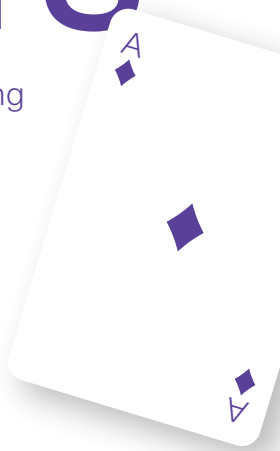
Sylvamo

The World's Paper Company

ALL DECISIONS ARE BETS

Sylvamo's Guide to Decision-making



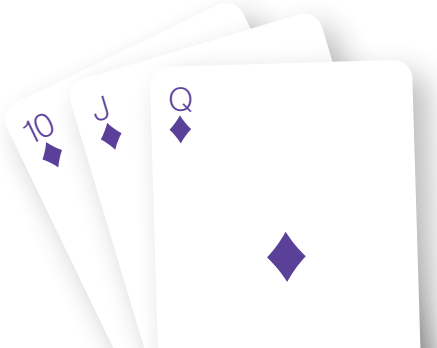


Table of Contents

Introduction

At Sylvamo, we're rooted in a continuous improvement mindset, striving to be better than the day before. Safer. Smarter. More efficient. This decision-making guide is intended to help employees overcome biases, sharpen decision-making skills and make confident choices.

Derived from "How to Decide: Simple Tools for Making Better Choices," written by former professional poker player Annie Duke, this guide offers a framework and tools for improving decisions. A key theme throughout the playbook is "All Decisions Are Bets," as Duke frequently highlights the importance in embracing uncertainty and recognizing that decisions are inherently bets on the future. This perspective shifts mindsets to view decisions as ongoing processes where learning and adaptation play crucial roles.

Mindset Shift: The Process is More Important than the Outcome

There is a natural human tendency to measure decision success on results. This outcome-centric approach is flawed because it downplays uncertainties (luck) inherent in decision-making, but also ignores the quality of the decision. The distinction between decision quality and decision outcome is critical. Concentrating on the process and what is within our control — gathering information, analyzing data and applying critical thinking — leads to resilient decision-making, regardless of the variability of outcomes. Good quality decisions can still sometimes lead to bad outcomes and vice-versa, but by defining success based on decision quality rather than decision outcome, the groundwork is laid for continuous improvement and learning.

	Decision Outcome	
Decision Process	Good	Bad
Good	Good bet pays off; Earned good luck	Good bet doesn't pay off; Undeserved bad luck
Bad	Bad bet pays off; Undeserved good luck	Bad bet doesn't pay off; Earned bad luck

*Source: How to Decide: Simple Tools for Making Better Choices

How Can the Decision-Making Process Improve Our Odds?

Since all decisions are bets, a formalized decision-making framework improves the odds of reaching a better answer. A decision-making framework is a structured approach that helps individuals and organizations make informed and effective decisions to reach target objectives. It provides a systematic method to gain perspective by considering different options, evaluating options and prioritizing the best decisions. This guide offers a framework for thinking as well as tools for executing on that framework.

Decision-making Steps

The first step in the decision-making framework is to guard against bias. Once you've taken appropriate measures to ensure your decision will not be bias-based, apply the steps outlined below. Don't forget to check and adjust throughout the framework to ensure you're on track.

- Define the problem
- Define historical base rate
- Develop a range of possible outcomes
- Develop a view of each outcome
- Choose the best alternative
- Review your decision

Decision-making in action

Throughout this guide, you will be led through an example scenario of the decision-making process. In this case, an office paper manufacturer (PaperCo) is trying to determine if they should begin exporting paper to Mexico.

Meet the players:

- Grace (Marketing Director)
- Ethan (Export Manager)
- Thomas (Senior Analyst)
- Claire (Operations Manager)
- Joe (Finance Director)
- Nicole (Sales Director)

Background:

The team is gathered in a conference room at PaperCo headquarters.

Grace: "Thanks for joining, everyone. Ethan has been considering expanding PaperCo's market by exporting to Mexico. Currently, we are experiencing a decline in the demand for office paper in the U.S. at a rate of 3.5% per year, leaving us at 2.5 million tons. To sustain our growth, we need to look at new markets, and Mexico presents a promising opportunity."

Ethan: "Recent market dynamics have created an opening for us: previous Asian imports to Mexico have been hit with a tariff on foreign imports, leading to their exit from the market. European importers have begun to fill the gap, but unmet demand remains. The total demand for cut-size paper in Mexico is 500,000 tons and is growing at 1% annually. We're considering three possible strategies – direct exporting, joint venture with a Mexican company or setting up a local manufacturing facility. Our decision will be based on the following criteria: expected increase in revenue and profit, impact of foreign exchange (FX) rates and important regulations, cost implications and required investments, market acceptance and competitive advantage and long-term sustainability and scalability."

Continue reading each step for decision-making in action.

Step 1

Guard against bias

Perception matters

"Experience is necessary for learning. But we process that experience in a biased way. This means the very feedback you need to become a better decision-maker can interfere with your ability to learn good lessons from experience." ("How to Decide" page 48)

Bias is a predisposition of how we think and act, informed by history and experience. Our worldview starts to form during childhood as we are socialized within cultural context. Our thoughts are reinforced over time by our social groups, the media we consume and how our brain functions. Because all decisions are subject to bias, we need to take a structured approach to recognize and guard against bias when making decisions.

Individual Cognitive Bias

Cognitive bias can interfere with development in several ways:

- Accuracy: We tend to make judgments based on inaccurate or incomplete information.
- Communication: Cognitive bias can affect the way we communicate with others, leading us to misunderstand or misinterpret their perspectives.
- Learning: Cognitive bias can impact the way we learn and process information, often making us reinforce existing beliefs and ignore or dismiss new information.

A few examples of cognitive biases:

Actor-Observer Bias – A social cognitive bias relating to a person's tendency to attribute their actions to external influences and other people's actions rather than their own actions. This bias is more evident when outcomes are negative.

Anchoring Bias – Heavily relying on the first piece of information one learns to decide. This piece of information is often irrelevant and not rooted in specific data or a clear reference point. Anchoring undermines critical thinking because people rely on irrelevant but easily accessible facts to make judgments.

Attentional Blindness – The tendency to miss the obvious when one's attention is focused on another task, event or object. This can cause a person to ignore or miss important details and could lead to risky decisions.

Authority Bias – The tendency to attribute greater accuracy to the opinion of an authority figure.

Confirmation Bias – A common bias where a person focuses on information confirming their own existing beliefs or preconceptions. One seeks evidence that backs preconceived ideas or opinions and overlooks contradictory data or opinions.

Dunning-Kruger Effect – The over-reliance on one's intelligence or competence to make decisions. This type of bias leads people to overestimate their capabilities and fails to recognize limitations in decision-making. It is a perception gap between perceived and actual performance where the least skilled people overestimate their abilities more than anyone else.

Halo Effect – A bias where an initial impression, how we feel about a person or a positive or negative trait influences how we think about them overall. It is a cognitive error in judgment where an impression from a single trait or characteristic is allowed to influence multiple judgments of unrelated factors. In this type of bias, first impressions are established as more important than subsequent impressions in forming overall impressions.

Hindsight Bias – The "I knew it all along" phenomenon is where one tends to see past events as more predictable than they were. People overestimate their ability to predict events when this type of bias is present. It demonstrates how recently acquired knowledge influences the recollection of past information even though that information was completely unpredictable in the past.

Misinformation Effect – This occurs when misleading information is incorporated into an account of a historical event. One's memory is altered or impaired because of inaccurate information received after an event and can lead to inaccurate decision-making.

Optimism Bias – The tendency to overestimate the likelihood of favorable outcomes and success while underestimating the likelihood that negative results can impact our lives. If expectations are better than reality, the bias is optimistic, and if reality is better than expected, the bias is pessimistic. Optimism bias causes people to be irrational in expectations even if rationality suggests that problems are inevitable in life or in the decision they are making.

Self-Serving Bias – Another type of cognitive bias where one views themselves in an overly positive view and attributes successes to internal factors like intelligence while blaming external factors like other people or luck for failures to maintain self-esteem.

Sunk Cost Effect – The tendency to choose to continue something because of what has already been invested. In this situation, future decisions are impacted by past efforts even if the current costs outweigh the benefits. This behavior is justified by a person's desire not to appear wasteful but may lead to cost overruns in business.

Team Biases

The mixture of individual traits, group dynamics and social hierarchy can result in team biases. People are generally hesitant to contradict individuals in positions of authority. Group dynamics can also lead people to follow ideas and behaviors of others, despite not believing in the action or decision.

This leads to groupthink, a psychological phenomenon where a group of people becomes so harmonious and conforming that they fail to see faults in their decisions. When caught up by groupthink, individuals tend to refrain from expressing doubts and judgments or disagreeing with the consensus. Groupthink occurs when groups feel threatened and develop an "us versus them" mentality, prompting team members to accept group perspectives, even when those perspectives don't align with personal views. Groupthink may also occur in situations in which decision-making is rushed.

Decision-making affected by groupthink neglects possible alternatives and focuses on a narrow number of goals, ignoring risks involved in a decision. Groupthink fails to seek out alternative information – and once rejected, little attention is given to contingency planning.

Group dynamics and a natural desire to fit in with group members can also lead to the Abilene paradox, the tendency for a group to go along with an idea because they believe everyone else is for it when, in reality, no one believes the idea is appropriate. Abilene paradox is another team bias where group members inaccurately assume they are the only ones not wanting to do something.

Tools to guard against bias

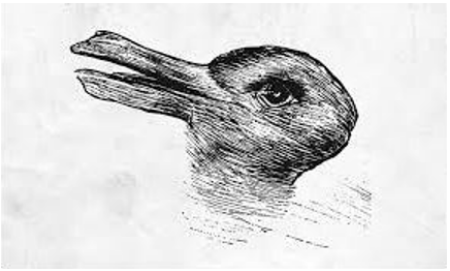
Decision-makers should take time to ask intentional questions to detect potential bias. The goal of these questions is to re-frame perspectives and avoid false agreement. Strategies to identify biases are provided below.

1. **Examine Multiple Frames:**

   Because cognitive bias is a result of our specific circumstances, we must evaluate the lens we see decisions to determine if there are alternative perspectives we have not considered.

   For example, in the illustration below, do you see a duck or a rabbit? Take a second look, perhaps shift your focus to the other side of the image. With a change in perspective, you may now see a different animal.

Rabbit or duck?

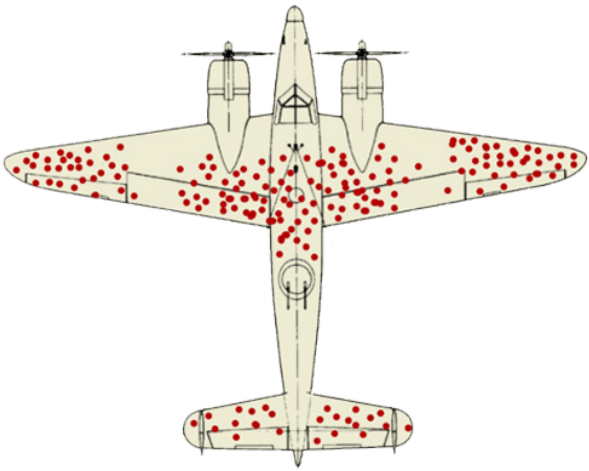


To ensure we are examining a decision through multiple frames, ask yourself how we can view the decision from different angles. What other perspectives can we examine?

2. **Seek Counterfactuals:**

When we examine the elements of a decision, we draw conclusions based on the way we interpret facts; however, every fact has a counter-fact.

Consider the plane shown below, representative of an Allied bomber used during World War II. The red dots represent damage from being struck while flying missions. This plane was critical to war efforts, so Allied Command determined that armor would be added to all areas with significant damage to reinforce the plane. Before adjustments were made, a statistician pointed out that they were only able to assess damage on planes that returned after completing missions, meaning planes with damage in the red concentration areas survived. Reinforcements should be added to the un-damaged areas of returning planes, concluding that planes that were hit in the other areas never returned from missions. (https://www.dgsiegel.net/talks/the-bullet-hole-misconception)



To seek counterfactuals, ask:

- What if our beliefs about causal mechanisms are wrong?
- What might be a symptom instead of a real problem?

3. **Deconstruct Assumptions:**

Assumptions used in decision-making can lead to oversight and lack of clarity. Ensure that all assumptions are defined, including "obvious" ideas and relationships.

- What elements of our decision are taken as a given?
- What assumptions should we evaluate more carefully?

4. **Search for Bias:**

   In addition to the general questions provided, there are resources available that give examples of questions to test for specific types of bias. Consider using one of the tools outlined below to help recognize bias.

Type of Bias	Test Question
Confirmation Bias	What alternatives did we consider? Did we look for information to disprove our hypothesis?
Anchoring Bias	Which amounts in the decision are fact versus estimate? Were the estimates developed by adjusting another number?
Halo Effect	What about the current decision is comparable to the previous success? Are the decision-makers overly attached to the past decision?
Authority Bias	Has the subject matter expert shared their opinion?
Sunk Cost Fallacy	Are decision-makers making recommendations overly attached to past decisions? How would a newcomer evalute this decision?

Team Structures:

Evaluate your team to ensure it consists of individuals with diverse perspectives and include all relevant stakeholders. Assign specific roles for each team member to challenge viewpoints. Types of inquisitors include:

- Counterfactualist – "What if we are wrong?"
- Deconstructionist – "What does that mean?"
- Incomplete Thinker – "Are we overemphasizing what we already know?"
- Curious George – "Tell us more about that."
- Bugs Bunny – "Watch for that rabbit hole."

Group Processes:

Determine group processes to ensure different perspectives are identified. Examples include:

- **Four-eyes approach** – this approach involves at least two individuals reviewing and approving decisions to guard against bias. This method ensures thorough examination, reduces errors and incorporates diverse perspectives. It also promotes accountability by requiring justification and agreement from multiple parties.

- **Red/blue teams** – using red and blue teams help guard against bias by introducing structured, adversarial viewpoints in decision-making. The red team challenges assumptions and highlights potential risks or flaws, while the blue team defends and refines proposed ideas. This dynamic promotes a thorough and balanced evaluation of options, reduces groupthink and ensures that strengths and weaknesses are evaluated in the decision process.
- **Pre-mortems** – encourages decision-makers to imagine potential failures and identify weaknesses before they occur. This proactive approach forces individuals to critically evaluate the risks and challenges of a decision, rather than just focusing on positive outcomes. By considering how and why a decision might fail, pre-mortems reduce overconfidence and optimism bias, leading to more thorough and realistic planning.
- **Rotating team roles** – exposes individuals to different perspectives and responsibilities. This approach minimizes the influence of personal biases that can arise from fixed roles or entrenched positions. By varying roles, team members gain a broader understanding of decision-making and are less likely to develop tunnel vision or groupthink.

Forcing Tools:

Forcing tools are self-monitoring techniques to facilitate behaviors to guard against bias.

- **Checklists**: Checklists guard against bias by ensuring consistency, objectivity and thoroughness in decision-making. In addition to contributing to a standardized process, checklists can reduce cognitive load and provide a documented record, making it easier to review decisions.
- **Templates**: Using templates provides a standardized format for tasks and communications, ensuring consistency and objectivity. Templates reduce the influence of personal preferences by outlining specific criteria and steps, and they reduce the likelihood of oversight due to cognitive bias.
- **Standing rules**: Having established guidelines or procedures in place can mitigate bias in decision-making. For example, a standing rule in hiring could be that all job candidates are evaluated using a standardized scoring rubric based on predefined criteria such as skills, experience and cultural fit.
- **Stopping rules**: Stopping rules promote an objective and balanced approach. An example of a stopping rule would be a time limit on new projects, such as a rule that exploratory research projects must be reviewed and either concluded or redefined after twelve months.
- **Anonymous voting**: Anonymous voting protects voters from potential social pressures and influences, ensuring that individuals can express their true opinions without fear of retribution or the need to conform to group dynamics.
- **Leader speaks last**: This method allows team members to share opinions and ideas freely without being influenced by leaders' viewpoints. This approach encourages a diversity of perspectives and promotes open discussion, preventing groupthink and the undue sway of authority.

Takeaways

- While experience is essential for improving decision-making, our biases can distort how we interpret that experience.
- We need to understand that we are all biased and need to guard against bias with informed and objective insights rather than skewed perspectives.
- Incorporate different roles and backgrounds for cognitive diversity in teams because teams can also be biased.

Decision-making in action

Grace: "Our first priority is to guard against bias in our analysis."

Thomas: "We need to implement a structured approach. Let's establish a set of clear, objective criteria for our analysis that everyone agrees on – this will minimize personal biases. We should also use diverse teams to review our findings since different perspectives can highlight potential bias we may overlook."

Nicole: "I don't think we need to worry so much about bias. We know our market well, and our intuition is usually spot-on."

Claire: "Intuition can be helpful, but we can't rely solely on it. We need to ensure our analysis is objective and data-driven. Different perspectives can help us identify and mitigate any biases we might overlook individually."

Joe: "Agreed. We could also set-up regular reviews with an external advisor. An outsider's perspective can provide unbiased feedback on our methods and findings."

Grace: "Great ideas. We'll incorporate these strategies as we proceed."

Step 2

Define the problem

Know what game you are playing before you bet

The first step (or in our case, the second step) in solving a problem is admitting you have one – and clearly defining it. Understanding the problem lays the groundwork for gathering relevant information, analyzing options and predicting outcomes. When you have a clearly defined problem, you can focus on collecting applicable data, ensuring your decision is based on facts versus feelings.

When you have a well-defined problem, you also have the following:

- **Clarity**: Clarity aids in setting specific, measurable, achievable, relevant and time-bound (SMART) goals.
- **Alignment**: Understanding the problem allows you to involve appropriate stakeholders.
- **Prioritization**: A defined problem ensures resources are allocated efficiently to achieve the most significant impact.
- **Measurement**: Clear understanding of the problem translates into clear metrics for measuring progress toward goals.
- **Adaptability**: You may uncover new insights or challenges as you gain deeper understanding of the problem – flexibility is important in adjusting objectives and resources as needed.

Examples:

- Deciding where to place distribution centers – in this decision, is our goal to reduce distribution time to customers or to reduce truck costs by streamlining routes?
- Determining how to lower the number of Helpline cases – in this decision, are we trying to shorten the time to close a case or to inform employees of other available resources so there are fewer calls to the Helpline?

Note that not all decisions need to be evaluated with the same level of diligence.

Consider the following factors when determining the depth of the problem.

- **Impact**: High-impact decisions can be riskier because they significantly influence outcomes and may have long-term implications. Conduct a risk assessment to determine how best to approach the decision-making process and tailor your approach accordingly.
- **Complexity**: The complexity of the decision determines the level of diligence needed. Complex decisions involving multiple variables and uncertainties often require deeper analysis to assess potential risks and outcomes accurately.
- **Urgency**: Urgent decisions may need to be made quickly. While time constraints can limit the depth of evaluation, critical aspects should still be considered.
- **Resources**: Adequate and available resources (time, details and expertise) enable a more comprehensive analysis, leading to better-informed decisions.
- **Relevance**: Prioritize the level of diligence based on the decision's significance and potential consequences.
- **Experience and Expertise**: Subject-matter experts may need to be utilized when making decisions in areas you have less experience in.

Tools to define the problem:

1. Kind versus Wicked Analysis

For kind problems, which are well-defined and predictable, decision-makers rely on structured methods, proven techniques and best practices, focusing on efficiency and accuracy. Wicked problems, which are complex and ill-defined, require flexible, adaptive strategies that involve engaging diverse problem-solving. An analysis of the problem type aids in effective resource allocation, risk management and setting realistic expectations.

Kind problems have clear definitions, a repetitive nature, standard evaluation process, predictable outcomes and established processes to solving problems.

- Solving kind problems typically involves using structured, methodical tools including standard operating procedures, project management tools and software applications. Wicked problems require tools that are adaptive and collaborative including focus groups and idea-sharing technology.

Examples of kind problems at Sylvamo:

- Planning for annual merit rewards – Sylvamo follows information provided by Human Resources as the appropriate percentage increase by rating. The next task is to examine the salary matrix by pay grade to ensure team members are correctly positioned within ranges. The only judgment required is to rate an individual's performance for the year. Once a rating is given, it becomes a mechanical process following the model.
- Credit decisions – Facts must first be gathered on the potential buyer and their financial conditions. In many cases, the buyer's rating on their credit report can be useful. It is also important to understand what products we sell them, the volume, profit margin and amount of expected purchases. Once this data is collected, judgment is applied to determine the appropriate amount of credit we will extend.

Wicked problems are strategic and do not have a well-defined set of parameters. They are often complex with changing parameters and unique solutions.

Examples of wicked problems at Sylvamo:

- Capital expenditures – We have established procedures that must be followed, but elements like future demand, supply and the market for the specific product and overall economic climate are not as predictable.
- Acquisitions – Decisions must be made with limited financial information available. While historical data might be available, future revenue projections can be uncertain and depend on many external factors.

2. **Question Burst** – brainstorming technique to generate questions about a particular problem or challenge (shifts thinking patterns, uncovers new insights and innovative pathways for problem-solving)
3. **Root Cause Analysis** – identifies the fundamental causes of a problem rather than only addressing symptoms (techniques like the "5 Whys" involve repeatedly asking "why" a problem occurs until the root cause is uncovered)
4. **SWOT Analysis** – provides a comprehensive view of both internal and external factors to understand the problem's context and dynamics
5. **Flowcharting** – identifies inefficiencies and areas for improvements by creating flowcharts to highlight where issues occur
6. **Interviews and Focus Groups** – gathers detailed information and uncovers nuanced issues by engaging directly with those impacted
7. **Data Analysis** – identifies trends, patterns and anomalies that indicate underlying problems

Takeaways

- Understanding the problem is a crucial step in our decision-making because it provides clarity needed to align, prioritize, measure and adapt.
- Not all decisions need to be evaluated with the same level of diligence. Kind problems (well-defined and predictable) can often be solved with structured methods.
- Wicked problems are complex and ill-defined. They require flexibility and adaptive, diverse problem solving.
- Tools such as question burst, root cause analysis and flowcharting can help us clearly understand the problems we need to address.

Decision-making in action

Grace: "Ethan, could you provide an overview of the issue we're facing?"

Ethan: "The primary issue is the declining domestic demand for office paper, which is falling at a rate of 3.5% per year. We are considering exporting to Mexico, where demand for office paper products is growing to sustain growth; however, we need to evaluate the financial benefits and risks associated with this move."

Nicole: "I think it's obvious. We should go for the option with the highest revenue potential."

Thomas: "Nicole, while revenue potential is important, we need a comprehensive analysis that includes risks and other factors. We should look at various data points to ensure we're not missing anything."

Claire: "Do we have any historical data on customer satisfaction and market acceptance in similar markets?"

Grace: "Yes, we've gathered data on historical supply, demand and market dynamics in Mexico and other similar markets. This will help us understand the potential outcomes better."

Ethan added, "We need to consider all angles here, not just revenue. There are regulatory issues, potential FX rate impacts and market acceptance factors we need to address."

Step 3

Define the historical base rate

We can't know where we are going unless we know where we have been

A historical base rate refers to how likely something is to happen in situations similar to the one we are considering. This provides a data-based look at a past event, giving an external reference point ("outside" view versus "inside" view). Without this base rate, predictions of different outcomes might be too optimistic or pessimistic.

An "outside" view considers generalizable patterns and historical data, broader reference classes or similar cases. By analyzing how similar problems played out in the past, we gain a more objective and realistic understanding of potential outcomes. This analysis provides a foundation for decision-making that combats biases, provides context and informs better choices.

Data-driven decisions rely on evidence rather than intuition or personal biases. Information rooted in data helps us describe the past with an objective external reference point. It helps us see the "outside view." When we only look at specifics of our fact pattern and apply what we have a hunch will happen, we only gain an "inside" view. This narrow focus leads to biases, over-optimism and a lack of consideration for external factors.

Here are a few examples of problems that arise when we ignore "outside" views:

1. **Excessive Optimism in Investment Decisions**
    - **Inside View:** A company evaluates a major investment project, focusing on its unique features, potential benefits and internal projections.
    - **Problem:** Managers are too optimistic when evaluating the returns of the investment and do not consider how similar investments have performed in the past.
    - **Consequence:** The investment may fail to meet expectations, leading to financial losses.

2. **Biased Product Development Forecasts**
    - **Inside View:** A tech startup develops a new software product, considering its innovative features and market potential.
    - **Problem:** The team ignores the experiences of similar products previously launched or similar products introduced by competitors.
    - **Consequence:** Overly optimistic forecasts lead to unrealistic expectations. The product may struggle to gain traction or face unexpected challenges.
3. **Underestimating Project Complexity**
    - **Inside View:** An engineering team embarks on a complex infrastructure project, focusing on technical details and internal expertise.
    - **Problem:** Their estimate of time for completion does not consider an analysis of a how long a similar project took to implement last year.
    - **Consequence:** Delays, cost overruns and quality issues arise due to insufficient consideration of external factors and lessons learned from comparable endeavors.

Why does historical information matter?

By examining past events, patterns and outcomes, we gain valuable insights into what has worked, what has failed and the potential consequences of our choices. Historical data serves as a baseline, allowing us to assess risks, predict trends and avoid repeating mistakes.

Knowing the past supports decision-making:

- **Learning from Patterns:** By examining historical data, we can identify recurring patterns, trends and outcomes. These patterns serve as valuable guides for making informed choices. For instance, analyzing past financial results of a company can inform investment decisions.
- **Avoiding Repetition of Mistakes:** Learning from others' past missteps or our own can prevent costly errors. For instance, a business that previously suffered due to poor marketing strategies can adjust its approach based on past experiences.
- **Contextual Insights:** Historical context provides a deeper understanding of current situations. Knowing the background, cultural nuances and historical events allows us to make more nuanced decisions. For instance, understanding the historical context of a conflict can guide diplomatic negotiations.

How to develop a historical rate:

Developing a good base rate starts with knowing what the objective is (what are we trying to achieve or measure?). We then look at similar situations to learn how that metric was achieved in the past. Here are steps to establish a base rate:

1. **Define Your Objective:**

    As mentioned in the first step, it's important to clearly define the objective you are trying to achieve. Articulate what you want to measure – for example, are you interested in financial metrics, customer behavior or operational performance?

2. **Select Relevant Variables:**

   Consider the following variables based on your objective:

   - Time: historical data should span a meaningful time frame (years, months or days)
   - Geography: if applicable, consider regional variations
   - Demographics: age, gender, income, etc. if relevant
   - Product/Service Categories: different product lines or services
   - Market Conditions: economic indicators, interest rates, inflation, etc.
   - Industry-Specific Factors: for example, in Finance, consider stock market indices or interest rates

3. **Collect Data:**

   - Gather historical data for each selected variable. Use reliable sources such as government reports, company records or industry databases.
   - Ensure data quality and consistency. Validate the data to remove errors or outliers.

4. **Aggregate and Analyze:**

   - Aggregate data by variable. Calculate averages, percentages or other relevant metrics.
   - Analyze trends over time and identify patterns. For instance, track changes in interest rates or customer retention rates.

5. **Consider Contextual Factors:**

   Understand external factors that influence your dimensions. For example:

   - Economic Events: recessions, booms or policy changes
   - Technological Advances: impact on industries and consumer behavior
   - Regulatory Changes: legal shifts affecting business practices

6. **Evaluate Relevance:**

   - Continuously assess the relevance of each dimension. Some may become less important over time, while others gain significance.
   - Be open to adjusting your base rate as circumstances evolve.

Good forecasting does not assume historical rates are fate. Base rates should only give us a starting point. We seek information on historical trends as our starting point and adjust from there. For example, suppose you are assuming the growth rate of demand will be different in the future than it has been over the past few years. Your assumption needs to be within the orbit of the base rate. In any case where you are assuming something in the future will be different than in the past, you need to be able to explain why you believe it will be different. If the historical base rate for closing new customer orders is 10% and your model assumes a rate of 15%, you should call-out what it will take for that change to happen, like hiring a new regional salesperson, gross domestic product increases or channel partner consolidation.

Watch-outs:

Using historical data in decision-making can be both beneficial and risky. Lex's explore potential drawbacks:

- **Cherry-Picking Data:** The past is complex, containing evidence supporting diverse views. Selectively highlighting facts that back up one particular position while ignoring contradicting information is intellectually dishonest.
- **Incomplete or Inaccurate Data:** Decisions based on incomplete or inaccurate historical information due to human error or technology malfunction can lead to flawed decision-making. Additionally, data-driven decision-making may lead to a false sense of security if decisions are made without full consideration of all possible factors involved in the situation.
- **Confirmation Bias:** People often succumb to confirmation bias, selecting and interpreting historical data in ways that affirm their existing beliefs or agendas.
- **Decontextualization:** Historical data points lose meaning when stripped of their full context. Decontextualized historical data can mislead decision-makers. We must consider the specific circumstances, market conditions and external factors when interpreting past trends to make effective decision.

Tools to define the historical base rate:

1. **To Define Your Objective:** Talk to your stakeholders to understand exactly what the team is trying to achieve. Be sure to align with your manager about the stated goal.
2. **To Select Relevant Variables:** Talk to co-workers who have tried to achieve this goal in the past. What mattered to the outcome? What did they wish they had known? Learn as much as you can from "inside" or "outside" resources about what goes into the target you are trying to predict.
3. **To Collect Data:** Once you know what the variables are, you can get the data from online resources such as industry or government databases.
4. **To Aggregate and Analyze:** Talk to colleagues to see what story the data is telling them to make sure you are not biased in your review. Check for context – what may be different now that in the past? Use scenario thinking for this step. Adjust as needed.

Takeaways

- Using data in our decision-making helps reduce bias.
- Knowing historical base rates provides us with an "outside" view. By considering the outside view, we gain a more objective and realistic understanding of potential outcomes.
- Historical data serves as a baseline, helping us to assess risk, predict trends and avoid past mistakes.
- Historical base rates are an important starting point. We don't have to use historical base rates in our modeling, but we should be prepared to explain why we deviated from the historical rate.

Decision-making in action

Grace: "Analyzing the historical data will give us a baseline. If we understand what worked before, we can see what's changed."

Nicole: "I still think we should prioritize the option with the highest immediate returns."

Claire: "We need to be thorough. Let's plot the satisfaction rates over time and compare them with changes in market conditions, regulations and competition. This might highlight where opportunities and risks lie."

Step 4

Develop a range of possible outcomes

Expect the unexpected

After the problem and historical base rate are defined, it's time to develop a range of possible outcomes. To do this, consider the sequence of decisions and unpredictable events impacting outcomes. The range of possible outcomes can be visualized like branches of a tree; each branch representing a possible outcome of the decision. Build out the branches of possibilities to evaluate outcomes within reason.

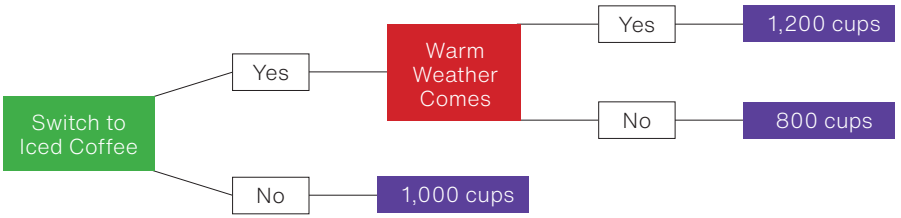
As we discuss developing a range of possible outcomes, let's make sure our terminology is clearly defined.

- **Event**: an unpredictable occurrence, outside of our control, that may impact our results
- **Decision**: a specific action or choice, under our control, taken to navigate events
- **Outcome**: a result of decisions and events
- **Payoff**: a monetary value associated with an outcome

Now, let's look at an example of a decision tree displayed on the next page:

Joe owns one of two local coffee shops in town, and the area has had an unseasonably cold winter. It is now April, and the forecast is calling for warmer temperatures. Joe is trying to decide if he should offer iced coffee this week versus hot coffee. Both types of coffee cost the same to produce, and he charges the same price for both. If Joe makes no changes to his menu, and continues selling hot coffee, the coffee shop is expected to sell 1,000 cups for the week. If Joe chooses to begin selling iced coffee and the warmer weather materializes, he expects to sell 1,200 cups. However, if Joe chooses to switch the menu to iced coffee and the weather remains cold, he expects to sell only 800 cups.

The green square represents a decision, the red square represents an event and the purple squares represent outcomes.



Tools to develop a range of outcomes:

To make a decision that provides us the best chance at a favorable outcome, evaluate all reasonable possible outcomes before taking action.

- **State the decision criterion:** As described throughout the first step in the decision-making framework (understand the problem), define what determines our most desirable end state. Are we trying to maximize profit, minimize cost, increase brand awareness, etc.? In the iced versus hot coffee example, Joe's goal is to maximize the number of cups he sells.
- **Brainstorm the events that could impact the outcome:** What may occur that is out of your control, but will affect the result? While Joe cannot control the weather, he knows it has a major impact on his sales, so it is included in his decision tree. Joe should also consider whether his competitor begins to sell iced coffee during warmer weather as an event in his decision tree.
- **State your historical base rate:** Joe knows he typically sells 1,000 cups of hot coffee per week. That is his base rate.
- **List the range of possible outcomes (include the status quo as an outcome to evaluate)**: Develop a structured way to articulate reasonable outcomes that could result from the events and decisions listed. One of the best ways to illustrate the range of possible outcomes is through a decision tree with each possibility on a branch of the tree.
- **Assign a payoff to each possible outcome:** The final step of developing a range of possible outcomes is assigning a value of the decision criterion or payoff to each possible outcome. For each potential outcome, there is something you can gain and something you can lose – these are called payoffs. Joe's decision criterion is sales volume. He knows that if the weather warms up, he will sell more iced coffee.

Takeaways

- When evaluating a decision, it is important to consider a range of possible outcomes.
- Possible outcomes are like the branches of a tree, with each branch representing a different possibility.
- Events beyond our control can impact the outcome of a decision. It is important to evaluate all outcomes that are reasonable possible to occur.
- Focus on the decision that provides you with the best chance of a favorable payoff.

Decision-making in action

Grace: "Now, let's develop a range of possible outcomes based on this data."

Thomas: "I'll run several scenarios where we adjust variables like market acceptance, competition and regulatory impacts. This will help us see how these factors influence our potential outcomes."

Nicole: "Isn't this overcomplicating things?"

Joe: "Developing multiple scenarios ensures we cover all bases. It's essential for our next steps."

Step 5

Develop a probability view of each outcome

What are the odds?

We make nearly every decision in the face of unpredictability. Unpredictability can arise from either variability or uncertainty, and can be simple to understand, like the unpredictability of flipping a coin, rolling a die or playing cards. Unpredictability can also be complex, like election outcomes, inflation rates and demographic trends.

Probability is a mathematical concept used to assess the chances of an event occurring, like obtaining a two when rolling a die, selecting a king from a deck of cards or earning a positive return on an investment. Whether consciously acknowledged or not, we regularly utilize probability in daily decision-making when faced with unpredictable outcomes, whether in gaming situations or selecting insurance plans.

The practical side of unpredictability

We are surrounded by unpredictability: how long it will take to get to work tomorrow, whether the Wi-Fi will be interrupted during a virtual meeting or how close the score of a game will be. We have a belief about what we expect to happen (you know how long a typical ride to work takes), and we know there are best and worst-case scenarios.

This applies to all decisions we make. Understanding how unpredictability impacts the choices we make improves the odds that we win the bet that our decision reflects. For a literal bet on – say a game of blackjack – we know a lot about the cards in the deck. If we pay attention as the games unfold, we get more information about the cards that remain in the deck. Imagine a game where none of the four aces has been dealt, and your opponent is showing a ten. How you might bet would be different if all the four aces had already been dealt.

Variability versus uncertainty

Variability is associated with ongoing repeating events, like your commute to work, yield rates on a machine, temperature of the coffee served at your favorite coffee shop and many other processes. Because these events repeat, it's easy to gather data. If you wanted, you could time your commute each day for two months and analyze the data in a spreadsheet. You'd probably calculate the average commute time and the maximum and minimum time. The distance between the maximum and the minimum and the range is a measure of variability. You might also calculate the standard deviation of the commute to determine average range. Let's say you did this, and your average commute is 35 minutes, with a maximum of 55 and a minimum of 25 minutes. You could use this data to make informed decisions about how likely it is that your commute tomorrow will be longer than 40 minutes. These are called empirical probabilities since they are calculated from data to generate the relative frequency of all observed outcomes.

Uncertainty is different from variability because there is no way to generate empirical probabilities to describe the likelihood that an event will happen. Uncertainty is associated with events that do not occur repeatedly. Because they are more unique, there is no data available to directly calculate the likelihood of the event. Will your favorite sports team win its season-opener? There is no way to calculate an empirical probability from data, so we look to subjective probability, using logic, related data and expertise to assess likelihoods. For example, you can compare the opponent's roster of players and the team's results from last season to the team you are rooting for. Look for identifiers like home-field advantage and common opponents the teams played the previous season. All of these provide information to assign a probability of winning. In practice, subjective probability reflects the belief of experts, so how you select your experts is an important part of the process. The approach you use to solicit their opinions, including the specific questions that you ask, is also an important part of the process.

Using Probability

Once you have considered all events that might impact the outcomes of a decision, you can develop a view of the probability of each outcome. It doesn't matter whether it is an empirical or subjective probability; they can be manipulated and interpreted in the same way.

Tools to develop a probability view of each outcome

1. **The Delphi Method** (research technique that uses a panel of experts to generate a consensus on a specific issue)
    - Determine specific issues you want to assess qualitative probabilities
    - Develop a list between four to seven experts – define expertise broadly (don't just look to economists or industry experts – include, for example, sociologists and historians)
    - Draft a series of questions and submit to the experts individually – have them return written responses
    - Summarize responses

- Return the summary to the experts – ask them to read summaries and reply with modifications of their responses
- Summarize overall narrative from the process
- Develop range of probabilities

2. **Modified Delphi Approach** (typically involves multiple rounds of surveys and in-depth discussions with experts)
   - Conduct the modified Delphi approach during a two-to-four-hour meeting
   - Determine the specific issues you want to assess qualitative probabilities
   - Draft a small number of questions you are interested in
   - Invite between four to seven experts – define expertise broadly (don't use only economists or industry experts – include, include, for example, sociologists and historians)
   - Discuss questions with the experts to make sure they understand the issues
   - Have each expert draft a short memo explaining responses
   - Discuss each experts' memo
   - Ask the experts to modify their beliefs based on what they have heard
   - Summarize overall narrative from the process
   - Develop the range of probabilities
3. **Crowdsource**
   - This requires a crowdsourcing platform (view reviews of top platforms at https://www.adamenfroy.com/crowdsourcing-platform)
   - Determine specific issues you want to assess qualitative probabilities
   - Draft a small number of questions to submit to platform
   - Determine the large group that you will seek input from – examples include engineers, employees, key customers, suppliers, etc.
   - Post to platform
   - Summarize overall narrative from the process
   - Develop range of probabilities

Communicating probability

Use numbers instead of words to avoid miscommunication

- People have different definitions for generic terms like always, frequently, real possibility, etc.
- When mutual understanding is vital, avoid nonnumerical words or phrases and turn directly to probabilities

Provide explanations for how the probabilities were determined

- Specify what data was used to generate empirical probabilities including limitations of data

- Specify the method used to generate subjective probabilities including which experts were consulted, how many rounds of discussion were used and what biases to be concerned about
- Specify assumptions made and evidence supporting the assumptions
- List uncertainties that impact probabilities

Communicate all probabilities as ranges – this helps avoid false assumptions

- For empirical probabilities, report the 95% confidence interval by stating, "I am 95% confident that the probability of X is between..."
- For subjective probabilities, provide the average, maximum and minimum probability – state, "The experts we spoke with had an average probability of X, with a high of X and a low of X"

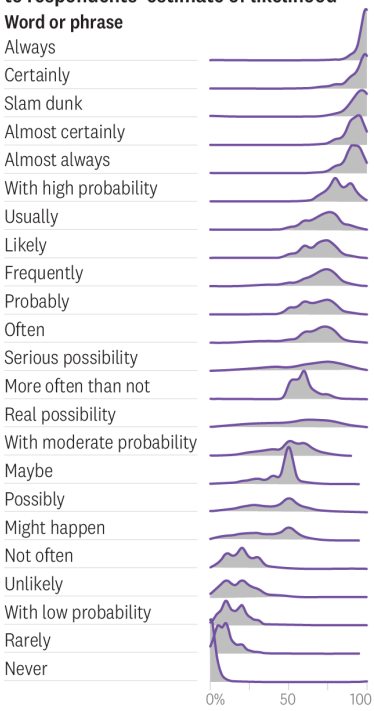
Combining probabilities

Remember creating a decision tree in step three to develop a range of outcomes? Now, you can use a decision tree to combine probabilities.

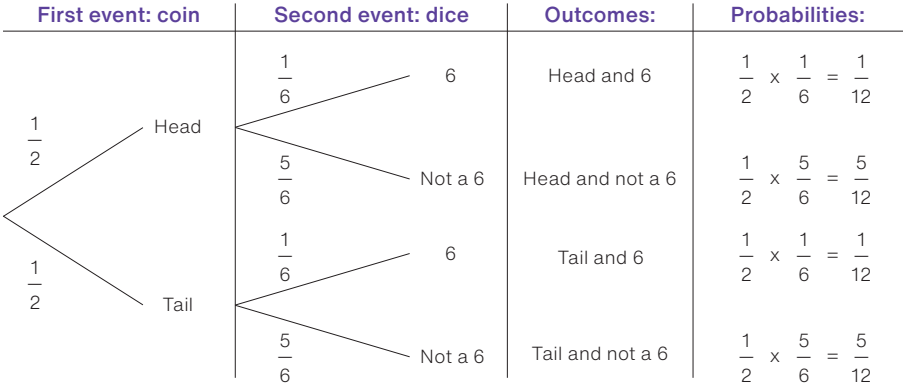
How People Interpret Probabilistic Words

"Always" doesn't always mean always.

Distribution of responses according to respondents' estimate of likelihood

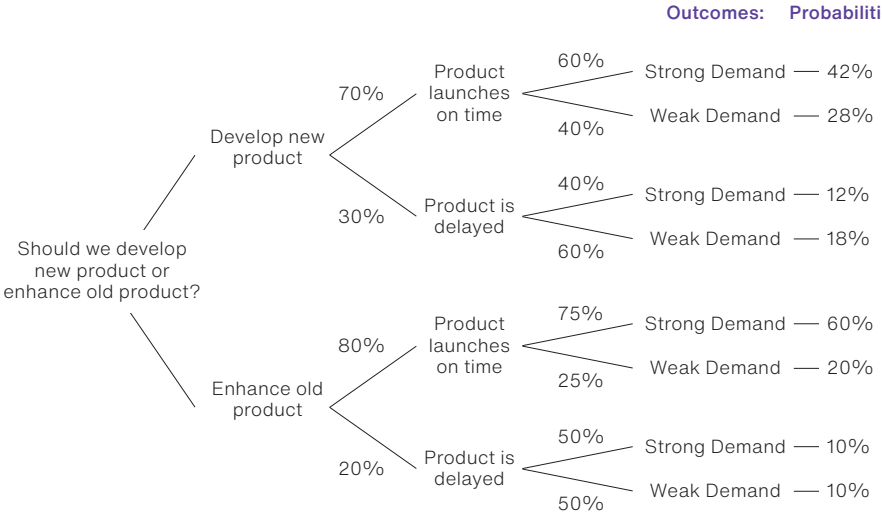


Source: Andrew Mauboussin and Michael J. Mauboussin HBR



1. **Two independent events (empirical example)**
   - Two events: flip a coin and roll a die
   - The probability of each individual event is a simple probability
   - The sequence of these two events is an outcome
   - The probability of the outcome is the joint probability, found by multiplying the simple probabilities together
2. **Two events (subjective example)**

   Let's consider a decision that requires a subjective view of probabilities. In this case, a company must decide whether to invest in a new product or enhance an existing product. A new product could create high demand but comes with a greater risk that if the product launch is delayed, demand will be weak. Enhancing an existing product may be a safer bet if the product is launched on time.



   - First event: decision on new product versus enhancement to old product
   - Second event: speed of launch
   - The simple probability that a new product launches on time is 70%
   - The joint probability that a new product launches on time to strong demand number is 42%

Takeaways

- Every decision we face contains some degree of uncertainty.
- Understanding how variability and unpredictability impact the choices we make improves our odds of making a better decision.
- Probabilities, whether empirical or objective, can help us analyze the likelihood of achieving a desired payoff.
- Using probabilities instead of words such as “possible” or “unlikely” helps to avoid misinterpretation.

Decision-making in action

Grace: “Thomas, once we have those scenarios, how should we approach establishing a probability for each outcome?”

Thomas: “Let’s gather data from market research, including customer feedback, competitor analysis and industry trends to estimate the likelihood of different outcomes. Using these tools, we can develop initial probabilities for each scenario.”

Joe: “That’s a solid approach. We should also consider that historical data may be limited or uncertain. Let’s identify several knowledgeable people and apply the Delphi Method to achieve consensus among a group of experts. Combining historical data with educated estimates based on expert opinions, and our teams’ experience, will help us establish solid probabilities for each outcome.”

Nicole: “Sounds good, but let’s also make sure we are willing to refine our predictions as new information comes in.”

Step 6

Choose alternatives based on probability of each outcome

Breaking free from analysis paralysis

In steps two and three, we identified the objective and the historical base rate for that objective. In steps four and five, we developed a range of possible outcomes and then probabilities for each outcome. Now, it's time to evaluate the likelihood of each outcome to determine risks associated with different choices.

No decision can be made with complete information. Attempting to attain absolute certainty leads to analysis paralysis, a state where the decision-maker becomes immobilized by overthinking and indecision. Recognizing the inevitability of uncertainty, effective decision-makers adopt strategies to mitigate its impact. This may involve embracing a degree of risk, allowing for flexibility and adaptation and maintaining a focus on the overarching goals despite imperfect information.

Tools to choose alternatives

1. **Evaluate decisions and outcomes for reasonableness, cultural fit, ethical principles, etc**. – this step answers questions like:
    - Are the decisions/outcomes practical and sensible to the organizations bottom-line?
    - Are they achievable within a reasonable timeframe?
    - What about resource allocation?
    - Do they fit into the organizational culture?
    - Are they ethical?
    - What is the probability that they will result in the desired outcomes?

2. **Conduct sensitivity analysis on key assumptions** – sensitivity analysis is a mathematical modeling tool used to analyze how different values of a set of independent variables affect a specific dependent variable under a given set of assumptions.

   Key assumptions, on the other hand, are hypotheses that have been accepted to be true and form the basis of choice or decision. Taking steps to conduct in-depth studies of all key variables make for reliable predictions, allowing opportunities for more informed choices and future improvements.

   For example, pretend you are determining rather to lease or buy a property. Key assumptions may be purchase price, lease rates and tax rates. Once the key assumptions have been determined, a decision-maker can go further to conduct sensitivity analysis to determine how changes in the assumptions can influence the outcome of the decision they are looking to make. For example, with fluctuating interest rates, how can one choice be better than the other? Can inflation leading to higher production costs impact cash flows affecting working capital and operational activities?

3. **Conduct risk analysis, including pre-mortem** – risk analysis is the process of analyzing potential challenges with negative impacts to a decision-making process. A thorough risk analysis process aids in identifying threats, impacts and mitigation strategies.

   A pre-mortem is a strategy where a failure scenario is projected, and the team works backwards to determine what risk factors could lead to failure. A pre-mortem enriches the decision-making process by helping one prepare for what could happen, either positively or negatively, adjusting along the way and putting plans in place to cater for potential outcomes.

   Consider questions such as the risk of regular downtime due to equipment malfunction and inability to find engineers to perform maintenance in a reasonable amount of time. How can these risks be mitigated? Will the company have an in-house engineer? What if the equipment becomes obsolete due to technological advancements after a buy decision has been made? An in-depth risk analysis and a deeper pre-mortem equips a decision-maker with so risk mitigation tools that can be used as backup if risks turn into realities.

Takeaways

- No decision can be made with complete information.
- All decisions involve some element of chance.
- Taking care to analyze key assumptions helps us make more reliable predictions about the future.
- Conducting a risk assessment or pre-mortem helps us consider and prepare for what could happen.

Decision-making in action

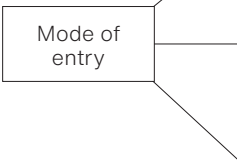
Grace: "We'll rank each alternative by its probability of success and its potential impact. The alternative with the highest probability and the most significant positive impact should be our top choice. However, we also need to consider the cost and feasibility of each alternative."

Claire: "A solution might have a high probability of success, but if it's too expensive or impractical to implement, it might not be the best choice."

Nicole: "We can develop a decision matrix to compare these factors side by side. This will help us evaluate each alternative holistically."

Decision Analysis:

The team turned their attention to the specifics of the case:



Direct Exporting:
- Expected annual revenue: $2,000,000.
- Adjusted expected value: $460,000.

Joint Venture with a Mexican Company:
- Expected annual revenue for PaperCo: $1,800,000.
- Adjusted expected value: $900,000.

Setting Up a Local Manufacturing Facility:
- Expected annual revenue: $5,000,000.
- Adjusted expected value: $140,000.

According to the analysis, forming a joint venture with a Mexican company offers the highest expected net cash flow improvement of $900,000. This strategy provided significant revenue potential, reduced entry barriers, leveraged the local partner's market knowledge and distribution network and mitigated the impact of FX rate volatility.

Step 7

Review the decision

Stop, collaborate and listen

Reviewing the decision is integral in Sylvamo's continuous improvement efforts as it allows us to evaluate effectiveness, identify areas for refinement and learn from past actions.

To ensure a successful review, start briefing the decision review team to set direction and ensure effective communication throughout the evaluation. This initial briefing serves as a platform to clarify the review's objectives, outline the scope of the decision being analyzed and establish expectations and roles for each team member (more on this below). It also provides an opportunity to discuss criteria for assessing the decision's success and the methods to be used during the review process.

Briefings should reinforce Sylvamo's culture, which is defined as, "We care. We trust. We grow and succeed together". Our culture reflects a "Speak Your Mind" mentality, encouraging all employees to express ideas without fear of retaliation. Trust ensures that feedback, whether positive or negative, is received in the spirit of continuous improvement rather than personal criticism. Keep in mind that our biases do not disappear because the decision has been made. Emphasizing openness ensures we are able to identify and address biases freely without fear of being judged.

Ways to create a culture of openness and trust

- Encourage risk-taking
- View mistakes as learning opportunities
- Build transparency into decision-making
- Share information openly

Tools you can use to review a decision

1. After-Action Review

A decision review (also called an after-action review) should be conducted for every major decision – good or bad. Approach an after-action review with the same diligence you might use on a decision with an unfavorable outcome.

Military teams often conduct "rankless" debriefs, physically removing their name and rank during the review. This is a valuable concept because it reinforces the idea that we are reviewing a decision process, not an individual. Mitigating bias, this approach sets the tone of openness and trust.

How to Use After-Action Review

- Who should attend: an after action review should include team members who were directly involved in the event, the team leader or project manager and key stakeholders with vested interest in the outcomes. Assigning specific roles can help ensure the review is thorough, balanced and productive.
    - Facilitator: Ideally someone impartial, the facilitator guides the discussion, keeps it focused and ensures all voices are heard.
    - Scribe/Recorder: This role takes detailed notes during the discussion, captures key insights and prepares a final report or summary.
    - Participants: Team members who were directly involved in the event or project provide firsthand accounts and share their perspectives.
    - Subject matter experts: These individuals offer technical knowledge to clarify uncertainties or complex discussions during the review.
    - Observers: Individuals who were not directly involved in the event but have an interest in the outcomes; they offer an outside perspective, which can be valuable for identifying biases or blind spots.
    - Action Owners: individual who is responsible for following up on the identified action items. They insure that lessons learned are implemented.
- Guiding the review discussion – ask questions to support the conversation:
    - What was supposed to happen?
    - What actually happened?
    - What did you learn?
    - What will you do differently next time?
- Closing the review discussion – summarize key points identified during discussion and include observations and recommendations for improvement
- Implement recommended actions

2. Highlight Outside Factors and Luck

What outside events occurred or did not occur that influenced the outcome? Were these events in our decision trees or forecasts? Highlighting the role that outside factors and luck play in the outcome of decisions can significantly enhance the decision review process by providing a more realistic and comprehensive understanding of why certain results were achieved. Acknowledging these elements aids in differentiating between the quality of the decision-making process and

the influence of uncontrollable variables. This perspective prevents the team from attributing success or failure solely to internal actions, reducing undue criticism or misplaced confidence. It encourages a more nuanced evaluation, focusing on the robustness of the decision-making process under varying circumstances.

3. **Capture Learnings and Apply Them**

   Write down and record lessons learned from the review. For each learning, develop an action plan that specifies what changes will be implemented, who is responsible and dates changes should be implemented. Ensure these plans are realistic and measurable. The action may be to update a procedure, recommend a different tool or implement training. Once the team has a list of learnings and action plans, share with relevant stakeholders.

In "How to Decide: Simple Tools for Making Better Choices," Annie Duke states, "The decisions you make are like a portfolio of investments. Your goal is to make sure that the portfolio as a whole advances you toward your goals, even though any individual decision in that portfolio might win or lose." Remember, all decisions are bets; but when follow the steps outlined in this guide, we're able to make data-based, educated decisions.

Takeaways

- Reviewing the decision provides us with feedback about where our efforts were effective, where we had gaps in our analysis and where luck impacted the outcome.
- We can learn from past successes and failures to continuously improve the quality of our decision-making.
- We encourage a culture of openness and trust, which includes speaking your mind, transparency in decision making and willingness to learn from our mistakes.

Decision-making in action

Grace: “We need to set regular check-ins to assess our progress and make necessary adjustments.”

Thomas: “We can schedule monthly meetings to review our results and ensure we’re on track. If any new data or issues arise, we can address them promptly.”

Joe: “Let’s document each step of our process. This documentation will help us learn from any mistakes and improve our decision-making framework for future projects.”

As the meeting concluded, the team felt a sense of accomplishment. With an outline and thorough framework for decision-making, each team member is clear on their responsibilities, ready to implement the plan and make a positive impact.

Notes

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