INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 13, Issue 5, (2023) E-ISSN: 2222-6990

The Decline of Project Management Maturity Models: A Review Paper

Muhammad Abdul Karim[1], Ong Tze San[1,2], Haslinah Muhamad[1]

[1]School of Business and Economics, Universiti Putra Malaysia, Serdang 43400, Selangor, Malaysia, [2]Department of Business and Administration, Daffodil International University; Daffodil Smart City 1207, Dhaka, Bangladesh

Email: karimgedang@gmail.com, tzesan@upm.edu.com.my, hasm@upm.edu.com.my

Correspondence Author Email: karimgedang@gmail.com

To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v13-i5/16972 DOI:10.6007/IJARBSS/v13-i5/16972

Published Date: *19* May 2023

Abstract

Many organizations today utilize projects as a strategic tool to achieve business objectives. As a result, project success becomes critical, making project management a crucial function in an organization. The project success rate globally has not been improving, and project management maturity models (PMMM) are now being further scrutinized. The PMMM is struggling to claim its value toward project success despite its success in the IT industry since its inception in late 1980s. However, since 2014, its publications have been on a decline. This paper attempts to investigate the reason behind its decline. Based on content analysis, information from previous studies was gathered and then combined so as to identify the possible cause of this decline. Three remaining issues leading to its deterioration were detected. It is -PMMM too-best-practices-centred type of model, inflexible, too complex, and plagued as an inadequate assessment tool. These issues have caused the PMMM to be a "hard sell" to the industries. The outcome derived contributes to a better understanding of the issues causing the decline of the PMMM in publication. Although once considered a successful tool for improving project success rate, the PMMM may become defunct in current project management environments without continuous research and improvement.

Keywords: Review Paper, Project Management Maturity (PMM), Project Management Maturity Model (PMMM), Project Success, Best Practices

Introduction

In today's competitive and challenging environment, organizations use project management as a strategic tool to achieve business objectives. Lundin et al (2015) noted that the need for project management intensifies as the world shifts into a "projectified society". They argued that a society's "projectification" is evidenced by the increase of human resources and gross domestic products (GDP) resulting from activities related to projects. Kerzner and Saladis

(2011); Turner and Miterev (2019) also asserted that organizations should view and adopt project management as a business process. In this way, project management could function effectively as a strategic tool for organizations to achieve organizational business objectives. Nevertheless, organizations' capability to deliver business objectives through project success would depend on organizational project management effectiveness. This is measured as the level of its maturity (de Carvalho, Patah, & de Souza Bido, 2015; PwC, 2007; Yazici, 2020). Figure 1 illustrates how this relationship is visualized.

Figure 1- Relationship between PM adoption, maturity level, and project performance
Source: (de Carvalho et al., 2015; Yazici, 2020)

Previous studies defined project management maturity (PMM) as an organization's effectiveness at performing certain tasks and pursuing continuous improvement (Cooke-Davies & Arzymanow, 2003; Crawford, 2006). This definition has evolved to be termed as a state of organizational capability and preparedness to implement the project.
Since the early 80s, academicians and professionals (Grant & Pennypacker, 2006; Kostalova & Tetrevova, 2018) has developed more than 30 project management maturity models (PMMM). Despite its numerous models, the project success rate has not increased significantly (Anantatmula & Rad, 2018).
The PMMM has been described as a "hard sell" model (Pells, 2020) beyond its industry of origin. Over the years, its significance has declined (Karim et al., 2022). Publications in the PMMM decreased since 2011, but post-2014 and 2015, publications increased slightly due to the special issues published by the International Journal of Managing Projects in Business in 2014 (Pasian, 2014). Figure 2 presents publication of PMMM trend between 2011 to 2021.

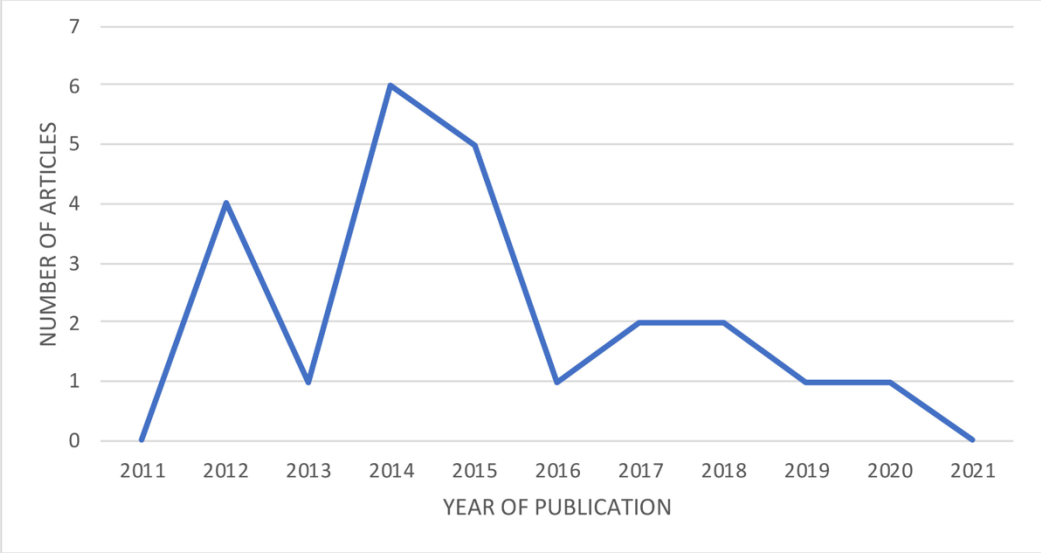

Figure 2. PMMM Publication Trend from 2011 to 2021
Source: Karim et al (2022)

Literature

Project management as a strategic tool

The competitive and challenging environment of today's business world has pushed many organizations to use project management as a strategic tool for achieving their business objectives (Anantatmula & Rad, 2018; Hillson, 2003). Despite the many publications on project management (PM) in articles, journals, and various media, project management has achieved little success. Perhaps this is to do with the various definitions of project management depend on its function to the specific organization.

Scholars, practitioners, academicians, and the professional society, have developed different interpretations of the PM (Kwak & Anbari, 2009). These definitions carried some differences in meaning because each definition was derived from the respective viewpoint based on the purpose of the PM itself. Cooke-Davies and Arzymanow (2003), for instance, described the PM as a discipline created from the global experience of a practitioner, a "community of practice." A prominent global institute, the Project Management Institute (PMI), defined PM as the discipline of applying knowledge, tools, techniques, and skills (PMI, 2017). Other studies viewed PM as a core competence of any project-related organization; the extent of its competence could lead to a competitive advantage for an organization (Gareis, 2000; Hillson, 2003). Thus, the PM was viewed as a goal-oriented and deterministic discipline (Morris, 2002).

This paper adopts the definition of PM as a discipline of applying knowledge, tools, techniques, and skills. It further adds that PM is an organization's core competence used to achieve the intended business objectives, for instance, elevating the organization's competitive edge.

PMM as a Concept in PM

Most organizations rely on their project management capability to achieve their business objectives, as seen through successful projects (de Souza & Gomes, 2015). In order to improve the project's success rate, project management maturity (PMM) has become an important concept in project management Crawford (2001); Kerzner (2019), for example, the success rate of an IT development project.

Some researchers defined PMM as the state of an organization's current PM practices, processes, and effectiveness in performing certain tasks and pursuing a continuous improvement (Cooke-Davies & Arzymanow, 2003; Crawford, 2006; Kwak & William, 2000). Others like Andersen and Jessen (2003) defined PMM as an organization that is "perfectly conditioned to deal with its project." Albrecht and Spang (2014a) expanded by saying that organizations need to adapt to the advancement of PM and PMM. They suggested that the PMM is the ideal maturity level derived from the "considerations of efficiency and fit of the organization's structures to the environment" (Albrecht & Spang, 2014a) as proposed in the contingency theory (Donaldson, 2001).

The PMM was further defined as the state of an organization's capability and preparedness in implementing PM practices and processes. Kerzner (2019) thus mentioned that there is no universally accepted definition of the PMM because organizations can be project-driven or non-project-driven, depending on the nature of their industry. In line with Andersen and Jessen (2003); Albrecht and Spang (2014a), the current paper also considers the PMM as a means for measuring the ideal level of an organization's PM effectiveness of practices and processes. In this regard, it is adequate to provide organizations with the capability to deliver successful projects.

Project Management Maturity Model (PMMM)

The PMMM was introduced as a conceptual structure that defines the maturity of the area of interest of an organization. It can quantify an organization's ability to manage a project successfully. This definition describes the processes an organization will need to develop to reach a desired future state (de Souza & Gomes, 2015; Kostalova & Tetrevova, 2018).

Origin of Project Management Maturity Model

The Project Management Maturity Model (PMMM) evolved from the Capability Management Maturity (CMM) model developed by the Software Engineer Institute (SEI) back in 1989 (Irfan et al., 2020). Models are process-oriented (Khoshgoftar & Osman, 2009). Many argued that the PMMM originated from the field of quality management, evidently for having the element of Statistical Process Control (SPC) and for using Total Quality Improvement (TQM) as an element of the continuous improvement (Mullaly, 2014). In this regard, the PMMM is a specific improvement methodology and a tool for measuring the improvement result to support new product development (NPD) in the Information Technology (IT) industry. It aimed to ensure that the NPD could be delivered with a higher success rate in a repeatable and predictable manner.

Evolution and application of the PMMM

The PMMM evolved, resulting in the creation of many models. In their 2001 study, Grant and Pennypacker (2006) uncovered 30 models. This was increased to 43 models recently by (Kostalova and Tetrevova, 2018). Nevertheless, analysis suggests that the adoption of the PMMM was lesser among organizations in the oil and gas industry (de Souza & Gomes, 2015). It was further revealed that 101 publications on the PMMM were detected in the IT industry, and only two publications were related to the gas and energy industry. This phenomenon has drawn more attention for further studies to understand why the PMMM was not widely used to manage projects outside the IT industry.

Dimensions of the PMMM

As a conceptual improvement structure, the PMMM had also been studied by Andersen and Jessen (2003), who identified three dimensions necessary for making improvements. They include attitude, knowledge, and action. Meanwhile, Hillson (2003) posited that culture, process, experience, and application are also necessary. Recent scholars like Görög (2016) took a more holistic view by categorizing the dimensions into individual aspects (non-process) and organizational process (process) aspects. Görög (2016) mentioned that dimensions should consider market demands while organizations should focus on methodology, IT resources, managerial skills, relationships, and communication to develop their process further and improve organizational project management maturity.

Levels of the PMMM

The PMM was defined by the Project Management Institute (2013) as the state of an organization's project management capability in achieving organizational strategies to produce better performance, better results, and sustainable competitive advantage in a predictable and repeatable manner.

Previous studies such as Crawford (2014); Kerzner (2019) had listed maturity in five levels: the initial process, the structural process and standard, organizational standards and institutionalized standard process, managed process, and the optimizing process. Since then,

this structure has not changed much; it continues to be used by scholars like (Galli, 2018; Žurga, 2018). Based on this, it can be deduced that organizational project management maturity is a dynamic process that has evolved over time. Scholars such as Albrecht and Spang (2014a) have also characterized each stage of its metaphorical change.

Application of the PMMM

de Souza and Gomes (2015) noted the broad use of the PMMM in IT but lesser in other industries. This lack has inspired more research to be conducted on project management maturity. Separately, Mullaly (2014) focused on the analysis of the benefits of the PMMM. He also proposed that future studies should look for maturity improvements to enhance organizational performance and capability in delivering business benefits. This was also asserted by (Albrecht and Spang, 2014a).

Methodology

Using content analysis to gather and analyse data, this paper focuses on past studies published on the PMMM. These publications were traced back to the last ten years, between 2012 to 2022, to capture current issues on the PMMM and, if any, the latest developments of the PMMM.

The literature search was based on two databases (Nagendrababu et al., 2019), viz. Scopus and ProQuest. They include the Business Process Management Journal, the Engineering Management Journal, and the International Journal of Project Management.

The search string began with “project management maturity” applied to both databases. Articles were filtered through quality assessment criteria, such as in English, articles and research papers, and project management maturity (Okoli & Schabram, 2010).

Discussion

Since its inception in the late 1980s, researchers have criticized the PMMM for its effectiveness in delivering their premise and the construct of the models as a tool. To ensure the continuous improvement of the PMMM, it is necessary to identify and understand the issues involved in the PMMM. The outcomes derived from this paper indicated that the three most common issues hindered the PMMM. It was experiencing fewer publications because – the PMMM was too-best-practices centred (Nenni et al., 2014), the PMMM was inflexible and too complex (Albrecht & Spang, 2014b; Görög, 2016), and the PMMM found as an inadequate assessment tool (Brookes & Clark, 2009; Viana & Mota, 2016).

The PMMM was too-best-practices Centred

Previous studies concluded that adopting best practices could ensure organizations achieve their intended maturity level (Nenni et al., 2014; Viana & Mota, 2016). PMMM model issued by PMI, the OPM3 said to be based on 600 best practices (Nenni et al., 2014). This caused previous studies to have two streams of opinions. The first stream suggested that adopting best practices was a faster way for organizations to meet their intended maturity level. The second stream proposed that relying on best practices would make the models too comprehensive and too complex to adopt, making them unsuitable for organizations. Table 1 further illustrates this.

Table 1
Most common issues in PMMM

Issues		Authors of reference
PMMM centred	too-best-practices	Viana and Mota (2016) Langston and Ghanbaripour (2016) Nenni et al. (2014) Crawford (2014) Backlund, Chroneer, and Sundqvist (2014) Cooke-Davies and Arzymanow (2003)
Inflexible, too complex model		Gareeb and Rwelamila (2021) Seelhofer and Graf (2018) Langston and Ghanbaripour (2016) Viana and Mota (2016) Görög (2016) Albrecht and Spang (2014b) Pasian, Sankaran, and Boydell (2012)
Inadequate assessment tools		Viana and Mota (2016) Nenni et al. (2014) Albrecht and Spang (2014b)

Source: Authors own compilation

According to Nenni et al (2014), the OPM3 was developed based on 600 best practices came from an accumulation of experiences and knowledge sharing between the "community of practice" (Cooke-Davies & Arzymanow, 2003). Best practices also came about as a result of the maturity assessment that later became a recommendation for an organization to achieve the maturity level. Hence, the recommended practice became a recommendation for organizations to apply to achieve the intended maturity level.

However, such recommended best practices were not a 'one-size-fits-all' tool. They may not be appropriate for certain organizations even though they may be effective for other organizations. This is because other organizational aspects may also influence adopting the maturity model (Karim et al., 2022; Nenni et al., 2014). Each organization operates in different contexts and is driven by different strategies (Crawford, 2014; Langston & Ghanbaripour, 2016).

One possible reason for this variation is that the PMMM had been found to be overly restrictive (Andersen & Jessen, 2003). It was said to make more emphasis on best practices rather than the integration between organizational business objectives and project outcomes (Backlund et al., 2014). This lack of integration made the PMMM impractical and lost its value (Langston & Ghanbaripour, 2016).

Too-best-practices-centred PMMM may not fit an organization with different structures and environments. For such organizations to adopt such a model, they may need to adopt other unnecessary practices. Therefore, adopting best practices without customization to fit other influencing factors in the organization may not necessarily contribute to maturity level.

The PMMM was inflexible and too complex to apply

The most common issue regarding the PMMM structure is that it is too complex and not flexible to use as an assessment tool (Görög, 2016). This makes it difficult for practitioners in the industry to apply.

Albrecht and Spang (2014b) highlighted that the PMMMs were too complex to practice; they demanded voluminous information to complete the assessment. This demand could cause the organization's project management maturity assessment effort to become labour-intensive, making it costly and time-consuming. This phenomenon occurs when organizations rely on consultants' support to perform the necessary assessment, making the implementation a burden to the organizations. Consequently, organizations tend to abandon the implementation because the investment has become too expensive than the benefit it offers.

Previous studies have also indicated that the model was too rigid. Most PMMMs were still based on the 'one-size-fits-all' measurement (Langston & Ghanbaripour, 2016). Organizations were expected to use the models so as to achieve their highest maturity level. To meet the highest level, models forced organizations to adopt best practices that were more than what organizations needed to do. Viana and Mota (2016) noted that these models were process-oriented and bureaucratic; they ignored organizational contexts. Best practices-oriented models, such as the OPM3 (Gareeb & Rwelamila, 2021), are used by trained practitioners or external consultants when assessing organizational project management maturity. However, the fact remains that some of the best practices may not fit specific organizational environments (Pasian et al., 2012).

The model was also too complex because it uses a complex structure to assess maturity. According to Hillson (2003), this complex structure made implementing and interpreting the collected information challenging. The too-complex model was inefficient for assessment. As Seelhofer and Graf (2018) suggested, this model only addressed tacit but not implicit project management knowledge areas.

Moreover, organizations tend to focus on areas relevant to their needs so as to increase their project management capability. For instance, the ProPMMM (Hillson, 2003) was designed to provide a straightforward assessment; it mainly highlights the organization's current project management's weaknesses and strengths. This type of model also provides a focus of attention for improvement.

The PMMM an Inadequate Assessment Tool

The PMMM has also been criticized for being an inadequate tool in assessing organizational project management maturity. Nenni et al (2014) highlighted that the assessment result frequently disappoints the user. Assessment elements needed to be more reactive and insufficient to convince the user who expected results in the scoring method. Nenni et al (2014) found that maturity models such as the OPM3 require more rigorous protocols for evaluating project management maturity. This finding was also supported by Viana and Mota (2016). They mentioned that organizations used the PMMM reactively; it has no rigorous protocols in the evaluation. They also found that the PMMM carried many omissions in its evaluations, including organizational culture and rapid change in management direction. With these shortcomings in the PMMM, Viana and Mota (2016) suggested that the model needs to be enhanced to stimulate change in the organization. Other organizational factors must be considered for the PMMM to improve as a holistic assessment tool. To advance, PMMM should not be limited to the project environment only.

Conclusion

This review paper successfully reveals three issues related to PMMM. Based on the information collected from past publications spanning ten years, PMMMs were found as a too-best-practice-centred model, inflexible and too complex to apply, and an inadequate assessment tool. These three main issues are believed to be why PMMM has become a "hard sell" to the industries.

The analysis performed by this paper also found no evidence of improvement in the PMMM thus far. This outcome makes the PMMM less attractive for adoption by project management practitioners. Consequently, there was a decline in its publications.

Therefore, researchers and academicians must continuously improve the existing models by taking a holistic view. They also need to understand better how project management practitioners approach their organizations when realistically managing projects. The improvement of the PMMM needs to consider what works among practitioners. Further research should bring the researchers and the academicians closer to the practitioner, thereby providing a more accurate solution based on actual practices in the industries.

Acknowledgements

The authors would like to thank the Associate Editor and anonymous reviewers for their helpful comments, which improved this article.

References

Albrecht, J. C., & Spang, K. (2014a). Linking the benefits of project management maturity to project complexity: Insights from a multiple case study. *International Journal of Managing Projects in Business, 7*(2), 285-301.

Albrecht, J. C., & Spang, K. (2014b). Project complexity as an influence factor on the balance of costs and benefits in project management maturity modeling. *Procedia-Social and Behavioral Sciences, 119*, 162-171.

Anantatmula & Rad. (2018). Role of Organizational Project Management Maturity Factors on Project Success. *Engineering Management Journal, 30*(3), 165-178.

Andersen, E. S., & Jessen, S. A. (2003). Project maturity in organisations. *International Journal of Project Management, 21*(6), 457-461.

Backlund, Chroneer, D., & Sundqvist, E. (2014). Project Management Maturity Models - A Critical Review A case study within Swedish engineering and construction organizations. *Procedia-Social and Behavioral Sciences, 119*, 837-846.

Brookes, N., & Clark, R. (2009). *Using maturity models to improve project management practice.* Paper presented at the POMS 20th Annual Conference.

Cooke-Davies, T., & Arzymanow, A. (2003). The maturity of project management in different industries: An investigation into variations between project management models. *International Journal of Project Management, 21*(6), 471-478.

Crawford, J. K. (2006). *Project management maturity model*: Auerbach Publications.

Crawford, J. K. (2014). *Project management maturity model*: Auerbach Publications.

De Carvalho, M. M., Patah, L. A., & de Souza Bido, D. (2015). Project management and its effects on project success: Cross-country and cross-industry comparisons. *International Journal of Project Management, 33*(7), 1509-1522. doi:10.1016/j.ijproman.2015.04.004

De Souza, T. F., & Gomes, C. F. S. (2015). Assessment of maturity in project management: a bibliometric study of main models. *Procedia Computer Science, 55*, 92-101.

Donaldson, L. (2001). *The contingency theory of organizations*: Sage.

Galli, B. J. (2018). Project Management Maturity Models: An Overview of the Common Models and a Proposed Uniform Model. *International Journal of Applied Logistics (IJAL), 8*(2), 19-38.

Gareeb, N., & Rwelamila, P. D. (2021). Rethinking project management maturity models for the South African power sector. *African Journal of Science, Technology, Innovation and Development*, 1-15.

Gareis, R. (2000). *Competences in the Project-oriented Organization.* Paper presented at the Proceedings of PMI Research Conference.

Gorog, M. (2016). A broader approach to organisational project management maturity assessment. *International Journal of Project Management, 34*(8), 1658-1669.

Grant, K. P., & Pennypacker, J. S. (2006). Project management maturity: an assessment of project management capabilities among and between selected industries. *IEEE Transactions on engineering management, 53*(1), 59-68.

Hillson, D. (2003). Assessing organisational project management capability. *Journal of Facilities Management, 2*(3), 298-311.

Irfan, M., Hassan, M., Hassan, N., Habib, M., Khan, S., & Nasruddin, A. M. (2020). Project Management Maturity & Organizational Reputation: A Case Study of Public Sector Organizations. *IEEE Access*.

Karim, M. A., Ong, T. S., Ng, S. H., Muhammad, H., & Ali, N. A. (2022). Organizational Aspects and Practices for Enhancing Organizational Project Management Maturity. *Sustainability, 14*(9), 5113.

Kerzner, H. (2019). *Strategic planning for project management using a project management maturity model* (Third ed.): John Wiley & Sons.

Kerzner, H., & Saladis, F. P. (2011). *Value-driven project management* (Vol. 1): John Wiley & Sons.

Khoshgoftar, M., & Osman, O. (2009). *Comparison of maturity models.* Paper presented at the 2009 2nd IEEE International Conference on Computer Science and Information Technology.

Kostalova, J., & Tetrevova, L. (2018). Proposal of Project Management Methods and Tools Oriented Maturity Model. *Gestão e Projetos: GeP, 9*(1), 1-23.

Kwak, Y. H., & Anbari, F. T. (2009). Analyzing project management research: Perspectives from top management journals. *International Journal of Project Management, 27*(5), 435-446.

Kwak, Y. H., & William, C. (2000). *The Berkeley project management process maturity model: measuring the value of project management.* Paper presented at the Engineering Management Society, 2000. Proceedings of the 2000 IEEE.

Langston, C., & Ghanbaripour, A. N. (2016). A Management Maturity Model (MMM) for project-based organisational performance assessment. *Construction Economics and Building, 16*(4), 68.

Lundin, R. A., Arvidsson, N., Brady, T., Ekstedt, E., & Midler, C. (2015). *Managing and working in project society*: Cambridge university press.

Morris, P. W. (2002). Science, objective knowledge and the theory of project management. *Civil Engineering, 150*(2), 82-90.

Mullaly. (2014). If maturity is the answer, then exactly what was the question? *International Journal of Managing Projects in Business, 7*(2), 169-185.

Nagendrababu, V., Pulikkotil, S., Sultan, O., Jayaraman, J., Soh, J., & Dummer, P. (2019). Effectiveness of technology-enhanced learning in Endodontic education: a systematic review and meta-analysis. *International endodontic journal, 52*(2), 181-192.

Nenni, M. E., Arnone, V., Boccardelli, P., & Napolitano, I. (2014). How to increase the value of the project management maturity model as a business-oriented framework. *International Journal of Engineering Business Management, 6*(1). doi:10.5772/58292

Okoli, C., & Schabram, K. (2010). A guide to conducting a systematic literature review of information systems research.

Pasian, B. (2014). Extending the concept and modularization of project management maturity with adaptable, human and customer factors. *International Journal of Managing Projects in Business, 7*(2), 186-214.

Pasian, B., Sankaran, S., & Boydell, S. (2012). Project management maturity: a critical analysis of existing and emergent factors. *International Journal of Managing Projects in Business, 5*(1), 146-157. doi:http://dx.doi.org/10.1108/17538371211192946

Pells, D. L. (2020). Whatever Happened to Organizational PM Maturity.

PMI. (2017). *A guide to the Project Management Body of Knowledge* (Sixth Edition ed.). Newton Square, Pennsylvania: Project Management Institute.

PwC. (2007). *Insights and Trends: Current Programme and Project Management Practices*. Retrieved from

Seelhofer, D., & Graf, C. O. (2018). National Project Management Maturity: A Conceptual Framework. *Central European Business Review, 7*(2), 1.

Turner, R., & Miterev, M. (2019). The Organizational Design of the Project-Based Organization. *Project Management Journal, 50*(4), 487-498.

Viana, J. C., & Mota, C. M. D. M. (2016). Enhancing Organizational Project Management Maturity: a framework based on the value focused thinking model. *Production, 26*(2), 313-329.

Yazici, H. J. (2020). An exploratory analysis of the project management and corporate sustainability capabilities for organizational success. *International Journal of Managing Projects in Business*.

Zurga. (2018). Project Management in Public Administration. TPM-Total Project Management Maturity Model. The Case of Slovenian Public Administration. *Transylvanian Review of Administrative Sciences, 14*(53), 144-159.