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Co-VAL [770356] “Understanding value co-creation in public services for transforming European public administrations”



D1.3 Research report on experiments

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Editor(s)	Dr Natalia Oprea (UB)
Contributor(s)	Prof. Maria Cucciniello (UB), Prof. Greta Nasi (UB), Dr Natalia Oprea (UB),
Reviewer(s)	Dr Kirsty Strokosch (UEDIN)
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Executive Summary

This report is part of the WP1 Co-VAL project that aims to provide a comprehensive and holistic framework and develop further the Public Service Logic (PSL). In the recent calls for better and inclusive public services, PSL emerged as an alternative approach to other theoretical strands guiding the reform of public service management. The public service logic emphasises value creation and effective citizen/user participation as main characteristics in reforming the design and delivery of public services. Accordingly, value creation is the main pursuit of public service organisation and service users are at the centre of the value creating process.

Based on the conceptual framework developed to understand value creation in public service delivery (D1.1), the aim of this deliverable is to test empirically how extrinsic participation of citizens in service delivery can be improved. The general question is: What factors can stimulate citizen engagement in the co-production of public services?

As part of the findings of the literature review (D1.1) it has emerged that there is a need to further understand the process. Previous research has identified a number of factors influencing co-production, willingness and ability among others (Voorberg et al. 2015). In other studies, information and different sources of delivering it were found to have an impact on value creation in different forms (Porumbescu et al. 2017, Bellé 2013).

This study seeks to assess, through the experimental method, which factors affect the process of co-production. Laboratory experiments allow researchers to identify causal mechanisms under conditions of tight control over endogenous and exogenous variables. For this purpose, two laboratory experiments were designed and conducted at the BELSS Laboratory of Bocconi University. The aim of the first experiment is to test how different sources of information influence citizens' willingness to co-produce. Whereas, in the second experiment the aim is to understand how the willingness to co-produce can be increased, manipulating information and offering a private incentive.

The analysis of data from the first experiment shows that citizens who receive information directly from a beneficiary are more willing to co-produce. This is explained by the fact that citizens act as resource integrators: based on their experience, they use the information received as knowledge to engage more in the process. Simultaneously, the contact with beneficiary influences their intrinsic and solidary motivation to contribute, through their effort, to other service users (social value).

The analysis of data of the second experiment yielded mixed results regarding citizens' effort in the process of co-production. The monetary reward alone has no impact on influencing citizens in the production process. Instead, when the personal reward is coupled with a benefit for others, that is information delivered by a beneficiary contact, citizens are willing to deploy more effort in the process of co-production.

These findings suggest that not only information is essential, but so are the means of delivering it so that it supports an effective contribution of citizens in co-production. As the case here shows, meeting the beneficiary of own action activates values that connect with citizens' intrinsic or solidary incentives. Related to this is the role of financial incentives that proved effective only partially, when the

information was received by the means of a beneficiary contact. This adds a variation to claims about the effect of money on co-production. Given the complexity of motivation driving citizens to co-produce, material rewards may have, at best, a complementary role.

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List of Terms and Abbreviations

Abbreviation	Definition
BELSS	Bocconi Experimental Laboratory for Social Sciences
NeMO	NeuroMuscular Omnicentre Clinic
PSL	Public Service Logic
PSO	Public Sector Organisation
WP	Work Package

1 Introduction

This report illustrates the design, analysis and the results of empirical testing of the conceptual framework (Deliverable 1.1) developed as part of the WP1 of Co-VAL project.

1.1 Purpose and Scope

The report anchors the experiments in the evidence of the review carried out as part of the WP1, whose main objective is to develop a theoretical framework to understand value co-creation in service delivery and design.

The scope of this report is to discuss the findings of two laboratory experiments aimed at testing how extrinsic participation of citizens can be enhanced in service delivery. In particular, the testing focuses on a number of factors that could affect the participation of citizens in the co-production process.

The theoretical work carried out in D1.1 emphasized the necessity to delve upon the process of value creation, with particular reference to intrinsic and extrinsic processes of citizens'/users' participation. Therefore, the study was designed to earn insights on how various factors can influence the process of co-production.

Compared to previous approaches, PSL places citizens/users at the centre as skilled and knowledgeable actors. Therefore, their engagement should be managed in way to ensure an effective contribution to the co-production process. Identifying the enablers or barriers of citizen engagement in the process would represent a crucial improvement to the current studies both from a theoretical and empirical point of view.

1.2 Structure of the Deliverable

This report recalls the evidence from the theoretical framework to discuss the research questions tested in this part of the Work Package. This sets the stage for the focus of this study articulated in the main research questions. In addition, the rationale for choosing the method is presented and some methodological challenges are discussed next.

In the second part, the report describes the design and process of conducting the two experiments, followed by the analysis and presentation of findings. The last section draws together the evidence into a general discussion and delineates possible developments for future studies.

2 General framework and focus of the experiments

As emerged from the literature review undertaken in the previous deliverable D1.1, Public Service Logic advances an alternative model to public service reform. In PSL, the creation of value is at the core of PSO activity, created together with users, citizens and communities. While the other five narratives of reform (New Public Administration, New Public Management, Public Value, New Public Service and New Public Governance) suggest that public services are designed and delivered by the public managers and that participation transforms people (i.e. citizens are empowered when PSOs enable their inclusion through participative mechanisms, Pollitt and Bouckaert 2004, Aberbach and Christensen, 2005, Skelcher et al 2005, Osborne 2010), PSL is less about empowerment and more about how people transform a service offering made by service providers with their resources, skills and experiences and ultimately create value (which might include capacity for future change). By consequence, PSL situates service users at the center as value creators and co-creators through their role in the production, consumption, evaluation and contextualization of public services (e.g. Osborne et al. 2013; Osborne and Strokosch, 2013; Skalen et al. 2018).

This is at the base of Co-VAL project and the aim of this paper is to test under PSL how different factors can enhance citizen engagement in co-production.

Co-production is one extrinsic process of value creation to which the focus of this study is addressed. From the review emerged that PSL argues for two types of participation in public service delivery through which value is created on the part of citizens: *intrinsic* and *extrinsic* (p. 28, D1.1 Report). While intrinsic processes occur naturally in the service process and can be unconscious, without agency, extrinsic processes require deliberate and voluntary agency on the part of the citizens/service users in the management and delivery of services. For this reason, co-production needs support and management to enable citizens' contribution in service delivery. In co-production, service providers can benefit from citizens'/users' tacit knowledge in their pursuit of improving services. Thus, it is important that PSOs facilitate and enable an effective process of citizen engagement in the process.

Existent research has identified, among others, willingness, ability, information etc., as influential factors in co-production (see Voorberg et al. 2015). Being an interactive process, co-production can either be facilitated or obstructed by these intervening factors. For instance, the role of information has been acknowledged both at the point of access (Alford 2002, Jakobsen 2013) and during the process of interaction (Pralhad and Ramaswamy 2004) as influencing citizen's capacity to actively engage. However, as some studies point out, the role of information can be undermined if the presentation format is not properly considered (Porumbescu et al. 2017). In other words, the means of delivering information is crucial for citizen engagement.

In analyzing citizen's willingness, Alford, based on extensive studies (2002, 2009), argues that both self-interest and other altruistic reasons, such as solidarity or intrinsic motivation can drive citizen's willingness. The presence of clear incentives could be a condition to mobilise citizens' effort and time in co-production. For instance, in the service marketing literature, monetary incentives play a substantial role in co-creation in the private realm. However, as Alford (2009) stresses, material rewards may fall short when applied to the public sector and other intrinsic values might influence citizens'

willingness to contribute to public service production. Indeed, a recent experimental study on financial incentives has found only a limited effect of such rewards on stimulating citizen's willingness to co-produce (Voorberg et al. 2018).

Experiments have a great potential and strength in appraising causality and are increasingly applied in public management research. In the context of this paper, the promise of experimentation is to isolate and test 'conditions' that, in practice, affect the process of co-production.

2.1 Objectives and the research question

The main scope of the experiments was to test out what factors can enhance citizen engagement in co-production.

The underlying assumption is that different factors may result in different level of co-production. These factors regard: 1) the type of information, and 2) willingness (motivation) of citizens that might affect the process of co-production.

These experiments represent an original attempt to explore and provide evidence in understanding what factors can stimulate citizen engagement in the co-production of public services under the PSL which places citizens/users at the centre as knowledgeable actors. For this reasons investigating the enablers or barriers of citizen engagement in the process would represent an important contribution to further demonstrate the relevance of PSL compared to previous approaches.

2.2 Why the experimental method was chosen, its advantages and limitations

Experimental design is one powerful methodology applied in research where the aim is to measure the causal effect of some "manipulated treatments" on the variable of interest. Despite their relevance in generating valuable knowledge about practice and policy making for management studies, experiments found limited application in the discipline and even less if one considers lab experiments (Li and Van Ryzin 2017, Anderson and Edwards 2015).

Laboratory experiments, compared to other types of experimentation, offer a tight control over endogenous and exogenous variables which improves the conditions to identify causal relationships. Whenever factors influencing human behavior are studied, it is important to understand that lab experiments offer high internal validity due to controlled variations of the independent variable (treatment) and the random assignment of subjects to treatments.

Conducting experiments in laboratory, however, has its own challenges. Some advanced critiques regard the limited 'reality' and generalizability of results. As far as experimental realism is concerned, this can be handled through the design of real-world situations and not just approximate actual behaviour. This limitation is not exclusive to this type of method, whereas its contribution to identify and affirm a causal statement, as in the case of the task for this WP, justifies its choice.

2.3 The place where the experiments were conducted

Both experiments were carried out at BELSS laboratory at Bocconi University. It is an interdisciplinary research centre specialised in laboratory experimental work. In collaboration with university departments, it organises regular meetings and seminars briefing on the state-of-art and discuss latest research.

BELSS Behavioural Lab is equipped with modern infrastructure relying on a network of 27 centrally controlled computers. This allows to run various interactive experiments.

The lab keeps an active subject pool of more than 5000 participants (both Bocconi students and outsiders). Generally, participants are invited to join experiments and respond on a voluntary basis. The Lab follows a rigorous policy of informing about the conditions of participation during registration (no deception, payments). More information can be retrieved on the official website of the Lab: www.belss.unibocconi.it

2.4 Context of the experiments

To test our research question and understand the phenomenon of co-production in context, the design of the experiments was built upon the findings of one of the case studies delivered in D1.2.

In designing the experiment, we referred to the specialized medical Centre assessed as one of the case studies of WP 1 research report on case studies (Deliverable D1.2). The Centre addresses the needs of people affected by neuromuscular diseases with the aim to improve the quality of their lives and those of their families.

BELSS participants received an invitation to join the laboratory for the Co-VAL experiment, which explicitly disclosed that potential participants had the possibility of contributing to the co-production of service delivery for NeMO Clinical Centre.

3 Experiment 1

Experiment one aims at answering the following research question: *How does information affect citizens' willingness to engage in the co-production process?*

In the extant literature on co-production, some studies have shown that information (resources in the form of knowledge) can increase citizens' participation (Jakobsen 2013) and even their capacity to actively engage in the process (Alford 2002). Likewise, research has found that intrinsic and solidary motives greatly influence citizens' willingness to co-produce (Alford 2009, Parrado et al. 2013).

To understand and measure the effect of information in the process of co-production for this experiment two strands of literature served as a theoretical backdrop. The first one focuses on the role of information on citizens' engagement (Porumbescu et al. 2017, Cook et al. 2010). The baseline argument is that the way in which information is delivered can influence citizen's engagement and their compliance to a policy.

In the second strand, experimental studies have shown that a personal contact with beneficiaries of their effort can positively affect the motivation and engagement measured for example as performance of public workers (Grant et al. 2007; Bellé 2013). Engaging with beneficiaries is one way to clarify the purpose of own efforts and form an attitude around the issue.

The argument is that providing information represents the resources co-producers can use in the form of knowledge to actively engage in the process. Moreover, when engaging in co-production, subjects' willingness is mediated by their motivation which can underlie intrinsic values such as solidarity, civic duties etc. Therefore, exposing citizens to different sources of information is expected to impact on the process of co-production.

3.1 Experimental design

To carry out the experiment, an online invitation letter was distributed among the registered participants of BELSS informing them about the experiment. Overall, 258 subjects participated in 9 experimental sessions. While all participants received the same information and instructions at the outset, groups varied according to conditions formulated in the theoretical part and described in Table 1. Participants were asked to perform administrative tasks related to the relationship of the Centre with its donors.

The three groups represent three different levels of exposure to information about co-production. While the first two groups were exposed to different content and sources of information, the third one received not only the information inserted in the leaflet but more important had a direct contact with the beneficiary of their effort. Based on this reasoning, it was possible to formulate the following working hypothesis:

- H1. Changing the sources of information has an impact on the willingness to engage effectively in the co-production process

Table 1. Groups varying by experimental condition

Group	Treatment	Description
1 (control)	Basic	Description of NeMO's aims and activities.
2	Leaflet (+basic)	Information about the activities promoted by NeMO and the importance of donations for its mission.
3	Beneficiary contact (+basic)	Presentation on the behalf of a NeMO user about the activities of the Centre. Subjects met in person with a spokesperson who was present in the lab to explain its mission as well as future plans for which financial support is crucial.

To estimate the average treatment effect of the conditions exposed above on willingness to co-produce, the main dependent variable was measured as the number of hours (per month) subjects would volunteer in 1 control group and 2 treatment groups, respectively. Volunteering, which regards citizen participation in the community and public sphere, is an important component of co-production aiming at enhancing service quality (Brudney and England 1983, Parrado et al. 2013). The independent variable represents the different sources of information subjects received according to the conditions described next.

Subjects were randomly assigned to one of the three potential groups regarding the information received about Clinical Centre NeMO. The randomisation and the controlled variation in the groups allowed to capture the effect of information on subjects' behavior. Therefore:

- In the first group, i.e. the control group, subjects received, on a piece of paper, a description of NeMO and its mission;
- In the second group, besides the above-mentioned piece of information, upon arrival, subjects received a leaflet they were supposed to read before the beginning of the session. The leaflet was an official one, containing the description about the activities promoted by NeMO and the importance of donations for its mission.
- Finally, in the third group, subjects were given the same information contained in the leaflet by a person. Thus, in addition to the description of NeMO, subjects met in person with one of the volunteers and users of the Centre.

3.2 Findings

This experiment examined whether providing citizens with different information sources would influence their willingness to co-produce. The overall results confirm that information, delivered by a beneficiary, has a strong effect on boosting co-production.

The findings show that citizens manifest increased willingness to co-produce when the information is provided directly by a beneficiary. According to the results, while the average number of volunteering hours in the control group – with paper-based information – is 7.49 it increases to 11.8 for the subjects in the group having had contact with the beneficiary. It is worth notice that the value is at 7.7 for the leaflet group.

The following table shows the difference in terms of volunteering hours between control and treatment groups.

Table 2. Differences in group means of volunteering variable compared to control group

	Leaflet	Beneficiary contact
Volunteering hours	+0.21	+4.31*
*p<.05		

The difference between groups is overall significant ($p < .05$). The results of the analysis of variance yielded evidence that the time willing to allocate in volunteering – the outcome variable – differed significantly across the three groups at 5% significance level. However, at a more accurate inspection it was found that being exposed only to reading the leaflet shows no significant impact on subjects' disposition to volunteer for NeMO at the conventional level ($p = .99$)¹.

3.3 Implications

The main focus of this test was to understand if citizen engagement in co-production of service delivery would increase when exposed to different sources of information. The results clearly indicated that the answer is positive. This has several implications.

First, information matters in the process of co-production, based on their resources (ensured by basic presentation provided) citizens used the information received from a beneficiary as knowledge to boost their willingness to co-produce.

Concomitantly, the results provided evidence that official communication – through traditional means – has no relevance on citizens' engagement in the co-production process. Information delivered through standard means has minor contribution to citizens' knowledge as to engage more actively in the co-production process.

Finally, this suggests that NeMO must change the way it provides information if the goal is to actively engage citizens in co-production.

¹ Both the Tukey HSD and the Bonferroni tests show that difference is significant between the two treatments, respectively at 3% and 5%, while the leaflet has a negligible effect with respect to the control group.

4 Experiment 2

The questions that guide this second experiment are: *How does a private incentive affect the level of effort in co-production? And how does it interact with different sources of information?*

In the service marketing literature material rewards play a substantial role in mobilizing clients to devote their time and effort. In a nutshell, clients when faced with tasks of co-production must see some kind of reward for themselves (Schneider and Bowen 1995, Van Doorn et al. 2010). Alford (2009) suggests that material rewards are at least as important as intrinsic motivations and “(...) none of these incentives on its own resonates best in all situations, but rather that particular incentives are effective in particular circumstances” (p.188). As the value consumed by clients gets more ‘public’ the motivation gets more complex. Indeed, research on prosocial behavior has revealed that extrinsic incentives get less effective in public activity (Ariely et al. 2009, also Bellé 2015). Whereas, financial rewards might work in services that require readily performed tasks (Alford 2002).

The second experiment, therefore, focuses on the effect of a private incentive upon citizens’ willingness to put more effort in the process of co-production. The basic assumption here is that users are more likely to deploy an increased effort when the benefits produced are enjoyed/consumed individually. On the other side, it is expected that citizens’ willingness will increase in response to information delivered by a beneficiary leading to a higher effort in the co-production process. Research on private incentives is vast yet it has been only scantily explored in co-production studies. Current evidence shows that financial incentives can be only to a limited degree an effective instrument to stimulate citizens’ willingness to co-produce services (Voorberg et al. 2018).

4.1 Experimental design

The participants for this experiment were recruited using an online invitation letter which informed them about the possibility of contributing to co-production activities for a health organisation. Overall, 303 subjects participated in 11 experimental sessions. At the outset, all subjects received the same directions and information regarding NeMO Clinic. However, groups varied according to conditions formulated in the theoretical part and presented in Table 3.

Subjects had to perform several tasks, for example they were asked to register a certain number of donations and to compute the average of donations to the NeMO Centre over the last 4 years by each donator. The number of correct tasks performed, in the operationalisation process, represents the effort subjects deployed in the process. The accuracy in performing the tasks is subsequently used as a proxy for subjects’ willingness to contribute to the fundraising campaign for the health Centre.

The dependent variable is measured as the number of correct tasks performed, that is, the performance. Thus, a higher number of correct tasks performed represents a higher level of performance. The independent variables in this experiment are information and the private incentive. The advanced hypotheses for this second experiment are:

H1. Offering a private incentive has an impact on citizens’ effort to co-produce effectively.

H2. The impact of a private incentive on citizens’ effort depends on the sources of information.

Table 3. Groups varying by experimental condition

	Information		
	Basic	Leaflet(+basic)	Beneficiary contact (+basic)
Private incentive	G1	G3	G5
No incentive	G2	G4	G6

Participants were randomly assigned to one of the six groups which considered the three different sources of information and the incentive. The three different sources of information represent different levels of exposure and participation in the process of co-production. In addition, subjects randomly received an incentive that could potentially boost their levels of effort in the process. The private incentive represented an additional personal gain of 0.5 Euro which varied upon the number of correct answers provided.

These conditions were expected to instrumentally influence subjects' willingness to engage more in the process of co-production. The material reward underlies an individual benefit driving subjects' willingness to put more effort into the process. On the other side, information may help subjects illustrate what is the goal of their production and how it matters. Together, these two factors might have an increased weight.

4.2 Findings

This experiment investigated whether providing citizens with different sources of information and a private incentive would increase their effort in the co-production process. The analysis yielded mixed results, confirming only one of the two hypotheses. That private incentives have an impact only when citizens are exposed to information received from a beneficiary contact.

To measure the performance of subjects in the co-production process, the final score for each task was standardized. Generally, the standardization process is applied in cases where different scales of measurement across variables are used. Below are shown the results of standardized scores across the tasks.

After conducting the analysis of variance, it was found that changing information sources and offering a private incentive produced no significant difference on the effort subjects deployed in the process of co-production. The tests confirmed that there is no significant variance between groups exposed to different sources of information on their overall performance across the tasks. Similar results were obtained after replicating the same procedure on the private incentive. This leads to the rejection of the first hypothesis regarding the impact of material incentives on citizens' effort to co-produce.

Despite this lack of significance in the evidence regarding the effect of the two influencing factors separately, in the preceding discussion it was hypothesised that the two factors jointly might cause a positive effect.

Analysing the regression results displayed in Table 4, it can be seen that there is mild evidence regarding the impact of the two factors combined on the overall effort of subjects in the process of co-production

($p < .05$). Only when citizens are provided with direct information from beneficiaries, the offering of a private incentive significantly increases their effort in the process of co-production.

Table 4. Regression analysis predicting performance (standardised coefficients)

	Coeff	SE	t	p>t	beta
Leaflet	0.03	0.17	0.20	0.843	0.02
Beneficiary contact	-0.37	0.22	-1.71	0.089	-0.15
Private incentive	-0.28	0.19	-1.49	0.136	-0.14
Leaflet x Private	0.21	0.26	0.79	0.433	0.08
Beneficiary x Private	0.70	0.31	2.26	0.025	0.21*
Constant	0.26	0.14	1.90	0.059	
Obs		303			
F(6,286)		2.65			
Prob > F		0.0162			
R ²		0.05			
Root MSE		1.0013			

* $p < .05$

4.3 Implications

In this part of the study, more evidence regarding factors affecting co-production was brought. In particular, it tested the hypothesised role of a personal incentive in the form of monetary reward in driving citizen's action in the process of co-production.

The results presented previously suggest that the role of incentives in co-production is still ambiguous. In fact, there is some mild evidence that incentives can influence co-production only when crossed with information delivered by a beneficiary. As it appears, citizens are motivated in their actions when the benefits produced are enjoyed collectively and only after when it benefits them. This is supported by the fact that a personal earning alone has no significant effect on their willingness to engage more in co-production.

Other research concluded that monetary incentives can work in simple tasks, while more complex rewards are driven by solidary or intrinsic motivators (Parrado et al 2013). This points to the tension between individual and social value in co-production.

5 Discussion and conclusions

The PSL places at the centre the participation of citizens/users as skilled and resourceful actors in the production of public services and creation of value. Yet there is little understanding about which factors can prompt more active citizen engagement in the co-production of public services.

To provide empirical evidence, the current study used the experimental design to examine the effect/impact of a number of intervening factors in the process of co-production. Offering information from different sources can affect citizens' behaviour in the process of co-production on at least two levels. First, information represents new knowledge, that integrated with previous experience, increases citizen's engagement. Second, receiving information from the direct beneficiary of own activity contributes to the awareness and clarity about how active engagement might have a positive impact on other service users and community in general.

In the first experiment, it was found that information provided directly by a beneficiary has a clear effect on co-production compared to one-way information sources. This finding has several implications. First, providing information has an impact on the process of co-production. Other studies using experimental methods corroborate this finding (Jakobsen and Serritzlew 2015). Next, while the official source of information, i.e. the centre official leaflet, has no relevant effect on citizen's engagement, information delivered through direct means, possibly by beneficiaries of own efforts, strongly affects citizens' willingness to co-produce.

In the second experiment the results were somewhat less definite compared to the first one. It was found that providing citizens a private incentive, i.e. an immediate and individually enjoyed benefit, in the context of co-producing services for a health organisation has no effect on their effort. This finding is not completely surprising in contexts of prosocial activity where it was found that incentivizing effort has no effect (Ariely et al. 2009). However, it was interesting to detect that private incentives can win the argument among citizens when information is delivered by the beneficiary of their efforts. Although the result is not very strong, the interpretation might be that citizens' willingness increases when the outcome of their effort is enjoyed collectively as much as individually.

This discussion brings us to draw some relevant points for present and future research on co-production of public services. First, in trying to harness effective co-production, public agencies should pay particular attention to information and how it is disseminated, as for instance to appeal to citizens' intrinsic motivation. Information is powerful when citizens know how they can use it for their own benefit as well as others'. This leads to the second consideration regarding more broadly the design and use of incentive systems in the co-production process. Although the role of financial incentives was at best weak in this field of co-production, their role cannot be ruled out in other sectors, in particular when more consistent rewards are offered (Voorberg et al. 2018). Further research could analyse whether and how monetary incentives can be complemented with other types of motivators (e.g. intrinsic) as to lever greater effort and willingness from citizen in co-production activities.

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