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KEYWORDS ■ project execution ■ project tools and methods ■ theory of project management

PROJECT EXECUTION: A RESEARCH AGENDA TO EXPLORE THE PHENOMENON

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ABSTRACT

It is observed in the literature that although project management is considered to be an execution-oriented discipline, the Project Management Body of Knowledge developed by the Project Management Institute provides relatively little detail in the Executing process group compared with other process groups such as the Planning and Monitoring and Controlling process groups. It is further observed that project elements considered essential to the success of the project including project Scope, Cost, Schedule, and Risk are not included within the Executing process group. Likewise, the coverage of project execution in the Project Manager Competency Development Framework authored by the Project Management Institute appears to provide limited insight regarding what actually takes place during project execution. This paper outlines a research agenda to better understand what actually occurs in projects when experienced project managers are carrying out activities within the Executing process group. It proposes a study consisting of a pilot study, project manager interviews, a focus group validation session, and data collected by a survey instrument in order to develop a more complete understanding of the phenomenon of project execution.

1. Background: Project Management Execution

It is observed that the project execution literature paints a rather incomplete picture of execution as a project management phenomenon. Project execution appears to be something that is understood to happen

in projects when tasks are completed (Carrier, 1987). Considerable overlap is noted between project execution, project planning, and project controlling. In some cases, terms used to describe execution do so in terms of planning artifacts (*i.e. tasks*) or monitoring and controlling activities (Wideman, 1989). Studies that directly refer to execution tend to be either forward looking, as in the assigning of execution work in a simulation study, or retrospective when

considering the work of the project that has been completed (Andersen, 2006; Carrier, 1987; Jugdev & Müller, 2005; Turner, 2006). Project execution is also viewed from the perspective of the use of tools, the capabilities that must be in place in order to foster execution, or the authorization of work (Jugdev & Müller, 2005; McLeod et al., 2012).

Many project management theorists identify apparent implicit assumptions that are made regarding project execution, or they make reference to analogies or comparisons to other bodies of theory (Jugdev, 2004; Koskela & Howell, 2008; Singh & Singh, 2002). Research associated with the temporary organization and its focus on action and tasks is one field of related theoretical research that appears to hold promise for the improved understanding of project execution (Artto, 2013). Further, the consideration of project execution as the flow of information and decision-making appears to capture elements of the dynamic aspects of project execution as a phenomenon. The aim of this paper is to catalogue the results of execution research describing the current state. This paper concludes with a series of research questions and an in-depth executable research agenda which will add to the body of knowledge.

2. Literature Review

A review of the literature reveals a number of themes that are associated either directly or indirectly with the phenomenon of project execution. The phenomenon of execution itself is typically addressed either in terms of its required inputs or its results (Turner, 2006). As a result of this emphasis, research in this field appears to focus more on the “before” and “after” rather than what happens “during” project execution. Likewise, although the themes of project management theory, competence, practice, and project success provide supporting evidence for the phenomenon of execution, there is

little direct empirical evidence that describes project execution phenomena in the literature.

The PMBOK Framework and the Executing Process Group

The Project Management Institute released the fifth edition of the Project Management Guide to the Body of Knowledge in 2013 (Project Management Institute, 2013). The PMBOK is a life-cycle approach to project management that specifies 47 processes for managing projects. The processes are organized within five process groups, identifying a cradle-to-grave system, and 10 knowledge areas. The process groups provide a sequential approach to completing work in a project, whereas the 10 knowledge areas organize processes according to specific domains that are applied in the course of managing a project (Project Management Institute, 2013). The resulting PMBOK framework is given as follows in Table 1.

Although the numbers are suggestive of the emphasis given to each process group, it may be argued that the quantity of processes alone is not necessarily a definitive indicator of emphasis. Another way to understand the relative emphasis that the PMBOK gives to the Executing process group is to consider which Knowledge areas are included within the Executing process group and which are not. It is observed that Project Scope, Time, Cost, and Risk Management are absent from the Executing process group. Therefore, it is noted that there may be several possible gaps in the Executing process group.

The PMBOK view of project execution appears to be consistent with the apparently abbreviated view of the phenomenon of project execution in the literature. The number of processes in the Executing process group is small compared to Planning and Monitoring and Controlling processes (Project Management Institute, 2013). The PMBOK also does not include supporting process guidance within the executing process group across all three dimensions of the triple constraint. Given the historical emphasis and importance placed on managing projects according to schedule, budget, and performance goals, this lack of triple constraint coverage of execution within the executing process group is cited as a possible reason for the

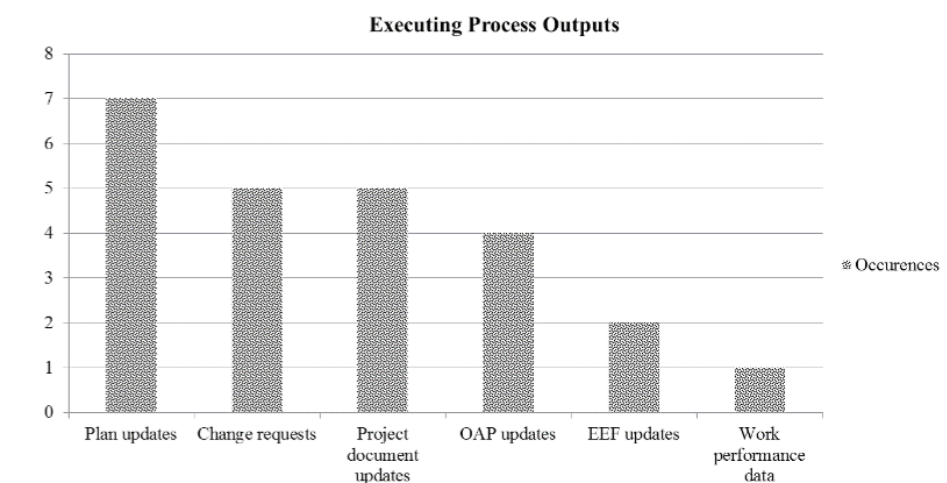


FIGURE 1. Executing process outputs
NOTE. Project Management Institute, 2013

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements		5.5 Validate Scope 5.6 Control Scope	
6. Project Time Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule		6.7 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
9. Project Human Resource Management		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

TABLE 1. The PMBOK Framework
NOTE: Project Management Institute, 2013

ongoing poor track record of project success (Müller & Jugdev, 2012). Further, the knowledge areas in the PMBOK that do provide process guidance within the executing process group tend to be described only at a high level. This presumably could lead to a lack of clarity regarding the specific activities that project managers should undertake during project execution. As concluded by Zwikael (2009), project managers do not receive enough support in executing processes related to certain knowledge areas. Finally, the high level activities associated with the application of tools and techniques within the execution process group overwhelmingly appear to lead to monitoring and controlling-related outputs. From inspection of **Figure 1**, there are 33 total process outputs in the executing process group that are associated with updates of plans and documents as well as change requests. Only 9 of the 33 process outputs relate to tangible deliverables suggestive of the carrying out of the execution of work.

Project Success and Project Execution

The link between project success and project execution appears to be generally assumed in the literature of project success research. However, the specific linkages between execution and success lack clarification in the literature. A possible reason for this may relate to the absence of a clear definition of project success. The apparent lack of clarity associated with the very definition of project success reflects the expanded view of project success beyond

the historical narrow focus on the achievement of the project triple constraint. Until a consensus view emerges in the literature for a definitive description of project success, the specific role played by project execution in project success will be assumed to remain incomplete. The PMBOK view appears to be consistent with the view that emerges from the literature. The PMBOK framework is presented as a set of processes that if followed will lead to the successful attainment of project goals. It is of interest that the emphasis of the PMBOK is on planning and monitoring and controlling rather than executing. The specific role of project execution in the PMBOK as it relates to project success is therefore observed to be unclear.

Execution Outside of the PMBOK

Project management is but one field of management of which execution is a component. Within the literature of strategic management, execution is the link between the strategic vision of the company and the attainment of results (Higgins, 2005). The literature of strategic management has many elements in common with project management. Similar to project management, the vision of the company is translated into a plan that is in turn separated into components that may be executed by the organization (Zagota & Ronsinson, 2002). Parnell (2008) indicated that management plays a key role in execution and the need is to communicate that execution strategy to the team. Also, in the same manner as project management, leadership and interpersonal skills influence communicating and coordinating the work associated with the execution effort (Sull, 2007). The literature of strategic management also points to the need for the alignment of the organization with strategic goals in order to ensure successful results (Patanakul & Shenhar, 2012).

Various systems are proposed in the literature for measuring the progress of strategic execution although rarely to the level of detail suggested in project management (Higgins, 2005). What if any differences exist between execution within strategic management and project management? Clues emerge when comparing permanent organizations with temporary organizations. Permanent organizations have sustained economic success and long-term survival as their primary mission. The ongoing execution activities that unfold from the vision of the organization are ultimately intended as the means for achieving this sustained success. Temporary organizations on the other hand exist solely for the purpose of achieving

unique objectives or producing specific deliverables (Lundin & Söderholm, 1995).

Winch (2003) suggested a possible overlap between temporary and permanent organizations. Winch pointed to the shift from mass production typified by the automobile industry to the increasing emphasis in industry in the delivery of complex systems. Unlike sustained mass production, complex systems such as construction, information technology, and capital intensive deliverables tend to be unique. The literature of project and temporary organization execution is focused on applying tools and techniques in order to produce deliverables whereas the strategic management literature is focused on the connection between the strategic vision and the plan (Higgins, 2005). Although the project management literature is more focused and tangible given its close linkage to short term objectives and deliverables, the emphasis in the literature is on planning and monitoring and controlling rather than project execution as a phenomenon. Likewise, strategic management tends to emphasize higher-level themes such as vision, leadership, and control systems (Killen et al., 2012).

3. Literature Synthesis

The literature suggested the following underlying observations:

- Project execution is generally assumed to have occurred within a project when tasks are completed (Carrier, 1987; Zagotta & Robinson, 2002; Liu et al., 2010).
- Project execution is viewed as a phenomenon that is closely linked to and overlaps with project planning and monitoring and controlling (Wideman, 1989; Rozenes et al., 2006; Sull, 2007; Project Management Institute, 2013).
- Project execution is often associated with the use of tools, methods, and practices (Jugdev & Müller, 2005; McLeod et al., 2012; Menke, 1994; Besner & Hobbs, 2006; Andia, 1999)
- Project execution is said to be associated with decision-making and therefore, information processing and flow (Koskela & Ballard, 2006; Ashok et al., 2011; Tatikonda & Rosenthal, 2000; Snider & Nissen, 2003).
- Project execution is implicitly equated with task authorization in the PMBOK framework (Koskela & Howell, 2002; Menke, 1994).
- Project management competence is viewed in the literature as an input to execution and

is evaluated retrospectively using evidence of completed tasks or activities (Lampel, 2001; Patanakul & Milosevic, 2008; Gillard & Price, 2005; Killen et al., 2012).

- The formalization of project practice is observed to diverge from the actual practices of project managers, and to be weakly linked with both project success as well as ROI (Napier et al., 2009; Besner & Hobbs, 2012; Söderlund, 2004).
- Project success has evolved into a multidimensional construct to the extent that the linkages between project execution and project success are unclear (Ika, 2009; Müller & Turner, 2007; Müller & Turner, 2010; McLeod et al., 2012; Mir & Pinnington, 2014).
- The PMBOK framework emphasizes planning and monitoring and controlling over project execution and this emphasis is generally observed in the literature (Wideman, 1989; Rozenes et al., 2006; Sull, 2007; Project Management Institute, 2013).

Why Then is Execution Apparently Missing?

Task completion emphasis. Project execution is said to involve the completion of tasks associated with achievement of project goals (Carrier, 1987). The result of project execution cannot be assessed until the tasks are completed (Zagotta & Robinson, 2002). The ability to complete tasks is viewed as an important competence (Liu et al., 2010), however such ability is measured after the fact. The fundamentally retrospective view of task execution therefore limits the research perspective with respect to what actually occurs during project execution.

Overlap with monitoring and controlling. Project execution is viewed as a phenomenon that is closely linked to and overlaps with project planning and monitoring and controlling. A close relationship exists between project planning, execution, and monitoring and controlling (Wideman, 1989). Project control is related to the management of the gap between the planning and execution (Rozenes et al., 2006). Further, control efforts that result in successful execution lead some researchers to the conclusion that project control may be synonymous with execution in certain contexts (Sull, 2007). The resulting blurring of the lines between planning, execution, and monitoring and controlling results in literature and performance standards such as the PMI Project Management Competency Development Framework to refer to project execution in terms associated with planning or monitoring and controlling (Project Management Institute, 2007). This lack of clarity leads to apparent gaps in understanding what project managers actually do within project execution that is distinct from project planning and monitoring and controlling activity.

The task authorization view. Project execution is implicitly equated with task authorization in the PMBOK framework. Koskela and Howell (2002) observed that the underlying theoretical assumption associated with project execution in the PMBOK framework is the concept of “work authorization”. It is suggested that this implicit underlying view of project execution contributed to the lack of project success (Koskela & Howell, 2002). In actual projects, substantial in-

teraction is said to occur between those who authorize and those who execute work. Decisions that must be made are said to lead to further discussion and negotiation (Menke, 1994). The observations of Koskela and Howell revealed a gap in the PMBOK framework that has not received attention from researchers. The presence of such a gap suggests the need for further research in order to examine to what extent, if any, the role of “work authorization” plays in actual project execution.

Failure to define project success. Project success has evolved into a multidimensional construct to the extent that the linkages between project execution and project success are unclear. Project success research considers success criteria, critical success factors, and various competencies including leadership and the role each plays with respect to project success (Ika, 2009; Müller & Turner, 2007; Müller & Turner, 2010). Empirical studies validating critical success factors or success criteria are limited and the results from such studies suggested a complex picture (McLeod et al., 2012). Further, individual project manager performance has been linked to project success (Mir & Pinnington, 2014). It is clear from the literature as well as practice that work must be done in order for a project to be successfully completed. In this respect, there is an observed link between project execution and project success. However, the exact nature of this link is not clearly expressed in the literature—presumably because the definition of project success tends to vary considerably between researchers. In addition, the study of project success is often retrospective in the sense that it involves analysing factors that may have contributed to projects that were deemed to be successful. The examination of competencies and critical success factors naturally tends to focus on factors that must be present prior to the execution of work associated with the goals of the project. The study of project success therefore does not appear to have as its focus the actual phenomenon of project execution.

Emphasis on planning and monitoring and controlling. The PMBOK framework emphasizes planning and monitoring and controlling over project execution and this emphasis is generally observed in the literature. By inspection, the PMBOK devotes more processes to project planning and monitoring and controlling than project execution. Further, the outputs of the processes that found within the executing process group are observed to be primarily related to monitoring and controlling activity (Project Management Institute, 2013).

4. Research Agenda: To Reveal the Phenomenon of Project Execution

The following are a series of propositions, which if examined in depth, could fill the apparent gap in the literature and inform the practice.

- a. Do project managers follow the Executing process group as described within the PMBOK when they actually execute projects, or do they take actions that go beyond it? If so, what is it that successful project managers do within the Executing process group given the limited scope of the Executing process group within the PMBOK?
- b. To evaluate what project managers do when executing projects.
- c. To evaluate what competencies project managers consider essential for successful project execution.
- d. To identify the practices, tools or methods project managers employ when executing projects.
- e. To determine the extent to which project managers view project execution as a phenomenon that is distinct from project planning and monitoring and controlling as well as how they describe the differences.
- f. To evaluate the degree to which project managers view project execution as a contributor to project success.
- g. To determine if project managers perceive that gaps exist within the PMBOK Executing process group.

The rest of this paper outlines a complex research agenda to inform the body of knowledge.

Overall Research Methodology

A lack of clarity and detail associated with the phenomenon of project execution is observed in the literature and in the PMBOK framework. Further, the underlying theoretical basis for project management and the role of execution within project management has been noted in the literature. Because of this an inductive approach will be used in this research. Inductive research seeks to build theory or conceptual frameworks rather than to test existing theory (Miles & Huberman, 1994). Further, qualitative research plans and procedures may only be tentatively determined up front given the often iterative nature of this type of research (Creswell, 2003). However, such an approach is consistent with project management practice research which seeks to understand what it is that project managers do within the field of project management in order build a body of theory firmly grounded upon project man-

agement practice (Leybourne, 2007). The underlying paradigm is therefore phenomenological in its outlook, and mixed methods in practice.

A phenomenological, inductive research methodology therefore seeks to understand a particular phenomenon by repeated measures that lead to a conceptual framework or general theory (Stake, 2010). Such a framework or theory may be later tested using the means of hypothesis testing in deductive research (Strauss & Corbin, 1998). Deductive research often uses statistical sampling, survey instruments, and statistical analysis in order to make generalizations about a larger population.

In mixed methods research using a phenomenological outlook, survey instrumentation is not typically used to test hypotheses or to make generalizations about a larger population (Alreck & Settle, 2004; Bergman, 2008). Instead, such collected data may be used in concert with other qualitative data in order to build a more complete picture of the phenomenon and to validate collected qualitative data (Bergman, 2008). This research seeks to understand a phenomenon that is instantiated when project managers complete projects. Therefore, experienced project managers could be said to be a repository of information and lived experiences associated with this phenomenon. The research therefore collects data directly from

project manager interviews and uses a focus group composed of experienced project managers to validate the results of the interviews and thematic analysis. The initial qualitative data derived from the interviews and the focus group is further validated by using a large data sample collected via electronic survey instrumentation. The intent is not necessarily to seek a sample representative of a particular demographic population, but rather to seek a significant number of samples from any respondents who could be said to have experienced or conducted project execution activities.

For the purposes of this research, repositories of such experiences are defined as currently employed project managers with at least five years of experience. This is consistent with the Project Management Institute and its requirement of five years of experience in order to qualify to attempt the certified Project Management Professional exam (Project Management Institute, 2014). Further, project management practice is said to vary across industries in which it is employed (Cooke-Davies et al., 2009; Crawford, 2006; Hällgren et al., 2012). A large sample taken without regard to industry therefore offers the possibility to gain a wider view of this phenomenon as it is employed in multiple settings.

The proposed mixed methods research methodology mirrors the

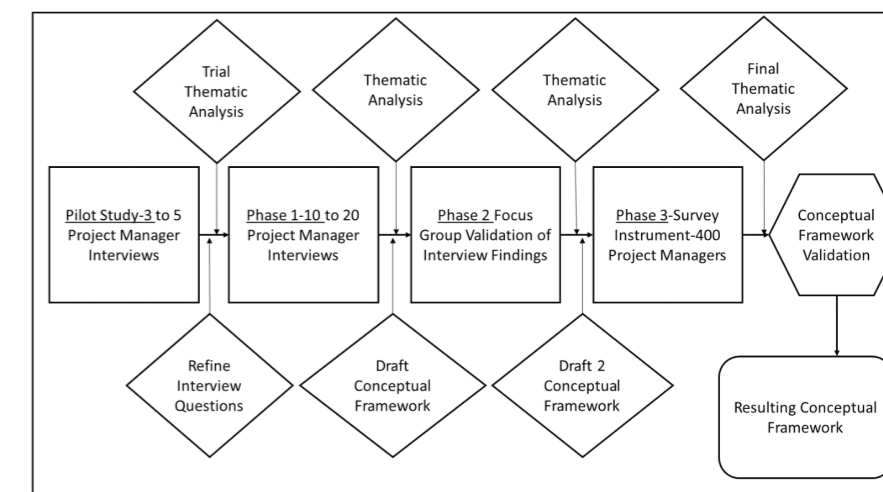


FIGURE 2. Proposed Research Sequence

process employed by Stevenson & Starkweather (2010). In this study, the researchers defined and validated project management competence criteria through a study of the literature followed by interviews with project managers as well as hiring managers. The result of the initial definition and validation was used to develop a survey instrument administered to hiring managers. The hiring managers were then asked in the survey to indicate their hiring preferences for noted competencies (Stevenson & Starkweather, 2010). This study of project execution will follow a similar pattern using multiple rounds of validation in order to answer the research questions. Such validation using multiple sources of data is referred to as triangulation (Miles & Huberman, 1994). Triangulation allows for the comparison of multiple “imperfect measures” characterizing a phenomenon in order to derive a more complete view.

Answering the Research Questions

An important goal of research that adopts an inductive, phenomenological outlook is to answer the question, “What is going on?” (Creswell, 2003; Miles & Huberman, 1994; Strauss & Corbin, 1998) The review of the literature illustrates that, with respect to project execution, the answer to this question is by no means clear. Further, an examination of the PMBOK framework illustrates little specific guidance regarding project execution. Furthermore, project execution is completely absent in areas that are said to be essential for successful projects. The conceptual framework resulting from this research is expected to contribute to the understanding of execution actions, competencies and processes as a distinct project management phenomenon and thereby add clarification and depth to the project execution process guidance in the PMBOK (Figure 2).

Given that qualitative, mixed methods research is typically an iterative process (Miles & Huberman, 1994), additional specific adjustments to the proposed primary research effort are likely to emerge upon completion of the pilot study.

Interviews

The size of the sample of interviewees is informed by the literature. In general terms, the sample size used in qualitative research is recommended to be small (Miles & Huberman, 1994) with possible ranges recommended from 5 to 25 participants (Creswell, 2003). An examination of multiple qualitative research studies suggests a range from 10 to 60 participants with no clear-cut

sample size guidelines (Marshall, Cardon, Poddar, & Fontenot, 2013). The primary driver of qualitative research sample size appears to be the goal of “saturation”. This state is said to occur when additional interviews uncover no new information (Strauss & Corbin, 1998). A suggested interview sample size range from 15 to 20 project managers is therefore proposed for the study. This sample size is consistent with qualitative research practice and may be increased as necessary in order to reach saturation (Marshall et al., 2013; Strauss & Corbin, 1998) Phase 2 of the research will use qualitative analysis techniques to derive themes from the interview transcripts as described in the outline of the pilot study.

Focus Group Validation

The themes will be presented to a focus group of project managers for the purposes of validation of the themes emerging from the interview transcripts. The focus group will consist of 6 to 8 project managers according to recommended practice (Alreck & Settle, 2004; Miles & Huberman, 1994). Focus group members will be recruited locally by outreach to local PMI chapter members and by a published invitation in LinkedIn project management forums. As in the case of interview subjects and survey respondents, the criteria for focus group selection will be current employment in project management along with five years of project management experience. In the focus group session, excerpts of interview transcripts, coded passages of text, overall identification of themes, and finally the relationships between themes as illustrated in the draft conceptual framework will be shown to members for review and comment. The focus group session will be recorded, transcribed, and also analysed for its thematic content. Finally, Phase 3 of the research will use the thematic results to develop a quantitative survey instrument to be administered electronically to a larger population of project managers.

Survey

The total membership of the Project Management Institute exceeds 400,000 members worldwide (PMI, 2013). Assuming that the bulk of the membership exists in the United States, given that it is an American organization, it appears reasonable to assume that at least 100,000 to 300,000 project managers exist in the United States. This number is likely to be significantly higher given the possibility that many project managers

may not be certified, or members of a project management professional organization. The sample size for a population exceeding 100,000 with a 5% margin of error and a 95% confidence level approaches the number of 400. This sample size number does not change significantly after it exceeds an assumed population of 20,000 (Checkmarket, 2014). Therefore, this research will seek 400 survey responses as a means to validate the conceptual framework developed from the interview themes and focus group evaluation.

The survey instrument will be created and distributed electronically using the SurveyMonkey survey Website and the SurveyMonkey audience service. SurveyMonkey collects and maintains databases associated with specific demographic profiles designed for access by researchers (SurveyMonkey, 2014). The electronic survey link will be distributed via email to email addresses of currently employed project managers with at least five years of experience. The link will be distributed to sufficient numbers until at least 400 responses are collected. Use of the SurveyMonkey database access service for researchers ensures that the survey will be distributed to a nationwide target demographic until such time that the target response is collected (SurveyMonkey, 2014).

Data Analysis

The results of the pilot study, the thematic analysis of the interview transcripts, the focus group validation of the interview results, and finally the survey instrument results will be analysed in order to produce a holistic view of the phenomenon of project execution (Miles & Huberman, 1994). The data analysis will proceed as described in the pilot study along with lessons learned and research protocol updates that arise from the pilot study. The survey instrument will provide a large sample of abbreviated responses to the same or similar questions asked in the project manager interviews. Such results will be tabulated and compared

and contrasted with the qualitative data analysis results and will be used to ground, validate, and potentially supplement the qualitative findings. For example, given that the survey questions exactly mirror the interview questions in abbreviated form, the survey data tabulation will provide a means to confirm the level of importance of ascribed to themes identified in the interviews as well as the identified practices, methods, and tools.

Conceptual Framework

The final outcome of the analysis process will provide an illustration of how the themes and supporting survey instrument data come together to produce a conceptual framework suggested by the data (Stake, 2010). A conceptual framework is a visual or graphical description of a phenomenon. Unlike a theory or a model, the conceptual framework is descriptive rather than prescriptive (Lott, Gerrish, Laker, & Bray, 2013). In this regard, it is not tested or calibrated in the manner of a process model, but rather serves to provide an in-depth description of the phenomenon that is apparently only weakly described in the project management literature. The resulting conceptual framework could then be used in future research exploring this important component of project management.

5. Conclusion

What then is project execution, and why is so little process guidance provided for execution in the PMBOK framework? The proposed research agenda seeks to understand the apparent missing piece of the PMBOK framework with the goal in mind of providing guidance to improve the overall success rate of this evolving execution-oriented management discipline.



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