Walden University

ScholarWorks

6-8-2015

Understanding Project Management A Three Dimensional Model for Understanding Projects and the Implications for Developing a Project Management Plan

Russell W. Darnall DM
College of Management and Technology, russell.darnall@waldenu.edu

Follow this and additional works at: https://scholarworks.waldenu.edu/facpubs

6-8-2015

Understanding Project Management A Three Dimensional Model for Understanding Projects and the Implications for Developing a Project Management Plan

Russell W. Darnall DM
College of Management and Technology, russell.darnall@waldenu.edu

Understanding Project Management
A Three Dimensional Model for Understanding Projects and the Implications for Developing a Project Management Plan

Russell W. Darnall, DM, PMP

Master's in Project Management, Walden University, 522 Moody Mountain Road, Burnsville, NC 28714. rwdarnall@gmail.com

"Any fool can know. The point is to understand"

Albert Einstein

ABSTRACT

Project success is dependent on the understanding of the project and applying the appropriate knowledge, skills, and processes. The paper presents a three dimensional model for understanding projects and developing an appropriate project management approach. The First Dimension represents the generic knowledge, skills, and processes appropriate for all projects and typically represented in such documents as the PMBOK. Although the First Dimension provides the basics for managing projects, it is not sufficient. The Second Dimension represents industry-specific knowledge, skills, and processes appropriate for projects in specific industries or industries with similar characteristics. The Third Dimension builds on both First and Second Dimensions and provides a discussion on profiling projects in the need for understanding and developing the tools and processes for managing projects outside the comfort zone of the organization. The three-dimensional model focuses our understanding of project management in developing research, designing appropriate education models and improving project performance.

A Three Dimensional Model; An Overview

Based on research funded by the Project Management Institute (PMI), a new *Project Complexity Model* was presented that attempted to capture dimensions of project complexity. The author of this research won the 2009 PMI David I. Cleland Project Management Literature Award for *Managing Complex Projects: A New Model.* Among the elements of this new model was the definition of a highly complex project as any project that is greater than six months in duration, a budget greater than $750,000 and more than 10 team members. This new model may work well within some industries but it has much less value in other industries. Using this model, even the most simple or less complex projects within the pharmaceutical, motion picture, or construction projects would be consider extremely complex. The size of a project is a relative concept more related to the project industry's norm than to a fixed amount. For any model to be

comprehensive, the model must reflect an understanding of the traditional or basic project management knowledge, skills, and processes as well as reflecting the industry and in some cases an understanding of the project profile

Some researchers indicate that "traditional project management" is too rigid, resistant to change and focused on scope not clients. Aaron Shanhar (2007) wrote that project management is becoming more important to the economy at the same time project performance is not improving. Cicmil, Cooke-Davis. Crawford and Richardson (2006) concluded that there is a discrepancy between "project management best practice" and project management as it is actually practiced. Are these representative statements fair when placed within the context of an industry specific approach or within the context of the project specific profile?

Traditional project management and even project management best practices often refers to the basic project management knowledge, skills, and processes (KSP)as reflected in such documents as the Project Management Institute's *A Guide to the Project Management Body of Knowledge* (PMI, 2013). Although it is often referred to as a method for managing projects, the PMBOK is a standard NOT a methodology. The PMBOK captures the basic knowledge needed to manage projects. This knowledge is grouped into 47 project management processes and categorize into five process groups; initiating, planning, executing, monitoring and controlling, and closing. Basic project management knowledge, skills, and processes are necessary for successfully managing all projects but it not sufficient. The PMBOK is not a methodology because the development of a project management methodology requires an understanding of the industry and project profile.

In addition to the basic KSP the project manager must also apply a project methodology for managing projects. The KSP needed to understand and manage the construction project are very different from an IT project or industrial project. In addition to the basic KSP, construction project managers must also have an understanding of construction processes. Even within the same industry, the project profile may require different project approaches. For example, within the construction industry a domestic $50 million construction project requires very different knowledge skills and processes than an international $500 million construction project.

The KSP needed to successfully manage projects varies significantly from industry to industry. A movie project meets our definition of a project in that it is time framed with a defined deliverable. The lifecycle of a movie project includes the preproduction, production, and postproduction. The KSP needed to develop a script, identify and acquire actors, manage production, develop and produce the music score, and manage the postproduction activities and distribution requires a methodology that is industry-specific. For example Movie Magic Budget® and Movie Magic Scheduling® are software designed to support a movie project.

The KSP needed to produce a small short film will often be very different than a major motion picture. The knowledge, skills, and processes required to produce *The Hobbit* can

be very different than those needed for the Disney's *Frozen*. These differences are reflected in the project profile. Understanding the project profile is as important to developing the appropriate project execution approach in the movie industry as it is in the construction industry.

The South Carolina Technical College System managed training projects for new and expanding industries as an incentive for industries to locate in South Carolina. Managing over 100 projects per year, the project managers used industry best practices for understanding, developing and delivering training. These projects also used project management processes for managing schedule, budget, rick, stakeholders, etc. Most projects trained 10 to 50 new employees.

Each year there were a few projects training over 100 new employees. The organization also trained over 1000 new employees for BWM and Boeing when they located new plants in South Carolina. The KSP needed to be successful in these training projects included basic project management and industry specific best practices. In addition, some projects were sufficiently large and complex to require additional knowledge, skills, and processes. These additional KSP reflect the project profile represented in the Third Dimension.

The construction, IT, movie production, and training industries all used basic project management knowledge, skills, and processes in the management of their projects, although sometimes selectively. Each of these industries also required industry specific knowledge, skills and processes to successfully manage their projects. Within each of these industries, the large, complex project also required additional KSP to be successful.

The Darnall 3Dimension Model categorizes the KSP needed to successfully manage a project into three categories. The First Dimension reflects the basic or traditional knowledge, skills, and work processes most commonly reflected in the PMBOK. The Second Dimension reflects the knowledge, skills, and abilities reflected in the industry. The Third Dimension reflects the individual profile of specific projects that typically fall outside the industry's comfort zone for managing projects.

First Dimension: Traditional Project Management KSP
The First Dimension of the KSP is often referred to as traditional project management. These reflect the fundamental knowledge, skills, and processes applicable to all projects. The PMBOK indicates that these are "applicable to most projects most of the time." (PMI, p. 2) It does not mean that the knowledge, skills, and work processes should be applied uniformly to all projects.

To enhance the likelihood of project success, every project should have a charter, schedule, budget, risk management, quality plan, stakeholder management plan, and the other components of the traditional project management KSP. A project charter could be developed on a table napkin or it could be several hundred pages. The project schedule might be a small and simple spreadsheet, or it could be a very sophisticated schedule

developed through a tool such as Magic Schedule® in the movie industry. The fundamental or traditional KSP are common across most projects, the methodology for selecting and applying these skills to any individual project is more determined by the industry's approach as reflected in the Second Dimension.

Second Dimension: Industry Specific KSP
The Second Dimension reflects the KSP and the methodology that are developed within the industry for managing projects. The knowledge, skills, and work processes used to develop a schedule for construction project will vary significantly from the methodology within the IT, movie, or training industry. For example, the IT industry developed sophisticated processes for developing and managing schedule throughout the life of an IT project. In another example, the training industry created processes for understanding the needs and requirements stakeholders. The traditional knowledge, skills, and work processes of the First Dimension are typically common across all projects while the KSP of the Second Dimension are usually industry specific.

Many organizations have established project management offices (PMO) to manage and improve project performance within the organization. Developing better execution plans involves both improving the knowledge, skills, and processes of the First Dimension as well as applying the appropriate project management methodology of the Second Dimension. As organizations increase the use of programs and portfolios to implement organizational strategy, PMO's play a larger role in driving organizational performance. In addition to training project staff in the traditional KPS of the First Dimension, PMOs often assist in the selection of the appropriate management approach the Second Dimension. The PMO is also often responsible for collecting performance data and driving improvement, developing industry or organizational best practices as well as providing forums for improving project management skills.

It is at the Second Dimension or industry level that the appropriate project management methods are developed and selected. Improvement to project management methodology occurs within the Second Dimension as reflected in such approaches as agile project management developed for the IT and similar industries. The PMO's assist organizations in standardizing project management practices and applying the appropriate project management methodology as well as providing inputs for improvement.

Third Dimension: Project Specific KSP

The Third Dimension reflects the KSP required to effectively manage *specific* projects within an industry. In addition to the KSP needed to manage projects effectively within the industry, some projects fall within fall outside the comfort range for their industry or organization. The construction company that builds houses typically has good processes for managing the construction of houses but when the house falls outside the normal range, the project complexity increase and the normal processes may not be as effective. Understanding when the project falls outside the range and what new or additional processes are needed, is important for project success.

A Fortune 500 Engineering and Construction Company formed a Small Projects Group after several years of smaller projects not meeting performance expectations. The Small Projects Group was separated from the rest of the organization and established the processes and skills necessary to successfully manage smaller project. This same company divided extremely large projects into smaller subprojects and assigned a project manager with good integration skills to integrate the subprojects to meet the project goals. The vast majority of projects fell within the organization's comfort zone. Those outside the comfort zone needed project specific tools, processes, and skills.

Darnall (1996, 2000, 2010), Shenhar et al. (2005), and Youker (2002) have developed tools and process for profiling a project. Among other advantages, the project profile provides an analysis of the project to determine if the project falls outside the comfort zone of the executing organization. The project profile provides the information needed to determine the appropriate knowledge, skills, and processes as well as the appropriate methodology needed to successfully manage the project.
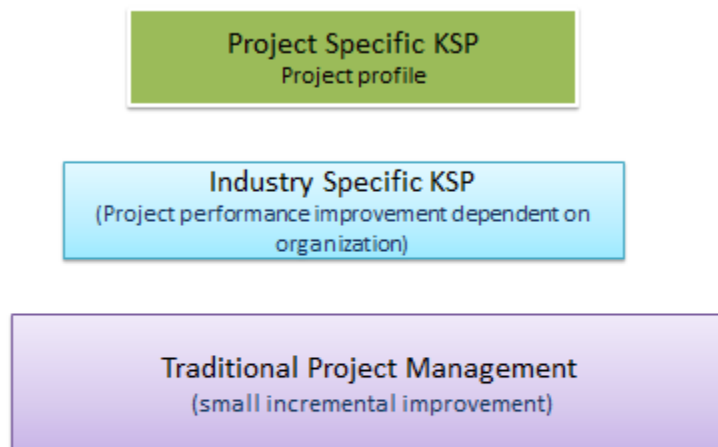

Figure. Darnall 3-Dimensional Model of Project Knowledge, Skills, and Processes

Implication of applying the Darnall 3Dimension Model of Project Knowledge, Skills, and Processes

Increasingly, organizations are using projects to implement strategy and change within the organization. Krahn and Hartman indicated that "The use of project management tools and techniques is growing. The impact of project success on organizations is also increasing as project management is implemented more often and for projects of greater importance" (2014, p.1). Shenhar (2012) stated that "project management is becoming more strategic business oriented… projects are the engines that drive innovation and change; the turn ideas and strategies including products and services, and they make organizations better, stronger, and more competitive." (p. 1)

The healthcare industry is going through rapid change in response to pressures from cost and regulation. The implementation project management to manage new work processes and new approaches to the delivery of medical services will be important to a healthy transition. In addition to the basic knowledge, skills, and processes of the First Dimension of project management, approaches to project management within the healthcare industry will need to consider the existing culture, skills, and work processes. Project management approaches found in the industries similar to healthcare will probably be assimilated as industry-specific approaches to the projects that emerge.

Existing models that contrast traditional project management with agile or other approaches create barriers in some industries that implement projects on a regular basis. The motion picture industry, book publishing industry, and even course development within a university apply project management approaches to the accomplishment of the goals of these organizations. Determining the appropriate knowledge, skills, and processes include applying the knowledge, skill, and processes of the First Dimension as well as developing the appropriate industry specific knowledge, skills, and processes of the Second Dimension. When necessary, projects within these industries will fall outside the industry specific comfort zone; developing a project profile and matching the appropriate project management approach of the Third Dimension is necessary.

Research

Research that does not account for the differences in the knowledge, skills and processes needed to successfully mange projects in different industries and for projects outside the project execution comfort zone projects will have significant validity issues. Research to improve project performance typically explores: 1) Ways to develop better tools, processes, methods, and skills; and 2) Ways to better understand our projects. Some tools and process are germane across all projects; some are specific to the industry while others are specific to the project profile.

Research focusing on effectiveness of tools and processes that does not account for the appropriate use of different methodologies within industries cannot be generalized from one industry to another. Research surveying project managers normally do not include project managers from the movie industry, book publication, curriculum development and other industries underrepresented an array of project managers that do not traditionally participate in professional project management organizations. Readers should critically review the conclusions from research that study only populations within similar industries.

Education and Professional Development

Degree programs and consultants developing educational programs in one industry may not have direct applicability to other programs. Most project management degree programs provide instructions on the basic project management knowledge, skills, and processes represented in the First Dimension. Developing instructional design that also

includes project management methodologies across industries that are represented in the Second Dimension is more difficult.

Some educational programs support specific industries, such as the construction industry or the IT industry. Other programs support the project management of major corporations within their geographical area. These educational programs can provide the knowledge, skills, and processes of both the First and Second Dimensions. Educational programs without this industry or corporate connection need to develop context within their program for understanding the appropriate application of industry based knowledge, skills, and processes.

Many project management consultants provide training that incorporates both the First and Second Dimension. Such training should delineate the aspects of the industry-specific or Second Dimension appropriate for the audience. If the audience is composed of project managers primarily from one industry or similar industries with common project management methodologies, then training consistent with these methodologies is very appropriate. The same approach would be less appropriate for entry-level project managers or project managers from diverse industries.

Develop Better Execution Plans

Spundak (2104) contrasted traditional project management and agile project management as two different approaches to managing projects. Shenhar (2012) indicated that traditional project management is based on concepts developed over 50 years ago and is insufficient for today's project environment. Fair (2012) often contrasted traditional waterfall project methodologies with agile methodologies. These approaches to project management often appear to represent the First Dimension as the traditional project management approach or methodology and contrast this approach to a second Dimension or industry specific methodology. *The contrasting of the First Dimension as one approach to project management against the Second Dimension is a second approach to project management denies the interconnectivity of the two Dimensions.*

The knowledge, skills, and processes represented in the First Dimension are important for all projects. Although not all the KSPs represented in the First Dimension are applicable and appropriate for all projects, project managers must have a fundamental knowledge of the appropriate knowledge, skills, and processes to apply to their project. By developing a better understanding of the KSP's within the First Dimension, project managers improve their ability to successfully manage projects.

Selecting and developing the appropriate project management methodology for each project falls within the Second Dimension. As indicated earlier, the PMO is an increasingly important factor in developing and implementing better execution plans. One new approach developed by the Project Management Institute focused on understanding project complexity. The Project Management Institute's (PMI)*Navigating Complexity: A Practice Guide* (2014) indicated that among other things, a Project Management Office (PMO) provides "guidance on how to perform program or project

assessments and define when and how they were to be used." (p. 7) PMO's operate within the realm of the Second Dimension and are an excellent vehicle for driving improvements to project management methodology as well as the knowledge, skills, and processes.

Profiling Project

A project profile provides a snapshot look at a project and provides valuable information for the development of the project execution plan and the assignment of resources to the project. An analysis of the project environment, including the internal and external environment, provides information that allows the project parent organization to allocate the organizational resources and assign the appropriate organizational leadership to the project.

The Project Management Institute recognized the need for delineating the differences among projects in the 1990's. PMI's initial attempt to develop project taxonomy as the first step in increasing an understanding of the KSP needed on various types of project was the *Taxonomy Project*. The Project Management Institute Standards Committee chartered a *Taxonomy Project* with Gregory D. Githens as project manager (Darnall, 2012). The taxonomy project team was chartered to provide a framework for classifying projects for the purpose of understanding and developing better methods of managing projects. The committee presumed that a greater understanding of projects was a necessary for developing improved project management approaches.

Most organizations have a comfort zone for executing project. This comfort zone reflects the tool, processes, skills, and methods typically used to manage projects. One of the purposes of profiling a project is to determine the degree in which the various components of the project fall within and outside the comfort zone of the organization. These components can include such items as size, risk, schedule, cost, resource availability, clarity of project objectives, clarity of scope, organizational complexity, stakeholder agreement, linking mechanisms, technological complexity, legal complexity, environmental concerns, cultural complexity, and political complexity.

The impact of project size on the complexity level project and therefore moving the project outside the comfort zone was discussed in the example of the construction company establishing a small projects group to deal with projects that fall outside the organization's comfort zone. An organization going international for the first time, developing a new technology, experiencing a deadline 10% shorter than any previous experience, and conflict between members of the organization's leadership team are examples of project conditions that will impact the project complexity often pushing the project outside the execution zone of the organization. The level of complexity and the degree of discomfort are related to both the degree of differentiation (how much larger is the project than normal), and the number of elements outside the comfort zone.

Typically, if one element of the project is outside the comfort zone, the project team can make adjustments to existing tools and processes to compensate. Most often, project

managers encounter many of the project elements outside the comfort zone when one element is significantly outside the zone. For example, a very large project for an organization will often have different organizational leadership involved, often include new technologies and sometime legal implications that effect project execution.

The Third Dimension represents the KSP needed to manage these projects that fall outside the organizational norm. In addition to the knowledge, skills, and processes of both the First and Second Dimensions, the KSP for analyzing projects and matching the appropriate management approach to projects for both the Third Dimension are critical for project success.

Improving project performance includes improving the basic knowledge, skills, and processes needed to manage all projects represented in the First Dimension. Improving project performance within the Second Dimension is often accomplished through the use PMOs. This includes the understanding and applying the project management methodology appropriate within industry. Improving project performance for those projects that fall within the Third Dimension involves developing the tools and processes for better understanding the profile the project and matching the appropriate skills, processes, and tools.

CONCLUSION

In 1986, the author entered the first Masters Degree Program accredited by PMI. Now PMI accredits over 95 project management programs. Over the past 30 years, project management has grown as a discipline with a continuous development of the PMBOK and increasing development the project management certification. Program and portfolio management has been integrated into the project management universe and industry concentrations (communities of practice) have grown within the Project Management Institute. Agile and industry-specific methodologies are developing and the increasing exploration complexity within projects helps us understand unique needs of the project profile. The 3 dimensional model focuses our understanding of project management in developing research, designing appropriate education models and improving our project performance.

REFERENCES

Darnall, R., & Preston, J. M. (2010).*Project management: From simple to complex.* Nyack, NY: Flatworld Knowledge Publishing,

Darnall, R. (2012). *Developing and applying a project profile to determine the appropriate execution approach*. Unpublished manuscript.

Darnall, R. (1996) *The world's greatest project,* Newtown Square, PA: Project Management Institute.

Darnall R.(2000) *Understanding and Using a project profile to improve your execution,* PMI Symposium, Houston, TX.

Fair, J. (2012). Agile verses Waterfall. *PMI Global Congress 2012--EMEA*. Retrieved from: http://marketplace.pmi.org/Pages/ProductDetail.aspx?GMProduct=00101365000&iss=1

Hass, K. (2008). Living on the edge. Project Maagement Istitute http://www.pmi.org/learning/living-edge-project-complexity-management-7170

Krahn, J., & Hartman, F. (2004). Important leadership competencies for project managers: The fit between competencies and project characteristics. *Proceedings of the PMI Research Conference July 2004 – London, UK.*

Project Management Institute. (2014). *Navigating Complexity: A Practice Guide*. Newtown Square, PA; Project Management Institute.

Project Management Institute. (2013). *A Guide to the Project Management Body of Knowledge (PMBOK Guide®)*. (5th ed.). Newtown Square, PA: Project Management Institute.

Shenhar, A. (2012). What's the next generation of project management? *2012 PMI Global Conference Proceedings – Vancouver.*

Spundak, M., (2014). Mixed/traditional project management methodology – reality or illusion. *27th IPMA World Congress, Social and Behavioral Sciences 119 939 – 948.*

Youker, R. (2002). The difference between different types of projects. Retrieved from http://www.maxwideman.com/guests/typology/abstract.htm