

## The PMI-RMP® Exam

### In This Chapter

- Introduction
- Project Management Institute (PMI)®
- The PMI-RMP® Credential
- Project Risk Management
- The PM's Role in Risk Management
- PM Skills and Knowledge
- Statistics for Risk Management

## Introduction

Congratulations on your decision to pursue the Project Management Institute (PMI) Risk Management Professional (PMI-RMP)® credential! Being a credentialed (and possibly multi-credentialed) project manager can greatly enhance your career opportunities and salary.

One of the most critical aspects of managing projects is managing uncertainty. Uncertainty is risk. The ability to accurately identify, address, and respond to that uncertainty is the hallmark of a strong and experienced project manager. Because of that, I personally believe that the PMI-RMP credential is a natural progression for any seasoned project manager.

I earned my PMI-RMP on June 2, 2010. At that time, I found the exam surprisingly straightforward and relatively easy, compared to the Project Management Professional (PMP)® exam. I have since taught PMI-RMP exam prep to a few hundred professionals, and based on their feedback and experiences, the exam has changed over time. Candidates may experience difficulty with the exam's specialized risk analyses, especially if they lack professional experience in that aspect.

This book is intended to give you a robust study and preparation program in order to ensure your success on the exam, and to do so, it includes comprehensive yet straightforward information on the specialized risk analysis techniques. PMI's credentialing exams are notoriously difficult, and the PMI-RMP exam is no different. However, with the appropriate focus and study, I have found that many professional project managers are able to pass on their first attempt.

## PMP® Certification

While there is no requirement that you have your PMP prior to pursuing your PMI-RMP, a majority of PMI-RMP aspirants have already earned their PMP.

If you are PMP-certified, you will be familiar with the PMI approach to testing and question formats. In addition, you will have some knowledge of *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. Keep in mind that the current PMI-RMP exam is based on the *PMBOK® Guide*, 5<sup>th</sup> Edition. If you tested for your PMP on the 5<sup>th</sup> Edition, you will find that some aspects of this material provide a review of your PMP exam preparation, but it will also offer much deeper dive into the project risk management components.

If you tested for your PMP prior to the release of the 5<sup>th</sup> Edition, it may be beneficial to review the differences. If you are not PMP-certified, it is still possible to successfully complete the PMI-RMP exam on your first attempt, but it may take slightly more effort. For either situation, I will be highlighting the key aspects and components of information within the *PMBOK® Guide* that are applicable to the current PMI-RMP exam throughout this book.

An important step toward completing your PMI-RMP exam is committing to and following through with a dedicated study plan and approach. I recommend pinpointing a date by which you want to complete the exam and building your study plan accordingly. Commit to your date below.

I, \_\_\_\_\_, **commit to completing my PMI-RMP exam**  
by \_\_\_\_\_.

## Using This Book

Each of the nine chapters in this book includes review questions covering its sections. Ideally, you should be scoring at least 80-85% on the review questions. If you are scoring less than that, be sure to identify your gaps and go back to the related sections.

You will also find that each chapter includes a vocabulary review exercise. Because one of the goals of PMI is to formalize a common project management vernacular, it is important to be very strong in your knowledge of these terms and definitions. It is possible that you will find a difference between a term you have used in practice and PMI's definition of that term. Always align with the PMI definition!

Finally, this book includes a full-length PMI-RMP practice exam, which aligns with the PMI exam blueprint, its allocation of questions, and its timing. Approach this practice exam as though it were the actual exam. Ideally, you should score at least 75-80% on the practice test to indicate readiness for the actual exam.

# Project Management Institute (PMI)®

---

Founded in 1969, the Project Management Institute (PMI) has a primary focus on advancing the practice of project management. A not-for-profit organization, PMI develops and publishes project management standards, manages an extensive research program, and offers professional development opportunities to project managers working in all industries.

PMI has more than 250 chapters around the world and 30 industry- or interest-based communities of practice.

As of January 2017, PMI's annual membership fees are:

- Individual – \$139 to join, \$129 to renew
- Student – \$32 to join, \$32 to renew
- Retiree – \$65 to renew

Benefits of membership include:

- Access to members-only information and resources on PMI.org
- Discounts on the PMI credential exams
- Access to PMI's career framework
- A digital copy of all of the PMI practice standards, including the *PMBOK® Guide*, 5th Edition
- Leadership and volunteer opportunities
- Publications including *PM Network®*, *PMI Today®*, and *Project Management Journal®*
- Up to a 20% discount on PMI store purchases

## The PMI-RMP® Credential

---

Launched by PMI in 2008, the first PMI-RMP credential was granted on June 2, 2008, and 63 additional project risk management practitioners achieved the credential by the end of 2008. As of October 31, 2016, there are 3,783 PMI-RMP credential holders globally.

The specialized PMI-RMP credential is intended for professionals who not only demonstrate knowledge and experience in general project management practices but also demonstrate significant experience and expertise in the practice of project risk management.

Project risk management involves not only the ability to identify and assess project risks but also the ability to manage negative risks (threats) and capitalize on positive risks (opportunities). This may be the first time you have seen risk referred to as potentially positive. On the exam and from a PMI-perspective, it is important to recognize that risk can be both positive and negative. I will address this in more detail later in this book.

According to PMI, 83% of organizations that are high performers in project management practice risk management frequently, while just 49% of low performers do so.

## PMI-RMP Credential Snapshot

PMI-RMP®	
<b>Credential Name</b>	PMI Risk Management Professional®
<b>Project Role</b>	Assesses and identifies risks, mitigates threats, and capitalizes opportunities
<b>Eligibility</b>	<p><b>HS diploma:</b> 4,500 hours of project risk management experience within the last five consecutive years and 40 hours of project risk management education</p> <p><b>OR</b></p> <p><b>Bachelor's degree:</b> 3,000 hours of project risk management experience within the last five consecutive years and 30 hours of project risk management education</p>
<b>Exam Information</b>	<p>3.5 hours</p> <p>170 questions</p>
<b>Fees</b>	<p>Member \$520</p> <p>Non-Member \$670</p>
<b>Credential Maintenance</b>	3 years; 30 PDUs

## PMI-RMP Requirements

To qualify to apply for the PMI-RMP credential, you must meet the following criteria:

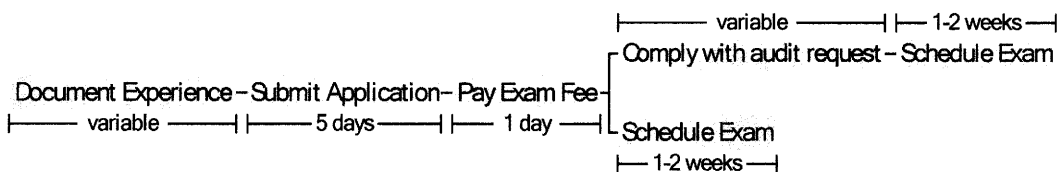
- With a high school diploma or global equivalent:
  - At least 4,500 hours of experience in professional project risk management within the last five consecutive years *and*
  - 40 contact hours of formal education in the specialized area of project risk management
- With a bachelor's degree or global equivalent:
  - At least 3,000 hours of experience in professional project risk management within the last five consecutive years *and*
  - 30 contact hours of formal education in the specialized area of project risk management

# PMI-RMP Application

If you have your PMP credential, the application process for the PMI-RMP will be similar. To complete your PMI-RMP application:

1. Create a profile on [www.PMI.org](http://www.PMI.org).
2. From the PMI home page: Home > Certification > PMI Risk Management Professional (PMI-RMP).
3. Select "Ready to Apply?"
4. You will be guided through the application process and asked to provide your educational history and your project risk management experience.
  - Project risk management experience must date back at least three years from the application submission date but must begin no earlier than five years prior to the application submission date.
  - Project risk management experience is required in each of the five areas: risk strategy/planning, stakeholder engagement, risk process facilitation, risk monitoring/reporting, and specialized risk analyses, although you do not need experience in all domains for all projects.
5. Once you submit your application to PMI, it will take approximately five business days to be reviewed and approved.
6. You will receive a notification that your application has been approved, and you will be directed to pay your credential fees.
  - If you are a PMI member, the exam fees are \$520. For non-members, the fees are \$670.
7. Upon payment of the exam fees, you will be provided with either:
  - A payment receipt containing your eligibility ID, which will be used to schedule your exam, *or*
  - A payment receipt with audit notification.

## Application Timeline Estimation



## Audit

PMI randomly selects approximately 25% of applications for audit upon payment of the exam fees. If you are audited, verification of your experience and education must be provided to PMI before they will issue your eligibility ID, which you will need to schedule your exam.

You will complete your experience verification using forms that are pre-printed with your submitted experience. You will need to have these forms physically, not electronically, signed by the contact person for the organization you identified on

your application. The signed forms need to be placed into an envelope and sealed with the contact's signature across the flap.

These experience forms, your training transcripts, and proof of your education (a photocopy of a diploma or an unofficial transcript) should be sent to PMI in one envelope. It typically takes less than a week from the receipt of the materials for PMI to clear a candidate from audit.

I advise my students to assume that they are going to get audited. It's better to have a good surprise than a bad surprise from PMI. Be certain that the information you are submitting is factual. I also recommend giving the organization contact you list (manager, supervisor, etc) a heads-up as to what you will be submitting on the application and advise them that you may need them to sign off on the work.

## The PMI-RMP Exam

Once you have your Eligibility ID, you will be able to schedule your PMI-RMP exam online at [www.Prometric.com/PMI](http://www.Prometric.com/PMI). PMI-RMP exams are offered year-round at designated Prometric sites, and in most U.S. regions, candidates can secure a seat within a few weeks. For other global areas, it can be more challenging to schedule the test.

If you need to reschedule or cancel your exam, do so more than 30 days prior for no cost. If you must cancel or reschedule within 30 days prior to your exam, there will be a \$70 fee. If you cancel or reschedule within 48 hours prior to your exam, you will forfeit your entire exam fee.

There are 170 questions on the PMI-RMP exam, and you will have 3.5 hours to complete the test. Of the 170 questions, 150 are scored and 20 are considered "pre-test" or unscored questions. These are questions that PMI is evaluating for future inclusion in their testing bank. There will be no indication of whether a question will be scored or unscored, so assume that every question counts and never leave a question blank.

## The Exam Experience

There are Prometric locations globally, and many of them are located in educational centers such as Sylvan Learning Centers. These test centers provide exams on a multitude of topics, not just the PMI credentials.

You will be asked to provide your government-issued ID, and the name on your ID must match the name on your PMI application. Each testing candidate is provided with a locker, and everything you bring must go into that locker, including your phone, wallet, purse, jacket, etc. Given the introduction of smart watches, do not be surprised if they ask you to leave your watch in your locker as well.

If you cannot go through the exam without a drink or a snack, be sure to leave those items outside of your locker on the designated shelf. Food, drinks, and gum are not allowed within the testing room, and you will not be able to open your locker once the exam has started.

Before you are escorted to your testing seat, it is very likely that you will be searched, asked to turn your pockets inside-out, and/or checked with a security wand. There is no need to be offended by these actions, as they are to protect the integrity of the testing site, the various exams, and the test-takers.

Additional security measures include cameras in the testing room and a camera over your test station. The proctor will also walk through the room periodically. The testing centers are used to administer a number of different exams, and their seating times may vary. Because of this, you may notice that there are people coming in and leaving throughout your exam. If you are worried that this may be distracting to you, the test centers do offer headphones that you can use.

According to the PMI testing guidelines, candidates must use the calculator that is built into the testing module on the computer. However, when asked, some test centers will provide candidates with a single-function calculator. If you prefer the hand-held calculator to the system calculator, it does not hurt to ask for it. The worst that they can say is “no.”

The testing system is relatively straightforward. Once seated at your test station, you will be allowed 15 minutes to complete a system tutorial. This tutorial will show you the features of the exam system, and it typically does not take more than a few minutes to complete.

Once you are done with the tutorial, you can choose either to wait for the remaining time to run down or to start the actual exam, starting your 3.5-hour clock. You will be provided with either scratch paper and pencils or a dry-erase board with markers. Many of the test centers are moving to the dry-erase boards.

Some candidates choose to start by doing a memorization “dump sheet,” including formulas, key concepts, etc. I would recommend assuming that you are going to be provided with a dry-erase board rather than a packet of paper and being cognizant of the amount of space required for your dump sheet. Ensure that you leave room for any notes and equations that you will need to work through during the exam. While most of my PMP students leverage a dump sheet, it is not as common for the PMI-RMP exam.

On the testing screen, you will be shown one question at a time, with a clock in one corner and a question counter in the other. For each question presented, you will have the opportunity to answer it, answer it and mark it, or leave it blank. In addition, there are now options to strike through answers that you believe are incorrect and highlight pieces of information that you believe are important.

## **Exam Anxiety**

Exam anxiety is one of the most concerning aspects of these tests and can be particularly harmful. It is important to recognize the symptoms of our “fight-or-flight” response to testing. When we are nervous, our body is getting ready to either fight the threat or run from the threat, which means that our blood flow is redirected from the logical processing part of our brain to our large muscles. Unfortunately, those large muscles are not very helpful for reading complex questions.

My recommendation is to cycle through the questions, answering short or easy ones first. This will help you burn down your adrenaline to a more helpful level while also dispelling your fear of the unknown. You can cycle through the questions as many times as you need to within the 3.5 hours. Do not sit on one question for an extended period of time. It will not only waste time, but it can potentially increase your anxiety.

Once you finish a pass of the 170 questions, you will have the option to review all the questions or just the questions you left blank and/or marked. Go to the questions you left blank and/or marked, answering as many as you can easily, and repeat.

## Exam Strategy

I strongly discourage reviewing questions you already answered. Generally speaking, your first gut instinct is going to be correct. The exception to that are math questions involving some calculations. It is never a bad idea to run through the calculations again to be sure you answered correctly. Because of this, I suggest marking any math questions to be sure you double-check your math. Another exception would be if another question prompted you to remember something applicable to a previous question.

It is very possible that you will have questions on the exam that contain typographical, punctuation, or grammatical errors. It happens. Do not allow that to distract or discourage you as you work through the questions.

For example, on my exam, I had a question that referenced my “high rise” project, so I envisioned building a high-rise building. After reading it through a few times, I realized that it was actually a “high-risk” project, not a “high rise” project.

## Submitting Your Exam

Once you complete all 170 questions, you can submit your exam. Be sure that you have not left any questions blank, as they will count against you. It is more likely than not that you will feel a bit unsure when you submit your exam. This is due to the fact that, for many of the questions, you will have answered from the PMI’s perspective rather than your own. Do not use that as an excuse to go back through the exam and change your answers. Usually your first response to a question is the correct one.

Upon submission, you will be prompted to complete a brief survey that will ask questions about your exam preparation and experience. After you submit the survey, you will be shown your pass or fail result on the screen. Acknowledge your result on the computer and collect your printed score report from the front desk.

Your score report will show your results and proficiency ratings (Proficient, Moderately Proficient or Below Proficient) in the following domains:

- Risk strategy and planning – 19-20% of the exam questions
- Stakeholder engagement – 19-20% of the exam questions
- Risk process facilitation – 25-28% of the exam questions
- Risk monitoring and reporting – 19-20% of the exam questions
- Performing specialized risk analyses – 14-16% of the exam questions



## Passing the PMI-RMP Exam

“What is the passing score?” is the most common question I receive related to the PMI exams. And the unwelcome response is “I don’t know.” A few years ago, PMI stopped publishing the passing score for the exams. PMI employs a robust psychometric analysis model. Each exam question is evaluated and scored by a test population of project risk managers, and an appropriate weighting is applied. Depending on your particular pool of questions and their associated weights, the score to pass can vary.

Candidates can pass the exam without being “proficient” in any one domain but must have multiple domains in which they are “moderately proficient.” A frustration associated with PMI exams is its inability to identify and address gaps beyond a simple proficiency rating in a domain. You will not receive a copy of your exam, nor will you know how many questions you answered correctly.

In the event that you do not pass your exam, you have the option to repeat the exam up to two more times during your eligibility year. Your eligibility year begins the day your application is approved by PMI. To repeat the exam, you will be responsible for paying the re-examination fee. The fee is \$335 for PMI members and \$435 for non-PMI members.

As I mentioned previously, I suggest that you score at least an 80% on the practice test given in this book to indicate readiness for the actual exam.

## Maintain Your PMI-RMP Credential

Once you pass your exam, your PMI-RMP credential will be valid for a period of three years from the exam date. During these three years, you must achieve no less than 30 professional development units (PDUs) of continuing education in order to maintain your credential.

PMI recently launched the Talent Triangle®, requiring credential holders to earn PDUs in the following categories: Technical, Leadership, and Strategic and Business. PMI-RMP credential maintenance requires:

- Technical education – a minimum of 4 PDUs
- Leadership education – a minimum of 4 PDUs
- Strategic and business education – a minimum of 4 PDUs

In addition to education, PDUs can be earned through your experience and activities, up to a maximum of 12 PDUs.

- Working as a practitioner – a maximum of 4 PDUs.
- Other giving back, such as creating content, giving presentations, sharing knowledge, and volunteering – a maximum of 12 PDUs (including those you have earned working as a practitioner)

All PDUs you earn are reported through PMI’s Continuing Certification Requirements (CCR) system. Any PDUs earned to maintain your PMI-RMP will also be credited toward maintaining your PMP credential.

# Project Risk Management

A project risk is defined as an uncertain event that, if it occurs, will have an impact on the project objectives. That impact may be positive (an opportunity) or negative (a threat).

Project risk management is a key component of project management and is identified as a knowledge area within the *PMBOK® Guide* Framework. According to PMI, a project is defined as a “temporary endeavor undertaken to create a unique product, service, or result.” Leveraging that definition, the idea of risk (or uncertainty) is evident and unavoidable. Creating, developing, or building something unique within a time-bound period presents an inherent level of uncertainty.

There are a number of factors that affect that level of uncertainty. These factors can be internal, such as available resources, skill levels of human resources, funding availability, management approach, time constraints, etc. In addition, there are a number of external factors that can also influence the level of uncertainty, such as economic conditions, industry implications, global considerations, and legal regulations, laws, or controls.

Experienced project managers should have the ability to identify the areas of uncertainty, evaluate the impact of those uncertainties, and develop plans and approaches to respond to them. In addition, experienced project managers should be able to report and leverage data and metrics while the project is underway to identify trends that could indicate a changing risk environment.

## Risk Taxonomy

An organization’s risk taxonomy is the language the organization uses to talk about risk. Successful project risk management is dependent upon organizational agreement on the key aspects of and approach to risk management. Consistently applied definitions and structure lend to a credible and repeatable approach that can then be used to continually improve project risk management for the organization.

Risk taxonomy can include defining:

- Risk – How does the organization define risk, and will it consider both negative risks (threats) and positive risks (opportunities)?
- Risk categories – How does the organization categorize risks? Are there standard categories across the organization that can be presented within an organizational risk breakdown structure (RBS)?
- Risk rating scales – How does the organization rank and rate risk impact and risk probability? Is there a standard numerical scale that corresponds to a low-medium-high or green-yellow-red scale?
- Risk assessment and analysis – What methods are used to assess risk? Do these include qualitative and quantitative methods? When is it acceptable to use each method? Other than probability and impact, are there other factors that will be evaluated, such as frequency, controllability, and urgency? How are the assessments documented?

- Risk appetite and tolerance – How is risk appetite and tolerance defined for the organization? Is risk appetite or tolerance dependent on any internal or external variables? How are risk decisions handled, based on the organization's risk appetite and tolerance?

## The PM's Role in Risk Management

Project management and project risk management are inextricably linked. In many circumstances, the project manager owns project risk management, rather than someone having the sole role of managing the risk of the project. From an exam perspective, you will find that some questions will ask you to think "as project manager," and some will ask you to think "as project risk manager." Regardless of this differentiation, your position and answers will be the same.

The project manager's role for project risk management typically involves stakeholder management, oversight of the risk processes, and leadership and decision-making.

### Stakeholder Management

Stakeholder management from a project risk perspective includes:

- Working with stakeholders to determine the acceptable level of risk exposure for the project, including ongoing dialogue in the event of changes in risk tolerance
- Reporting risk status to the key stakeholders on a regular and consistent basis. This will include recommendations regarding any type of decision or action necessary to ensure the appropriate level of risk exposure for the project
- Working with senior management to ensure that there is ongoing and continual support for the project risk management approach
- Maximizing open and honest communication with stakeholders, leadership, and the project team surrounding the project risk exposure and actions suggested or taken

### Risk Process Oversight

As the project manager, you have ownership of and accountability for the project risk management processes, approach, actions, and control. This includes:

- Participating in the project risk management processes with the project team, experts, and stakeholders
- Developing and approving the project risk management plan
- Ensuring that contractors, vendors, and suppliers are properly applying risk management
- Monitoring the effectiveness of the project risk management approach, including auditing risk responses for effectiveness
- Continually capturing, documenting, and sharing lessons learned as they relate to project risk management

## Leadership and Decision-Making

While the authority of a project manager can vary greatly depending on the environment and the organization, generally speaking, the project manager will have some type of decision-making authority in areas that relate to project risk management. The level of authority and decision-making should be determined and documented explicitly within the project risk management plan.

Leadership and decision-making responsibilities may include:

- Approving risk responses and the associated actions, tasks, and anticipated impacts
- Identifying and applying the project contingency funding to risks that occur
- Escalating identified risks to senior management when necessary. Escalation should occur when the risk impact or required action is outside of the authority of the project manager, when a decision requires input from outside the project, and/or when there is a need to access management reserve funds

## PM Skills and Knowledge

Being an effective project manager and project risk manager is highly dependent upon a number of management and leadership skills and techniques. The project manager is often required to influence members of the organization without any type of formal authority. These may include project team members, stakeholders, and the organization's leadership.

## Communication

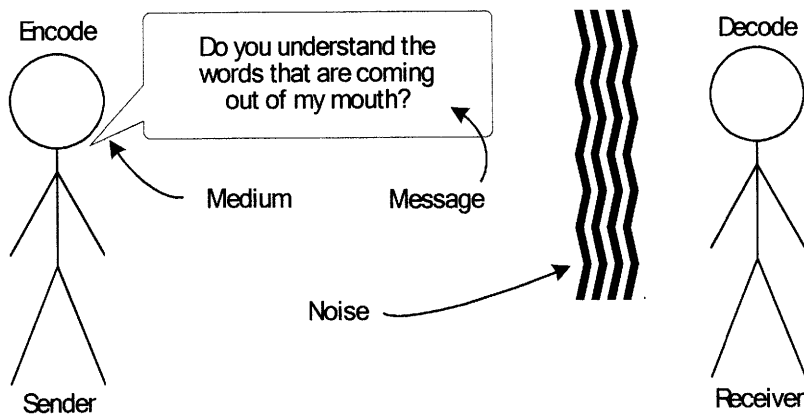
It is estimated that 90% of a project manager's job is communication. The project manager is responsible for communicating effectively and efficiently with project team members, stakeholders, the project sponsor, the steering committee, and other organizational leaders. The ability to recognize various communication needs and approaches based on the audience and situation is critical. While we often listen to respond, it is more important to listen to understand.

### Communication Model

A communication model includes the following components:

- Sender – the individual who needs to convey a message
- Receiver – the intended recipient of that message
- The message – what the sender intends to convey
- Encoding and decoding – the interpretation of the message (the sender encodes the message and the receiver decodes the message)
- Medium – the method in which the message is conveyed, such as verbal discourse, email, etc.

- Noise – biases, perspectives, and conditions that may impact the receiver's decoding of the message
- Acknowledgement – a signal that the message has been received, which does not necessarily mean it has been comprehended or agreed with
- Feedback/response – a new encoded message sent from the receiver to the sender after the original message has been decoded and understood



## Communication Categories

There are three general categories of communication: interactive, push, and pull.

Interactive communication is in real time, allowing for the most efficient flow of information between parties. Interactive communication allows both the sender and receiver to interpret not only each message, but also its tone, inflection, and delivery. Face-to-face meetings, web-based meetings, and phone conversations are all considered interactive communication.

Push communication involves the sender delivering the message to the receiver. The sender may know that the message was delivered but cannot know how it was interpreted or understood. As communication technology has advanced, push communication has become a standard form of communication, and a primary example is email. While convenient, it should not be used to relay information that is sensitive, urgent, or likely to be misunderstood or misinterpreted.

Pull communication occurs when the receiver must proactively seek out the information to receive it. Pull communication is often used for information that is FYI only, for large volumes of information, and for large distributions. Shared directories, bulletin boards, and web interfaces are examples of platforms for pull communication.

## Communication Channels

Another aspect of communication management is identifying and understanding the number of communication channels or paths in your project and the implications of that number. The more people involved in the project, the larger the number of channels or paths. A high number of communication channels in the project may indicate an increased risk of misunderstandings or misinformation.

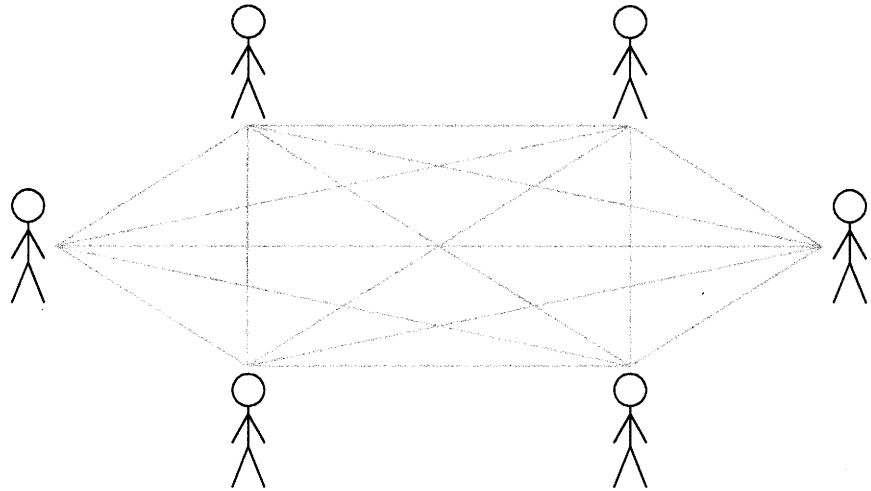


Figure 1-1: Communication Channels

To calculate the communication channels on your project, use the formula:  $n(n-1)/2$ , where “n” represents the number of project team members and stakeholders, including you as the project manager.

For example, for a project with 32 stakeholders, there are 496 communication channels, representing each member talking directly with every other member. If the project size increases to 34 stakeholders, the number of channels increases to 561.

For large projects involving a high number of stakeholders, this concept should be considered and factored into the communication plan.

While I personally have never felt the need to actually calculate the number of communication channels in my projects, the concept is an important one from a communication and risk perspective. I compare it to kids playing a game of telephone. I whisper something in the first person’s ear; they whisper it to the next person, and so on until, at the end of the chain, the last listener states what they heard. Typically, laughter ensues at how messed up the original message has become along the chain. This is not unlike a lot of project conversations!

Regardless of the fact that most project managers will not run the actual calculation, it is possible that you will receive a question on communication channels and the formula for calculating the number of them in a project on the PMI-RMP exam.

**Exercise: Communication Channels**

1. You are the project manager for a multi-year, global project. Upon completion of the analysis phase, the team increased from 28 members to 38 members. As such, the number of communication channels increased by:
  - A. 10
  - B. 325
  - C. 76
  - D. 252
2. The Widget Futura project is leveraging a vendor to provide contract resources. The vendor has provided 17 individuals, all in a part-time capacity. Other than the project manager, the remainder of the organization's core team is made up of 72 engineers, analysts, and developers. The best estimate of the number of communication channels in this project would be:
  - A. 3,916
  - B. 2,556
  - C. 2,628
  - D. 4,005

## Facilitation

Project meetings tend to be the primary format for sharing project information, receiving project updates, and working through project risks and issues. Aside from team meetings, project managers often find themselves serving as facilitators of other related meetings with change control boards, steering committees, or other audiences.

There are three general principles of project meeting facilitation: demonstrate a respect for others, plan for the meeting appropriately, and stay focused on the desired outcomes.

General facilitation rules:

- Prepare an agenda – Prior to the meeting, prepare and distribute a specific agenda with time allocations for each topic.
- Start on time – Meetings should always start at the time they were planned. Delaying the start of a meeting is disrespectful to attendees who are on time.
- Review agenda and desired outcomes – Start the meeting by briefly reviewing with the group the agenda and the desired outcomes for the planned topics, such as making a decision, gathering information, or assigning ownership.
- Create a parking lot and identify owners – Capture items that do not fit within the planned topics as “parking lot” items, and immediately identify an owner for each topic.

- Keep the meeting on track – Facilitate firmly by maintaining control over both the discussions and the time. Ask pointed questions, redirect conversation, and remind the participants of the time allocations.
- Summarize decisions and actions – Always allow time at the end of the meeting to summarize the decisions that were made and the actions that were assigned. Shortly after the meeting, send out the meeting notes.

I always recommend that my project managers read “Death by Meeting” by Pat Lencioni (author of *The Five Dysfunctions of a Team*) to gain some useful facilitation advice. Pat’s books are written in the form of fables and present easily digestible information in a relatively quick read.

## Negotiation

In increasingly complex and competitive environments, project managers are expected to represent the project objectives and act in the best interests of those objectives. This necessitates the ability of project managers to negotiate effectively with a number of parties, including but not limited to the project sponsor, functional and operational managers, team members, stakeholders, partner organizations, and vendors.

While some may position negotiation as the attempt to achieve a win-win situation, it can often result in something that feels more like a lose-lose situation, in which each party must agree to give up something in order to come to a resolution.

Generally speaking, there are four phases involved in negotiating: pre-negotiation, conceptualization, settling the details, and follow-up.

- During the pre-negotiation phase, the project manager should assess his or her particular needs and/or concerns to address. The project manager may develop a prioritized negotiation checklist of the items in contention.
- During conceptualization, both parties work through their individual perspectives, needs, and desires in order to find places of alignment and define a shared ideal outcome.
- Once the resolution is conceptualized, the next phase is to plan how to achieve it and settle the details, reviewing the expectations and actions expected from both parties.
- After reaching and executing the agreement, the project manager should follow up on outstanding items, concerns, or lessons learned from the process.

Dr. Robert Cialdini, the Regents’ Professor Emeritus of Psychology and Marketing at Arizona State University, is most well-known for his book *Influence: The Psychology of Persuasion*. This is another book that I recommend to project managers. Rather than structuring it as a “how-to” book, Dr. Cialdini gives the “why” behind individuals’ decision-making processes. The understanding this book offers is incredibly powerful when it comes to negotiation.



# Leadership and Organizational Theory

If you completed your PMP exam, you may remember learning about or being tested on various leadership and organizational theorists. I affectionately call these the “dead guys,” though some are still alive as of the writing of this book. An understanding of these theorists and their theories can be beneficial for project management. Understanding traits of human behavior and the origins of that behavior can enable the project manager to productively modify his or her approach to leadership, change, and communication.

I would not anticipate a large number of questions on these theorists on the exam, but you may encounter one or two. As this is not an area in which I recommend extensive study, I will provide you with my silly mnemonic hints for remembering the theorists and their theory.

## Abraham Maslow (1908-1970) – Hierarchy of Needs

Maslow was an American psychologist who is best known for his hierarchy of needs. As a humanistic psychologist, he believed that every person has a strong desire to realize his or her full potential and ultimately reach the level of self-actualization. He identified human needs as a hierarchy, often depicted as a pyramid, and believed that someone’s lower-level needs must be met before they can concern themselves with fulfilling their higher-level needs.

From low to high:

- Basic physiological needs – breathing, food, water, sex, sleep, homeostasis
- Safety needs – security, order, stability
- Love and belonging needs – friendship, family, intimacy
- Esteem needs – self-esteem, confidence, achievement, respect for and from others
- Self-actualization needs – morality, creativity, spontaneity, problem-solving, lack of prejudice, acceptance of facts

Hint: Think opposites – Maslow/Hierarchy (low/high)

## William Ouchie (1943- ) – Theory Z

Ouchie studied the difference between American and Japanese companies to formulate his Theory Z.

Mirroring Japanese management approaches, Theory Z focuses on increasing employee loyalty by providing a job for life with a strong emphasis on the well-being of the employee both on and off the job. Ouchie believed that a Theory Z management style promotes stable employment, high productivity, and high employee morale and satisfaction.

Hint: Attrition hurts (Ouch); providing a job until the end of an employee’s career (Z is at the end of the alphabet)

## **Douglas McGregor (1906-1964) – Theory X and Theory Y**

McGregor proposed that a manager's individual assumptions about human nature and behavior determine how he or she will manage employees.

Theory X is based on pessimistic assumptions of human behavior and assumes that average employees have little to no ambition, shy away from work or responsibilities, and are of less intelligence than the manager. As such, Theory X managers believe that these employees function best with a high level of hands-on management. Theory X management is typically applied in environments in which employees are responsible for repetitive tasks.

Theory Y managers assume that people in the workforce are internally motivated, enjoy their work, and will work to better themselves without any direct reward in return. Theory Y managers assume that employees are the most valuable company assets, and that assumption drives the internal workings of the company. Because Theory Y management sees employees as self-driven, it gives employees minimal supervision and direction.

Hint: Think of "X" as crossing items off a list when employees are micro-managed and "Y" as the shape of open arms welcoming employees as valuable assets

## **Victor Vroom (1932- ) – Expectancy Theory**

Vroom's research attempted to explain why individuals choose to follow certain courses of action in organizations, particularly in decision-making and leadership. Vroom's expectancy theory proposes that an individual is motivated to select a specific behavior over other behaviors due to what he or she expects as a result of the chosen behavior.

Essentially, individuals will choose to put effort toward improving performance if they believe that the improved performance will result in a reward that will justify the effort.

Hint: You need "vroom, vroom, vroom" to the hospital when you're "expecting" a baby

## **David McClelland (1917-1998) – Need Theory**

McClelland developed the need for achievement (*n*-achievement) theory, a motivational model that explains how employees' needs for achievement, power, and affiliation affect their actions.

Individuals with a high need for achievement will select tasks that are moderately difficult in order to earn a sense of accomplishment and will avoid tasks that are very low-risk or very high-risk. They prefer work in which results are based on effort, and they prefer to receive feedback on their work.

Hint: The last two letters in the name McClelland are "nd," which expands to "need" – need for achievement

## Frederick Herzberg (1923-2000) – Motivator-Hygiene Theory

Herzberg is known for introducing job enrichment and the Motivator-Hygiene Theory, also known as the two-factor theory of job satisfaction. According to this theory, people are influenced by two sets of factors, hygiene factors and motivational factors.

Hygiene factors will not motivate employees, but their absence can lower motivation. These factors, extrinsic to the work itself, include appropriate office set-up and space, clean restrooms, a reasonable level of pay, vacations, and job security.

The absence of motivational factors will not necessarily lower motivation, but their presence can be responsible for increasing motivation. Motivational factors are intrinsic to the work itself, such as challenging work, job recognition, growth or advancement potential, and responsibility.

Hint: Think “H” for Herzberg and Hygiene

## Statistics for Risk Management

While statistics is not generally recognized as a project management area of expertise, it is a component of many of the quantitative risk analysis techniques. Statistics, in and of itself, could comprise a complete book or class or even multiple books and classes.

For the benefit of the exam, I will provide a brief overview of statistics and some of its common terminology here. Additional details and information are included in the later section on quantitative risk analysis.

Statistics is the study of the collection, analysis, interpretation, presentation, and organization of data. Two main statistical methodologies are used in data analysis: descriptive and inferential statistics.

### Descriptive Statistics

Descriptive statistics describes or summarizes the features of a collection of information. Its aim is to summarize a sample rather than to learn more about the population a sample is thought to represent.

Measures commonly used to describe a data set are measures of central tendency and measures of variability or dispersion.

Measures of central tendency include mean, median, and mode. Measures of variability include standard deviation, minimum and maximum values, and skewness.

#### Mean

The mean is typically the average result of the data set (the sum of the values divided by the number of values).

For example, for the data set [1, 1, 1, 3, 5, 5, 6, 6, 8], the mean would be 4.

## Median

The median is the middle value in the list, the value separating the higher half of the data sample from the lower half of the sample.

For example, for the same data set, the median would be 5.

## Mode

The mode is the element of the sample that occurs most often in the data set.

For example, the mode for the same data set would be 1.

## Standard Deviation ( $\sigma$ )

Standard deviation is a measure used to quantify the amount of variation or dispersion in a set of data values. A low standard deviation indicates that the data points tend to be close to the mean, while a high standard deviation indicates that the data points are spread out over a wide range of values.

For example, for the data set [1, 1, 1, 3, 5, 5, 6, 6, 8], the mean is 4. To calculate the standard deviation, calculate the deviations of each data point from the mean and square the result of each:

$$(1 - 4)^2 = (-3)^2 = 9$$

$$(1 - 4)^2 = (-3)^2 = 9$$

$$(1 - 4)^2 = (-3)^2 = 9$$

$$(3 - 4)^2 = (-1)^2 = 1$$

$$(5 - 4)^2 = (1)^2 = 1$$

$$(5 - 4)^2 = (1)^2 = 1$$

$$(6 - 4)^2 = (2)^2 = 4$$

$$(6 - 4)^2 = (2)^2 = 4$$

$$(8 - 4)^2 = (4)^2 = 16$$

The variance is the mean of these values:

$$(9 + 9 + 9 + 1 + 1 + 1 + 4 + 4 + 16) / 9 = 6$$

The standard deviation is equal to the square root of the variance: 2.45

## Minimum and Maximum Values of the Variables

These simply refer to the highest and lowest values listed in a data set. For example, in the data set used above, the minimum value is 1 and the maximum value is 8.

## Skewness

Skewness is a measure of the asymmetry of the probability distribution of a real-valued random variable about its mean. Skewness can be positive or negative.

Negative skew occurs when the left tail is longer and the mass of the distribution is concentrated on the right side of the figure. This represents the fact that there are more data points or results that are higher than the mean than there are lower than the mean.

Positive skew occurs when the right tail is longer and the mass of the distribution is concentrated on the left side of the figure. This represents the fact that there are more data points or results that are lower than the mean than there are higher than the mean.

For example, in the data set [30, 31, 32], the values are evenly distributed around a central value of 31.

To create a negative skew, you would add values far below the mean. For example: [20, 30, 31, 32]

To create a positive skew, you would add values far above the mean. For example: [30, 31, 32, 40]

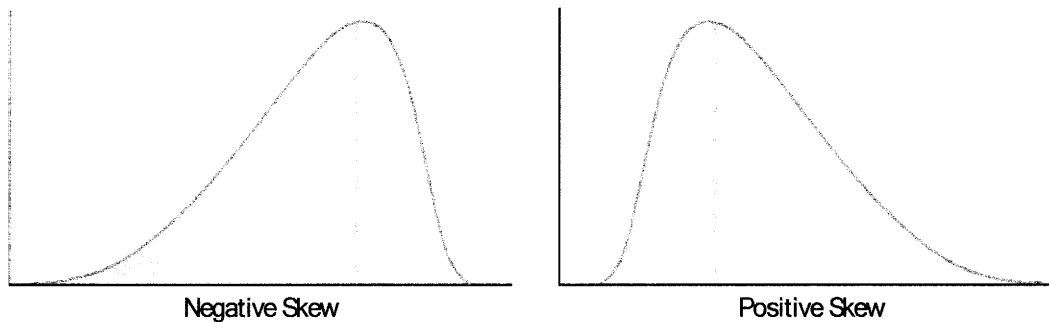


Figure 1-2: Probability Distribution Skew

## Inferential Statistics

Inferential statistics draws conclusions from data that is subject to random variation, inferring properties about a population that is larger than a given sample. It includes testing hypotheses and deriving estimates.

The conclusion of a statistical inference is a statistical proposition. The most common statistical proposition used in quantitative risk analysis is an interval estimate, specifically a confidence level.

Confidence levels are used to state the likelihood of occurrence of a certain outcome, such as a project completion date or an amount of project spending. For example, a total project cost of \$130,000 at a P30 interval would represent a 30% probability of the project cost coming in at \$130,000 or below. This is discussed in more detail in the quantitative risk analysis section.