

## Cause-and-Effect Analysis

**What:** Determining the sources of a problem situation.

**When:** Throughout a project.

**Results:** Identified root causes for current or potential project trouble.

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### Identify Sources of Trouble

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*Cause-and-effect analysis* is applied in a wide range of situations, such as:

- Issue management
- Schedule control
- Cost control
- Scope change control
- Risk response planning
- Process improvement
- Creative problem-solving
- Failure diagnosis

There are many names for essentially *similar processes*, including root cause analysis, failure mode and effect analysis, “fishbone diagrams,” and Ishikawa diagrams, named for Dr. Kaoru Ishikawa, the Japanese quality-movement expert who popularized the concepts.

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### Describe the Effect

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Whatever the process is called, it begins with a clear, *unambiguous statement* of the problem, issue, risk, variance, or other adverse situation. Quantify the effect, defining the consequences in terms that are as specific and measurable as possible.

Involve project *team members* and stakeholders with insight into the effect. Ensure that each person understands the situation and can describe it in his or her own words.

## Identify Root Causes

As a group, **brainstorm** possible sources for the undesirable outcome. Collect as *many inputs* from the team as quickly as you can. Tap sources of data such as documented problems, **lessons learned**, and other documentation from prior projects, checklists, and templates. Use the idea from **quality planning** of “asking *why* five times” to probe for causes, not symptoms. Focus on the quantity of ideas, not the quality; you can filter later.

Organize the results into major *cause categories* such as:

- Scope
- Schedule
- Staff and resources
- Cost
- Organization

## Diagram and Document

Display root causes visually, using a *fishbone diagram* (as shown in Figure 7.1) to provide deeper understanding of the situation. Use subcategories as needed to organize the information logically, and review the results to see whether they stimulate additional causes.

*Document the root causes* and apply them to resolve the problem situation.

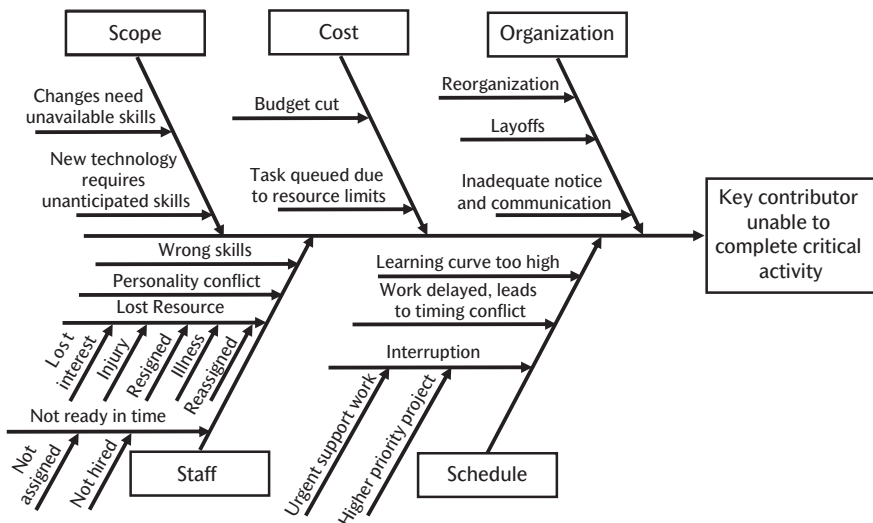


Figure 7.1. A sample fishbone diagram.

## Closing Projects (PMBOK® 4.6, Close Project or Phase)

- What:** Completion of project management tasks at the end of a project or phase.
- When:** Project (or phase) closure.
- Results:** Final project documents, approvals, and lessons learned.

This process is used to close a project. It is also applicable to life cycle phase or stage gate transitions, especially for longer projects.

### Obtain Formal Acceptance

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Review **requirements collection** and **scope definition** and your records of **scope change control** to determine the project *deliverable requirements*. Check that all final testing is aligned with the agreed-upon specifications.

Work with the people who must evaluate your project results to complete **scope verification**, formally acknowledging that the project deliverable has met the project goals. If there are no issues, *get formal sign-off* from your project sponsor and as appropriate from customers or other stakeholders. For projects undertaken for a fee, ensure the customer is properly and promptly billed.

If the project fails to deliver on some objectives, obtain written acknowledgment of the *partial results* that were delivered. Even when **canceled projects**, formally document all accomplishments.

### Complete Project Documentation

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Whatever the ultimate result of the project may be, *write a report* to summarize results and to acknowledge contributors. This report is generally similar in format to project **information distribution** and **performance reporting**. Use the report to communicate to all that the project is over.

Begin the final report with a *high-level summary*, including the most significant results. In the remainder of the report, stress the accomplishments of the project team and formally recognize significant contributions individuals

and groups made to the project. Include retrospective **project metrics** and other performance information.

Add the final project report to the *project information archive*, along with any other project documents and reports that are updated or created as part of your project close-out.

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### Close out Contracts and Accounting

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Complete all paperwork required for contracted services used on the project and approve appropriate final payments. If there are issues or problems relating to a contract, escalate and resolve them as soon as possible. Complete **procurement close-out** following payment of all invoices, taking action to *terminate the contract*.

Summarize required financial information for the project and ensure that any *project accounting* is done accurately and promptly.

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### Thank Team Members

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At the end of a project, *thank people*, both in person and in writing. For contributors who report to others, acknowledge their work formally to their managers. Use **rewards and recognition** as positive reinforcement for the good work of deserving project contributors.

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### Celebrate

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*Celebrate success* at the end of a project with an event. Even if the project had problems, identify accomplishments and do something to end the project on a positive note. Celebrations need not be lavish to be effective. On **global teams**, arrange similar events for each location.

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### Analyze the Project

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At the end of a project, conduct a *post-project analysis* to capture **lessons learned**. Meet with the project team soon after the completion of project work to list practices that went well and should be used on future projects. Also identify project processes that need change, and generate recommendations for remedy. Document the results and add the report to the project information archive.

## Coaching and Mentoring

**What:** Sharing expertise with team members and building needed skills.

**When:** Throughout a project.

**Results:** Improved teamwork and better project performance.

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### Seek Opportunities to Help

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Identify *capability gaps* in the project using **required skills analysis**. Identify proficiencies the project needs or would benefit from that are missing or insufficient. Use coaching for **performance problem resolution**.

Assess weaknesses on the project team and consider *threats and risks* that could require responses using specialized talents.

Align *personal goals* with project and organizational needs. Ask team members what they desire to learn and do, and use the information to guide **team management** and increase **motivation**. Keep the “big picture” and **project vision** in sight, and identify opportunities to develop new skills on the project team when **delegating responsibility**.

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### Foster an Open Environment

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Build *trust* and teamwork, so people will feel free to discuss any matter or topic without fear of criticism. Encourage “pull”; respond positively to requests for help and encourage project staff members to let you know when they are inexperienced or lack skills needed for their assigned activities. Display **leadership**; model the behaviors you wish to see on the project: follow through on commitments, make time for **communicating informally**, and be willing to teach and share your expertise.

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### Protect Confidentiality

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Effective mentoring requires *discretion*. People need to feel free to reveal their shortcomings and ask “dumb questions.” Because this may not be the

case when the mentor is also the individual's manager, mentoring is generally most successful across organizational boundaries, where adverse consequences and repercussions may be avoided.

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### **Establish Enduring Relationships**

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Build on coaching and mentoring relationships over time. Establish long-term two-way relationships, where in some cases the roles reverse and the mentor requests guidance. Encourage people who benefit from mentoring to share what they have learned with others by becoming mentors.

## Communicating Informally

- What:** Periodic person-to-person communication without a specific purpose.
- When:** Throughout a project.
- Results:** Good team relationships, fewer misunderstandings, and early warning of potential problems.

Informal communication is often as (or more) important on projects as formal communication. Many risks and problems surface first through conversations and other team interactions, and **team management** and relationship building depend upon it.

### Take Advantage of Unstructured Communication

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Casual *conversations* at coffee machines, in corridors, and parking lots represent some of the most important project communication. Successful project leaders make an effort to encourage frequent, unstructured conversations, both with and among team members. “Soft data” and valuable project information often surfaces during unplanned exchanges.

Even with **global teams**, where you are seldom able to talk with people in person, there may be opportunities to do it once in a while; always take full advantage of face-to-face opportunities to enhance relationships. Use the *telephone* when you are distant. Call team members regularly, even when there may be no pressing project business, to ask how they are doing.

### Practice Structured Informal Communication

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Many project leaders set aside time at least once a week for “*managing by wandering around.*” MBWA is a particularly effective way to reinforce trust and build relationships within a project team. Although it is best done in person and with no particular objective, it can also be a part of regularly scheduled one-on-one meetings or telephone calls for **status collection** or discussion when **delegating responsibility**. Asking questions about interests, family matters, or other nonproject matters adds a personal touch and

helps build **motivation**, particularly if you keep it brief and restrict yourself to topics both of you are interested in discussing.

Informal communications are also an important benefit of *team activities*, longer meetings (such as **start-up workshops** and **project reviews**), and project celebrations. Use milestones and other key project dates to organize events that are at least partly social, to reinforce the connections on the team. Particularly for longer projects, extracurricular activities are effective in maintaining teamwork, but let the team choose the event. Avoid “forced merriment” and diversions that may annoy or distract the team. Eating together, scheduling an outing to a film, or engaging in some other event of mutual interest builds team cohesion essential to a healthy project.