

Project Management Maturity Models and Organizational Project Management Maturity Model (*OPM3*[®]): A Critical Morphological Evaluation

Farrokh J. and Azhar K. Mansur

Abstract—There exists a strong correlation between efficient project management and competitive advantage for organizations. Therefore, organizations are striving to standardize and assess the rigor of their project management processes and capabilities i.e. project management maturity. Researchers and standardization organizations have developed several project management maturity models (PMMs) to assess project management maturity of the organizations. This study presents a critical evaluation of some of the leading PMMs against *OPM3*[®] in a multitude of ways to look at which PMM is the most comprehensive model - which could assess most aspects of organizations and also help the organizations in gaining competitive advantage over competitors. After a detailed morphological analysis of the models, it is concluded that *OPM3*[®] is the most promising maturity model that can really provide a competitive advantage to the organizations due to its unique approach of assessment and improvement strategies.

Keywords—Project management maturity, project management maturity models, competitive advantage.

I. INTRODUCTION

FOR any organization, gaining competitive advantage (CA) and lucrative profits go side by side because only competitive advantage can assure long term existence of the organization. Therefore, organizations always remain in pursuit of gaining CA through various means including, but not limited to, financial investments, launching novel products and services, aggressive marketing campaigns etc. Although these initiatives look mutually exclusive but in fact, these are not – because all of these are carried out through initiating projects. Projects make it possible to integrate and manage efforts of activities spawning throughout the organization or departments. Put it the other way around, projects must be successful if the organization wants to gain a CA over their competitors. Role of successful completion of projects in maintaining CA for the organizations has been studied and correlated in many studies, case studies and reports [1], [2], to mention a few. Due to this reason, discipline of project management is gaining a wide acceptance throughout the

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world and universities are offering graduate degrees in project management. Many standardization organizations such as Project Management Institute (PMI), Office of Government Commerce (OGC), Australian Institute of Project Management (AIPM) etc., have developed project management capability assessment certifications for individuals and for the whole organizations. Recognizing the strategic importance of efficient management of projects, more and more individuals and organizations [3] are turning to get themselves certified i.e. having their project management processes assessed and improved.

Although there are many certifications available for individuals and organizations, the most widely known being; Project Management Professional (PMP[®]), Program Management Professional (PgMP[®]) are for the individuals; and Organizational Project Management Maturity Model (*OPM3*[®]), Project in Controlled Environments (PRINCE2[®]) are for the organizations. In this paper, we are interested in evaluating, morphologically, the renowned project management maturity models against *OPM3*[®] to find out which maturity model caters for most of the needs of organizations.

II. PROJECT MANAGEMENT MATURITY (PMM) AND COMPETITIVE ADVANTAGE (CA)

Before delving ourselves into the discussion and evaluation of PMMs, let us first discuss strategic importance of PMM and CA. Project management maturity, as defined by PMI is, “the degree to which any organization practices organizational project management [2]”.

The premise is that since successful completion of projects plays a decisive role in maintaining CA for the organizations, so improvement of project management practices i.e. project management maturity, will too. A number of researchers [4-6] conducted studies to examine the benefits which organizations can harness by adopting PMMs. Some of the important benefits mature organizations can have are:

1. they can manage all the projects undertaken by an organization effectively [6],
2. they can improve continually the performance of all the projects undertaken by them [4],
3. the creation of an organization-wide ability for managing projects based on standard, defined project management

processes that can be tailored to meet the specific needs of individual projects [2], [7] and,

4. "Enablement of the organization to advance its strategic goals through the application of project management principles and practices. In other words it bridges the gap between strategy and individual projects" [2], [8], [9].

ibbs and Reginato [8] noted in their interesting study that as an organization grows in project management maturity, it obtains a better project management performance at a lower cost – which in turn, can provide competitive advantage to the organizations in the long term. Although some researchers have criticized the relationship of adopting PMMMs and gaining competitive advantage but their claim is weakened by the existence of numerous case studies depicting the gains achieved by the adopting PMMMs, such as OPM3[®].

III. PROJECT MANAGEMENT MATURITY MODELS (PMMMS)

Organizations invest massive amounts for the assessment and improvement of their project management processes, therefore, they need to know in advance which framework to follow which could not only benefit them in terms of improvement of their processes, but also be financially viable. This assessment and improvement is performed through some conceptual frameworks called, project management maturity models (PMMMs). Broadly speaking, there exist two categories of PMMMs in terms of the way they deal with maturity – one which assume staged-representation of maturity and the ones which assume non-staged-representation of maturity (including OPM3). PMMMs which follow a staged-representation of maturity are based on the philosophy of incremental maturity as purported by Watts Humphrey [10], [11] and hence, is the basis of Capability Maturity Model Integration (CMMI) as well. CMMI and its concept of incremental maturity received a wide acceptance among academicians and organizations, that is why most of the maturity models today follow this structure and, in fact, inherit nearly all of the traits of CMMI in one way or the other – OPM3 and some other models being the exception.

Maturity models (MMs) are being used not only in project management but also in many disciplines, such as:

- Software development [14, 15]
- Quality management [12, 13]
- Supplier relationships [16]
- R&D effectiveness [17, 18]
- Product development [19]
- Collaboration [20]
- Product reliability [21, 22]
- Project management [2, 7, 23-33]
- People capability maturity model [34]
- Business development maturity model [35]

Whatever the application of maturity model is in any discipline, they are primarily used as a means of assessing and improving the product or service development process [36]. Moreover, they share one common characteristic – all of these specify some key performance areas (KPA) or key

performance indicators (KPIs). In this study we are interested only in the project management maturity models therefore we will not be discussing maturity models for all of the above listed disciplines. Table I below depicts some known PMMMs according to their structure briefly.

The main reason for presenting the Table I is to contrast the structure of OPM3[®] with other known PMMMs. As all of the renowned PMMMs are based on CMM, so it is more appropriate and logical to contrast OPM3[®] with CMM instead of comparing all the PMMMs to OPM3[®] – as it will reduce the complexity of the text, comparison and time of the readers. Let us now discuss in detail the logic followed by and behind the structure of PMMMs and its application to the organizational needs.

As mentioned earlier that all of the above listed models are based on CMMI – as they follow a staged-representation of maturity, have a definite number of KPIs/KPAs – the logic proposed by CMM, and they can assess only project management capability of the organization i.e. are not multidimensional. The staged structure of the CMM is actually based on principles of product quality developed and proposed in the 1930s by Walter Shewart [14, 37]. These principles were developed for the improvement and monitoring of quality of industrial products and not for the services or processes; although later on these were extended to services industries as well but still their base is industrial products. Ironically, application of industrial products quality improvement processes to the project management processes cannot guarantee the success of projects. Moreover, a ladder model might be too rigid as it restricts the differentiation required in describing the needed competencies in handling the specific project management processes of the organizations [38].

Secondly, CMM was developed with the joint efforts of Watts Humphrey and his colleagues [39, 40] based on their experiences at IBM – where they exercised concepts of total quality management (TQM) for the manufacturing processes. Humphrey and his colleagues tailored the concepts of TQM in the favor of software development processes. Their try to fit manufacturing quality management processes to the software development processes worked and, in fact, it proved successful in managing and assessing software development processes only, but not to the software project management processes that efficiently as any specialized PMMM can; the reason being that managing a project is much more integrated (multidimensional) in nature than only software development alone. Hence, any model that does not caters for the integrated nature of project management cannot fulfill ever changing organizational needs.

Thirdly, CMM and all the renowned PMMs are not based on any widely accepted theoretical base or body of knowledge of project management. This deficiency makes them even more controversial of being an acclaimed standard for project management maturity assessment.

TABLE I
 COMPARISON OF MATURITY MODELS (MMS) – BY STRUCTURE

Maturity Model(s)	Acronym	Structure			Theoretical Base/CMM Ideology	KPA/KPI
		Staged	Continuous	Multi-Dimensional		
Organizational Project Management Maturity Model	OPM3			Yes	Yes/No	Not Definite
Maturity by Project Category Model	MPCM	Yes			No/Yes	5
PORTFOLIO, PROGRAMME & PROJECT MANAGEMENT MATURITY MODEL	P3M3	Yes		Yes, but limited	No/Yes	42
Projects in Controlled Environments	PRINCE2	Yes			No/Yes	32
Project Management Maturity Model for Business Management Consultants	PMMM (BMC)	Yes			No/Yes	10
Software Capability Maturity Model	CMM	Yes			No/Yes	11
PM Solutions Project Management Maturity Model	PMMM	Yes			No/Yes	9
Project Management Maturity Model	ProMMM	Yes			No/Yes	4

In contrast, OPM3 is based on a widely accepted project management body of knowledge (PMBOK), program management and portfolio management – which assures that it has a solid underlying theoretical base capable to assess organizational maturity at any level.

Secondly, OPM3 is the only PMMM that is multidimensional i.e. it can assess project, program and portfolio management maturity of any organization. The basic logic of making of OPM3 multidimensional is that when the organizations views and begins to perform its work as multiple projects, it begins to understand project management as a holistic system that spans the whole enterprise therefore in OPM3®, organizations can address the project management domain, the program management domain, the portfolio management domain - either one or many domains, any combination of these - whatever suits the needs and capacity of the organization. This approach had never been taken before in a maturity model. This unique structure made OPM3® scalable and flexible, hence, applicable to most of the organizations most of the time - the hallmark of PMI standards.

Thirdly, OPM3 does not have a definite number of KPIs/KPAs. This makes it flexible and scalable for the organizations which wish to assess and improve only a subset of their processes.

Finally, OPM3 does not follow the orthodox notion of staged-representation of maturity rather, in OPM3® the progression of increasing maturity consists of several dimensions, or different ways of looking at an organization's maturity. One dimension involves viewing BPs in terms of their association with the progressive stages of process improvement—from Standardize to Measure to Control and, ultimately, to Continuously Improve. While, another dimension involves the progression of BPs associated with each of the domains, first addressing Project Management,

then Program Management, and finally, Portfolio Management. Each of these progressions is a continuum along which most organizations aspire to advance [2].

IV. CONCLUSION

Today successful completion of projects has become a source of competitive advantage for the organizations. Therefore, more and more organizations are concerned with assessing and improving their project management processes. To achieve this objective, organizations need project management maturity assessment models in commensuration to the additional information of which PMMM will assure to help them for achieving competitive advantage. In this paper we have tried to answer this question by contrasting the contemporary PMMMs with OPM3. As nearly all the contemporary PMMMs are based on capability maturity model (CMM), therefore instead of contrasting all the models with OPM3, we contrasted various morphological traits of CMM with OPM3 to determine which of them is better at predicting successful completion of projects, and, provide competitive advantage to the organizations. After analyzing both of the models, it was found that although CMM was developed earlier but, due to its unique structure OPM3 is the most promising maturity model for any organization undertaking projects to gain competitive advantage.

REFERENCES

- [1] Jugdev, K. and J. Thomas, Project Management Maturity Models: The Silver Bullets of Competitive Advantage? Project Management Journal, 2002. 33(4): pp. 4-14.
- [2] PMI, Organizational Project Management Maturity Model: OPM3 Knowledge Foundation. 2003, Project Management Institute (PMI) Inc.: Newtown Square, Pennsylvania USA.
- [3] PMI, 2010 Annual Report, in Building & Strengthening our Global Community. 2010, PMI.

- [4] Peterson, A.S. The impact of PM maturity on integrated PM processes. in Proceedings of the 31st Annual Project Management Institute 2000 Seminars and Symposium. 2000. Houston, TX: PMI.
- [5] Rosenstock, C., R.S. Johnston, and L.M. Anderson. Maturity model implementation and use: A case study. in Proceedings of the 31st Annual Project Management Institute 2000 Seminars and Symposium. 2000. Paris, France: PMI.
- [6] Soares, I. A real world look at achieving project management maturity. in Proceedings of the 29th Annual project Management Institute 1998 Seminars and Symposium. 1998. Long Beach, CA: PMI.
- [7] OGC, Portfolio, Programme & Project Management Maturity Model (P3M3). 2006, Office of Government Commerce.
- [8] Ibbs, W.C. and J. Reginato. Can good project management actually cost less? in Proceedings of the 33rd Annual Project Management Institute 2002 Seminars and Symposium. 2002. San Antonio, TX: PMI.
- [9] Ghorbanali, A., et al., Improving project management competency by using an OPM3 approach, in 2010 International Conference on Economics, Business and Management. 2011: Manila, Philippines.
- [10] Humphrey, W., *Managing the Software Process*. 1989: Addison Wesley.
- [11] Humphrey, W., Characterizing the software process: a maturity framework. *IEEE Software*, 1988. 5(2): p. pp. 73-79.
- [12] Crosby, P.B., *Quality is free*. 1979, New York: Mc-Graw Hill.
- [13] Crosby, P.B., *Quality is still free: making quality certain in uncertain times*. 1996, New York: Mc-Graw Hill.
- [14] Paulk, M.C., et al., *Capability Maturity Model SM for Software*, Version 1.1. 1993, Software Engineering Institute: Pittsburg.
- [15] Niazi, M., D. Wilson, and D. Zowghi, A maturity model for the implementation of software process improvement: an empirical study. *The Journal of Systems and Software*, 2005. 74(2).
- [16] Macbeth, D.K. and N. Ferguson, *Partnership sourcing: an integrated supply chain management approach*, ed. N. Ferguson. 1994, London: Financial Times: Pitman.
- [17] Szakonyi, R., *Measuring R&D Effectiveness-I. Research-Technology Management*, 1994a. 37(2): pp. 27-32.
- [18] Szakonyi, R., *Measuring R&D Effectiveness-II. Research-Technology Management*, 1994b. 37(3): pp. 44-55.
- [19] McGrath, M.E. and M.N. Romeri, The R&D effectiveness index: A metric for product development performance *Journal of Product Innovation Management*, 1994. 11(3): pp. 213-220.
- [20] Fraser, P. and M. Gregory, A maturity grid approach to the assessment of product development collaboration, in 9th international product development management collaborations. 2002: Sophia Antipolis.
- [21] Sander, C.P. and C.A. Brombacher, Analysis of quality information flows in the product creation process of high-volume consumer products *International Journal of Production Economics*, 2000. 67(1): pp. 37-52.
- [22] Tiku, S., M. Azarian, and M. Pecht, Using a reliability capability maturity model to benchmark electronics companies. *International Journal of Quality & Reliability Management*, 2007. 24(5): pp. 547-563.
- [23] Prado, A., MPCM - Maturity by Project Category Model, Available on: <http://www.maturityresearch.com/novosite/en/index.html>.
- [24] Prado, D., *Project Management Maturity Model (Prado-PMMM)*. 2006: INDG-Tecs.
- [25] OGC, *PRINCE2-Projects in Controlled Environments*. 2004, Office of Government Commerce: UK.
- [26] Garies, R., *Competencies in the project-oriented organization*, Projekt Management Group.
- [27] BMC, *Project Management Maturity Model*. 2003, Business Management Consultants (BMC).
- [28] Voivedich, B. and M. Jones, *Developing and Applying A Project Management Capability Maturity Model*, PMCC Inc.
- [29] Hillson, D. Benchmarking Organizational Project Management Capability. in Proceedings of the Project Management Institute Annual Seminars & Symposium. 2001. Nashville, Tenn., USA.
- [30] Martinelli, R. and J. Waddell, *The Program Management Maturity Model: A Framework for Change*, in *PM World Today*. March 2007.
- [31] AIPM, *National Competency Standards For Project Management*. 2004, Australian National Training Authority.
- [32] Kwak, Y.H. and C.W. IBBS, *The Berkley Project Management Process Maturity Model: Measuring the Value of Project Management*. 2000, IEEE.
- [33] Kwak, Y.H. and C.W. Ibbs, *Project Management Process Maturity (PM2) Model*. *Journal of Management in Engineering*, 2002. 18(3).
- [34] SEI, *People Capability Maturity Model (P-CMM)*. 2009, Software Engineering Institute (SEI).
- [35] BDII, *Capability Maturity Model® for Business Development*, Version 1.0. 2003, Business Development Institute International.
- [36] DTI, *Innovation - Your Move: Company Focus; a Self Assessment Guide (Managing in the '90s)*. 1994, London: Great Britain Dept. of Trade and Industry.
- [37] Shewhart, W.A., *Economic control of quality of manufactured product*. 1931, New York,: ASQ Quality Press.
- [38] Gareis, R. and M. Huemann, *Project Management Competences in the Project-oriented Organisation*, in In: Turner JR, Sinister SJ, (Eds.), *The Gower handbook of project management*. 2000, Gower: Aldershot.
- [39] Radice, R.A., et al., *A programming process study*. *IBM Systems Journal*, 1985. 24(2).
- [40] Humphrey, W., *Three process perspectives: Organizations, teams, and people*. *Annals of Software Engineering*, 2002. 4: pp. 39-72..

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