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

D2.8 Final Report of Survey Results

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Executive Summary

Key findings

- The main Co-VAL survey was conducted as a statistically representative sample and obtained responses from 1,036 public sector managers in six European countries, of which 788 were from innovative work units that answered questions on their most important innovation. The pilot NGO survey obtained responses from 99 NGO managers.

- The involvement of users in the development of a 'most important innovation' is very common, reported by 87.7% of surveyed public sector managers in six EU countries. This indicates a very high awareness of user involvement, although users may not be involved in all innovations.

- 14.5% of responding public sector managers' report obtaining assistance for a most important innovation from organizations such as design firms, innovation labs or living labs that often involve users in developing an innovation. This is a small share of all managers that report user involvement, indicating that users are mostly involved with in-house innovation activities.

- Users can be involved in innovation through non-interactive methods such as surveys or research on how users experience a prototype, or through interactive methods such as focus groups, brainstorming sessions and one-on-one conversations with innovation designers. Previous experience with a variety of innovations and dedicated funding for the innovation are positively associated with interactive methods of user involvement.

- User involvement is associated with positive effects on innovation processes such as reducing the costs or time to develop an innovation or a reduced risk of innovation failure. Interactive methods of user involvement have a greater effect on innovation processes than non-interactive methods.

- User involvement is associated with positive innovation outcomes for both process and service innovations. Both interactive and non-interactive user involvement can produce good outcomes on their own, or when combined together.

- 54% of surveyed NGOs assisted government with a service innovation. NGO involvement with government innovations is user-focused: 76% of NGOs provided information on the experiences of service users while 50% helped to find users to participate in the development of a government service innovation.

Methods

This report provides results for two surveys on public sector innovation and the use of five methods for involving users in developing a service or process innovation. The level of intensity of user involvement can vary substantially. For this reason, we often refer to 'user involvement' or 'user engagement' instead of co-creation. The term 'co-creation' is limited to intensive participatory involvement of users in the development of an innovation.

The main survey was sent to public sector managers in municipalities and national government organizations in six European countries: France, Hungary, Spain, the Netherlands, Norway and the UK. The countries cover a variety of conditions in terms of size, economic development and political structure. Respondents were asked to only respond for their area of responsibility, defined as their work unit. The organization is the government entity that employs the respondent and could be an agency, ministry or department within a municipality or national government. In total, 3,497 questionnaires were sent out for the main survey. The valid sample excludes 327 contacts from the full sample that could not reached for various reasons. The final response rate is 32.7%, varying from a low of 14.8% in the UK to a 48.1% in Norway.

The second survey is the Co-VAL pilot survey of non-governmental organizations (NGOs). The pilot survey collected information on 1) NGO activities to develop their own service innovations and 2) NGO involvement in service innovations under development by public sector agencies. The goal is to contribute to the sparse literature on the innovation activities of NGOs, which is largely restricted to case studies. In total, 99 valid responses were obtained by the pilot NGO survey. The average response rate for valid responses is 28.4%, with considerable differences by country, from 6.9% for the UK to 60.0% for Norway.

Highlights of the results of the main survey

Results from the main survey sent to public sector managers have shown that the percentage of innovative work units varies by country from 56.5% in Hungary to 92.7% in the Netherlands and the United Kingdom. Other factors that affect innovation status include the focus area of the respondent's unit (the type of services provided, such as education, health, housing etc.) and the type of organization (the percentage of innovators is highest in large municipalities at 88.2%).

Non-innovative units are more likely than innovative units to report each of 12 obstacles to innovation as not relevant. The most frequently cited 'high' importance obstacle for both innovative and non-innovative units is a lack of knowledge on how to innovate (cited by 19.6% and 49.2% respectively). Barriers related to user involvement are very low amongst innovative units with just 7.5% citing management resistance to user input as highly important. Insufficient demand from users and difficulties finding users for input are of no importance or low importance for 82.3% and 76.1% respectively.

Most of the survey questions focus on a single 'most important innovation' (MII) identified by the respondent. A maximum of 788 respondents from innovative work units answered questions in this section of the questionnaire. In regards to novelty, 43.2% of the MIIs were improvements to previous services or processes, while 32.7% provided a new service or process and 24.1% a new service and process. The most commonly reported purpose of the MII was to 'improve quality for users' (cited by 68.7%), followed by 'improve internal efficiencies' (cited by 60.4%).

Methods for involving users in innovation activities

Respondents were asked to report on the use of five methods of involving users in the development of the MII: analysis of data on the experience of users, one-to-one in-depth conversations, focus groups, the inclusion of users in brainstorming or idea generation workshops and real-time studies of how users experience a prototype of the innovation. In total, 87.7% of respondents reported the use of at least one of the five methods. Public sector managers often combine design-thinking methods (including conducting research to identify challenges, conducting research to identify different types of users, brainstorming and development of a prototype) with the involvement of users. The most common combination is to involve users with brainstorming activities within the work unit (reported by 45% of innovators). Another frequent combination is combining in-depth one-on-one conversations with users with research on the challenges to be addressed by the innovation (29.3%).

Public sector managers can involve users through the assistance of design firms, innovation labs or living labs. In total, 14.5% of respondents report obtaining assistance from these types of organizations. Of these respondents, 89.3% also report the use of one or more of the five methods for involving users in developing an innovation.

Factors influencing user involvement in innovation activities

Regression analysis is used to investigate the factors influencing the use of different methods to involve users in developing the most important innovation. Innovation intensity (the number of different types of innovation developed by the work unit in the previous two years) has a significant positive effect on user involvement. These results suggest that public sector organisations with more experience with innovation are more likely to involve users in the development of their innovations than organisations with less experience. Furthermore, the regression analyses show that more expensive and time-consuming methods such as focus groups, brainstorming sessions, and real-time studies of user experiences are more likely to be used when extra funding/resources are provided for the most important innovation.

Contribution of user involvement to innovation activities

User involvement in innovation can influence development costs or other factors linked to the innovation process itself. Regression analysis evaluates the role of involving users in developing the

innovation on four innovation process outcomes; 1) reducing development costs or time to develop an innovation, 2) improve quality and fit with users, 3) reduce the risk of an innovation failing and 4) reduce the need to revise the innovation after implementation. The regression results show that involving users is positively associated with each of these outcomes. However, the method of involving users is important. Co-creation methods that use interactive methods have a positive effect on all four outcomes, whereas passive methods only have a positive effect on reducing development costs or time and reducing the need to revise the innovation.

User involvement in innovation and innovation outcomes

The questionnaire asks respondents if their most important innovation had four 'positive effects' on service innovations (user experience of a service, user access to information, safety of users, and service quality) and six positive effects of process innovations (simpler procedures, time to deliver a service, ability to target a service to those who need it, employee satisfaction, employee safety, and reducing costs.

The evaluation of the effect of user involvement and seven other conditions (factors) is investigated through qualitative comparative analysis (QCA), which assumes that public sector managers can combine resources and strategies in different ways to achieve good outcomes. User involvement is divided into interactive and non-interactive methods. Other conditions include senior management support for innovation, employee motivation, obtaining assistance from sources external to the respondent's work unit, a clear system for managing the development of the innovation, and background research on the innovation (existing good practices, identifying challenges, identifying types of potential users).

The analyses are limited to respondents that had evaluated their most important innovation after implementation in order to exclude respondents that lacked knowledge about outcomes. Separate analyses identified different configurations of eight conditions (factors) that were associated with high levels of benefits for service innovations and for process innovations.

The analyses find that user involvement is almost always present in configurations that result in high benefits. Both interactive and non-interactive user involvement can produce good outcomes on their own or when combined together. Interactive methods are more strongly associated with good outcomes for process compared to service innovations.

NGO involvement in public sector innovations

The results of the survey sent to NGO show that 87.9% of NGOs report developing at least one type of innovation for their own use and 12.1% reported no innovations. In total, 58.3% of NGOs that developed their own innovations assisted a government innovation, compared to only 27.3% of non-innovative NGOs. NGO involvement with government innovations is user-focused: 76% of NGOs provided information on the experiences of citizens or residents with services while 50% helped to find citizens or residents to participate in the development of a government service innovation. The main motivation for NGO involvement, reported by 100% of the NGOs, is user-oriented, either through improving user experience or better targeting the service.

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1 Introduction

The survey results discussed in this final report for WP2 are part of the Co-VAL project "Understanding value co-creation in public services for transforming European public administrations". The rationale for this project builds on the role of public administrations in addressing European challenges of the 21st century. These challenges include the delivery of efficient high-quality public services and improved public sector capacity to deal with societal challenges, such as social inclusion of diverse populations and vulnerable communities. The societal challenges are met with an increasing demand for public sector transformation to cope with the growing complexity of public administration problems, as reflected in the current discourse between what citizens' demand and the responses offered by governments. However, designing public services by following the internal logic of top-down government policy assessments does not meet the changing needs of citizens. Expectations for increased public value creation to meet the complex demands on public administrations are rising, as well as the pressure to deliver high-quality services in an efficient and accountable manner.

Public sector transformation requires thinking of inclusive ways of citizen engagement in the creation of public value. The traditional view of top-down public administrations, in which citizens can only passively absorb supply-led services, is no longer appropriate. There is a need for a demand-driven design of public services that incorporate the opportunities provided by new technologies to allow the effective engagement of citizens and organizations "to unlock social assets". A key element for a public sector transformation is the paradigm shift from designing and delivering public services solely based on the internal policy-driven logic of public administrations to an external, open and co-productive public service logic (Osborne et al, 2021).

Recent public sector innovations have included the use of e-government for delivering services (including services, such as online tax payments) and digital platforms to include citizens' ideas and knowledge. Yet efforts have stalled in many European countries, without progressing to transformative innovation. Some of the changes have contributed to time and resource savings, but frequently online service delivery is merely a replication of existing offline processes, without rethinking mission support or redesign of services. Instead, new forms of agility and responsiveness in service delivery should be co-designed and co-produced by the public, as pointed out by the EU Commission (Vision Public Services Paper on ICT-enabled public sector innovation in H2020). In this context, the involvement of citizens or residents in developing service innovations can improve the value of public services to address welfare or economic needs, increase personal well-being through public service delivery, add value to the community or society, and/or create the capacity for value creation in the future.

User involvement (also referred to as engagement) in the design of a service innovation can take many forms and occur at different levels of intensity. At its simplest and least demanding level, knowledge about user needs (before an innovation is developed) or post-implementation experience with an innovation can be obtained through online or other surveys. More interactive or participatory methods of involving users include focus groups or the inclusion of users in brainstorming sessions.

User involvement is often referred to as co-creation, but co-creation for innovation requires the active involvement of users in the design and development of an innovation, often over a period of time as ideas are developed into prototypes. In addition, we avoid the use of the term 'co-creation' to avoid confusion with the co-creation of value between the provider of a service and the service user at the point of consumption of a service (Grönroos, 2019; Osborne et al, 2021). In this report we limit the term 'co-creation' to intensive, participatory methods of user involvement in developing an innovation. We use the term 'co-creation of value' to refer to the co-creation of value between service providers and users at the point of consuming the service.

The main goal of Co-VAL is to discover, analyze, and provide policy recommendations for transformative strategies that integrate the co-creation of value in public administration through the introduction of a new paradigm of public service design and delivery. The project accomplishes these objectives by conducting research on the paradigm shift from the traditional top-down model of service design to demand and bottom-up driven models.

1.1   The purpose of WP2: evaluating existing data to creating new data

The main goal of WP2 within Co-VAL is to identify and evaluate quantitative data on co-creation (or the involvement of users in the development of an innovation) in the European public sector. Two methods were used: a search for existing data on user involvement (deliverable 2.1) and a dedicated survey on this topic, implemented in six European countries in 2019 (deliverables 2.2 to 2.8).

The search for existing data was conducted for relevant, representative studies in English, followed by detailed searches for studies in the national language of other countries participating in WP2: France, the Netherlands, Norway, Spain, and the UK. Several relevant studies were found in these national languages, except for Hungarian, possibly because the audience for scientific research in Hungarian is limited.

Although several case studies were identified, they do not produce useful data because the sample sizes are too small and unrepresentative. There are only a small number of representative surveys in the business or public sector in Canada, Scandinavia and Europe that included questions on the involvement of users in innovation. The most common questions ask if citizens or users were a

source of information for innovation and if user surveys were used to obtain information of relevance to innovation. For example, the 2010 European Innobarometer survey (EC, 2011) of 3,500 public sector managers included one question of direct relevance to co-creation: how well does the following apply to your organization: users are involved in the design or planning of new or improved services"? One small survey for the UK asked about the involvement of users at different stages of the innovation process. The disadvantage of all of these surveys, except for a survey from Denmark and Norway, is that they cover activities five or more years ago and are consequently out of date, given an expected rapid increase in user engagement by public sector agencies. Furthermore, a major gap in the available studies to date is data on the outcomes from the use of co-creation in the public sector.

An alternative method for producing representative data on user engagement is to use "Big data", often based on data available on the internet. Big data theoretically provides a cheaper and more up-to-date source of innovation data in comparison to surveys. The main methodology is the use of web-scraping bots that use textual analysis to identify innovation activities that are posted on the websites of public sector organisations. Although several experiments have been conducted in Europe to use web-scraping to identify innovation activities in the public sector, none have looked at co-creation.

Consequently, the research summarized in WP deliverable 2.1 failed to find any data that could be used to construct indicators or provide recent, statistically representative, and comparable data from multiple European countries on user engagement by public sector organisations to innovate. However, the research for this report did find useful information for two other purposes: identifying ideas for survey questions and identifying data gaps. This information was used in the design of the questionnaire for the WP2 survey.

Useful ideas for questions were identified, among other sources, in the NESTA survey of UK agencies, in an interview study in Norway, and a survey in Canada that included questions on where and how users were involved innovation. The research also identified data collection 'gaps' that can be met through a new survey: 1) the prevalence of users in different stages of the innovation development process, 2) the intensity with which users are involved in innovation, 3) the factors associated with user engagement, including managerial and organizational characteristics, 4) obstacles to innovation, including those linked to user engagement, and 5) the effect of co-creation on innovation outcomes.

1.2   The Co-VAL surveys

Most of the Co-VAL research on user involvement in public sector innovation is based on over 50 case studies, with several hundred interviews conducted. In contrast, this report provides the results of the main survey of public sector managers and a pilot survey of NGOs. The main survey, in particular, serves a different purpose from case studies by providing statistically representative data for a random sample of public sector managers. While case studies provide in-depth insights into how users are involved (or not) in innovation, a survey provides comparatively superficial data, but for a large sample. This permits estimating the prevalence of user involvement and the association between various factors and user engagement.

The main Co-VAL survey was sent to public sector managers at municipalities, national government organizations and NGOs in France, Hungary, Spain, the Netherlands, Norway and the UK. The survey excludes the highest level of senior management but includes divisional managers at job levels two to five levels below senior managers. The questionnaire used for the main survey sent is provided in Annex A and the questionnaire sent to NGOs is provided in Annex B. The questions of the main survey cover general background information on the respondent's unit (section A), and general innovation activities, including questions on organizational support for innovation (section B). Most of the questions (section C) focus on the unit's most important innovation, as identified by the respondent. The purpose of focusing on a single, most important innovation is to improve the validity and reliability of the data. Respondents are more likely to be able to provide valid and reliable answers to questions on a single important innovation than on all of their unit's innovations (OECD/Eurostat, 2018). In addition, data for a single innovation avoids problems of averaged responses, whereby respondents must estimate the average importance of specific activities or innovation obstacles.

1.3   Purpose and Scope of this report

In addition to a brief overview of the results of deliverable 2.1 (given above), this report includes the main results of the two surveys and extends the preliminary report (D2.7) by presenting econometric results on topics related to user engagement. All of the chapters (4 to 7) that give econometric results are based on work in progress.

This report is structured as follows: Chapter 2 describes the methodology and response rates of the two surveys sent to public sector managers and NGOs. Chapter 3 provides descriptive results on the methods used by public sector managers to engage users in the development of their most important innovation. Chapter 4 presents results on which factors have an influence on the use of co-creation by public sector managers. Chapter 5 looks at the linkages between user involvement and 'top-down' and 'bottom-up' innovation strategies. Chapter 6 discusses how co-creation contributes to innovation activities and Chapter 7 evaluates the effect of co-creation activities on

innovation outcomes. Chapter 8 provides examines the role of NGOs in contributing to public sector innovations. Finally, Chapter 9 presents the main conclusions.

2   Methodology and selected descriptive results

2.1   Main survey

This chapter gives a brief description of the survey response rates and relevant methodological issues. A more detailed description of the survey response rates and database characteristics can be found in Deliverables D2.6 and D2.7.

The goal for the main Co-VAL survey of public sector managers (see Co-VAL deliverable 2.7) was to construct a representative sample, which required Co-VAL partners to build a comprehensive list of managers in the six target countries (France, Hungary, Netherlands, Norway, Spain and the UK), from which a random sample was drawn.

Table 2.1 provides statistics on the sample, the number of responses by postal mail or online, and the response rates for the full sample and by country. In total, 3,497 questionnaires were sent out. The valid sample excludes 327 contacts from the full sample that could not reached for various reasons, such as the identified contact person no longer worked at the organization, or the address was no longer valid. Respondents were first contacted by postal mail. The second stage follow-up was conducted online. Of the 1,036 total replies, 709 (68.4%) were received by post and 327 (31.6%) were received through the online platform.

Table 2.1 Response rates by organizational level, total sample and by country of the main survey

TOTAL SAMPLE /Level	Sample sent	Valid sample	Mailed replies	Online replies	Total replies	Response rate
Mid-sized Municipalities	921	820	167	96	263	32.1%
Large Municipalities	855	778	179	73	252	32.4%
National	1721	1572	363	158	521	33.1%
Total	**3497**	**3170**	**709**	**327**	**1036**	**32.7%**

TOTAL SAMPLE /Level	Total	NL	UK	NO	FR	HU	ES
Mid-sized Municipalities	32.1%	48.6%	13.6%	49.6%	31.7%	35.9%	30.1%
Large Municipalities	32.4%	48.9%	18.2%	53.2%	27.5%	41.3%	28.5%
National	33.1%	45.0%	13.7%	45.0%	27.2%	32.6%	45.8%
Total	**32.7%**	**46.9%**	**14.8%**	**48.1%**	**28.5%**	**35.6%**	**37.7%**

The total response rate is 32.7%, but there is substantial variation by country. The highest response rate is for Norway at 48.1%, followed by the Netherlands (46.9%), Spain (37.7%), Hungary (35.6%), France (28.5%) and the UK (14.8%). The response rate for the UK is considerably lower compared to the other countries. A standard survey methodology (see D2.4) was used in every country including the UK. This included hand signing the cover and reminder letters in most cases, otherwise, an electronic signature was used. We have no explanation as to why the response rate for the UK is so low. For the UK, UNU-MERIT implemented additional practices to the standard methodology in an effort to increase the response rate, such as hand writing the addresses on the envelopes to make the letter more personalized and reduce the probability that envelopes were perceived as junk mail. Unfortunately, this additional effort did not lead to notably more responses from the UK. The low response rate for the UK means that results for the UK need to be interpreted very cautiously.

A non-response analysis was conducted using available pre-survey data. As expected, there are significant differences by country, but other variables such as the unit function (health, education, etc.) type (national, mid-sized municipality, large municipality) and the job level of the respondent had no effect on response rates.

2.2   Questions in the main survey and their treatment

The questionnaire included several control variables such as the size (number of employees) of the respondent's unit, the job tenure of the respondent in his or her current position and the types of services offered by the unit. Innovation status (whether the respondent's unit is innovative or not) is determined by question B1, which asks if the work unit implemented any of 9 types of innovations in the preceding two years and also includes an 'other' option. Other control variables are available from data obtained on the work unit before the survey, such as the

country of location, the type of organization to which the unit belongs (national, large municipality, mid-sized municipality) and the focus area of the unit (education services, health services, etc.).

Two questions cover organizational factors that could influence the use of co-creation, including the use of work groups that meet regularly to discuss or develop innovations (question B2) and senior management and employee attitudes to innovation (question B3).

Four questions provide information on the characteristics of the most important innovation, which could influence the use of co-creation methods. These include question C2 on the expected users of this innovation, question C3 on the original purpose of this innovation, and question C5, which asks if this innovation is a service, process or both and if it is entirely new or an improvement on existing services or processes. Additional information on the most important innovation is obtained from a written description provided by the respondent. This information was used to create 11 new variables, using the protocol in Annex B for coding the open text data. The additional variables for the most important innovation are as follows:

- If it is an external service provided to individuals or organizations outside of government and if yes, if it concerns health, education, social conditions, or other conditions.
- If it is an internal service for use by other government organizations.
- If it is a process, and if yes if it involves online capabilities, other ICT, and organizational changes.
- If the characteristics of the innovation are unknown. This occurs when the respondent provided insufficient written information to classify the innovation.

Two questions cover political and social influences on the most important innovation, including question C7 on the source of the ideas for this innovation and question C8 on the drivers for this innovation.

Three questions cover inputs to the most important innovation, the first two of which also provide information on the importance of this innovation or the amount of effort expended on this innovation. Question C9 asks if the work unit had received extra funding or staff to develop this innovation and QC10 asks about the number of person-months used to develop this innovation from the idea stage until implementation. Question 11 asks if the work unit obtained assistance to develop this innovation from external sources.

Outcomes are measured in two questions. Question 6 asks about the expected effect of the most important innovation on the costs of processes or services. Question 16 asks about the effects of this innovation on nine outcomes, of which five are internal outcomes that affect government processes (simpler procedures, reduced costs, etc.), three affect users (user experience, user

access to information, service quality) and one affects both internal processes and users (safety of employees or individuals).

In addition to the written description of the most important innovation, the questionnaire included five open text questions for which the respondents were asked to provide additional details if they selected an 'other' response option for the types of services provided by their unit (question A3a), the types of innovations implemented by their unit (question B1), the types of users of their MII (question C3) and the original purpose of the MII (question C4). All text fields were translated into English. Where possible, the information was used to recode the response into one of the existing question response options. For example, many of the descriptions of other types of services in question A3a fit within the seven defined types of services for this question.

2.3   Eligible cases, case conservation and treatment of missing values

Two issues with producing descriptive results are that respondents are not eligible to respond to all questions and respondents often skip questions that they are expected to answer, resulting in missing values.

In respect to eligibility, two examples are as follows. Non-innovators are not asked to respond to all questions in section C except for the final question (C17) on obstacles to innovation, while innovators that did not or do not intend to evaluate their MII are not eligible to answer question 14b on whether or not user experiences were included in the evaluation. In order to produce accurate descriptive results, in most analyses, non-eligible respondents need to be identified and excluded from calculations.

The treatment of incomplete or missing values as a result of respondents skipping questions requires particular care in order to conserve cases. Up to 10% of the responses to a question can include a missing value for one or more sub-questions. The default is to exclude all cases with a missing value for a variable of interest. However, this is likely to decrease accuracy if the pattern of responses shows that a respondent has selectively skipped questions, for instance by only answering questions that they find relevant. Several rules of thumb are used to address missing values in questions that include sub-questions (Arundel et al, 2015). Respondents that used a "don't know" response category to a sub-question are assumed to assign low or no importance to the activity covered by the question, otherwise they would be aware of the activity. Deliverable D2.7 includes more details on case conservation and the treatment of missing values of the main survey.

2.4   Innovators versus non-innovators

Innovative work units (innovators) reported one or more types of nine innovations in the previous two years in response to Question B1, whereas non-innovative work units (non-innovators)

reported no innovations.[1] Non-innovators were not asked to reply to the questions on the most important innovation (section C), but data for both non-innovators and innovators are available for several characteristics of the unit, two questions on general support for innovation, and a question on obstacles to innovation. For the entire sample, 17.1% of respondents did not report an innovation in the previous two years and 82.9% reported an innovation.

2.5 Innovation status by the characteristics of the work unit

The percentage of respondents that report an innovation in the previous two years can be influenced by several characteristics of the work unit, including the country of location, the size of the work unit (number of employees), the type of organization (a unit within a national, large municipal, or mid-sized municipal government), the focus area of the government division where the unit is located, and the length of time that the respondent has been in their current position. The results show significant differences by country, size and type of organization, a small but significant difference for the focus area, and no difference by the respondent's time in their current position.

The share of innovative units varies from 56.5% in Hungary to 92.7% in both the Netherlands and the United Kingdom (see Table 2.2). In general, the share of innovators is lower in Spain, France and Hungary than in the Netherlands, Norway and the United Kingdom.

Table 2.2 Innovation status by country (Question B1)

Country	N	Non-innovator	Innovator	
Spain	264	20.5	79.5	100.0%
France	197	14.2	85.8	100.0%
Hungary	124	43.5	56.5	100.0%
Netherlands	137	7.3	92.7	100.0%
Norway	167	9.0	91.0	100.0%
United Kingdom	96	7.3	92.7	100.0%

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[1] 17 respondents left question B1 blank but answered other questions that permitted them to be identified as either non-innovators or innovators. These additional respondents are included in the results.

Country	N	Non-innovator	Innovator	
Total	985	17.1	82.9	100.0%

Differences by country are statistically significant (p < .000).

Table 2.3 gives the distribution of non-innovative and innovative units by size, measured by the number of employees. Smaller units are significantly less likely to innovate than larger units, with a positive correlation between unit size and the share of innovators.

Table 2.3 Innovation status by the number of employees in the respondent's unit

Employees	N	Non-innovator	Innovator	
< 10	235	37.4	62.6	100%
10-49	431	13.7	86.3	100%
50-249	207	7.7	92.3	100%
250+	102	2.9	97.1	100%
Total	980	17.0	83.0	100%

Differences by the size of the unit and the trend are statistically significant (p < .000). Excludes five respondents that did not know the size of their unit.

The effect of the focus area is not as large as that for size and country (see Table 2.4). An above-average share of units that provide services to businesses are non-innovators (27.5%), while the highest share of innovators is observed in health and internal government services (86.0%).

Table 2.4 Percent innovation status by focus area

Area	N	Non-innovator	Innovator	
Social	242	12.8	87.2	100%
Health	86	14.0	86.0	100%
Internal services to governments	193	14.0	86.0	100%
Education	146	17.8	82.2	100%
Other	209	21.1	78.9	100%

Business	51	27.5	72.5	100%
Total	927	16.6	83.4	100%

p =0.044. Data on the focus area is not available for 58 cases.

An alternative measure of focus area can be obtained from question A3b. As shown in Table 2.5, there is no difference between innovators and non-innovators in the main type of service provided by the respondent's work unit.

Table 2.5 Percent innovation status by the main type of service provided

Area		Non-innovator	Innovator
	N	159	792
Educational services to individuals		15.7	16.7
Health services to individuals		5.7	6.3
Social welfare services to individuals		12.6	14.8
Services to businesses		10.7	10.9
Housing/urban services		8.2	7.3
Infrastructural services		13.8	12.0
Services to government		30.8	30.7
Other services		2.5	1.4
Total		100.0%	100.0%

p =0.95. Data on main type of service is not available for 35 cases.

The type of organization also influences innovation status (see Table 2.6), with the share of innovators higher in large municipalities than in units that are part of national governments.

There are no significant differences for innovation status by the time that the respondent has been in his or her current position (results not provided in a table, p =0.846). This suggests little

or no bias that could be due to respondents with a shorter job history being unaware of innovations within the last two years in their unit. For example, 22.8% of respondents for non-innovative units had been in their current position for less than 2 years and 42.5% for more than 5 years, compared to 24.7% and 40.3% of respondents, respectively, from innovative units. Due to a lack of significance, results by job tenure are only provided occasionally, such as for outcome measures.

Table 2.6 Percent innovation status by type of organization

Area	N	Non-innovator	Innovator	
National	501	19.8	80.2	100%
Mid-sized municipality	247	16.6	83.4	100%
Large municipality	237	11.8	88.2	100%
Total	985	17.1	82.9	100%

p =0.027.

2.6 Propensity to innovate

The regression analysis has been conducted to investigate the factors influencing a public sector organization to innovate. There are 168 respondents (17.1%) that did not report an innovation. The regression analysis is restricted to sections A and B in the questionnaire that all respondents have answered, i.e. innovators and non-innovators. The independent variables in Table 2.7 include the work unit size (question A1), the percentage of work unit employees that met regularly to discuss or develop innovation, and the degree of applicability of certain practices in the organization (question B3). Control variables include the country, focus area and organization type.

These preliminary results show a positive impact on the work unit size and the percentage share of staff meeting regularly to discuss or develop innovations. A negative relationship is found between organizational units with a focus on education and a national level organization. Of interest are the results found for the organizational practices. The likelihood of innovating is higher in organizations where senior management gives high priority to new ideas or new ways of working, i.e. promoting a conducive environment for innovation. In addition, the likelihood to innovate is higher in an organization where employees have a feeling of empowerment and ownership of their work.

Table 2.7 Preliminary regression results for the propensity to innovate

Variable	B	P

Independent variables		
Work unit size	0.989	0.000
Percent employees working on innovation	1.166	0.000
Organizational practices		
Senior management gives high priority to new ideas or new ways of working	.757	0.009
Senior management supports taking risks in order to innovate	-.040	0.889
Senior management supports a positive innovation culture that includes all employees in innovation activities	.373	0.140
Employees are highly motivated to think of new ideas and take part in their development	-.255	0.347
Employees have a feeling of empowerment and ownership of their work	.570	0.019
Focus area (other = reference category)		
Health	-0.396	0.468
Education	-0.896	0.033
Social	-0.382	0.358
Business	-0.674	0.246
Internal	0.056	0.887
Organization type (large mun. = reference category)		
National	-0.859	0.012
Mid-sized municipality	-0.548	0.193
Constant	-3.334	0.000

Binary logistic regression

2.7 Types of innovation

On average, respondents reported 2.79 different types of innovations within the previous two years. As shown in Table 2.8, the average number of types of innovations differs by country (p = .004). Not surprisingly, the average number of types of innovations increases by the size of the responding unit from 2.35 for units with less than 10 employees to 3.43 for units with 250 or more employees. There is no difference in the number of types of innovations by focus area (including the main type of service provided by the respondent's work unit) and type of organization.

Table 2.8 Average number of types of innovations by country (Question B1)

Country	N	Mean
Spain	208	2.65
France	166	2.57
Hungary	68	2.47
Netherlands	126	2.94
Norway	151	2.95
United Kingdom	86	3.31
Total	805	2.79

Differences by country are statistically significant (p = .004). Limited to innovative units; data on number of types of innovations missing for 13 innovators.

The innovation types include four types of services and four processes. On average, 51.8% of units report service and process innovation, 23.9% only report process innovations, and 24.3% only report service innovations. Larger units are more likely to report both types of innovations than smaller units (40.7% of units with less than 10 employees, increasing to 63.6% of units with over 250 employees, p < .000).

More descriptive results can be found in Deliverable 2.7.

3   Methods for user engagement

User involvement in the most important innovation is covered in the Co-VAL survey question C13, which asks about the involvement of users in five different stages of innovation development. Users can include government staff involved in using a process innovation or citizens or residents that use a service.

3.1   User engagement

In total, 87.7% of 739 eligible respondents reported the use of at least one of the five methods for involving users, while 12.3% reported none of them, suggesting that they did not involve users in the development of their most important innovation.[2] There are significant differences by the country for three of the five methods (see Table 3.1), with the exception of 'focus groups with users' and 'real-time studies of how users experience or use a prototype of this innovation'.

Table 3.1 Percent respondents using five methods for involving users in the development of the most important innovation using question C13, by country

	N	Analysis of data on user previous experiences	In-depth one-on-one research with users	Focus groups with users	Users in brain-storming workshops	Real-time studies of user experiences[1]
Spain	197	51.3	46.2	41.1	27.4	34.0
France	150	39.3	65.3	53.3	46.0	42.0
Hungary	62	74.2	25.8	43.5	40.3	51.6
Netherlands	119	58.8	48.7	45.4	76.5	30.3
Norway	133	58.6	39.8	45.1	58.6	34.6
UK	78	50.0	70.5	59.0	62.8	34.6
Total	739	53.2	50.2	47.1	49.5	36.7
P		<0.000	<0.000	0.068	<0.000	0.053

1: For instance, ethnographic research where an observer studies how a user interacts with a service, without making comments. This includes automated data collection when users interact with an online service.

The intensity of user involvement is estimated by summing the number of methods used to involve users, which can vary between zero and 5. The average number of methods used by

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[2] This excludes 21 respondents that answered 'don't know' to all five C13 sub-questions. If these 21 cases are assigned as 'no' responses, 85.2% of respondents reported the use of one or more of the five methods for involving users.

country is shown in Table 3.2. The UK has the highest number of co-creation methods used at 2.33 while Spain has the lowest number, at 1.96.

Table 3.2 Mean number of co-creation methods involving users in developing the most important innovation using question C13, by country

	N	Mean number
Spain	197	2.00
France	150	2.46
Hungary	62	2.35
Netherlands	119	2.60
Norway	133	2.37
UK	78	2.77
Total	739	2.37

$P < .001$

3.2 External assistance for innovation

In addition to obtaining information from users, valuable information for innovation can be obtained from other sources that are external to the respondent's work unit. Question C11 collected information on respondents that obtained assistance, advice, technology or other inputs for their most important innovation from six external sources. The most frequently used source is 'other work units within your organization', cited by 69.9% of respondents, followed by 'businesses including consultants', cited by 41.7%. The least cited source is 'design firms, innovation labs or living labs', cited by 14.5%. Design firms, innovation labs or living labs are linked to co-creation with users, with Norwegian respondents more likely than the average to draw on these businesses and sources.

Table 3.3 Percent respondents obtaining assistance, advice, technology or other inputs for the most important innovation from six sources using question C11, by country

	N	Other work units within your org.	Other gov't orgs	Universities / public research institutes	Businesses incl. consultants	Design firms, innov. labs, living labs	ICT software or equip. suppliers
Spain	205	69.8	31.7	17.6	42.0	4.9	42.0
France	157	61.8	45.9	17.2	34.4	17.8	24.2
Hungary	68	64.7	41.2	11.8	16.2	14.7	48.5

Netherlands	122	84.4	33.6	18.0	51.6	17.2	43.4
Norway	141	62.4	34.8	25.5	49.6	19.9	49.6
UK	82	79.3	37.8	28.0	46.3	18.3	37.8
Total	775	69.9	37.0	19.7	41.7	14.5	40.2
P		<0.000	.093	0.053	<0.000	0.001	<0.000

3.3 User engagement and design thinking

Question C12 asks about the use of good practice methods for innovation. The most commonly cited method was to assign a dedicated team to the project (76.6%), followed by 'brainstorming or idea generation to identify solutions' (71.7%). Several methods used in design thinking and often linked to user engagement, such as 'conduct research to identify the challenges to be identified by this innovation', 'conduct research to identify different types of users for this innovation', and the 'development of a prototype' were the least commonly used methods, cited by 48.2%, 39.3%, and 42.1% respectively.

Table 3.4 Percent respondents using methods to develop the most important innovation using question C12, by country

	Responsible individual in charge	Dedicated team	Review good practices	Research challenges	Research users	Brain-storming	Proto-type	Pilot testing	Mean
Spain	69.9	72.3	52.9	58.3	45.6	50.5	39.3	59.2	4.48
France	80.0	71.6	62.6	56.8	52.3	69.7	40.0	61.3	4.94
Hungary	67.2	50.7	59.7	20.9	16.4	67.2	49.3	65.7	3.97
Netherlands	63.9	86.9	63.1	54.9	43.4	93.4	41.0	76.2	5.23
Norway	46.4	90.7	62.1	22.9	17.1	78.6	43.6	73.6	4.35
UK	50.6	78.5	74.7	64.6	49.4	88.6	46.8	72.2	5.25
Total	64.5	76.6	61.0	48.2	39.3	71.7	42.1	66.8	4.70
P	< .000	< .000	.030	< .000	< .000	< .000	.661	.008	< .000

Notes: No data for 19 cases, the total number of respondents is 769 (206 for Spain, 155 for France, 67 for Hungary, 122 for the Netherlands, 140 for Norway, 79 for the UK).

Question C12 includes six design-thinking methods to develop the most important innovation (C12c to C12g). Of interest is if public sector organisations combine design-thinking methods with the five methods for involving users (C13a to C13e). The results for 738 respondents show that brainstorming is the most frequently reported design-thinking method that is combined with user involvement, with 64.6% of respondents reporting the use of brainstorming (C12f) and one or more of the five methods of involving users. Reviewing good practices comes in second at 54.4%. Looking at specific combinations, the results show that the practice of brainstorming 'internally'

often goes hand-in-hand with brainstorming with users (this combination is reported by 45% of innovators). Other frequent combinations include the analysis of user data together with reviewing good practices (37.4%) and in-depth one-on-one research combined with conducting research to identify the challenges to be addressed (29.3%).

Table 3.5 Percent respondents using design thinking methods while also involving users (co-creation) using question C12 and C13

	Review good practices	Research challenges	Research users	Brainstorming	Prototype
Analysis of data on user previous experiences	37.4	28.3	24.4	42.7	25.9
In-depth one-on-one research with users	34.4	29.3	26.2	40.4	25.9
Focus groups with users	31.6	26.6	22.9	38.6	23.8
Users in brain-storming workshops	32.1	26.8	22.4	45.0	25.1
Real-time studies of user experiences	25.1	21.8	20.2	28.9	22.2
Total	54.4	43.2	36.3	64.6	37.7

Design firms, innovation labs or living labs are linked to co-creation and are cited by 14.5% (Table 3.3) as an external source for developing the most important innovation. Table 3.6 gives the per cent of respondents, by country, that has obtained assistance from a design firm, innovation or living labs and *also* involved users for the development of the most important innovation. In total 89.3%, of respondents that have used a design firm (or similar) have also used one or more of the five co-creation methods. Similar to the results found in Table 3.4, 71.3% of the respondents using a design firm or living labs report the inclusion of users in brainstorming or idea-generating workshops.

Table 3.6 Share of respondents that have obtained assistance from design firms, innovation or living labs and report involving users in innovation, using question C11e and C13

Analysis of data on user previous experiences	63.9
In-depth one-on-one research with users	60.2
Focus groups with users	60.2
Users in brain-storming workshops	71.3
Real-time studies of user experiences	52.8
Any method of involving users	89.3
N	112

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4   Factors influencing user involvement in innovation[3]

How value is created in public administration has generated a lot of research interest (Alves, 2013; Voorberg et al, 2015; Osborne, 2017), particularly when public administrations aim to co-create value through involving users in the development of service innovations. Vargo & Lusch (2004) introduced the concept of Service Dominant (S-D) logic and customer-centricity, which emphasizes the development of relationships between consumers and organizations through dialogue and ongoing interaction. The S-D logic sees the customer as an operant resource. The customer in this sense is a resource capable of acting on other resources, a collaborative partner who co-creates value (Vargo, 2008), rather than being just a consultant or a resource for ideas. The concept of the S-D logic provides the basis for understanding the value of involving users in the development of service innovations. This involvement can be minor, as when users are surveyed for their views, or substantive, as when users are involved in participatory or interactive methods of 'co-creating' an innovation with a variety of stakeholders.

In a literature review, Voorberg et al (2015) identify a variety of factors that can influence user involvement in innovation, which they classify into two groups, influential factors on the organisational side and on the citizen side. The Co-VAL survey was only able to collect data on influential organisational factors, since data on citizens would require a survey of public service users. Voorberg et al (2015) lists several factors that could influence user involvement, including the compatibility of public organisations with citizen participation and barriers to citizen participation in innovation activities.

4.1   Methods

A multivariate probit model is used to investigate the factors influencing the use of different methods to involve users in developing the work unit' most important innovation. Two dependent variables are constructed for the five methods for involving users: 1) interactive methods, (equal to '1' if yes to any of the following methods: one-to-one in-depth conversations, focus groups, and involving users in brainstorming, and zero otherwise), and 2) non-interactive methods, (equal to '1' if yes to any of the following methods: analysis of existing data and real-time studies of

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[3] This chapter is based on an academic paper (work in progress) by Luis Rubalcaba, Óscar Montes Pineda, Cristina Suárez Gálvez (UAH), Nordine Es-Sadki and Anthony Arundel (UNU-MERIT).

users' experiences, and zero otherwise). In addition, each of the five methods is evaluated separately.

The independent variables for the acceptance of user input include 'a problem or crisis requiring an urgent response' as a driver for the development of the most important innovation and the sum of 'high' responses to barriers to user involvement (difficulties in finding potential users, management resistance to including user input, and legal or regulatory uncertainty to including user input). Work units could also obtain assistance in involving users from "design firms, living labs, or innovation labs or from "universities or public research institutes". Both of these variables are coded as 1 if reported and 0 otherwise. The work unit's experience with a variety of innovations (measured as the number of types of innovations developed in the previous two years) could also influence the likelihood of involving users. Lastly, as involving users can be expensive (Schmidthuber, 2019), receipt of dedicated funding (yes = 1, 0 otherwise) for the most important innovation can influence user involvement.

The analysis is restricted to respondents that reported an innovation and who described their most important innovation. The summary results are presented in Tables 4.1 and 4.2 for service and process innovations respectively. Control variables such as the work unit size, country, organization level, and job level are included in the regression analyses, but not reported.

4.2   Results and discussion

The results show that a crisis requiring an urgent response as a driver for innovation is considerably more important for services (Table 4.1) than for processes, where demand could partly be driven by employees (Table 4.2). The lack of an effect of a crisis for processes could be because it is easier to address them, and crises could be less common for process innovations as they are hidden from the public eye.

Assistance from both design firms and universities increases the likelihood of involving users, but the strongest effect of obtaining assistance from design firms is for services, particularly for involving users in brainstorming. For processes, design firms are only significantly associated with real-time studies. Universities / PROs play a stronger role than design firms for both services and processes, which could be due to obtaining assistance from relevant technical and design faculties.

Barriers to user engagement largely affect services, with no significant effect on processes. This is unsurprising since there should be few barriers to involving employees as users in developing the innovation. However, the strongest effect of low barriers for services is for less expensive, passive methods of involving users, such as analysis of data on the experiences of users, often obtained through online surveys.

Innovation intensity has a positive effect on many of the methods for involving users, including interactive user involvement. For service innovations, experience with a variety of innovations increases the use of more expensive and time-consuming methods such as focus groups and brainstorming sessions with users and real-time studies of user experience for services (Table 4.1). For processes, the intensity of innovation increases the use of existing data, one-on-one in-depth conversations and brainstorming with users (Table 4.2).

Dedicated funding is positively associated with the use of more expensive and time-consuming methods of user involvement such as focus groups, brainstorming sessions with users and real-time studies of user experience. Except for real-time studies, these are also interactive methods of user involvement. The effect is observed for both service and process innovations.

Table 4.1 Preliminary regression results of the factors influencing how users are involved in service innovations

	Interactive methods	Non-interactive methods	Analysis of data	In-depth one-on-one research	Focus groups	Brain-storming	Real-time studies
Crisis requiring urgent response	0.419	0.584***	0.552***	0.073	0.264	0.351*	0.313*
Assistance from universities/PROs	0.029	0.366**	0.194	0.334**	0.316*	0.280	0.543***
Assistance from design firms etc.	0.572	0.150	0.314	0.343*	0.222	0.579***	0.304*
Barriers to user engagement	0.203	0.333**	0.286**	0.241*	0.198	0.053	0.131
Innovation intensity	0.188**	0.089**	0.101*	0.193***	0.073	0.112*	-0.015
Funding	0.196*	0.198	-0.066	0.180	0.409**	0.490***	0.483***
Constant	0.458	-0.030	0.370	-0.010	-1.116*	-0.766	-0.656

Notes: Multivariate probit regressions. The analyses control for work unit size, country, organization level, and job level. Level of significance: * < 0.05, ** < 0.01, *** < 0.001.

Table 4.2 Preliminary regression results of the factors influencing how users are involved in process innovations

	Interactive methods	Non-interactive methods	Analysis of data	In-depth one-on-one research	Focus groups	Brain-storming	Real-time studies
Crisis requiring urgent response	0.237***	0.038	-0.224	-0.276	0.134	0.164	0.106
Assistance from universities/PROs	0.585*	0.451*	0.243	0.296	0.382	1.065***	0.636***
Assistance from design firms etc.	0.421	0.408	0.297	-0.080	0.165	0.207	0.526*
Barriers to user engagement	-0.131	0.172	-0.045	0.184	0.084	0.022	0.098
Innovation intensity	0.237***	0.038	0.101*	0.193***	0.073	0.112*	-0.015
Funding	0.454**	0.066	-0.066	0.180	0.409**	0.490***	0.483***
Constant	-0.741	0.090	0.370	-0.010	-1.116*	-0.766	-0.656

Notes: Multivariate probit regressions. The analyzes control for work unit size, country, organization level, and job level. Level of significance: $* < 0.05$, $** < 0.01$, $*** < 0.001$.

5   Contribution of user involvement to innovation activities[4]

5.1   Introduction

User involvement in the development of service innovations in the public sector could influence innovation activities themselves, for example by reducing development costs or time to develop an innovation or reduce the risk of an innovation failing and needing to be revised after implementation. This is in addition to the effect of user involvement on outcomes such as the user experience of an innovation, discussed in Chapter 7, and another way in which user involvement in innovation activities could increase the organization's performance.

The involvement of users is the starting point of public service-dominant logic (Osborne et al, 2013) in which users are at the core of a complete process going from conception to services' production. The inclusion of citizen or 'end-user's perspectives in problem definition and solving is thought to enable a richer understanding of the problem and direct attention to more nuanced solutions (Mintrom and Luetjens, 2016). However, the intensity and methods of user involvement can differ (Desmarchelier et al. 2019). For instance, users can only be involved at the operational stage, mainly for gathering information about their needs and aspirations. A second method consists of engaging consumers in co-design collaborative discussions (Ballantyne et al., 2011; Osborne and Strokosch, 2013; Osborne et al., 2016).

We define three approaches to user involvement: user orientation, user participation and user co-creation. User orientation is the lowest level of user involvement because users are not directly involved in the innovation process. Instead, the innovator obtains information about user needs and challenges through indirect research, usually in the early stages of developing the innovation. User participation is focused on later stages where the innovator involves users in the testing and evaluation of an innovation prototype in order to identify aspects in need of improvement. User co-creation is the most intense form of user involvement, where users actively contribute to the initial design and development of the innovation.

The benefits provided by user involvement in public service innovation are likely to be enhanced by the inclusion of external support in the innovation process, such as assistance from design firms or universities. As Torugsa and Arundel (2017) note, the benefits of innovation are likely to increase if public organizations implement an active management strategy to support innovation that encourages the experimentation and evaluation of new ideas, stimulates organizational learning, and facilitates the involvement of staff and users in the design or planning of new

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[4] This chapter is based on an academic paper (work in progress) by Matthieu Belarouci (University Rennes1), Faiz Gallouj, Valérie François, (USTL) and Luis Rubalcaba (UAH).

services. Although service design approaches are the core competencies of design firms, they also can be employed by innovation platforms (or maker spaces) such as living labs or innovation labs (Mérindol et al., 2018; Schuurman and Tõnurist, 2016). Both design firms and innovation platforms use methodologies and tools that involve users in a collaborative vision of innovation. In a context where innovation is of growing importance for public organizations (Mulgan et Albury, 2003; Christensen et al., 2006; Bason, 2010), it remains to be explored how the methods of involving users interact with external support to foster the development of the innovation. The contribution of this chapter is to shed light on the benefits provided by different intensities of user involvement, while taking into account the role of supportive institutions.

5.2   Methods and descriptive results

Methodological details on the survey sample are provided in Chapter 2 of this report.

The analyses use the results of the Co-VAL survey questions for the single most important innovation in the respondent's work unit in the previous two years. Consequently, most of the independent variables and all of the dependent variables refer to the same single innovation. The only exception is for three control variables for the country, the type of public sector organization (mid-size municipality, large municipality, and national government) and the focus area (types of services provided) of the respondent's unit.

The three approaches to innovation are defined using relevant questions in C12 and C13. The per cent of respondents using each method are given in Table 5.1.

Table 5.1 User involvement metrics

Type of user involvement	Definition	Per cent respondents
Orientation	The user is not directly involved in the innovation process, but the innovator attempts to design the innovation through research about their needs and challenges.	69.0%
Participation	Users involved in testing a prototype or pilot testing.	85.4%
Co-creation	Users involved in brainstorming and focus groups. The relation is dyadic with the innovator and the user is active, meaning that he/she co-creates.	85.9%

In addition, the respondent is asked if their work unit obtained "assistance, advice technology or other inputs in the development of this most important innovation" from several sources. Of interest here are "design firms, innovation labs or living labs", reported by 18.7% of respondents

used in the analysis, and 'universities or public research institutes', reported by 14.2% of respondents. Design firms and living labs incorporate user innovation, usually through co-creation. Universities could provide other types of expertise.

Table 5.2 gives the results for the C15 questions that are used to construct the dependent variables on the importance of "the contribution of users to the development of your most important innovation". The last column of Table 5.2 indicates the proportion of respondents that report any level of benefit (different from none).

Table 5.2 Importance of benefits from involving users, per cent 715 respondents

	High	Medium	Low	None	Total	% any benefit (high to low)
C15a: Reduced development cost	6.4%	13.6%	22.2%	57.8%	100.0%	42.2%
C15b: Reduced development time	9.2%	22.7%	19.6%	48.5%	100.0%	51.5%
C15c: Reduced need to revise after implementation	18.7%	28.0%	16.6%	36.6%	100.0%	63.4%
C15d: Improved fit with user needs	49.9%	24.5%	05.7%	19.9%	100.0%	80.1%
C15e: Improved quality	47.0%	28.4%	05.6%	19.0%	100.0%	81.0%
C15f: Reduced risk of innovation failure	30.6%	30.5%	11.5%	27.4%	100.0%	72.6%

We use multiple correspondence analysis (MCA) to evaluate the relationships between the six outcomes while considering the row values of QC15 components. The results are given in Figure 5.1. There is a clear distinction between the absence and the presence of outcomes in the first dimension (x-axis). The second dimension (y-axis) indicates that there is an ordinal relationship (from low to high benefits). These results suggest pooling questions C15a "*Reduced development costs"* and C15b *"Reduced development time"* together, C15d *"Improved fit with user needs (uptake, understanding, acceptance, etc.)"* with C15e *"Improved quality"* and possibly C15f *"Reduced risk of innovation failure*". By contrast, C15c *"Reduced need to revise the innovation after implementation"* seems to be a standalone category.

We replicate this analysis with principal component analysis that assigns the following values to the level of benefit from user involvement: none =0, low=1, medium=2 and High=4 (results not shown). The first dimension accounts for 57.8% of the variance explained and the second dimension for 17.7%. The results of the PCA confirm the pooling proposed with MCA:

- **Dependent variable 1:** C15a *"Reduced development costs"* and QC15b *"Reduced development time"*
- **Dependent variable 2:** C15d *"Improved fit with user needs (uptake, understanding, acceptance, etc.)"* and C15e *"Improved quality"*
- **Dependent variable 3:** C15c *"Reduced need to revise the innovation after implementation"*
- **Dependent variable 4:** C15f *"Reduced risk of innovation failure"*

Figure 5.1 Multiple Correspondence Analysis of C15 questions – Dimension 1 and 2
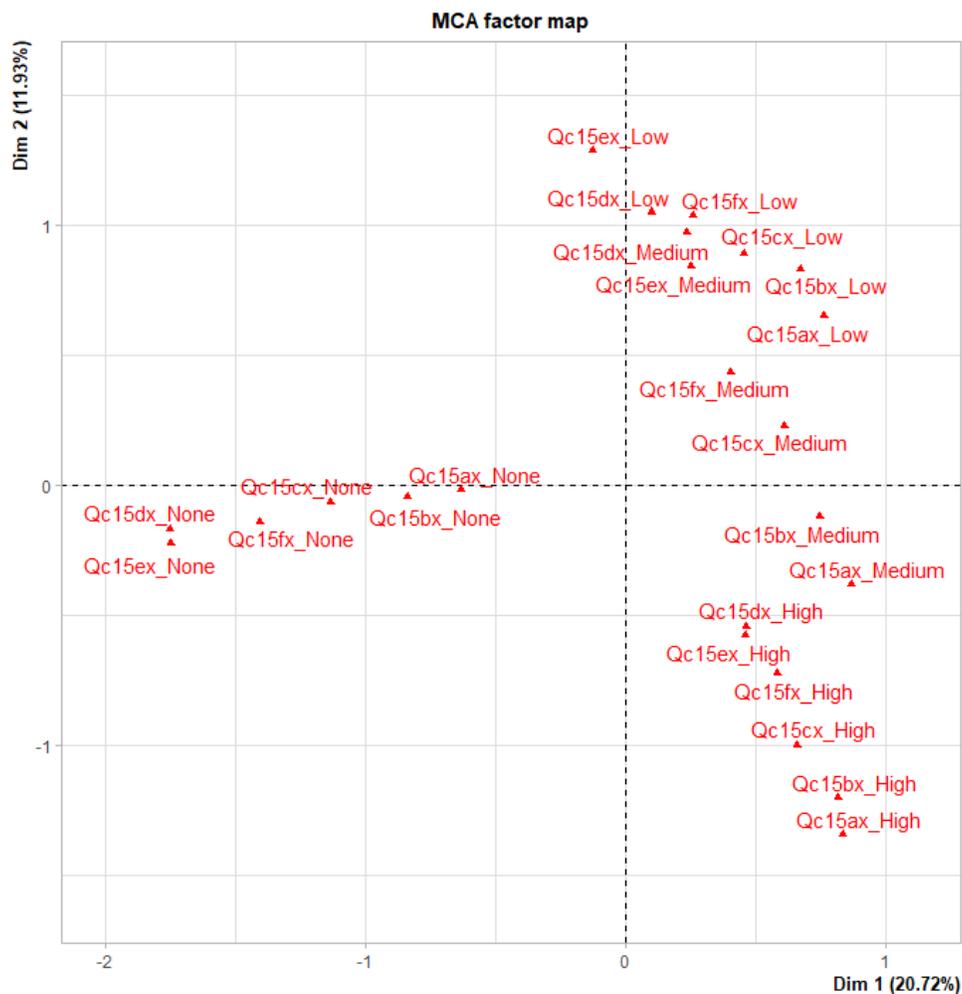
5.3   Results and discussion

Similar to Arundel et al. (2015), we use a multivariate probit model that simultaneously tests the effect of independent variables on a series of correlated dependent variables, while controlling

for the correlation of errors. The binary dependent variable takes the value of 1 if the benefit is high and 0 otherwise.

As shown in Table 5.3, all three methods of involving users are positively associated with benefits to innovation activities, but the effects differ by activity. The co-creation method of user involvement is significantly associated with all four outcomes. In contrast, the least intensive user involvement orientation is only associated with internal outcomes associated with innovation activities: a reduction in cost and development times and the need for revision. The participation approach eases the design of the service in a way that both improves the quality for users and reduces the revision needs and the risk of failure but has no effect on reducing internal costs or time to develop the innovation. These results have important implications for the choice of methods for involving users in public service innovations.

The use of design or innovation labs has no independent effect, but this could be because they do not add to activities that are already captured by the co-creation variable. The use of universities has a positive and significant effect for improving quality and fit with user needs, which indicates that they provide a complementary source of obtaining relevant expertise on users.

Table 5.3 Multivariate probit results for the benefits of user involvement in innovation activities

	Reduce cost & time	Improve quality & fit with user needs	Reduce need to revise	Reduce risk of failure
intercept	0.10	0.29	0.08	0.03
Co-creation	0.45***	0.73***	0.58***	0.43***
Participation	0.08	0.31**	0.30**	0.35***
Orientation	1.26**	0.00	0.26**	0.16
Obtained assistance from design firms or innovation labs	-0.12	0.28	0.18	0.28
Obtained assistance from universities / public research inst.	-0.05	0.36*	0.00	0.15
Correlation (error terms)				
Reduce cost & time		0.64**	0.46***	0.32***
Improve quality & fit			0.71***	0.64***

Reduce the need to revise	0.49***

Notes: The regression controls for the national population, type of organization, number of employees in the respondent's unit, the focus area of the unit, process or service innovation, types of targeted users (C3), and level of implementation (C2).

Level of significance: * < 0.05, ** < 0.01, *** < 0.001.

6   User engagement in innovation and innovation outcomes[5]

6.1   Introduction

User engagement in services could be particularly important to the successful outcomes of service innovations because the value of service innovations is co-created with service users and consequently service users will have in-depth knowledge of service characteristics that produce value (Osborne et al, 2021). User engagement could also be of value to improving the performance of process innovations, although for these innovations the 'user' consists of public servants who 'run' or provide the process.

Only a few studies have used representative samples to evaluate factors that are associated with the outcomes of public sector innovations (Arundel et al, 2015; Damanpour et al, 2009; Demircioglu and Audretsch, 2017; Torugsa and Arundel, 2016; Torgusa and Arundel, 2017). Furthermore, although collaboration between different actors and user engagement have been identified as important inputs to public sector innovation (Lopes and Farias, 2020; Osborne et al, 2021; Svesson and Hartman, 2018; Torfing, 2013), the effect on innovation outcomes of user involvement in developing an innovation has been limited to case studies and qualitative methods (Schmidthuber et al., 2019.)

The design of the main Co-VAL survey permits an evaluation of the association between user engagement and the outcomes for process and service innovations. The survey asks respondents about the use of five methods for user engagement in developing their work unit's 'most important innovation' within the previous two years and nine described outcomes of this innovation. The analyses are limited to a single innovation in order to be able to directly link user involvement to an innovation and its outcomes and to improve the accuracy of respondent estimates of outcomes (OECD/Eurostat, 2018).

We follow Moore (1995) and Benington and Moore's (2010) strategic triangle framework for public sector innovation to identify factors that could influence innovation outcomes. The analysis evaluates the effect of *different combinations* of eight factors to support the development of these innovations, using qualitative comparative analysis (QCA). QCA assumes that there are multiple combinations of resources and strategies for obtaining good outcomes and therefore it may be possible for managers to successfully innovate under less than ideal conditions. This approach is of interest to practitioners that have access to varying sets of resources for innovation and who face different levels of organizational support for innovation. For instance, managers

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[5] This chapter is based on an academic paper (work in progress) by Anne Nordli (INN), Anthony Arundel (UNU-MERIT), Miklós Rosta(CUB), and Márton Tamás (CUB).

may need to innovate in an environment with minimal support from senior management for innovation, or they may lack key internal capabilities for innovation. QCA has been used to identify strategies that public sector managers can use to obtain good outcomes in risk-averse innovation environments (Torgusa and Arundel, 2017) and by Torfing et al (2020) to identify combinations of factors that support collaborative innovation.

6.2 Methods and variables

QCA must be based on familiarity with the cases (Schneider & Wagemann, 2010). The preliminary analysis explored the effect of different combinations of conditions on the benefits of reported innovations. We included and excluded specific conditions in the QCA analysis and compared the results (coverage, consistency and final reduction sets for the model) to determine the relationship of each condition to positive outcomes. The preliminary analyses identified eight conditions, described below, that were consistently included in multiple configurations: three organizational factors to support innovation and five activities to develop the most important innovation. In addition, the preliminary analyses included whether the MII was a process or service innovation and if the MII had been evaluated after its implementation. The type of MII and evaluation had a substantial effect on the configurations and consequently, the final models are provided separately for service and process innovations, with both models limited to respondents that evaluated the innovation.

Respondents are instructed to select their most important innovation on the basis of its 'expected or realized benefits'. Consequently, a large percentage of these innovations are expected to have good outcomes. The effect of user engagement on outcomes is assessed through an index for the variety of positive effects of the innovation, using question C16. There are four positive effects for service innovations (user experience, user access to innovation, safety of users, and service quality) and six outcomes for process innovations (simpler procedures, time to deliver a service, ability to target service to those who need it, employee satisfaction, the safety of employees[6], and reducing costs).

6.2.1 Condition variables

Benington and Moore (2010, p.4) find that successful public value creation requires public servants to 1) identify "the strategic goals and public value outcomes", 2) create an appropriate 'authorizing environment' and 3) build «operational capacity». Based on the strategic triangle,

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[6] This question is included in service outcomes as well as process outcomes because it involves employees as well as citizens/residents. Outcomes for employees are relevant to process innovations, while outcomes for citizens/residents are relevant to service innovations.

we assume that the probability of good outcomes will be enhanced if public sector managers work in an organizational environment where senior managers and employees support innovation, have sufficient skills and other resources for innovation, and can identify the desired goals and characteristics of an innovation.

The development of an idea into an innovation requires the support of senior management for innovation, in part through creating a positive innovation culture that accepts some degree of risk-taking and which encourages employees to put forward proposals for innovations and take part in innovation activities (Borins, 2002; Damanpour and Schneider, 2009; Demircioglu and Audretsch, 2019). The organizational environment for innovation is measured through two variables. *Management support* for innovation is created from responses to three questions that ask "how well did the following apply to your organization": "senior management gives high priority to new ideas or new ways of working" (B3a), "senior management supports taking risks to innovate" (B3b), and "senior management supports a positive innovation culture that includes all employees in innovation activities" (B3c). *Employee motivation* is constructed from two questions: "employees are highly motivated to think of new ideas and take part in their development" (B3d), and "employees have a feeling of empowerment and ownership of their work" (B3e).

Operational innovation capabilities are measured through three variables. Research from the private sector finds that successful innovation requires a person who is responsible for the innovation process (Rubenstein et al, 1976, p. 18. Assigning a dedicated team to an innovation project can also improve the results of innovation (Terziovski and Sohal, 2000). *Innovation management* is created from two questions on how the development of the innovation is managed: "assign one individual to take responsibility for this innovation" (C12a) and "assign a dedicated team to this innovation" (C12b). Drawing on external knowledge is an important input for the innovation activities of public sector organizations that can enhance performance (Arundel et al, 2015; Henttonen et al, 2016.*) External knowledge* sums the number of five external sources listed in question C11: "assistance, technology or other inputs to the development of this most important innovation": "other government organizations", "universities or public research institutes", "businesses including consultants", "design firms, innovation labs or living labs" and "providers of specialized software or ICT equipment". Experimentation, developing prototypes, and pilot testing of innovations can decrease the risk that an innovation fails or underperforms and thereby improve outcomes (Murray et al, 2010). *Testing* sums the use of two testing methods: "development of a prototype of this innovation" (C12g) and "pilot testing of this innovation" (C12h).

Three conditions measure the necessary characteristics and goals for the innovation, of which two conditions involve user engagement. *Supportive research* sums the use of four methods to

obtain additional information on the problem, target, and solutions to be addressed by the most important innovation. The methods include "review relevant good practices of other government or business organizations" (C12c), "conduct research to identify the challenges to be addressed by this innovation" (C12d), "conduct research to identify different types of users for this innovation" (c12e), and "brainstorming or idea generation to identify solutions" (C12f). *Interactive user involvement* equals the sum of responses to the use of three methods for involving users interactively, where users can discuss challenges or make suggestions for how to solve problems in face-to-face discussions with individuals involved in developing the innovation. The methods are "one-to-one in-depth conversations with users to identify challenges or unmet needs" (C13b), "focus groups with users to identify challenges or unmet needs" (C13c) and "inclusion of users in brainstorming or idea generation workshops" (C13d). *Non-interactive user involvement* is the sum of two non-interactive methods of obtaining information from users (Hughes et al., 2011): "analysis of data on the experience of users with previous or similar services or processes" (C13a) and "real-time studies of how users experience or use a prototype of this innovation" (C13e). The latter method includes ethnographic research where individuals are observed using a prototype, but without interactive discussion with the observer. Interactive methods of involving users could be more resource-intensive than non-interactive methods, due to the need to obtain a commitment from potential users and to manage differences in objectives (Torfing et al., 2020). Consequently, non-interactive methods could suffice for less challenging innovations.

6.3   Discussion and results

Table 6.1 provides the results. Solid black circles identify the presence of a condition, empty circles the absence of a condition, while no circle implies that the condition can be present or absent. The first half of Table 6.1 identifies six configurations that produce a high level of positive outcomes for services. All configurations as well as the total model have a very good consistency level above 0.90. The model coverage is 47% of the membership in the set for a high level of positive outcomes. The second half of Table 6.1 identifies five configurations for a high level of positive outcomes for process innovations. The consistency level is also very good (above 0.90), although the coverage, at 37.2%, is less than for the model for service innovations.

The results indicate that one or the other form of user involvement is almost always present in configurations that result in high benefits, with only configuration 6 for services lacking user involvement. Only one strategy for services, (configuration 1) requires a high level of both interactive and non-interactive user involvement. Otherwise, good outcomes for service innovations can be obtained from only interactive user involvement (configuration 2) or high levels of non-interactive user involvement (configurations 3, 4 and 5).

The presence of a high level of innovation management is the most frequent condition for services since it is present in all but one configuration. The configurations where active user involvement is present (configurations 1 and 2) lack management support, but include more conditions than the configurations with non-active user involvement. For example, the two configurations with active user involvement also include a high level of research, testing and external knowledge. The effect could be because the use of research and external knowledge for service innovations complement active user involvement, or the lack of management support requires greater resources to ensure that the innovation succeeds. Management support is present in two of the three configurations that only include non-active user involvement (3 and 4), suggesting that high levels of management support reduce the need for other resources.

Table 6.1 QCA results for high levels of beneficial outcomes for service and process innovation

6.1a Service innovation

Configuration	Mgement support	Employee Motivation	Innovation mgement	External knowledge	Interactive user involvement	Non-interactive user involvement	Research	Testing
1		●	●	●	●	●	●	●
2	○	○		●	●		●	●
3	●		●	○	○	●		○
4	●		●	○		●		●
5	○	○	●		○	●	●	○
6		○	●	●		○	●	●

Total Coverage = 0.47   Solution Consistency = 0.907

6.1b Process innovations

Configuration	Mgement support	Employee Motivation	Innovation mgement	External knowledge	Interactive user involvement	Non-interactive user involvement	Research	Testing
1	●		○	○	●	○	○	●
2	●	●	●	○	●	●		●
3	●		●	●	●	●	●	●
4	●	●	●	○		●	●	●
5	●	●		○	○	●	●	●

Total Coverage = 0.372   Solution Consistency = 0.950

*Notes: Black circles "●" indicate the presence of a condition. Empty circles "○" indicates the absence of a condition. Blank cells indicate an irrelevant ("don't care") condition where the condition can be present or absent.

There are two necessary (always present) conditions in the process innovation model in part b of Table 6.1: a high level of management support and a high level of testing. User involvement is more common for process than for service innovation and there are two configurations (2 and 3)

that use both interactive and non-interactive methods of user involvement. Only configuration 3 requires a high level of external knowledge. One configuration (1) with interactive user involvement does not need additional resources, other than the necessary conditions, but two configurations (4 and 5) that only involve a high level of non-interactive user involvement also require a high level of employee motivation and research to obtain high levels of positive outcomes. This suggests that research and employee motivation can substitute for a lack of interactive user involvement.

For both services and processes, a high level of non-interactive user involvement is more common than high levels of interactive user involvement. This could be due to the lower cost of non-interactive methods, which do not require as much effort to identify volunteer users to participate, nor staff to interact with users. Interactive methods are also more common for process innovations, which is probably because process users, as government employees, are readily available. High levels of employee motivation are also present in three of the process configurations but in only one service configuration. This could be due to a greater necessity to involve employees in process innovations because they are directly affected by them and consequently could have a high level of interest and expertise, whereas service innovations can be developed without high levels of employee motivation.

7   NGO involvement in public sector innovations

The pilot survey of NGOs covers both the internal innovation activities of NGOs and their involvement in public sector innovation. Internal innovation activities are covered because skills learnt to develop innovations in-house could also be applied to assisting the innovation activities of public sector agencies, or influence a willingness to participate in public sector innovations. This relationship could also occur in reverse, whereby interactions with the government could encourage NGOs to develop their innovations (Osborne et al, 2008). In this report, we focus on the involvement of NGOs in activities to develop public sector innovations and how NGOs contribute expertise to the needs of citizen users. The in-house innovation activities of NGOs are covered in Deliverable 2.7b.

There is no single definition of NGOs in common use, but most are non-profit, non-governmental organizations that provide services to individuals or are active in an advisory or political role. NGOs can include 'third sector' organizations (De Wit et al, 2019), voluntary and community organizations (Osborne et al, 2008), and non-profit 'social' enterprises. This study focuses on NGOs that provide services to individuals and excludes NGOs that are only active in an advisory or political role.[7]

NGOs potentially have several attributes of value to the innovative activities of governments: experience with community integration and giving citizens a voice, pioneering service innovations that address user needs that are neglected by markets or governments and enhancing established public services (Pestoff and Brandsen, 2009). These experiences could give NGO staff a deep understanding of the problem that public service innovations need to address (Crosby et al, 2017; Windrum et al, 2016; Coston, 1998; Yang and Sung, 2016). NGO personnel that are knowledgeable about user needs can be asked to represent individual users in situations where citizen users are reluctant or unable to participate (Crosby et al, 2017; Tuurnas, 2015). Drawing on their experience, NGOs can also provide ideas for public sector innovations (Merickova et al, 2015).

There are also drawbacks to involving NGOs in public sector innovations. In particular, a reliance on NGOs to represent the interests of individual citizens is unlikely to fully capture citizen perspectives, although this depends on the number and legitimacy of the NGOs involved (Brandsen et al, nd). Professional public servants may also prioritize the views of their peers from NGOs over the views and experiences of individual citizens.

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[7] Examples of advisory or political NGOs include Amnesty International, the World Wildlife Federation, and Greenpeace.

There are also potential advantages and disadvantages for NGOs to participate in the development of public sector innovations. The advantages include building long-term relationships and influence with civil servants in the NGO's areas of interest (Bano, 2018), learning new skills, and attracting government funding. Conversely, participation in government innovations can create reputation hazards for NGOs by association with government resource constraints and budget cuts (Sinclair et al, 2018), or efforts to download government responsibilities for services to NGOs such as voluntary and community organizations (Coston, 1998; Osborne et al, 2008).

7.1 Methods

In contrast to the main survey, the NGO survey was conducted as a pilot, with the goal of only 120 responses across the six countries. Consequently, a representative sample was not taken, which would have required identifying the population of all NGOs in each country. Instead, the goal was to construct a list of NGOs in each country that provided different types of services (domains).

The target sample size for the three large countries (France, Spain and the UK) was 60 NGOs and for the three small countries (Hungary, the Netherlands and Norway) 40 NGOs, but the sample of the larger countries was increased to improve coverage. The target response rate was 40% and 120 responses. Table 7.1 below lists the number of sampled NGOs by country.

The survey began at the end of January 2020, beginning with a postal mail out of invitation letters and questionnaires. The invitation letter explained the purpose of the survey and included a postage-paid return envelope for potential respondents. One postal mail reminder was sent to non-respondents in mid-February. The protocol required a second postal reminder in early March, followed by a switch to an online survey for non-respondents.

However, due to the COVID-19 pandemic and the subsequent lockdowns in several countries, the second postal reminder was replaced by online follow-up methods. The second reminder, delayed due to Covid, was sent by email in late April/early May, with a third reminder, by email, sent in June 2020. Telephone follow-up calls were conducted in the Netherlands and the UK in June, but this was abandoned because the norm of working from home led to very few successful contacts.

In total, 112 responses were collected (72 online and 40 by post), but 13 responses were excluded as invalid because respondents answered none or only a few questions (all online responses). The average achieved response rate for valid responses is 28.4%, with considerable differences by country, from 6.9% for the UK to 60.0% for Norway. The same disparities in response rates by country were found in the main Co-VAL survey, but the responses rates were lower, possibly due to Covid related issues (see Table 2.2).

Table 7.1 Response rates by country of the NGO survey

TOTAL SAMPLE /Level	Sample size	Online replies	Postal replies	Total replies	Response rate
Norway	40	14	10	24	60.0%
Hungary	40	9	9	18	45.0%
Netherlands	39	11	2	13	33.3%
Spain	74	13	11	24	32.4%
France	84	10	4	14	21.4%
UK	72	2	4	5	6.9%
Total	349	59	40	99	28.4%

A common concern in survey research on innovation is that innovative units may be more likely to respond to an innovation survey than non-innovative units since the survey will be of greater interest and relevance to the innovators. This effect can occur even when the cover letter stresses the importance of non-innovators to also complete the questionnaire, as was the case for this survey. When this bias is present, low response rates (caused by non-innovators not participating in the survey) is positively correlated with the percentage of respondents that are innovators. To check for this effect, the national response rate was correlated with the national innovation rate obtained from Table 2.1. There is no relationship, with the correlation coefficient (R^2) equal to 0.0005.

7.2 NGO assistance on government service innovations

The NGO questionnaire asks respondents "In the last five years, did your organization provide advice, expertise, data or other inputs to assist a local, regional or national government organization to develop a new or improved service?" Results for innovative and non-innovative NGOs (innovation status is determined from other survey questions) are reported in Table 7.2. Over twice the percentage of non-innovative NGOs responded yes to the question (27.3% versus 58.3%) ($p = .054$), with a total of 45 NGOs assisting a government innovation.

Table 7.2 Percent NGOs assisting a government innovation, by innovation status

	N	No	Yes
Non-innovator	11	72.7%	27.3%
Innovator	72	41.7%	58.3%
Total count	83	38 (45.8%)	45 (54.2%)

We use logit regression analysis to evaluate the effect of four factors on assistance with a government innovation: the number of paid NGO employees, the time of the respondent in their current position, the percentage of the NGO's total budget funded by governments, and the number of types of innovations developed by the NGO in the previous two years. The NGO size and the time the respondent has been in his or her current position could increase visibility to the government and lead to an invitation to assist a government innovation. The percentage of the NGO budget funded by the government could lead to an expectation that the NGO will participate, while the number of types of innovations developed by the NGO is a measure of the NGO's experience with innovation, which is equal to zero for non-innovators.

The results, excluding and including country dummies, are given in Table 8.3. Of note, the coefficients are odds[8] ratios, where a value greater than 1 indicates that the factor increases the likelihood of participation in government innovations while a coefficient of less than 1 indicates that the factor decreases participation. The inclusion of country dummies improves the results, indicating that the results are not due to differences across countries, for instance, if a high percentage of NGOs in France participated in government innovations compared to a low percentage of NGOs in Hungary. There is a significant effect on the size of the NGO, but only for NGOs with more than 50 employees. There is also a significant effect for the percentage of the NGO's budget funded by the government (p = 0.015), but this is due to a negative effect on participation in government service innovations by NGOs that receive government funds to cover 25% to 50% of their budget, compared to NGOs that receive zero to less than 25% of their budget from the government (the reference category). The results also suggest that there is a 'U' shaped relationship with budgetary support, with NGOs with low and high levels of support more likely to participate in government innovations than NGOs with government support for between 25% and 50% of their budget. However, the largest effect is for the number of different types of innovations developed by the NGO for its use, with an odds ratio of 1.971 for an increase in one type of

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[8] The odds ratio is the probability that an outcome occurs when a variable is present divided by the probability that an outcome occurs when the variable is absent.

innovation (p =0.005). This indicates that the NGO's experience with innovation is an important factor in their decision to assist a government innovation. Additional analysis (see report D2.7b) finds that NGOs assist government innovations with characteristics that are close to their own areas of expertise.

Table 7.3 Factors influencing NGOs to assist government in developing a service innovation (odds ratios (β) from logit model results)

	β	p	β	p
Share of NGO budget funded by Governments[1]		.032		.015
25% to up to 50%	0.120	.023	.031	.005
50% to 100%	1.272	.661	.515	.352
Number of paid employees[2]		.270		.215
10-49	0.881	.823	1.186	.793
50+	2.880	.153	4.573	.085
Two years or more in current position[3]	1.113	.871	1.210	.805
Number of types of innovations developed by the NGO in the previous two years	1.564	.012	1.971	.004
Country dummies		No		Yes
N[4]		78		78
Model chisquare		.008		.001
R^2 (Nagelkerke)		.269		.432

1: Reference category is zero to 25% funded by government.

2: Reference category is less than 10 employees.

3: Reference category is less than 2 years in current position.

4: Missing data for one or more variables for 5 respondents.

7.2.1 Contribution of the NGO

The 45 respondents that reported assisting a government service innovation were asked to provide a short description of the most important new or improved service for which they provided assistance and questions on their involvement and their contributions to this service. Almost half (42.9%) reported that they expected to receive government funding to deliver the new or

improved service to citizens or residents. This is a substantial incentive for assisting the development of the government innovation.

The number of person months[9] that NGO employees contributed to developing the government innovation is as follows: 10.3% contributed less than one person month, 41% contributed between one and less than three person-months, and 41% contributed three or more person-months. With 80% contributing over a one-person month, this is a substantial contribution from NGOs to government innovation, particularly as there is no difference in the number of person-months by the expectation of receiving government funding to provide the innovative service to citizens or residents: 81.3% of NGOs that expect such funding contributed more than one person-month to the innovation (of which 37.5% contributed three or more person-months) compared to 82.6% of NGOs that did not expect government funding to deliver the innovation (of which 43.5% contributed three or more person-months).

The respondents were asked about seven methods of contributing to the development of the government service innovation, plus another option (see Table 7.4). Only 2.4% of respondents reported only one method, with a median number of four methods.

Table 7.4 Contributions of the NGO to the development of the government service innovation, per cent respondents

Any method related to user experience (items 2, 4, or 6)	*87%*
1. Participated in brainstorming, discussion groups or idea generation workshops to identify problems to be addressed by the service	81%
2. Provided information on the experiences of citizens or residents with similar services or their needs for this service	76%
3. Assisted with the design of the new or improved service (characteristics of the service, delivery method, etc.)	69%
4. Participated in tests of how people experience or use a prototype of this service	55%
5. Provided technical expertise (ICT, scientific knowledge, etc.)	50%

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[9] The following definition is included in the questionnaire: "A person-month equals one person working full-time for one month. Count all time spent by your organization's employees and volunteers on developing this new or improved service from the initial idea until its implementation. Include time spent before the last two years if relevant."

6. Helped find citizens or residents to participate in the development of this service (i.e. provide user views)	50%
7. Other	7%
8. Participated in an evaluation of this service after its implementation	5%

N = 42 (no response from three respondents). Questions listed in declining order of 'high' importance.

Of particular interest is the role of NGOs in either substituting for service users (methods 2 and 4 in Table 7.4) or assisting government organizations to find citizens or residents to participate in developing a service (method 6 in Table 7.4). 86.7% of respondents reported one or more of these three methods associated with user involvement. Half (50%) cited helping to find citizen participants, which has been identified in the literature as a difficult challenge for engaging users by government agencies (Schmidthuber, 2019).

7.2.2 Reasons to assist in the development of government service innovations

The respondents were asked about the importance of seven reasons for their NGO to participate in the development of the new or improved government service, plus an 'other' category (see Table 7.5). The most frequent 'high importance' reason is to improve user experience (cited by 73.8%), plus improving community consensus in support of the innovation (52.4%). Excluding the 'other' category, the least frequently cited high importance reason is to receive funding to participate, cited by 26.2% of respondents.

The reasons to participate can be aggregated into three types: external reasons such as improving the user experience of the service innovation and community acceptance (reasons 1 and 2), learning opportunities for the NGO (reasons 3 and 5), and internal benefits for the NGO (reasons 4, 6 and 7). External reasons are the most common, cited by 81.0% of respondents, followed by internal benefits (57.1%) and learning opportunities for the NGO (47.6%). Two factors are significantly correlated with external, learning or internal reasons for participation. [10] The first is if the NGO expects to receive government funding to develop or implement the service, which is, as expected, positively correlated with two internal reasons: "improve the relationship with government' (p = .097) and 'networking opportunities (p = .097). Second, NGOs that receive less than 50% of their total funding from the government are more likely to report both external

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[10] Other factors that had no effect on the reasons for assisting a government innovation include the size of the NGO (number of employees), the time the respondent has been in their current position, and the time expended on the innovation.

reasons as 'high' importance than NGOs that receive more than 50% of their total funding from the government (53.8% versus 39.3%).

Table 7.5 Importance of reasons to assist the development of the government service innovation

	Importance				
	None	**Low**	**Medium**	**High**	**100%**
1. Improve the user experience of the new or improved service	9.5%	4.8%	11.9%	73.8	100%
2. Improve community consensus in support o new or improved service	11.9%	14.3	21.4%	52.4	100%
3. Gain insights into the needs of the users of service	11.9%	9.5%	33.3%	45.2	100%
4. Improve relationship with government	16.7%	21.4	28.6%	33.3	100%
5. Gain experience in developing new or impro services	21.4%	9.5%	38.1%	31.0	100%
6. Networking opportunities with other indivic and organizations (NGOs, non-profits, businesses, etc.)	21.4%	16.7	31.0%	31.0	100%
7. Receive funding to participate	33.3%	19.0	21.4%	26.2	100%
8. Other	97.6%	0.0	0.0%	2.4	100%

N = 42.

Questions listed in declining order of 'high' importance.

Respondents were also asked if their NGO "contributions to developing this new or improved service focused on any of the following issues", with five issues plus an 'other' category listed. The purpose of the question is to determine the effect of their contributions on the innovation itself. Results are given in Figure 4.2. Over 90% of respondents reported each of the two user-focused issues (100% reported at least one of the two), but there is still a substantial share of respondents who perceived their participation as providing benefits to the government organization, such as improving the efficiency of back-office processes (57.1%) reducing time to develop the service (33.1%), and reducing the cost of providing the service (33.1%). 71.4% reported at least one of the three issues to provide benefits to the government.

The only factor that is correlated with a focus on areas with benefits to the government is the length of the time the respondent has been in their current position. On average, only 33.3% of respondents with less than two years in their current position focused on areas with government benefits, versus 79.4% of respondents with two or more years in their current position (p = 0.039). Factors that had no effect include the size of the NGO, the time spent on the government innovation, and expectations of receiving government funding to provide the service innovation to citizens or residents.

Figure 7.1 Focus of NGO contributions to the government innovation

(per cent respondents)
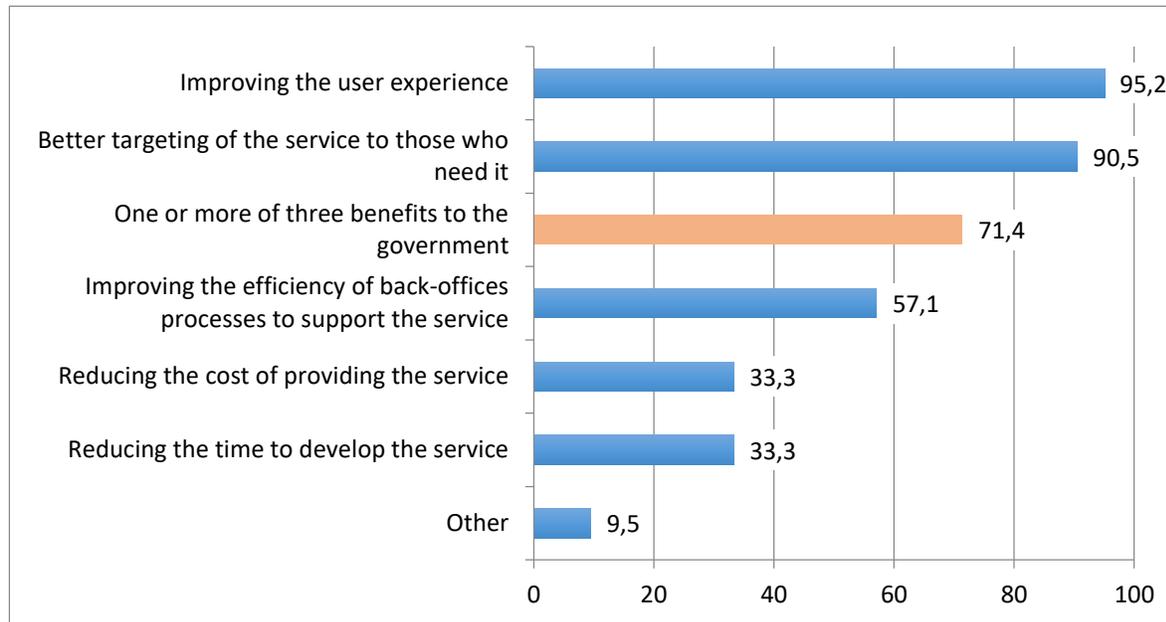
7.3 Conclusion for the NGO survey

The results show that experience with innovation is an important predictor of the involvement of NGOs with government innovations. In total, 58.3% of NGOs that developed their own innovations assisted a government innovation, compared to only 27.3% of non-innovative NGOs. In addition, there is a positive correlation between the number of different types of innovations developed by NGOs and the probability of assisting a government innovation. NGOs also tend to assist governments with the same types of innovations that they develop themselves, for instance an NGO that develops health innovations is likely to assist with a government health innovation. These results indicate that the skills and experience acquired by NGOs through their own innovation activities is the single most important factor influencing assistance, providing some support to Osborne et al (2008). Other factors such as the experience of the NGO manager that replied to the survey (time in their current position) have no effect on involvement in government innovations. Other factors that are associated with assisting government service innovations is the share of the NGO's budget that is funded by government (a 'U' shaped relationship) and the number of paid employees (larger NGOs are more likely to participate), but these factors have less of an effect than the NGO's experience with in-house innovation.

Out of the NGOs that assisted with a government innovation, 42.9% expected to receive government funding to deliver the new or improved service. This is an important motivation, but at the same time, 57.1% participated in government innovations without an immediate financial benefit. Furthermore, NGOs with no expectations of future funding put as much time (in person-months) into assisting the government innovation as NGOs with an expectation of future funding.

The involvement of NGOs is focused on the users of the service. The main reason for NGOs to assist in the development of government service innovations was to improve the user experience and community acceptance (cited by 73.8% and 52.4% respectively), while 100% of the respondents viewed their contribution to the innovation as user-oriented (improving user experience or better targeting the service).

The literature discusses the potential role of NGOs as a partner for the development of government innovations, particularly their knowledge of problems that service innovations need to address (Windrum et al, 2016; Yang and Sung, 2016) and an understanding of user experiences (Crosby et al, 2017; Tuurnas, 2015). The survey finds that 87% of the NGOs contributed to the user experience in some way, either by providing information on the experiences of citizens or residents (76%), participating in tests of how people experience or use a prototype of the service (69%), or by helping to find citizens or residents to participate in the development of the service (50%). These contributions of the NGO could be particularly important for government innovation activities, where finding sufficiently knowledgeable or motivated citizens to participate can be a challenge (Strokosch et al, 2018, pp 18-19; Schmidthuber, 2019).

8   Conclusions

Work Package 2 of the Co-VAL project focuses on quantitative data on user involvement in public sector innovations. In addition to an evaluation of data available from publicly available data and case studies (see Deliverable 2.1), its main contribution includes a large-scale survey of public administration managers responsible for innovation projects and a smaller pilot survey of NGO managers. The surveys were conducted in six countries represented by a Co-VAL project partner: France, Hungary, the Netherlands, Norway, Spain and the UK. The surveys collect data on user involvement in innovation projects. The results can be used to produce 1) policy-relevant metrics for user involvement in developing innovations and 2) analyses of the factors that influence how innovation occurs, the roles of different partners in public sector innovation projects, the factors that lead to failure or success, and the impact of user engagement in developing public services.

The main Co-VAL survey is a representative sample of mid to high-level public sector managers. The results for user involvement are limited to the respondent's most important innovation in the previous two years. Users include government staff that use a process innovation or citizens or residents that use a service innovation. Respondents may have involved users in other innovation projects, but the expectation is that user involvement in developing an innovation is more likely to be used for important innovations than for minor innovations, due to its costs and the demands on managerial professionalism, as found in the Co-VAL case studies (Strokosch et al, 2020). Consequently, the percentage of managers that report user involvement in their most important innovation is an indicator for the level of *awareness* of including user input in innovation development, instead of an indicator for the share of innovation projects that involve user input.

The survey results for 739 managers indicate a high level of awareness among managers of involving user input in the development of an innovation, with 87.7% of respondents reporting the use of at least one of five methods for involving users in their most important innovation. The methods differ in how users are involved, with several of the analyses finding significant differences in outcomes between the use of interactive and non-interactive user involvement. This indicates that it could be of value for policy benchmarking to also collect data on how users are involved and to use this data to construct relevant indicators.

Similar to the survey, the case studies find high levels of user involvement in developing innovations and differences in how users were involved. All 10 case studies on service design identified user input in the design of innovations (Røhnebæk et al, 2020). Four of the cases mainly used indirect methods for obtaining input from users, four focused on interactive methods of involving users in co-design; and two cases combined both interactive and non-interactive methods.

The Co-VAL case studies find that practitioners employed design-thinking tools such as user journey mapping to obtain insights on what users find valuable or problematic (Røhnebæk et al, 2020). Similarly, the survey results show that design thinking methods such as brainstorming are often combined with user engagement methods: 64.6% of respondents use brainstorming to develop the work unit's most important innovation while also using one or more of the five methods of involving users. The case study on 'living labs' found that knowledge on citizen experiences was collected through interacting with citizens and involving citizens in experiments to test prototypes (Fuglsang and Hansen, 2019). The survey finds that only a small share of the most important innovations, 14.5%, obtained assistance or advice from living labs and similar organizations such as innovation labs or design firms. One explanation is cost. Larger organizations, with access to greater resources, are more likely to report the use of living labs than smaller organizations.

The case studies identified several additional factors, not covered in the survey, that influence the choice of method for involving users. These include the reasons for obtaining user input and the openness of civil servants to the participatory involvement of users (Røhnebæk et al, 2020. Fuglsang and Hansen, 2019). User involvement was easier to achieve when obtained through non-interactive methods than when users are interactively involved in design processes and potentially disagreeing with service designers or civil servants responsible for innovation.

Regression analysis was applied to the survey data to investigate factors influencing how users were involved in developing innovations. The results show that the intensity of the previous experience with innovation, i.e. the number of different types of innovations reported by the responding unit, has a significant positive effect on interactive user engagement for both services and processes. These results suggest that public sector organizations with more experience with innovation are more likely to involve users in the development of their innovations. Furthermore, the regression analyses show that more expensive and time-consuming interactive methods such as focus groups, brainstorming sessions with users and real-time studies of user experiences with service prototypes are more likely to be used when extra funding/resources are available. Additionally, public sector managers that involve users in developing the innovation are more likely to evaluate their innovations after implementation.

How value is created by public sector services has generated considerable research interest (Alves, 2013; Voorberg et al, 2015; Osborne, 2017), but very little research has examined the effect of user involvement on innovation outcomes. The case studies rarely evaluated outcomes, although interviewees for several case studies recognized the lack of outcome measures, other than satisfaction surveys or data on the number of users of a specific service (Strokosch et al, 2020). A

major purpose of the survey was to examine the association between user involvement and outcomes.

An important reason why public sector managers involve users is to improve the effectiveness of the innovation process. Regression analysis investigated the association between user involvement and four innovation process outcomes: 1) reducing development costs or time to develop an innovation, 2) improve quality and fit with users, 3) reduce the risk of an innovation failing and 4) reduced need to revise the innovation after implementation. The results show that involving users is positively associated with innovation process benefits, but these differ by how users are involved. Interactive methods, such as brainstorming and focus groups, are positively associated with all four outcomes. In contrast, the least intensive user involvement of 'orientation', measured as non-direct involvement of users through research, is only associated with two positive internal outcomes: a reduction in cost and development times and the need for revision.

User engagement in services could be particularly important to the successful outcomes of service innovations because the value of service innovations is co-created with service users and consequently service users will have in-depth knowledge of service characteristics that produce value (Osborne et al, 2021). User engagement could also be of value to improving the performance of process innovations, although for these innovations the 'user' consists of public servants who 'run' or provide the process.

Qualitative comparative analysis (QCA) was conducted to identify configurations of resources and strategies that are associated with high levels of benefits from the most important innovation. Eight factors (conditions) were included in multiple configurations: three organizational factors to support innovation and five activities to develop the most important innovation. QCA assumes that there are multiple configurations of resources and strategies for obtaining good outcomes and therefore it may be possible for managers to successfully innovate under less than ideal conditions. This approach is of interest to practitioners that have access to varying sets of resources for innovation and who face different levels of organizational support for innovation.

The analyses indicate that user involvement is almost always present in configurations that result in high levels of benefits from service innovations. The presence of a high level of innovation management is the most frequent condition for services since it is present in all but one configuration. The configurations where interactive user involvement is present (configurations 1 and 2) lack management support, but include more conditions than the configurations with non-interactive user involvement. Only one strategy for services, (configuration 1) requires a high level of both interactive and non-interactive user involvement. Otherwise, good outcomes for service innovations can be obtained from only interactive user involvement (configuration 2) or high levels of non-interactive user involvement (configurations 3, 4 and 5). One configuration for services

required no user involvement. Similarly, the case studies found that user participation may be unnecessary under some conditions (Desmarchelier et al, 2019).

The analysis of NGOs finds that experience with innovation is an important predictor of the involvement of NGOs with government innovations. In total, 58.3% of NGOs that developed their innovations assisted a government innovation, compared to only 27.3% of non-innovative NGOs. In addition, there is a positive correlation between the number of different types of innovations developed by NGOs and the probability of assisting a government innovation. The contributions of NGOs could be particularly important for government innovation activities, where finding sufficiently knowledgeable or motivated citizens to participate can be a challenge (Strokosch et al, 2018, pp 18-19; Schmidthuber, 2019). NGOs report that their main contributions to government service innovations are to provide information on the experiences of users and to help find citizens or residents to participate in the development of service innovation.

Final note: This report has presented the final results of the WP2 surveys and summarised some of the preliminary results of academic papers. Several additional papers are underway, but it is too early to report results in this report. An overview of academic publications using WP2 data can be found in Table 8.1. It is also likely that additional topics that are not listed in Table 8.1 will be developed into papers.

Table 8.1 Academic publications using WP 2

Topic	Status
1. Advancing innovation in the public sector: aligning innovation measurement with policy goals	Published
2. Effect of knowledge search depth, co-creation, and moderating factors on the outcomes of service innovations by European public administration agencies	In submission
3. User involvement and innovation outcomes	Close to first submission
4. Effects of user involvement on innovation processes	Work in progress.
5. Factors supporting user involvement in public sector innovations	Work in progress.
6. Role of NGOs in co-creating government innovations	Work in progress.
7. Propensity to innovate in the public sector	Work in progress.
8. Risk and obstacles to public sector innovation	Work in progress.

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Annex A: Main survey questionnaire

Survey on new or improved services or processes in the public sector

<ID>

A: General information

*This questionnaire defines your **work unit** as your area of responsibility, consisting of all employees under your direct management that report to you.*

*Your **organization** is defined as the government entity that employs you. This could be an agency, ministry or department within a municipality, regional government, national government, or organization that works for several levels of government.*

With a few identified exceptions, answer all questions in respect to your work unit. *Do not report activities for other work units, divisions or departments of your organization for which you are not responsible.*

A.1 How many employees (head count) are in your work unit? Count all employees that report to you or form part of your team.

(Tick **one** box only)
a) Less than 10 ....☐
b) 10 to 49 ....☐
c) 50 to 249 ....☐
d) 250 or more...☐
e) Don't know ....☐

A.2 How long have you been in your current position?

(Tick **one** box only)
a) Less than six months ....☐
b) Six months to less than two years..☐

c) Two years to less than five years ....☐
d) Five years or more ....☐

A.3a In the last two years, did your **work unit** provide any of the following types of services?

(Tick **all** that apply)

   a) Educational services to individual citizens or residents ....☐
   b) Health services to individual citizens or residents ....☐
   c) Social welfare services to individual citizens or residents ....☐
   d) Services to businesses or business associations...☐
   e) Housing or urban planning services ....☐
   f) Infrastructure services (waste disposal, transportation, traffic management, etc.) ....☐
   g) Services to your organization or other government organizations (information technology,
       accounting, procurement, legal, regulatory, policy, public relations,
       human resources etc.)...☐
   h) Other services (please specify) ....☐

A.3b If you selected more than one type of service, which was the main type of service provided by your
         work unit?

         _____ insert letter from Question A.3a above

B: Innovation Activities

*For this questionnaire, an innovation is defined as a new or improved **service or process** (way of doing things) that **differs significantly** from your **work unit's** previous services or processes. Please note:*

   1. *An innovation **must only be new or substantially changed for your work unit**. It may have already been used by other work units within your organization, other governments, or by businesses.*

   2. *An innovation must be partly or fully **implemented**. For example, a service innovation must be offered to users (governments, citizens, residents etc.), while a process innovation needs to be used by government employees.*

   3. ***Innovations can have multiple characteristics.** For example, a new service can be combined with improved processes for delivering the service.*

B.1 In the last two years, did your **work unit** implement any innovations with the following characteristics?
(Exclude innovations that were only implemented by other work units in your organization)

(Tick **all** that apply)

a) Services for use by other government organizations (national, regional, municipal, etc.) ...... ☐

b) Services for use by individuals (citizens, residents, etc.) .... ☐

c) Services for use by community groups or non-profit organizations .... ☐

d) Services for use by businesses or business associations .... ☐

e) Supporting activities for your work unit or organization (IT, maintenance, purchasing, accounting, human resources, etc.) .... ☐

f) Processes for producing or delivering services .... ☐

g) Organization of work responsibilities or decision-making .... ☐

h) Methods for communicating your services to individuals or businesses. .... ☐

i) Other (please describe) .... ☐

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[                                                                    ]
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j) None of the above: no innovations in the last two years .... ☐

B.2 In the last two years, what percentage of your **work unit's** employees were involved in work groups that met regularly to discuss or develop innovations? *Include all of your work unit's ongoing and temporary employees.*

(Tick **one** box only)

a) None .... ☐

b) Less than 25% .... ☐

c) 25% to less than 50% .... ☐

d) 50% to less than 75% .... ☐

e) 75% or more .... ☐

f) Don't know .... ☐

B.3 In the last two years how well did the following apply to your **organization**?

(Tick **one** box per row)

	Fully	Partly	Not at all
a) Senior management gives high priority to new ideas or new ways of working	☐	☐	☐
b) Senior management supports taking risks in order to innovate	☐	☐	☐

c) Senior management supports a positive innovation culture that includes all employees in innovation activities	☐	☐	☐
d) Employees are highly motivated to think of new ideas and take part in their development	☐	☐	☐
e) Employees have a feeling of empowerment and ownership of their work	☐	☐	☐

<if your work unit had no innovations in the last two years, (you 'answered' none of the above in B.1) go to C.17, otherwise go to C.1>

C: Your Work Unit's Most Important Innovation

C.1 In a few sentences, please describe the most important **service** innovation that was **partly or entirely developed by your work unit** in the last two years. If your work unit had no service innovations, describe your most important process innovation. ("*Importance" is defined in terms of the expected or realized benefits of this innovation.)*

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Please answer all remaining questions for this most important innovation only: do not include other innovations in your answers

C.2 To what degree has this most important innovation been implemented?

(Tick **one** box only)

a) Currently being piloted or tested ....☐

b) Partially implemented, with continuing improvements underway ....☐

c) Completely implemented..☐

C.3 Who are the **users** of your **work unit**'s most important innovation? (*The users of a process innovation are usually government employees that operate the process, such as a new accounting system. The user*

for a service innovation often consists of individuals, but can include government employees, businesses or community groups).

(Tick **all** that apply)

a) Government employees (in your own work unit or elsewhere)...☐

b) Individuals (citizens, residents, etc.)...☐

c) Businesses or business associations...☐

d) Community groups or non-profit organizations ....☐

e) Other (please describe) ....☐

C.4 Was the **original purpose** of this most important innovation to:

(Tick **all** that apply)

a) Provide significant quality improvements for users ....☐
b) Improve user experience..☐
c) Improve the adoption or use by potential users ....☐
d) Improve internal efficiencies in the use of staff or other resources ....☐
e) Address social challenges..☐
f) Other (please describe)..☐

C.5 In your opinion, does this most important **innovation:**

(Tick **one** box per row)

	Yes	No	Don't know
a) Provide an entirely new process	☐	☐	☐
b) Improve existing processes	☐	☐	☐
c) Provide an entirely new service	☐	☐	☐
d) Improve existing services	☐	☐	☐

C.6 What is the expected effect of this most important innovation on the costs of your processes or services?

(Tick **one** box only)

a) Increase costs..☐
b) Have no effect on costs..☐
c) Decrease costs ....☐
d) Costs not relevant ....☐
e) Don't know ....☐

C.7a Where did the idea for this most important innovation come from?

(Tick **all** that apply)

    a) Elected politicians ....☐

    b) Senior managers in your organization...☐

    c) Yourself or colleagues at a similar management level in your organization ....☐

    d) Staff at job levels below your own ....☐

    e) Other government organizations (include good practice examples)....................☐

    f) Individuals (citizens, residents, etc.)..☐

    g) Businesses (include consultants) ....☐

    h) Community groups or non-profit organizations...☐

    i) Other ....☐

C.7b Which of the above was the most important source of the idea for this innovation?

_____(insert letter from Question C.7a above)

C.8 How important were the following factors in driving the development of this most important innovation?

Degree of importance

(Tick **one** box per row)

		High	Medium	Low	None	Don't know
a)	An increase in your work unit's budget	☐	☐	☐	☐	☐
b)	A decrease in your work unit's budget	☐	☐	☐	☐	☐
c)	Government regulations, policies or priorities	☐	☐	☐	☐	☐
d)	A problem or crisis requiring an urgent response	☐	☐	☐	☐	☐
e)	Demand from individuals	☐	☐	☐	☐	☐
f)	Demand from businesses, community groups or other organizations	☐	☐	☐	☐	☐

Inputs into this innovation

C.9 Did your work unit receive any extra funding or staff specifically to develop this most important innovation?

(Tick **all** that apply)

a) Extra funding...☐

b) Extra staff ....☐

        If yes: How many additional employees worked on this innovation?   _____

c) No extra staff or funding received ....☐

C.10 Approximately how many person months of **government employees** were required to develop and implement this most important innovation? *Include government employees outside your work unit if relevant.*

A person-month equals one person working full-time for one month. Count all time spent by government employees on developing this innovation from the initial idea until implementation. Include time spent before the last two years if relevant. Exclude time by external consultants.

(Tick **one** box only)

a) None ....☐

b) Less than 3 person-months ....☐

c) 3 person-months to less than 12 person-months ....☐

d) 12 person-months to less than 24 person-months ....☐

e) 24 person-months or more..☐

f) Don't know ....☐

C.11 Did your work unit obtain assistance, advice, technology or other inputs to the development of this most important innovation from the following sources?

(Tick **one** box per row)

	Yes	No	Don't know
a) Other work units **within** your organization	☐	☐	☐
b) Other government organizations	☐	☐	☐
c) Universities or public research institutes	☐	☐	☐
d) Businesses including consultants	☐	☐	☐
e) Design firms, innovation labs or living labs	☐	☐	☐

f)   Providers of specialized software or ICT equipment   ☐   ☐   ☐

C.12 Were the following methods used to develop your work unit's most important innovation?

(Tick **one** box per row)

		Yes	No	Don't know
a)	Assign one individual to take responsibility for this innovation	☐	☐	☐
b)	Assign a dedicated team to this innovation	☐	☐	☐
c)	Review relevant good practices of other government or business organizations	☐	☐	☐
d)	Conduct research to identify the challenges to be addressed by this innovation	☐	☐	☐
e)	Conduct research to identify different types of users for this innovation	☐	☐	☐
f)	Brainstorming or idea generation to identify solutions	☐	☐	☐
g)	Development of a prototype of this innovation	☐	☐	☐
h)	Pilot testing of this innovation	☐	☐	☐

Involvement of <u>users</u> in this most important innovation

C.13 Were the following methods used to obtain input from **users** for the development of this most important innovation?

(Tick **one** box per row)

		Yes	No	Don't know
a)	Analysis of data on the experiences of users with previous or similar services or processes	☐	☐	☐
b)	One-to-one in-depth conversations with users to identify challenges or unmet needs	☐	☐	☐
c)	Focus groups with users to identify challenges or unmet needs	☐	☐	☐
d)	Inclusion of users in brainstorming or idea generation workshops	☐	☐	☐
e)	Real-time studies of how users experience or use a prototype of this innovation	☐	☐	☐

C.14 Was this most important innovation evaluated after implementation?

(Tick **one** box only)

a) Yes..☐
b) No, and no plans for an evaluation...☐
c) No, but the innovation will be evaluated in the future ....☐

(If yes to **C.14**): Were **user experiences** of this innovation included in the evaluation?

(Tick **one** box only)

a) Yes, and no changes to the innovation required to improve the user experience ....☐
b) Yes, and changes to the innovation were required (or planned for in the future) to

improve the user experience..☐

c) No evaluation of user experience ....☐

<if no or don't know to all options in C.13 go to C.16, otherwise go to C.15>

Effects of involving users on outcomes

C.15 How important was the **contribution of users** to the development of your most important innovation
for the following outcomes?

Level of benefit from user involvement

(Tick **one** box per row)

	High	Medium	Low	None	Don't know
a) Reduced development costs	☐	☐	☐	☐	☐
b) Reduced development time	☐	☐	☐	☐	☐
c) Reduced need to revise the innovation after implementation	☐	☐	☐	☐	☐
d) Improved fit with user needs (uptake, understanding, acceptance, etc.)	☐	☐	☐	☐	☐
e) Improved quality	☐	☐	☐	☐	☐
f) Reduced risk of innovation failure	☐	☐	☐	☐	☐

Outcomes of the most important innovation

C.16   What effects did this most important innovation have on the following outcomes? (*Service outcomes
may not be relevant for process innovations.*)

(Tick **one** box per row)

	Positive effect	Neutral effect	Negative effect	Too early to estimate	Not relevant
a) Simpler procedures	☐	☐	☐	☐	☐
b) Time to deliver a service	☐	☐	☐	☐	☐
c) Ability to target a service to those who need it	☐	☐	☐	☐	☐
d) User experience of a service	☐	☐	☐	☐	☐
e) User access to information	☐	☐	☐	☐	☐
f) Employee satisfaction	☐	☐	☐	☐	☐
g) Safety of employees or individuals (citizens, residents, etc.)	☐	☐	☐	☐	☐
h) Reducing costs	☐	☐	☐	☐	☐
i) Service quality	☐	☐	☐	☐	☐
j) Other	☐	☐	☐	☐	☐

Obstacles to developing or implementing this most important innovation

C.17 How important were the following factors in hindering the development of this most important innovation? *If you reported no innovations in question B.1, please answer this question by reporting the importance of the following factors in hindering innovating in your work unit.*

Degree of importance

(Tick **one** box per row)

		High	Medium	Low	None	Not relevant
a)	Political or senior management pressure for rapid development and implementation	☐	☐	☐	☐	☐
b)	Lack of a supportive culture for innovation in your organization	☐	☐	☐	☐	☐
c)	Lack of support by senior management	☐	☐	☐	☐	☐
d)	Lack of support by politicians	☐	☐	☐	☐	☐
e)	Senior management concerns over risk (failure, poor publicity, technical difficulty, etc.)	☐	☐	☐	☐	☐
f)	Lack of knowledge on how to innovate within your organization	☐	☐	☐	☐	☐
g)	Difficulties in finding potential users to participate in developing this innovation	☐	☐	☐	☐	☐
h)	Management resistance to including **user input** in the development of this innovation	☐	☐	☐	☐	☐
i)	Legal or regulatory obstacles to including **user input** in the development of this innovation	☐	☐	☐	☐	☐
j)	Other legal requirements or regulations	☐	☐	☐	☐	☐
k)	Insufficient financial resources or staff	☐	☐	☐	☐	☐
l)	Insufficient demand from users	☐	☐	☐	☐	☐

Please use the following text box to provide any comments on the topic of this survey

Annex B: NGO survey questionnaire

Questionnaire on new or improved services

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A: General information

This questionnaire asks about some of the activities of the organisation for which you work. **How you answer the questions depends on your area of responsibility:**

1. If you are **responsible for a division or subsidiary of an organisation**, please answer all questions for your division or subsidiary only.

2. If you are **responsible for all of your organisation**, please answer all questions for the entire organisation.

A.1 How many paid employees does your organisation currently have in <country>?

Include full-time and part-time employees

(Tick **one** box only)

a) Less than 10 ....☐
b) 10 to 49 ....☐
c) 50 to 249 ....☐
d) 250 or more..☐
e) Don't know ....☐

A.2 How many unpaid volunteers does your organisation currently have in <your country>?

(Tick **one** box only)

a) Zero..☐
b) 1 to 9...☐
c) 10 to 49 ....☐

d) 50 to 249 ....☐

e) 250 to 500 ....☐

f) 500 or more...☐

g) Don't know ....☐

A.3 How long have you been in your current position?

(Tick **one** box only)

a) Less than six months ....□

b) Six months to less than two years..□

c) Two years to less than five years ....□

d) Five years or more ....□

A.4 In the last two years, approximately what percentage of your organisation's total budget in <country> was funded by government? *Include all types of funding from local, regional, national, and supra-national (European Commission) governments*

(Tick **one** box only)

a) Zero..□

b) Over zero but less than 25%..□

c) 25% to less than 50% ....□

d) 50% to less than 75% ....□

e) 75% to 100%...□

B. New or improved services that were developed by your organisation

B.1 In the last **two years**, did your **organisation** develop or implement any of the following types of new or improved services for citizens or residents of <country>. *A single innovation may provide more than one of the following types of services. Include programmes to provide services.*

(Tick **all** that apply)

a) Health services ....□

b) Educational or training services ....□

c) Social support services (disability, income, etc.)..□

d) Housing or accommodation services ....□

e) Transportation services..□

f) Environmental services (parks, air and water quality, etc.) ....□

g) Recreational services (sports, entertainment, culture, etc.) ....□

h) Communication services (information campaigns, etc.)...□

i) Other (please describe)..□

j) No new or improved services introduced in the last two years..☐

Please go to question C1 if your organisation had no new or improved services in the last two years. Otherwise go to question B2.

B.2 In a few sentences, please describe the **most important** new or improved **service** developed by your organisation in the last **two years**.

"*Importance" is defined by the expected or realized benefits of this new or improved service to citizens or residents of* <country>.

Note: all remaining questions in Part B refer to the most important new or improved service described in question B.2.

B.3 To what degree has your organisation implemented this new or improved service?

(Tick **one** box only)

a) Currently being piloted or tested ....☐

b) Partially implemented, with continuing improvements underway ....☐

c) Completely implemented..☐

B.4 Where did the idea for this new or improved service come from?

(Tick **all** that apply)

a) Yourself..☐

b) Other senior managers in your organisation (include other divisions or subsidiaries).........☐

c) Other employees or volunteers within your organisation...☐

d) Other non-profits or community organisations...☐

e) Local, regional or national Governments within <country> ....☐

f) Potential users of this new or improved service (citizens, residents, etc.)..........................☐

g) Businesses (include consultants) ....☐

h) Other (please describe)...☐

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B.5 Did your organisation receive any government funding to **develop or implement** this new or improved service? *Exclude government funding to provide this service after its implementation. Include funding from local, regional, national and supra-national (European Commission) governments.*

(Tick **one** box only)

a) Yes...☐

b) No ....☐

B.6   Approximately how many person months of **your organisation's paid employees** were required to develop and implement this new or improved service?

A person-month equals one person working full-time for one month.* Count all time spent by your organisation's employees on developing this new or improved service from the initial idea until its implementation. Include time spent before the last two years if relevant. Exclude time by external consultants and volunteers.

(Tick **one** box only)

a) Less than 1 person-month ....☐

a) 1 person-month to less than 3 person-months ....☐

b) 3 person-months to less than 12 person-months ....☐

c) 12 person-months to less than 24 person-months ....☐

d) 24 person-months or more..☐

e) Don't know ....☐

*For example, if one employee worked on the innovation for full-time for one month and two employees worked on it half-time for one month, the total is two person-months (1 + 0.5 + 0.5).

B.7   How important were the following factors in hindering or delaying the development of this new or improved service?

Degree of importance

(Tick **one** box per row)

		High	Medium	Low	None	Not relevant
k)	Difficulty in obtaining funding to cover development costs	☐	☐	☐	☐	☐
l)	Concerns over risk (failure of the innovation, negative publicity, technical difficulties, etc.)	☐	☐	☐	☐	☐
m)	Lack of knowledge on how to develop new or improved services within your organisation	☐	☐	☐	☐	☐
n)	Resistance to change within your organization or by your stakeholders	☐	☐	☐	☐	☐
o)	Opposition from other organisations that provide similar services	☐	☐	☐	☐	☐
p)	Political or regulatory obstacles	☐	☐	☐	☐	☐
q)	Other (please describe)	☐	☐	☐	☐	☐

C. The focus of the questions in Part C differs from those in Part B. The questions in Part C concern new or improved services developed by a <u>Government</u> organisation in <country>.

C.1 In the last **five** years, did your organisation provide advice, expertise, data or other inputs to assist **a local, regional or national government organisation in** <country> to develop a new or improved service? *Exclude new or improved services developed by your own organisation – these are covered in section B above.*

(Tick **one** box only)

a) Yes..☐
b) No ....☐

Please go to question D1 if your answer to Question C1 is no. Otherwise go to question C2.

C.2 Please describe the most important new or improved **service by a government** for which your organisation provided input. ("*Importance" is defined in terms of the expected or realized benefits of this new or improved service to citizens or residents of <country>.)*

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Note: all remaining questions in Part C refer to the new or improved service described in question C.2.

C.3 What type of service was this (multiple types are possible)?

(Tick **all** that apply)

a) Health service ....☐
b) Educational or training service ....☐
c) Social support service (disability, income, etc.)..☐
d) Housing or accommodation service ....☐
e) Transportation service...☐
f) Environmental service..☐
g) Recreational service...☐

h) Communication services (information campaigns, etc.) ....☐

i) Other (please describe)...☐

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C.4 Once completed, did your organisation expect to obtain Government funding to provide this new or improved service to citizens or residents of <country>?

(Tick **all** that apply)

a) Yes...☐

b) No ....☐

C.5 Did your organisation contribute in any of the following ways to the development of this new or improved service?

(Tick **one** box per row)

	Yes	No	Don't know
a) Participated in brainstorming, discussion groups or idea generation workshops to identify problems to be addressed by this service	☐	☐	☐
b) Provided information on the experiences of citizens or residents with similar services or on their needs for this service	☐	☐	☐
c) Provided technical expertise (ICT, scientific knowledge, etc.)	☐	☐	☐
d) Helped find citizens or residents to participate in the development of this service (i.e. provide user views)	☐	☐	☐
e) Assisted with the design of the new or improved service (characteristics of the service, delivery method, etc.)	☐	☐	☐
f) Participated in tests of how people experience or use a prototype of this service	☐	☐	☐
g) Participated in an evaluation of the service after its implementation	☐	☐	☐
h) Other (please describe)	☐	☐	☐

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C.6 How important were the following **reasons for your organisation** to participate in the development of this new or improved government service?

Degree of importance

(Tick **one** box per row)

	High	Medium	Low	None	Don't know

a)	Gain experience in developing new or improved services	☐	☐	☐	☐	☐
b)	Gain insights into the needs of the users of this service	☐	☐	☐	☐	☐
c)	Improve relationship with government	☐	☐	☐	☐	☐
d)	Networking opportunities with other individuals and organisations (NGOs, non-profits, businesses, etc.)	☐	☐	☐	☐	☐
e)	Improve community consensus in support of the new or improved service	☐	☐	☐	☐	☐
f)	Improve the user experience of the new or improved service	☐	☐	☐	☐	☐
g)	Receive funding to participate	☐	☐	☐	☐	☐
h)	Other (please describe)	☐	☐	☐	☐	☐

C.7 Was your organisation's contributions to developing this new or improved service focused on any of the following issues?

(Tick **one** box per row)

		Yes	No	Don't know
a)	Better targeting of the service to those who need it	☐	☐	☐
b)	Reducing the time to develop the service	☐	☐	☐
c)	Improving the user experience	☐	☐	☐
d)	Reducing the cost of providing the service	☐	☐	☐
e)	Improving the efficiency of back-office processes to support the service	☐	☐	☐
f)	Other (please describe)	☐	☐	☐

C.8 In total, how many person-months did employees from your organisation contribute to developing this new or improved service? *Note: Person-months is defined in question B.6. Exclude volunteers.*

(Tick **one** box only)

a) Less than one person-month ....☐
b) One person-month to less than three-person months ....☐
c) Over three person-months ....☐
d) Don't know ....☐

D. Do you have any comments, including on the methods used to develop new or improved services by your organisation or by government organisations?

Thank you for completing this questionnaire.