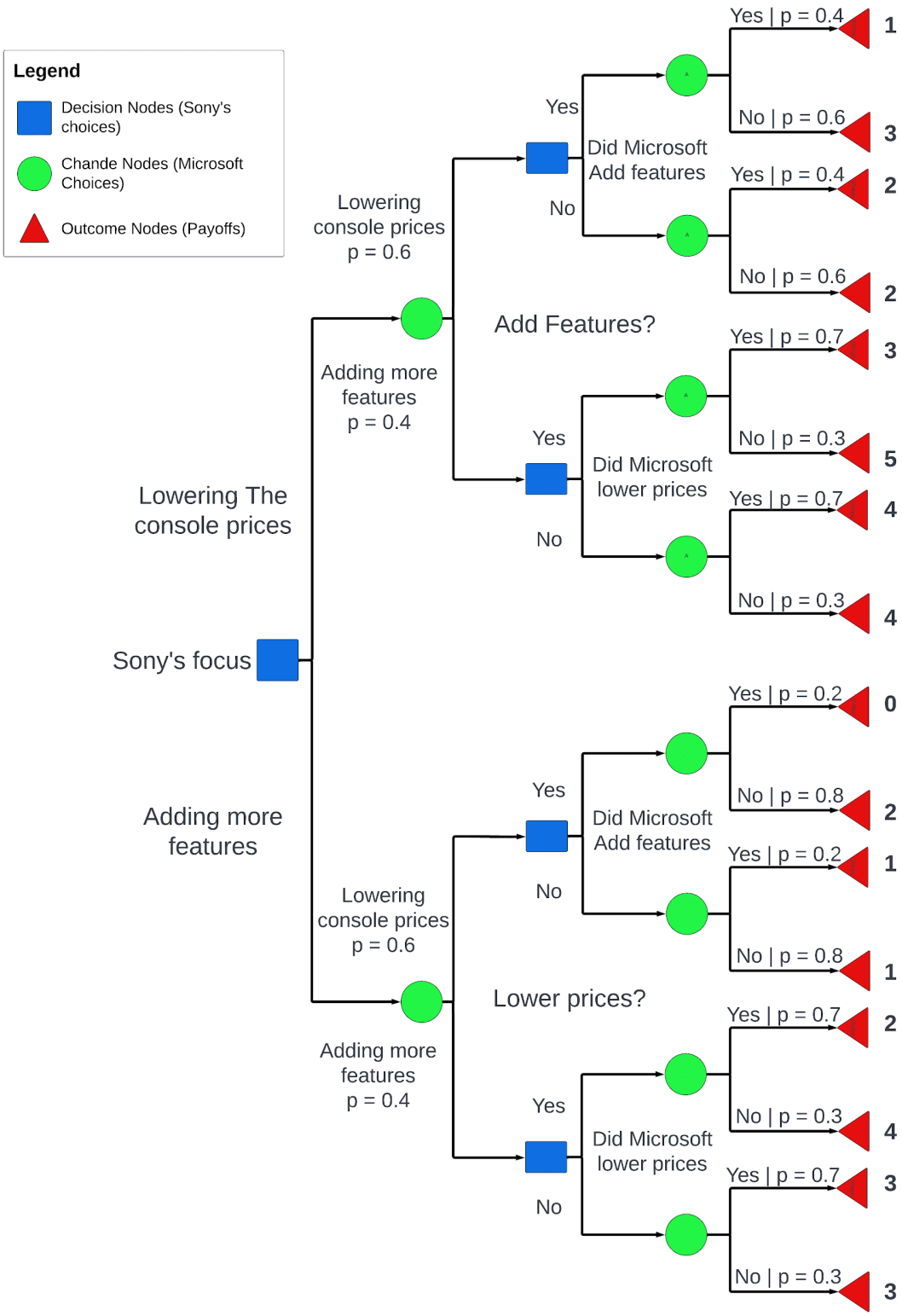

Figure 1: Decision tree from the perspective of Sony that maps most of the possible strategies Sony can take and what reactions they can go to depending on the probabilities of what Microsoft might choose.

This tree is from the perspective of Sony and includes a decision process that will involve two stages; in the first stage, Sony has to choose whether to focus on lowering the prices of the new console (strategy 1) or investing in adding new features and exclusive games (strategy 2). Then, depending on Microsoft's decision Sony can decide whether to use the other strategy in the second stage, but the second stage has a lower impact on the utility than the first stage because the first stage has the first impression (Nabyla Daidj & Thierry, 2009). Also, according to Nabyla Daidj and Thierry (2009), prices are one of the most important aspects as they target most of the audience, so companies are more likely to focus on this strategy, which is why we made the probability of Microsoft choosing this strategy higher than the adding feature strategy. The other probabilities were built on the logic that if a company has already lost a competition they'd be more risk averse so they're less likely to risk reducing their utility more, and the opposite is correct for the companies that won a competition (Tom et al., 2007).[1]

Assumptions and Simplifications

The model assumes that market reactions can be directly correlated with pricing and exclusive content quality, disregarding external market shifts like new entrants or significant technological disruptions.

Strategies interpretation

Maximax (Optimistic strategy)

This approach will overlook Microsoft's decisions and the probability of each outcome and choose the option that produces the most utility at each decision node.

- *max(Adding features | Sony lowering prices & Microsoft lowering prices) = 3*

[1] **#evidencebased**: We used evidence from various sources to support each one of our claims. This helped us make a compelling case throughout the assignment, but also understand our subject better and know how to calculate our decisions. Evidence was used also to justify the reasoning behind our probability estimations.

- *max(Adding features | Sony lowering prices & Microsoft Adding features) = 5*
- *max(Lowering prices | Sony Adding features & Microsoft lowering prices) = 2*
- *max(Lowering prices | Sony Adding features & Microsoft Adding features) = 4*

The maximum utility will be 5, prompting Sony to choose to focus on lowering its prices and then add more features, hoping that Microsoft will focus on adding features and won't lower its prices, because that has the potential for Sony to have a utility of 5.

Maximin (Pessimistic Strategy)

This approach is risk-averse because it considers the worst case in each decision tree and then chooses the best of them.

- *min(Adding features | Sony lowering prices & Microsoft lowering prices) = 2*
- *min(Adding features | Sony lowering prices & Microsoft Adding features) = 3*
- *min(Lowering prices | Sony Adding features & Microsoft lowering prices) = 1*
- *min(Lowering prices | Sony Adding features & Microsoft Adding features) = 3*

Now we apply the approach to the root node:

- *min(Sony Lowering prices) = 2*
- *min(Sony adding features) = 1*

The best worst-case utility will be 2, prompting Sony to choose to focus on lowering its prices and then adding more features, in case Microsoft focuses on lowering prices and then adding features, because in the worst case, Sony will get a utility of 2.

Expected value

This approach utilizes the utility and probability of each outcome to calculate the expected value in each decision node by multiplying the outcomes with the probabilities on the path and then choosing the one with the highest expected utility.

- *So, the EU(Adding features | Sony lowering prices & Microsoft lowering prices) will be calculated as = 0.4 * 1 + 0.6 * 3 = 2.2 if we said yes and = 0.4 * 2 + 0.6 * 2 = 2. So we will choose the "Yes" option for this decision node and then use all of the calculated EUs to decide which path to take for the root node.*
- *EU(Sony Lowering prices) = 0.6 * 2.2 + 0.4 * 4 = 2.92*
- *EU(Sony Adding features) = 0.6 * 1.6 + 0.4 * 3 = 2.16*

This approach suggests focusing on lowering prices and then adding features if Microsoft also added features or not adding features if Microsoft decided to add more features in the first stage.

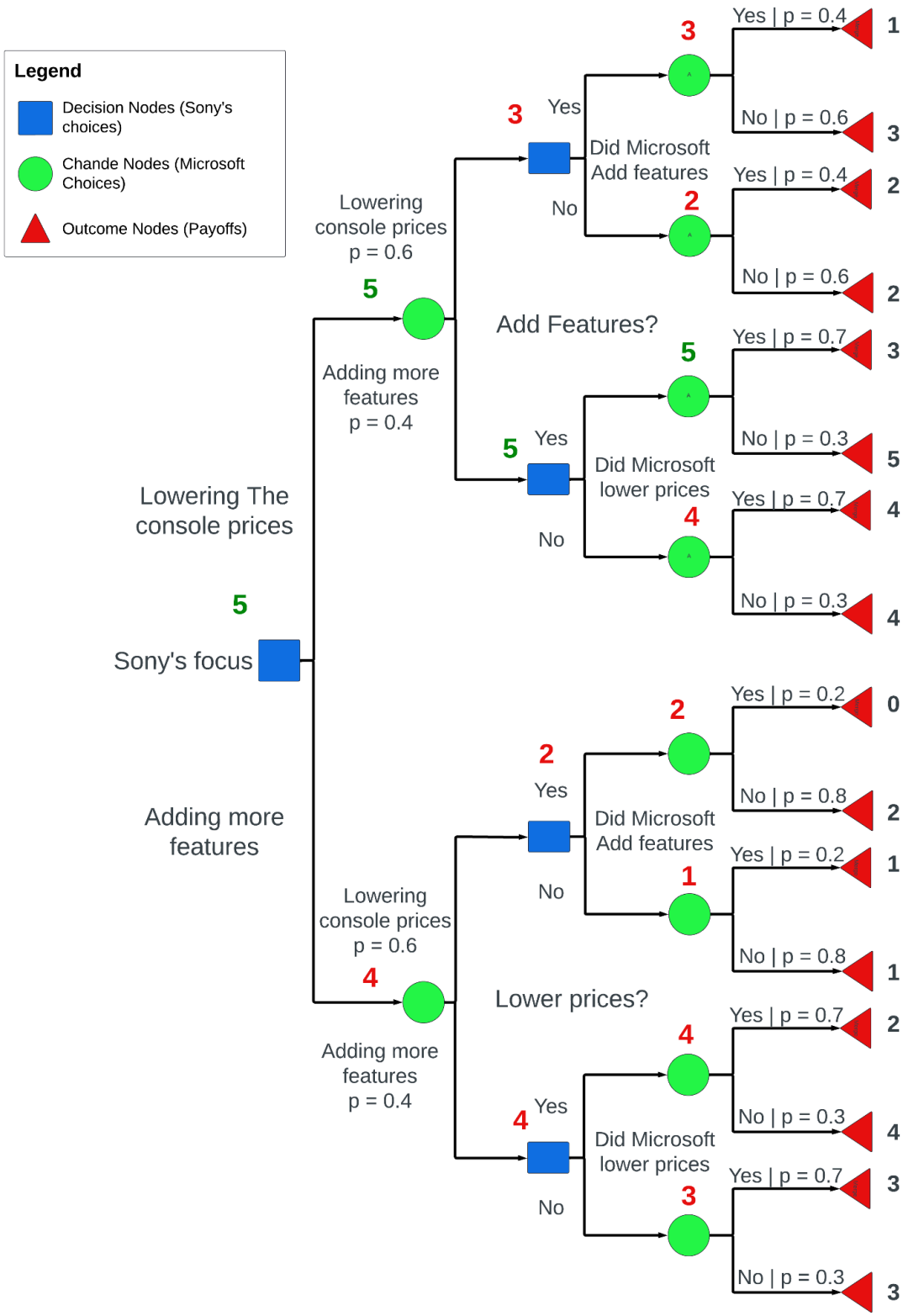

Figure 2: This is an illustration for the path Sony would take if they followed the Maximax approach and skip all of the probabilities and Microsoft's decisions.

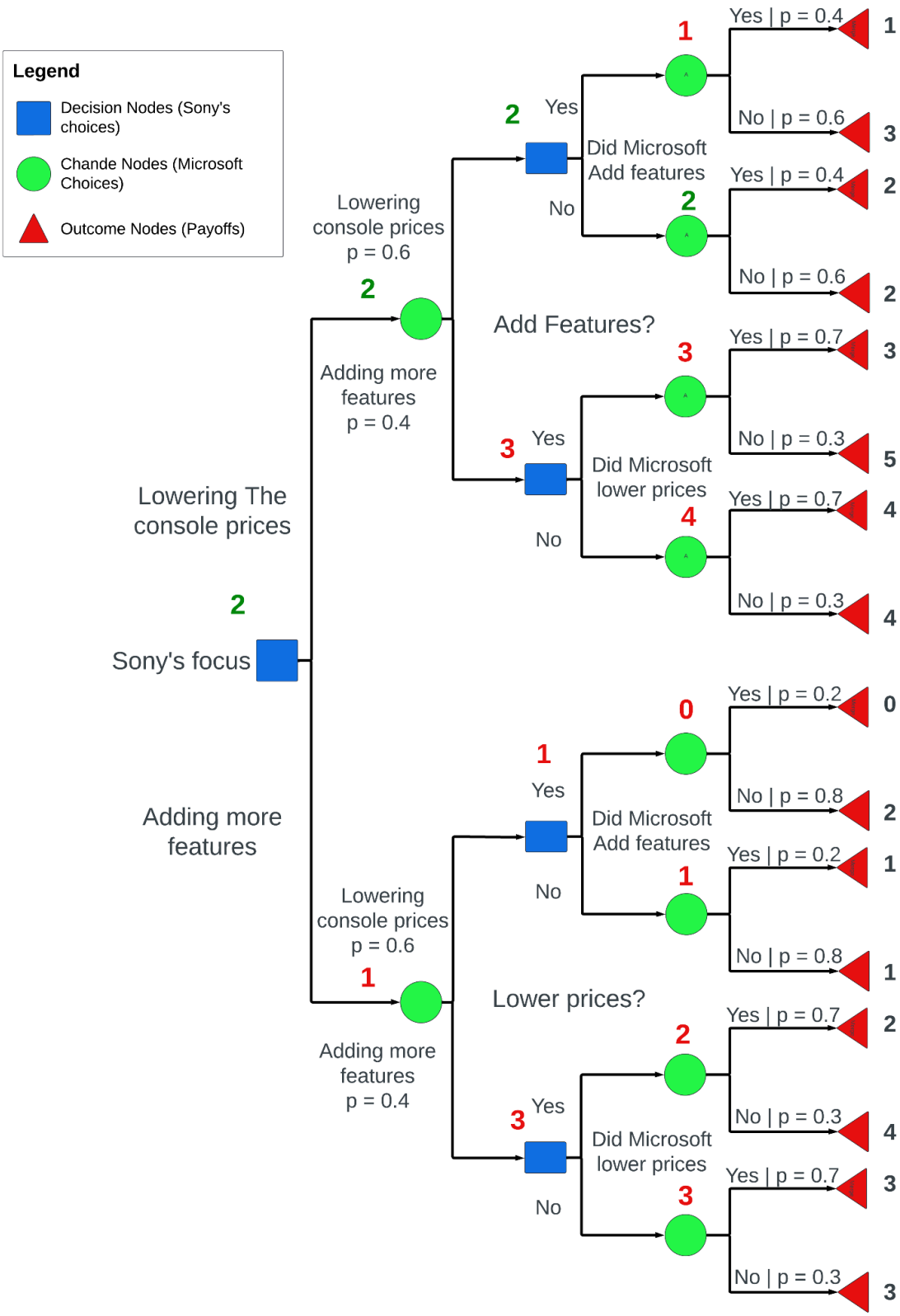

Figure 3: This is an illustration for the path Sony would take if they followed the Maximin approach and chose the best worst-case scenario.

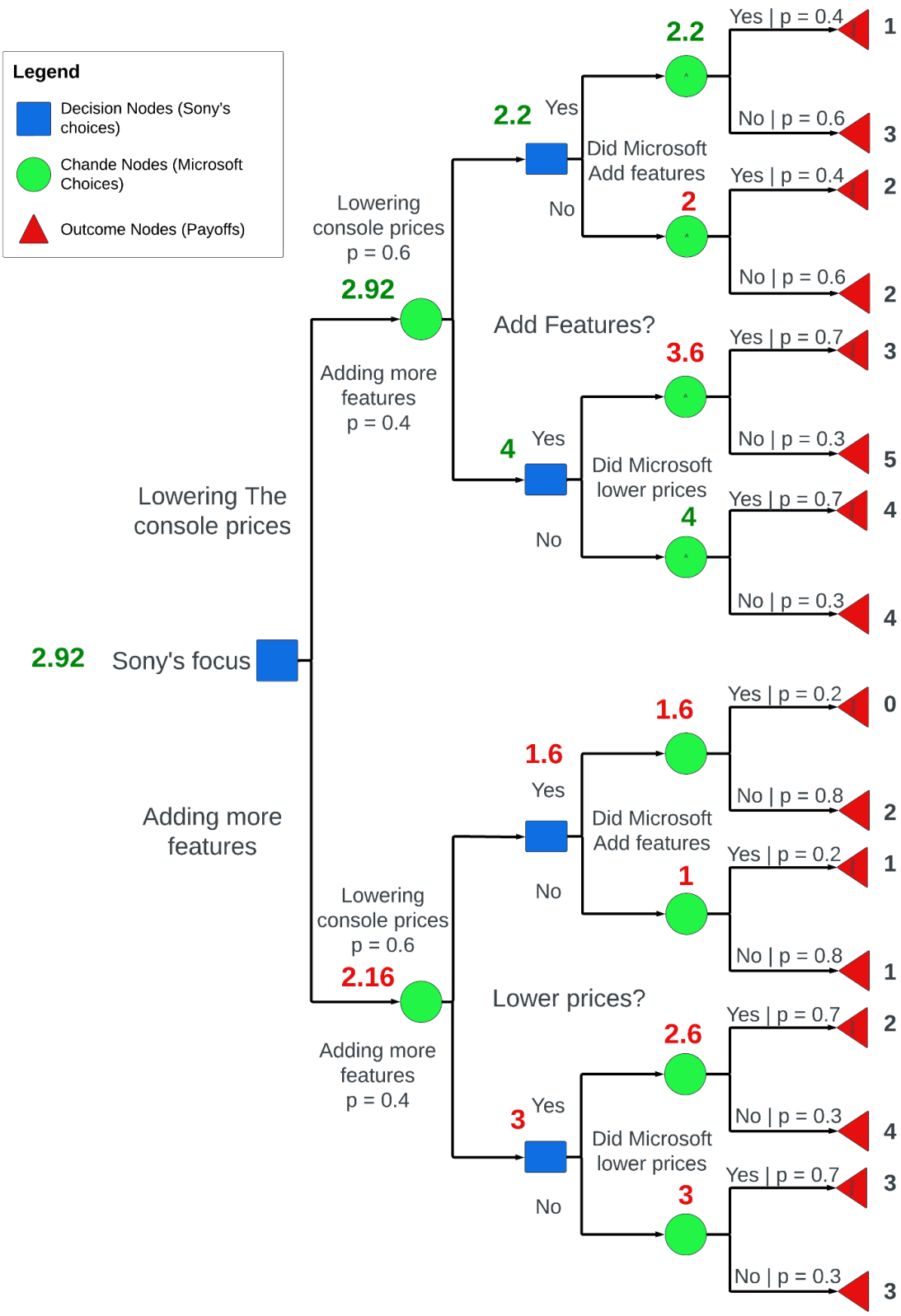

Figure 4: This is an illustration for the path Sony would take if they followed the Expected utility approach and utilized probabilities and all of the possible outcomes in their decision making process.

Best strategy

The maximax strategy is risky as it ignores the possibility of Microsoft's competitive response. The maximin strategy is overly conservative and might miss opportunities for higher profits. An expected value strategy would generally make the most sense, as it balances the potential benefits against the risks.[2]

Imperfect information

We can suppose Sony has hired a professional market analyst who worked with Microsoft before and can predict Microsoft's strategic moves with some degree of accuracy. The analyst doesn't provide perfect information but gives Sony better insight into the likelihood of Microsoft's actions. They indicated that there is an 85% chance that Microsoft will focus on more futures because they have been working on deals that will allow them to acquire Activation Blizzard, the American video games company.

Sony initially believed there was a 60% chance Microsoft would add features, this new information adjusts the probability to 85%, changing the expected utilities calculated in their decision tree analysis. This Bayesian update influences the subsequent strategic decisions Sony will make:

- Sony might only reduce the prices slightly to still get the advantage of winning the price wars but keep some resources to invest in adding features as well to stay competitive on both aspects of the market

[2] **#decisiontrees:** We defined all the possible outcomes of the game and justified any simplification, estimation, and modifications made in the tree. We provided interpretation using three different approaches (Maximax, Maximin with a rollback, and EU) and provided data visualization for each approach to make it easily understandable. I added a scenario of having an imperfect information and how it might affect our decision.

- However, if Sony were focusing on adding features. Then this information will shift them to take the opportunity and allocate more resources in lowering the new console prices to win this easy price war.

But since the information is not perfect, Sony shouldn't fully rely on it. They still need to lower the prices (if that is their choice) by a good amount to ensure that they win the price wars.

By applying Bayesian reasoning, Sony can dynamically adjust its strategy in response to new information, even when it is not perfect, thus optimizing its response to anticipated market developments and enhancing its competitive positioning.[3]

Game theory

Root Node: Initial Marketing Strategy

Strategies:

- Focus on lowering prices (attract customers with more affordable options)
- Focus on adding features (attract customers with higher quality or unique features)

Sony / Microsoft	Focus on lowering prices	Focus on Adding Features
Focus on lowering prices	2, 2	4, 1
Focus on Adding Features	1, 4	2, 2

2nd Decisions: Further Investment Decision

Strategies:

- Add more features (riskier but could lead to higher market differentiation)
- Don't add more features (maintain current state, less risky)

[3] **#probability:** We've used probabilities in our decision trees to determine different outcomes and used these probabilities in calculating the EU. We justified the reasoning behind these probabilities using academic articles. We used Baysen perspective to analyze the imperfect information and discuss how Sony will change its perspective.

Sony / Microsoft	Add more features	Don’t Add more features
Add more features	-1, -1	1, 0
Don’t Add more features	0, 1	0, 0

A game is symmetric if the payoffs for playing a particular strategy depend only on the other strategies chosen, not on who is playing them. Both of these matrices are symmetric games because the payoffs are mirrored across the diagonal.

Reasoning for Payoffs:

Lower prices attract more customers, so there's a bigger reward (4) for the company that offers the lowest prices (*Understanding the Impact of Pricing Strategies*, 2023; *The Impact of Pricing Strategies on Market Share Growth*, n.d.). When all companies are cutting prices, adding extra features doesn't help much, so the reward is smaller (1) (*Setting Value, Not Price | McKinsey*, n.d.). A steady approach that adds some features without raising prices too much gets a fair reward (2) (Almquist et al., 2016). Later on, trying to add more features can be risky and costly, and might not bring in more customers, leading to possible losses (-1) (*Pricing Strategy*, n.d.; Pricing Structure: Tips, Definition, and Examples, n.d.).

In the first decision matrix, neither Sony nor Microsoft has a strictly dominant strategy. For Sony, focusing on lowering prices would be better if Microsoft does the same ($2 > 1$), but focusing on adding features is better if Microsoft focuses on lowering prices ($4 > 2$). For Microsoft, the decision also depends on Sony's strategy.

A pure Nash equilibrium is a situation in a game where every player has chosen a strategy, and no player can benefit by changing their own strategy while the other players keep theirs unchanged. In the first decision matrix, there is only one pure Nash equilibrium: when both companies focus on lowering prices. This is because neither Sony nor Microsoft can benefit

by changing their strategy while the other's strategy remains the same (2,2). For example, if Sony is lowering prices, Microsoft's best response is to also lower prices (2 is better than 1) and if Microsoft is lowering prices, Sony's best response is to also lower prices (2 is better than 1). There is no need to calculate a mixed Nash equilibrium in this case.

In the second decision matrix, not adding more features is a strictly dominant strategy for both Sony and Microsoft. Regardless of the other's choice, not adding more features yields a better or equal payoff for both ($1 \geq -1$ and $0 \geq -1$ for Sony; $1 \geq 0$ and $0 \geq -1$ for Microsoft). This suggests in this scenario, after the initial decision, both companies should not invest in additional features to mitigate risk and avoid potential losses.

There are two pure Nash equilibria in this case:

- (Sony: Don't Add more features, Microsoft: Add more features): Sony gets a payoff of 0 and has no incentive to change since adding features would result in a payoff of -1. Microsoft gets a payoff of 1 and has no incentive to change because not adding features would lower its payoff to 0.
- (Sony: Add more features, Microsoft: Don't Add more features): Sony gets a payoff of 1 and has no incentive to change because not adding features would result in a payoff of 0. Microsoft gets a payoff of 0 and has no incentive to change as adding features would result in a payoff of -1.

To find the mixed strategy Nash Equilibrium, Sony needs to be indifferent between adding and not adding features which means the expected payoffs from both strategies should be equal. The same applies to Microsoft.

If Sony "Adds more features", their expected payoff is:

$$E(Add) = -1 * q + 1 * (1 - q)$$

If Sony "Doesn't Add more features", their expected payoff is:

$E(Don't\ Add) = 0 * q + 0 * (1 - q) = 0$, which means that regardless of Microsoft's choice, Sony's payoff is 0 when they don't add more features.

If Microsoft "Adds more features", their expected payoff is:

$$E(Add) = -1 * p + 0 * (1 - p)$$

If Microsoft "Doesn't Add more features", their expected payoff is:

$$E(Don't\ Add) = 1 * p + 0 * (1 - p)$$

For Sony to be indifferent:

$$E(Add) = E(Don't\ Add)$$

$$-1 * q + 1 * (1 - q) = 0 * q + 0 * (1 - q) = 0$$

$$-2q + 1 = 0$$

$$q = ½$$

For Microsoft to be indifferent:

$$E(Add) = E(Don't\ Add)$$

$$-1 * p + 0 * (1 - p) = 1 * p + 0 * (1 - p)$$

$$-p = p$$

$$p = 0$$

The calculation results tell us that Sony would always play "Don't Add more features" (since p=0, they never choose "Add more features") and Microsoft would randomize their strategy, playing "Add more features" with a probability of q = 1/2, and "Don't Add more features" with a probability of 1 - q = 1/2. However, this is in contradiction with the mixed strategy Nash Equilibrium, where both players should be randomizing their strategies to make the opponent indifferent. Sony always playing "Don't Add more features" is the best response to

Microsoft's mixed strategy. This result shows more of Sony's dominant strategy rather than a mixed strategy Nash Equilibrium. We have a situation where one player (Sony) has a dominant strategy, and the other player (Microsoft) has the best response.

In a repeated game, the players make choices over and over again, and they can change their moves based on what happened before. This is more realistic in our scenario since Sony and Microsoft have had 23 years of competition since the launch of Microsoft's Xbox (Movement, n.d.).

In the context of a repeated game where Sony and Microsoft make decisions over time, strategies like 'grim trigger' come into play. This means if they start by cooperating, they'll keep doing so as long as the other does. But if one company stops cooperating — maybe by launching a price war or exclusive games — the other will respond by always competing hard from then on. The best approach depends on what they value more: long-term benefits from working together or short-term advantages from going against each other. If they choose the grim trigger strategy and one company decides to compete, it could lead to both companies earning less over time because they'll be stuck in a cycle of competition. They might also use the "Tit-for-Tat" strategy, where a player copies the opponent's last move. If the opponent defects, the player retaliates by defecting in the next round but will return to cooperation if the opponent does so too (*Tit-For-Tat in the Repeated Prisoner's Dilemma – Game Theory 101*, n.d.). If both companies start adding features and see negative outcomes (financial losses; saturated markets), they might shift to a mutual pact where neither adds features so that they can avoid mutual losses.

The game can be extended to involve more than two players, such as other console manufacturers like Nintendo. The strategies would be similar and the situation more complex

because multiple companies can partner up in different ways on similar strategies like all deciding to lower prices together. For example, Sony and Nintendo could decide to lower their prices at the same time during the holiday season. This way, they can increase sales without directly competing with each other on price (*Nintendo Switch Outsells PS5 over COVID Holiday Season*, n.d.).

If the situation were to be modeled with other variables taken into account, these are some potentially significant variables:

- Profit (p): The earnings from attracting gamers.
- Cost (c): The expenses that needed to be spent in developing and marketing exclusive games.
- Time to market (t): The duration it takes for a game to be released, affecting how quickly a company can capture market share.[4]

Utility

A cognitive bias that could impact decision-making in this case is loss aversion which is part of Prospect Theory. When outcomes are framed as gains, individuals (or companies) tend to be risk-averse (Kühberger et al., 1999). Loss aversion is the tendency for individuals to prefer avoiding losses rather than achieving equivalent gains. This means they prefer a certain, smaller gain over a gamble with a higher expected value but also higher risk. The utility function here can be concave for gains and convex for losses, which shows diminishing sensitivity as values move away from the point of reference. This means that losses mean more for the individual or

[4] **#gametheory:** Our analysis identifies the game scenario by specifying the players (Sony and Microsoft), their strategies (lowering prices, adding features), and the associated payoffs. The game is identified as symmetric, justified by the mirrored payoffs. The analysis identifies Nash equilibria for both decision matrices and talks about the importance of these equilibria, particularly in terms of strategic implications for the players. The scenario's extension into a repeated game context introduces strategies like 'grim trigger' and 'Tit-for-Tat'.

company than the equivalent games.

If x, representing a metric of success is more or equal to 0 which means the company experiences gains, then the utility would be modeled like this $U(x) = x^{\alpha}$.

When outcomes are framed as losses, individuals tend to exhibit risk-seeking behavior. This means preferring a risky option that could potentially avoid a loss over a certain but smaller loss.

If x is smaller than 0, which means the company experiences loses, the utility function would look like this $U(x) = -\lambda(-x)^{\beta}$.

Where α and β (both < 1) shape the curve for gains and losses and λ (> 1) is the loss aversion coefficient, which indicates how much more losses are weighed compared to gains.

If Sony is perceived as "winning" or having a market lead, they might choose conservative strategies that solidify their position without significant risks. This could involve enhancing existing successful product lines or minor pricing adjustments rather than radical innovations or price slashes. When "winning", the company might use a maximizing strategy (choosing the strategy that maximizes the minimum payoff, which is safe). When "losing", the company might use a maximax strategy (choosing the strategy with the maximum possible payoff, which is more aggressive).

Probability distortion is a common cognitive bias where people do not perceive or respond to chances and risks accurately. This can lead to either overestimating very unlikely events or underestimating more likely ones. For example, if Sony or Microsoft overestimate the success of a highly innovative but untested feature, they might allocate disproportionate resources toward its development and marketing. This could mean less attention and resources for other more reliable projects. Overestimating these small probabilities can skew the expected

utility calculations, making high-risk strategies appear more beneficial than they realistically are.

In the gaming console industry, companies like Sony and Microsoft constantly make important decisions about launching new products, setting prices, or expanding into new markets. These decisions are not just one time events, they are part of a continuous series of strategic choices. How these decisions are grouped and considered — either together or separately — can greatly influence their outcomes and the company's overall strategy. If the companies view the decisions as part of a larger, cohesive strategy (broad framing), then they can mix riskier strategies with safer projects, leading to more stable results overall, they can make decisions that support each other where the success of one can help boost others and they can think long-term in the context of the fast-changing industry. For example, Sony and Microsoft might see how lowering prices affects not just sales, but also customer loyalty and how consumers see the brand across all their products and markets. However, if they evaluate each decision as an isolated choice (narrow framing), it can make risks seem bigger than they are, leading to overly cautious or, conversely, overly bold moves. It can also miss opportunities for collaboration between the companies. Sony might consider launching an expensive, cutting-edge gaming console just because it could make a big profit in the market. However, if they don't think about how this new console fits with other efforts like improving online services or updating their current products, their overall strategy could become disjointed. This lack of coordination might confuse customers and weaken the Sony brand.[5]

[5]**#utility**: We utilized an utility function and justified why our situation might look like the function defined. Cognitive biases like loss aversion and probability distortion are identified and their impacts are discussed in terms of how they might skew decision-making. We explained how loss aversion influences utility functions, noting that the utility function is concave for gains and convex for losses.

Modeling

Risk vs. Uncertainty:

In the context of the marketing campaign between Sony and Microsoft's strategic decisions, risk refers to situations where the probabilities of different outcomes are known or can be estimated. For example, the decision tree assigns numerical payoffs to each potential outcome, reflecting a risk calculation based on historical data or market analysis. Uncertainty, on the other hand, exists where the probabilities of outcomes are unknown or cannot be quantified. In our extended scenario with the market analyst, while Sony has imperfect information about Microsoft's actions, it still faces uncertainty about the actual market behavior and the effectiveness of its strategic decisions.

Normative vs. Descriptive Decision-Making Models

The game theory analysis above aligns with normative decision-making models, prescribing how Sony and Microsoft should make decisions based on rational criteria to maximize their payoffs. The use of expected value, maximax, and maximin strategies are typical normative approaches that assume rationality in the decision-making process.

Conversely, the introduction of new imperfect information and the adjustments made to Sony's beliefs via Bayesian reasoning tap into descriptive decision-making models. This reflects how companies actually make decisions in practice, which often involves dealing with incomplete information and trying to predict competitors' behavior based on available intelligence.

Results Evaluation

Comparing these findings with the predictions from your game theory analysis, there appears to be a convergence in the conceptual understanding of strategic interactions between

Sony and Microsoft in the gaming console market. Your analysis, particularly under the cooperative extension with imperfect information, aligns with the research suggesting that collaboration can enhance profitability, supporting Rational Choice Theory which predicts that rational players who will aim to maximize their utilities.

However, as per Prospect Theory, the real-world application in the console market may present deviations due to potential loss aversion or overweighting of unlikely outcomes. The results in the paper point out that cooperation can lead to a significant improvement in benefits, which can be reflected in the console industry if Sony and Microsoft were to collaborate on certain fronts. Still, such a partnership may be hindered by brand competition and market dynamics unique to the tech industry, which may not be fully captured in the cooperative game model.

Summary of Findings

Our analysis revealed that while normative models provide a structured decision-making approach (the analysis showed that the best decision would depend on the expected value approach and prompt Sony to focus on lowering their console prices), real-world complexities necessitate a more nuanced view, as provided by descriptive models. The "best" decision is thus not illuminated solely by normative frameworks but is informed by the imperfect and unpredictable nature of information and market behavior.

The most useful aspects of our analysis lie in its ability to synthesize quantitative probabilities with qualitative market insights, providing a strategic foresight that is both data-informed and adaptable. However, the biggest limitations stem from the inherent unpredictability of consumer preferences and competitive actions, which can render even well-calculated strategies ineffective in the face of actual market developments. In conclusion,

while models serve as vital tools for strategic planning, their predictive power is contingent upon the reliability of underlying assumptions and the ever-changing market context.[6]

Optional questions

ChatGPT Response

"To maximize market share and profitability in the face of stiff competition from Microsoft, Sony should consider a balanced strategy. Initially, Sony could lower prices to quickly gain a broad customer base and establish market presence. Following this, Sony could gradually introduce unique features in its games and services that are exclusive to the PlaySphere X, which will not only retain the initially attracted customers but also appeal to more dedicated gamers. This phased approach allows Sony to be competitive on price initially while building a reputation for innovation and quality that justifies future price adjustments."

Analysis

The ChatGPT strategy aligns well with the expected value approach discussed in our analysis, which suggests balancing risk and opportunity by adjusting strategies based on market response. However, ChatGPT simplifies the dynamics between lowering prices and adding features without addressing the potential financial strain of a price drop followed by costly feature additions. It also does not consider Microsoft’s potential reactions to Sony’s strategy changes, which could significantly influence the outcome.

ChatGPT's recommendation matches our analysis in recognizing the need for flexibility in strategy and the importance of market share. Yet, it overlooks the complexities of sequential game theory where each move by Sony could lead to a countermove by Microsoft, impacting the

[6] **#modeling:** Our model differentiates between risk, based on known data, and uncertainty, with unknown probabilities, reflecting Sony and Microsoft's strategic decision-making complexities. It combines normative elements outlining rational strategies and descriptive elements handling imperfect information, adding realism. Despite its structured nature, we recognize potential market unpredictability limitations and justify our variable choices and model simplifications for practical accuracy.

effectiveness of the initial strategy. This exercise highlights the usefulness of AI in generating a broad strategic outline but also underscores the need for deeper strategic planning that accounts for real-time competitor reactions and market conditions.

Word Count: 4352 words[7]

[7] **#professionalism:** We made sure to cite every source we used and give credit to the sources that aided us in the process. We made sure to have consistent formatting and follow the assignments guidelines.

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Reflection

Maria: I worked on the Game Theory and Utility parts of the assignment. We decided and developed the situation together and communicated through messages and calls. We felt free to give feedback and talk about each other's work and updated each other on our progress constantly. We both researched the topic, shared what we found, and talked through our thoughts and ideas. Since I was more confident in Game Theory and Ahmed was more confident in Decision Trees, we decided to separate the topics and work individually on the first draft of both sections then worked together to make them flow better. We commented on the document and in the chat to give each other pointers and mostly shared our thoughts on Telegram. We were pretty receptive to feedback and the assignment flew smoothly.

Ahmed: I was responsible for developing the decision tree and integrating our findings into the modeling part of the analysis. My role involved mapping out the strategic options for Sony and Microsoft, calculating expected outcomes, and ensuring these were aligned with our game theory analysis. Communication within our group was effective; we utilized Google Meet and Telegram Chats and continuous updates via the shared doc. I ensured our arguments and probabilities were well-supported and logically structured. My feedback to peers aimed at refining our strategies and clarifying complex sections of the analysis. I received feedback positively, especially regarding the need to simplify some of the more technical explanations to make our analysis accessible to a wide audience. This project reinforced the value of clear communication and the importance of balancing detail. Moving forward, I aim to improve my ability to anticipate and integrate potential feedback earlier in my upcoming group projects.

AI statement

We used Grammarly for grammar checks and punctuation. We used ChatGPT for the optional part in the scenario section.

Document link

https://docs.google.com/document/d/1w5SY6URXfvwVg1gOLj65KTJTiFtWOsq8-GUCaF9Buo8/edit?usp=sharing