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Publication date
2022

Document Version
Final published version

Published in
Proceedings of the 38th Annual Conference

Citation (APA)

Molaei, M., Koops, L. S. W., & Hermans, M. H. (2022). Evaluating the procurement documents of Dutch water boards portfolio: A step towards more reliable public clients. In A. Tutesigensi, & C. J. Neilson (Eds.), *Proceedings of the 38th Annual Conference* (pp. 114-123). ARCOM, Association of Researchers in Construction Management.

Important note

To cite this publication, please use the final published version (if applicable).
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ASSOCIATION OF RESEARCHERS IN **CONSTRUCTION MANAGEMENT**

Thirty-Eighth
ANNUAL
CONFERENCE
2022

September 5-7

Glasgow

PROCEEDINGS

Association of Researchers in Construction Management (ARCOM)

PROCEEDINGS OF THE 38TH ANNUAL CONFERENCE

Edited by Apollo Tutesigensi and Christopher J Neilson

First published 2022

978-0-9955463-6-3

Published by

Association of Researchers in Construction Management (ARCOM)

7 Bell Yard,

London

WC2A 2JR

United Kingdom

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EVALUATING THE PROCUREMENT DOCUMENTS OF DUTCH WATER BOARDS PORTFOLIO: A STEP TOWARDS MORE RELIABLE PUBLIC CLIENTS

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Although a considerable amount of literature has addressed the public procurement in the construction industry, still little is known about procurement in small and repetitive activities. In practice, however, public clients are often involved in repetitive tasks such as maintenance activities. Dutch water boards, regional governmental bodies responsible for providing water management services, are the focus of this study. For this research, three main procurement documents of the water boards were performed using content analysis. The aim is to evaluate these documents and to identify the typology of the repetitive activities and the procurement volume of these tasks from a portfolio perspective of the public client. Most of the contractors/suppliers involved in these activities are local Small and Medium-Sized Enterprises (SMEs). The findings of the study indicate that insights into the typologies of these repetitive works and their expected volume over time delivers crucial value for the public procurer. Given the amount of repetitive works procured by public clients, creating such an insight to both clients as well as contractors can ultimately increase efficiency and improve investment opportunities.

Keywords: public client; public procurement; repetitive works; water; portfolio

INTRODUCTION

Public clients in the construction industry usually have large portfolios with significant volume of public procurement which provides opportunities for improving their procurement processes. These opportunities might be missed since the focus is mainly on one-off projects and less priority is given to procurement of repetitive works. The current study evaluates the procurement document of Dutch water boards, using publicly available information and a portfolio document review of four water boards on outsourced projects and tasks. Dutch water boards (also known as regional water authorities) are decentralized and independent government organisations and currently, there are 21 water boards in the Netherlands. Within the scope of work of regional water boards three main programs can be recognized: water quantity (preventing droughts or water surpluses such as performing dredging); water quality (treating wastewater from households and businesses); and water safety (managing and maintaining primary and secondary flood defences such as dikes and locks). Since they are a governmental body, they finance their activities by collecting taxes

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from industries and households (de Graaf *et al.*, 2017). Together, the water boards have an annual budget of €2.9 billion and an investment budget of €1.6 billion in various water related projects (Unie van Waterschappen 2013). As a result, they are one of the main clients in the Dutch construction market (de Graaf *et al.*, 2017).

These repetitive activities in fact form most of the volume of construction work, this is especially the case for water boards in which around 80-90% of tasks are repetitive. These repetitive tasks are usually small and medium in size and are mostly executed by small and medium enterprises (SMEs). Surprisingly little research is available about the composition of these repetitive tasks in the portfolio of a public client organisation. Research on small scale projects and activities is scarce as well (Nase and Wong 2017).

The goal of the research is to evaluate the procurement data and to identify the repetitive activities from the portfolio of the water boards as a public client. This ultimately can contribute to more efficient procurement and execution of such activities by market parties. This research aims to address this question: to what extent do the available procurement documents of Dutch water boards help in identifying the repetitive tasks within their portfolio and the expected procurement volume of such tasks?

Public Procurement in the Netherlands

In general, Dutch procurement law is largely influenced by the European Union. Every government organisation must follow an appropriate tendering procedure for three categories of tasks (European Commission 2014): works; supplies; and services. To ensure the uniform application of a classification system, improve the transparency and efficiency in public procurement, the Common Procurement Vocabulary codes (CPV-codes) were developed by the European Commission. PIANOo is the Dutch primary public body responsible for professionalisation of procurement and tendering procedures in all government authorities (European Commission 2019). A list of the general categorisation of the CPV-codes is published by PIANOo. To facilitate eProcurement, Tendered was developed which is the online marketplace for public procurement in the Netherlands. All the public contract notices above the EU limits are obliged to be published on Tendered (European Commission 2019). Table 1 presents an overview of the number of contracts and procurement volume, for tasks above the threshold and below the threshold during the period between 2017 and 2019, according to the recent report of Team Significant Synergy (2021).

Table 1: Total estimated procurement of Dutch government, 2017-2019 (Team Significant Synergy 2021)

	2017		2018		2019	
	Number of contracts awarded	Procurement volume (in € billion)	Number of contracts awarded	Procurement volume (in € billion)	Number of contracts awarded	Procurement volume (in € billion)
Above the threshold sum	5,031	27.3	5,790	29,7	6,397	29.8
Below the threshold sum (estimated)	130,900	52	150,400	56,6	163,500	57,7
Total	135,900 *	79.3	156,200 *	86,3	169,900 *	86.5

* Rounded off to the nearest hundred

According to Table 1, the total procurement volume of the Dutch public authorities has increased gradually by 9.2%, from €79.3 billion in 2017 to €86.6 billion in 2019. The table also shows that the annual procurement volume of the contracts below the limit is nearly twice that of the contracts above the limit, suggesting the importance of small and medium tasks. Most of these relatively small contracts are awarded to small and medium-sized enterprises (Team Significant Synergy 2021). SMEs play a crucial role in the European economy because they represent around 99% of all businesses (Bakker *et al.*, 2011, CBS 2015).

Public Procurement in the Dutch Water Boards

With an estimated annual procurement volume of €2 billion, water boards play a crucial role in stimulating successful collaboration in the water construction sector (Team Significant Synergy 2021). The association of Dutch water boards is responsible for professionalisation of procurement and tender procedures of the water boards. Such professionalisation cannot be achieved by the European rules and regulation only, therefore additional policies are required, which are fitted to the specific context of the water boards (Unie van Waterschappen 2013). By doing this, the association of Dutch water boards contributes to the professional public commissioning role of water boards and ascertains uniform application of tender and procurement activities between water boards and other public authorities (Unie van Waterschappen 2013). In 2016, the market vision is established with the aim of facilitating and improving the collaboration between the water boards and market parties. Project calendar is developed by Economisch Instituut voor de Bouw (2021) with the aim of providing a multiannual overview of the projects within the water boards and ensuring a match between supply and demand. PIANOo (2016) also published a list of the categorisation of the CPV-codes which is specifically developed for the contracts within the water authorities. In this study, only CPV-codes for works and services are considered for further analysis.

Repetitive Works in the Portfolio of the Public Client Organisation

The focal point of this research is repetitive works in the portfolio of project-oriented organisations. Therefore, these three concepts are explained in this section: portfolio, repetitive works, and project-oriented organisations. In the project organizing literature, a project is defined as a temporary organisation with a beginning and an end, management process and sequence of tasks established to create a unique or customized product, service, or result (PMI 2021: 2). A program is a set of interrelated projects for achieving a specific goal, when this goal cannot be achieved by each project individually (PMI 2021: 2). A portfolio is a set of projects and programs which share scarce resources, managed to achieve the long term's strategic objective of an organisation (Winch 2009). Following these definitions, a project mostly involves performing tasks in a one-time situation that will not be repeated in future, however, in practice every project involves some degree of repetition (Engwall 2003). Repetitive projects seem to be an opposite of unique projects and some scholars address this distinction in their studies.

Every organisation might primarily be involved in performing repetitive or unique works (Lundin and Söderholm 1995). Davies and Brady (2016) reviewed literature that provide definitions for these two concepts, and they realized that various terms used for addressing these two categories of projects, for instance simple vs novel (Loch *et al.*, 2011) and repetitive vs first-of-its kind (Davies and Brady 2000). Shenhar and Dvir (2007) recognize that projects might be primarily “strategic” to

enhance or maintain the firm's competitive position by creating new products, services and markets or they can be "operational" to maintain its current market by improving or extending its existing products and services. "Simple projects" involve predictable and repetitive works, whereas "novel projects" usually deal with uncertain and unforeseen situations (Loch *et al.*, 2011). In any organisation, a combination of repetitive and unique projects is managed in a project portfolio by adopting an explicit project management culture (Gareis and Huemann 2000). Delisle (2019) argued that portfolio, has a repetitive character since it is a continuous process and follows the existing procedures of the organisation.

Project-oriented organisations can be defined as an organisation that "perceives projects and programmes as temporary organisations for the performance of complex processes" (Gareis and Huemann 2000: 32). Arvidsson (2009) made a distinction between project-oriented and project-based organisation, in which the former has a permanent and stable structure and processes for generating revenues and time-based projects are the main source of costs. The focus of the project-based organisation is primarily on temporary endeavours and project dimension. In practice, however, he argued that organisations might combine these two repetitive and temporary structure in order to employ the benefits of both. A purchasing public owner organisation is considered primarily as a project-oriented organisation because projects are not its core business (Kay 1995). For such an organisation, projects are intended to extend their resource base and that is the reason they outsource projects to project-based firms for whom projects are their core business (Winch and Leiringer 2016).

Public client organisations are one of the crucial buyers (service or product) in the construction industry (Kadefors *et al.*, 2021). They are involved in a wide range of repetitive activities such as maintenance, renovation, activities related to sustainability or upgrading the assets. Usually, these repetitive projects are relatively small in terms of budget. This is also acknowledged by the study of Dunston and Reed (2000), in which four characteristics for small projects are considered: repetitive work; simple or uncomplicated construction process; renovations, remodelling or upgrades; total project costs less than US\$1 million; and maintenance projects. Managing these small projects in the portfolio of the public client organisation is a crucial task of such organisations. As an example, nearly half of the projects of the water boards are small or medium in size with a total cost between 1 and 5 million Euro (Economisch Instituut voor de Bouw 2021).

In the current research, repetitive works are defined as the activities performed by the suppliers for the public client with a high-frequency in a certain period of time, such as performing certain type of task in different locations. The focus of the study is tasks in the portfolio and not per se projects. The reason is that every project consists of several inter-related tasks. These tasks might have different characteristics and therefore require various resources, but they contribute to achieving the project goal. Indeed, these tasks also have a temporary nature and can be considered as sub-projects. But in this research, the terms tasks or activities are used. In addition, in practice no separate projects are usually defined by the public client for performing these repetitive tasks, for instance reactive maintenance of installations at water pumping stations.

METHOD

In this research, a document review of the available water boards funded projects and their procurement data was conducted to answer the research question. The unit of

analysis is the portfolio of the public client organisations. The aim is to get an insight into the whole portfolio of each water board, including small and medium scale tasks, projects, and contracts. Since there is no obligation to publish those small and medium size contracts below the EU limit on Tendered (Nase and Wong 2017), this platform cannot be used for identifying such contracts. In order to achieve the goal of this study, three main documents were studied: (1) the multi-year budgeting program of each individual water boards; (2) the project calendar published by Economisch Instituut voor de Bouw (2021), (3) and the set of purchase orders of each of the water boards. As suggested by Winch and Cha (2020), a case survey study (Larsson 1993) is suitable for analysis of patterns across a large volume of textual data. Four steps were followed for data analysis in the current study. In the first step, based on the goal and context of research, the type of data needed was established. In step two, a preliminary data analysis was performed to gain an overall insight into the procurement data in each specific document. In step three, a set of exclusion and inclusion criteria was determined. In the last step, the codes, and categories of the relevant tasks in the documents were generated. These four steps, however, only were applied for the analysis of the purchase orders. For multi-year budgeting program of the water boards and project calendar, we stopped after step 2. The reason was that we could not find the required data in these documents. This is further explained in the results section.

Content analysis (Weber 1990) is used for identifying the typologies of the procured tasks and projects and their procurement volume. The approach for analysis is both inductive (Schreier 2012) and deductive (Armat *et al.*, 2018): the CPV-codes of PIANOo (2016) were used as the starting point for determining the typologies (deductive) and the codes and key typologies emerged from data (deductive). Based on the content analysis of the purchase orders of the four water boards, an overall quantitative analysis of typologies of repetitive tasks and their associated procurement volume were provided. In addition, an in-depth qualitative analysis of the description of the tasks per type of the repetitive tasks was also performed.

FINDINGS

The starting point for the document review was the multi-year budgeting program of six water boards. These documents usually are developed for the coming 3-5 years and are publicly available on the website of each water board. They give an insight into the type of projects per program and investment and operating budget of their projects. In these programs, however, the underlying expected tasks per project were not explicitly provided. This is specifically crucial, because usually projects are divided into sub-projects, and they are procured in more than one contract.

In the next step, the project calendar consisting of 608 projects was studied. This publicly accessible document gives an overview of the current and future projects in 2021 and 2022. Although various elements such as different types of projects, type of tender, and contract type per project are considered in this document, again there is no detailed information about the (expected) tasks per project.

In the last step, the portfolio document of four water boards were analysed. More water boards were approached to get the purchase orders of the organisation, however, extracting such information was not easily possible for some water boards. These documents are not publicly available, and they are only available via the internal financial system of the organisations. In this study, the purchase orders of four water boards in the past 3-4.5 years were received. The expenditure of all the outsourced

tasks and projects are collected in this document. Unlike the previous two documents, the detailed information of the tasks per project or program is to a large extent given in the purchase orders. An overview of the attributes of the three procurement documents of the water boards is presented in Table 2.

Table 2: Overview of the three studied procurement resources for water boards

Criteria (attribute)	Multi-year budgeting program	Project Calendar	Purchase order of the water boards
Availability	Publicly available	Publicly available	Not publicly available
Forward-looking or backward-looking data	Forward-looking	Forward-and backward- looking	Backward-looking
Duration	Different per water board, usually for the next 3-5 years	Current or upcoming projects in 2021 and 2022	Available for any period of time (in this study the past 3-4.5 years)
Portfolio overview	Budget per project and per program	Expected contract price of 608 projects, type of tender and contract per project type	Expenditure of the outsourced projects and tasks with/without description of the contract
Distinguish between investment and operating budget	Provided	Not provided	This is explicitly mentioned in the purchase orders of only one water board
Overview of the underlying activities per project/program	Not provided	Not provided	To a large extent provided

Table 3 gives an overview of the attributes of the purchase orders of each studies water board in this study. From 405,249 purchase orders considered, 42,235 purchase orders with the total procurement volume of €399.1 million were relevant (based on the inclusion/exclusion criteria) for this research.

Table 3: General overview of the purchasing orders of four studied water boards

Attribute	Water board A	Water board B	Water board C	Water board D
Duration	3.5 years	3 years	4.5 year	4.5 years
Total number of purchase orders	18,032	81,291	225,046	80,880
Total number of unique tasks	243	180	170	247
Number of purchase orders relevant for this research	3,510	8,563	21,672	8,490
Procurement volume of the relevant purchase orders (in € million)	43.6	105.6	195.8	54.1
Number of unique tasks relevant for this research	29	21	18	40

The analysis of the purchase orders showed that different terms and concepts are used in these documents across various water boards. To make sure that similar data are analysed, the elements considered in purchase orders are compared across the water boards, summarized in Table 4. From this comparison, it can be concluded that some elements are to a large extent applied in a unified format, for instance coupling the purchase orders with CPV-codes. Some other elements, however, are not explicitly acknowledged by most of the water boards, for instance categorisation of the tasks below or above the EU thresholds is only considered in the purchase orders of one water board.

Table 4: Comparison of the elements in the purchase order of four water boards

Elements of the purchase order	Water board A	Water board B	Water board C	Water board D
Coupling with CPV-codes	+	+	+	×
Coupling with project	○	+	+	○
Coupling with program	○	○	+	○
Coupling with (ref. number of) contract	+	With many decoupled tasks	With many decoupled tasks	○
Distinguish between investment and operating budget	○	○	+	×
Distinguish between tasks above or below the threshold	○	○	+	○

○: Not provided; +: Provided; ×: not explicitly provided.

Using content analysis and based on the three main programs of the water boards and physical characteristics of the purchase orders, five main types of repetitive activities were identified: (1) activities (including maintenance) on waterways such as dredging; (2) mechanical and electrical works such as maintenance of water pumps and moving and rotating parts of water pumping stations; (3) innovation, building, and maintenance of water construction activities such as water pumping systems and locks for the navigation of water; (4) maintenance and placing installations in sewage treatment plants; and (5) civil construction works and maintenance of primary and secondary flood defences. Based on the analysis of purchase orders, the procurement volume per type of activities could be extracted which can be considered as the indication of the frequency of the performed tasks in these water boards.

Implications For Practice

The evaluation of the existing portfolio documents of the water boards shows that there is no explicit categorisation of the repetitive tasks and overview of their expected volume. Lack of such an insight would result in inefficiency of the budget allocation by the client and suboptimal allocation of the resources and capacities by the market parties. In other words, it leads to imbalance between the supply and demand. To provide such an insight at the portfolio level, three main implications for the public client organisations are discussed in the following.

Availability and Quality of the Procurement Data

During data collection, we have encountered some difficulties for getting the suitable procurement data of the water boards. It is important to make sure that such procurement data is available for public client, and it can be easily extracted. In addition, in the purchase orders, different elements with various interpretations are considered across the water boards. This makes it difficult to create a comparable and high-quality database across the organisations. Some potential subdivisions that can be considered in the procurement databases and can be valuable for practice and market parties are procurement volume below or above the EU limits, investment and maintenance activities, projects, and sub-projects (including tasks) per programs of the water boards, and procurement volume per type of repetitive tasks. Optimal clustering of the activities is one of the capabilities of public client (Winch and Leiringer 2016) and it could provide better and faster insights into the required capacity from the market. Furthermore, it contributes to more reliable and transparent requirements from a public organisation.

Unified approach over the procurement data at the portfolio level

The second implication is to provide a unified approach across the water boards. The analysis showed that the way in which procurement data is stored and handled is different across the water boards. As a result, there is no well-founded insight at the management level into the type of repetitive activities and their expected procurement volume. One possible reason is that procurement data are not consistent across the organisations. Comparable databases can also be used as a basis for knowledge sharing regarding the tender and procurement procedures across the water boards and even other public organisations. Given the large volume of the purchase orders and their fragmentation, it is difficult to create a clear and structured overview of the procurement volume, contract type, and the contractors that perform these tasks on a regular basis for the public client organisation.

Such clear overview is required to direct and stimulate the innovation by market parties which is vital for a public client (Kattel and Mazzucato 2018). This is also in line with the recent attention of the government for facilitating opportunities for SMEs to implement innovation and promoting innovation-oriented procurement (Ministry of Economic Affairs and Climate Policy 2021).

A forward- and backward-looking insight into the repetitive activities and their expected procurement volume

Finally, the study showed that the two important procurement documents of the water boards are created at different levels: the multi-year budgeting of each water board gives a high-level overview of the estimated budget per project and per program, whereas purchase orders provide a detailed insight into the procured and executed tasks. In addition, these two insights on the estimated and executed tasks are not linked with each other. To provide a sound basis for estimating the volume of the repetitive tasks both forward- and backward-looking insights by the public organisations for market parties are required. In addition, most of the tasks and sub-projects are performed by SMEs, which highlights the importance of detailed view for the market. The data on the executed tasks are updated regularly, it is therefore suggested that the procurement data are evaluated systematically to provide a holistic and detailed insight into the procured tasks.

CONCLUSIONS

Most of the tasks within the portfolio of the public clients in the construction industry have a repetitive character rather than unique nature. These repetitive tasks, however, are often overlooked in research. The first step for the clients is to identify the typology of the repetitive tasks and their expected volume over time. In this study, three available procurement documents of the Dutch water boards were reviewed. The findings showed that there is a lack of clear understanding on the nature of those repetitive tasks and their expected procurement volume at the portfolio level of the water boards. Based on the findings, five main types of repetitive activities were distinguished. In addition, based on the historical procurement data, the procurement volume of these repetitive tasks can be identified. The research contributes to the project organizing research by providing insights into the repetitive works in the portfolio of a public client organisation. From the practical point of view, the research suggested three main implications for public clients: availability and quality of the procurement data, unified approach over the procurement data at the portfolio level, and a combined forward-and backward-looking insight into the repetitive activities and their expected procurement volume. This study indicates the importance of the

insights into repetitive tasks (and mostly small tasks) and their procurement for public clients and contractors to increase efficiency. Since research on project governance also tends to focus mainly on large, mega, and one-off projects, there is a need to take a wider view reflecting what is happening in practice. Further research is required to explore how collaboration between the public and private parties is facilitated in these repetitive tasks and how different clustering of the tasks and contract types can affect collaboration in such tasks.

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