A broader approach to organisational project management maturity assessment

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Abstract

Around the new millennium, organisational project management maturity was a frequently occurring topic both in international conferences and professional journals. Many of the maturity models were published during this period. The response from professionals was largely positive, although there was also criticism in the literature. Many organisations, at the same time, have made investments in applying maturity models with little return in improved success rate achieved on their projects. Currently, this topic also attracts more attention coupled with challenging criticism. Central to this criticism are the inherent mechanistic approach and the subsequent narrow focus of the maturity models. The primary aim of this paper is to introduce a broader approach to project management maturity assessment, deduced from project management literature, which might address the criticism regarding the existing models, while it has the potential for developing more appropriate maturity models.

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Keywords: Broader approach to project management maturity; Conceptual bases of project management maturity; Project management maturity models

1. Introduction

Nowadays, it is broadly accepted by both academics and practitioners that projects are the means by which organisations implement those beneficial changes which are implied in their strategic objectives. Revealing the strategic role of projects was pioneered by Cleland (1990) and it was continued by many authors (e.g. Andersen and Jessen, 2003; Cooke-Davies et al., 2009; Grundy, 1998; van den Honert, 1994; Kwak and Anbari, 2008; Leybourne, 2007; Mc Elroy, 1996) throughout the past decades. Because of the turbulent operational environment in which organisations operate, the strategic role of projects implies that organisations need to manage the implementation of a portfolio of projects which encompass both single-projects and project programs (Görög, 2011). Thus project management has become an issue which needs to be considered at organisational level (c.f. Aubry et al., 2008). This need led to the concept of organisational project management maturity at the end of the nineties (c.f. Cooke-Davies, 2004). Many of the maturity models were introduced around the turn of the new millennium, and many project management maturity related papers were published during this time. Currently, the topic of maturity seems to attract an increasing interest again; for example, Iqbal (2013) provided an overview of the existing maturity models recently, while Pasian (2011) and Torres (2014) devoted their PhD thesis work to project management maturity. At the same time, International Journal of Managing Projects in Business devoted a special issue to the topic of project management maturity in 2014.

The concept of project management maturity of organisations stems back to the concept of process maturity (Cooke-Davies, 2002a; Cooke-Davies and Arzymanow, 2003). First, the Software Engineering Institute of Carnegie-Mellon University implemented their Capability Maturity Model (CMM) in order to improve software development efforts (c.f. Humphrey, 1992).

Skulmoski (2001) considers organisational project management maturity as a certain kind of organisational receptivity to managing projects. At the same time, Andersen and Jessen (2003) say that organisational project management maturity is an indication or a measurement of an organisation’s ability to deal with projects. Kwak and Ibbs (2002) emphasise that organisational project management maturity needs to reflect the actual level of dealing with projects. The outcomes of such a comparison highlight both the advantageous and disadvantageous
The aim of this paper is to introduce a broader approach to assessing project management maturity of organisations drawn from existing project management literature. In order to achieve this end, revealing the main features of the existing maturity models, and highlighting the views found in literature on these models are needed. The author believes that his proposed approach could lead to higher potential for increasing success rate of projects in the organisations.

To achieve the aim of this paper, the author adopts the assumption that based on

- a broader view on the concept of project success (and the associated success criteria),
- the concept of organisational project management (and the associated project governance structure).

A broader approach to assessing organisational project management maturity could be formulated.

The paper is organised as follows: The following section is a literature review on organisational project management maturity models. It provides a general overview of the existing maturity models and highlights the main features of these models, while it summarises the outcomes of the use of maturity models in organisations to assess their maturity level, then the associated critical remarks found in the literature are introduced. Following this section, the underlying concepts of the proposed broader approach to the project management maturity assessment is introduced. This section is followed by revealing the implications of the previously introduced concepts, then the framework of the proposed maturity models is introduced in brief. A summary and conclusions section highlights both the theoretical contributions and the practical implications of the proposed broader approach to the organisational project management maturity assessment. Finally, limitations and the likely further research are emphasised at the end of the paper.

2. Literature on organisational project management maturity models

This literature review has a twofold aim. One of them is to highlight the main features of the existing maturity models. The other one is to reveal the shortcomings of existing approaches to maturity models found in the literature.

Both the advent and the beginning of the new millennium saw a certain proliferation of organisational project management maturity models. Estimations suggest that the number of these models exceeds 30 (c.f Cooke-Davies, 2004; Pennypacker and Grant, 2003); however, Iqbal (2013) identifies roughly 60 different models. Cooke-Davies (2002a) defines three types of the maturity models: (a) those that focus on the project management process (i.e., the implied knowledge areas), (b) those that focus on the technical process of developing the project outcome (e.g., software development process), and (c) those that focus on organisational maturity in the wider sense. Brooks and Clark (2009) classify the existing maturity models based on the: (a) delineation of the term maturity, (b) the knowledge area considered in the models, and (c) the scope of the
models. These authors state that understanding the term maturity is the only common feature of the existing models. However, Brooks and Clark (2009) have found considerable differences regarding the knowledge area considered in the models, ranging from standard knowledge areas to such knowledge areas that are defined by authors, and they find models which focus on the project management process, while others consider organisational related factors as well. Torres (2014) differentiates maturity models based on their approach to determining maturity stage of organisations. In this way, he differentiates (a) continuous models that define a baseline for assessment and (b) staged models that define steps of maturity.

Being inspired by Brooks and Clarke’s classification, the author proposes classifying the existing project management maturity models according to (a) their underlying notion, (b) their implied primary aim of assessment, (c) the type of assessment criteria, and (d) the considered project management domains.

Models based on notion tend to be ladder-based models and spider-web-based models, while those based on the stated primary aim of assessment tend to be development-centred (i.e., assessment outcomes are used to develop maturity based on a predefined development method included in these models) and evaluation-centred (i.e., the immediate aim is the assessment itself, predefined development method is not included) models. Those based on the type of assessment criteria tend to be either maturity models which rely on a certain documented set of standard knowledge areas, or models which rely on professional conjecture or experience-based evidence (e.g., common consent, best practice). At the same time, the considered project management domains may include single-project management, program management, and project portfolio management. Therefore, a certain project management maturity model may fall under different groups simultaneously.

A typical example of those maturity models which adopt the ladder notion, a documented standard knowledge area (PMI’s PMBoK) as assessment criteria, as well as being evaluation-centred solutions, while it focuses on single-project management, is the PM Solutions’ Project Management Maturity Model (Crawford, 2007; Pennypacker and Grant, 2003). The Berkeley Project Management Process Maturity Model (Ibbs et al., 2004) is very similar to the aforementioned model. Another maturity model which also adopts the ladder notion and is considered to be an evaluation-centred solution, although it relies on professional conjecture or experience-based evidence (e.g., common consent, best practice). At the same time, the considered project management domains may include single-project management, program management, and project portfolio management. Therefore, a certain project management maturity model may fall under different groups simultaneously.

Another part of the literature implies criticisms and highlights some weaknesses of the maturity models. Andersen and Jessen (2003) stress the narrow focus, i.e., the adopted process view, of the approach to many maturity models. Cooke-Davies and Arzymanow (2003) also did not find unambiguous empirical justification on maturity models’ contribution to better project performance and, in this way, long-term organisational success. Currently, Brooks et al. (2014) point out the lack of empirical evidence regarding the relationship between higher level project management maturity and higher level project performance.

In the literature, however, there is some scepticism regarding the assessment of organisational project management maturity. Ibbs and Kwak (2000) could not identify significant correlation between the use of maturity models and project success. Similarly, Mullaly (2006) did not find the use of maturity models as a leverage of organisational competitive advantage. Yazici (2009) also did not find unambiguous empirical justification on maturity models’ contribution to better project performance and, in this way, long-term organisational success. Currently, Brooks et al. (2014) point out the lack of empirical evidence regarding the relationship between higher level project management maturity and higher level project performance.
further when they give a more detailed criticism of project management maturity models. These authors emphasise first of all that these models give a mechanistic view of the organisations, thus they postulate that higher level maturity can be achieved “through documents, surveys, guidelines, templates, or manuals” (Jugdev and Müller, 2005, p 21). These authors also state that the models generally rely on tangible assets and explicit knowledge, while they fail to consider intangible assets, such as human and organisational assets, and tacit knowledge (c.f. Hillson, 2003; Jugdev, 2004; Jugdev and Müller, 2005; Thomas and Mullaly, 2007). Accordingly, many authors (Brooks and Clark, 2009; Grant and Pennypacker, 2006; Lee and Anderson, 2006; Thiry, 2010; Wheatley, 2007), in order to achieve higher level maturity, state clearly the need for identifying the organisational level determinants of project management efficacy that need to be included within maturity models.

At the same time, many of the maturity models “are based on anecdotal material, case studies, or espoused best practices” (c.f. Jugdev, 2004, p 20), while their reliability, in most of the cases, is not justified empirically (c.f. Torres, 2014). In line with the previously cited authors, Yazici’s (2009) research into the relationships between project management maturity and project performance reveals that the contribution of project management maturity to better project performance was determined by the characteristics of the organisational culture to a great extent. Pasian (2014) also points out the decisive role of non-process factors in achieving more matured project management, especially in case of poorly defined projects. Recently, Mullaly (2014) stresses the need for considering both the organisational and contextual factors, and he points out the need for a contingent view, both in terms of project process and context, of maturity assessment.

Hillson (2003) then Thomas and Mullaly (2007) point out that a few of the models require a bulk of information which may lead to considerable time and cost when assessing the maturity status. In addition, Hillson (2003) and Torres (2014) stress that the overly complex structure of many maturity models might make the assessment of maturity difficult which could lead to difficulties of interpreting the outcomes and implementing development objectives. Meanwhile, O’Hara and Levin (2000), to support organisations achieving higher level maturity, recommend such a metric system which could help avoiding both time and cost consuming assessment.

In his recent paper, Mullaly (2014), in terms of presumptions, formulates very challenging statements, which might be considered to be a certain kind of summary of the previous critical remarks, regarding project management maturity models and the associated maturity assessment. The first one is the presumption of uniformity which implies that maturity models postulate a repeatable process performance, while the degree and extent to which consistency is required for different projects are ignored. The second one is the presumption of certainty and control which implies that deviation from established process means less matured project management. The third one is the presumption of better which implies that improved project management maturity leads to more value creation, i.e., more successful projects. The fourth one is the presumption of meaningful which implies that process itself is an appropriate tool to improve project management maturity, thus situational (contextual) factors are undervalued. The fifth one is the presumption of relevant which implies that maturity models are appropriate assessment tools.

As a concluding summary of the literature on organisational project management maturity assessment, the author of this paper might state that:

- The authors criticise the narrow process-based view and the mechanistic approach implied in the models, and stress the lack of a broader approach (e.g., Cooke-Davies, 2004; Jugdev, 2004; Jugdev and Müller, 2005; Mullaly, 2014).
- The authors stress the lack of considering organisational level determinants and other contextual factors which also shape the organisational project management maturity (e.g., Brooks and Clark, 2009; Grant and Pennypacker, 2006; Hillson, 2003; Thomas and Mullaly, 2007; Wheatley, 2007).
- The authors point out that many of the models are overly complex, and they require a bulk of information to complete the assessment of maturity (e.g., Hillson, 2003; O’Hara and Levin, 2000; Torres, 2014).

At the same time, the current approach to organisational project management maturity assessment is not underpinned by means of the commonly agreed concepts of project management. This statement seems to be justified, at least indirectly, by the contradicting outcomes of those researches that aimed at evaluating project management maturity of different organisations based on different maturity models (c.f. Grant and Pennypacker, 2006; Levene et al., 1995; Mullaly, 2006). Although most of the existing maturity models do not satisfy the expectations properly, the author of this paper might state that the concept of organisational project management maturity has relevance. It implies the potential for both improving project management preparedness and the associated increasing success rate of projects in the organisations. Actually, this likely potential was the underlying idea of developing CMM (c.f. Humphrey, 1992), the first maturity model. However, the highlighted shortcomings justify the need for a broader approach to organisational project management maturity assessment.

3. The underlying concepts of a broader approach to the assessment of organisational project management maturity

To develop a broader approach to organisational project management maturity, the author considers concepts included in the assumption formulated earlier in this paper. This section of the paper will introduce these concepts which provide the bases for a broader approach to assessing organisational project management maturity. These include (a) the broader view on the concept of project success and the associated success criteria, and (b) the concept of organisational project management and the associated project management governance structure. Each of these concept is thoroughly discussed in the project management literature, and the related views on these concepts are mostly accepted by both the academics and practitioners. In this way, while the fundamental points of the
related views are highlighted, making references only to those authors who pioneer the different views on a concept or those who summarise these views on a concept seems sufficient.

To introduce a broader view on the concept of project success and the associated success criteria, there is a need for considering the concept of project management in a broader sense, too, which, however, requires considering the concept of project also in a broader sense.

Over the past few decades, there has been a significant development in the way that projects and project management have been perceived by different authors. Prior to the article written by Lundin and Söderholm (1995) then Söderlund (2004), projects have been considered to be unique tasks, i.e., temporary undertakings (c.f. PMI, 1987), which might be described by a triangle. However, these authors pioneered a different concept of projects. Thanks to their efforts and that of their followers, nowadays, it is broadly accepted that a project is not only a unique and temporary undertaking but a temporary organisation as well. Lundin and Söderholm (1995) define the “demarcation between the temporary organization and its environment” (p 438) by means of four basic interrelated concepts, such as time, task, team, and transition. The task is a time-limited action to achieve a certain transition (change) which, however, requires dedicated (human) resources, i.e., a team of people. This team of people is (due to the time-limited nature of the action) considered to be a temporary organisation which ceases to exist when the required transition is achieved. This concept of projects has fostered the emergence of new insights into managing projects as well. These include project stakeholder management, the role of leadership style, human resource and knowledge management, and so forth. It should be mentioned here that this concept of projects also implies that each project has a wider organisational context, at the very least, its parent organisation. That is, projects, and project programmes as well, operate within a given organisational framework.

At the same time, Cleland (1990) pioneered that projects have a strategic role in organisations. Authors, for example, Andersen and Jessen (2003), Cooke-Davies et al. (2009), Grundy (1998), Kwak and Anbari (2008), Leybourne (2007), Mc Elroy (1996) and many others also highlighted the strategic role of projects. Projects are therefore the means by which beneficial changes implied in organisational strategic objectives (which may necessitate initiating both single-projects and project programmes) are realised. All in all, projects, and project programs as well, are considered to be multifaceted phenomena since they are not only unique and temporary tasks but temporary organisations and strategic building blocks as well.

Since projects are perceived in a multifaceted manner, they require a broader approach to managing them (Bredillet, 2007; Turner, 2009). Nowadays, there are three major views regarding “what project management is all about” (Shenhar and Dvir, 2007, p 96). As these authors point out, one of them is the process-centred view which is in line with the triangle concept of projects (i.e., they are unique undertakings). This view implies that central to project management is managing the implementation process of a unique undertaking. Another is the team/leadership view which corresponds with the concept of projects as temporary organisations. This view implies that central to project management is managing a temporary organisation, i.e., a project team. The third one is the strategic/business view which is in accordance with the strategic role of projects. This view implies that central to project management is managing the achievement of beneficial changes implied in the organisational strategic objectives. Since projects are multifaceted phenomena, project management also needs to be considered in a complex manner. In other words, each of the views on the concept of project management needs to be considered in order to cope with managing projects as multifaceted phenomena successfully. This also implies that the long-term success of an organisation relies on the successful completion of a portfolio of projects.

The criteria with which the success of projects might be evaluated have also evolved considerably in line with the development of the concept of projects and the approach to (the views regarding) project management, i.e., the concept of project management. Around the new millennium, Atkinson (1999), Baccarini (1999), Cooke-Davies (2002b), De Wit (1988), Wateridge (1997), and others argued for other criteria besides the project triangle (i.e., quality, time, and cost) to evaluate project success. Actually, they argue that the concept of project success and the associated success criteria should correspond with the multifaceted concept of project and also the multifaceted concept of project management. Nowadays, there seems to be an agreement among professionals regarding the required broader concept of project success and the criteria used to measure success. Recently, Görög (2013) provides an overview of the evolvement of the concept of project success, and he concluded to three types of success criteria. One of them is the traditional project triangle (time, cost, and quality), which corresponds with both the triangle (unique undertaking) concept of projects and the process-centred view of project management, i.e., managing the implementation process of a unique undertaking. This success criterion measures the efficiency of implementing projects. The other type of success criterion is referred to as client satisfaction which measures the extent to which the completed project result may contribute to achieving its underlying strategic objective. This success criterion corresponds with both the strategic role of projects and the strategic/business view of project management, i.e., managing the achievement of beneficial changes implied in the organisational strategic objectives. At the same time, this success criterion measures the effectiveness of the completed project result. The third type of success criterion is stakeholder satisfaction which corresponds with both the concept of project as temporary organisation; and also the team/leadership view of project management, i.e., managing the project team as a temporary organisation. This success criterion may measure both efficiency and effectiveness, although mainly indirectly.

Project programmes like projects are also perceived in the similar manner, i.e., they are both unique and temporary tasks (determined by a triangle) and temporary organisations, while their strategic role is not questionable (c.f. Gareis, 2005). At the same time, managing project programmes also needs a broader approach (process-centred view, team/leadership view, and strategic/business view); however, program management is
more than scaled up project management (Görög, 2011; Thiry, 2007). Although, the success criteria theoretically are the same, in the case of project programmes, they need to be considered at program-level, i.e., in terms of program triangle (quality, time, and cost), satisfaction of the program client, and satisfaction of the program stakeholders.

The multifaceted nature of the concept of projects and the associated multifaceted nature of the concept of project management require different project management tools to complete projects successfully according to each success criterion. Different project management tools play a different role in achieving success according to different success criteria. Each tool may contribute to achieving success against a certain criterion, although their influence on the likely success can vary criterion by criterion. Table 1 summarises the fundamental relationships between project management tools and success criteria at single-project level. When managing project programmes, besides the tools needed to manage single projects, there is a need for program-level tools as well. Although, different program level tools also have different importance according to different success criteria (e.g. Görög, 2011; Thiry, 2002, 2010). In this way, when projects are connected in a program by resource-related interdependence, the program-level use of resource allocation tools, and the associated double scheduling and process control are decisive to achieve success in terms of the program triangle. When projects are connected in a program by scope-related interdependence, the strategy-based scope definition of the program result and the associated scope control and change management are decisive to achieve success in terms of client satisfaction (c.f. Görög, 2011).

The author needs to mention here that the leadership style adopted by the project/program manager might have a considerable impact on the likely project success in terms of each success criteria (c.f. Müller and Turner, 2007).

At the same time, different project participants (project manager, project sponsor, etc.) are interested in achieving success against different success criteria. In addition, they can all contribute to achieving success in different ways. Ideally, a certain project participant is interested in such a success criterion on which she or he can have an impact. The case of project programmes is also the same. Thus, Table 2 summarises the fundamental relationships between the project/program participants and the success criteria.

In order to achieve their strategic objectives, organisations need to manage the implementation of a portfolio of projects (single projects and programmes) both efficiently and effectively, that is successfully. This need requires organisational level project management (c.f. Aubry et al., 2008; Hobbs et al., 2008; Julian, 2008). Aubry et al. define organisational project management as such an arena of organisational management which focuses on implementing a portfolio of projects in order to achieve beneficial changes implied in the strategic objectives. In this way, organisational project management postulates a project management governance structure which is embedded in a corporate governance system. Corporate governance provides the structure by means of which organisational objectives are set and monitoring performance is determined (OECD, 2004). Project governance, in this way, provides such an organisational framework by means of that an organisation deals with single projects and programmes (Dinsmore and Rocha, 2012, 2013). Thus, the concept of organisational project management postulates a set of rules of procedures and an organisational arrangement which latter acts based on the predefined rules.

There is agreement among professionals that the appropriate organisational arrangement for organisational level project management is the Project Management Office which is also referred to as Project Directorate (c.f. Aubry et al., 2007). The associated set of rules, derived from literature (Dinsmore and Rocha, 2012, 2013), primarily include

- project and program management processes;
- methods of supervising the implementation of both single-projects and project programmes, which includes the role and responsibility of project director, and/or that of the PMO and project sponsor;
- incentive mechanism, which includes motives for project and program managers, and also for functional managers to create interest for supporting projects and programmes by means of providing resources;
- methods of selecting project and program managers;
- methods of human resource management, which cover selecting and motivating project and program team members, and also reintegration upon completing the project/program;

Table 1
The fundamental relationships between the single-project management tools and the success criteria.

<table>
<thead>
<tr>
<th>Success criteria</th>
<th>Project management tools</th>
</tr>
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<tbody>
<tr>
<td>Project triangle</td>
<td>Implementation plans</td>
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<td></td>
<td>Risk management</td>
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<td>Process control</td>
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<td>Project organisational forms</td>
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<td>Client satisfaction</td>
<td>Project result/scope definition (objectives)</td>
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<td>Viability analyses or business case</td>
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<td>Project supervision</td>
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<td>Project implementation strategy</td>
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<td></td>
<td>Result/scope control</td>
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<tr>
<td>Stakeholder satisfaction</td>
<td>Stakeholder analysis</td>
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<td>Stakeholder marketing</td>
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</table>

Table 2
The fundamental relationships between project/program participants and the success criteria.

<table>
<thead>
<tr>
<th>Success criteria</th>
<th>Primary project/program participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project/program triangle</td>
<td>Project/program manager</td>
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<td></td>
<td>Project director (if any)</td>
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<td></td>
<td>Project/program supervisory board</td>
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<tr>
<td>Project/program client satisfaction</td>
<td>Project director (if any)</td>
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<td>Project/program supervisory board</td>
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<tr>
<td>Stakeholder satisfaction</td>
<td>Project director (if any)</td>
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<td></td>
<td>Project/program sponsor</td>
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• methods for managing the accumulated project and program management knowledge, which include gathering, generalising and sharing, the knowledge, and also the training of project professionals.

In summary, it might be stated that the long-term success of an organisation relies on successful completion of a portfolio of projects. In order to achieve success on projects, organisations need to adopt managing projects: (a) as the implementation process of unique undertakings; (b) as temporary organisations (i.e., the project team); and (c) as creating beneficial changes implied in the underlying strategic objectives. On the other hand, to achieve success on completing an entire project portfolio, which includes single projects and programmes, organisations need to implement organisational level project management, i.e., they need to develop and maintain a project governance structure, which encompasses an appropriate organisational arrangement and a set of predefined rules, to deal with a portfolio of projects both efficiently and effectively.

Reliable project management maturity assessment of the organisations needs to be in line with both the multifaceted concept of project success, and the associated multifaceted concept of project management, and the requirements of the concept of organisational project management, i.e., the project governance structure. In this way, the implications of these two concepts determine the reasonable assessment criteria to a great extent when refining or developing maturity models will be in the forefront based on the proposed broader approach.

4. Implications of the underlying concepts for a broader approach to the organisational project management maturity assessment

Bearing in mind the multifaceted nature of the concept of project success and also that of the project management, the author states that considering only the management process of implementing projects and programmes when assessing organisational project management maturity is not sufficient. The process-centric approach which is characteristic of most of the existing maturity models satisfies only the needs of the process-centred view (concept) of project management, and the associated triangle concept of projects, and finally, only the triangle-based success criterion. To achieve reliable maturity assessment, it is essential to consider the requirements of the broader concept of project success and the associated project management process as well. Since organisational project management has become a need, reliable maturity assessment necessitates considering the organisational project governance structure, too, by means of which a portfolio of projects is completed. This need is also supported by the literature on project management maturity to a certain extent (e.g., Brooks and Clark, 2009; Grant and Pennypacker, 2006; Lee and Anderson, 2006; Mullaly, 2014; Wheatley, 2007). These implications will be further discussed in the subsequent part of the paper.

In addition to considering the level of standardisation of a project management process itself, it is also important to consider the level of professionalism with which tasks are accomplished in the process. This is also supported by the literature on project management maturity to a certain extent (e.g., Curtis et al., 2009; OGC, 2010; Rad and Levin, 2003). The project management process itself is a framework, while the level of professionalism of the project management professionals can operationalise this framework. However, standardising the process itself is an organisational issue since it is part of the organisational project management governance structure.

Considering the above implications, the author of this paper states that the actual level of project/program management maturity of an organisation is primarily determined by the following factors:

• The appropriate and purposeful use of the project/program management toolkit and the associated level of professionalism of project management professionals. That is, the quality of dealing with (performing the management of) each project and program. From this point of view, the primary question is not only whether a certain project/program management tool is in use to complete the associated project management task but the way in which the tool is used, that is, the degree of context related applying the project/program management toolkit.

• The appropriateness of the project management governance structure, that is, the appropriateness of the organisational arrangement (in the parent organisation of the project/program) and the set of rules and procedures when dealing with completing single-projects and programmes.

The quality of management of each project and program fundamentally depends on the project-/program-related professionalism of the project/program team (including project/program managers), and the personal characteristics and leadership style of project/program managers. From this point of view, the way of (the underlying approach to) completing different project management tasks is of great importance. It implies not only the mere knowledge and skill which provide the potential for the technically proper use of the tools but the approach (the way) towards applying the knowledge and skill. The appropriate approach postulates the ability of applying these tools in line with the actual context of project/program implementation, i.e., a contingent view of applying the tools, especially in those cases when there are more than one tool (e.g., different risk assessment techniques, different project organisational forms, different leadership styles, etc.) to complete the very same project management task. This need is also supported by the literature on project management maturity (e.g., Mullaly, 2014). The project context that needs to be considered in such a case includes both the inherent project characteristics (level of uncertainty and degree of complexity), and organisational characteristics (e.g., organisational culture, selection method of project/program managers, method of project/program supervision etc.).

This attitude (the contingent view) of applying the project management tools is not implied in the current maturity models clearly, although different authors point out the importance of this issue. For example, Cooke-Davies et al. (2009) highlight the need for matching project management paradigm with the
strategic position adopted by an organisation. Howell et al. (2010), Sauser et al. (2009), and Shenhar and Dvir (2007) emphasise the role of both the project characteristics and the contextual features when the adopted project management paradigm is selected. At the same time, Müller and Turner (2007) point out the relationship between project success and the use of project leadership style. Görög (2005, 2013) devotes efforts for the context-related application of the process-related project management tools. This author discusses in detail the methods based on which the project context and the appropriate project management tool may be matched in case of a given project management task. His approach is based on the following assumptions when he discusses this matching problem: (a) projects are different in terms of the extent to which they comprise their inherent characteristics (i.e., level of uncertainty and degree of interdependency/complexity), while they are implemented in different organisational context; (b) none of those project management tools which are available to complete the very same project management task is better than another, while each of them has both advantageous and disadvantageous features. Thus, both the characteristics of projects and that of their contextual features, and the features of the project management tools need to be matched. A good case in point is identifying the appropriate single-project organisational arrangement. When a project is characterised by high level of uncertainty and high degree of complexity regarding its implementation process, there is no potential for preparing reliable implementation plans. The project, in such a case, needs to face with many unforeseen decisions, thus there is a need for intensive co-ordination to provide potential for sufficient implementation. Since a linear-functional-based project organisation implies a long decision-making process, it could not provide potential for sufficient co-ordination and implementation of such a project, thus the use of it would result in both time and cost overrun in this case. However, a project task force, due to its characteristics, could provide sufficient co-ordination, due to its short reaction time, thus the use of it support avoiding time and cost overrun. At the same time, an inappropriate organisational culture could not support the use of matrix-based project organisation, since in such a case there is no potential for making compromise by the functional managers and the project manager. Other examples for the context-related application of the process related project management tools, e.g., identifying the appropriate project implementation strategy in terms contract type and payment type, are found in Görög (2013).

When considering the context related, i.e., contingent application of the available project management tools, project managers may rely on the CIFTER model (GAPPS, 2007). This model includes 7 factors which determine both the uncertainty and interdependency/complexity of a project. Each of these factors might be scored based on a scale ranging from 1 to 4. Based on these assessment outcomes, project managers can match the most appropriate project management tool and the characteristics of the project context in case of a given project management task.

The other factor determining the actual level of project/program management maturity of an organisation is the organisational project governance structure in which the components of the first factor (i.e., the use of the project management toolkit and the associated level of professionalism) may manifest themselves. In other words, the extent to which the quality of management of each project and program is performed relies on the appropriateness of the organisational project governance structure within which projects and programs operate. At the same time, a low-level quality of the management performance at project and program level could not be compensated by a high-quality (i.e., a properly defined) organisational project governance structure. One of the decisive components in this governance structure is the project management process, especially the degree to which it is defined at organisational level. Since projects/programmes are different both in terms of level of uncertainty and degree of complexity (c.f. Geraldi et al., 2011; Turner and Cochrane, 1993), there is a need for such a process definition which (a) provides a foreseeable track for each project/program, (b) ensures flexibility in case of uncertain and/or complex projects/programs. Thus, a wisely defined project/program management process should be neither too rigorous nor too superficial.

These two determining factors might mutually influence each other. In order to have a comprehensive and reliable picture about the project/program management maturity of an organisation, both the factors need to be assessed. Since these two factors may be assessed against different sets of criteria, it is wise to consider them in different assessment models. Although both program management and single-project management require process-related professionalism, these two kinds of professionalism are different, while not all organisations require program management preparedness. Consequently, process-related single-project management maturity and process related program management maturity also need to be assessed separately.

The considered determining factors of the organisational project management maturity highlighted above make it clear and justify why the project management maturity of organisations needs to be evaluated at least at the following three levels:

- Single-project management,
- Program management,
- Organisational project governance structure.

In addition, the interrelationships between success criteria, project/program management tools, and project/program participants, and the (appropriate level of) professionalism needed in the implementation process determine the criteria to be used when assessing project management maturity in terms of management-process-related maturity both at single-project and program management level. The criteria used to assess project management maturity in terms of the organisational project governance structure are derived from literature (Aubry et al., 2007; Dinsmore and Rocha, 2012, 2013; Fortune and White, 2006; OECD, 2004).

To make the proposed approach to maturity assessment more operable, the following limitations are considered when developing the assessment models will be in the forefront:

- The project management maturity assessment models might primarily focus on project and program management maturity
of organisations. Project portfolio management requires a strategy-oriented and a decision-focused approach, while both project and program management imply an implementation-focused approach (c.f. Blomquist and Müller, 2006; Görög, 2011; Thiry, 2004). In this way, portfolio management is not a higher level (or scaled up) project management since it is rather about matching appropriate project ideas with strategic objectives. Thus, assessment of project portfolio management maturity requires a different approach.

- The assessment models might primarily adopt a client perspective based on the phases implied in the strategy-oriented project/program cycle (c.f. Görög, 2013; Thiry, 2004). These models then, however, might be adapted to the needs of project/program performer (project-based) organisations.

- The assessment models might primarily adopt an evaluation-centred solution. The reason for this is that different organisations implement their projects and programmes in different industrial context and markets, thus there is no one uniform way to develop their organisational project management maturity (c.f. Albrecht and Spang, 2014a, 2014b; Torres, 2014). Consequently, the assessment models might adopt a spider web notion to visualise the assessment outcomes clearly. This provides the potential for highlighting and perceiving more easily both the strengths and weaknesses of organisational maturity level.

- The assessment models need to consider only the most decisive assessment criteria in order to avoid both time- and cost-consuming assessment process (c.f. Hillson, 2003; O’Hara and Levin, 2000; Torres, 2014).

5. The framework of the proposed assessment models

Taking into account the considered underlying concepts of the broader approach to organisational project management maturity assessment and their previously discussed implications, and also the considered limitations, in this section of the paper, the author introduces the framework of the proposed assessment models in brief.

At single-project level, the first level of maturity assessment, the following criteria are involved in the assessment model which is encapsulated in Fig. 1 in a project cycle phase-based manner. The considered criteria are in line with the relationships highlighted in Table 1; however, due to the single-project level assessment, these criteria overlap to a certain extent with the standard knowledge areas found in PMBoK (Project Management Institute, 2013a, 2013b). In order to minimise the potential for subjective judgement, each criterion of the assessment needs to be broken down into appropriate number of sub-criteria.

The project phase of defining the expected project result is evaluated by means of the following criteria: (a) scope definition of the desired project result, (b) viability analyses of the desired project result, and (c) making decision regarding the desired project result.

The project initiation phase, which is primarily decisive in case of internal projects, is evaluated by means of the following criteria: (a) planning the implementation, (b) defining risk management methods, (c) formulating stakeholder management methods, (d) defining baseline values for the success criteria, (e) identifying project organisational arrangement, (f) defining project control methods, (g) defining change management methods, and (h) defining quality management methods.

The phase of awarding the implementation, which is primarily decisive in case of external projects, is evaluated by means of the following criteria: (a) defining the method of allocating risks and responsibilities (project implementation strategy) between the parties, (b) method of identifying the best bid, (c) appropriateness of the bid invitation and (d) appropriateness of the contractual agreement.

The implementation phase is evaluated by means of the following criteria: (a) the method of making corrective actions, (b) the method of initiating and making decision on changes, (c) the method of making decision on quality issues, (d) the management process of testing the completed project result.

The post-evaluation phase is evaluated by means of the following criteria: (a) the methods of evaluating success achieved, (b) the methods of evaluating managing the project.

At program level, which is the second level of maturity assessment, 6 criteria are involved in the maturity assessment model, derived from Görög (2011). Since managing project programmes also needs the tools of managing single-projects, the program-level maturity model includes only the program management-specific assessment criteria which are as follows: (a) program-level use of resource allocation tools, (b) the use of double scheduling, (c) program-level process control of implementation, (d) strategy-based scope definition of the program result, (e) program-level scope/result control, and (f) program-level change management. Outcomes of the program-level maturity assessment might be visualised based on a hexagonal spider web. The use of appropriate number of sub-criteria in case of each criterion, to increase the potential for objectivity, is also needed.

At the level of organisational project governance structure, which is the third level of maturity assessment, 6 criteria are involved in the maturity model derived from literature (Aubry et al., 2007; Dinsmore and Rocha, 2012, 2013; Fortune and White, 2006; OECD, 2004). The associated framework of this maturity model is presented in Fig. 2.
The considered criteria are also broken down into sub-criteria, and the number of these suggested sub-criteria is indicated in brackets in case of each criterion.

6. Summary and conclusions

The proposed broader approach to organisational project management maturity assessment was formulated based on a broader view on the concept of project success (and the associated success criteria), and the concept of organisational project management. Based on these concepts, the author introduced a broader approach to and presented the framework of the associated maturity models for organisational project management maturity assessment.

Based on the proposed broader approach, the author propagates separate project management maturity assessment in terms of (a) single-project management maturity, (b) program management maturity, and (c) organisational project governance structure maturity. Both single-project and program management maturity assessment focus on the available process-related professionalism. At the same time, organisational project governance structure assessment focuses on the appropriateness of the project/program-management-related organisational level project management governance framework.

Although organisations made considerable investments in applying maturity models with little return in improved success rate achieved on projects, Brooks et al. (2014) highlighted the very limited number of those researches which explore the impact of using these models. However, the outcomes presented in this paper provide potential for formulating both theoretical contributions and managerial implications as well, which have the potential for increasing the return of investment.

One of the theoretical contributions includes providing conceptual bases for organisational project management maturity assessment. In this way, the resulted maturity models, especially the considered assessment criteria, are in line with the success criteria. Thus, the proposed maturity models have the potential for contributing to achieving higher success rate in the course of implementing single-projects and project programmes in the organisations.

The other theoretical contribution of this paper relates to the primary determining factors of the organisational project management maturity. This paper, based on considering the concept of organisational project management, highlighted the determining role of, besides the process related professionalism, the organisational project governance structure. Thus, the proposed maturity models have the potential for completing maturity assessment in line with each primary determining factors of the organisational project management maturity.

The third theoretical contribution relates to revealing the relationship between standardisation of the project management process and professionalism of the project/program team. The author considers project/program management process to be an important contributing factor to the level of organisational project management maturity; however, the role of process is considered differently in this paper. Projects and programmes in different industries are different in terms of the level of uncertainty and the degree of complexity. Thus, these different industries have different potential for defining project management process accurately.

However, the management process includes the same project/program management tasks, although completing these task necessitates different approaches and different tools due to the different level of uncertainty and the different degree of complexity characteristic to each project and program. Establishing a process based on a higher level abstraction of the project/program management process (e.g., at the level of the project cycle, and focusing on the primary project/program management tasks) might provide a foreseeable track and allow exercising control, while it might ensure flexibility when needed. At the same time, the (level of) project/program management professionalism of the project/program team

![Maturity model for project governance structure.](image-url)
makes the process operable. This professionalism needs to encompass not only the technically proper use of the available tools but also the context-related (contingent) application of these tools as well. This is the way in which the project/program team might utilise the required flexibility of a properly established project/program management process. Thus, a properly established, i.e., flexible, process allows potential for a certain degree of uniformity in terms of the management process, while it makes possible utilising different approaches and using different tools to complete a certain project/program management task.

The proposed approach to assessing organisational project management maturity in case of using maturity models developed accordingly might imply the following managerial implications:

- Providing the potential for organisations to relate the assessment outcomes of the three levels of maturity (single-project, project program, organisational project governance structure) to each other. The existing interrelationships between the three dimensions of maturity could make it possible to formulate a more purposeful development strategy for their organisational project management maturity.
- The proposed phase-based assessment could support organisations to identify those phases of the project/program cycle which have primary importance from the point of view of their further development. In this way, the proposed approach also could contribute to formulating a more properly focused development strategy for organisational project management maturity either regarding their single-project management or program management maturity.
- The proposed approach implies the potential for developing models to assess organisational project management maturity regarding internal projects/programs and external projects/programs separately. This potential also supports formulating a more appropriate development strategy.
- The proposed approach may be adapted to the characteristics of organisations involved in projects/programs as external performers (project-based organisations) as well.

Finally, the above considered managerial implications could provide the potential, bearing in mind the interrelationships highlighted in Table 2, for identifying those project/program participants (team members, sponsors etc.) who need to be further developed regarding certain project/program management knowledge areas.

7. Limitations and further research

The proposed broader approach as a whole is based on such concepts which are filtered from project management literature. However, the assessment models developed based on this approach need to be empirically tested as well. Thus, potential further research efforts might include (a) refining the existing models accordingly; (b) testing the reliability, including practicability, of the proposed models, and (c) testing the availability of the highlighted managerial implications in the course of using these models.

Conflict of interest

There is no conflict of interest.

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