

2.5

Using the Darnall-Preston Complexity Index to Measure Organizational Complexity

LEARNING OBJECTIVES

1. Analyze a project function for size, organizational complexity, technological newness, and technological familiarity and assign a complexity score.

Recall that the Darnall-Preston Complexity Index (DPCI™) ranks complexity in four categories: external, internal, technological, and environmental. The information provided in this chapter can be used to rate a project's complexity in the areas of size, organizational complexity, technological newness, and technology familiarity. Scores range from 1 (least complex) to 5 (most complex).



Image by Doblin/Monitor

Size

Recall that size is relative to the organization's comfort zone for projects. Refer to the following descriptions for tips on arriving at a DPCI score for size:

1. The project size is the most common size the organization does. The project manager and team members have done many similarly sized projects, and the tools they use to manage this size project are well tested and reliable.
2. The project size is at the high or low end of the range of project sizes that the organization or team members have done before.
3. The project size is about 20% higher or lower than projects the organization or some of the team members have done before. The project leader and a few key team leaders are familiar with this size project from work they have done elsewhere. Project management tools and processes will have to be adjusted but

will probably work.

4. The project size is about 50% higher or lower than projects the organization or most of the team members have done before. Project management tools and processes will have to be adjusted, and it is not certain that they will work well. New tools and procedures may be needed.
5. Neither the organization nor the team members are experienced working on a project this size. It is several times larger or smaller than previous projects. It is too small or too large for the tools and techniques with which the team is familiar.

Organizational Complexity

Recall that system complexity is determined by the variety of types of elements and the number of connections there are between elements. Review a chart of the organizational structure that depicts the reporting relationships, the number of people involved, their familiarity with each other, and the amount of cross connections between reporting relationships and functions. Refer to the following descriptions for tips on arriving at a DPCI score for size:

1. The organizational structure is simple and involves few people. No new relationships need to be formed, and the people have worked together in these relationships before.
2. The team includes people who report to operations managers instead of the project manager, and more people are involved.
3. The organization chart has numerous segments, but most people are familiar with their roles and have worked in this type of role before.
4. The number of people involved is large, and the functions are handled by many different people. There are several levels of reporting in the organization chart.
5. The number of people is very large, and many of them do not know each other or have never met. Each major function

requires a full-time person, and coordinating between functions requires frequent meetings among mid- and top-level managers.

Technology Newness

Recall that this category refers to the technology that is part of the project. It might be new technology that is being implemented to make a step change in the efficiency of an operation. Refer to the following descriptions for tips on arriving at a DPCI score for size:

1. The technology is not new. It has been around for years and is reliable.
2. The technology is only a few years old. Most of the initial bugs are out of it, but the fixes have not been thoroughly tested.
3. The technology is recent, and only a few other organizations have experience with it. The providers promise that the next release or version will have the problems resolved.
4. The technology is new and has just been released for general use. Problems are likely.
5. The technology is in an early testing phase, and your organization is one of the test sites. Problems are expected.

Technology Familiarity

Recall that this category refers to the familiarity of the project team with the technology that is part of the project. Refer to the following descriptions for tips on arriving at a DPCI score for size:

1. The team members have all used the technology or have been involved with projects that used this technology. They are confident that they understand it and can handle problems related to it.
2. The technology is new to some of the team members who are not in key positions. Standardized training is available, if

necessary, to teach them what they need to know about it to do their jobs.

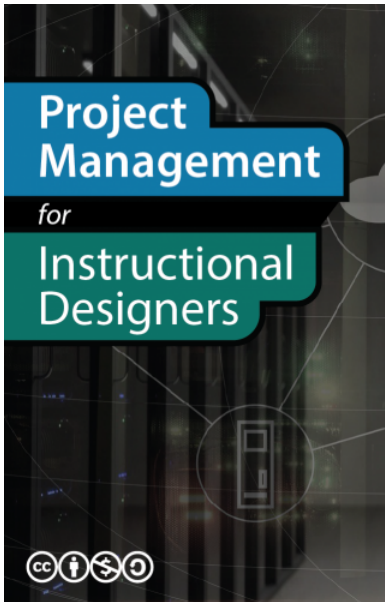
3. Several team members have not worked with this technology, including some of the key team members. Standardized training is not available, and consultants might be needed.
4. The technology is new but is similar to previous technologies with which the team leaders are familiar. An advisor from the product's development team may serve as a technology advisor.
5. The technology is new, and no one has worked with it before. A specialist might be needed to avoid serious errors.

Assigning a Score

Assigning a score is not an absolutely accurate process. Your objective is to be approximately correct, and some people are not comfortable with this type of estimate. Recall that one of the attributes of a successful project manager is the ability to live with ambiguity. One method that will help when assigning a score is to consider the two extremes. For each factor in the DPCI, consider what the simplest—least complex—scenario would look like, to which you would assign a 1 on the DPCI scale. Next consider what the most complex scenario would be, which would describe a 5. Then, compare actual projects to those two extremes. Accordingly, if it is about in the middle it rates a 3, and a 2 and a 4 are moderately simple and moderately complex, respectively.

KEY TAKEAWAYS

- Scores range from 1 to 5, where 1 is the lowest level of complexity and 5 is the highest. In each situation, consider what the two extremes would look like and then judge where the current situation lies between those extremes.



Wiley, D. et al. (2018). Project Management for Instructional Designers. EdTech Books.
<https://edtechbooks.org/pm4id>



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