Evidence-Based Decision Making

The Basic Principles

2nd edition

Eric Barends, Denise M. Rousseau, Rob B. Briner

CEBMa
center for
Evidence-Based Management

This booklet contains the first module of the e-book *Evidence-Based Decision Making for Organizations, Public Policy, and Practice*. The authors have made this module freely available to promote a better understanding and wider adoption of evidence-based decision making. It introduces the basic principles of evidence-based decision making: what it is, why it is needed, and how it works in practice.

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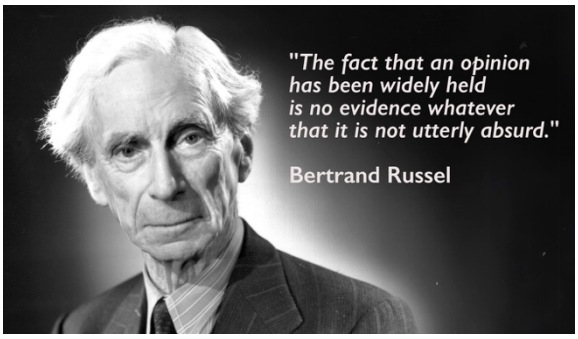
The Basic Principles of Evidence-based Decision Making

Learning objectives:

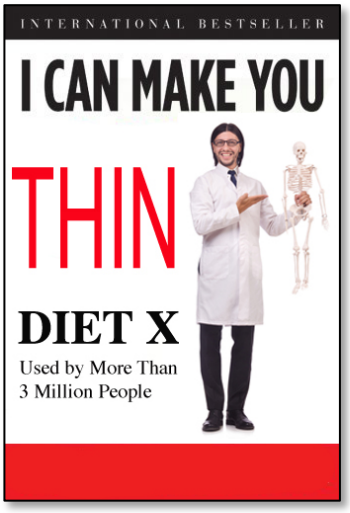
- Summarize the basic principles of evidence-based decision making.
- Explain the need for evidence-based decision making.
- Identify the four sources of evidence, and provide examples of each.
- Evaluate (coarsely and in general terms) the quality of evidence.
- Determine whether the best available evidence was used in a decision-making process.
- Correct common misconceptions about evidence-based decision making.

Introduction



Consider this hypothetical situation

You pay a visit to a dietitian after gaining a bit of weight during the holiday season. The dietitian advises you to try diet X. It's very expensive and demands a radical change in lifestyle, but the prospect of having a slim and healthy body motivates you to stick to the diet. After a few weeks, however, you have gained five pounds and suffer from serious side effects that require medical treatment. By searching the Internet, you learn that most scientific studies find diet X to be ineffective and fraught with side effects. When you confront the dietitian with these findings, he answers, "Why should I pay attention to scientific studies? I have twenty years of experience. Besides, the diet is developed by a famous American nutritionist, whose book sold more than a million copies." [1]



Does that scenario sound like malpractice to you? It probably does. Unfortunately, in organizations disregarding sound evidence and relying on personal experience or the popular ideas of management gurus is daily practice. Decisions made by leaders, managers and policymakers, however, affect the working lives and well-being of people around the world. As Henry Mintzberg said: "No job is more vital to our society than that of a manager. It is the manager who determines whether our social institutions serve us well or whether they squander our talents and resources." [2]

In this module, we explain what evidence-based decision making (EBD) is and how it can help you and your organization to make better decisions. Whether we work in a banking firm, hospital, large consulting firm, a city council or small startup, as practitioners affecting the lives of so many, we also have a moral obligation to use the best available evidence when making a decision. We can do that by learning how to distinguish science from folklore, data from assertions, and evidence from beliefs, anecdotes, or personal opinion.

What is Evidence-based Decision Making?

The basic idea of evidence-based decision making is that sound quality decisions require both critical thinking and use of the best available evidence. Of course, all professionals use evidence in their decisions. But few pay attention to the quality of the evidence and tend to base their decisions on only one source. The result is decisions that rely on unfounded beliefs, fads and fashions, and the unsupported though popular ideas of management gurus. The bottom line is bad decisions, poor outcomes, and little understanding of why things go wrong.

Evidence-based decision making seeks to improve the way decisions are made. It is an approach to decision-making and day-to-day work practice that helps practitioners to critically evaluate the extent to which they can trust the evidence they have at hand. It also helps practitioners identify and evaluate additional evidence relevant to their decisions. In this course, we use the following definition of evidence-based decision making. This definition is adapted in part from the Sicily statement of evidence-based practice. [3] It not only provides a clear statement of what evidence-based decision making means but also describes the main skills required to practice in an evidence-based way:

Evidence-based decision making is about making decisions through the conscientious, explicit, judicious use of the best available evidence from multiple sources by . . .

ASKING:	Translating a practical issue or problem into an answerable question
ACQUIRING:	Systematically searching for and retrieving the evidence
APPRAISING:	Critically judging the trustworthiness and relevance of the evidence
AGGREGATING:	Weighing and pulling together the evidence
APPLYING:	Incorporating the evidence into the decision-making process
ASSESSING:	Evaluating the outcome of the decision taken

. . to increase the likelihood of a favorable outcome.

Learn by doing 1.1

Take another look at the definition of evidence-based decision making. As you can see, it is quite detailed. If you had to explain to someone what evidence-based decision making is, which two element(s) would you emphasize?

a) Evidence-based decision making is about assessing the outcome of the decisions you take.

b) Evidence-based decision making is about taking a systematic (six-step) approach to decision-making.

c) Evidence-based decision making is about basing your decisions on critically appraised evidence.

d) Evidence-based decision making is about basing your decisions on multiple sources of evidence.

What counts as evidence?

When we say evidence, we basically mean information: Facts or data supporting (or contradicting) a claim, assumption, or hypothesis. It may be based on numbers, or it may be qualitative or descriptive. Evidence may come from scientific research suggesting some relatively generalizable facts about the world, people, or organizational practices. Evidence may also come from local organizational or business indicators, such as company metrics or observations of practice conditions. Even professional experience can be an important source of evidence, such as when an entrepreneur learns from having launched a variety of businesses that one particular approach seems more likely to pay off.

Think of it in legal terms. In a court of law, evidence from many different sources is presented, including eyewitness testimony, forensic evidence, security camera images, and witness statements. All this evidence may help a judge or a jury to decide whether a person is innocent or guilty. The same is true for decisions in organization. Regardless of its source, all evidence may be included if it is judged to be trustworthy and relevant.

Learn by doing 1.2

1. Imagine you are an executive of a large corporation. You are thinking about introducing flexible working arrangements. Would you regard the experience of employees with flexible working arrangements as evidence?
2. Imagine you are a senior manager of a large organization. Would you regard the following statement from a business consultant as evidence of how long it takes to change an organization's culture?
   "*It is common knowledge that it takes years to change an organization's culture.*"
3. Imagine you are a manager at an IT firm. Would you regard the following statement from a colleague as evidence about information sharing between software engineers?
   "*In the 15 years I have worked as a manager, I have noticed that software engineers are more likely to share information when they trust each other.*"

Did I get this 1.1?

Would you regard the following statement as evidence about how to change employees' behavior?

"According to our CEO, who has a degree from Stanford, you must first change the attitudes of people in order to change their behavior."

Why do we need Evidence-based Decision Making?

Learn by doing 1.3

Trust me, I have 20 years of management experience

Practitioners use many sources of evidence when making decisions, including intuition, personal experience, knowledge acquired through formal education, insights provided by experts, advice from a colleague, management literature, scientific research, and others.

On what do you base your decisions?

Most organizational decisions are not based on the best available evidence. Instead, practitioners often prefer to base decisions solely on judgment derived from their personal experience. However, personal experience alone is not a reliable source of evidence because it is highly susceptible to systematic errors. Humans have cognitive and information-processing limits that make us prone to biases that have negative effects on the quality of the decisions we make. [4] [5] [6] [7]

Even practitioners and experts with many years of experience perform poorly when making forecasts or calculating risks by relying solely on their personal judgment, whether it concerns the credit rating of bond [8], the growth of the economy, [9] political developments, [10] or medical diagnoses. [11]

Another heavily used source of evidence seems to be what other organizations are doing. Through benchmarking and so-called best practices, practitioners sometimes copy the methods and procedures of other organizations without critically evaluating whether those practices are actually effective and, if they are, whether they are also likely to work in a different context.

Benchmarking can demonstrate alternative practices, but it is not necessarily a good indicator in itself of what would work in a different setting.

At the same time, there are many barriers to evidence-based decision making. Few practitioners have been trained in the skills required to critically evaluate the trustworthiness and relevance of the information they use. In addition, important organizational information may be difficult to access, and what is available can be of poor quality.

Finally, practitioners are often unaware of the current scientific evidence available on key issues in the field. For example, a survey of 950 American HR practitioners found large discrepancies between what practitioners think is effective and what the current scientific research shows. [12] This study has been repeated in other countries with similar findings. More educated managers do, however, show somewhat greater knowledge of scientific findings.

These results suggest that most practitioners pay little or no attention to scientific or organizational evidence. Instead, the typical practitioner seems to place too much trust in low-quality evidence such as personal judgment and experience, best practices, and the beliefs of corporate leaders. As a result, billions of dollars are spent on management practices that are ineffective or even harmful to organizations, their members, and their clients.

Example

For years, the US technology company Google believed that technical expertise was the most important capability for their managers. The company's leaders thought that the best managers left their people alone as much as possible, focusing instead on helping them with technical problems when people got stuck. When the company examined what employees valued most in a manager, however, technical expertise ranked last among eight qualities. More crucial were attributes such as asking good questions, taking time to meet employees, and caring about employees' careers and lives. Managers with these qualities led top-performing teams and had the happiest employees and lowest turnover. These attributes of effective managers, however, also are well established in scientific studies, so Google's improvement efforts could have started years earlier.

Learn by doing 1.4

Evidence-based decision making is about making decisions based on the best available evidence, that is, critically appraised evidence from multiple sources.

Why do we need evidence-based decision making? Check the 3 most important arguments.

a) Practitioners often base their decisions solely on their judgment derived from personal experience. However, personal judgment alone is not a reliable source of evidence.

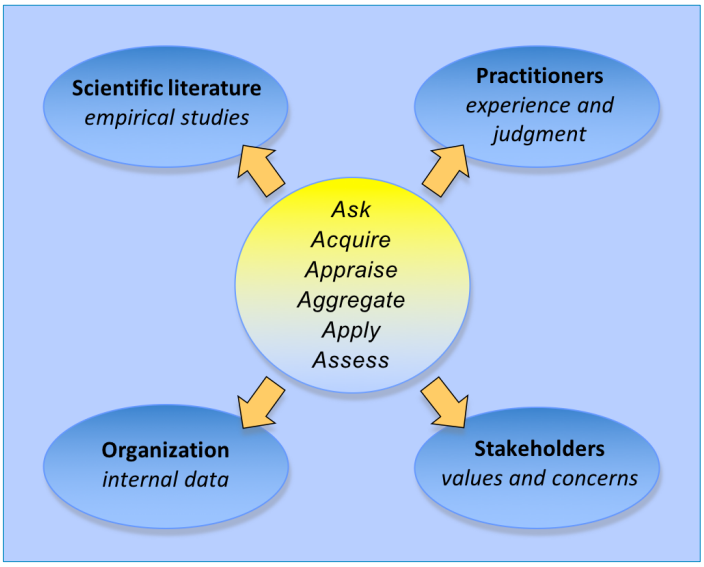
b) Good-quality evidence from multiple sources gives you the answer to most organizational problems.

c) Through benchmarking and so-called best practices, decision makers sometimes copy the methods and conventions of other organizations without critically evaluating whether these practices are actually effective.

d) There are large discrepancies between what decision makers think is effective and what the current scientific research shows.

To give evidence-based management the best chance at success, we need to increase the capacity of managers and organizations to prioritize quality evidence over unfounded personal opinion and to incorporate what the body of evidence indicates into their better-informed professional judgment.

What sources of evidence should be considered? (1)



Before making an important decision, an evidence-based practitioner starts by asking, "What is the available evidence?" Instead of basing a decision on personal judgment alone, an evidence-based practitioner finds out what is known by looking for evidence from multiple sources.

According to the principles of evidence-based practice, evidence from four sources should be taken into account:

- **Evidence from the scientific literature:** Findings from published empirical studies
- **Evidence from the organization:** Data, facts, and figures gathered from the organization
- **Evidence from practitioners:** The professional experience and judgment of practitioners
- **Evidence from stakeholders:** The values and concerns of people who may be affected by the decision

1. Evidence from the Scientific Literature

The first source of evidence is published research findings. When we use the term scientific evidence, we mean the evidence from scientific research published in academic journals. Over the past few decades, the volume of organizational research has escalated dramatically. Topics range from evaluating the success of mergers and the effects of financial incentives on performance to improving employee commitment and recruitment. In addition, much of the research from other domains is still highly relevant because many of the problems decision makers face are not so different from those

people would experience in any situation – how to make better decisions, communicate more effectively, or manage conflict. When it comes to tackling these issues, it makes sense to consider relevant scientific findings from any discipline. Although many practitioners learn about research findings in their education or professional courses, new research findings are produced regularly, and these findings can often change our understanding. To include up-to-date scientific evidence in your decisions, it helps to know how to search for studies and to be able to judge how trustworthy and relevant they are.

Example

The board of directors of a large Canadian law firm has plans for a merger with a smaller firm nearby. The merger's objective is to integrate the back offices of the two firms (IT, finance, facilities, etc.) in order to create economies of scale. The front offices and legal practices of the two firms will remain separate. The board has been told by the partners that the organizational cultures of the two firms differ widely, so the board wants to know whether the differences are likely to create problems for the merger. Partners of both firms we e asked independently about their professional experience with mergers. Those who had been involved in one or more mergers stated that cultural differences matter and can cause serious culture clashes between professionals.

How did scientific evidence help?

A search conducted in online scientific databases yielded a meta-analysis based on 46 studies with a combined sample size of 10,710 mergers and acquisitions. The meta-analysis confirms the partner s judgment that there is a negative association between cultural differences and the effectiveness of the post-merger integration. However, the study also indicates that this is only the case when the intended level of integration is high. In mergers that require a low level of integration, cultural differences are found to be positively associated with integration benefits. In the case of the two law firms, the planned integration concerns only back-office functions, making the likelihood of a positive outcome higher.

In Module 5, ACQUIRE Evidence from the Scientific Literature, you will learn the skills necessary to successfully search for relevant empirical studies using online research databases such as ABI/INFORM Global, Business Source Premier, PsycINFO and AI search tools such as Consensus and Elicit.

2. Evidence from the Organization

A second source of evidence is the organization itself. Evidence from the organization, whether a business, a hospital, a governmental agency, or a volunteer organization, comes in many forms. It can be financial data, such as cash flow or cost, or business outcomes, such as return on investment or market share. It can come from customers or clients in the form of customer satisfaction, repeat business, or customer recommendations. It can also come from employees through information about retention rates or levels of job satisfaction. Organizational evidence can consist of hard numbers such as turnover rates, medical errors, or productivity levels, but it can also include soft elements, such as perceptions of the organization's culture or attitudes toward the senior leaders. Knowing the organizational evidence is essential in deciding whether a problem exists that requires a decision maker's attention. It is also essential in identifying the likely causes of a problem, plausible solutions, and what is needed to implement these solutions.

Example

The board of a large insurance company plans to change its regional structure to a product-based structure. According to the board, the restructuring will secure the company's market presence and drive greater customer focus. The company's sales managers strongly disagree with this change, arguing that ditching the region-based structure will make it harder to build good relationships with customers and will therefore harm customer service.

How did evidence from the organization help?

Analysis of organizational data revealed that the company's customer satisfaction is well above the industry average. Further data analysis showed a strong negative correlation between the account managers' monthly travel expenses and the satisfaction of their customers, suggesting that sales managers who live close to their customers score higher on customer satisfaction.

In Module 9, APPRAISE Evidence from the Organization, you will develop a better understanding of evidence from the organization and learn to acquire it in a valid and reliable way.

Learn by doing 1.5

1. How would you define evidence from the scientific literature (in one or two sentences)?
2. How would you define evidence from the organization (in one or two sentences)?

3. Evidence from Practitioners

A third source of evidence is the professional experience and judgment of managers, leaders, consultants, employees, policymakers, staff, and other practitioners. Different from intuition, opinion, or beliefs, professional experience is accumulated over time through the feedback received on the outcomes of similar actions taken in similar situations. This type of evidence is sometimes referred to as 'tacit' knowledge. Professional experience differs from intuition and personal opinion because it reflects the specialized knowledge or expertise acquired by repeated experience and practice of technical activities, such as playing the violin or making a cost estimate.

Many practitioners take seriously the need to learn thoughtfully and critically from their experiences. Their knowledge can be vital for determining whether a management issue really does require attention or whether the organizational data available are trustworthy. Thoughtful practitioners also use their experience to judge whether research findings apply in a particular situation or a proposed solution is likely to work in a particular context. If relevant and trustworthy, experiential evidence plays a key role in the decision-making process.

Example

A Dutch university hospital has decided to implement personal development plans for all its nurses. These plans would include a statement of the nurse's aspirations and career priorities. The HR director points out that according to Maslow's hierarchy of needs, a well-known motivation theory, basic levels of needs (such as health and safety) must be met before an individual can focus on his or her higher- level needs (such as career and professional development). The nurses at the emergency department are increasingly exposed to serious safety hazards, from offensive language to physical violence. The HR director therefore recommends excluding these nurses from composing a personal development plan until the safety hazards are under control and significantly reduced.

How did evidence from practitioners help?

Experienced managers and nurses were asked independently about their view on the director's recommendation. Most of them disagreed and indicated that in their professional experience, the opposite often is true: nurses who work in difficult circumstances tend to be strongly interested in professional development and self-improvement. In addition, a search was conducted in online scientific databases. It yielded a range of studies indicating that the e is no empirical evidence available that supports Maslow's theory; consequently, the managers' and nurses' experience is supported.

In Module 3, ACQUIRE Evidence from Practitioners, we explain how to gather evidence from practitioners in a valid and reliable way, covering aspects such as what, who, and how to ask; the sample size needed; and how to develop appropriate questionnaires.

4. Evidence from Stakeholders

A fourth source of evidence is stakeholder values and concerns. Stakeholders are any individuals or groups who may be affected by an organization's decisions and their consequences. Internal stakeholders include employees, managers, and board members. Stakeholders outside the organization, such as suppliers, customers, shareholders, the government, and the public at large, may also be affected. Stakeholder values and concerns are a reflection of what stakeholders believe to be important, which in turn affects how they tend to react to a decision's possible consequences. Stakeholders may place more or less importance on, for example, short-term gain or long-term sustainability, employee well-being or employee output, organizational reputation or profitability, and participation in decision-making or top-down control.

Organizations that serve or respond to different stakeholders (e.g., ExxonMobil and Greenpeace) can reach very different decisions on the basis of the same evidence. Gathering evidence from stakeholders is important not just for ethical reasons. Understanding stakeholder values and concerns also provides a frame of reference to make sense of and weigh evidence from other sources. It provides important information about the way in which decisions will be received and whether the outcomes of those decisions are likely to be successful.

Example

To assess employees' satisfaction with their supervisors, a British telecom organization conducted a survey among its 12,500 employees. The survey contained some demographic questions such as postal code, date of birth, and job title along with five questions on employee satisfaction with their immediate supervisor. The introductory letter by the CEO stated that all answers would remain anonymous. After the survey was sent out, only 582 employees responded, a response rate of less than 5 percent.

How did stakeholder evidence help?

A focus group discussion with employees from different parts of the organization was conducted to find out why so many members did not participate in the survey. The employees in the focus group stated that they were concerned that the demographic data would make it possible to identify the person behind the answers. Given the sensitive nature of the survey's topic, they therefore decided not to participate. Based on this outcome, the survey was modified by dropping the postal code and replacing the date of birth with an age range. The modified survey yielded a response rate of 67 percent.

Learn by doing 1.6

1. How would you define experiential evidence (in one or two sentences)
2. How would you define stakeholder evidence (in one or two sentences)

Did I get this 1.2

1. Imagine you are the CEO of a large chemical plant. Would you consider the concerns of the plant's surrounding community regarding chemical waste disposal, as reported by the local paper, as evidence?
2. Would you regard the outcome of the annual employee satisfaction survey as evidence?
3. Would you consider the concerns and fears employees have regarding a possible layoff to be evidence?

What sources of evidence should be considered? (2)

Example

On January 15, 2009, Captain Chesley Sullenberger was flying out of LaGuardia Airport in New York City when his US Airways plane was struck by a large flock of geese. The bi d strike, which occurred only minutes after takeoff, damaged both engines and resulted in a rapid loss of power. With air traffic control, Sullenberger discussed his options: either return to LaGuardia or land at Teterboro Airport in New Jersey. Sullenberger quickly deemed the situation too dire for the plane to stay in the air long enough for either plan to be successful. Instead, he decided that ditching (performing an emergency water landing) the airplane in the middle of New York's Hudson River was the best option. He announced over the intercom, "Brace for impact," and took the plane down onto the water's surface. The maneuver was a success, and all 155 people on board survived. [13]

Would you consider Captain Sullenberger's decision to land the plane on the Hudson River as an evidence-based decision? Well, you might be surprised to find out that it was.

1. Evidence from the Scientific Literature

After Sullenberger successfully landed his plane on the Hudson River, the flight crew immediately started an evacuation of the plane, getting people into rafts and out onto the wings. After all passengers and crew members had left the plane, Sullenberger inspected the plane very carefully to make sure no one was left on board. Sullenberger, however, was not quite satisfied. He had done research with NASA scientists on how to make decisions to maintain safety despite technological complexity and crisis conditions. From this NASA research and other research, Sullenberger knew that stress narrows the focus of attention and limits the extent to which new information can be absorbed. As he recalled: "I sensed my perceptional field was narrowed, you know, the tunnel vision that you get from sudden, life-threatening stress." For this reason, Captain Sullenberger went back and walked the entire length of the aircraft for a second time—to make sure he had not missed anyone.

2. Evidence from the Organization

While working for US Airlines, Sullenberger was an air accident investigator for the National Transportation Safety Board (NTSB). He analyzed flight data, cockpit voice recordings, and statistics from major incidents and wrote aviation accident reports for more than 20 years. From these data and statistics, Captain Sullenberger and his copilot, Jeffrey Skiles, knew it was critical to judge the height to begin raising the nose for landing; if the nose was raised too soon, the plane would lose lift on the wings and crash. For this reason, his copilot called out air speed and altitude to help Sullenberger judge the height in the final seconds before landing.

3. Evidence from Practitioners

Sullenberger served as a fighter jet pilot in the US Air Force from 1975 to 1980 and was employed by US Airways from 1980 until 2010. In total, he achieved more than 20,000 flying hours. His years of professional experience helped Sullenberger to go quickly through the three pages of checklist procedures for the emergency landing and determine that the plane would not have enough power to make it back to LaGuardia Airport. In Sullenberger's own words: "One way of looking at this might be that for 42 years, I've been making small, regular deposits in this bank of experience, education, and training. And on January 15, the balance was sufficient so that I could make a very large withdrawal."

4. Evidence from Stakeholders

The passengers were Sullenberger's most important stakeholders. Sullenberger realized that some of them, such as children and elderly people, may not be able to swim.
For this reason, Sullenberger decided to ditch the plane on a part of the Hudson River that was near the ferry boat terminal. As a result, within five minutes after it hit the water, the plane was surrounded by ferry boats, and all 150 passengers were rescued.

Learn by doing 1.7

Read the following case and determine which sources of evidence were consulted.

A local branch of a British bank struggles with low employee satisfaction. Management has tried several initiatives to improve this situation, but this year's satisfaction survey has shown no improvement. After the outcomes of the survey became clear, senior management organized a meeting with all employees to ask them one basic question: What, in your opinion, is important for your job satisfaction? The outcome of this session indicated that the employees perceived trust in management as the most important factor.

1. Was scientific evidence consulted
2. Was organizational evidence considered?
3. Was professional experience and judgment taken into account?
4. Were stakeholder values and concerns considered?

Did I get this 1.3

Read the following case and determine which sources of evidence were consulted.

About 4 years ago, a large Belgian brewery (nine divisions, 6,800 employees) introduced Six Sigma, a management technique to decrease product defects and increase efficiency. However, despite Six Sigma being implemented in six divisions, results have declined over the past year, including:

- *The number of breakdowns and short stops in the production lines remains the same despite greater use of problem analysis and improvement effort.*
- *The average productivity per worker has dropped by 10 percent.*
- *The employee absence rate has increased by 20 percent.*

In a meeting with the board of directors, some of the senior managers expressed the view that Six Sigma works only in the Japanese automotive industry. Based on this information, the board decides to cancel the Six Sigma program.

1. Was scientific evidence consulted?
2. Was organizational evidence considered?
3. Was professional experience and judgment taken into account?
4. Were stakeholder values and concerns considered?

Why do we have to critically appraise evidence?

Evidence is never perfect and can be misleading in many different ways. It may be that the evidence is overstated such that a seemingly strong claim turns out to be based on a single and not particularly reliable piece of information. A colleague's confident opinion regarding the effectiveness of a practice might turn out to be based on little more than an anecdote. A long-standing way of doing things in an organization may actually never have been evaluated to see whether it worked optimally. All evidence should be critically appraised by carefully and systematically assessing its trustworthiness (certainty) and relevance. This appraisal is the critical-thinking part of evidence-based practice.

Although how a piece of evidence is evaluated can differ slightly depending on its source, critical appraisal always involves asking the same basic questions:

- ***Where and how is the evidence gathered?***
- ***Is it the best available evidence?***
- ***Is there enough evidence to reach a conclusion?***
- ***Are there reasons why the evidence could be biased in a particular direction?***

So, for example, if we are critically appraising a colleague's experiences with a particular problem, we may wonder how many times he or she has experienced that problem and whether the situations were comparable. If it turns out that our colleague has relatively little experience and in settings quite different from our own, we might judge this evidence to be irrelevant or weak. Similar questions need to be asked about organizational evidence such as sales figures, error rates, and cash flow. How were these figures calculated? Are they accurate? Are they reliable? In the case of scientific evidence, we would ask questions about how the study was designed. How were the data collected? How was the outcome measured? To what extent are alternative explanations for the outcome found possible? Evidence-based practice is about using the best available evidence. Judging the quality and strength of the evidence we have through the process of critical appraisal enables us to discern and identify the best available evidence.

Did I get this 1.4

How trustworthy would you consider the following evidence (very high, high, moderate, low, very low)?

1. *Findings from a survey regarding the effect of financial incentives on employee performance conducted by an insurance company and published in a press release*
2. *Findings from a study regarding the effect of financial incentives on employee performance conducted by researchers from a university and published in the scholarly Journal of Organizational Behavior. The study compares the average performance of employees from 20 organizations that use financial incentives with 20 organizations that don't use financial incentives. Performance was measured both before and after the implementation.*
3. *The personal opinion of a senior manager regarding the effect of financial incentives on employee performance*
4. *The outcome of a survey among nurses in a local hospital that assessed their feelings toward the use of financial incentives to improve performance. The survey was completed by 90 percent of the nurses; all responded that they considered the use of financial incentives to improve performance to be unethical.*

Why focus on the best available evidence?

In almost any situation, it is possible to gather different types of evidence from different sources. In many situations, it may also be possible to gather a large quantity of evidence. But which evidence should we pay most attention to, and why? A fundamental principle of evidence-based decision making is that the quality of our decisions is likely to improve the more use we make of trustworthy evidence – in other words, the best available evidence.

This principle is apparent in everyday decision-making, whether it's buying someone a birthday present or wondering where to go out for dinner. In most cases, we actively seek information from multiple sources, such as our partner's opinion, the experiences of friends, or the comments of a local food critic. Sometimes, this information is so weak that it is hardly convincing at all; other times, the information is so strong that no one doubts its correctness. It is therefore important to be able, through critical appraisal, to determine what evidence is the best – the strongest, most trustworthy – evidence. For instance, when planning a vacation to the Emerald Isle, the most trustworthy evidence on which area of Ireland has the least chance of rain in early August will obviously come from statistics on the average rainfall per month, not from the personal experience of a colleague who visited the country only once.

Learn by doing 1.8

Consider the following scenario, then read the four evidence sources and rank the evidence based on its trustworthiness.

You have recently been appointed as director for a medium-sized business. In your first months working there, it becomes clear to you that the company is not organized in the best way. Overhead is too high, the reward system is very old, and profit margins have halved over the last two years. The CEO wants this situation to change and is wondering whether the introduction of the Meyer-Whitney model could improve the financial performance of the company. Since you have never heard of this model, you decide to consult evidence from a number of sources before you give your advice to the CEO.

The four evidence sources are as follows:

1. A recent scientific study published in an academic journal, which shows that the Meyer-Whitney model has no effect on the financial performance of an organization. The study compares 20 organizations that have implemented the Meyer-Whitney model with 20 organizations that have not implemented it. Measuring the financial performance before and after implementation showed that there was no difference between the two groups.
2. A multiple case study published in a popular management magazine, that appears to show that the financial performance of three British organizations showed a major improvement within a year after the Meyer-Whitney model was introduced.
3. In a national newspaper, an article was recently published in which the famous American CEO of a large multinational company talked about his experiences with the Meyer-Whitney model. In the article, he says that since the introduction of this model, the stock market value of the company has increased by 20 percent.
4. You contact a senior consultant at a well-known consulting firm. This consultant tells you that he does not think the Meyer-Whitney model has an effect on the financial performance of an organization. He advises you not to introduce the model.

Rank the evidence according to its trustworthiness: 1 = the strongest / most trustworthy evidence to 4 = the weakest / least trustworthy. Use each number only once.

As is illustrated in the preceding activity, exactly the same is true for organizational decisions. Consider the decision whether to use a quality management method such as Six Sigma to reduce medical errors in a British university hospital. Information based on the findings from a study of 150 European university hospitals in which medical errors were measured before and after the introduction of Six Sigma is stronger (more trustworthy) than the professional experience of a colleague who works at a small private hospital in Sydney, Australia.

However, such a study may never have been done. Instead, the best available evidence could be case studies of just one or two hospitals. For some decisions, there may be no scientific or organizational evidence at all. Consequently, we may have no option but to make a decision based on the professional experience of colleagues or to pilot test various approaches and see for ourselves what might work best. Given the principles of evidence-based decision making, even if we rely on the experience of a colleague, using this limited-quality evidence can still lead to a better decision than not using it, as long as we are aware of its limitations when we act on it.

Did I get this 1.5

Consider the following scenario, then read the four evidence sources and rank the evidence based on its trustworthiness.

You are working as a manager at a large Italian IT firm. The productivity of the engineers is far below average for the sector. The board of directors wants to take action to improve this situation. The financial director suggests introducing a performance-related pay model, which would give the workers a financial incentive to carry out more work. Since you are not sure what causes the low productivity of the engineers, you feel it will be useful to consult evidence from a number of sources before you decide to implement a performance-related pay model.

The four evidence sources are as follows:

1. The advice of a senior consultant at a well-known consulting firm, who tells you that, on the basis of hi 15 years of experience with a large number of IT firms in the United States, the most likely cause for low productivity is lack of leadership. He therefore advises you not to introduce the performance-related pay model and instead to provide leadership training for all supervisors and senior managers.
2. The testimony of the chief operating officer, who tells you that the organizational data show that the engineers' productivity varies widely per team. In fact, analysis shows that teams with a large number of senior and experienced engineers are twice as productive as teams with a large number of young and inexperienced engineers. She therefore advises you to invest in the training and support of young and inexperienced engineers and to arrange a more balanced distribution between the teams.
3. A case study shown to you by the financial director; this case study, published in an academic journal, indicates that the productivity of Chinese mineworkers of four state-owned companies improved within a year after a performance-related pay model was introduced. The result of this case study is based on interviews with 50 supervisors. The financial director therefore advises you to introduce the performance-related pay model.
4. The testimony of the HR director, who tells you that she thinks the most likely cause for low productivity is lack of teamwork: it is well known that engineers in general lack social skills and consequently don't share among themselves the task-relevant knowledge that is necessary to solve practical problems and improve performance. She therefore advises you not to introduce the performance-related pay model and instead to invest in team building.

Rank the evidence according to its trustworthiness: 1 = the strongest / most trustworthy evidence to 4 = the weakest / least trustworthy. Use each number only once.

Now let's assume that in the preceding scenario, the only evidence available is a multiple case study published in a popular management magazine. Based on this study, the CEO decides to take his chances and implement the Meyer-Whitney model.

Would you consider this to be an evidence-based decision?

a) Yes, because the CEO has consulted evidence from the scientific literature.

b) No, because the case study is not the best available evidence.

c) No, because a case study with no premeasure or comparison, published in a popular magazine, should be regarded as low-quality evidence.

d) Yes, because the multiple case study is the best available evidence.

Common misconceptions of evidence-based decision making

Misconceptions about evidence-based practice are a major barrier to its uptake and use. For this reason, it is important that misconceptions be challenged and corrected. In most cases, they reflect a narrow or limited understanding of the principles of evidence-based management.

Learn by doing 1.9

Based on what you have learned so far, are the following six statements true or false?

1. *"Evidence-based decision making disregards practitioners' professional experience."*
2. *"Evidence-based decision making is all about numbers and statistics."*
3. *"In organisations, people need to make decisions fast and don't have time to take an evidence-based approach."*
4. *"Every organization is unique, so the usefulness of scientific evidence is limited."*
5. *"If you don't have high-quality evidence, you can't do anything."*
6. *"Good-quality evidence gives you the answer to the problem."*

What is the evidence for Evidence-based Decision Making?

People sometimes ask whether there is evidence that an evidence-based approach leads to better decisions than the way people typically make decisions. This is, of course, an important question. However, to assess whether an evidence-based approach leads to better decisions, we must first ask: better compared to what? Obviously, methods such as flipping a coin or consulting a crystal ball are not serious alternatives. Yet throughout history, decision makers have relied on a variety of other approaches. Below is an overview of common alternatives to evidence-based decision making.

Other types of decision making

1. Heuristic-Based Decision Making

Decisions are made using *heuristics*—quick mental shortcuts that simplify complex problems. This approach is fast and sometimes helpful under time pressure but is also prone to systematic errors and cognitive biases. We will explore this type of decision making in more detail in Module 4.

2. Intuition-Based Decision Making

Decisions are guided by gut feelings and intuition. While intuition can be effective when grounded in deep, tacit expertise, it is often unreliable—especially in unfamiliar or high-stakes situations.

3. Tradition-Based Decision Making

Decisions are based on established customs, norms, and longstanding practices—often summarized as “the way we’ve always done it.” This approach assumes that what worked in the past will also work in the future. While it can provide stability, it often hinders innovation and adaptation to new or changing circumstances.

4. Authority-Based Decision Making

Decisions are based on the judgment of people who are seen as experts or leaders. This approach is common in organizations with strong hierarchies or in traditional societies. It can work well in some situations but can be risky if the authority figure is wrong or biased.

5. Ideology-Driven Decision Making

Decisions are mainly guided by moral, political, religious, or other strong beliefs. In this approach, staying true to these beliefs is more important than using facts or empirical evidence.

6. Rule-Based Decision Making

Decisions are based on formal rules, laws, protocols, or official procedures, sometimes without considering the actual results. In some specific areas—such as medical procedures or legal contexts—this approach can work well. However, in other situations, it can limit flexibility and lead to poor outcomes.

7. Consensus-Based Decision Making

Decisions are made collectively through group discussions, aiming for agreement among participants or following majority views. Although this approach can build commitment and social cohesion, it may also result in groupthink or compromise solutions that are suboptimal.

Learn by doing 1.10

Read the following scenario:

A company is developing a new work-from-home policy. The CEO decides to copy the same policy that several competitors have been using for years, explaining: *"If it works for them, it should work for us too. Rather than reinventing the wheel, we should follow what successful companies do."*

What type of decision-making approach is this?

A. Heuristic-Based Decision Making

B. Intuition-Based Decision Making

C. Tradition-Based Decision Making

D. Authority-Based Decision Making

Learn by doing 1.11

Read the following scenario:

For economic reasons, a city government proposes allowing shops to open on Sundays. However, several influential council members strongly oppose the idea, stating: *"Allowing shops to open on Sundays goes against our community's values about family and rest, no matter what the economic benefits might be."* Based on their arguments, the mayor decides to veto the proposal.

What type of decision-making approach is this?

A. Tradition-Based Decision Making

B. Ideology-Based Decision Making

C. Consensus-Based Decision Making

D. Heuristic-Based Decision Making

Evidence for evidence-based decision making

To assess the effects of evidence-based decision making, we would ideally need:

1. Studies evaluating many different situations and organizational contexts where evidence-based decision making was applied,
2. Measurement of a wide range of outcomes, preferably through double-blind, randomized controlled trials, and
3. A direct and fair comparison with other types of decision making.

Obviously, such studies are extremely difficult—if not impossible—to conduct in organizational settings. Despite this, there is substantial empirical evidence suggesting that an evidence-based approach improves decision effectiveness.

Numerous studies—including systematic reviews and meta-analyses—show that decisions based on high-quality evidence from multiple sources - rather than on opinions, beliefs, tradition, authority or ideology - are less prone to systematic errors and cognitive biases that reduce the quality of our decisions. For example, studies have found that, in general:

- **Forecasts or risk assessments based on the aggregated (averaged) professional experience of many practitioners are more accurate than those based on a single person's experience—provided that the forecasts are made independently before being combined.** [20] [21] [22] [23] [24]
- **Professional judgments based on hard data or statistical models are more accurate than judgments based on individual experience.** [25] [26] [27]

- **Knowledge derived from scientific evidence is more accurate than expert opinions.** [28]
- **Decisions based on a combination of critically appraised experiential, organizational, and scientific evidence yield better outcomes than decisions based on a single source of evidence.** [29] [30]
- **Evaluating the outcomes of decisions has been shown to improve organizational learning and performance, particularly in novel and non-routine situations.** [31] [32]

Evidence That an Evidence-Based Approach Improves Outcomes

In addition, there is strong empirical evidence from high-quality studies showing that an evidence-based approach improves outcomes across various fields, including medicine, education, policing, and management. For example:

- In **medicine**, evidence-based approaches have reduced unnecessary surgeries, improved survival rates, and exposed ineffective treatments. Randomized controlled trials and meta-analyses consistently demonstrate that evidence-based medical practices lead to better outcomes. For instance, implementing evidence-based clinical pathways has been shown to significantly reduce complications and hospital readmissions compared to treatments based on conventional practice or individual physician preference. [33] [34] [35] [36]

- In **education**, programs using an evidence-based approach consistently outperform traditional or untested approaches. For example, a large-scale synthesis of more than 800 meta-analyses covering over 50,000 studies found that structured, evidence-based teaching methods—such as providing feedback and scaffolded learning strategies—consistently improve learning outcomes compared to approaches based on tradition or intuition. [37]

- In **policing**, evidence-based strategies such as focusing on high-crime locations (*hot spots*) or targeting high-risk offenders have been shown to reduce crime more effectively than routine or random patrols. A systematic review found that increasing police presence at crime hot spots led to significant reductions in crime, with violent offenses declining by an average of 24% and drug offenses by about 30% [38]. In addition, *focused deterrence* programs—such as Boston's "Operation Ceasefire"—have demonstrated large reductions in violent crime. [39]

- Although randomized controlled trials in **management** are uncommon, a large number of meta-analyses consistently show that structured, evidence-based interventions—such as setting clear and challenging goals, providing frequent feedback, enhancing psychological safety, fostering team trust, offering training, enabling flexible working arrangements, promoting organizational justice, ensuring leadership support, strengthening social cohesion, and recognizing and rewarding people for their contributions—are more strongly associated

with improved job performance and organizational outcomes than traditional or intuition-based approaches. An overview of these studies can be found on the website of the Center for Evidence Based Management (CEBMa, https://cebma.org)

These examples strongly suggest that relying on multiple, critically appraised sources of evidence leads to more accurate judgments and better outcomes. This pattern holds across fields such as medicine, education, policing, management, and policymaking, demonstrating the broad impact of an evidence-based approach.

Did I get this 1.6

In many fields, evidence-based decision making tends to outperform approaches based on intuition, tradition, or authority. Which of the following best explains this difference?

A. Evidence-based decision making removes uncertainty by focusing on quantitative data and high quality scientific research such as randomized controlled studies and meta-analyses

B. Evidence-based decision making reduces the risk of biased decisions by critically assessing and combining multiple sources of evidence, even when personal experience or authority suggest otherwise.

C. Evidence-based decision making relies on evidence from multiple sources to ensure that the viewpoints of stakeholders are represented before making a decision.

D. Evidence-based decision making applies a systematic and a transparent process to maintain consistency across decisions.

You have now reached the end of this introduction to evidence-based decision making. We provided you with a lot of information, so let's summarize the most important learning points.

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TO SUM UP ...

We started this module by explaining what evidence-based decision making is about making decisions through the conscientious, explicit, and judicious use of the best available evidence from multiple sources. By using and critically appraising evidence from multiple sources, you increase the likelihood of making an effective decision.

We discussed why we need evidence-based decision making. Most managers, leaders, consultants and policymakers prefer to make decisions based solely on personal experience. However, personal judgment alone is not a reliable source of evidence because it is prone to cognitive biases and thinking errors. In addition, people are often unaware of the current scientific evidence available: Large discrepancies seem to exist between what practitioners think is effective and what the current scientific research shows. As a result, billions of dollars are spent on practices and policies that are ineffective or even harmful to organizations and their clients.

We then discussed what counts as evidence. When we say *evidence*, we basically mean information. It may come from scientific research, from the organization itself, or from the professional experience of practitioners. Even evidence regarding the values and concerns of stakeholders (e.g., employees who will be affected by the outcome of the decision) may be important to consider.

We also explained that evidence is never perfect. We must always critically appraise the trustworthiness of the evidence, regardless of whether it is evidence from experience or evidence from scientific research. We can do that by asking 1) how the evidence is gathered, 2) if it could be biased in a particular direction, and 3) whether it is the *best available evidence*.

Sometimes, the best available evidence is hardly convincing at all. Other times, the evidence is so strong that no one doubts its correctness. In fact, in some situations, little or no quality evidence may be available. In those cases, we have no choice but to work with the limited evidence at hand and supplement it through learning-by-doing. This means pilot testing and systematically assessing the outcome of the decisions we make so we can improve subsequent decisions.

You have learned that evidence is not the same as answers—it does not speak for itself. In fact, most evidence comes with a significant degree of uncertainty. As a result, evidence-based practitioners rarely make decisions with absolute confidence. Instead, they assess probabilities, carefully question the indications, and draw cautious, provisional conclusions

Finally, there is strong and compelling evidence that using high-quality, critically appraised evidence from multiple sources—rather than intuition, tradition, authority, or ideology—reduces the risk of systematic errors and cognitive biases. Numerous empirical studies, including meta-analyses and systematic reviews, consistently show that an evidence-based approach leads to better outcomes across various fields.

Nonetheless, the most important learning point is that evidence-based decision making starts with a **critical mindset**. It means questioning assumptions, particularly when someone (including ourselves) asserts some belief as a fact. So, from now on, always ask, *What's the evidence for that? How trustworthy is this evidence?* and *Is this the best available evidence?*

Podcast: Principles of Evidence-Based Decision Making

In this first podcast host Karen Plum discusses with Eric Barends, Managing Director of the Center for Evidence Based Management (CEBMa), Denise M. Rousseau, Professor of Organizational Behavior and Public Policy at Carnegie Mellon University, and Rob Briner, Professor of Organizational Psychology at Queen Mary University of London, the basic principles of evidence-based decision making.



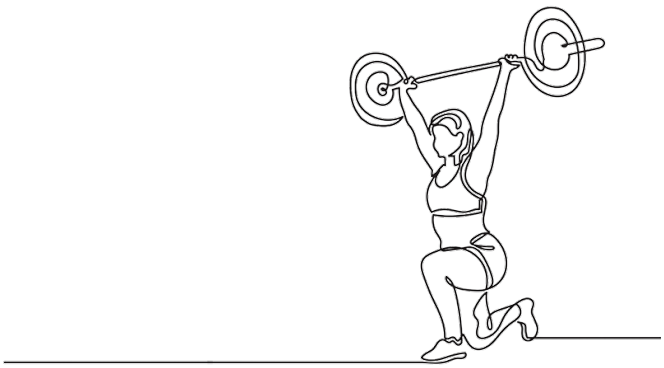

What is evidence-based management and why do we need it? Because everyone uses some kind of evidence when making decisions, right? But only one source, or many? And are those sources assessed for their reliability and trustworthiness? Are we actively trying to identify the biases that so often lead us down the wrong path?

And really, who has time to take an evidence-based approach, when organisations just want to “get things done”?

Listen on buzzsprout

https://evidencebasedmanagement.buzzsprout.com

Exercises



Exercise 1.1:
How do you typically make decisions?

Think about how you make decisions as a consumer (e.g., buying a new laptop, choosing a restaurant, booking a hotel). Take two decisions: one you are satisfied with and one you are not as satisfied with.

1. What was your decision-making process? (e.g., How did you start? How many alternatives did you consider?)
2. What evidence did you use to decide between alternatives?
3. Did you use product review sites such as Yelp, TripAdvisor, or Amazon reviews? Why / why not?
4. Overall, how trustworthy was the evidence you did use?
5. How long did it take before you made your final decision?
6. On comparing the two decisions, what reflections do you have on your decision processes?

Exercise 1.2:
How does your organization typically make decisions?

Download the “How evidence-based is your organization?” self-assessment survey.
Fill out the survey with two or more colleagues.

Exercise 1.3:
How does your organization typically make decisions?
Postmortem

Think back to a management, business, or policy decision you have been involved in making (or have observed closely). This decision should be reasonably important for your organization, involving significant resources, several or many people, and with no 'easy' answer. Write your answers to the following three questions in detail.

1. What exactly was the problem to be solved (or opportunity to be addressed)?
2. What evidence was available and from which sources?
3. Was any attempt made to explicitly evaluate its quality or trustworthiness?
4. What was the decision-making process? (Steps taken, alternatives considered, stakeholders involved, and who made the final decision?)
5. What could have been done to improve the 'evidence base' of the decision - what specific types of evidence would have been helpful?

Exercise 1.4:

Self-guided book tour

We would like you to get a hold of three popular/best-selling management books. You can go the bookstore, check out your library (or a friend's) or go on-line. Pick three books that interest you. For each book, indicate what its 'evidence-base' appears to be. Write down your answers to the following questions:

1. What types of evidence sources does the book cite? In particular, what proportion of sources appears to be
   - personal/anecdotal?
   - best-practices of other companies?
   - other business books or publications?
   - evidence from scientific research?
2. What is known about the author? (check Google or Google Scholar)
3. What is known about the proposed model/principles/insights? (what's the evidence base for its proposed model or insights?)
4. Which book appears to you to be the most useful? Why?
5. Does being evidence-based affect usefulness?

Suggestions for further reading

- *Managerial fads and fashions: The diffusion and rejection of innovations*, Abrahamson, AMR, 1991
- *Surprising but true: Half the decisions in organizations fail*, Nutt, AMP, 1999
- *What bandwagons bring: Effects of popular management techniques on corporate performance, reputation, and CEO pay*, Staw & Epstein, ASQ, 2000
- *Seven common misconceptions about human resource practices: Research findings versus practitioner beliefs*, Rynes et al, AMP, 2002
- *Evidence Based Management*, Pfeffer & Sutton, Harvard Business Review, 2006
- *Trust the Evidence, Not Your Instincts*, Pfeffer & Sutton, The New York Times, 2011
- *Evidence Based HR: Under The Microscope*, Katie Jacobs, HR Magazine, 2015
- *The Basics of Evidence-Based Practice*, Rob Briner, HR People & Strategy, 2018

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Learn by doing & Did I get this?

Answers and Feedback

Learn by doing 1.2

1: Yes > The experience of employees with flexible working arrangements can be considered as evidence. Evidence such as employees' experience can provide important information about whether a new way of working or a new procedure is feasible or effective in a particular context.

2: No > It is unclear what common knowledge means: findings f om an employee survey, the collective personal experience of managers? When no supporting evidence is provided, assertions based on common knowledge should be considered a belief or personal opinion.

3: Yes > Even one person's professional experience counts as evidence.

Did I get this? 1.1

Yes > It is unclear what the evidence is for the CEO's assertion: professional experience, findings f om scientific research? As long as you can ask, "How do you know?" or "What is the evidence?" it is likely that the information presented is not evidence but an assumption, a personal opinion, or a belief. The fact that the CEO has a degree from a prestigious university does not mean his or her assertion is evidence.

Learn by doing 1.3

Our answer: Research suggests that most management practitioners base their decisions on intuition and experience. In fact, practitioners seldom consult the findings of scientific research. The most important source to which practitioners turn when faced with a management problem seems to be their colleagues or the insights from "experts."

Learn by doing 1.4

Correct: A, C and D

Learn by doing 1.5

1: Evidence from the scientific literature refers to the findings from empirical studies published in academic journals.

2: Evidence from the organization refers to data, facts, and figu es that are generated by the organization itself and measured repeatedly over time. It can be hard numbers such as financial data, turnover rates, or client satisfaction. It can also include soft elements, such as organizational characteristics (e.g., cultural norms or structural information) as well as the outcomes of exit interviews.

Learn by doing 1.6

1: Experiential evidence refers to evidence from the professional experience, knowledge, skill, and expertise of practitioners. This type of evidence is sometimes referred to as ***tacit knowledge***.

2: Stakeholder evidence refers to what individuals or groups affected by a decision believe to be important. Stakeholder evidence is relevant to how an individual or group might react to a decision's possible consequences.

Did I get this? 1.2

1: Yes > The public opinion or other expressions of stakeholder interests and concerns are important stakeholder evidence that may influence the outcome of decision-making

2: Yes > The outcome of employee satisfaction surveys can be considered as organizational evidence: evidence that is generated by the organization itself and is repeatedly measured over time.

3: Yes > Employees are important stakeholders. Their fears and concerns, regardless of whether they are based on facts or rumors, can be considered as stakeholder evidence. Although stakeholders' concerns can be highly subjective and even sometimes seemingly irrational, they provide important information about how a proposed decision might be received.

Learn by doing 1.7

1: No > No scientific evidence was consulted. Based on the outcome of the meeting with the employees, the scientific literature could have been consulted to find out if research findings confirm a positive effect of trust in management on employee satisfaction.

2: Yes > The outcome of the satisfaction survey can be considered as organizational evidence: evidence that is generated by the organization itself and is repeatedly measured over time.

3: No > The employees were asked to give their 'opinion', which is not the same as professional experience and judgment (see 4)

4: Yes > The outcome of the meeting with the employees can be considered as stakeholder evidence.

Did I get this? 1.3

1: No > No scientific evidence was consulted. The board could have asked these questions: What does scientific research suggest to be the major cause of declining productivity or increasing absence rates? Given the target group and the context involved, what are the main factors determining the success or failure of Six Sigma?

2: Yes/No > Partially correct. The number of problem analyses and improvement measures, the number of breakdowns and short stops, the average productivity per worker, and the employee absence rate all can be regarded as organizational evidence. However, it could be argued that important organizational evidence is missing: Is there a correlation between absence rate, productivity, short stops, and the implementation of Six Sigma? Is there a trend? What is the average in the sector?

3: No > The views of some senior managers cannot be regarded as experiential evidence. When no supporting evidence is provided, views should be considered a belief or personal opinion. The board could have asked these questions: Have they seen this scenario before? What are their experiences regarding declining productivity in general? What do they think are the causes in this particular case? How relevant and applicable is their experience?

Did I get this? 1.3 (cont.)

4: No > In this case no stakeholder evidence was consulted. Relevant questions include: How do employees feel about Six Sigma? Do they see downsides or unintended negative consequences? How practical or workable do those responsible for implementing Six Sigma feel? What do they think are the causes of the declining productivity?

Did I get this? 1.4

1: Correct: Low/very low. Findings from a survey conducted by an insurance company and published in a nonacademic journal such as a press release, newspaper, or magazine cannot be considered as (highly) trustworthy. The evidence could be stronger / more trustworthy if it came from a survey conducted by scholarly researchers who strive to be objective and if it were published in a journal that maintains a high standard of quality, accuracy, and academic integrity. Research conducted by organizations and published in press releases, newspapers, or magazines could be biased or influenced by the desi e to obtain certain findings

2: Correct: High/very high: Findings from a study that measures the effect of financial incentives on employee performance both before and after the implementation and compares the outcome with other organizations not using financial incentives can be regarded as (highly) trustworthy evidence. In addition, findings f om a study conducted by independent researchers and published in an academic journal such as the *Journal of Organizational Behavior* are more trustworthy than findings f om a study published in a popular magazine.

3: Correct: Low/very low. If no supporting evidence is given, the personal opinion of a senior manager is not very trustworthy: it is a belief because it reflects a subjective point of view . However, senior managers are important stakeholders in the decision-making process, so from an evidence-based perspective, it could be important to take their personal opinions as stakeholders into account.

4: Correct: High/very high. The unanimous outcome of a survey with a response rate of 90 percent can be regarded as (very) trustworthy evidence: in this case, it is a strong indicator that financial incentives would be unacceptable to these nurses.

Learn by doing 1.8

1: 3 > This is the professional experience of only one person, published in a newspaper. In addition, the outcome (stock market value) is not very relevant. We would argue it is less strong/trustworthy than the scientific study or the case study, though more trustworthy than the personal opinion of a consultant.

2: 4 > No evidence is provided, so the consultant's advice should be considered a personal opinion or belief. This makes it less strong/trustworthy than the scientific study, the case study, and the CEO s personal experience.

3: 1 > This is a controlled study with a before-and-after measurement, published in an academic journal, so this is a very strong/trustworthy source of evidence.

4: 2 > This is a case study of only three organizations, with no premeasure or comparison, so it is less strong/trustworthy than a controlled study of 20 + 20 organizations. However, it is more trustworthy than the professional expertise of one person or the personal opinion of a consultant.

Did I get this? 1.5

1: 4 > No evidence is provided, so the HR director's testimony should be considered a personal opinion or belief.

2: 2 > This evidence represents a scientific study published in an academic journal. However, the case study is based on just a single organization and uses no premeasures or controls, making bias likely in what is reported. Also, note that the study population and context are quite different from the focus of this decision. This makes it less reliable and applicable than objective and reliable data from the organization itself.

3: 1 > This evidence is based on solid, objective, and reliable data from the organization itself in which a direct comparison between teams with experience and teams of less experienced engineers was made. This makes it stronger / more trustworthy than the other sources of evidence.

4: 3 > This evidence represents the professional experience of just a single person. It is not clear what measures of productivity and teamwork were used. Thus, the experience may be based on a general impression rather than reliable or valid data; it also is based in a different context (a US instead of Italian firm)

5: Yes > Although this is just a case study with no premeasure or comparison, published in a popular magazine, it is still the best available evidence.

Learn by doing 1.9

1. "Evidence-based decision making disregards practitioners' professional experience.".

Correct

This misconception directly contradicts our definition of evidence-based decision making that decisions should be made through the conscientious, explicit, and judicious use of evidence from multiple sources, including experiential evidence. Evidence-based decision making does not mean any one source of evidence is more valid than another. Even experiential evidence – the professional experience and judgment of practitioners – can be an important source of evidence if it is appraised to be trustworthy and relevant.

Experiential evidence is essential in appropriately interpreting and using evidence from other sources. If we are trying to identify effective ways to share information with colleagues, scientific and organizational evidence may be informative, but experiential evidence is needed to help figu e out what practices make good sense if we are working with professionally trained colleagues or relatively low-skilled workers.

Similarly, scientific evidence can help us to understand the extent to which our experiential evidence is trustworthy. Research indicates that years of experience in a technical specialty can lead to considerable expertise and tacit knowledge. On the other hand, an individual holding a series of unrelated jobs over the same number of years may have less trustworthy, less reliable expertise. That's why evidence-based decision making is about using evidence from multiple sources rather than merely relying on only one.

Learn by doing 1.9 (cont.)

2. "Evidence-based decision making is all about numbers and statistics."

Incorrect:

Evidence-based decision making is about seeking and using the best available evidence from multiple sources. It's not all about numbers and quantitative data, though many organizational decisions involve numbers and figures of some sort. You do not need to become a statistician to make an evidence-based decision, but it does help to have an understanding of some basic statistical concepts that are useful to critically evaluate some types of evidence. The principles behind such concepts as sample size, statistical versus practical significance, confidence intervals, and effect sizes can be understood without any math. Evidence-based decision making is not about doing statistics, but statistical thinking is an important element.

3. "In organizations, people need to make decisions fast and don't have time to take an evidence-based approach."

Incorrect:

Sometimes, taking an evidence-based approach is about taking a moment to reflect on how well the evidence you have can be trusted. More often, it is about preparing yourself to make key decisions well – by identifying the best available evidence you need, preferably before you need it. It is true that some organizational decisions must be made quickly, but even split-second decisions require trustworthy evidence. Making a fast and sound decision about when to evacuate a leaking nuclear power plant or how to make an emergency landing requires up-to-date knowledge of emergency procedures and reliable instruments providing trustworthy evidence about radiation levels or altitude. Likewise, when important decisions really must be made quickly, an evidence-based practitioner anticipates the kinds of evidence quality decisions require. However, the need to make really fast decisions in many cases is the exception rather than the rule. Most decisions take place over much longer time periods sometimes weeks or even months – and often require the consideration of legal, financial, strategic, and other organizational issues, which by necessity takes time. This provides plenty of opportunities to collect and critically evaluate evidence about the nature of the problem and, if there is a problem, the decision most likely to produce the desired outcome. For evidence-based decision making, time is not a deal breaker.

4. "Every organization is unique, so the usefulness of scientific evidence is limited."

Incorrect:

One objection some people have to using research evidence is the belief that every organization is unique, suggesting that research findings simply will not apply. Although organizations do differ, they also tend to face similar issues, sometimes repeatedly, and often respond to them in similar ways. Peter Drucker, a seminal management thinker, was perhaps the first to assert that most organizational issues are "repetitions of familiar problems cloaked in the guise of uniqueness."[14]

Learn by doing 1.9 (cont.)

It is commonplace for organizations to have myths and stories about their own uniqueness[15] – it is not that all organizations and clients/customers are alike, nor is it that each is unique: the reality lies somewhere in between. As an evidence-based decision maker, you need to be flexible enough to take your organization s similar-yet-different qualities into account. For instance, an evidence-based practitioner may use individual financial incentives for sales agents but reward highly skilled knowledge workers with more opportunities for development or personally interesting projects, knowing that financial incentives tend to lower performance for knowledge workers.[16, 17]

5. "If you don't have high-quality evidence, you can't do anything."

Incorrect:

Sometimes, there is very little or no quality evidence available. This may be the case, for example, with a new practice or the implementation of a new policy. In some areas, the organizational context changes rapidly, which can limit the relevance and applicability of scientific and experiential evidence derived in a context different from today's. In those cases, the evidence-based practitioner has no other option but to work with the limited evidence at hand and supplement it through learning by doing. This means pilot testing and treating any course of action as a prototype: systematically assessing the outcome of the decisions we take through a process of constant experimentation, punctuated by critical reflection about which things work and which things do not [18, 19]

6. "Good-quality evidence gives you the answer to the problem."

Incorrect:

Evidence is not answers. It does not speak for itself. To make sense of evidence, we need an understanding of the context and a critical mindset. You might take a test and find out you scored 10 points. But if you don't know the average or total possible score, it's hard to figu e out if you did well. At the same time, you might want to know what doing well on the test actually means. Does it indicate or predict anything important to you and in your context? And why? Simply knowing you scored 10 points on the test is meaningless data without this additional information. At the same time, evidence is never conclusive. It doesn't prove things, which means no piece of evidence can be viewed as a universal or timeless truth. In fact, in most cases, evidence comes with a large degree of uncertainty. Evidence-based practitioners therefore make decisions not based on conclusive, solid, up-to-date information but on probabilities, indications, and tentative conclusions. Evidence doesn't tell you what to decide, but it does help you to make a better decision.

Learn by doing 1.10

Correct: C

The CEO relies on the idea that what has worked in the past—or for others—will work in their own company. This reflects *tradition-based* decision making, where decisions follow established customs, routines, or norms without critically examining whether they apply to the current situation.

Learn by doing 1.11

Correct: B

This decision is based on deeply held moral and cultural beliefs about family and rest, rather than on evidence such as economic data. Ideology-based decision making prioritizes values, ethics, or political beliefs over factual analysis or outcomes.

Did I get this 1.6

Correct: B

Evidence-based decision making does not remove uncertainty, but it reduces the likelihood of systematic errors by requiring the use of high-quality, critically appraised evidence from multiple sources. This process makes it less vulnerable to personal, authority-based, or traditional biases, and more adaptable to the specific context of a decision.