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MAPPING FIELDS OF INTEREST - A SYSTEMATIC LITERATURE REVIEW ON PUBLIC CLIENTS IN CONSTRUCTION

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ABSTRACT

Purpose: To create an overview of scientific knowledge currently available on public clients in order to set up a research agenda for public commissioning in construction.

Background: Public clients are important actors and change agents in the construction industry. While sharing characteristics with private clients, they differ on terms of spending of public funds and by having to comply with European regulation. Operating in a public context requires transparency, objectivity and accountability of processes, procedures, projects and services.

Approach: We conducted a systematic literature review in Scopus and JSTOR. In total 171 articles were labelled relevant for the field of public commissioning. These articles were used to perform a quantitative study on the characteristics of the studies in the field. Additionally a network analysis of the topic was performed to identify the topics in the literature.

Results: Results suggest that most research focused on issues related to organising the project (procurement, contracting and management). Hardly any of the publications in construction management dealt with asset management of public clients, their internal organisation and their need to operate transparent, objectively and accountable.

Practical Implications: Two future research directions are identified to enhance the knowledge on public commissioning. Firstly, a focus on strategic asset management, the internal client organisation and the role in the public realm is needed. Secondly, the awareness of scientific knowledge in this field can be increased by translating the findings of previous work on procurement, contracting and management in practice.

Research limitations: The results are influenced by the choice of search engines (Scopus and JSTOR) and the exclusion of paper that were inaccessible, resulting in a small amount papers on specific subjects, such as purchasing, finance and legal issues.

Originality/value: Despite the importance of public clients in the construction chain, research on public commissioning is still in its infancy. The study provides directions for future research, complementing this interesting research field. A research agenda can stimulate oth-

er scholars in connecting adjacent research areas to improve the level of knowledge in this field and enhance the position of the public client in construction.

Keywords: Public sector, Construction clients, Literature review, Research agenda

1   INTRODUCTION

Clients are important actors in the construction industry. The literature on construction clients considers clients as the initiators of projects and those that contract other parties for the supply of construction goods or services (Boyd & Chinyio, 2008). Opposite to clients in mass-production sectors, clients in the construction industry play a large role in the creation of their facility or the facility they bear a responsibility for. They directly engage in the planning and construction and in this way they shape not only the ultimate product, but also the construction process (Hartmann, Reymen, & Van Oosterom, 2008).

Despite the importance of the clients, little research has been conducted. To address the lack of research into construction clients, Haugbølle and Boyd (2013) introduced a conceptual framework in the CIB W118 road map. The framework consists of the internal operation of the client, together with four key domains: 1. Business and Society where the client's purpose is given meaning; 2. Business and Users where the organisation of the achievement is enacted; 3. Buildings and Society where the client's building aspirations are regulated; and 4. the Construction Industry, which fulfils the building aspirations of the client. By putting the client's aim centrally in this framework, they create a different perspective from other work on construction clients (Haugbølle & Boyd, 2013).

The roadmap of CIB W118 features as a starting point for our research. We adopt the vision in the roadmap, but focus solely on clients in the public sector. While sharing many characteristics with private clients, they differ on terms of spending of public funds and having to comply with European regulation. Private clients do not have to comply with such a rigid externally enforced framework. Public clients operate in a public context. They therefore have to be transparent, objective and apply accountable procurement of projects and services (Morledge & Smith, 2013). Studies have shown that in a typical country, around 50% of the construction output is commissioned by a public client (state, municipality or other public body). Many of the private sector clients, (who are usually less experienced) tend to follow the model of the public clients (Winch, 2010). This indicates public sector clients are of great importance for the industry since they serve as an example. Furthermore, they are expected to act as one of the most important change agents in the construction industry. As such they also have a leading role in innovation and change.

Last year several major Dutch clients in construction decided to initiate a new Chair of Public Commissioning at Delft University of Technology. This requires setting up a research programme to increase the level of scientific knowledge in the domain and implement research results in practice. In order to identify the most important knowledge gaps, we conducted a systematic literature review. In this paper we present the research approach of this review and the results of this search. We identify related domains of commissioning in construction to support the scientific development of the discipline. Then we discuss the meaning of our findings in relation to the research agenda for our new chair in this challenging new field of science.

2   RESEARCH APPROACH

In this paper we address the following research questions: what are the main research themes in the scientific field of public commissioning? Which knowledge gaps can be identified?
To map the current knowledge on public commissioning, we conducted a literature review. According to Tranfield et al. (2003) this is an appropriate tool to map and assess the existing intellectual territory and develop the existing body of knowledge further. A systematic literature review is characterised by an accurate methodology section describing how the study was conducted (Crowther & Cook, 2007; Denyer & Neely, 2004). It can summarise large volumes of literature into manageable executive summaries (Crowther & Cook, 2007). This approach has in the past decades increasingly been applied by medical researchers (see for instance Checklists for review articles (Oxman, 1994). Recently the systematic literature review has been adopted in management studies (Tranfield et al., 2003). In this chapter we describe how we set up our literature review.

2.1   Query

As addressed in the introduction our aim is to map literature from a variety of academic domains (construction management, engineering, management sciences and purchasing) that relate to clients in construction. Therefore we did not limit our search to a specific set of journals or books, but focused on two main databases in these fields. First we used the search engine of Scopus to find papers with specific search terms in the title and/or abstract. Scopus contains around 50 million records about (amongst other) science, technology and social sciences[9] and is considered one of the primary sources for applied science, including construction.
Inclusion criteria were:
1. Only articles, because of the guarantee of quality offered by peer review and the wide availability;
2. Written in English, because this is the standard scientific language;
3. Dated after 1st January 1990 (because the 90s marked a change in the opinion on the construction industry (see for instance the reports of Latham in 1994 (Constructing the Team) and the Egan Report Rethinking Construction in 1998);
4. Published or in press, because of the relevancy and timeliness;
5. Only content that can be accessed from the TU Delft Library, because of pragmatic reasons.

The query was developed in an iterative way. Our main focus was on public clients. It was therefore necessary both terms ("public" and "client") appeared in our query. Because we found out some authors did not use these exact terms, we added synonyms such as government, (local) authority, parliament, commissioner and owner to emphasise the focus on the public sector client. Furthermore our aim was to find papers from different disciplines. Therefore we included "construction", "infrastructure", "real estate" and "architecture". The last part of the query consists of tasks or interests of a client, such as "brief", "asset management", "partnering" and "tendering". The final result can be found at the end of this paper (appendix 1).

Searching was performed in June and July 2013, and finalized on 18th July. Then we performed a similar search in JSTOR, because that database has a larger focus on management papers. The last search performed in JSTOR was on 23rd July 2013. Because the query from

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[9] http://www.elsevier.com/online-tools/scopus. Retrieved 17 September, 2013.

Scopus could not be used, we devised a different one. In JSTOR papers in which certain words are close together can be found. When the terms 'client' and 'construction' appear within 25 words from each other, the paper was included in our results. The same was done with the combinations 'client' and 'infrastructure', 'client' and 'estate' and 'client' and 'architecture'. This query can be found in appendix 2.

The query in Scopus yielded 786 unique results, the one in JSTOR 181 unique results, so 967 in total. This set was subjected to further investigation to determine which papers suit the purpose of this review. For this we used exclusion criteria. The first was 'availability of full text'. Using the licences and subscriptions of the TU Delft library on the 967 results from Scopus and JSTOR no full text could be found of 283 articles, leading to a set of 684 papers.

The second exclusion criterion was 'focusing on construction/infrastructure'. Despite the careful composition of the query, a lot of papers appeared to focus on other domains than construction, such as legal advice and computing. Both authors read the abstracts of the papers independently and rated them on a scale from 1 to 3 on relevance for the field. Then we discussed for each paper the ratings. When our opinions differed, we discussed the reasoning until agreement was reached. 516 papers did not primarily focus on construction/infrastructure and were therefore excluded from further analysis.

We then discovered a difference between papers that considered clients as one of the many stakeholders in the construction process and papers that primarily focused on the interests of clients. We therefore divided the remaining set of 171 papers into two categories:
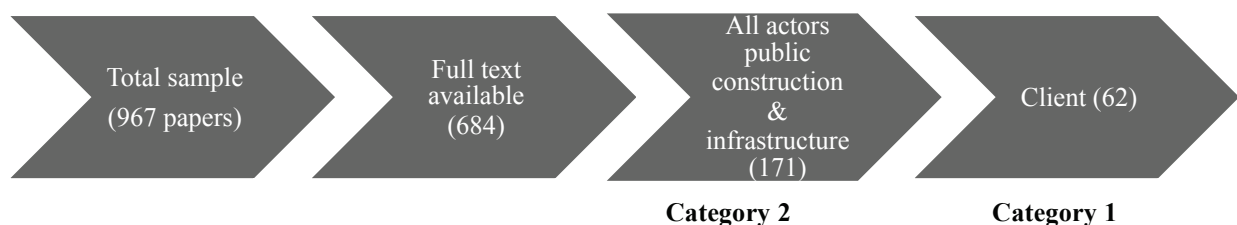- *Category 1: first tier papers*
  The context of these papers is construction or infrastructure industry, written specifically for or about clients, or considering the client perspective on a (different) subject. These 62 papers are the main source of inspiration for our research agenda.
- *Category 2: second tier papers*
  The context of these papers is the construction industry or infrastructure, but the results focus on all stakeholders instead of clients only. When a tool or topic is described that is relevant to the client but not specifically aimed at the use of clients, the paper was also included in this category. These 109 papers provide a background for our research agenda.

The process from 967 to 62 papers is displayed in figure 1. The full list of these papers can be obtained from the authors.

Figure 2: Selection of the papers

| Total sample (967 papers) | Full text available (684) | All actors public construction & infrastructure (171) | Client (62) |
| | | Category 2 | Category 1 |

2.2   Explorative quantitative analysis
The results of this paper consist of two parts. In the first part we analyse all category 1 and 2 papers on the year of publication, top authors and journals and geographic dispersion (section 3.1-3.4). This analysis is based on the export file of Scopus and JSTOR. We also looked at the government forms of affiliated countries as categorized in the report of the Democracy

Index (The Economist Intelligence Unit, 2013) (section 3.5). In this report a distinction is made between full democracies, flawed democracies, hybrid regimes and authoritarian regimes.

Again both authors read the abstracts (and if necessary the papers) and categorised the context of the research. The research methods of papers were analysed in the same way (sections 3.6). We distinguished between qualitative methods, quantitative methods, mixed methods, argumentation, modelling and other methods.

Finally the papers were categorised on the research theme (section 3.7). Inspired by the roadmap (Haugbølle & Boyd, 2013) and the 4-phase Project Life Cycle (PLC) model (Pinto & Prescott, 1988) we identified five fields of interest on public clients in construction: 1) Operating in the public realm, 2) Organising people, 3) Developing the performances level/brief, 4) Organising the project, and 5) Governing the assets. Themes 2-5 are translations of phases in the PLC: conceptualisation, planning, execution and project termination/use. Theme 1 is an addition to the PLC model emphasising the context of the public sector. In this theme the focus is the need for transparency, accountability and integrity, important issues for public clients. Theme 2 pays attention to the internal organisation of the public client. In order to generate a successful project, it is important to put the right people at the right places and coordinate the projects on a strategic level. Theme 3 concentrates on briefing and establishing the desired performance level of the future facility. Theme 4 regards the tender and procurement phase and the construction phase. Theme 5 focuses on the management of the assets and underlying contractual agreements of the client.

2.3   Explorative network analysis

In the second part of the paper we focus on the connections between all 967 papers in the data set to see how the papers relate to each other, and which papers and topics are important. For this a network overview was created which displays the references as mentioned in the papers. We followed the same method as Chappin and Ligtvoet (2014) in their paper on the differences between transition and transformation.

For the network overview the papers from the search query including the references was exported from Scopus and JSTOR into an export file. We then ran the script provided by Chappin and Ligtvoet to convert the export file into one that can be imported into the program Gephi. We used Google Refine to clean the data by removing typing errors and combine different spellings of the same reference (for instance P.E.D. Love and P. Love). Finally we imported the file in Gephi, a program which recognises the relation between two documents and connects them in a network (see Chappin & Ligtvoet for the details).

Our network on public client literature consists of 16.445 nodes with 17.313 connections. To keep a clear view on the network, the figure only shows nodes with 4 connections or more that are connected to the central network. These are 320 nodes in total. The size of the node refers to the number of connections: the more connections, the bigger the node. The results of this analysis are described in chapter 4.

3   RESULTS PART 1: EXPLORATIVE QUANTITATIVE ANALYSIS

3.1   Paper count per year

We found 117 papers on public commissioning. This sample size is comparable to other literature reviews on a specific topic in the construction industry. See for instance Garvin and

Gross (2012) who identified 278 PPP-related papers in infrastructure in a smaller timespan (1997 up until 2010) or Lehtiranta (in press), who found 105 papers on risk management in project management between 2000 and 2012. This is comparable to our size. However, compared to general fields of study such as health case or IT, it is a very limited number. Figure 2 shows the paper count per year. This shows a substantial increase of publications since 1997, in both cat.1 and cat.2-papers. Cat.1-papers, with a main focus on the clients, show a growth from incidentally one paper per year to five per year. Cat. 2-papers increase from around two per year to ten per year.

Figure 3 : Paper count per year
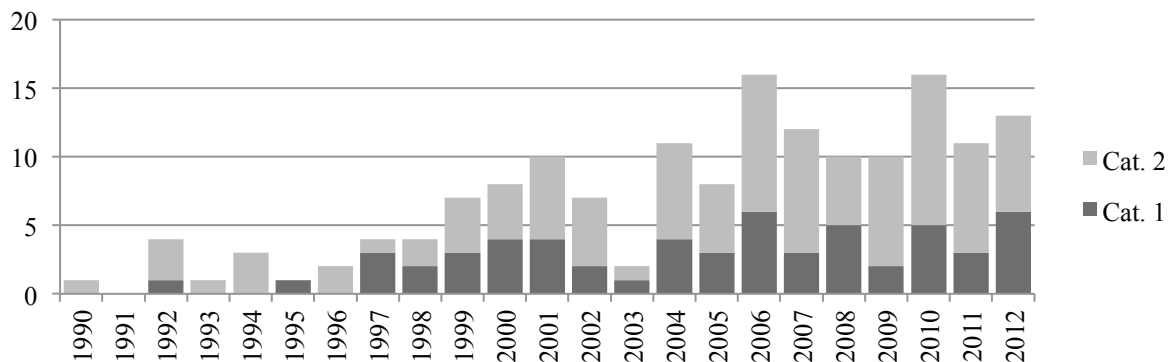
Two points in the graph catch our attention, the first being the increase of papers after 1997. Before 1997, the number of published papers is relatively low. The increase after 1997 can be related to the report of Latham (Constructing the Team, 1994) and the report of Egan (Rethinking Construction, 1998). As shown in section 4, these reports are important links in our data set. The second remarkable point is 2003, which is a notable low point with only one paper per category. We find this gap difficult to explain. The number of papers in surrounding years is the same, so there is no reason to believe that there was a decline in interest in this subject. Since the papers in 2002 and 2004 focus on the same subjects (contractor selection, decision making), it also does not mark a transition from one theme to another. Yet, we noticed that the journals featuring a lot of papers in this data set (Construction Management and Economics, Journal of Construction Engineering and Management, see also section 3.3), are not present in 2003. We therefore assume this dip is merely coincidental.

3.2   Important authors
The number of unique authors is 299. Figure 3 shows the top 13 authors appearing in the search query results are responsible for 34 of the 62 papers in Category 1 (55%). This group of important authors is relatively small. They also often write papers together, which causes a tightly interwoven pattern in the network overview (chapter 4). Based on the disposition between cat.1 and cat.2 papers we conclude that these authors did mainly focus on the client perspective instead of taking all construction stakeholders into account.

Figure 4: Paper count per author (only displaying authors with 2 cat.1-papers or more)
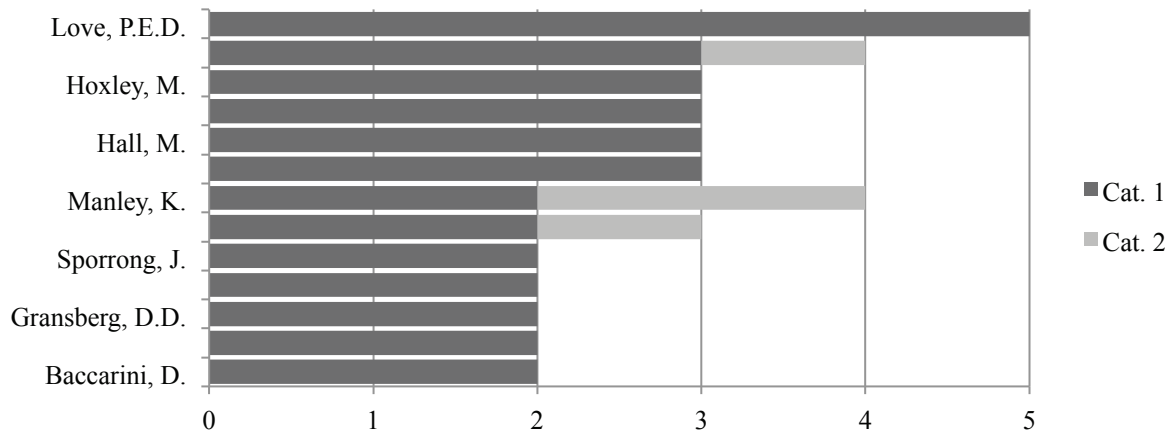

Looking at the topics addressed in the papers, we notice a strong interest in public procurement, originating from Australia and the UK. Peter Love of Curtin University of Technology (Australia) wrote, for example, five papers on public sector procurement, and five other authors wrote three cat.1-papers: Peter Davis (also Curtin University) and David Edwards (Loughborough University/ Birmingham City University, UK), both co-author of three of the five papers on this topic by Love. Mark Hall (University of Bath/Manchester Metropolitan University, UK) and Robin Holt (University of Bath, UK) wrote three papers together about project management in the UK. Michael Hoxley (Anglia Polytechnic University/Nottingham Trent University, UK) authored 3 papers on service quality in the public sector.

3.3   Important journals
Figure 4 shows the kind of journals in which the papers were published. There are 81 unique journals in our results. They can be generally divided in two groups: one focusing on construction and engineering and one on management sciences and governance.

Two journals are ahead in number of publications: Construction Management and Economics (published by Routledge), with 23 papers in total and Journal of Construction Engineering and Management (American Society of Civil Engineers) with 17 relevant papers. Our focus on the public sector shows in the journal on the third place, International Journal of Public Sector Management (Inderscience) and Public Performance & Management Review (M.E. Sharpe) on the eighth place. These journals do not feature cat.2-papers, which shows that the papers they publish focus not only on construction, but when they do, they are regarded cat.1-papers.

Figure 5: Paper count per journal (only displaying journals with 2 cat.1-papers or more)
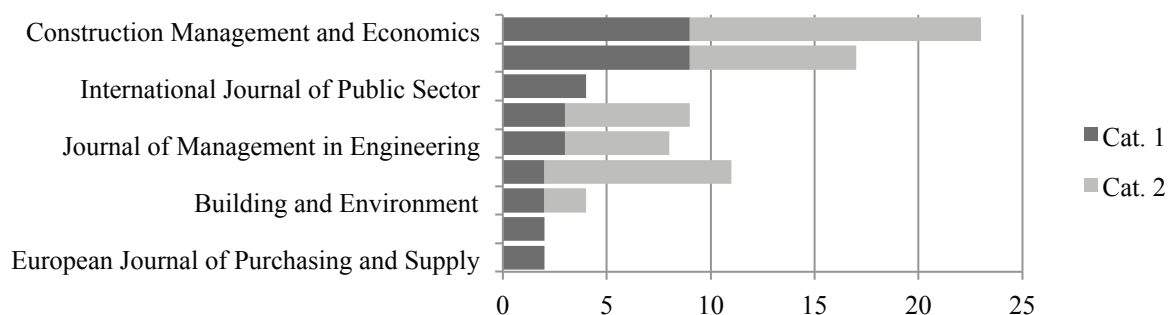
The papers in place three to six feature a larger share cat.2-papers than cat.1-papers. We believe this is because of a wider scope on construction actors, visible from the titles: review, project management, and environment.

3.4   Geographic dispersion

Figure 5 shows the geographic dispersion of the papers. 50% of the cat.1-papers originate from Europe (inner circle). The majority is produced in the United Kingdom. Sweden, The Netherlands and Poland are the other European producers of cat.1-papers. Asia, North America and Australia are responsible for 1/6 of the remaining papers. Respectively Hong Kong, United States and Australia produced the largest number of papers from their continent.

The cat.2-papers (outer circle) show a different image. The share of Asian authors is twice as big, constituting mostly of contributions from Hong Kong and Taiwan. The European, North American and Australian shares are smaller. From these findings we conclude that in Europe the focus on public commissioning and especially the client is the biggest. In Asia the debate on public commissioning concentrates on all actors, instead of only the client.

3.5   Forms of government

Elaborating on the previous section we determined to what extend the data collection of the selected papers was done in a democratic environment (figure 6). The papers were distinguished between full democracies, flawed democracies, hybrid regimes and authoritarian regimes, based on the Democracy Index of 2012 (The Economist Intelligence Unit, 2013).Almost 80% of the cat.1-papers are from a full democracy. The top four countries (UK, US, Australia and Sweden, together 68%) are full democracies. There is only one paper in the authoritarian and two in the hybrid category. This form of government possibly effects public commissioning, especially in the field of transparency and accountability.

In the cat.2-paper the share of full democracy is significantly smaller. This is connected to the increase of papers from Asia in this category. Hong Kong, a flawed democracy, mainly contributed to this share. The increase in authoritarian papers is influenced by papers from China. It is clear that our focus, public client commissioning, receives more attention in democratic countries.
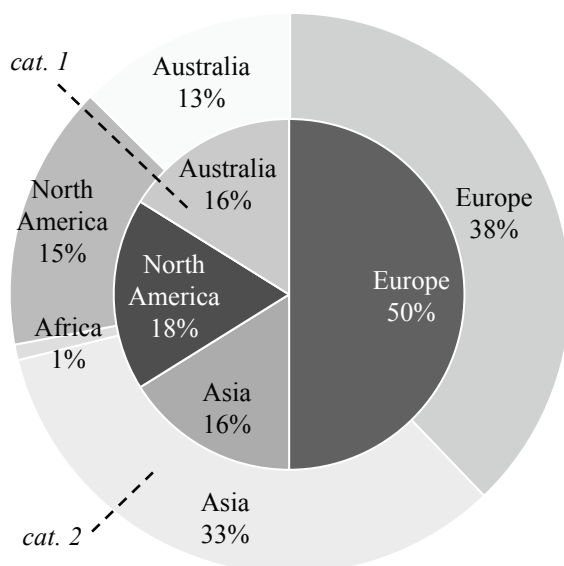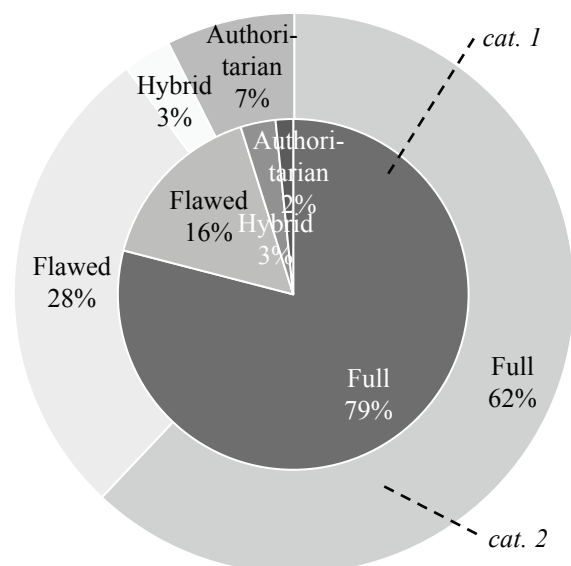

Figure 5: Paper count per continent

Figure 6: Form of government in countries where papers were written

3.6   Research methods

To determine the nature of this research field, we also analysed the research methods. We found that qualitative research is a majority in cat.1 and cat.2-papers (53% and 43%, see figure 7). This shows the nature of this field: multidisciplinary research with a relatively small amount of traditional engineering.

For the cat.2-papers the share of qualitative research is smaller compared to the first tier papers, whereas modelling has a substantial bigger share. This difference appears to relate to the amount of Asian papers in this category and their preference for quantitative studies and modelling. Especially the modelling of contractor selections is a popular research area. Based on this analysis we conclude that that the majority of the cat.1-papers describe public commissioning from a sociological point of view in identifying the complexity of the phenomenon, while cat.2-papers are more focused on unravelling reality by modelling and conducting surveys.

3.7   Themes of papers

To map which topics in public commissioning are well researched and which not, we divided the papers in the five client themes: acting in the public realm, organising people, developing the brief, project organisation and governing assets. As shown in figure 8 most cat.1-papers deal with theme 4 – the project organisation. Common topics in this theme are contractor selection, project performance and project management. The other themes have a considerable smaller share, of which theme 1 (Governing the assets) is clearly the smallest. The image for cat.2-papers is the same: most papers are about organising the project. This shows that generally most attention is given to the project organisation, whether the papers focus on the client or on all stakeholders. Not much attention is given to operating the public realm, organising the people, developing the brief or governing the assets.
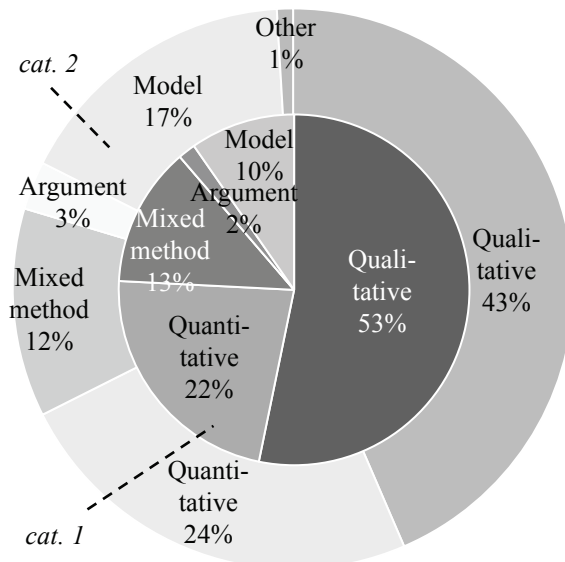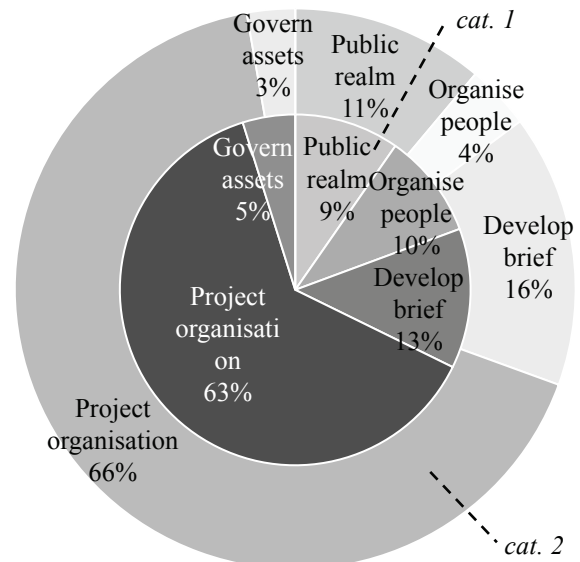
Figure 6: Research methods

Figure 7: Themes of papers

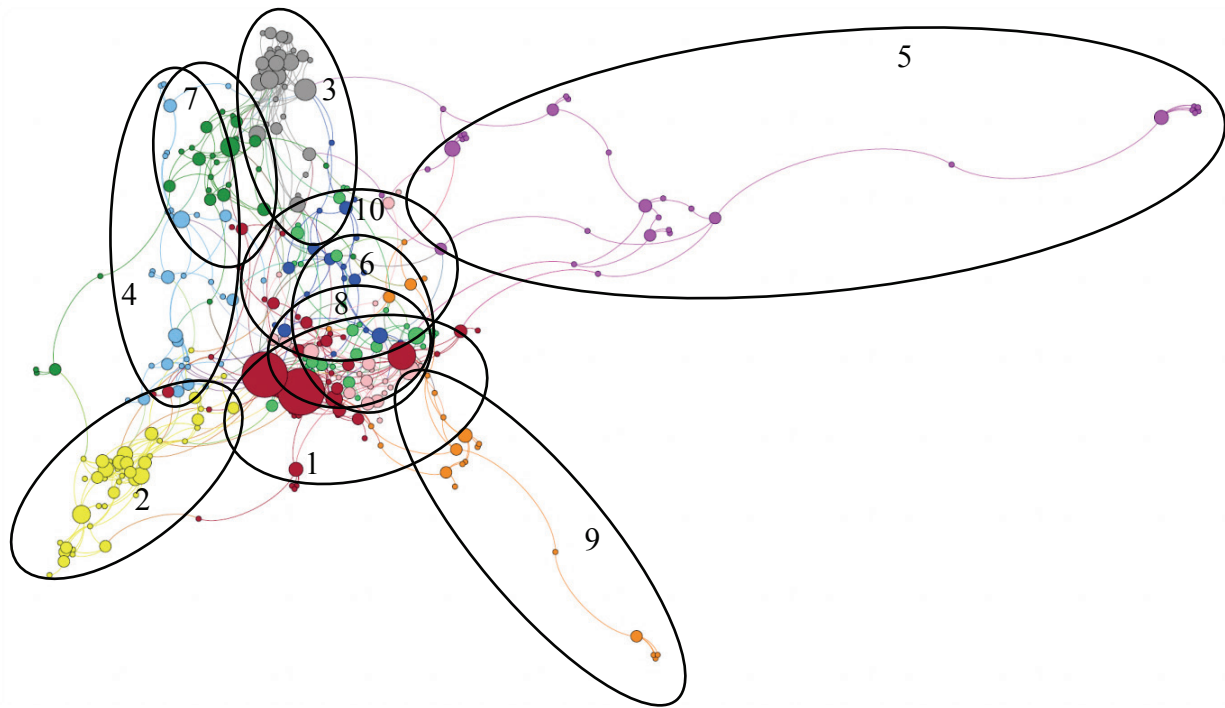## 4   RESULTS PART 2: NETWORK ANALYSIS

4.1   Themed groups

In the second part of our paper we discuss the results of a network analysis of the total sample of 967 papers. As indicated in section 2.3 the network analysis consists of a closely-knitted network of 320 nodes with a large number of mutual connections (figure 9). Of the 320 nodes, 42 belong to papers in category 1. This means 20 papers are not in the network, mainly because they are recent and have to date not been referred to. Only half of the category 2 papers is present in the network: 56 of 109. This means they do not yet have a strong connection to the core of the network, which consists mainly of papers on the construction industry and infrastructure. Because they appear in our search results, they should be relevant for our research field.

The software Gephi categorised the nodes on the basis of mutual connections. Based on this categorisation, ten main groups were identified:

1. Collaboration: this group contains the two biggest nodes related to the Latham and Egan report. Key words of this group are: team organisation, collaboration, innovation, and case study research. This shows that most papers focus on a better way to collaborate (by partnering, supply chain management and/or innovative procurement), mostly done by investigating cases. Together with groups 6 (modernising construction), 8 (innovation) and 10 (public project management) it is one of the main themes of the network, with many connections with other themes and papers.

2. Contractor selection: keywords are contractors, selections, competitive bids, decision criteria. This group is situated at the edge of the network, which means it has few(er) connections to other groups. As a group however, it is coherent, indicating that the authors refer a lot to each other's work, but not so much to papers outside this theme.

3. Project performance: this group focuses on construction performance, especially on cost and time overruns of projects. Like group 2 (contractor selection) it is a coherent group. It is also at the edge, but less remote than group 2. This means the number of connections to other groups is higher than group 2.

4. Service delivery: group 4 focuses on delivery methods (Design & Build and Joint Ventures) and on service quality. It is a widely dispersed group, which indicates not much internal referencing. The number of connections to other themes on the other hand is large. The references to group 1, 2 and 7 show its relevance for team organisation, contractor selection, and causes of time and cost overruns.

5. Public private collaboration: this group is the most widespread group. This means there is a small number of internal connections. It is also at the edge of the network, showing it does not have a lot of topics in common with other groups. Keywords are private finance initiative, public private partnerships, public sector and democracy.

6. Modernising construction: this group focuses on cooperation and modernising construction. Being in the centre of the network it is a group with many connections to other themes. This indicates that cooperation and modernising construction are important themes in our data set. These themes are often subject to qualitative research.

7. Delay and cost overruns: this group shared similarities with group 3 (project performance). However, being closer to group 4 (service delivery) the publication concerns are delay and cost overruns combined with delivery methods and public private partnerships.

8. Innovation: this group shows similarities with group 1 (collaboration) and 6 (modernising construction). Main themes are innovation in construction and procurement innovation. Other important terms are case study research and qualitative research, which show the type of research of this group similar to group 1, 6 and 10.

9. Integrity: this is a dispersed group at the edge of the network. It focuses on professional ethics, better construction briefing, and collusion.
10. Public project management: this group also positioned in the centre of the network. It combines research on project management, project procurement, and public sector clients. The group is connected to group 5 (public private collaboration) so it is strongly focused on public sector topics.

Figure 8 Network of papers

4.2   Network results

Our network analysis shows a number of interesting findings, which also connects to the quantitative exploration of the sample in the first part of our paper. First, we clearly recognise the two groups of journals as identified in section 4.1.3. Although the management and purchasing papers are mainly concentrated in groups 4 and 10, the network shows that public commissioning is a multidisciplinary field studied by both construction/engineering and (public) management/purchasing researchers.

Four groups (Collaboration, Modernising construction, Innovation and Public project management) are centrally positioned in the network. The cross references between these groups signifies the importance of these papers for the research agenda. However, we also found themes that are at the core of public commissioning, such as public sector, democracy, professional ethics and (better) briefing (groups 5 and 9), are at the edge of the network. This signifies a weak link to other papers. The number of papers in those groups is also small. This is in line with our findings in section 3.7. Of the ten groups identified, seven (group 1-4, 7, 8 and 10) focus on the execution phase of a project.

We therefore conclude that most of the research done on public commissioning is related to project management, procurement, and performance. It is merely performed by a relatively

limited group of people, often referring to each other's work. Little attention is paid to other topics and therefore less prominent in our network. In order to develop a balanced field of research that represents the full scope and complexity of operating as a client in the public domain, future research should incorporate the character of the public private collaboration and general themes of construction innovation, integrity and other public values.

5   CONCLUSION AND RESEARCH AGENDA

5.1   Conclusion
The goal of this paper was to set up a research agenda for public commissioning in construction. We investigated what is currently known about this topic and what can be done to increase the level of (scientific) knowledge. We conclude that the number of papers on public commissioning is limited: our total sample included 967 publications that somehow relate to clients. In the time span of 1990 to 2013, only 62 papers were directly connected to public clients in the construction industry. This number increases from 1 to 12 papers per year, indicating a growing field of science. The majority of these papers are produced by a small number of authors from Europe and Australia, and published in only a few journals.

Most research papers appear to have a limited scope. The explorative quantitative analysis showed that more than half of the relevant papers focused on project management, contractor selection and project performance. This was confirmed by the network analysis, which revealed that these papers are situated in the centre of the network. Furthermore, two-third of the selected papers use qualitative research methods such as case studies and interviews.

The journals publishing relevant articles for client research can be divided into two categories: a large group focusing on construction and engineering, and a smaller one on management sciences and governance. Although some topics are relevant for the construction industry, most of the papers do not seem to acknowledge public commissioning as a separate field. We also found that the core of the network concentrates on two levels: the project level and the industry level. The organisational level is missing. We believe this is the main concern of the client.

5.2   Reflection
Our results share similarities to the roadmap of Haugbølle & Boyd (2013). The results from the literature review underpin the importance of the domains. The domains identified in the roadmap are comparable to the topics we found. Compared to the roadmap, our literature review adds prioritisation and also concretises relevant research fields. Our findings, for example show that domain 2 Business and Users (where the organisation of the achievement is enacted) is related to our topic 4 (Organising the project). We found that there has been much interest on this topic. We therefore believe that more focus on the other domains is required.

Determining the relevant papers for public construction clients is an evolving process. One example is the fact that the term "purchasing" was not included in our original query. Yet, from the network analysis we found that purchasing is an important topic in public sector literature. As Murray (2009) indicates the terms commissioning, procurement and purchasing, are often interchanged.

When looking at the results from the query, almost no papers on legal issues were included. This can be attributed to the fact that Scopus mainly focuses on science, technology and social sciences and that we excluded papers we were unable to access. This effect apparently was not compensated by JSTOR, which does feature law journals. To broaden the scope of the query, the query should be performed at other databases or universities, since the kind of subscriptions to particular journals differs between libraries.

5.3   Research agenda

We suggest that in order to describe and investigate the full spectrum of public commissioning, the scope should be broadened towards operating in the public domain, the internal organisation of the client, briefing and asset management. A strong connection to adjacent research fields such as public administration, law and organisation sciences may support the further development of the field. We found inspiration in other fields that came across in our search query such as IT, healthcare, urban planning, and infrastructure management. A research agenda can connect these fields to that of public clients in construction, improve the level of knowledge to enhance the position of the public client in construction. The goal of the research agenda will therefore be twofold, comprising both new research and valorising existing knowledge.

Firstly, the themes that have not fully been addressed in previous research could be developed in the further. Since most of the previous work concentrates on project related issues, our focus is on two topics: 1) The client as a professional public organisation, and 2) The client as a strategic asset manager. Topic 1 elaborates on the organisational structure and competences the client. Having the right people in the right place will not only enhance the internal organisation, but also impact project performance (Van Weele, 2009). This in turn could improve the image of the project and the commissioning body as separate entity. Especially in times when budget cuts are prominent and transparency, integrity and accountability are important values (Jørgensen & Bozeman, 2007), the perception of professionalism is an important feature for public clients. Adjacent fields, such as organisation science, organisational psychology and public administration, could offer interesting theories in addressing these issues.

Secondly, we will focus on strategic asset management. This is strongly related to the aging building stock in the Netherlands and other (European) countries. In the years following World War II, a large amount of dwellings and infrastructure was constructed (Dekker, 1996). This stock has now reached the end of their technical life span, while the demand for new real estate is diminishing. The need for transformation and renovation will therefore become more prominent. Knowledge development in this area strongly relates to architecture, urban planning and heritage of our built environment.

Furthermore, there is a need from practice for practical guidelines and instrumental tools. Despite the availability of existing publications and tacit knowledge, mistakes are still made. This requires a good valorisation strategy that is tuned towards the audience. Our research strategy provides in a practice-oriented research approach, in which practical implications are integrated in the development of theoretical knowledge foundations.

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APPENDIX

1   Search query Scopus
TITLE-ABS-KEY(public OR government) AND (TITLE-ABS-KEY({local authority} OR {local authorities} OR client OR commissione* OR commissioning OR {owner} OR {parliament}) AND TITLE-ABS-KEY(construction OR infrastructure OR {real estate} OR architectur*) AND TITLE-ABS-KEY({asset management} OR {portfolio management} OR {project management} OR {process management} OR performance OR procur* OR brief OR briefing OR partnering OR {public private partnership} OR {public-private partnership} OR p3 OR ppp OR assessment OR governance OR maintenance OR project OR tender* OR build* OR housing OR {facility management} OR transportation)) AND SUBJAREA(mult OR ceng OR engi OR mult OR arts OR busi OR deci OR psyc OR soci) AND PUBYEAR > 1989 AND (LIMIT-TO(LANGUAGE, "English")) AND (LIMIT-TO(DOCTYPE, "ar") OR LIMIT-TO(DOCTYPE, "re") OR LIMIT-TO(DOCTYPE, "cr"))

2   Search queries JSTOR
("public client"~25 AND "client construction"~25)
("public client"~25 AND "client infrastructure"~25)
("public client"~25 AND "client estate"~25)
("public client"~25 AND "client architecture"~25)