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PMBOK 6th meets 7th: How to link both guides in order to support project tailoring?

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Abstract

Project Management is evolving more rapidly than ever[1]. Driven by the progress in new technologies and the emergence of agile methodologies, organizations such as the Project Management Institute (PMI) reviewed their Project Management Standards to reflect on this phenomenon. In its latest edition, the Project Management Body Of Knowledge 7th[1] (PMBOK), gather the largest number of evolutionary [2] and a disruptive approach based on Principles and focuses on emerging trends such as tailoring, to enhance value delivery through project results[3][4][2]. Nevertheless, the PMI states that this new release does not invalidate previously published versions of PMBOK. However, the coexistence of these two perspectives may initially be an unclear subject for managers and teams, used to a process-oriented [5].

This research studied the relationship between PMBOK 6th[5] and PMBOK 7th[1] and the importance of their connection applied to project tailoring and value creation, through a model that relates concepts from PMBOK 7th[1] (Methods, Models and Artifacts and Performance Domains) and the PMBOK 6th[5] (Processes).

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1. Introduction

Nowadays project managers have a new purpose in the way they deliver their projects and products. Due to the exponential development of new technologies, Project Management (PM) discipline is evolving faster than ever[1,6] with a new focus: deliver value for the organization and stakeholders through project work and outputs[1].

The Project Management Institute (PMI) has contributed significantly to the standardization and documentation of PM practices, and its Project Management Body of Knowledge Guide (PMBOK) is widely accepted by the community[7][8][9].

Compelled by the new needs of PM, the PMI in its seventh edition[1], has evolved from a protocol and procedural [5]s approach represented by eight Performance Domains focused on delivering value.

In this new paradigm, the focus is on the tailoring of methodologies and PM, empowering the teams and their project leaders with a set of principles and base domains that serve as guidelines for the definition of the project's lifecycle, development approach and management elements to be used[3]

In chapter "4. Models, Methods, and Artifacts" from PMBOK 7th[1] models, methods and artifacts (Items) are described so that they can be used by teams to generate value through eight Performance Domains. By itself, this knowledge allows the project manager to do a high-level tailoring of the project by selecting items according to the project's environment.

However, the way these models, methods and artifacts are produced and applied is purposely left open, with reference to other publications for more detailed information.

The efficient tailoring of projects through the items identified in the PMBOK 7th[1] not depends only on the project's knowledge, but also on the processes of creation and application of these models, methods and artifacts.

Through a two-way analysis based on the Value Proposition and the Domains identified by the PMBOK 7th[1], this investigation intends to relate the items of the PMBOK 7th[1] to the processes of PMBOK 6th[5], and thus (i) using the knowledge documented in PMBOK 6th[5] meet the needs of each Performance Domain and (ii) analyze how each PMBOK 6th[5] process contributes to value creation according to the Performance Domains identified in the PMBOK 7th[1].

In brief, this study aims to contribute with a model to support project tailoring and to aid project managers[5], who find it difficult to apply the new approach oriented to value creation according to the Performance Domains identified in the PMBOK 7th[1].

2. LiteratureReview

PMBOK was created in 1987 to document the knowledge of PM[3]. Over the years, PM has evolved and adapted in an increasingly plural way[2]. Today's projects diverge between different degrees of uncertainty, complexity and risk[10][9]. Driven by the exponential development of technology, new approaches, such as agile methodologies, arise in response to the high demand for immediate value delivery[10]

In 2021, the PMI emphasizes change-oriented PM releasing the PMBOK 7th[1] with the largest number of evolutionary changes in a new version. From a process-based approach, PMI introduces a new paradigm based on Principles and Performance Domains, focusing on emerging trends, such as tailoring, to enhance value delivery through project results[3][4][2].

Until then, PMBOK 6th[5]presented an approach where the project life cycle was well defined, with five phases associated with 49 processes. Each PM process produced one or more outputs of one or more inputs, using appropriate PM techniques and tools[5]. Those processes and techniques intended to produce deliverables leave for background the focus on creating value through the work done, and ultimately the response to the interest of stakeholders[8].

The seventh version of the PMBOK[1] advocates that projects not only produce outputs but more importantly, enable them to generate results that ultimately add value to the organization and stakeholders[1]. Therefore an Integrated Value Delivery System, consisting of eight Performance Domains, was developed: Interested parties; Team; Development and Life Cycle Approach; Planning; Project Work; Delivery; Quantification; Uncertainty. These domains are interactive, interrelated and independent, working in unison to achieve the project objectives[1].

Project tailoring is also highly encouraged in this seventh version[1] as the deliberate adaptation of PM methodologies, governance and processes to the project environment and to the work to be performed. This subject is enriched in the guide techniques and guidelines for decisions such as the project lifecycle as well as development approaches.

In addition to the tailoring of the project, there is also a section dedicated to the presentation of Models, Methods and Artifacts (Items) so that teams can build a framework for structuring their efforts to deliver the project outcomes[1].

3. Methodology

This research's main goal was to build a model to support project tailoring and assist project managers in structuring efforts to deliver results, considering that Performance Domains are critical to value creation.

To guide and achieve the objectives of this work, it was needed to find a methodology oriented to problem-solving through the development of an artifact and the production of new scientific knowledge. For being widely applied in the Information Technologies research area[11] and for meeting the needs of this study[12], Design Science Research[13] (DSR) was the chosen methodology, applied in 6 steps : 1.Problem Identification and motivation; 2.Solution's objectives definition; 3.Design and development; 4.Demonstration; 5.Evaluation and 6.Communication.

3.1. Problem Identification

The identification of the problem began at the release of the PMBOK 7th[1] with the greatest number of evolutionary changes between versions of the guide[2] and a disruptive view on PM. How the PMBOK 7th[1] and the PMBOK 6th[5] could coexist and complement each other, in the execution of a project, led us to an exhaustive literature review.

After this analysis, it was possible to identify related points between the two guides, in particular the section "4. Models, Methods, and Artifacts" from the PMBOK 7th[1] which presents a catalogue of models, methods and artifacts that correspond with the Techniques and Tools presented and used in PM Processes described in PMBOK 6th[5].

3.2. Solution's Objectives Definition

The previous step allowed us to identify an integration point between PMBOK 6th [5] and 7th[1] and, from there, establish a final goal for research: The creation of a model to support the project's tailoring and assist project managers to apply the new approach oriented to value creation according to eight Performance Domains identified in the PMBOK 7th[1].

3.3. Design and Development

In order to deepen the use of tailoring models, methods and artifacts to the project, we considered it relevant to consult their creation and application processes, documented in the sixth edition of PMBOK[5]. By knowing these processes and knowing the project, the project manager can deliberate if he has the adequate resources to apply them and develop the pretended item.

After analyzing versions six and seven, taking care not to invalidate the documented knowledge, a new goal was defined: explore an integration point between the PMBOK 6th[5] and the PMBOK 7th[1] by correlating Items (models, methods and artifacts), Performance Domains and Project Management Processes.

Our starting point was the mappings of Items with Performance Domains presented in PMBOK 7th, in tables 4-1, 4-2 and 4-3, respectively models, methods and artifacts.

Given the existence of three dimensions of items(models, methods and artifacts), and maintaining the structure of the PMBOK 7th[1], this analysis was performed iteratively among the three items.

To relate all the concepts (Items, Performance Domains and Processes) a criterion of direct relationship between Items(PMBOK 7th[1]) and the Processes(PMBOK 6th[5]) was defined: (i) artifacts resulting from, or updated, through a process, as well as (ii) models and methods performed in the processes. This implied the exclusion of the artifacts documented as input, recognizing that, although they contribute to the creation of value, they do it indirectly and their impact is less significant.

Then we started an exhaustive search for the correlation between PMBOK 6th[5] Processes and PMBOK 7th[1] Items. The analysis consisted of an immediate first phase with the identification of PMBOK 6th[5] Processes where the Items have the exact nomenclature of PMBOK 7th[1] and the identification of the PMBOK 6th[5] processes where Items (commonly known by two or more nomenclatures) were referenced with a nomenclature equivalent to that used in PMBOK 7th[1]. For the Items excluded from the previous phase, we performed a second intensive analysis using the definitions documented in the PMBOK 7th[1] of each Item to identify their contextualization in the PMBOK 6th[5] Process.

The analysis structured in two different moments allowed us to include all the concepts of PMBOK 7th[1] (Items and Performance Domains) and PMBOK 6th[5] (Processes), in addition to making the process more efficient. At the end of this analysis, as desired, it was possible to obtain a matrix whose cells represent the crossing between Items, Performance Domains and PM Processes.

4. Contributions

As mentioned, the primary contribution of this research consists of a crossbreeding matrix of Performance domains and Items (PMBOK 7th) with Processes (PMBOK 6th) that can be consulted in Appendix A.

Error! Reference source not found. A brief reference to Appendix A. in it, we can find the eight Performance Domains of PMBOK 7th[1] and correspond with the number of models, methods and artifacts associated. In addition to being able to quantify the number of Processes(PMBOK 6th[5]) that can be used to create or apply these items and generate value according to the Performance Domains.

Table 1.Summary of the Correlation Matrix of Items, Domains of Performance and Management Processes

Performance Domain	Models	Methods	Artifacts	Nº Processes
Planning	15	101	235	49
Project Work	36	72	232	49
Delivery	6	65	135	47
Measurement	2	42	105	43
Stakeholders	18	43	83	43
Uncertainty	0	17	63	37
Team	24	7	10	21
Dev Approach and Life cycle	2	5	3	4

By itself, obtaining this Matrix corroborates the guidelines of the PMBOK 7th[1], as it proves the continued relevance of PMBOK 6th[5] Processes, as well as the real possibility of those being applied in complementarity with the new approach presented by PMBOK 7th[1].

By **Error! Reference source not found.**1 we can draw the first analytical conclusions, regarding the representation of Processes in Performance Domains: (i) for Domains such as Planning and Project Work we verified a total expression of the 49 Processes of the PMBOK 6th, (ii) however, for the Domain of Dev Approach and Life cycle the representation is very reduced to only 4 Processes.

In the first instance, this is the reflection of PMBOK's 7th[1] evolution, revealing a new focus on topics superficially explored in previous versions, such as the use of agile methodologies and the customization of the project lifecycle. On the other hand, it reinforces the PMBOK 7th's appeal to teams not to limit themselves to the prescriptive use of the PM guide and find new ways to respond to their needs.

The Performance Domains of a project are critical to the effective delivery of project results[1]. This was the motto that led us to rethink the correlation matrix. We evolved it into a model that allows the tailoring of Processes to the project, enhancing the creation of value by the Performance Domains through the creation or application of Items.

Figure 1 outlines a use case for this model.

Figure 1. Schematic representation of the steps to use the model developed

Initially, the user chooses the Performance Domain(s) that he wants to develop. For this Domain(s), a list of Items recommended by PMBOK 7th[1] is presented, in the second stage, with the possibility of consulting the corresponding processes. Based on these data, the manager deliberates the context of the project and decides, in step four, which processes are adequate to develop the items and add value to the project results. Completing step five by performing the selected process(es) to produce the Items and generate value through the Performance Domain initially chosen.

4.1. Demonstration

In order to demonstrate the use of this model, we present an example of a manager who intends to add value to his project through the Performance Domain of Dev Approach and Life cycle. Through the model query, represented in Table 2, he identifies eight Items documented in the PMBOK 7th[1] that can be developed in order to achieve his goal.

Table 2. Mapping (obtained through the model) of Items and Corresponding Processes for the Dev Approach and Life cycle Performance Domain.

Items	Processes
Cost-benefit ratio	12.1 Plan Procurement Management
Internal rate of return	12.1 Plan Procurement Management
Milestone schedule	4.1 Develop Project Charter
	6.5 Develop Schedule
Net present value	12.1 Plan Procurement Management
Payback period	12.1 Plan Procurement Management
Return on investment	12.1 Plan Procurement Management
Roadmap	6.5 Develop Schedule
Stacey matrix	8.2 Manage Quality
	8.3 Control Quality

Every Item displays the Processes associated. Adapting to the circumstances of the project the manager can, among several options, (i) choose an item and select one of the associated processes to perform or (ii) execute the procurement planning and management process that is associated with a significant number of Items and may indicate a great potential for value creation in the Dev Approach and Life cycle Domain.

It is important to note that in PMBOK 6th[5], for each of the processes, there is a varied number of tools and techniques associated, which may or may not correspond to the Items obtained in the model. Following the PMBOK

7th[1] principle of tailoring and total adaptation of processes to the project, situations such as this should also be analyzed and taken into account.

5. Conclusions

This investigation started at the release of the version with the highest number of evolutionary changes to PMBOK 7th[2]. Despite the disruptive nature of this new version, PMI clearly states that it does not invalidate the knowledge documented previously. However, the coexistence of these two perspectives was initially an unclear subject.

After a thorough analysis of the PMBOK 6th[5] and the PMBOK 7th[1], it was possible to establish a link that allows to integrate the knowledge of both versions through correspondence between the Techniques and Tools used in the PM Processes of PMBOK 6th[5] and the Models, Methods and Artifacts of PMBOK 7th [1]. Given the less procedural and prescriptive nature of PMBOK 7th[1], this relationship is important, as it allows the integration and reuse of previous knowledge(from PMBOK 6th[5]) in the new context presented, as well as guiding teams in the adoption/transition of the new paradigm.

Another result of the link between versions six[5] and seven[1] of the guide, was a crossbreeding matrix of Performance Domains and Items (PMBOK 7th[1]) with Processes (PMBOK 6th[5]). In addition to the inherent value, the matrix obtained corroborates the simultaneous applicability of the knowledge documented by PMI in the different versions of PMBOK.

The correlation matrix was our primary output that we evolved into a model to support project tailoring whose objective is to allow teams to deliver results through Performance Domains: by selecting Processes to be performed in the project, value is generated through the Performance Domains by the creation or application of Items.

For future work, we identified the relevance of extending the Item and Process libraries, extending the research to PM standards and guides beyond PMBOK. Ensuring a more diverse listing and an equitable response across all Performance Domains.

Appendix A. Correlation Matrix of Items, Domains of Performance and Management Processes

	D	DA	M	P	PW	S	T	U	GT
4.1 Develop Project Charter									
Art	2	1	2	6	2	4		1	18
Mod					1	1	1		3
4.2 Develop Project Management Plan									
Art	1		1	1	1				4
Met	2		1		1				4
Mod					1	1	1		3
4.3 Direct and Manage Project Work									
Art	4		2	7	5	4	1	2	25
Met				4	4	2	1		11
4.4 Manage Project Knowledge									
Art			1	1	3	1			6
Met	1			1	1	1			4
4.5 Monitor and Control Project Work									
Art	4		5	1	6	1		1	18
Met	3		4	3	3	1		1	15
4.6 Perform Integrated Change Control									
Art	3		1	1	3	1			9
Met	2			1	2			1	6
Mod				4	4	4			12
4.7 Close Project or Phase									
Art	1		1		1				3
Met	1		3	2	2	2	1		11
5.1 Plan Scope Management									
Art	3			4	1	1			9
Met				1	1			1	3
5.2 Collect Requirements									
Art	5		2	6	2	1			16
Met	1		1	1					3
Mod					1	1	1		3
5.3 Define Scope									
Art	6		2	8	2	3		1	22
5.4 Create WBS									
Art	6		4	6	3	2		1	22
Met	1			1	1			1	4
5.5 Validate Scope									
Art	2		2	3	3	1			11
Met				1	1	1			3
5.6 Control Scope									
Art	6		5	8	6	3			28
Met			2	1	1	1			5
6.1 Plan Schedule Management									
Art	3		2	2	2				9
Met				2	1			1	4
6.2 Define Activities									
Art	2		2	2	2	2	1		11
6.3 Sequence Activities									
Art	3		3	3	3	1	1	1	15
6.4 Estimate Activity Durations									
Art	3		2	2	2			1	10
Met	4			7	4	3		1	19
6.5 Develop Schedule									
Art	9	2	5	12	9	3	1	2	43
Met	3		1	6	2	3		1	16
6.6 Control Schedule									
Art	9		7	8	9	1		2	36
Met	2		4	5	2	2	1	1	17

	D	DA	M	P	PW	S	T	U	GT
7.1 Plan Cost Management									
Art				1					1
Met	1			2	1			1	5
7.2 Estimate Costs									
Art	2			2	3			2	9
Met	3		1	6	2	1		1	14
7.3 Determine Budget									
Art	1		3	4	3			1	12
7.4 Control Costs									
Art	3		4	7	7	1		2	24
Met	1		4	2	1	1			9
8.1 Plan Quality Management									
Art	6		3	9	8	2		2	30
Met	3		2	4	1	1			11
8.2 Manage Quality									
Art	7		4	6	11	1		2	31
Met	5		2	4	4	1		1	17
Mod		1	1	1	1				4
8.3 Control Quality									
Art	3		4	3	7	1		2	20
Met	3		1	2	2	1	1		10
Mod		1	1	1	1				4
9.1 Plan Resource Management									
Art	1			4	4	1	2	1	13
9.2 Estimate Activity Resources									
Art	2		1	4	5		1	2	15
Met	1			4	1			1	7
9.3 Acquired Resources									
Art	1		2	6	6	2	1	1	19
Met	1			1	1	1			4
Mod	1			1	1	1			4
9.4 Develop Team									
Art			1	3	5	1	1		11
Met	1			1	1	1			4
Mod	1			1	9	1	8		20
9.5 Manage Team									
Art	1		2	3	5	1			12
Met	1			1	1	1			4
Mod					8		8		16
9.6 Control Resources									
Art	2		3	5	8		1	2	21
Met	2		1	2	2	1		1	9
Mod	1			1	1	1			4
10.1 Plan Communications Management									
Art			2	7	5	5			19
Met			1		1				2
Mod				1	1	1	1		4
10.2 Manage Communications									
Art	1		3	6	8	4		1	23
Met	1			1	1	1			4
Mod	1			1	2	2	2		8
10.3 Monitor Communications									
Art			1	5	6	5			17
Met	1			1	1	1			4
Mod				1	1	1	1		4
11.1 Plan Risk Management									
Art			1	2	3			2	8
Met				2	1	1			4

	D	DA	M	P	PW	S	T	U	GT
11.2 Identify Risks									
Art	2			3	5			4	14
Met	4		1	3	2	1		1	12
11.3 Perform Qualitative Risk Analysis									
Art	2			3	3			3	11
Met			1	1					2
11.4 Perform Quantitative Risk Analysis									
Art			2	2				1	5
Met	3			5	1				9
11.5 Plan Risk Responses									
Art	5		3	12	11	1		3	35
Met	2		1	2	2	1		1	9
11.6 Implement Risk Responses									
Art	1			3	3			3	10
Met	1			1	1	1			4
11.7 Monitor Risks									
Art	3		2	5	7	1		4	22
Met	2		2	1	4	2			11
12.1 Plan Procurement Management									
Art	8		8	12	10	8		6	52
Met	1	5	5	7	2	1			21

	D	DA	M	P	PW	S	T	U	GT
12.2 Conduct Procurements									
Art	5		4	10	8	3		2	32
Met	1			2	2	2			7
Mod	1			1	1	1			4
12.3 Control Procurements									
Art	2		3	6	6	2		1	20
Met	1		2	2	1	1			7
13.1 Identify Stakeholders									
Art	3			8	6	4		3	24
Met				1	2	2			5
Mod				1	1	1			3
13.2 Plan Stakeholder Engagement									
Art				2	1	2			5
Met	2		1	1	1			1	6
13.3 Manage Stakeholder Engagement									
Art	1			4	5	4			14
Met	1			2	2	2	2		9
Mod	1			1	2	2	1		7
13.4 Monitor Stakeholder Engagement									
Art	1			7	8	5		1	22
Met	3		1	4	5	2	1	1	17

Legend:

D-Delivery; DA- Dev Approach and Life cycle;

M- Measurement; P-Planning; PW- Project Work;

S-Stakeholders; S-Schedule; T-Team; U-Uncertainty;

GT-Grand Total.

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