

# Public-Private Partnership: Empirical Findings in Infrastructure Projects

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*BOT; criticism of implementation; DBFMO; empirical finding; PFI; procurement of infrastructure; PPP; Public-Private Partnership; systematic literature review*

*Public–Private Partnerships (PPP) has become a common way to procure infrastructure facilities, but its utility is disputed in both science and practice. Therefore the article figures out scientifically proven findings of PPP in the field of infrastructure procurement. Using the approach of a systematic literature review important and renowned journals will be searched for empirical articles published in the period 2000 - 2015. The 24 articles gathered will be analysed for findings to the six categories: accountability; partnership; participation of stakeholders; performance and success; skills, knowledge and abilities; risk. The findings suggest, that a lot of difficulties occurring at the implementation of PPP are based in deficits of the public partner. Because a lot of questions remain unanswered, the author addresses questions for further research and proposes comparative research approaches.*

## I. INTRODUCTION

The provision of infrastructure is an essential part of a state's activity. Global investment in facilities just of basic services like energy, transport, water and telecommunication amounts to 2.3 trillion Euros per year. This is about 3.5 percent of the world's gross domestic product (McKinsey Global Institute 2016). In addition various other public tasks require the provision of infrastructure, such as in the field of education for children's day-care centres, schools and universities.

For procurement and management of infrastructure facilities the public decision-makers have the choice between various institutional options (Hodge et al. 2010; Reichard 2008; Reichard/Röber 2010). Traditionally, decision making and overall responsibility, including all risks, lies within the public sector. Therefore the following tasks division for infrastructure projects is quite common: politics is responsible for defining objectives and decision making; administration for general planning, coordination and monitoring the tasks that are carried out by many private contractors. In doing so, planning and construction on the one hand, as well as operation and maintaining on the other are often considered separately. Two-thirds of the expenses for infrastructure facilities arise during operation. If these costs were comprehensively considered during planning, the total costs of infrastructure facilities including operation and maintaining for 15-30 years, could decisively be lower. But, decision making in the procuring phase often focuses more on minimizing the expenses for construction than optimizing the total costs. It is for that reason, that a holistic approach to planning, construction and operation including maintenance and financing can lead to a more effective and efficient use of resources. Under these circumstances, Public-Private Partnership (PPP) has been more and more developed to a holistic procurement approach. The main ideas of PPP today are to ensure an assessment of all incurred costs over 15 - 25 years (lifecycle principle), to share responsibilities and risks as well as to bring in private knowledge and resources (Hodge et al. 2010). However, there are uncertainties about its success.

In science a certain scepticism towards PPP existed from the beginning. Based on considerations of institutional economics, e. g. contract and transaction cost theory, there are conceptual concerns

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about effectiveness and efficiency. However, a lot of scientific publications also support the main ideas of PPP and make proposals to develop this procurement approach further. As the number of PPP projects increases, so does critical reporting of the implementation of PPP in media and science (e. g. Akintoye 2003; Rügemer 2010; Kröger 2014). In addition, a dogmatic believe is questioned, in which the private enterprise is generally seen as more economic than state action (e. g. Reichard/Röber 2010; Szymanski 2010). At the same time, particularly practice oriented scientific reports maintain that cost and time savings as well as a positive impact on project management exist (Alfen/Weber 2006; Grabow 2007). Especially after the turn of the millennium, the ongoing discussion about PPP has led to a growing number of publications, also in important scientific journals. Nevertheless, only a few studies provide empirical evidence.

The aim of this paper is to lay out scientifically proven findings of PPP in the field of infrastructure procurement. Using the approach of a systematic literature review relevant empirical studies in highly-ranked and renowned international journals are identified and analysed.

## II. PUBLIC-PRIVATE PARTNERSHIP FOR INFRASTRUCTURE

*Public-Private Partnership* (PPP) and *Infrastructure* are terms that do not have a clear definition. Depending on the context the usage and the connotations of these terms can differ. For that reason both need to be discussed at the beginning of an analysis.

### a) INSIGHT IN THE PPP-APPROACH

New and differing terms are used not only to describe new phenomena, but also to delineate qualitative changes and to emphasize changed aspects. In scientific context the term *Public-Private Partnership*<sup>2</sup> became popular in the 1990s (Barr 2007; Torchia et al. 2013: 8). From this point onwards the number of publications has increased strongly. However, a declining trend started in 2005 (Figure 1).

In the political sense the affirmative word *partnership* positively reinterprets the relationship between state and private actors. Therefore TEISMAN and KLIJN (2002) regard the usage of the term just as a language game. PPP is just a linguistic framing, which means a targeted and addressee-oriented accentuation of language. In this sense, Linder attributes the popularity of *PPP* to the avoidance of other terms like privatization and outsourcing, which carry a negative connotation. Nevertheless, in the administrative context the transfer of ownership by PPP is assessed differently. In the UK the term is used synonymously to privatization, but no such usage takes place in Australia (O'Flynn/Wanna 2008).

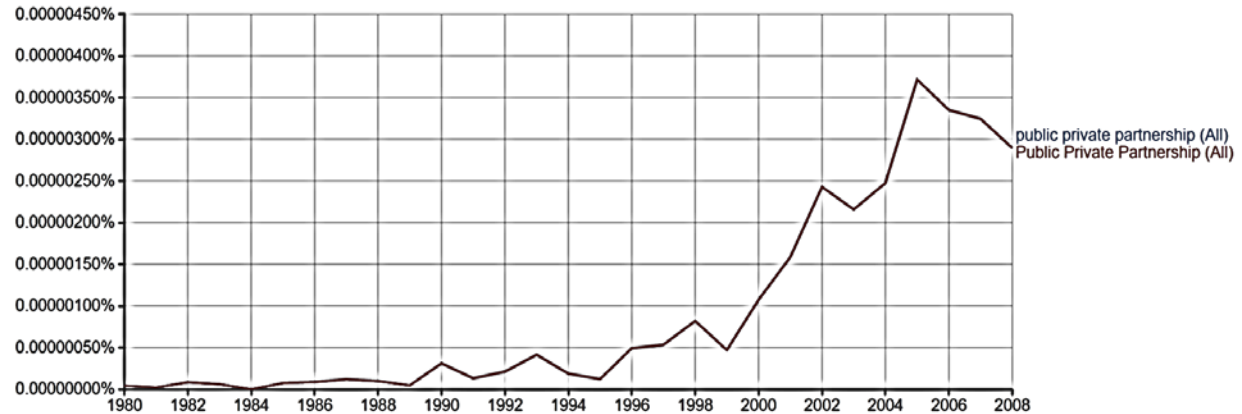
This illustrates the meaning of a term can vary and additionally also change over time. Both effects are observed with *PPP*. On the one hand, the generic term *PPP* describes many different organizational forms. Referring to the transfer of assets from the state to private sector, PPP can be distinguished between institutional and infrastructure-oriented projects (O'Flynn/Wanna 2008: 95). Hence, the distinction between contracting and organizational PPP is widespread internationally (Hodge et al. 2010; Budäus/Grüb 2008; Lenk et al. 2011; Lück et al. 2013). Nevertheless, academic literature usually refers to the description of "PPP typical characteristics", which involve an intensive exchange between at least one public and one private actor in a defined task, a sharing of resources as well as a division of risks and a common goal. On the other hand, the meaning of *PPP* changed. At the beginning, PPP was primarily seen as an alternative approach to finance infrastructure, which explains why the term is partly used interchangeably to privatization. The increase in usage of PPP in other countries, as well

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<sup>2</sup> The abbreviation PPP is not only used for Public-Private Partnership, but also, to give an example, for Purchasing Power Parity. Therefore the abbreviation PPP is present before the 1980s.

as for smaller and less capital-intensive social infrastructure projects at the beginning of the 21<sup>st</sup> century caused a shift. Other aspects of the concept of PPP became more important, such as value for money, substance and value preservation, as well as time savings and transfer of risk. This influenced the definition of *PPP*.

Figure 1: Frequency of the term based on google n-grams



Source: google n-grams

In summary, depending on the context a definition of PPP highlights different aspects, which can range from soft criteria such as a partnership-based relationship to concrete contract constructions. This article is based on the understanding of PPP offered by Bloomfield (2006: 400): Public-Private Partnerships "are complex, long-term municipal contracts with private companies for some combination of services, construction, or financing in return for some combination of public funds, public assets, or user fees".

#### b) A FEASIBLE DEFINITION OF INFRASTRUCTURE

*Infrastructure* describes the basic facilities of an economy. In economics there are distinctions between physical, intangible and institutional infrastructure (Jochimsen 1966: 145). The latter is based on formal rules of the legal, social and economic order. Intangible infrastructure includes human capital, its functioning and its capability based on educational, research, health and social institutions. In contrast, physical infrastructure involves immovable capital goods in particular transport and supply facilities (Buhr 2003: 4ff; 2009; Gabler n. d.; Wirtschaftslexikon n. d.).

In general, *infrastructure* is assumed to cover all facilities which contribute the necessary material basis for the provision of services and economic development (Duden 2016; Frey 1978: 201). The economic characterization of infrastructure refers to minimum requirements, like project size, high capital requirement and its long-term commitment as well as a lasting use (in public interest) and external effects (Frey 1978: 201; Gabler n. d.; Wirtschaftslexikon n. d.). Public infrastructure are facilities valuable to society, which are often constructed and maintained with tax payer money. Additionally, especially in telecommunication and in electricity sector as well as for toll roads, fees and charges may be collected (Frey 1978: 211). Nevertheless, task-, and service fulfilment can be regulated in the state as well as in the private sector (Buhr 2007: 17).

Public infrastructure is divided into social infrastructure and technical infrastructure. The former includes the provision of buildings for education and healthcare as well as for recreation and leisure purposes. Technical infrastructure includes communication networks, traffic-, distribution- and disposal facilities (Libbe et al. 2010). In addition, the construction industry distinguishes between building construction and civil engineering. Nearly congruent with social infrastructure, building construction refers to edifice, which are mostly above the ground. In comparison, civil engineering

includes all edifice constructed mostly below the ground, which for many projects is in accordance with technical infrastructure.

The present study concentrates on procurement and building of facilities. Therefore, infrastructure is limited to the material core. Building construction and civil engineering as well as social and technical infrastructure will be involved.

### III. METHODOLOGY

The increasingly rapid and specific production of knowledge is leading to a need for qualitative approaches and methodologies, which in a selected field of research enable comprehensible determination and structured summaries of existing scientific knowledge (Denyer/Tranfield 2009: 673). For this purpose systematic literature review is available as a specific, well approved and evidence-based research approach (David/Han 2004: 42; Denyer/Tranfield 2003; Torchia et al. 2013).

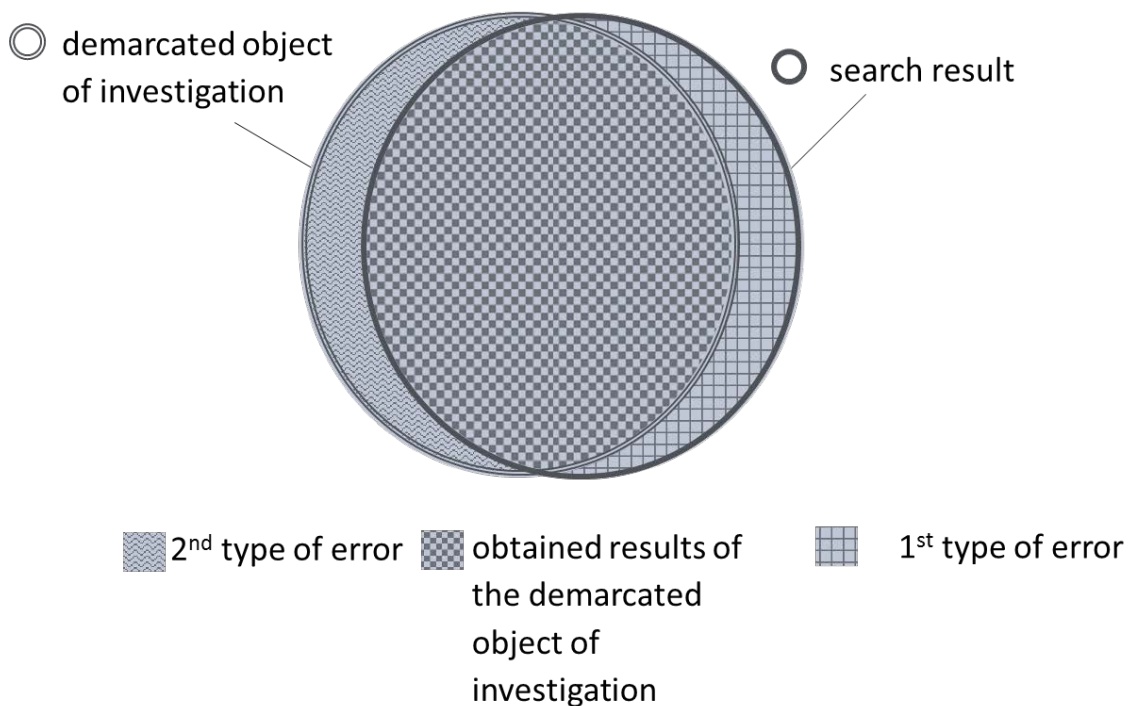
Beyond "normal" searches, a systematic literature review aims to provide a scientifically valid overview and substantiated knowledge gain (David/Han 2004: 42; Denyer/Tranfield 2003, 2009; Torchia et al. 2013). This creates reliable insights "about what is and is not known" (Denyer/Tranfield 2009: 671). For that reason David and Han (2004) proclaim that a systematic literature review is an extremely effective instrument to derive new insights, on the one hand about the existing state of research and knowledge level, and on the other hand about open research questions or gaps. A prerequisite is the adherence to scientific requirements for conception, implementation and documentation (Booth 2006; Simon 2011). A systematic literature review has to be reproducible, all procedural steps have to be transparently and comprehensively documented as well as geared toward a specific objective (David/Han 2004: 42; Denyer/Tranfield 2003; Booth 2006). Furthermore, it is necessary that search, selection and analysis of the literature use qualitative methods and are made in an incremental process on the basis of previously defined criteria (Torchia et al. 2013). Even though, in recent decades principles and methodological requirements have been developed and standardized, there is no uniform methodological approach. However, there exist three established approaches of implementation:

- focusing highly-ranked journals (e. g. David/Han 2004)
- database research (e. g. Torchia et al. 2013)
- comprehensive approach (e. g. Denyer/Tranfield 2009)

DAVID and HAN focus the systematic literature review on highly-ranked journals, because the articles published therein "have been through a review process that acts as a screen for quality, allowing us to distill studies meeting a certain level of conceptual and methodological rigor" (2004: 42). In contrast, DENYER and TRANSFIELD determine that "[i]n particular, reviewers are best advised to guard against using proxies for research quality such as the quality rating of journals as a basis for exclusion" (2009: 680). Since articles in journals represent only a (small) part of the overall available literature, researchers have to "beware of excluding studies solely on the basis of adherence to the pursuit of absolute epistemological standards" (Denyer/Tranfield 2009: 680). In order to point out the complete state of research and level of knowledge, DENYER and TRANSFIELD (2009) propose a comprehensive approach, which includes monographs, scientific publications in books as well as other publications with academic context such as studies and expert reports. Indeed, a reproducible gathering of the entire literature stock is hardly possible. Because databases combine articles from different sources, TORCHIA et al. consider them as a "key tool in the search process"(2013: 5).

A database search requires fixed keywords, but they can lead to incomplete results. While the delimitation in a manual search can be individually interpreted, a keyword-based search does not examine whether there is congruence between the searched phenomenon and the actual found result. On the one hand, there is the possibility that especially keywords provide results beyond the demarcated object of investigation. Thus, articles will be gathered that based on the carried out definition of the term or existing thematic limitations should not be gathered (1<sup>st</sup> type of error). On the other hand, articles could be excluded, which are part of the investigation (2<sup>nd</sup> type of error). This can occur, when articles use terms that are not covered by the well-chosen keywords. For that reason, the validity of the results is highly dependent on simultaneously include all relevant articles (sensitivity) and exclude all irrelevant articles (specificity). To achieve this, the object of investigation has to be accurate and precisely defined. Nevertheless, there is always a trade-off between specificity and sensitivity (Guba 2008). Especially when using keywords, both errors cannot be completely eliminated. Database searches are particularly affected. In order to generate valid results, a systematic literature review is in principle dependent on conceptual design of the research method (Booth 2006).

Figure 2: trade-off between specificity and sensitivity



Source: own compilation

#### a) RESEARCH METHOD

Objective of this research is to find out scientific findings of PPP projects in the field of infrastructure procurement. Because highly-ranked journals express the state of debate in the scientific community, and their standardized peer-review procedures ensure at least a minimum level of equivalent scientific quality, they are a suitable source for exploration. In this respect the approach of DAVID and HAN (2004) can be adapted. In addition, to not exclude important and renowned scientific journals, as well as to minimize the shown trade-off problem, elements of DENYER and TRANSFIELD (2009) and of TORCHIA et al. (2013) will be included. Thus, a five-step approach was developed for this systematic literature review (Figure 3).

#### STEP 1

As basis for research and analysis, the first step identifies relevant databases and journals. Databases are Web of Science, Business Source Complete and ECONBIZ. The selection of the journals is mostly based on the Scientific Journal Rankings (SJR) and on the Journal Citation Reports (JCR). In the fields of economics, econometrics and finance, as well as of management and politics outstanding and globally leading will be included as sources. In the field of public management some important and renowned scientific journals will be additionally be added, like "Public Administration". To keep research manageable, a selection can hardly be avoided and is a common practice, but regardless of a well-founded basis for decision-making, a selection is to a certain extent always a subjective decision (Booth 2006). However, a total of 26 journals will be considered (Figure 3).

#### STEP 2

The second step is to look for potential relevant articles that are published in the period 2000 - 2015. For this purpose, a database search, as well as a chronological examination are carried out. The latter is a manual review of the headings and the abstracts. Thereby, in the selected journals all articles will be examined for contributions to the objective. The database search delivers all results gathered by the keywords (Figure 3). This proceeding makes it possible to simultaneously correct subjectively motivated exclusions of chronological reviews, and the errors of 1<sup>st</sup> and 2<sup>nd</sup> type occurring in cause of keyword based database search. The period is sufficient as infrastructure related PPP projects were developed at the end of the 1990s and as the number of publications is growing by that. Articles found will be gathered with the literature management software Citavi that will also be used to find and remove duplicates.

#### STEP 3

The main task in this step is detecting and removing duplicates. In addition, the reference to infrastructure in the articles will be examined in headings and abstracts. Thus, at the end of step 3 remain 252 articles.

#### STEP 4

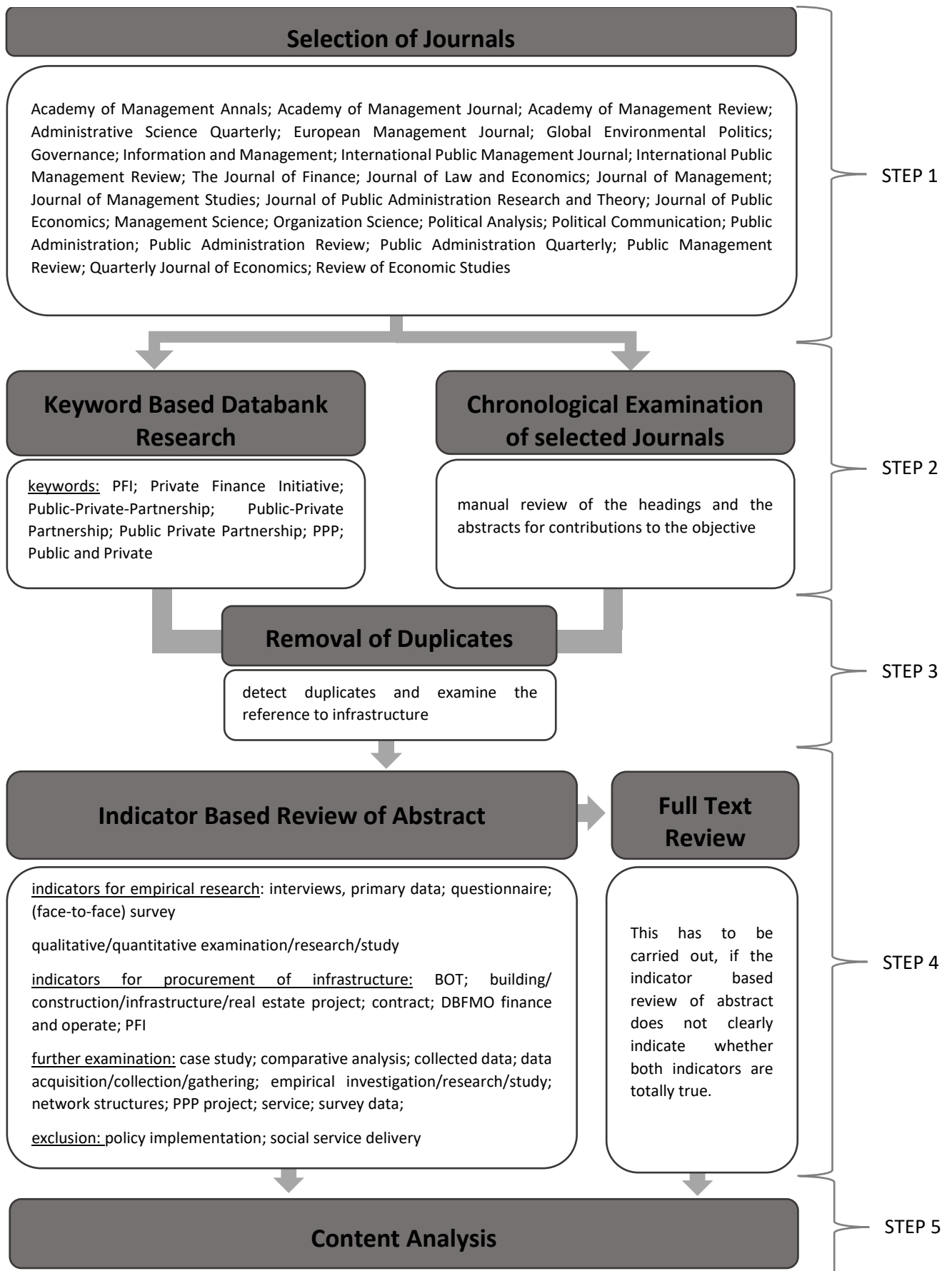
The articles relevant for content analysis will be identified. In line with the objective of the paper, empirical studies on PPP projects in infrastructure procurement are essential. Thus, for all articles considered for content analysis, the abstract has to deal with "procurement of infrastructure" and simultaneously to clarify that it is an "empirical studies". Indicators are set for both criteria (Figure 3). All studies failing to fulfil one of the two criteria are discarded.

Abstracts, even of publications in renowned and highly-ranked journals, partly contain only superficial and vague information about the object of investigation and/or the data collection method. To give an example: "evidence from two detailed case studies of partnerships" (Grimshaw et al. 2002: 475). To deduce, whether any of these articles use empirical data and/or deal with procurement of infrastructure necessitates a full-text examination. This means that the entire article is examined under both criteria.

#### STEP 5

This approach identifies 24 articles, which are expected to provide empirical results for the procurement of infrastructure projects within the framework of PPP, and which are in step five, subjected to a content analysis, that involves six analysis categories.

Figure 3: Research Methode



Source: own compilation

## b) CATEGORIES OF CONTENT ANALYSIS

The analysis of the gathered articles is based on six categories: partnership, participation of stakeholders, skills, knowledge and abilities, accountability, risk and performance. These are not completely disjoint, but very feasible to point out findings to the most discussed aspects of PPP.

### PARTNERSHIP

The category evaluates the way, in which the contracting parties work together. Therefore, *partnership* includes findings, which allow conclusions to the relationship between public and private actors. How do customer and contractor behave with each other? What degrees of freedom do the actors have? What is their relationship based on? What are the mechanisms to form a partnership? What characterizes the partnership?

### PARTICIPATION OF STAKEHOLDERS

In contrast to partnership, the category *participation of stakeholders* examines the external relationship. Will citizens and/or user of the infrastructure be involved? What are the options for stakeholder groups to participate? Are there any findings on the participation of stakeholders?

### SKILLS, KNOWLEDGE AND ABILITIES

The category regards assessments to *skills, knowledge and abilities* of the public and the private partner. With which skills, knowledge and abilities does each partner contribute to PPP and which does he lack? Are the responsible employees adequately qualified? Do they have sufficient experience and resources to manage the project?

### RISK

The category *risk* dedicates questions to assessment and diversification of risk. Is there a balanced sharing of risks? Do both partners have the ability and knowledge to manage risks? Who is involved in the development of risk assessment approach? In which way risk assessment and risk allocation are done? What is the general experience?

### ACCOUNTABILITY

*Accountability* gathers information about the controlling of contractual criteria. What has to be told to whom? Are there economic efficiency calculation carried out? How transparent are the decision-making processes and contract modalities? Are there clear objectives or success criteria?

### PERFORMANCE AND SUCCESS

The category *performance and success* identifies findings to the achievements of the PPP project. Did PPP contribute to construct public infrastructure facilities quicker, cheaper as well as in higher quality and more based on the needs? Were processes usefully implemented?

## IV. RESULTS

This section presents the results of the systematic literature review and interpretations. The first two sections show and explain the findings to general characteristics (a)) and the conceptual understanding of PPP (b)). Subsequently, in the following six sections (c) - h)) the findings in the described analysis categories will be presented and discussed.

### a) GENERAL CONSIDERATIONS

The number of empirical studies on infrastructure PPP has been growing strongly since 2011. Almost 70 % of the articles found are from the years thereafter. These were most frequently published in the journals: Public Administration (27% of the articles found), Public Management Review (19% of the articles found) and International Public Management Journal (15% of the articles found).



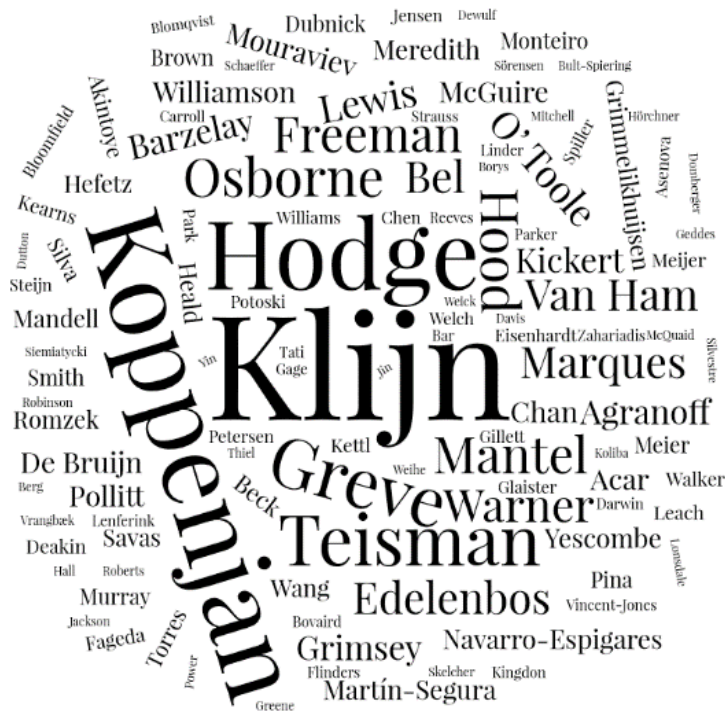
Regardless of the journal, the underlying understanding of infrastructure is explained in very few studies. Thus, no direct differentiation between social and technical infrastructure is made, but authors implicitly make this distinction by selecting the objects of investigation. The empirical studies found most frequently investigate educational and transport projects. In terms of overall investment volume, transport is, *inter alia* in the statistics of the European Investment Bank, the most significant sector (e. g. EIB 2016: 3). In this comparison, education projects follow in third place after health care (e. g. EIB 2016: 3). In the health care sector PPP is mainly used for the joint provision of services and rather for construction of infrastructure facilities (Torchia et al. 2013). In education it is different. In this sector, PPP is mainly used as another form of procurement. Indeed the general investment volume per PPP project is lower than in the transport sector, nevertheless, the number of deals is mostly higher (e. g. EIB 2016: 3). Therefore, education and transport are the most significant sectors for studies dealing with PPP about the provision of infrastructure facilities. As is typical for technical infrastructure, transport projects are usually complex construction work with a high investment volume and long planning time. In contrast, as is typical for social infrastructure, in education more standardized projects with a comparatively small capital outlay and short-term planning are often established. In this way, the studies found often distinguish between social and technical infrastructure without naming them directly.

From a geographic perspective, many of the gathered articles concentrate on PPP projects in Europe (16 article). In addition, articles also evaluate projects in Australia (1 article), Asia (4 articles) and in North America (4 articles). PPP as procurement alternative has been used worldwide for unique large-scale projects of technical infrastructure, such as airports and harbours, water supply and road construction. But in addition, particularly in Europe, many smaller standard projects of social infrastructure have been implemented such as kindergartens, schools and administrative buildings. Therefore, Europe is important for empirical research in this field and the increased number of studies focussing European projects is not surprising.

Among the European projects, the ones in the United Kingdom (UK) and the Netherlands (NL) are the commonest in the articles. The UK is three times considered for separate analyses, but in addition it is often used as object of comparison (e. g. Chen et al. 2013). The UK is the pioneer in the usage of PPP and considering investment volume and number of projects in first place of European countries for years (e.g. EIB 2016). Therefore it is not surprising. The high number of seven articles focussing solely on projects in NL seeks for an explanation. In the past years the number of PPP projects increased also in many other European countries like France and Germany and all of them have a solid database (e.g. EIB 2016). Analysing differences, language seems to be a key factor. In NL the English language is a much more part of everyday life than in Germany or France (Expatriate News 2016). The existence of a language barrier could therefore be an explanation for the high number of empirical articles found in renowned and highly-ranked international journals, focusing on Dutch PPP-projects, in particular, as well as on English speaking countries in general.

In total 872 different authors are referenced to in the analysed articles. The majority (617) is just mentioned 1-2 times. 118 have more than four mentions, 31 have more than ten and just 8 authors have more than twenty references (Figure 4). Most frequently, the articles refer to: KLIJN (61 times), KOPPENJAN (44 times), HODGE (40 times), TEISMAN and GREVE (29 times each) HOOD (23 times), OSBORNE (22 times) and MANTEL (21 times).

Figure 4: word cloud of most mentioned authors



Source: own compilation

Based on the selection criteria all articles use at least one empirical research method. In principle, this could either be document analysis, observation or survey. However, observation is only used in three articles and only in addition to other empirical methods (table 1). Surveys have been carried out for 18 articles mostly as qualitative method of interviews (16 times). The number of respondents varies from 5 up to 66 (table 1). While four articles refer to questionnaires simply as a supplement, only two solely use this research method. Thereby LELAND and READ (2012) demonstrate that large-scale quantitative surveys are possible. Their study has a sample size of more than 1,180 respondents. Document analysis is particularly mentioned in 16 articles, but just PETERSON (2011) precisely counts and completely names of the included documents (table 1). In articles referring to document analysis also the term case study often can be found in the methodology section, but it is used very differently. On the one hand, it describes an entire examination area like school building or transport, on the other hand, it is used for a qualitative exploration of a single object. Nevertheless, in some articles methodology and basis of data are just hazily described, for example see MOURAVIEV and KAKABADSE (2014).

Table 1: Overview of analysed articles

Author	Titel	Year	Journal	Questionnaire	Interview	Document analysis	Observation	Country /-ies involved	Infrastructure sector	Number of demarcated objects
Albalate/Bel/Fageda	Beyond Pure Public and Pure Private Management Models: Mixed Firms in European Airport Industry	2014	International Public Management Journal			x		European Union, Switzerland; Norway	transport (airports)	100
Ball/Heafey/King	Risk Transfer and Value for Money in PFI Projects	2003	Public Management Review		15		x	United Kingdom (Scotland)	education (high school)	1
Button/Daito	Sharing out the Costs of a Public–Private Partnership	2014	Applied Economic Letters			x		United States of America	transport (highways)	41
Chen/Hubbard/Liao	When Public–Private Partnerships Fail: Analysing citizen engagement in public–private partnerships – cases from Taiwan and China	2013	Public Management Review		x	x		Taiwan; China	transport (toll road; toll collection)	2
da Cruz/Marques	Mixed Companies and Local Governance: No Man Can Serve Two Masters	2012	Public Administration			x		Portugal	water, waste, transport, education	4
Diggs/Roman	Understanding and Tracing Accountability in the Public Procurement Process Interpretations, Performance Measurements, and the Possibility of Developing Public-Private Partnerships	2012	Public Performance & Management Review		41	x	x	United States of America (Florida)	public procurement	-
Edelenbos/Klijn	Project Versus Process Management in Public-Private Partnership: Relation Between Management Style and Outcomes	2009	International Public Management Journal	32	32			Netherlands	environmental projects of transportation (roads; highways; railways, stations) and of area development	18
Foo/Asenova/Bailey/Hood	Stakeholder Engagement and Compliance Culture	2011	Public Management Review		15	x		United Kingdom (Scotland)	education (schools)	4
Ke/Wang/Chan	Risk Misallocation in Public–Private Partnership Projects in China	2013	International Public Management Review	46	38			China	energy supply; health(hospital); housing; transport; water supply; waste	-
Koppenjan	The Formation of Public-Private Partnerships: Lessons from Nine Transport Infrastructure Projects in The Netherlands	2005	Public Administration			x		Netherlands	transport (road; highways; railway station; logistical transfer facilities)	9

Kort/Klijn	Public-Private Partnerships in Urban Regeneration Projects: Organizational Form or Managerial Capacity?	2012	Public Administration Review	68				Netherlands	housing (urban regeneration)	-
Leland/Read	Stimulating Real Estate Development Through Public-Private Partnerships: Assessing the Perceived Opportunities and Challenges	2012	Public Administration Quarterly	1.180				United States of America	real estate	-
Lenferink/Tilleman/ Arts	Public-Private Interaction in Contracting: Governance Strategies in the Competitive Dialogue of Dutch Infrastructure Projects	2013	Public Administration		19	x		Netherlands	transportation (highways; tunnel)	4
Mouraviev/Kakabadse	Public-Private Partnership's Procurement Criteria: The Case of Managing Stakeholders' Value Creation in Kazakhstan	2013	Public Management Review		7	x		Kazakhstan	education (kindergartens)	11
Mouraviev/Kakabadse	Risk Allocation in a Public-Private Partnership: A Case Study of Construction and Operation of Kindergartens in Kazakhstan	2014	Journal of Risk Research		x	x		Kazakhstan	education (kindergartens)	11
Noble/Jones	The Role of Boundary-Planning Managers in the Establishment of Public-Private-Partnerships	2006	Public Administration		62	x	x	United Kingdom; Australia	education; housing; transport (roads); waste; services (defence; IT; leisure; age-care)	10
Petersen	Public-Private Partnerships as Converging or Diverging Trends in Public Management? A Comparative Analysis of PPP Policy and Regulation in Denmark and Ireland	2011	International Public Management Review		18	~140		Denmark; Ireland	-	-
Reeves	The Practice of Contracting in Public Private Partnerships: Transaction Costs and Relational Contracting in the Irish School Sector	2008	Public Administration	5	5			Ireland	education (secondary schools)	5
Reynaers	Public Values in Public-Private Partnerships	2014	Public Administration Review		19			Netherlands	infrastructure DBFMO	-
Reynaers/Grimmelihuijsen	Transparency in Public- Private Partnerships: Not so Bad After All?	2015	Public Administration		66			Netherlands	transport (highway); justice (detention centre); water supply; real estate (ministry of finance)	4
Silvestre/de Araújo	Public-Private Partnerships/Private Finance Initiatives in Portugal	2012	Public Performance & Management Review			x		Portugal	transport (highways), water supply	2
van Gestel/Voets/ Verhoest	How Governance of Complex PPPs Affects Performance	2012	Public Administration Quarterly	x	7	x		Belgium	housing (social housing)	1
van Ham/Koppenjan	Building Public-Private Partnerships: Assessing and Managing Risks in Port Development	2001	Public Management Review			x		Netherlands (Rotterdam)	transportation (harbour)	1
Willems	Democratic Accountability in Public Private Partnerships: The Curious Case of Flemish School Infrastructure	2014	Public Administration		13	x		Belgium	Education (schools)	-

Source: own compilation

## b) CONCEPTUAL UNDERSTANDING OF PPP IN THE ARTICLES EXAMINED

Depending on the context *PPP* has different accentuations. Even though, all articles deal with infrastructure oriented projects, the conception can be different. For that reason the understanding applied in the selected articles will be analysed.

First of all, it is striking that many articles forego a precise definition and refer to be more or less constitutive criteria. If a definition is offered, as in this article, it is mostly a quotation or reference to BLOOMFIELD (2006). Nevertheless, as mentioned above, the presented definitions are not precise and also generally consider typical criteria.

When speaking of PPP, a fundamental criterion is **cooperation** (e. g. van Ham/Koppenjan 2001; Reynaers 2014; Ke et al. 2013). On the one hand, cooperation defines type and amount of actors: in the case of PPP, at least one public and one private actor is needed. On the other hand, cooperation characterises the way in which the actors work together. Inherent to PPP, partnership describes this way. In general, partnership means more than just working together (Thomson/Perry 2006; da Cruz et al. 2012). Nevertheless, the degree of cooperation of PPP can range from collaboration (e. g. Chen et al. 2013) through extensive cooperation (e. g. Edelenbos/Klijin 2009), up to joint decision making (da Cruz et al. 2012). In addition, a partnership can be based on different ties, but for a PPP it is essential that by contractual regulation a certain degree of formalization is reached. Therefore, some authors refer to the **degree of formalization** as an independent criterion (da Cruz/Marques 2012; Mouraviev/Kakabadse 2014; Koppenjan 2005). Closely linked to cooperation are also the criteria **risk allocation** and **provision of resources**. In order to fulfill the respective criterion for PPP, it is normally sufficient, that risk or rather resources are shared by the partners (e. g. Noble/Jones 2006; van Ham/Koppenjan 2001; Edelenbos/Klijin 2009). Even though, provision of resources includes know-how, human, material and financial resources, sometimes it is reduced to fiscal aspects. In addition, the **private financial contribution** is mentioned as a separate criterion, especially when the analysed projects are part of the Public Finance Initiative (PFI). A further criterion is the **long-term orientation** of the contractual relationship. But again, there is no definite answer, when it is fulfilled. While, for example, REEVES names 30 years (2008: 939), NOBLE and JONES incidental mention an indefinite period of "several years" (2006: 909) and LENFENFERINK et al. (2013) mentions no duration. In general, long-term orientation is assumed to be between 10 - 15 years.

Secondly, many articles do not specify the contractual regulation and organizational structure. A lot of articles refer to so-called DBFMO projects (e. g. Albalate et al. 2014; Chen et al. 2013; Ke et al. 2013; Koppenjan 2005; Lenferink et al. 2013; Petersen 2011; Reynaers/Grimmelhuijsen 2015; Reynaers 2014; van Gestel et al. 2012; Willems 2014). This abbreviation is used to describe the services provided in the project: D(esign), B(uild), F(inance), M(aintenance), O(peration). In practice not all services need be included, so that several combinations like DBFM or DBFO are possible. In addition, abbreviations like BOT (Albalate et al. 2014; Chen et al. 2013; Ke et al. 2013; Petersen 2011) and BOOT (Petersen 2011) can be found. The additional T(ransfer) highlights a contractual fixed retransfer of ownership to the public sector at the end of the contract. In the UK the notion of PFI is common. Essentially, these are also DBFMO projects (Priemus et al. 2008), but the notion of PFI emphasis, that a private company owns the assets (UK Parliament 2008). All in all, DBFMO can differ strongly and all possible combinations neither specifies the organizational structure, nor the contractual regulation. Notwithstanding the above, the private companies owning the assets can also have both private and public shareholders. In this case, the notion institutional PPP (iPPP) partially can be found.

In conclusion, two extremes can be derived: articles, which have a definition or which examine a particular type of PPP, and articles that are rather loose in describing their object of investigation.

### c) PARTNERSHIP

In an ideal partnership, both parties have a common goal, share all information and risks equally, as well as offer valuable experience and resources to each other. But, PPP is a contractual cooperation to do business. For that reason, partners maybe have the same goal, but are not necessarily motivated to share all information and risks equally. Both have own interests and therefore a cooperation needs binding arrangements.

In contrast to other business cooperation, the term *partnership* involves the ideas of co-production and co-decision-making. Forming a Public-Private Partnership requires the parties to have a common understanding of each other, to build trust, as well as to achieve binding agreements through negotiations on "eye level" (Lenferink et al. 2013; Mouraviev/Kakabadse 2014; van Ham/Koppenjan 2001). Nevertheless, the analysed articles clearly point out the main obstacle for implementing a partnership: a lack of trust (Lenferink et al. 2013; Mouraviev/Kakabadse 2014; van Ham/Koppenjan 2001; Foo et al. 2011; Noble/Jones 2006).

In the beginning trust is low on both sides, limited by conflicting interests and a competitive relationship (van Gestel et al. 2012; van Ham/Koppenjan 2001). Both partners are not always willing or able to understand the constraints of the other side (van Ham/Koppenjan 2001: 601). Thus, they tend to overestimate options and risk-bearing capacity of the other party (van Gestel et al. 2012). At the same time existing restriction, such as "an ex ante political framework" (Koppenjan 2005: 153) and "the rigidity of the legal framework of the project" (van Gestel et al. 2012: 176), can lower the level of trust, because they are at odds with the partnership idea.

Public partner in particular, hamper the formation of trust. In order to prevent opportunism of private actors, public authorities prepare project proposals with little room for negotiation (Mouraviev/Kakabadse 2014). Despite the fact that partners have to regard each other as equals, the public side tends to have a hierarchical structure (Foo et al. 2011; van Gestel et al. 2012) and to take a dominant role (Lenferink et al. 2013; Mouraviev/Kakabadse 2013, 2014). This might be caused by the "multi-faceted and capricious nature of the public sector" (Koppenjan 2005: 153), in which hierarchy helps to avoid the articulation of conflicting interests and preferences, as well as their enforcement. Regardless of the reason, this prevents both sides to exploit the full potential of the partnership as well as to develop a trustful relation.

Trust is important to achieve binding agreements and therefore is dependent on another essential factor: individuals. NOBLE and JONES underline that "common ground is only found through the actions of individuals" (2006: 912). Of course, in formal meetings the action of a single individual might not lead to significant breakthroughs, but building up personal trust is important nevertheless (Lenferink et al, 2013), as there is at least "a need to feel some level of 'chemistry'" on both sides (Noble/Jones 2006: 909). Having a connection beyond the professional level lets public and private actors avoid "jostling behaviour" (Noble/Jones 2006), but enables continuous dialogue (Foo et al. 2011) and creates "more opportunities to express their wishes and ambitions" (Lenferink et al. 2013: 941). That is why, a frequent high turnover of staff "causes a loss of tacit knowledge and negatively influences personal trust relations" (Lenferink et al. 2013: 936). Otherwise in direct contrast, "the strength of belief in the quality of the people in a partner organization can influence and even overshadow the objectivity of the formal assessment process" (Noble/Jones 2006: 910).

In accordance to this, the articles point out that a partnership characterized by high levels of cooperation and trust on both sides is possible (Reeves 2008; Foo et al. 2011; van Ham/Koppenjan 2011). Therefore "it is crucial that the parties involved manage to develop arrangements which clearly define their relationships with each other" (van Ham/Koppenjan 2001: 601). Moreover, a joint project

development, like it is intended with PPP, requires effective communication as well as stable governance structure (Mouraviev/Kakabadse 2014)

#### d) PARTICIPATION OF STAKEHOLDERS

Planning, construction, financing and maintenance of public infrastructure is a matter of public concern. Apart from the two partners, who, as mentioned above, need to merge different views even within themselves, building public facilities has to consider the interests and the requirements of various stakeholders, such as users, local residents and the wider public. To this end in particular, PPP differs from other procurement options by the inherent idea of different actors working together as partners. In addition, for successful implementation of an infrastructure project, it is more and more important how well the partners succeed in including justified demands also of stakeholders (Redlich/Röber 2013).

In the examined articles the participation of stakeholders differs a lot. While DA CRUZ and MARQUES (2012) as well as CHEN et al. (2013) find out a lack of participation in their studies, LENFERINK et al. conclude that "local stakeholders, i.e. municipalities and residents, have been actively involved in judging the bids as members of the appraisal committees" (2013: 939). Nevertheless, the obtained results are not contradictory, but rather two sides of the same coin: Participation stimulates "a broader dialogue with a collaborative character" (Lenferink et al. 2013: 939) and "leads to better (perceived) outcomes" (Edelenbos/Klijn 2009: 321), but its absence "put[s] the project at stake" (da Cruz/Marques 2012: 751), or at least provokes displeasure of citizens (Chen et al. 2013). FOO et al. examine in some cases an inadequate and dissatisfying participation process, but conclude, that engaging users and employees "led[s] to positive project outcomes such as more favourable contract terms, practical design, minimum disruption to teaching, effective facility maintenance and increased level of community use" (2011: 720). According to the analysed articles, the factors of success are:

- to provide information by means of comprehensibility, simplicity and transparency (da Cruz/Marques 2012; Foo et al. 2011),
- to give stakeholders an opportunity and choice to participate (Chen et al. 2013; da Cruz/Marques 2012, Leland/Read 2012; Willems 2014),
- to carry out participation neither as "window dressing" nor solely because of force or just the need for complying to regulations (Chen et al. 2013; Foo et al. 2011),
- to directly express a request for participation to all actors (Koppenjan 2005; Leland/Read 2012; Mouraviev/Kakabadse 2013),
- to build mutual understanding and trust by continuous interaction (Koppenjan 2005; Willems 2014),
- to prevent an "uncritical piling up of wild ideas and ambitions" by firmly including participation in decision-making structures (Koppenjan 2005: 151).

Against this background, serious efforts to improve the participation of stakeholders can prevent dissatisfaction, delays and failure of projects. However, due to complexity and long duration of contracts (Reeves 2008; Reynaers 2014), it is difficult to maintain the attention of the stakeholders throughout the whole project period (Foo et al. 2011). And even though, PPP is a contract between a public and a private partner, the encouragement of stakeholder involvement is generally seen as the public partner's duty (Leland/Read 2012).

In conclusion, the findings indicate a direct correlation between participation of stakeholders and (perceived) performance of PPP. In addition, it requires efforts from all parties as well as abilities to implement a project governance supporting the participation of shareholders (Reeves 2008).

#### e) SKILLS, KNOWLEDGE AND ABILITIES

The intention of implementing a PPP, is usually followed by consulting advisors (Reynaers 2014; Silvestre/de Araújo 2012; van Gestel et al. 2012). Especially public partners call in various professional consultants, e. g. for legal and technical questions as well as economic and feasibility studies. Furthermore, they also move procedural preparation, negotiation and contract management to third parties. Due to the high level of complexity in contracts and organizational forms, one reason is the necessity for additional support (Edelenbos/Klijn 2009; Pongsiri 2011; van Gestel et al. 2012). Another, that public administration often lacks experience and knowledge in the field of PPP (Silvestre/de Araújo 2012; Reynaers/Grimmelikhuijsen 2015; van Gestel et al. 2012). Thus, there is a "public dependency on outsourcing" (Silvestre/de Araújo 2012: 334).

PPP projects are implemented by persons, who bring individual characteristics into the project. Therefore, most of the articles treat skills and knowledge of the individual as crucial for the success of the project. LELAND and READ determine that "personal and professional attributes of planners have a profound impact on the way public-private partnerships are perceived" (2012: 335). In connection to this, at least five articles point out missing personal skills and organizational weaknesses on the public side (e. g. Silvestre/Araújo 2012; van Gestel et al. 2012)

Considering the organizational abilities, nearly all articles emphasize the special importance of a good management approach. But, in practice structured processes of cooperation and communication are missing (Koppenjan 2005: 153): "both public and private parties have great difficulty in finding the right shape for the processes by which they try to build their partnerships". Instead they both tend to apply a rigid contract management (Reynaers 2014). While, more flexibility and a continuous optimization of processes could lead to more innovation and better results (e. g. Edelenbos/Klijn 2009; Mouraviev/Kakabadse 2014), contracts and organizational form are never capable of replacing personal knowledge and skills, which are necessary to deal with complexity (Pongsiri 2011). Therefore, the management style has an influence on the outcomes (Edelenbos/Klijn 2009).

With regard to personal skills, public employees especially, lack negotiation capacity (Silvestre/de Araújo 2012; van Gestel et al. 2012). In addition, due to the lack of knowledge and understanding of each other (van Ham/Koppenjan 2011: 601), also problem-solving competence can be assumed as being fairly low. Furthermore, for the development of project management competences experience is an important aspect (Leland/Read 2012). While van GESTEL et al. figured out, that public employees often have too little knowledge and experience in successfully managing complex project (2012), LELAND and READ assume "that many experienced planners have developed the skills necessary to manage the transaction costs involved in real estate development projects through their education and experience" (2012: 335). But, experience is concentrated with just a few individuals, when these people choose to leave, so does the knowledge (Reynaers/Grimmelikhuijsen 2015). This can also happen to the private partner, who regardless of this, also can lack knowledge and experience (Mouraviev/Kakabadse 2014).

#### f) RISK

Risk and its management is of particular relevance in infrastructure projects. Concerning public interest and money as well as being highly complex, these projects have to take into account many general risks, such as cost increases and time delays. But, risk management includes much more, like construction default, financing, maintenance and operating risks, to name just a few of the most important.

In general, risk assessment and management are considered to be particularly important, but at the same time the practical approach and implementation are negatively assessed (e. g. da Cruz/Marques 2012; van Ham/Koppenjan 2001; Mouraviev/Kakabadse 2014). As principle reasons, articles invoke a



lack of knowledge and understanding (Koopenjan 2001; Silvestre/de Araújo 2012) and missing risk mitigation strategies (Mouraviev/Kakabadse 2014). In this respect, one should not forget, risk assessment is a highly complex and difficult process, which in fact always remains incomplete (Akintoye 2003; Thamhain 2013).

Despite this, the sharing of risks is insufficient, as many authors argue (da Cruz/Marques 2012, Silvestre/de Araújo 2012, Ball et al. 2003). Often criticised is the incomplete transfer of risks to the private side, but most studies do not evaluate the transfer of risks within the public sector. As DA CRUZ and MARQUES (2012) point out: it is poor, too. Due to a misguided risk allocation, high transaction costs can occur (Mouraviev/Kakabadse 2014). In addition, there is a mismatch between de jure and de facto risk transfer, because an effective risk allocation can only be achieved, if a risk carrier is actually able to assume the risk and if the risk is not influenced by others (da Cruz/Marques 2012). Governmental obligations and responsibility as well as the political framework restrict private responsibility. Although, financial penalties support the implementation of a fruitful risk allocation (da Cruz/Marques 2012), public partners have difficulties to impose sanctions (Ball et al. 2003; van Gestel et al. 2012). This is especially the case in an organizational PPP, when the approval of sanctions would imply a self-punishment, because of the public shares.

In conclusion, if a project is running "well", risk assessment and risk allocation are successful, but as soon as problems arise, assertion and transfer of risk will be difficult (Ball et al. 2003). In the end, as DIGGS and ROMAN detected, the public side "would be held accountable regardless of contract stipulations" (2012: 306).

#### g) ACCOUNTABILITY

Accountability has the purpose to justify and to facilitate the implementation of public procurement procedures against third parties. To do so, all processes have to be fair and equitable as well as transparent and consistent (Diggs/Roman 2012). Due to its political and social importance, information, especially in public procurement, also has to meet the expectations of the stakeholders (Diggs/Roman 2012). Likewise, a clear allocation of tasks and responsibilities is indispensable in order to ensure accountability (van Gestel et al. 2012). Taking in account the above, the conclusions concerning accountability differ.

In terms of transparency, a lack of clearness and too much information prevent appropriate mechanisms (Ball et al. 2003; Reynaers/Grimmelikhuijsen 2015). Some authors criticise, that requirements have not been clarified in advance (Lenferink et al. 2013) and even later in time, the actual costs approach and expected expenditure as well as other contractual information stay nebulous, especially for the stakeholders (Reynaers 2014; Lenferink et al. 2013). In addition, there are uncertainties about the exact use of funds (Ball et al. 2003; Reynaers 2014). Therefore, it can be difficult to assess, whether the amount of monthly payments is justified or not (Ball et al. 2003; Reynaers 2014). At the same time, an information overload can occur, where information on paper continuously increases, but its further processing is not feasible (Reynaers 2014). All the above, the cause of such an improper information management are the missing of standardization as well as the lack of experience (Ball et al. 2003; Reynaers/Grimmelikhuijsen 2015). Nevertheless, these difficulties are particularly problematic at the onset and will decrease with increasing duration of the cooperation (Lenferink et al. 2013).

Another general challenge to accountability are the processing and the sharing of information, because misunderstandings occur (Diggs/Roman 2012; Silvestre/de Araújo 2012). Although, both public and private partners use a similar approach of accountability, organizational and institutional differences leave room for interpretations (Diggs/Roman 2012). Furthermore, a short time for preparing a complex bids and contracts, as well as a participation of third parties, such as consultants and stakeholders,

additionally increases this difficulty (da Cruz/Marques 2012; Koppenjan 2005). In direct contrast, some authors discover, that a public and private collaboration fosters transparent accountability (Lenferink et al. 2013; Reeves 2008; Reynaers/Grimmelikhuijsen 2015). Although, worries about the long-term implications exist (Diggs/Roman 2012), the institutional nature of PPP leads to more documentation and date maintenance (Reeves 2008). As mentioned before, differences and difficulties decrease with increasing duration of the cooperation (Lenferink et al. 2013). In this respect, the systematic and institutionalized processes of PPP have a positive effect on transparency, especially in the implementation and operating phase (Reynaers/Grimmelikhuijsen 2015).

Most PPP projects have implemented procedures for supervision and control (van Gestel et al. 2012), such as a steering board or an advisory council, but monitoring is not always applied correctly (Reynaers 2014; Reynaers/Grimmelikhuijsen 2015). Moreover, as DIGGS and ROMAN point out, "it sometimes takes a strong personality or a well-developed 'protection' mechanism to 'deal with the pressure' and to avoid biases" (2012: 304).

Related to accounting, there are additional crucial points. Because of the high number of potential addressee (Koppenjan 2005), e. g. audit and approval authorities, politicians, users and journalists, accountability sometimes seeks for a target recipient. Moreover, media and public as well as politics show less interest in technical details (Koppenjan 2005). Therefore, accountability is more an internal administrative process (Koppenjan 2005), on which the public side as a whole is assumed to be liable (Diggs/Roman 2012).

#### h) PERFORMANCE AND SUCCESS

Concerning infrastructure, the goal of the project team generally is to construct a useable facility. Moreover, a project traditionally is considered to be successful, if it achieves both product and process success. The latter means to keep on schedule in procedure, time and budget. Product success implies on the one hand the fulfilment of specified functional and non-functional requirements, and, on the other hand, to meet the existing demands (Atkinson 1999; Neues et al. 2016; Pinto 2004). Nevertheless, it is estimated, that 50 - 80 % of the projects do not achieve at least one of the two goals and therefore can be regarded as failed (Böhland et al. 2012).

Only two of the analysed articles makes a clear distinction between product and process success of a PPP project (Edlenbos/Klijn 2009; van Gestel et al. 2012). Even though, there are statements regarding the product (e. g. Reynaers 2014; Reeves 2008; van Gestel et al. 2012), most articles focus on the mentioned process based success factors. Some authors positively highlight, in particular, the implementation speed as well as the quality of facilities and services (Reynaers 2014; Reeves 2008; Silvestre/de Araújo 2012). However, others point out, that not all public partners are completely satisfied with the quality and that there are delays in schedule (van Gestel et al. 2012). A lot of authors express a rather critical view on project success (e. g. Chen et al. 2013; da Cruz/Marques 2012; van Gestel et al. 2012).

Beyond that, authors also evaluate project success based on finance procedure. Since "[t]he perceptions of the profitability and financial feasibility of projects are very important for achieving PPP" (Koppenjan 2005: 153), an effectively exclusion of investment cost from public balance sheets, can be a success criteria for the public side (Petersen 2011; van Gestel et al. 2012). In addition, there is some evidence, that financial mechanism "influence the quality of service delivery directly" (Reynaers 2014: 48). Nevertheless, the long-term effect to the budget is a main reason for criticism (e. g. van Gestel et al. 2012; Silvestre/Araújo 2012; Mouraviev/Kakabadse 2014).

All in all, the conclusions of the authors differ. Clear statements to the performance and the success of PPP are rare. Instead a lot of articles deal with reason for success and failure of PPP projects

(Edelenbos/Klijn 2009; Kort/Klijn 2011; van Ham/Koppenjan 2001; da Cruz/Marques 2012; Reynaers 2014). Therefore, a general assessment to performance and success of PPP projects is not possible.

## V. CONCLUSION AND FUTURE NEED FOR RESEARCH

The analysis of empirical findings reveals a more differentiated picture than a lot of individual publications indicate. Results presented in the articles criticize the implementation, but not the approach. In this context, however, it is to mention that the peculiarity of an empirical study hampers conceptual criticism. Overall, the categories *risk* and *accountability* are the most critical, but it seems that they have a clear connection to *skills, knowledge and abilities*.

For the first one mentioned, it is most frequently expressed, that risks allocation, assessment as well as management are insufficient. This may be, but is this due to the use of PPP? Of course, without PPP the problem does not occur, since a division of risks does not take place at all. Although, risk assessment and management are very significant to all projects, it is not applied in other procurement approaches. Despite the reasonable criticism of handling risks in PPP, the public partners therefore lacks methods, knowledge and experience, to assess risks as well as to impose mechanisms for sanctions and for prevention. Moreover, in research there is a gap, exactly to this. Therefore a lot of questions remain unanswered, especially: How can the implementation of risk allocation and assessments approaches be more effective?

In regard of *accountability*, similar problems concerning information management occur. Especially noticeable is the positive impact of a long-term relation to transparent accountability. As presented in the category *partnership*, the same applies to trust. This analysis reveals clear indications, that within a PPP a trustful relation between public and private partners can develop over time. On the one hand, conflicting interests and misunderstandings occurring at the beginning could be reduced, while, on the other hand, awareness of each other and understanding of constraints increase. Nevertheless, PPP is often more considered to be a market orientated customer-supplier relation with hierarchical structure than a partnership. However, it is uncertain, whether accountability and trust can be easier achieved with PPP or other procurement forms. The articles analysed point out factors in a PPP, which hamper trust. But despite a perspective based on individuals, the mechanism presented to build trust are largely vague.

Nevertheless, the public sector cannot have *skills, knowledge and abilities* in every field, the public dependency on third-party advisors, as it is stated in this category, is a problem. But the question arises again: Is this due to the use of PPP? In this category the authors point out that there are fundamental deficits on the public side, regardless of PPP. However, as the articles illustrate, intensive cooperation and long-term contracts can exacerbate the problem. Otherwise, this remains obscure, if there really is a difference. In this regard, research is missing comparative analysis of PPP and other procurement procedures.

The same applies to the category *participation of stakeholders*. Although, the analysis outlines here success factors, it is striking how little the relationship between private contractors and stakeholders, especially users, has been in focus. Comparative studies are missing, that on the one hand, evaluate, whether an active involvement of stakeholders fosters quality of facilities and satisfaction with the building, or that, on the other hand, compare and benchmark participation mechanisms of PPP with other procurement procedures.

In conclusion, a general statement about the success of PPP cannot be derived from the present research: "Each project has its own unique composition of success and failure factors so that solutions which are successful in one project will not necessarily work in other projects" (Koppenjan 2005: 153). Even though, there is room for improvement in all other categories, most supportive to the project

success is a good project management including different management approaches and strategies (Kort/Klijn 2011) as well as a process orientation (Edelenbos/Klijn 2009). Therefore, "[t]he biggest challenge is to build a governance structure that would permit effective communication between partners in a PPP and collaborative approach to problem solving including risk management" (Mouraviev/Kakabadse 2014: 637).

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