Assessing the Maturity of Public Construction Client Organisations

Hermans, Marleen; van Zoest, Simon; Volker, Leentje

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

ASSESSING THE MATURITY OF PUBLIC CONSTRUCTION CLIENT ORGANISATIONS

Marleen Hermans[1], Simon van Zoest and Leentje Volker

Faculty of Architecture and the Built Environment, Delft University of Technology, P.O. Box 5043, 2600 GA Delft, the Netherlands

The construction sector is changing, and commissioning organisations have to rethink the way they approach the market. This is especially important for client organisations operating in the public domain, because of their role as change agent in the sector and their social responsibilities. The 'Public Commissioning Maturity Model' (PCMM), first presented in 2014, was created to raise awareness amount construction clients' organisations to the range and width of their commissioning task. It provides a means to elicit discussion on the current and desired state of the organisation's competences, thereby supporting these organisations in further professionalization. As a result of six workshop-based discussion sessions and five panel discussions, the value of the model was determined. In this paper, the validation path of the model in practice is described. The findings resulted in changes to improve the usability of the model for the construction sector, as well as alterations to increase the understanding of the model for workshop participants. Adjustments regarding stylistic issues and elements in the maturity model and supporting materials were also made. Applying the PCMM has proven to enable assessment of the current and desired organisational performance on different aspects of public commissioning by eliciting discussion and raising awareness. It is however not constituted for numerical ranking, sector-wide monitoring or benchmarking purposes, while these needs also exist among client organisations. Furthermore, it was found that the model is less suitable for organisations in the middle of a comprehensive change process.

Keywords: client, commissioning, maturity model, professionalization, public sector

INTRODUCTION

The construction industry is, together with related sectors, one of the major economic activities in every country. In addition, the construction sector has a significant impact on living standards, the capability of a society to produce other goods and services, and its capability to trade effectively (Manseau and Seaden, 2001). Despite its importance, it has been underperforming for many years (Winch, 2010), and a necessity is felt worldwide to reform the sector. Public and semi-public construction clients have a significant impact on potential construction sector reform (Vennström, 2009; Winch, 2010). They account for approximately 40% of the total construction output in Western European countries, and have a significant influence on the quality of the built environment and the construction process itself. Furthermore, because of their social responsibilities they are expected to actively contribute to the innovation and improvement of the building sector (Boyd and Chinyio, 2008; Manley, 2007; Ye *et al.*, 2013).

Although the important role of construction clients in the public domain (non-profit and not-for-profit) has been recognized in the literature, the understanding of the actual nature and configuration of public commissioning is limited and data collection is fragmented. Most research is focussed on large projects and new construction, yet most construction activity involves small-scale projects and construction performed by smaller scale public or semi-public organisations (Eisma and Volker, 2014a). Semi-public organisations are private organisations that have statutory duties and/or serve a distinct public interest, and that they are (mostly) financed by the government (Boyd and Chinyio, 2008). Only limited research has been done into the impact of organisational characteristics on the level of professionalism and competences of commissioning entities (Hermans and Eisma, 2015; Hermans, Volker, and Eisma, 2014).

In 2014, the Public Commissioning Maturity Model (PCMM) was developed. The objective of this model is to raise awareness among construction clients' organisations to the range and width of their commissioning task. It provides a means to elicit discussion on the current and desired state of the organisation's competences, thereby supporting these organisations on defining their desired further development (Hermans *et al*., 2014). In this paper the validation path of the model in practice is described. First, the general concept of maturity models in general and the PCCM specifically are explained. Next the validation path is described, followed by the corresponding findings. Subsequently, the applicability of the model is discussed.

THE CONCEPT OF MATURITY MODELS

A maturity model focuses on the key elements of a specific organisational quality, and thereby describes an evolutionary improvement path from an ad hoc, immature process to a mature, disciplined process (Paulk *et al*., 1993). The purpose of a maturity model is to provide a framework for improving an organisation's business result. To achieve these improvements, a maturity model identifies the organisational strengths and weaknesses, and possibly, but not necessarily, provides benchmarking information regarding similar organisations (Combe, 1998; Hartman, 1996; Kwak and Ibbs, 2000).

One of the first maturity models was designed for software processes in the late 90's (Paulk *et al*., 1993), and since then a large number of maturity models for a variety of processes in organisations is developed. However, some have criticized maturity models from a practical perspective. Objections are among others the inflexibility of the models, their emphasis on identifying problems and raising awareness instead of solving problems, and their incapacity to account for the rapid pace of change in firms (Cabanis, 1998; Dinsmore, 1998; Pennypacker, 2001). But despite their shortcomings, they have made a significant contribution to the field (Cabanis, 1998; Dinsmore, 1998; Kwak and Ibbs, 2000). A research on several purchasing maturity models reveals poor empirical validity on the investigated models. Although some of these models are widely known in both practice and in the academic world, they are barely used or applied (Poucke, 2016). Poucke states that, nevertheless, in both practice and in the research community more of such practical knowledge tools are needed.

However, there is a lack of information about the applicability of maturity models in practice. In the paper we present the validation process of the maturity model 'PCMM', and therefore contribute to the knowledge development on applying maturity models within construction organisations.

PUBLIC COMMISIONING MATURITY MODEL (PCMM)

Development of the model

The development of the Public Commissioning Maturity Model (PCMM) has been extensively described by Hermans *et al*., (2014). First a preliminary set of elements correlated to the concept of 'public commissioning' in the built environment was gathered. These elements were mainly based on an international literature survey by Volker and Eisma (2014b), supplemented with more practical viewpoints. Next, literature on maturity models was studied, together with existing maturity models developed for adjacent areas. Then, the development stages and a set of aspects were compiled, which led to a draft version of the model. The draft version was discussed in a structured discussion in four expert sessions, which resulted in an adjusted pilot version of the model. This pilot version is used in the validation phase.

Content of the model

The Public Commissioning Maturity Model contains the following 10 aspects:

1. Organisational strategy and policy; 2. Culture and Leadership; 3. People and learning organisation; 4. Decision models and portfolio; 5. Stakeholder management; 6. Public role; 7. Public rules of play; 8. Interaction with supply market; 9. Managing projects and assignments; 10. Creativity and flexibility.

The aspects are a combination of basic organisational competences, specific public commissioning related issues and aspects related to the 'public' nature of construction clients. The 10 aspects are being assessed according to 5 maturity levels, being: 1. Ad hoc; 2. Repeatable; 3. Standardized, 4. Managed; 5. Optimized.

The maturity level is determined on the basis of four indicators, all carrying equal weight. These indicators concern the extent to which the client:

- Has the aspect on the agenda within his organisation, and how integral their consideration of the aspect is (comprehensiveness)
- Has given itself tangible targets regarding the aspect, and to what extent the client evaluates and is held accountable over these targets
- Has this specific aspect embedded in the organisations, and thus the aspect is known to the relevant employees (embedding)
- Has the processes, methods and tools available to ensure the operations and support for this particular aspect (supporting means)

The resulting maturity model is shown in figure 1.

Figure 1. The Public Commissioning Maturity Model (PCMM)

			State of development regarding professional commissioning in your organisation									
	5.	Optimized										
	4.	Managed										
	3.	Standardized										
	2.	Repeatable										
	1.	Ad hoc										
			Organisational strategy & policy	Culture & leadership	People & learning organisation	Decision models and portfolio	Stakeholder management	Public role	Public rules of play	Interaction with supply market	Managing projects and assignments	Creativity & flexibility
			1	2	3	4	5	6	7	8	9	10
							Aspects						

Validation Path

To validate the model and test its applicability, it was used in several cases with commissioning organisations in the public domain. First, a number of structured

workshop-based discussion sessions were conducted, each with one or in some cases two organisations. Secondly, several panel discussions were organized, each with a larger amount of organisations. All cases were conducted with Dutch organisations, in the period of 2015 and 2016.

Workshops

A total of six workshops have been carried out, with four housing associations and the real estate department of a central government organisation. The selection of organisations is made within the network of the university that developed the model. All organisations expressed interest in the model by themselves, intending to use it as a tool in a strategic change process of their commissioning role.

In order to validate the usability and feasibility of the model and the toolkit, we somewhat varied the programme and character of the workshops. In most cases, two workshops of half a day were conducted. In the first workshop the current situation regarding professional commissioning is assessed, after which the results are processed and fed back to the participants. Some weeks later the second workshop is carried out, in which the desired future state of professional commissioning is discussed, based on the results of the first workshop. Some organisations only attended the first workshop, others were based on a mixture of current and future measurements. In all workshops, the final results were fed back to the organisation.

A workshop has between 8 and 15 participants, and is accompanied by one or two facilitators. These facilitators are researchers of the university, working within the department that developed the model. The model is intended to be used by board members and managers, and the participants should be primarily engaged in commissioning, so no advisors or support staff. The organisations are advised to invite both people engaged in managing the portfolio and those involved in new projects and investments, in order to get an image of the commissioning competences throughout the organisation as a whole.

Structure of the workshops
A workshop starts with a plenary session, with an explanation of the maturity model and some background information. Subsequently the participants are divided into several groups of approximately four people. Each group is assigned a number of aspects of the maturity model, which they discuss successively. They get circa 15 minutes per aspect, in which they have to assess the corresponding maturity level and the reasoning behind it. When all aspects are discussed, participants come together to share the outcomes. In a structured plenary session every group shares their results, with which the maturity model of the organisation is made.

Each of the validation workshops ends with an evaluation of the workshop and the maturity model. During this evaluation the different aspects, maturity levels and the applicability of the maturity model in general are discussed. The outcomes of these evaluations are described in the next section.

Think-aloud
All discussions are recorded using audio recorders, and the participants are asked to use the think-aloud method during the group discussions. With this method all decision, reasoning and decision-making processes are being made by thinking out loud, and the recordings are analysed retrospectively (Ericsson and Simon, 1980).

Quick scan

All participants receive a so-called 'quick scan', approximately two weeks before the workshop takes place. This is a document with the maturity model as displayed in figure 1, equipped with a brief description. Participants are asked to fill in the model spontaneously, for the current state of development in their organisation. They do this based on their first intuitive estimation in a maximum of 15 minutes.

The quick scan serves two purposes: first, it gives the possibility to compare the outcomes of the individually and spontaneously filled in quick scans with the outcomes of the workshops, at which the participants assess the maturity levels through group discussions. The second purpose is a more practical one; since the participants are already familiar with the model, time can be saved during the workshops.

Supporting material

The PCMM is accompanied by a toolkit, containing supporting material. This toolkit contains an accompanying memo with extensive explanation of the model, posters of the model to be used in the plenary parts of the workshops, several prints of the model with brief explanations of the different aspects and maturity levels, and forms to evaluate the workshop afterwards. The explanations of the aspects are equipped with questions for the participants, as a basis for discussion on the issue. This toolkit ensures that the model is being used in the same way in the different organisations. As a result, the usability of the model and its elements is perceived in the same way, and the evaluation of the model is conducted in the same manner.

Panel discussions

In addition to the structured workshops, five panel discussions were conducted. In these panel discussions, multiple organisations assessed their maturity at the same time. The meetings enabled participants of different organisations to share their experiences, differences, similarities and best practices, and on the basis of that they jointly determined the agenda for future improvements. The aim of the discussions within the validation of the model was twofold: recognition of the 10 aspects, and obtaining an understanding of the bandwidth of performance within these aspects. Most panel discussions took about two hours, and therefore were more superficial than the workshops. Nevertheless, they gave a good understanding of the distribution of leaders, mainstream and stragglers regarding public commissioning within the sector.

FINDINGS

Elements

Overall, the experiences are positive. The aspects are being recognized and collectively give a good impression of professional commissioning. The maturity levels are helpful, but can be difficult to grasp at first. Furthermore, correct terminology is of great importance in the model and the toolkit.

In general, the participants considered the selection of aspects very complete. One of the participants commented that he was missing 'collaboration within the organisation' as an aspect in the maturity model. This is however covered in aspect 2; culture and leadership. Another participant suggested the aspect 'customer satisfaction'. Currently this is covered in aspect 5; stakeholder management, since costumers are one of the stakeholders. The costumers and users could be further specified in the toolkit to clarify this. But if they are specified too far, the model cannot be widely deployed, since costumers and users differ for different kind of organisations. The final aspect, creativity

and flexibility, proved to be a difficult aspect to assess. Whether one can be creative and flexible depends highly on the other aspects, according to several participants. Furthermore, it is difficult to assess this aspect according to the specific maturity levels in the model. A possible solution would therefore be to incorporate this element in the maturity levels.

The first maturity level, ad hoc, is often understood in two different ways: 'not yet available, one does not think about that', in other words fairly negative, and 'we are consciously working on it, but at the moment it is still ad hoc', which is more positive. In order to show such nuances in the maturity model, an arrow can be drawn in the model, showing the upward or downward movement in the organisation. There was some confusion about the third maturity level as well. In the draft version of the model, the term 'standard' was used for this level. However, this caused some confusion among the participants, since they associated the term standard in a different way. Therefore, we changed the term to 'standardised'.

Process of using the model

In all workshops the process was facilitated by one of the developers of the model. Experiences show that (executive) managers occasionally had the tendency to dominate the discussions in the workshop, by talking the most and by steering the discussion. This might influence other participants, especially if they work at a different level in the organisation. Ensuring that the groups of participants are evenly mixed across the organisation, and making sure that every voice is heard therefore belonged to the core tasks of the facilitators during the assessment process.

Approximately 15 minutes per aspect was used. This is a tight schedule, especially for the first aspects, at which one must get used to the process of using the maturity model. Keeping track of time during the group discussions is therefore another important role for the facilitators. Sending the quick scan contributes as well, since it makes the participants accustomed to the maturity model in advance.

As follows from the above, the facilitator plays an important role in the process of using the maturity model. In the validation phase, most of the workshops were moderated by a researcher of the university department that developed the model. However, it appears to be very well possible to use the model autonomously. In that case, it is especially important that the moderator has both experience in the construction industry and experience in facilitating workshops and suchlike. This could be provided by a representative from a university or other knowledge based institution, but it could also be provided by peers in the field.

APPLICABILITY OF THE MODEL

The maturity model proved to be a good way to elicit discussion about professional commissioning in organisations in the public domain. The structured workshop-based discussion sessions raise awareness about the comprehensive side of professional commissioning, and with the PCMM it is possible to assess the current and desired organisational performance on each of its different aspects. By organizing the workshops with participants of all relevant parts of the organisation (such as project management, purchasing, contracting and maintenance on management and operational level), the awareness and possible improvements as a result can be accomplished throughout the organisation as a whole. Furthermore, reporting the results of the workshop contributes to embedding the elements of public commissioning within the organisation.

The model seems to be less suitable for organisations in the middle of a comprehensive change process. In two of the workshops the organisation was going through major organisational changes at the time of the workshop, which had an adverse impact on the results. Although the added value of the model was recognized in the context of the future development, the dynamics of the organisational change had a negative impact on the outcomes of the maturity levels, since the model mainly rewards standing practices instead of future changes.

To truly measure change in an organisation, one should link the outcomes of the maturity model to the actual performance of the organisation. This is for instance done in the EFQM model, a quality management system developed by the European Foundation for Quality Management. In this model, a distinction is made between "enablers" and "results". In this context enablers can be considered comparable with the maturity aspects of the PCMM, and the results are the actual performances that are being achieved (Vukomanovic, Radujkovic, and Nahod, 2014). However, for the PCMM the focus deliberately lies with the awareness within organisations as a first step towards further professionalization.

Benchmarking
In contrast to some other maturity models, the PCMM is not intended for benchmarking, numerical ranking or sector-wide monitoring purposes (Hermans *et al.*, 2014). Nevertheless, remarks and suggestions in the workshops indicate that there is a demand for comparisons among commissioning organisations. However, as stated before, the aim of the PCMM is to focus on the awareness within organisations first. For this purpose, a supervised workshop seems to be the most appropriate method. Quantitative comparison of organisations on the basis of numerical outcomes of the current maturity model, would give a distorted picture and is methodologically not sound. For benchmarking to be justifiable, the questions and terminology that are being used should always be interpreted in the exact same way, without ambiguity or differing perceptions. This imposes different requirements on the used terminology and supporting material, and is more suitable with, for example, an individual questionnaire or another more standardised method.

CONCLUSION AND DISCUSSION

Only limited research has been done into the role of commissioning clients in the public domain. A strong need therefore exists among public and semi-public clients to develop a scientific foundation about the approach to face the challenges existing in the industry. In order to accomplish this aim, the first step would be to raise awareness among these organisations to the range and width of their commissioning task, and supporting them in defining their desired further development. The development of the Public Commissioning Maturity Model (PCMM) and accompanying toolkit fulfils this need.

After development in 2014, the PCMM has now been validated in a number of cases with public and semi-public commissioning organisations. The model proofs to be an effective means to elicit discussion on the current and desired state of commissioning competences among construction client organisations. By doing this, the PCMM adds crucial information to the development of existing body of knowledge on the role of public construction clients. Furthermore, reporting the results contributes to embedding the elements of public commissioning in the organisation.

The results of the validation workshops show that illumination of the specific terminology is of great importance for the general understanding of the material, since some terms can

be interpreted in various ways. The selection of the participants within the organisation and good facilitators also appeared to be essential in the correct use of the model. Limitations of the model include its unsuitability for numerical ranking, sector-wide monitoring or benchmarking purposes. Furthermore, it was found that the model is less suitable for organisations who are in the middle of a comprehensive change process.

It should be noted that there could be some bias in the current selection of organisations, since the organisations in the workshops have expressed interest in the model themselves, and are therefore not selected at random. Supporting material is now being developed for the PCMM to be used without support of university researchers, in order to the model to be more wide spread among client organisations in the Netherlands.

Future research could incorporate the relationship between the outcomes of the maturity model and the actual performance an organisation achieves, in order to assess the rapid changes some organisations undergo. Research could also be aimed at a more solid version of the model, with for example an individual questionnaire instead of discussions, in order to enable benchmarking purposes.

REFERENCES

Boyd, D, and Chinyio, E (2008) *Understanding the Construction Client*. Oxford: Blackwell.

Cabanis, J (1998) "Show me the money": A panel of experts dissects popular notions of measuring project management maturity. *PM Network*, **12**(9), 53-60.

Combe, M (1998) Standards committee tackles project management maturity models. *PM Network*, **12**(8).

Dinsmore, P (1998) How grown-up is your organization? *PM Network*, **12**(6), 24-26.

Eisma, P R, and Volker, L (2014a) Exploring the field of public construction clients by a graphical network analysis. *In*: A Raiden and E Aboagye-Nimo (Eds.) *Proceedings 30th Annual ARCOM Conference, 1-3 September 2014, Portsmouth, UK*. Association of Researchers in Construction Management, 217-26.

Eisma, P R, and Volker, L (2014b) Mapping fields of interest: A systematic literature review on public clients in construction. *In*: Proceedings CIB Commission Meeting on Clients and Users in Construction (CIB W118), in conjunction with the International Conference on Facilities Management and Maintenance, 21-23 May 2014, Copenhagen, Denmark.

Ericsson, K A, and Simon, H A (1980) Verbal reports as data. *Psychological Review*, **87**(3), 215.

Hartman, F (1996) Trends and improvements: Looking beyond modern project management. *Proceedings-Project Management Institute*, 398-402.

Hermans, M, and Eisma, P (2015) Behind the scenes of public construction clients: Collecting data on commissioning activities and organisational approach. *Procedia Economics and Finance*, **21**, 391-398.

Hermans, M, Volker, L, and Eisma, P (2014) A public commissioning maturity model for construction clients *In*: A Raiden and E Aboagye-Nimo (Eds.) *Proceedings 30th Annual ARCOM Conference, 1-3 September 2014, Portsmouth, UK,* Association of Researchers in Construction Management, 1305-1314.

Kwak, Y and Ibbs, C (2000) Assessing project management maturity. *Project*

Management Journal, **31**(1), 32-43.

Manley, K (2007) The innovation competence of repeat public sector clients in the Australian construction industry. *Construction Management and Economics*, **24**(12), 1295-1304.

Manseau, A, and Seaden, G (2001) *Innovation in Construction: An International Review of Public Policies*. New York: Spon Press, Taylor and Francis Group Ltd.

Paulk, M C, Curtis, B, Chrissis, M B, and Weber, C V (1993) Capability maturity model version 1.1. *IEEE Software*, **10**(4), 18-27. http://doi.org/10.1109/52.219617

Pennypacker, J (2001) *Project Management Maturity Benchmark*. A Center for Business Practices (CBP) research report.

Poucke, E van (2016) *Climbing the stairs of purchasing maturity: Essays on purchasing development, internal service quality and sourcing outcomes*. University of Antwerp, http://doi.org/10.1017/CBO9781107415324.004

Vennström, A (2009) Clients as initiators of change. *In*: J Borgbrant (Ed.) *Performance Improvement in Construction Management*. London: Taylor and Francis, 14-24.

Vukomanovic, M, Radujkovic, M, and Nahod, M M (2014) EFQM excellence model as the TQM model of the construction industry of southeastern Europe. *Journal of Civil Engineering and Management*, **20**(1), 70-81.

Winch, G M (2010) *Managing Construction Projects*. Chichester, West Sussex: Wiley-Blackwell.

Ye, K, Shen, L, Xia, B, and Li, B (2013) Key attributes underpinning different markup decision between public and private projects: A China study. *International Journal of Project Management*, **32**(3), 461-472.