

A systematic review of co-creation and co-production: Embarking on the social innovation journey

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A systematic review of co-creation and co-production:

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Abstract (max. 100 words, now 100 words)

This article presents a systematic review of 122 articles and books (1987-2013) of co-creation/ co-production with citizens in public innovation. It analyses a) the objectives of co-creation and co-production, b) its influential factors and c) the outcomes of co-creation and co-production processes. It shows that most studies focus on the identification of influential factors, while hardly any attention is paid to the outcomes. Future studies could focus on outcomes of co-creation/co-production processes. Furthermore, more quantitative studies are welcome, given the qualitative, case study, dominance in the field. We conclude with a research agenda to tackle methodological, theoretical and empirical lacunas.

Keywords:

- Co-creation
- Co-production
- Public sector innovation
- Social innovation
- Systematic review.

1 Introduction

Social innovation and co-creation are ‘magic concepts’ (cf. Pollitt & Hupe, 2011) which, during recent years, have been embraced as a new reform strategy for the public sector, given the social challenges and budget austerity with which governments are wrestling. Social innovation is an inspiring concept but at the same time it is weakly conceptualized, due to the dominance of grey, policy-oriented literature (Bates, 2012; Cels et al, 2012; Kamoji et al, 2009; Mulgan, 2009; Mair, 2010). In this study, we define social innovation as: the creation of long-lasting outcomes that aim to address societal needs by fundamentally changing the relationships, positions and rules between the involved stakeholders, through an open process of participation, exchange and collaboration with relevant stakeholders, including end-users, thereby crossing organizational boundaries and jurisdictions (Hartley, 2005; Bason, 2010; Osborne & Brown, 2011; Sørensen & Torfing, 2011; Chesbrough, 2003, 2006). In the literature the participation of end-users is indicated as co-creation (Von Hippel, 1987). But what do we know about co-creation with citizens as end-users in a public sector context?

In the private sector, co-creation is based on two trends. First, corporations are challenged to produce their goods more efficiently. As a result end-users are defined as possible co-producers who take over specific activities in the production chain (Prahalad & Ramaswamy, 2000; Vargo & Lusch, 2004; Von Hippel, 2007). Second, end-users may become co-creators whose experiences with products or services can be of added value for a company. End-users are an interesting source of product and service innovation (Prahalad & Ramaswamy, 2000; Vargo & Lusch, 2004). As a result, research showed that co-creation not only influences customer satisfaction and loyalty, it also helps firms to achieve competitive advantage (Grisseemann & Stokburger-Sauer, 2012).

But, in the public sector these end-users are citizens. According to the European Commission (2011; p. 30) “social innovation mobilizes each citizen to become an active part of the innovation process”. If citizen participation is considered as a necessary condition for

social innovation in the public sector, it is important that we have systematic knowledge regarding the conditions under which citizens are prepared to embark on the 'social innovation journey' (cf. Van de Ven et al. 2008). This leads to the following research question:

What do we know about the types, objectives, outcomes and conditions under which co-creation and co-production with citizens take place in innovation processes in the public sector?

This research question can be divided into three sub questions:

- 1) *What are the objectives of co-creation and co-production with citizens and what are relevant types of co-creation in the public sector?*
- 2) *Which factors influence co-creation and co-production processes with citizens?*
- 3) *What are the outcomes of co-creation and co-production processes with citizens?*

To answer these questions we conducted a systematic review of the academic literature regarding public co-creation and co-production with citizens.

This brings us to the demarcation of the co-creation concept. Co-creation refers to the *active involvement* of end-users in various stages of the production process (Prahalad & Ramaswamy, 2000; Vargo & Lusch, 2004). This is more specific than, for instance, the broad concept of participation, which could also refer to *passive involvement*. In the literature regarding active citizen involvement, the term *co-production* also occurs (Brandsen & Pestoff, 2006; Verschuere, Brandsen, & Pestoff, 2012). Since the concept co-creation and co-production seems to be related (Vargo & Lusch, 2004) or maybe even interchangeable (Gebauer et al 2010), adding the concept of co-production to our review can teach us important lessons about co-creation. Therefore, our systematic review both includes the literature on co-creation during public innovation, as the literature on co-production during public innovation (see also Verschuere et al., 2012). We acknowledge that co-creation is also related to other concepts such as public participation, collaborative governance, or

community involvement. However, in order to enhance the feasibility of this study, we decided to focus on co-creation and co-production.

The relevance of our review is twofold. First, given the importance that policy makers attach to citizen engagement in social innovation, we aim to provide a more evidence-based overview regarding the conditions under which citizens co-create or co-produce. Secondly, the choice for a systematic review helps to make the current body of knowledge more transparent in a reproducible way. This contrast with a more traditional literature review (Liberati et al., 2009). During the systematic review, we adhere as much as possible to the widely used 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' (The PRISMA Statement, referred to as PRISMA from here on) which ensures transparent and complete reporting (Liberati et al., 2009; Moher et al., 2009).

This brings us to the outline of this article. In Section 2 we will describe the methodology used to conduct the review. Section 3 will present the results of our review. We conclude our analysis in Section 4 with a conclusion and a future research agenda on co-creation and co-production in innovation processes in the public sector.

2 Research Strategy

2.1 Study and report eligibility

Systematic reviews are based upon replicable and transparent steps. The checklist for each step is presented in Appendix 1.

PRISMA distinguishes study eligibility and report eligibility criteria (Liberati et al., 2009).

Study eligibility criteria

- *Type of studies* – Records should deal with co-creation or co-production with citizens during the design or implementation of public service delivery processes. The public sector was defined broadly as “those parts of the economy that are either in state ownership or under contract to the state, plus those parts that are regulated and/or subsidized in the public interest” (Flynn, 2007; p. 2).
- *Topic of co-creation/co-production* – Records should contain the words co-creation or co-production in their title and/or abstract, in order to prevent mix-up with related concepts. We are aware that concepts exist which seem to refer to comparable or related phenomenon's like, public participation, co-management or interactive governance. However, the inclusion of these concepts would lead to an enormous increase in the number of records to be examined. For this study we screened 4716 records. The inclusion of for instance the concept [participation] would urge us to screen an extra 507,807 records (Scopus showed 265,079 hits on participation and ISI Web of Knowledge 242,728).
- *Type of participants* – The participants in the co-creation/co-production process should minimally be citizens (or their representatives) and public organizations (or their representatives). It is important to stress that we are interested in what happens when ‘ordinary’ citizens take over tasks which are traditionally delegated to public organizations. Therefore, we use the term ‘citizens’, and not for instance private organizations. The same goes for why we use ‘citizens’ and not ‘end-users’, since

'end-users' may also refer to private companies and/or multinationals. Public organizations can refer to both individual civil servants as representatives of public organizations or public organizations in general.

- *Study design* – Only empirical studies are eligible. Since co-production and co-creation are often considered as 'magic concepts', our review aims to understand the empirical embedding of both concepts. Hence, we want to establish a more evidence based understanding of the added value of co-production/co-creation (Pawson, 2006). We included all kinds of research designs into our review (case-studies, questionnaires, experiments etc.)

Report eligibility criteria

- *Language* – Only English written records were selected, which is common for systematic reviews, given the practical difficulties of translation and the replicability of the review (Wilson et al., 2003).
- *Publication status* – We only included international peer-reviewed journal articles, or books from well-established publishers on the field of public administration (such as Routledge, Sage, Edward Elgar, Ashgate, Oxford University Press).
- *Year of publication* – We selected records between 1987 and 2013. 1987 was chosen as this is the publication year of the seminal work of Von Hippel on co-creation (1987).

2.2 Search strategy

Four search strategies were used. First, electronic databases were searched using the terms [co-creation] and/or [co-production] in the title and/or abstract. The last search was run on May 20, 2013. We did not add the term [innovation], because, the innovative character of the co-creation/co-production practice is often *implicitly* mentioned. Every record is manually screened to analyse whether the involved practices could be considered innovative. Furthermore, our search shows that the combination of [innovation] and [co-creation] and

[co-production] resulted, even without a limitation to a specific time period and research domain (e.g. also including the private sector) in only 678 hits within the Scopus (394 hits) and ISI Web of Knowledge (284) databases. Including the term [innovation] would limit our sample too much, since we considered for this article 4,716 records. The found studies are examined on their eligibility. They are screened on title and abstract and, when needed, by reading the full text. Secondly, we conducted the same search in the top tier Public Administration Journals: *Public Management Review*, *Public Administration*, *Journal of Public Administration*, *Research and Theory*, *Administration and Society* and *Public Administration Review*. Thirdly, we analysed the books on co-creation or co-production. In 'Google Books' we searched for related contributions. Fourthly, we contacted known experts in the field of co-creation/co-production to supplement our literature list with important records (see acknowledgements).

2.3 Record selection

The screening of all articles and books ultimately led to the inclusion of 122 studies (27 on co-creation and 95 on co-production). Our selection process is presented in Figure 1.

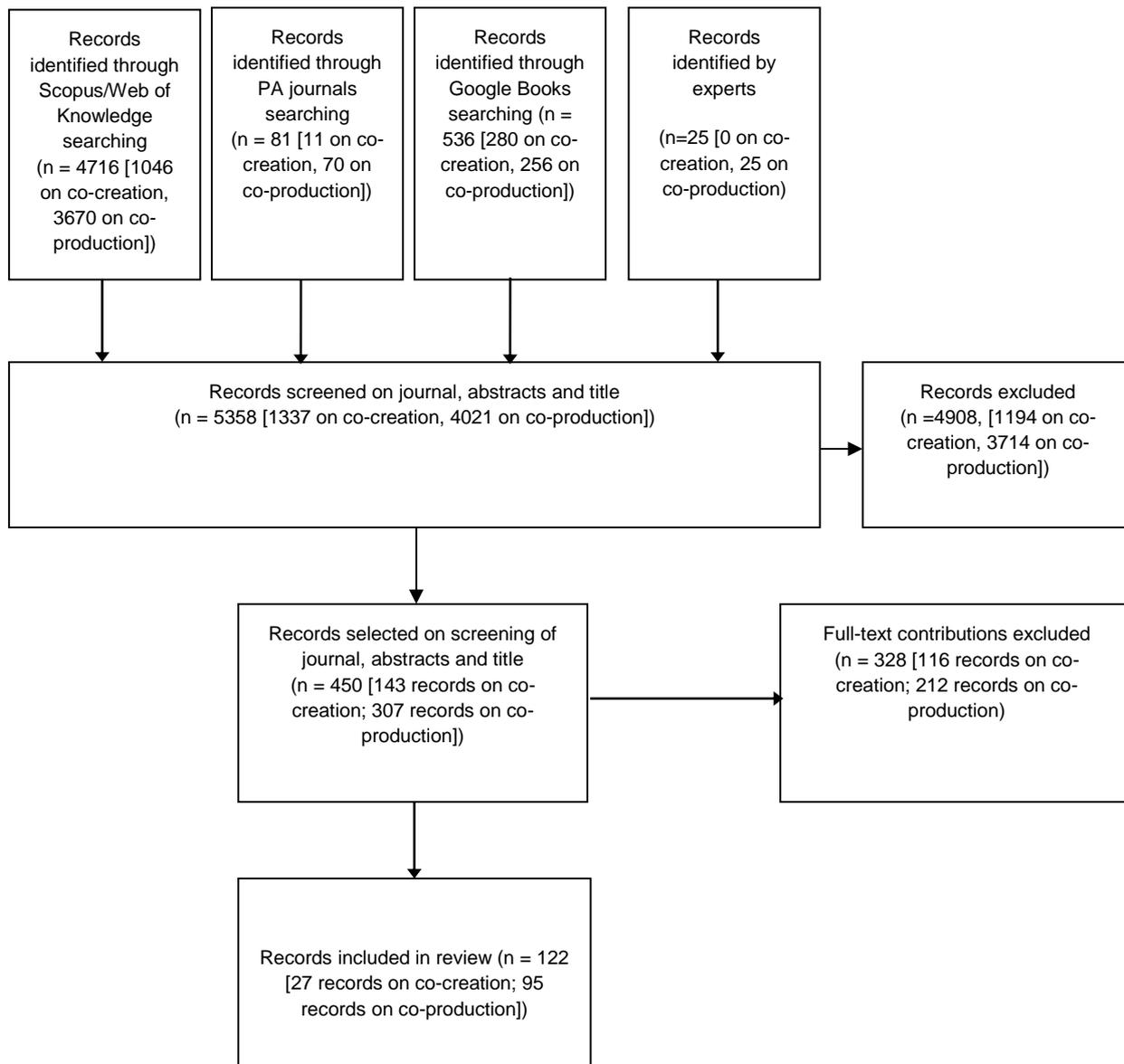


Figure 1: Flow-diagram search strategy

The next section describes the results of our systematic review.

3 Results of the systematic review

3.1 Record characteristics

Before answering our research questions, we address some characteristics of the records found.

Diversity in journals

The articles found are published in a large number of different journals. The journals which contained most studies were *Public Management Review* (9), *International Journal of Voluntary and Non-profit Organizations* (7) and *World Development* (6).

Policy sector diversity

The review shows that **co-creation**/co-production is a practice to be found in numerous policy sectors (like regional media, library services and garbage disposal), but predominantly in health care (30 records) and education (15 sector). The latter can be explained by the more direct relationships established between citizens and public officials in these sectors when compared with other sectors, such as water management.

Methods used

Public co-creation/co-production was predominantly examined in single (51%) or comparative case-studies (34%). These case-studies were often qualitative in their research approach, using interviews and document analysis. Quantitative methods were used much less (15%). Hence, we see that a qualitative approach prevails when studying co-creation/co-production practices. This also implies that the context of co-creation and the factors/effects within this context enjoyed substantial attention. However, less is known about generalizability of these factors or effects (see section 3.3).

3.2 Definitions, types and objectives

Types of co-creation/co-production

Table 1 presents the types of co-creation/co-production found. We distinguish three types which differ in their degree of citizen involvement. Type 1 involves the citizen as *co-implementer* of public services. For instance, Benari (1990) described the participation of citizens in garbage disposal services. In order to effectively manage garbage disposal, the assistance of citizens is required to separate types of garbage. Hence, citizens only perform some implementation tasks. The second type defines the citizen as *co-designer*. Very often the initiative lies within the public organization, but citizens decide how the service delivery is being designed. For instance, Wipf et al. (2009) described how citizens participated in the design and maintenance of outdoor recreation, after being invited by local government. The third type represents the citizen as an *initiator* and the government as an actor that follows. For instance, Rossi (2004) described an initiative of citizens themselves restoring monuments, when the historical centre of Naples was reopened for the public.

Table 1: Types of co-creation/co-production

Type	Co-creation	Co-production	Total
Citizen as a co-implementer	15 (51%)	53 (50%)	68 (50%)
Citizen as a co-designer	7 (25%)	30 (28%)	37 (28%)
Citizen as an initiator	4 (14%)	10 (9%)	14 (9%)
No specific type	3 (10%)	14 (13%)	17 (13%)
Total	29 (100%)	107 (100%)	136 (100%)

Note: Total higher than 122 as some studies described multiple types of involvement

This table shows that the distinction between co-production and co-creation does not depend so much on the type of citizen involvement. In both co-creation and co-production studies,

the citizen as a co-implementer has been studied the most extensively. Furthermore, the dispersion between the different types is rather equal. This challenges Basons (2010) assumption that in the co-creation literature the emphasis has been put on the citizen as co-designer, while, in the co-production literature, the emphasis primarily lies on the citizen as co-implementer. Our study shows that both concepts are closely linked. Some regard co-creation as co-production and some mention co-production while it refers to co-creation. Furthermore, it is surprising that 13% of the authors did not mention a specific level of co-creation/co-production. In these cases, no detailed assessment of the specifics of citizen involvement was described.

Definitions

When we compared the records definitions of co-creation/co-production, we see that - to a large extent – both are defined similarly. In both literature streams citizen are considered as a valuable *partner* in public service delivery (e.g. Baumer, et al 2011; Cairns, 2013; Bovaird, 2007; Meijer, 2012a). We see some variations in the nature of these partnerships. In some cases the creation of *sustainable* relations between government and citizens is being stressed (e.g. Ryan, 2012); in other cases the *joint responsibility* of professionals and citizens for public service delivery (e.g. Lelieveldt, et al, 2009) is put forward; while in again other cases simply *the involvement* of citizens in the process (design, production or delivery) of public service delivery (e.g. Ostrom, 1996) is assessed. However, the main difference in the definitions between co-creation and co-production is that, in line with the work of Vargo & Lusch (2004), the co-creation literature puts more emphasis on co-creation as *value* (e.g. Gebauer et al., 2010).

Furthermore, some authors (19%) did not present a specific definition at all, possibly for two reasons. First, in some studies, co-creation with citizens was not the main subject of study. Some authors present the topic of co-creation merely as a factor to explain policy effectiveness (Cairns, 2013; Fuglsang, 2008). Second, the absence of a definition can be

related to the practical oriented nature of the study (e.g. Davidsen & Reventlow, 2011), i.e. aimed at the creation of a manual for citizen involvement.

Hence, we can conclude that empirically co-creation and co-production are used as interchangeable concepts. However, the question can be raised whether this supports the creation of conceptual clarity.

Objectives

The following table shows the potential objectives that practices of co-creation/co-production must achieve.

Table 2: Objectives

Objectives	N
Gaining more effectiveness	22 (18%)
Gaining more efficiency	13 (11%)
Gaining customer satisfaction	10 (8%)
Increasing citizen involvement	8 (7%)
Other objectives	5 (4%)
No objective mentioned	64 (52%)
Total	122 (100%)

Table 2 shows that many contributions did not mention a specific objective at all. There seems to be an implicit assumption that involvement of citizens is a virtue in itself, like democracy and transparency, thereby also stressing that co-creation as a process is a goal in itself. In that case, the process of citizen involvement is considered, in a normative way, as something that is appropriate. This assumption is strengthened by the fact that in eight different studies the purpose of co-creation/co-production *is* simply the involvement of

citizens (e.g. Lelieveldt et al., 2009). In studies where objectives were mentioned, these were often related to efficiency and effectiveness. Hence, in these cases, the added value of co-production and co-creation was primarily justified by referring to more economic values.

The next step is to identify the factors affect the way in which these objectives are being accomplished.

3.3 Influential factors

Our analysis found a variety of influential factors which we categorized into eight categories (Table 3). These factors are sometimes qualified as 'supporting' and 'frustrating'. They can be considered as 'two sides of the same coin'. For instance, some records mention the acceptance of the citizen/patient as the key driver for successful establishing co-production relations (e.g. Corburn, 2007; Leone et al, 2012; Ryan, 2012), while other records mentioned the averse attitude towards citizen participation (e.g. Bovaird & Loeffler, 2012; Vamstad, 2012).

Table 3: Dominant Influential Factors

Influential factor on organizational side	N
Compatibility of public organizations with citizen participation	47 (46%)
Open attitude towards citizen participation	23 (22%)
Risk averse administrative culture	19 (18%)
Presence of clear incentives for co-creation (win/win situation)	14 (14%)
Total	103 (100%)
Influential factors on citizen side	N
Citizen characteristics (skills/Intrinsic values/marital status/family composition/level of education)	10 (33%)
Customer awareness / feeling of ownership / being part of something	9 (30%)
Presence of social capital	9 (30%)
Risk aversion by customers/patients/citizens	2 (7%)
Total	30 (100%)

Note: Total higher than 122 as some studies described multiple factors

The identified influential factors can be separated into being at either the organizational or citizen side of co-creation.

Organizational Factors

On the organizational side the following factors are mentioned, which seem to be independent from a specific policy domain, service or role, like the co-production of safety (Weaver, 2011), knowledge (Evans et al., 2012), health (Lindahl, et al, 2011b) or education (Díaz-Méndez & Gummesson, 2012). First, there is the *compatibility* of public organizations with respect to co-creation/co-production. This may refer to the presence or the absence of

inviting organizational structures and procedures within the public organization (e.g. Andrews & Brewer, 2013; Bovaird & Loeffler, 2012; Meijer, 2012b) or the presence or absence of a decent infrastructure to communicate with citizens (e.g. Davidsen & Reventlow, 2011). Second, many authors mentioned that the *attitude* of public officials and politicians influence to what extent co-creation/co-production occurs (e.g. Davis & Ruddle, 2012; Gebauer et al., 2010; Leone et al., 2012). For instance, Ryan (2012) emphasized that a pre-condition was the prior acceptance of the right of the client to be a eligible partner in achieving public safety. Roberts et al. (2013) reports that many politicians, managers and professionals consider co-production as unreliable, given the unpredictable behaviour of citizens. Therefore, political and professional reluctance to lose status and control was considered as an explanation for the unwillingness to support co-creation/co-production. Third, looking beyond the attitude-aspect, authors have stressed the influence of a risk-averse, conservative *administrative culture* as an explanation why citizens were not considered to be a reliable resource providing partner (e.g. Baars, 2011; Talsma & Molenbroek, 2012). Hence, the lack of a tradition to consider citizens as associates, rather than service-receivers, implies that there is no 'institutional space' to invite citizens as equals (Maiello et al, 2013). Fourth, many authors mentioned the importance of having clear *incentives* for co-creation/co-production. For instance, for public officials it is often unclear to what extent public services can be improved by incorporating citizens (e.g. Evans et al., 2012), how co-creation creates budgetary benefits (Abers, 1998), or even increases customer interest (Lam, 1996). Without clarity about these incentives, administrators do not see its usefulness (e.g. Fuglsang, 2008).

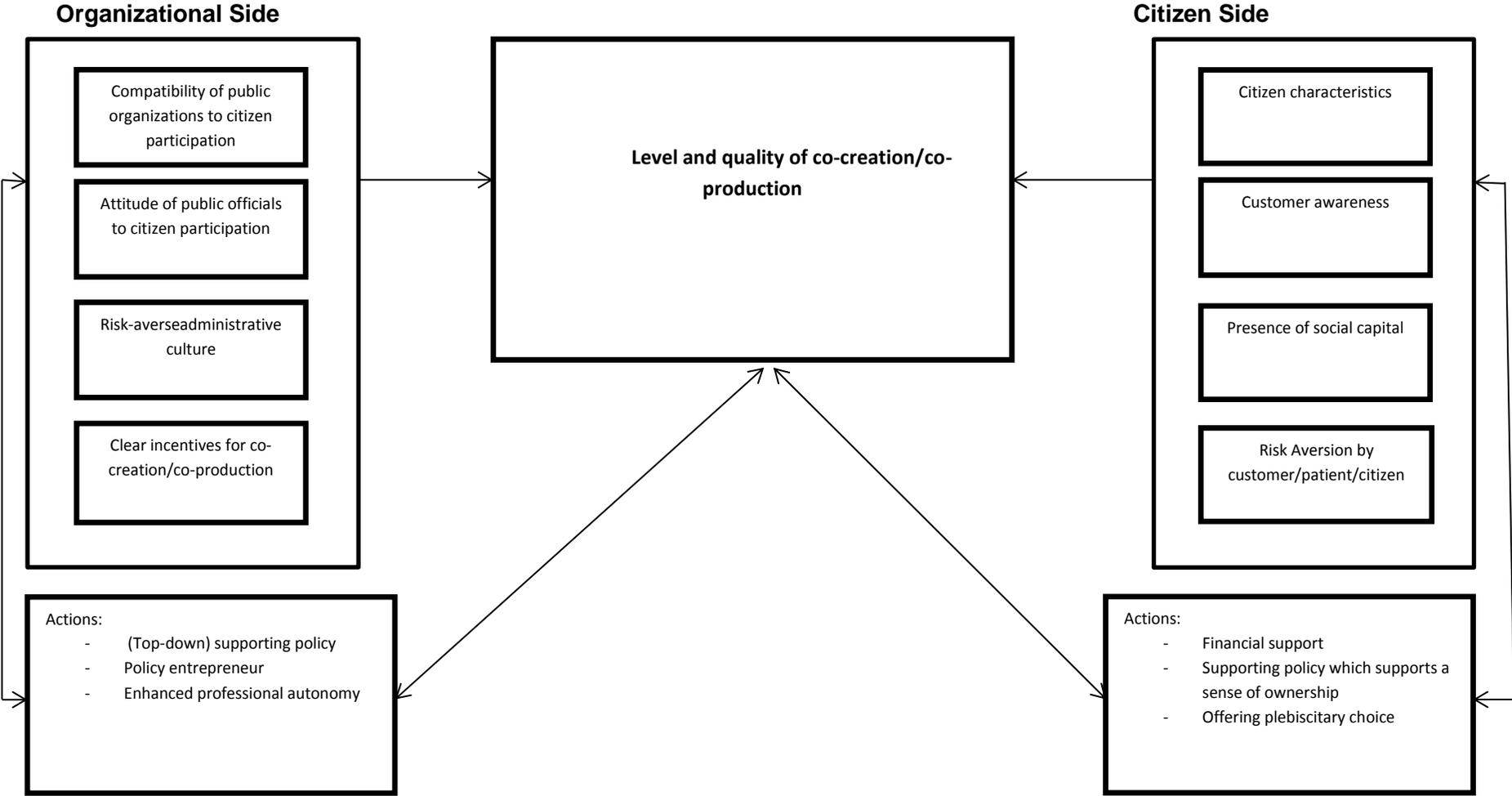
Citizen Factors

On the citizen side the following factors can be mentioned. First, characteristics of citizens play an important role in whether citizens are *willing* to participate. Wise et al. (2012) showed that intrinsic values, such as loyalty, civic duty, and the wish to improve the government positively, influence the willingness of citizens to participate. Also personal traits like education and family composition play a role, which Sundeen (1988) demonstrated. People

which had received more education than high school were more aware of community needs and were more able to articulate their own needs. They also possessed the administrative skills to participate. Second, several authors identified the importance of *a sense of ownership* and the *perceived ability* of citizens to participate. Talsma & Molenbroek (2012) showed that, because of a feeling of being responsible (sense of ownership) for the well-being of eco-tourists in India, local people put much effort into improving these services. So, as well as people needs to be willing to participate, they need to be aware of how and where they can influence public services, but they also need to feel it as their responsibility. Third, *social capital* is also needed for co-creation and co-production. Ostrom (1996) mentions that, in order to involve citizens in a sustained way in infrastructure projects in Brazil, not only is the activation of citizens required, but also social capital needs to be energized in order to fulfil the promises of collective action. Subsequently, Schafft & Brown (2000) showed that the local organization of social capital implied that Hungarian Romas were able to initiate several profitable projects. By the enforcement of social capital, people looked after each other and had the feeling that they were not alone in their minority position. So, social capital became an important ingredient to develop a robust commitment. Lastly, citizens also needed to have *trust* in the co-creation initiative. In some cases, a substantial risk-averse attitude of patients towards co-creative initiatives was also shown. This was often related to the extent to which the patient saw doctors and nurses as an authority (Lachmund, 1998).

A closer look to these factors shows that they are interrelated. We present this relationship in figure 2. Within a risk-averse administrative culture, it seems plausible that the attitude of public officials means that they are averse to citizen participation. Hence, public organizations lack the practical organizational tools required for active citizen involvement. The outcome is that, if sustainable relationships between public organizations and citizens are not being established, additional actions are required to establish these relationships with citizens. We describe the actions found in our review in the next sub-section.

Figure 2: Correlation between identified influential factors



3.4 Identified actions in order to overcome barriers

The actions to overcome barriers were aimed at influencing elements on both the organizational as the citizen side. Actions on the organizational side refer, for example, to a (top-down) policy that supports co-creation/co-production (e.g. Pestoff, 2009). Furthermore, a policy entrepreneur can also be appointed in order to promote the co-creation/co-production initiative (Fuglsang, 2008). Other research noted that the enhancement of discretionary autonomy for professionals is also required (e.g. Gill, White, & Cameron, 2011).

On the citizen side actions which are repeatedly mentioned, involve the lowering of thresholds for citizens to participate. This can refer to a lowering of the participation costs (Weinberger & Jutting, 2001) or by providing financial support (Pestoff, 2006). Also mentioned was the need for an inviting policy to generate a feeling of ownership (Lindahl et al., 2011a; Ostrom, 1996). Last, when public organizations or officials approach citizens to participate, they should offer them a plebiscitary choice, instead of asking them about complicated policy issues (Wise et al., 2012). Peculiar is, though, that the responsibility to take these actions seems to lie with the public organization. The mentioned actions all refer to 'something that the public organization must do'.

3.5 Outcomes

In response to our third research question, *what are the outcomes of co-creation and co-production processes with citizens*, we analysed the reported outcomes. We conclude that in most records the study that was carried out was not aimed at the identification or evaluation of specific results of the co-creation/co-production process. Rather, most studies were dedicated to the identification of influential factors or to find a typology of public co-creation/co-production. We present the results in table 4.

Table 4: Types of study results

Type of study results	N
Identification of influential factors	43 (35%)
Report on specific goals to be met	24 (20%)
Identification of different types of co-creation/co-production	22 (18%)
Other	33 (27%)
Total	122 (100%)

The dominance of studies dedicated to the identification of influential factors shows that most academics aimed their study to the co-creation/co-production process rather than their outcomes (35%). A typical example is Alford (2002) who studied how influential incentives (sanctions, material rewards, non-material rewards) are on the participation behaviour of clients in social welfare programmes. We have included these findings in our preceding section 3.3 Influential Factors. Other authors aimed their studies at the identification or conceptualization of different co-production/co-creation types, while not discussing their outcomes (18%). For instance, Pestoff (2009) examined the different participation levels of parents in childcare services in European countries within different forms of provision (i.e. public, private for-profit and third sector). Only a handful of authors did describe specific outcomes as a result of co-creation/co-production processes (20%). These are shown in Table 5.

Table 5: Types of outcomes

Type of outcome	N
Gaining more effectiveness	14 (59%)
Increasing citizen involvement	6 (25%)
Gaining more efficiency	1 (4%)
Gaining customer satisfaction	1 (4%)
Strengthening social cohesion	1 (4%)
Democratizing public services	1 (4%)
Total	24 (100%)

The table shows that if concrete outcomes are reported, they mostly refer to an increase (or decrease) in effectiveness. Leone et al. (2012) analysed that through the co-production of health care for heart failure patients, the treatment quality increased. Baars (2011) showed that by incorporating farmers as specialists on the field of organic farming, knowledge about how to organize and maintain organic farming is gathered more easily. However, some authors presented how effectiveness was not increased by co-creation/co-production. Benari (1990) showed that co-production in Japanese garbage disposal did not generate positive outcomes. People simply did not divided their garbage into different categories. Furthermore, Meijer (2012a) showed that co-production is not to be considered as something that *directly* leads to a more neighbourhood safety.

However, given the limited number records that reported on the outcomes of co-creation/co-production, we cannot definitely conclude whether co-creation/co-production can be considered as beneficial. Furthermore, our previous observation, that co-creation/co-production is being considered as a virtue in itself, is strengthened by the dominance of studies dedicated to influential factors and the attempts to offer a typology. This is underlined by six records which described these outcomes in terms of enhanced participation.

4 Conclusion and future research

Policy makers and politicians consider co-creation/co-production with citizens as a necessary condition to create innovative public services that actually meet the needs of citizens, given a number of societal challenges, like ageing and urban regeneration; and all of this within the context of austerity. Hence, co-creation/co-production seems to be considered as a cornerstone for social innovation in the public sector. But what do we empirically know about co-creation/co-production, given their proclaimed importance? How evidence-based is the claim that co-creation/co-production is a relevant renewal strategy?

In order to increase our empirical and conceptual understanding of the literature on co-creation and co-production, we conducted a systematic review of: a) the objectives and types of co-creation/co-production (RQ 1); b) the influential factors (RQ 2); and, c) the outcomes of co-creation/co-production processes (RQ 3). In this section some conclusions will be drawn and a future research agenda will be drafted. However before doing so, we must acknowledge an important limitation: A main selection criterion was that the journal article or book should contain the word 'co-creation' or 'co-production' in the title or abstract. It is possible that studies were dedicated to the topic of co-creation/co-production, but did not mention the words in their abstract or title and we may have overlooked relevant studies. Related to this, literature, such as on 'interactive governance', '(public) participation' and 'open innovation', was not included, given the exponential growth of the number of records to be studied although we acknowledge that analysing these literature streams is also be valuable. For us, this was practically impossible since for this study already 4716 records had to be screened. Future studies could address this flaw.

Returning to the first research question with regard to how co-creation/ co-production are defined, we observed that citizens are perceived as an important partner in developing and re-designing public services. However, we concluded that in the literature the concepts of co-creation and co-production were often seen as interchangeable. There is empirically no striking difference between both concepts, and within bodies of knowledge different

meanings are given to both concepts (Evers & Ewert, 2012). This doesn't contribute to conceptual clarity (Osborne & Strokosch, 2013). Some clarity can be provided by making a difference between three types of co-creation (in terms of degree of citizen involvement) in social innovation: a) citizens as co-implementer: involvement in services which refer to the transfer of implementing activities in favour of citizens that in the past have been carried out by government, b) citizens as co-designer: involvement regarding the content and process of service delivery and c) citizens as initiator: citizens that take up the initiative to formulate specific services. Furthermore, based on this distinction, we would like to reserve the term 'co-creation' for involvement of citizens in the (co)-initiator or co-design level. Co-production is being considered as the involvement of citizens in the (co-)implementation of public services.

Secondly, if we look at the objectives that co-creation/co-production must achieve, the most remarkable observation is that in more than half of the eligible contributions, no specific objective is mentioned why it is important to co-create/co-produce. Hence, we may conclude that co-creation/co-production is perceived as a value in itself, which is also supported by the observation that several authors addressed the increase of citizen involvement as an objective to be met. Other objectives that were mentioned, are being more effective, gaining more efficiency and creating more customer satisfaction.

Thirdly, we have also looked at possible factors that influence the participation of citizens in co-creation and co-production. We made a difference between factors on the organizational side and factors on the citizen side. On the organization side, most of them involve the 'compatibility of public organizations to citizen participation'. This may refer to, for example, to a proper communication infrastructure or training facilities for both citizens as public officials. Another important factor are the attitudes of administrators and politicians to involve citizens as valuable partners. As it turns out, most authors identified that these attitudes are often not really inviting to citizen involvement. A third important factor seems to be the risk averse culture of public sector organizations. Civil involvement is traditionally

regarded as uncontrollable and unreliable. Therefore the administrative environment is not aimed at incorporating citizens in public service delivery.

On the citizen side, factors identified refer to the willingness to participate. These involve the education level of individual citizens, family structure and personal characteristics. Next to this willingness, citizens need to be aware of their ability and possibility to actual influence public services. A last important influential factor seems to be the presence of social capital. Social capital is required in order to create sustainable relations between public organizations and citizens. It is also important to note that these factors are related and must be considered as subsequent to each other. If these factors seem to be lacking (on both the organizational and on the citizen side), the responsibility to succeed co-creation/co-production initiatives seems to lie with the public organization. This, because the additional actions which came across, all refer to 'something that the public organization must do'. Examples of these actions are the assignment of a policy entrepreneur, implementing supportive policy or financial support.

Fourthly, we also analyzed the outcomes of co-creation/co-production. In most cases the conducted analyses related to either different types of co-creation/co-production, or involved a description or identification of the factors which influence the process of co-creation/co-production. However, studies that address the outcomes of the co-production/co-creation process are scarce. If specific outcomes were reported, the emphasis was on whether effectiveness of public service is being enhanced. The limited number of specific outcomes also adds up to our idea that co-creation/co-production is primarily considered as a virtue in itself, which does not need to be legitimized by referring to external objectives.

What do these results imply for the role of co-creation/co-production in social innovation? In order to address this question a number of considerations needs to be taken into regard: Firstly, we need to separate the process of co-creation from the outcomes. If we look at the influential factors that have been identified we can say that we are now able to assess if and how the process of co-production/co-creation comes to being. However, if we look at the outcomes of the co-creation/co-production process and relate to possible social

innovation outcomes, we can argue that we do not know if co-production/co-creation contributes to outcomes which really address the needs of citizens in a robust way, thereby acting as a 'game changer'. To some extent this would put the claims that policy makers make in relation to the 'magic' of social innovation into perspective. Second, we also do not know, if there is a relationship between several degrees of citizen involvement (co-implementing, co-design and initiator) and the outcomes of social innovations. As a consequence, further research challenges lie in the examination of outcomes co-creation/co-production as such and in relation to social innovation in particular.

Given these conclusions, how does a possible future research agenda look like? The first suggestion is to be more specific about the type of co-creation or co-production being studied and offer conceptual clarity between this and related concepts. Our literature review may help to provide this clarity in two ways: Firstly, we would like to emphasize that future studies should explicitly address the role of the citizen. As indicated, most studies are focused on citizens as a co-implementer, while only a few looked at the role of citizens as a co-designer or co-initiator. Therefore, future studies could focus on the latter types. In addition, since in co-creation and co-production processes the role of involved stakeholders are formulated within "a field of tension where users and organizations are urged to cope with contradictory role expectations but similarly adopt, reinterpret and subvert given role models against a backdrop of individual identities and self-construction (Evers & Ewert, 2012; p. 77) it might be useful to explicitly research the relation between this diversity in roles and the outcomes of co-creation processes.

Secondly, it is important to understand under what conditions citizen participation can be linked to more concrete and functional outcomes. Are specific needs in fact better served by co-creation processes? We noted that few studies (only 20%) explicitly looked at explicit and long-lasting outcomes. This contributes to the idea that co-creation/co-production is primarily considered as a virtue in itself, which does not need to be legitimized by reference to external goals. However, if we use a rational, functional or goal-oriented approach, the outcomes can be somewhat disappointing. We can also argue that the added value of co-

creation/co-production should be assessed from a political and cultural perspective in which innovation and co-creation/co-production is defined as a process of sense-making in which citizen involvement is seen as having important political value (Weick, 1995; Weick, 1969). Then, co-creation processes are important symbolic activities in which an organization tries to establish a process of normative integration between the central and dominant values and developments in public organizations on the one hand and in society on the other hand. In this process citizen participation is regarded as an important mechanism to achieve normative integration (DiMaggio & Powell, 1991; DiMaggio & Powell, 2000). In doing so, co-creation can be seen as a way of 'conspicuous production' (Feller, 1981) and a way of sense-making 'myth' or 'ceremony' in order to achieve political legitimacy and thus stress the importance of citizen participation as a relevant process that can be used as strategy to be applied to address issues that are defined in the literature as the perceived existence of a possible democratic deficit (Bekkers et al, 2007) or performance gap (Salge & Vera, 2012). Both concepts deal with the issue that legitimacy of government is under pressure, due to the fact that the production of public services does not really address the needs of citizens, which was one of the reasons to embark on the social innovation journey. This is, perhaps, even more important than the specific functional goals that have been achieved (Meyer & Rowan, 1977). This implies that future research must conclude to what extent co-creation/co-production contributes to bridge this perceived democratic or performance gap, thereby also acknowledging its symbolic function.

The third suggestion is methodological. The literature on co-creation and co-production relies to a great extent on (single) case studies. This is understandable given the importance of contextual factors. However, there are a few possibilities to generalise. First, the comparison between cases from different countries can show to what extent state tradition or governance structure influence co-creation processes (see also Verschuere et al., 2012). Second, quantitative approaches can show the weight of influential factors. For instance, what is the impact of negative attitudes of public officials compared to the impact of the actions of policy entrepreneurs? Finally, in order to determine possible causal linkages,

experiments are required. This could prove whether, for instance, user satisfaction is improved because of participation in public service design, or if this is due to other factors (see also Dunleavy et al., 2005).

The last research suggestion is empirical. We would recommend studying co-creation and co-production in different policy sectors. The review shows that most empirical data is derived from records within the education and health care sector. This is not surprising given the traditional direct relationships between service provider and service user. However, it can be valuable to expand this body of knowledge to other domains. Future research must conclude on to what extent the policy field in which co-creation is implemented is influential with respect to the type and effects of these processes.

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Appendix 1: PRISMA checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3-5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	4
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	4
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6-9

Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	9
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	9
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	6-9
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	N.A.
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	N.A.
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	N.A.
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	N.A.

Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	6-8
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	6-8
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	9
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	10
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	N.A.
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	N.A.
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N.A.
Risk of bias	22	Present results of any assessment of risk of bias across studies (see Item 15).	N.A.

across studies			
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	10-21
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	22
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	22
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	22-27
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	1

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097 For more information, visit: www.prisma-statement.org.