

CHAPTER 2

Risks and Risk Assessments

Learning Objectives:

1. Describe the nature of risk.
2. Classify risks into different risk categories.
3. Determine the quantitative value of risk.
4. Explain how businesses respond to risk.

ANSWERS TO MULTIPLE CHOICE QUESTIONS

1. A

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

2. C

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

3. C

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

4. D

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

5. C

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

6. C

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

7. C

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

8. D

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

9. C

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

10. A

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

11. A

14. B

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

15. C

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

16. B

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

17. B

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

18. A

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Communication, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

19. D

LO 3, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Communication, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

20. B

LO 4, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

21. B

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

22. C

LO 4, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

23. C

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

24. D

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

12. B

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

13. C

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

25. C

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

26. D

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

ANSWERS TO DISCUSSION AND RESEARCH QUESTIONS

DQ1. IT risk is an important consideration in risk management and involves threats and vulnerabilities to the information technology resources used by an organization. These include the risk of intentional or accidental damage, theft, unauthorized access, unauthorized changes, and disruption or interruption of systems. All of these could cause significant loss or damage and may disrupt business operations to the extent that the organization cannot meet its objectives.

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 5 min., AACSB: Technology, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

DQ2. While the general view of risk is that it is bad, a business that proactively identifies risk can manage it. Risk often drives innovation. There is a trade-off between risk and return. A company that takes on significant risk may have a competitive advantage over a company that avoids that risk. Think of modern-day innovators like Elon Musk, Mark Zuckerberg, Steve Jobs, and Jeff Bezos. Without taking significant risks, their companies would not be the success stories that make them household names. If a company wants to be at the forefront of its industry, it must be willing to accept calculated risk. Without risk, there would be no innovation.

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 5 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

DQ3. Enterprise risk management (ERM) is a formal process for enhancing risk management in an organization. It is a comprehensive process for planning, organizing, and managing a company's risks. ERM performs risk assessments to address each part of the organization's risk – no matter how large or small the risk. The "E" in ERM means it is top-down, enterprise-wide process to manage all the risks that may impact the organization in its mission to meet its strategic objectives. This is an "entity-level" risk management approach.

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 5 min., AACSB: Communication, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

DQ4. These two crashes resulted from an identifiable internal risk—the risk of poor design of the plane with the potential outcome of plane crashes. This risk statement maps to the *operational risk category*, which occurs during day-to-day operations and causes a breakdown in business activities. Operational risks can stem from organizational, technology, process, and/or human failures. The company suffered a tremendous loss of reputation and material financial losses due to loss of sales revenues, lawsuit costs, and stock price declines. However, reputational risk (an external risk) and financial risk (an internal risk) would be secondary to operational risk (an internal risk) because a breakdown in operations was the principal driver for the terrible outcome in this case.

LO 2, Blooms: Analysis, Difficulty: Medium, TOT: 10 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

DQ5. “Compliance risk is the threat posed to a company's financial, organizational, or reputational standing resulting from violations of laws, regulations, codes of conduct, or organizational standards of practice.” Source: Deloitte, <https://www2.deloitte.com/us/en/pages/finance/articles/cfo-insights-compliance-risks.html>.

An example of compliance risk is “non-compliance with *Sarbanes–Oxley Act (SOX)*” with the possible outcome of fines, legal costs, and/or imprisonment. SOX does not apply only to Wall Street corporations. Under Title VIII, Section 802 (a), it unlawful to hide, destroy, or alter any records **or objects** [emphasis added] with the intent of obstructing a federal investigation.

John Yates was a commercial fisherman working in the Gulf of Mexico when a federal agent inspected his ship. The agent discovered undersized red grouper on his ship—a violation of U.S. regulations for federal conservation. The federal agent gave Yates instructions to separate the grouper from the other fish. Instead, Yates ordered his crew to throw the grouper overboard. Consequently, Yates was prosecuted under SOX for the following transgression: “...knowingly alters, destroys, mutilates, conceals, covers up, falsifies, or makes a false entry in any record, document, or **tangible object** [emphasis added] with the intent to impede, obstruct, or influence a federal investigation.” The tangible object was the grouper. Yates was convicted and sent to prison.

Source: Legal Dictionary, Sarbanes Oxley Act. <https://legaldictionary.net/sarbanes-oxley-act/>.

LO 2, Blooms: Comprehension, Difficulty: Medium, TOT: 15 min., AACSB: Communication, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

DQ6. These outcomes resulted from an identifiable internal risk—the risk of poor maintenance of transmission lines with the potential outcome of causing wildfires. This risk statement maps to the *operational risk category*, which occurs during day-to-day operations and causes a breakdown in business activities. Operational risks can stem from organizational, technology, process, or human failures. The company suffered a tremendous loss of reputation and material financial losses due to liabilities from the wildfires, and the company declared bankruptcy. Reputational risk (an external risk), the physical risk of wildfires (an external risk), and financial risk (an internal risk) would be secondary to operational risk (an internal risk) because a breakdown in operations was the principal driver for the deadly and destructive outcomes in this case.

LO 2, Blooms: Comprehension, Difficulty: Medium, TOT: 15 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

DQ7. No, it is not 100% controllable. Because businesses have limited resources — equipment, space, people, and budgets — it is impossible to eliminate 100% of every risk. Also, while internal risk can be forecast with some reliability, this is not the case with external risk, which is much more difficult to forecast.

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 5 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

DQ8. Information technology (IT) is propelling massive changes in how a business functions, and at a very fast pace. Technology provides new opportunities, including new ways to manage risk, while also creating significant risks related to its use. For this type of company, technology risk is a crucial consideration in risk management at the entity level and involves threats and vulnerabilities to the IT resources used by an organization. These include the risk of intentional or accidental damage, theft, unauthorized access, unauthorized changes, and failure, disruption or interruption of systems, which puts the business model at significant risk.

External threats, resulting in significant external risks for platform companies are compliance risk (e.g., privacy laws), strategic risk, and physical risk. If the technology platform is not functioning, the existence of the business is at risk. Assessing the severity of technological risk, such as cybersecurity, is crucial to business success and survival.

LO 3, Blooms: Comprehension, Difficulty: Medium, TOT: 15 min., AACSB: Technology, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

DQ9. The colors of the heat map in this risk matrix convey data-driven meaningful information. This image is divided into a grid. Within each rectangle of the grid, the heat map shows the relative intensity (hotness, coldness, or somewhere in between) of values by assigning each value a color to represent it. The rectangles that are highest in risk value—relative to the other—have a “hot” color (in this case red), while those that are lower in their risk value show a “cold” color (in this case green).

Ranking of risks in order:

1st. Risk E, medium likelihood, high impact, hottest color.

2nd. Risks D and A ranked equally. D has medium likelihood and medium impact, while A is a combination of medium-high likelihood and medium-low impact. These respective combinations give D and A the same color.

3rd. Risk C is low likelihood and high impact.

4th. Risk B is medium likelihood and low impact—it has the most green in it.

LO 3, Blooms: Analysis, Difficulty: Medium, TOT: 15 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

DQ10. **Likelihood:** Medium low or low because of system of good internal control

Impact: Low because only around 4% of sales impact accounts receivable.

LO 3, Blooms: Comprehension, Difficulty: Easy, TOT: 3 min., AACSB: Ethics, Section: 2.3

DQ11. Board members and executives are responsible for addressing risk. They must calculate the likelihood and impact that a certain risk can impose on the success of the business and decide on the optimal risk response, which means accepting the risk, mitigating the risk, transferring the risk or avoiding the risk.

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 5 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

DQ12. Before a business takes any action to address a risk, it is an inherent risk. Inherent risk is the natural level of risk in a business process or activity if there were no controls or other response in place. It is the gross risk or risk before mitigation with controls or by other means.

In a risk assessment, we identify and prioritize the inherent risk. After assessing risk, firms choose a risk response by deciding how to deal with each risk. The remaining level of risk after implementing a risk response is residual risk. Residual risk is the risk that a process or activity would pose when controls or other risk responses are in place.

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

DQ13. Accept, mitigate, transfer, or avoid risk.

When an inherent risk is present and the firm chooses not to act, they have chosen to **accept the risk**. Companies usually accept the risk when it is very small or unlikely to happen. It is self-insurance. Example: A business rents out coastal vacation houses that it owns. Management decides that it is too expensive to insure the houses against flood damage and accepts the risk.

The firm **mitigates the risk** internally by implementing controls over business processes and activities or using other mitigation tools to reduce the risk. Example: The internal auditor of a company that manufactures small tools discovers that some employees in the factory are putting the tools in their pockets and taking them home. A risk assessment shows that this practice has had a significant impact on gross profit. Management installs cameras in the factory and implements other controls to reduce the risk.

Transferring the risk involves the shifting the risk through contractual means to a third party. As with mitigating risk with internal controls, transferring the risk comes with associated costs, like insurance expenses. Examples: (1) A trucking company insures its vehicles and takes out extra liability insurance to protect the business against reckless driving by its employees that causes damage or harm. (2) A business rents out coastal vacation houses that it owns. Management decides to insure the houses against flood damage and transfers the risk.

To **avoid risk** a firm will eliminate the source of the risk, like closing stores in a particular high-risk geographical location. Avoiding risk is usually associated with events of significant impact that are highly likely to occur. Example: A business rents out coastal vacation houses that it owns. It decides to sell certain houses in an area that is prone to flooding in hurricane season.

LO 4, Blooms: Comprehension, Difficulty: Medium, TOT: 20 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

SOLUTIONS TO APPLICATION AND ANALYSIS QUESTIONS

A1. Student answers will vary. Examples of answers are:

Issue		Outcome/Potential Impact
The door to one of the machines is propped open, even though it has a sign "keep closed"	<i>may result in</i>	Inappropriate access to the machine might occur.
Some employees are not wearing hard hats in hard-hat zones	<i>may result in</i>	Injuries to the employees as they might hit their head on a low hanging item.
Some employees are taking shortcuts around the machines and not following the clearly marked lines on the ground, showing where it is safe to walk	<i>may result in</i>	The forklift driver might not see the employee, as they are not supposed to be walking in certain areas.

An employee was eating a bag of chips while changing the machine settings	<i>may result in</i>	Sanitation and health violations occur if food is found outside of the break room. Food outside of the breakroom might invite unwanted critters to the plant.
A piece of duct tape is used to hold one of the machine pieces together	<i>may result in</i>	Injury to the employee, as the piece might fall off at any moment. Danger to the facility if the piece falls off and breaks something else.

LO 1, Blooms: Analysis, Difficulty: Medium, TOT: 15 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

A2.

Risk Statement	Business Process	Business Function(s)
1. Because wiring from suppliers does not meet specifications, it will be necessary to return the wiring to the suppliers for a refund.	Purchases and payments	Purchasing
2. Because working conditions for employees in the factory are not safe, there may be legal consequences like compensation for lost wages, medical bills, and production delays in the event of accidents.	Conversion	Production operations
3. Because of sales staff members lacking knowledge about the features and benefits of the new service the company is selling, prospective customers are confused and don't subscribe to the service, resulting in decreased sales revenues.	Sales and collections	Sales
4. Because of poor strategic planning, the business may not meet its earnings forecasts and may therefore suffer financial losses, reputational loss, and a decrease in its stock price.	Impacts all business processes	Board of directors and executives; all functional areas
5. If product reliability test failures exceed 5%, the resulting schedule delay to fix failures would exceed two weeks, causing increased cost and customer dissatisfaction.	Conversion	Production operations
6. Poor short-term financial forecasts may result in cash flow issues, negatively impacting the company's credit rating and its ability to borrow at a reasonable cost.	Purchases and payments	Treasury management
7. Customer data theft caused by	Purchases and	Information

defective system changes could result in significant financial fraud losses due to fines, loss of customers, and regulatory sanctions.	payments	technology
8. Returns by customers in a superstore are at risk of being diverted, with the returned goods never reaching the warehouse, resulting in inventory shrinkage.	Sales and collections	Customer service
9. Because of inadequate background checks, an employee with a criminal background may be hired, with the potential for losses from fraud or theft in the workplace.	Purchases and payments	Human resources
10. Because of inadequate timekeeping, employees could be paid for time not worked, resulting in fictitious costs and reduced profits.	Purchases and payments	Payroll

LO 1, Blooms: Application, Difficulty: Medium, TOT: 30 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1

A3.

Risk Scenario	Risk Category
1. Employees are required to work from home, remotely, if there is no need for a physical presence in the workplace. Because managers cannot supervise employees in person, the employees may not be as productive as when they are on the premises, resulting in much lower productivity for the same cost to the organization.	Operational
2. Because of COVID-19, walk-in customers, the main revenue source for the business, can no longer come to the store due to the shutdown. The CFO arranges to borrow money from a bank at a higher-than-usual rate of interest in an attempt to bridge the gap in the revenue stream. She is concerned about the company's ability to repay the loan principal by the due date specified in the debt agreement.	Financial
3. At a university, in an effort to ensure that the football program starts the season, the board of trustees mandates a restart of face-to-face classes before the rate of infection from the virus has decreased in that state. The board proposes mandatory monitoring of the health of faculty and students through the use of an app, testing, distancing in class and on campus, and mask wearing. The university faces a risk of lawsuits by faculty and students who are infected by the virus on campus, regardless of the precautions, resulting in a financial loss due to settlements and legal fees.	Strategic
4. A commercial diving school continues to run its certification program during the COVID-19 pandemic. It uses an app for	Compliance

instructors and students to mandatorily report on their health conditions every three days. Administration discloses to colleagues, without permission, that an instructor has reported an underlying condition of concern. The instructor rightly claims that the school has breached the law (HIPAA) by disclosing his medical condition to colleagues.	
5. A member of the executive team at a major corporation has joked on social media about the coronavirus and mocked people infected with the virus. He also used a racial slur against an Asian man who responded to one of his posts. The public relations department is trying to manage the public outrage resulting from the executive's posts.	Reputational

LO 2, Blooms: Application, Difficulty: Medium, TOT: 10 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.2

A4. Student answers about priority will vary. The correct notecard answers and an example of a student's prioritization answer are:

Risk	Note Card Letter	Priority
A customer receiving the wrong order may result in an upset customer.	E	5
A customer posting a negative review on the social media page may result in reputational damage.	B	2
A customer returning a used/damaged laptop sticker and demanding a full refund may result in a loss of revenue.	D	4
A customer suffering an allergic reaction to the glue on the sticker may result in an upset customer and a possible lawsuit.	C	3
A customer providing a fake credit card number may result in loss of revenue.	A	1

LO 3, Blooms: Analysis, Difficulty: Medium, TOT: 10 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

A5. Student answers about likelihood, impact, risk score, and manager reasoning may vary. The answers for priority should be as shown below.

Risk	Likelihood	Impact	Risk Score	Manager Reasoning	Priority
Important influencers with contracts to publish content only on this platform leaving the site may result in significant revenue loss due to lower customer traffic.	3	2	6	Influencers could take customers away. However, many of our customers will find other channels to follow, which will keep them on the platform even if an influencer leaves.	3
An influencer making offensive remarks	4	4	16	Since live streaming is usually unscripted and	2

during a live stream may result in reputational damage to the site.				unedited, an influencer can state something that is against the belief system at the platform. The company could face a potential lawsuit, but it is more likely that the influencer will be sued.	
A lack of proper security processes may result in a hacker stealing customer information such as names and credit card numbers.	4	5	20	While the company has site security in place, there is always a possibility of the hackers getting through. It would be detrimental if customer information was released, resulting in huge reputational impact. The company could face a significant lawsuit.	1

LO 3, Blooms: Application, Difficulty: Medium, TOT: 15 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.3

A6.

1. You cancel your plans and stay up all night cramming. You risk being tired during the test, but you think you can cram enough to just maybe pull this off.	Mitigation
2. You cancel your plans and study for two hours before your normal bedtime and get a good night's rest. Maybe that is going to be enough.	Mitigation
3. You go to dinner but come home right after to study the rest of the night. You think you can manage both.	Mitigation
4. You go to dinner and stay out with your friends afterward. It is going to be what it is going to be, and it is too late for whatever studying you can do to make any difference anyway.	Acceptance
5. You tell your friends you are sick and tell your professor you are too sick for class the next day. You schedule a makeup exam for next week and spend adequate time studying for it.	Avoidance; Mitigation
6. You pay someone else to take your license and go take the exam for you. (Note: It happens, although this is a terrible idea. Never do this! It is unethical and the consequences may be severe.)	Transfer; this is an unethical answer, but it is a loose example of transferring a risk using a contract.

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Knowledge, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.4

A7. Student answers will vary. Below are some examples of best possible answers. This question is an opportunity to show students that there often are not *wrong* answers in business. It takes critical thinking to come up with best possible solutions.

1. Biometric screening at the door. Using fingerprints to enter the room will prevent unauthorized personnel from using someone else's badge to enter. This is a type of risk mitigation.
2. Removing the desks and chairs and banning food and drinks from the server room. This is a type of risk avoidance.
3. Replacing the outlets, making sure the fire safety plan is in place. This is a type of risk mitigation.

LO 1-4, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Technology, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1-4

A8 to A10. Student answers will vary significantly.

A8.

1. Possible issues:

Mild winter
Single source of flour
No visibility into planting techniques
Wheat diseases

2. Examples of risk statements:

A mild winter *may result in* an inability to acquire ingredients for products.
A mild winter *may result in* a bad harvest that ruins wheat and makes it hard to get flour.
A lack of wheat crop *may result in* a breakdown in the supply chain.
Wheat disease *may result in* inability to create products.

A9. Most likely categories:

Most risk statements will fall into either physical (weather) or operational.

A10. Demonstrating form prioritization:

Students should demonstrate an ability to use critical thinking to rank risks. Proper risk formula [impact x likelihood = risk score] should be used. Understanding that the higher the risk score, the higher the priority should be demonstrated.

LO 1-4, Blooms: Application, Difficulty: Medium, TOT: 20 min., AACSB: Analytic, AICPA AC: Risk Assessment, Analysis, Management, Section: 2.1-4