

# Co-creating public online service development: the Slovenian e-Authorization Project

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## **Abstract**

Studies evidence that contemporary societies demand different, advanced public administration models; more specifically, citizens want to upgrade their role from being passive clients to being active, more demanding, influential, public service co-creators. Public services need to be renewed and digitized, and the way they are renewed, including related legislation and public policy, needs to be changed. Such a shift can be linked to the concept of New Public Governance (NPG), which stimulates the development of new forms of leadership to support collaborative public innovation, including co-initiation, co-design, and co-implementation with stakeholders, such as citizens, non-governmental organizations, private companies and interest groups.

Different stakeholder groups play different roles in relation to public services and have different perspectives in terms of which problems should be addressed (Bianchi et al., 2017), which services should be provided to address said problems and how to solve said problems co-creatively, making collaboration difficult (Bryson et al., 2015). Firstly, the politicians involved want public service users to feel the benefit of said services because public service users are voters. Secondly, public servants want to provide easily supported, efficient and effective public services. Thirdly, interest groups, including NGOs, want open, transparent public services. Finally, public service users want low administrative burden services, so they can easily and in a timely fashion benefit from them and better focus on their other endeavors, be they private or business.

Our objective was to ascertain citizens' attitudes and behavior regarding collaboration to better activate, affect, coordinate and guide service users towards common goals, and efficiently manage co-creation, using the Theory of Planned Behavior to detect and evaluate success indicators. We primarily focus on a project initiated by the Slovenian Ministry of Public Administration to develop a centralized digital platform for e-Authorization/e-Proxy (SI-CeP) that enables service users to authorize other legal and private persons to execute online and offline public service access on their behalf, with SI-CeP functioning as a one-stop-shop for authorization creation with regard to public and private sector service provision.

We found that well-managed, well-led and appropriately informed co-creation teams operating in friendly environments better develop successful solutions and innovations to mitigate different social problems through stakeholder observation, interview and survey. Gender was found to be insignificant in terms of determining attitudes and behavior. Our results evidence that the citizens of Slovenia are interested in co-creation and public good provision.

## **Points for Practitioners**

This paper, its findings and insights are of utility to public service providers and policy makers at different levels interested in enabling stakeholder co-creation processes to better develop and implement new online and offline public services, and put participants into a co-creative state of mind.

Key words: co-creation, public service, theory of planned behavior, case study, e-authorization.

## **1 Introduction**

Modern democratic societies are dissatisfied with the classical representative model, with stakeholders demanding the representative hierarchical form of governance be replaced by a direct, horizontal 'do it yourself culture' (Hilgers & Ihl, 2010) pursuant to better education, global connectivity and digital tool innovation, which support every aspect of our lives, improving information sharing, communication, and private and public sector service provision. However, public sector organizations have tight budgets, have to be efficient and effective, and soon hear the loud, prompt voices of the populace if their demands are not met. Moreover, complex challenges, often called 'wicked problems', represent challenges that cannot be met by one institution alone (Lorenzoni et al., 2007). Wicked problems are public policy problems that are difficult to clearly define,

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influenced by complex social and political factors, never really solved and need to be constantly managed (Rittel & Webber, 1973); said problems demand the inclusion of different administrative levels and responsibilities, and are characterized by multilevel, multi-actor and multi-sectoral challenge (Bianchi et al., 2017).

Pursuant to the above, to best create, develop and implement policies and services in line with citizen demand, it is best to incorporate them into the process. New public governance models, such as New Public Governance (NPG), incorporate these ideas and force governments to change and recognize public service provision as a holistic means to meet complex needs based on social inclusion (Osborne & Stokosch, 2013). Accordingly, collaboration and cooperation between private sector enterprises and their customers are preconditions for remaining globally competitive (Ambrosino & Romanazzi, 2015). Such collaboration is most often described as co-production or co-creation. While some literature does not distinguish between the two, Torfing et al. (2019) make a clear distinction. Co-production, encompassing co-planning, co-management, co-design and co-delivery (Bovaird & Loeffler, 2012), refers to service provider and service user interaction whilst co-creation refers to the interaction of a plethora of participants and considers public value in its broadest sense (Torfing et al., 2019).

Different stakeholders have different drivers regarding co-creation: politicians see it as means to strengthen their political base, public managers as a means to acquire knowledge and resources (Torfing et al., 2019), and citizens as a means to meet their needs because they are dissatisfied with the current situation, to participate, share ideas and dedicate their time and other resources to the common good, and to extend their influence (de Jong et al., 2019). Sometimes citizens' reasons are purely intrinsic, such as curiosity about participation and a wish to learn something new; nevertheless, they best understand the situation because they are service users affected by public policy and can consequently better contribute to service and policy improvement (Alves, 2013); there are other reasons, so citizen behavior regarding co-creation has yet to be robustly researched. Furthermore, most empirical research is oriented towards local government, countrywide research has yet to be implemented and users may have different attitudes to the services and policies in question, so more research is needed.

We utilized the Theory of Planned Behavior (TPB) adapted to the co-creation environment to address the aforementioned paradigm (Ajzen, 1985, 1991; Ajzen & Madden, 1986) because TPB has been tested on various related topics, including participation and e-participation (de Jong et al., 2019; Lee & Kim, 2018). We tested our adapted TPB with regard to Slovenia's citizens' co-creation intentions and linked said results to the quantitative data gathered as part of the current development of an e-Authorization system in the Republic of Slovenia.

The purpose of this paper is three-fold: firstly, to understand the factors that affect stakeholder behavior whilst engaged in co-creation; secondly, to identify and assess the key factors that affect citizens' intention to participate in co-creation; and finally, to test our theoretical findings using qualitative and quantitative methods focused on Slovenia's citizens and Slovenia's new public sector online service. Our research questions are: 'What key factors determine stakeholder behavior within a specific public service co-creation project?' and 'How are stakeholder qualities related to interviewee attitudes with regard to a specific online public service in Slovenia?'

## **2 Theoretical Background**

### **2.1 Co-creation and its Impact Factors**

Public sector co-creation and co-production determine equal government agency and stakeholder collaboration (Jukić et al., 2019). Though co-creation and co-production are different, they are often used interchangeably (Gebauer et al., 2010) because they entail the active participation of citizens as equal partners. Co-production can be defined as the process by which professionals and citizens support each other to make 'better use of each other's assets, resources and contributions to achieve better outcomes and/or improved efficiency' (Bovaird & Loeffler, 2013, p. 4) whilst co-creation more specifically entails the active involvement of end-users at various stages of the production process (Pralhad & Ramaswamy, 2000). Gebauer et al. (2010) evidenced that co-creation places more emphasis on the value added by merging service provider and service user resources, whereby citizens upgrade their role from passive clients to active co-creators of public services (Vargo et al., 2008), with the benefits derived from such interaction defined as co-creation value (McColl-Kennedy et al., 2012).

Many factors related to stakeholder environment importantly affect the success of co-creation initiatives and these are often collectively called the value network (Lusch et al., 2010); Voorberg et al. (2015) suggest there are eight key factors, highlighting the following as most often mentioned in the literature they researched:

- the compatibility of public organizations with citizen participation and open attitude towards citizen participation; and
- intrinsic citizen attitudes and demographic characteristics.

Regarding the former, optimal organizational structures and procedures are needed to better enable citizen participation, including improved communications infrastructure and positive employee, public official and politician attitude (Leone et al., 2012). Torfing et al. (2019), pointing to the void left by the demise of New Public Management, see potential in ‘the new institutional designs, forms of public leadership and a series of systematic changes’. Regarding the latter, the better educated are more aware of community need and possess the necessary skills to actively and positively participative (de Jong et al., 2019). Citizens are also more willing to participate if they see public organizations as partners not just authority figures, which was evidenced in the case of hospitals, (Lachmund, 1998) and those who enjoy co-creation evidence higher activity levels (Schmidhuber et al., 2017). However, we must view co-creation as a series of actions, with each action differently addressing intrinsic citizen attitudes and demographic characteristics, leading to differing citizen behavior. Furthermore, each action is preceded by and dependent on citizen activity and affects the whole co-creation process. If the stages of a public policy cycle are agenda-setting, policy formulation, decision making, policy implementation and policy evaluation (Fischer & Miller, 2006, pp. 43–62), then the stages of a public service co-creation cycle should be service formulation and initiation, service design, service implementation and service evaluation (Torfing et al., 2019).

## 2.2 The Theory of Planned Behavior

The Theory of planned behavior (TPB), an enhancement of the Theory of Reasoned Action (TRA) developed by Ajzen and Fishbein (1980), is based on the assumption that human behavior is generally not capricious but reasoned and planned (Tornikoski & Maalaoui, 2019). It predicts behavioral intention and behavior itself, enabling future action prediction and applied citizen setting development. TBP, developed by Ajzen (1985), is based on the assumption that an ‘individual's intention to behave in some fashion’ primarily determines citizen behavior, with said intentions motivating and leading behavior related to the effort people are willing to put into the selected behavior. The intention itself is shaped by three independent components: the attitude towards the act itself (behavioral beliefs, i.e. the perceived consequences of performing the behavior); the subjective norm (normative beliefs, i.e. belief related to the behavioral expectations of important individuals and groups in people's lives and motivation to comply with them); and perceived behavioral control, which quantifies an individual’s perception of how easy or difficult it is to perform the behavior based on said individual's ability and access to necessary resources). Moreover, Madden et al. (1992) argue that perceived behavioral control (PBC) directly influences the behavior itself (the dashed line in Figure 1).

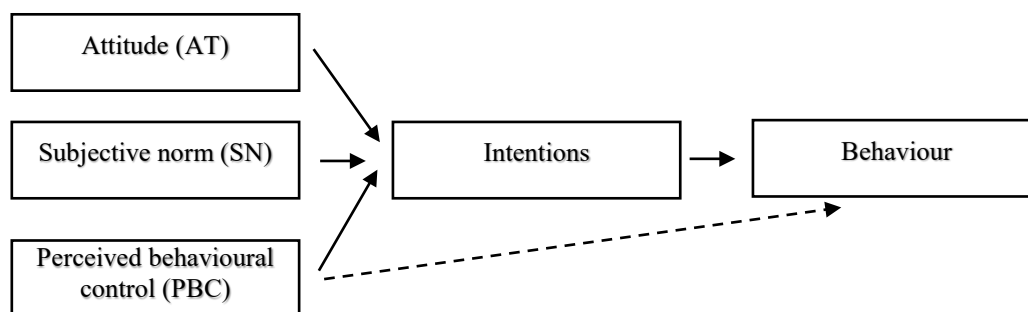


Figure 1: Theory of Planned Behavior - factor relationships

The theory and concomitant model have been used in a variety of behavior research fields related to a wide range of behavior. In terms of co-creation, TPB was, for example, used to evaluate citizen tendency to participate in agenda-setting activities in local governance in South Korea (Choi & Song, 2020; Lee & Kim, 2018) and subnational level policy creation in the Netherlands (de Jong et al., 2019).

### 2.3 Co-creation and TPB

TPB can be successfully applied to the area of co-creation and participation, but it differs regarding the role and characteristics of individual participants in the process. Xiao et al. (2019) evidenced that value co-creation attitude, subjective norm and perceived behavioral control affect customer co-creation behavior in the service industry. Then applied to the public sector, TPB found that when citizens positively perceived (attitude) the outcome of their participation in the co-creation process, their attitude towards this behavior was positive and their intention to engage in this process was stronger (Tornikoski & Maalaoui, 2019). Lee and Kim (2018) found that active citizen e-participation is positively correlated with greater trust in government. Schmidhuber et al. (2017) evidenced that participation experience enjoyment engendered high levels of citizen activity in co-creation processes. In the case of local government politics, the attitudes of citizens, such as interest in provincial politics, the perceived value of citizen participation and expected personal gratification, positively correlate with participation intention (de Jong et al., 2019). Additionally, social pressure (subjective norms) further affects people's desire to co-create because important referent individuals or groups may approve or disapprove of their actions. When considering perceived behavioral control, even co-creation can be regarded as an environment where individuals do not have full volitional control of their actions; therefore, belief in terms of resource availability and co-creation opportunities affect individual intention.

Table 1: Roles of stakeholders in the co-creation process and variables' measures (adjective pairs) that reflect their co-creation views in relation to TPB

Role (Torfing et al., 2019)	Attitude	Subjective norm: important others (normative referents) think I ...	Perceived behavioral control (have / do not have)
<b>Citizens</b>	Unsatisfactory - Satisfactory Unpleasant - Pleasant Worthless - Valuable Meaningless - Meaningful Distrustful - Trustful	Should - Should not Support - Oppose Agree - Disagree ... where others are family, friends, neighbors and team members.	Skills Time Economic resources
<b>Private organization or NGO</b>	Irrelevant - Relevant Worthless - Valuable Uninfluential - Influential Distrustful - Trustful	Should - Should not Support - Oppose Agree - Disagree ... where others are co-workers, NGO community and team members.	Skills Time Economic resources
<b>Public managers</b>	Irrelevant - Relevant Worthless - Valuable Uninfluential - Influential	Should - Should not Support - Oppose Agree - Disagree ... where others are employees, other managers, team members and politicians.	Skills Time Economic resources Compliance demands
<b>Elected politicians</b>	Irrelevant - Relevant Worthless - Valuable Uninfluential - Influential	Should - Should not Support - Oppose Agree - Disagree ... where others are other politicians, citizens/voters and team members.	Skills Time Economic resources Political promises
<b>Service owners/providers</b>	Unpleasant - Pleasant Worthless - Valuable Meaningless - Meaningful Uninfluential - Influential Distrustful - Trustful	Should - Should not Support - Oppose Agree - Disagree ... where others are co-workers, team members, superiors and project managers.	Skills Time Economic resources Compliance demands Service framework

To best focus on the three key TPB factors, we linked them to co-creation drivers and possible stakeholder roles (Table 1). Firstly, there is the attitude towards the very behavior we wish to predict (Fishbein & Ajzen, 2015, p.

59), which is evaluative and changeable during co-creation, and related to the *relevance* of the government body, stakeholder co-creation *gratification* (pleasure and satisfaction), perceived *value*, the degree of *impact* on the co-created service or policy, and stakeholder *trust* in institutional co-creation intention (Neulen, 2016). Secondly, subjective norms address the feeling of being different on one the one hand and of complying with others on the other, where ‘others’ are friends, neighbors, co-workers, team members and the like; it therefore focuses on the individual's so called normative belief that others approve or disapprove of their behavior (Ajzen, 2005, p. 193). Finally, perceived behavioral control, defined as the degree to which an individual actually has control over their behavior (Ajzen, 1991), addresses limitations in relation to time, skills, abilities, social competencies, economic resources sand the like. TPB’s inventor also stresses that four elements define behavior at varying levels of generality or specificity, denoted by the acronym TACT, as follows: the target at which the behavior is directed, the action involved, the context in which the action occurs and the time frame (Tornikoski & Maalaoui, 2019).

### **3 Empirical Research**

Empirical research was twofold: firstly, we conducted a general survey on citizen attitude towards co-creation; secondly, we focused on the Slovenian Ministry of Public Administration’s project to develop a centralized system for e-Authorization/e-Proxy (SI-CeP) as an online service that enables users to authorize other legal or private persons to perform online or offline services on their behalf. Currently, e-authorization in Slovenia is enabled for specific services related to the Agency of the Republic of Slovenia for Public Legal Records (AJPES) and the Financial Administration of the Republic of Slovenia (FURS). SI-CeP’s role is similar to paper authorization but it replaces it with a digital authorization counterpart and is planned to be generally used in the public sector and in some private sector settings.

#### **3.1 Data Collection**

We first conducted a structured survey of adult Slovenian citizens randomly selected using a random sample from a publicly accessible mobile phone directory. According to 2020 data from Statistical Office of the Republic of Slovenia, 97% of the population use mobile phones. A professional survey firm conducted the survey, screening respondents by age, geographical location and gender to make the demographic characteristics of the sample as similar as possible to those of the general population to reduce potential threat to both the internal and external validity of the findings. 1,660 mobile numbers were called using specialized survey software: 870 of said calls were not answered, encountered busy lines or call errors, or were hung-up in the middle of a call if answered; 636 users answered but declined to participate; finally, 154 of those called completed the questionnaire.

The questionnaire is composed of 12 agreement statements (Table 3), using a 5-point Likert scale from ‘strongly disagree’ (1) to ‘strongly agree’ (5), and two demographic questions concerning gender and age. According to Torfing et al. (2019), public service provision, one of the three core public sector functions, is the context in which public and private sector stakeholders are clearly defined, namely who the service providers and users are. Citizens were consequently directed to think about a few of the said public services and a few of the co-creation scenarios related to participation with public institutions as service providers, including topics related to a local public park, a renewal of a highway speed limit policy and a change in Slovenian migration policy.

The second method of data collection were the interviews with five stakeholders engaged in the SI-CeP project’s co-creation activities, these being three private citizens and two legal entity representatives, one being the director of an accounting firm, the other a legal practice lawyer. The accounting firm was selected because they had e-authorization experience from using the ‘e-davki’ platform provided by Financial Administration of the Republic of Slovenia. Lawyers in Slovenia use the ‘e-sodstvo’ e-authorization platform, where they can be authorized to conduct legal business for their clients. Each interview, composed of approximately five open questions related to authorization services in general was conducted over the phone and lasted about 20 minutes.

#### **3.2 Results and Discussion**

We received 154 completed questionnaires, with all the groups achieving a satisfactory level of reliability in relation to general Slovenian population groups in terms of demographic variables (Table 2).

Table 2: Survey respondent (15+ years of age) and population demographics at the time the research was conducted according to the Statistical Office of the Republic of Slovenia.

Demographic Variable	Groups	Sample	Sample (%)	Slovenia (N= 1,780,059)	Slovenia (%) (N= 1,780,059)
Gender	Male	77	50	888,426	50,09
	Female	77	50	891,633	49,91
Age	15 – 34 years	60	39.0	446,959	30
	35 - 54 years	45	29.2	613,979	35
	55 years or more	49	31.8	719,121	41

Pursuant to using a Likert Scale, we calculated mean averages and standard deviations for each of the variables (Table 3).

Table 3: Mean averages and standard deviation (SD) of the results.

Group	Statement / indicator	N	Mean	SD	Mean	SD	Mean	SD
					Male	Male	Female	Female
AT	AT1 I would be happy to participate in such a group.	154	3.96	0.989	3.96	0.952	3.96	1.032
	AT2 Participation in such a group would not be stressful for me.	150	3.29	1.166	3.96	1.032	3.33	1.082
	AT3 Participation in such a group would give me personal satisfaction.	152	3.88	0.979	3.33	1.082	3.24	1.250
	AT4 Participation in such a group would be meaningful for me.	152	3.94	0.908	3.24	1.250	3.90	0.981
SN	SN1 I have a feeling that other members of the group would accept and support me.	154	3.69	0.761	3.90	0.981	3.85	0.982
	SN2 I have a feeling the manager of the group would accept and support me.	154	3.73	0.698	3.85	0.982	3.92	0.957
	SN3 My family and friends would support me in such activity.	151	4.12	0.894	3.92	0.957	3.96	0.861
	SN4 My neighbors and people in my environs would support me in such activity.	151	3.75	0.842	3.96	0.861	3.71	0.758
PBC	PBC1 I have sufficient knowledge to participate.	153	3.55	0.980	3.71	0.758	3.68	0.768
	PBC2 I have sufficient communication and teamwork skills to participate.	151	4.08	0.990	3.68	0.768	3.77	0.724
	PBC3 I have sufficient time to participate.	154	3.12	1.231	3.77	0.724	3.69	0.674
	PBC4 I have sufficient resources, including financial resources, to participate.	154	3.81	1.138	3.69	0.674	4.22	0.805

Possible participation is perceived as meaningful and those surveyed are considered willing to participate because the relevant mean average values are high, and this positive attitude evidences that it is possible to foster more efficient and effective solutions adapted to local want and need through the collaborative innovation of new solutions that outperform previous ones (Sørensen & Torfing, 2011). However, participants express that co-creation might be *stressful* for them, with the lowest mean average values of the attitude indicators, indicating the importance of intrinsic attitude suggested by Voorberg et al. (2015). Therefore, the role of policymakers has to change from being experts to being citizen facilitators (Pedersen & Johannsen, 2016). Additionally, it is suggested that a relaxed co-creation environment be enabled for the invited participants. In relation to social norm indicators, possible participants expect activity approval from their family and friends, with the highest mean average values, and expect the support of their neighbors and people in their environs. The same is true for co-creation group managers, who may have less difficulty in identifying and mobilizing participant resources (Bovaird, 2007). However, possible *participants anticipate less support from the other members of the group*, so, as highlighted by Leone et al. (2012), appropriate team member selection is important, and a precondition for successful co-creation and consequent public policy and service provision innovation (Torfing et al., 2019). Furthermore, a relaxed and positive introductory meeting is advised. Lastly, survey respondents see their communication and teamwork skills as appropriate for co-creation activities, with the highest mean average PBC indicator values. The biggest obstacle is evidenced in relation to *the availability of time*, with the lowest mean average PBC indicator values. Because participants must be involved in the co-

creation process as early as possible (Thomas, 2013), an exact and reasonable timetable should be introduced to participants beforehand.

Table 4: Independent sample test for gender differences, including Levene's Test for Equality of Variances.

Ind.		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
AT1	Equal variances assumed	0.908	0.342	0.000	152.000	1.000	0.000	0.160
	Equal variances not assumed			0.000	151.030	1.000	0.000	0.160
AT2	Equal variances assumed	2.920	0.090	0.489	148.000	0.626	0.093	0.191
	Equal variances not assumed			0.489	145.019	0.626	0.093	0.191
AT3	Equal variances assumed	0.957	0.330	0.269	150.000	0.789	0.043	0.159
	Equal variances not assumed			0.269	149.887	0.789	0.043	0.159
AT4	Equal variances assumed	0.189	0.665	-0.257	150.000	0.798	-0.038	0.148
	Equal variances not assumed			-0.257	149.087	0.798	-0.038	0.148
SN1	Equal variances assumed	0.125	0.724	0.317	152.000	0.752	0.039	0.123
	Equal variances not assumed			0.317	151.974	0.752	0.039	0.123
SN2	Equal variances assumed	0.051	0.822	0.691	152.000	0.490	0.078	0.113
	Equal variances not assumed			0.691	151.239	0.490	0.078	0.113
SN3	Equal variances assumed	0.616	0.434	1.429	149.000	0.155	0.207	0.145
	Equal variances not assumed			1.424	141.775	0.157	0.207	0.146
SN4	Equal variances assumed	0.465	0.496	0.651	149.000	0.516	0.090	0.137
	Equal variances not assumed			0.652	148.867	0.516	0.090	0.137
PBC1	Equal variances assumed	4.518	0.035	1.953	151.000	0.053	0.307	0.157
	Equal variances not assumed			1.950	143.401	0.053	0.307	0.157
PBC2	Equal variances assumed	5.528	0.020	1.312	149.000	0.192	0.211	0.161
	Equal variances not assumed			1.309	131.402	0.193	0.211	0.161
PBC3	Equal variances assumed	4.690	0.032	-2.670	152.000	0.008	-0.519	0.195
	Equal variances not assumed			-2.670	146.566	0.008	-0.519	0.195
PBC4	Equal variances assumed	2.348	0.128	3.054	152.000	0.003	0.545	0.179
	Equal variances not assumed			3.054	148.741	0.003	0.545	0.179

To verify whether there is significant difference between the mean average values for men and women, we further calculated the values of Independent Sample t-test and its p-values, which must be less than 0.05 (Hair et al., 2016). As shown in Table 4, no significant differences were detected related to gender, except in relation to PBC factors related to time and resources: results evidence that women tend to indicate less time availability for co-creation activities than men,  $t(146.566) = -2.670$ ,  $p = .008$ , but indicate more resources for participation than men,  $t(152) = 3.054$ ,  $p = .003$ .

We addressed issues directly related to Slovenia's authorization services and SI-CeP during the participant interviews, with the scenario of enabling authorization to obtain a vehicle registration card for their parent, an yearly obligation for car owner in Slovenia, including a mandatory car insurance. The scenario was presented to the interviewees, who easily and *personally identified* with the scenario, with Ana stating, 'I used to visit my parent and get them to sign an authorization document on paper. I would then use my smartphone to take a photo and upload it to the SI-CeP portal', which is practical but not secure because signature forgery is possible. Interviewees indicated *approval or doubt* when presented with the possible solutions *the new service* provides, with John stating, 'If my parents and I have to go to the administrative district to verify the signature on paper and then upload it to the SI-CeP portal, that is stupid. If we are already there, we can obtain vehicle registration immediately'. Sadly, they did not see that online e-authorization could be used in perpetuity. However, interviewees were *full of ideas and suggestions*, with Greg stating, 'An online authorization service would be great, but exact instructions and clear, user-friendly forms, with as few back-and-forth clicks as possible, would be needed'. They were even keen to *trust the public administration* and allow the gathering of their *personal data* from different government registries once user identification had been validated and authorized. They were eager to *share their own ideas and knowledge* to help the service to be the best it could be, with Jill stating, 'The authorization service portal should have topics organized in groups and include search capability. A to-do list for each scenario would also be great'. They stressed that their skills and knowledge would better enable co-creation, with Jill stating, 'I use the e-tax system. When entering a tax number, all the data linked to it, including personal data, are entered into the form'. Based on his skills and knowledge, Greg stated, 'I use the eUprava government portal and many of its services. When conducting a service for another person, a button for e-authorization should be easily accessible'. John, speaking as a lawyer, would be *eager to participate* in the service development process because his problems would be diminished, 'I need to get authorization from each client, so a general one would be great because it would allow me to represent them in all their proceedings'. The respondents stated that participation would be a *personal satisfaction* to them, with Ana stating, 'I am happy that I helped you. I wish that all goes well and that the service will be success and helpful for many people'.

#### 4 Conclusion and Suggestions for Future Research

Collaboration continues to be the way forward for societal development, including the provision of public services that create added value, but wicked problems are too great a challenge for public managers and their traditional assets, including authoritative expertise, binding decisions, and purchasing service options (Crosby et al., 2017). Therefore, co-creation executed by citizens and other stakeholders, with their experiences, resources, energy and ideas, should mitigate this obstacle (Hilgers & Ihl, 2010), but to better enable this, those initiating co-creation must find out whether those involved are willing to participate, the drivers and obstacles for such collaboration and how to transform existing, often individualistic, behavior into a more collaborative form.

The Theory of Planned Behavior is not only successful in explaining and predicting social behavior, it can also be appropriately used to study behavior change and the intervention needed to do so (Tornikoski & Maalaoui, 2019). Our survey findings suggest that to best attract individuals and groups to co-creation processes, the key factors related to citizen behavior must be addressed by means of the following actions:

- create cooperative co-creation teams and co-creation friendly environments;
- appoint good co-creation team managers with the appropriate multi-stakeholder leadership and co-creation skills;
- include citizens with knowledge about the topics addressed; and
- schedule and coordinate time to be time-effective.

Our interviews with co-creation participants evidenced their belief that co-creation is beneficial because it utilizes their resources, that is, their knowledge, experiences, energy and time, to add value to public policy and



public service provision (McColl-Kennedy et al., 2012). In a similarly fashion to other authors' findings (Schmidhuber et al., 2017), our findings evidence how TPB can be best utilized in terms of public sector co-creation. The selected indicators evidenced useful results, and these must be further discussed, and TPB-factor augmented. We therefore suggest further research in relation to co-creation and TPB, and that additional indicators supported by the theory be studied, including correlation and causality.

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## References

- Ajzen. (2005). *Attitudes, Personality and Behavior* (2nd edition). Open University Press.
- Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In J. Kuhl & J. Beckmann (Eds.), *Action Control: From Cognition to Behavior* (pp. 11–39). Springer. [https://doi.org/10.1007/978-3-642-69746-3\\_2](https://doi.org/10.1007/978-3-642-69746-3_2)
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior* (1st Edition). Pearson.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22(5), 453–474. [https://doi.org/10.1016/0022-1031\(86\)90045-4](https://doi.org/10.1016/0022-1031(86)90045-4)
- Alves, H. (2013). Co-creation and innovation in public services. *The Service Industries Journal*, 33(7–8), 671–682. <https://doi.org/10.1080/02642069.2013.740468>
- Ambrosino, G., & Romanazzi, S. (2015). Including Chamber of Commerce Customers: Satisfaction as a Trust Predictor. *Innovation, Entrepreneurship and Sustainable Value Chain in a Dynamic Environment*, 94–107. <https://emrbi.org/wp-content/uploads/2020/09/EuroMed-8-2015-f.pdf>
- Bianchi, C., Bovaird, T., & Loeffler, E. (2017). Applying a Dynamic Performance Management Framework to Wicked Issues: How Co-production Helps Transform Young People's Services provided by Surrey County Council, UK. *International Journal of Public Administration*, 40(10), 833–846. <https://doi.org/10.1080/01900692.2017.1280822>
- Bovaird, T. (2007). Beyond Engagement and Participation: User and Community Co-production of Public Services. *Public Administration Review*, 67(5), 846–860. <https://doi.org/10.1111/j.1540-6210.2007.00773.x>

- Bovaird, T., & Loeffler, E. (2012). From {Engagement} to {Co}-production: {The} {Contribution} of {Users} and {Communities} to {Outcomes} and {Public} {Value}. *VOLUNTAS: International Journal of Voluntary and Non-profit Organizations*, 23(4), 1119–1138. <https://doi.org/10.1007/s11266-012-9309-6>
- Bovaird, T., & Loeffler, E. (2013). We're all in this together: Harnessing user and community co-production of public outcomes. *Birmingham: Institute of Local Government Studies: University of Birmingham*, 1(2013), 15.
- Bryson, J. M., Crosby, B. C., & Stone, M. M. (2015). Designing and Implementing Cross-Sector Collaborations: Needed and Challenging. *Public Administration Review*, 75(5), 647–663. <https://doi.org/10.1111/puar.12432>
- Choi, J.-C., & Song, C. (2020). Factors explaining why some citizens engage in e-participation, while others do not. *Government Information Quarterly*, 37(4), 101524. <https://doi.org/10.1016/j.giq.2020.101524>
- Crosby, B. C., Hart, P., & Torfing, J. (2017). Public value creation through collaborative innovation. *Public Management Review*, 19(5), 655–669. <https://doi.org/10.1080/14719037.2016.1192165>
- de Jong, M. D. T., Neulen, S., & Jansma, S. R. (2019). Citizens' intentions to participate in governmental co-creation initiatives: Comparing three co-creation configurations. *Government Information Quarterly*, 36(3), 490–500. <https://doi.org/10.1016/j.giq.2019.04.003>
- Fischer, F., & Miller, G. J. (Eds.). (2006). *Handbook of Public Policy Analysis: Theory, Politics, and Methods* (1st edition). Routledge.
- Fishbein, M., & Ajzen, I. (2015). *Predicting and Changing Behavior* (1st edition). Routledge.
- Gebauer, H., Johnson, M., & Enquist, B. (2010). Value co-creation as a determinant of success in public transport services: A study of the Swiss Federal Railway operator (SBB). *Managing Service Quality: An International Journal*, 20(6), 511–530.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling* (Second Edition). SAGE Publications, Inc.
- Hilgers, D., & Ihl, C. (2010). Citizen sourcing: Applying the concept of open innovation to the public sector. *International Journal of Public Participation*, 4(1).
- Jukić, T., Pevcin, P., Benčina, J., Dečman, M., & Vrbek, S. (2019). Collaborative Innovation in Public Administration: Theoretical Background and Research Trends of Co-Production and Co-Creation. *Administrative Sciences*, 9(4), 90. <https://doi.org/10.3390/admsci9040090>

- Lachmund, J. (1998). Between Scrutiny and Treatment: Physical Diagnosis and the Restructuring of 19th Century Medical Practice. *Sociology of Health & Illness*, 20(6), 779–801. <https://doi.org/10.1111/1467-9566.00129>
- Lee, J., & Kim, S. (2018). Citizens' e-participation on agenda setting in local governance: Do individual social capital and e-participation management matter? *Public Management Review*, 20(6), 873–895. <https://doi.org/10.1080/14719037.2017.1340507>
- Leone, R., Walker, C., Curry, L. C., & Agee, E. (2012). Application of a marketing concept to patient-centered care: Co-producing health with heart failure patients. *Online Journal of Issues in Nursing*, 17(2).
- Lorenzoni, I., Jones, M., & Turnpenny, J. R. (2007). Climate change, human genetics, and post-normality in the UK. *Futures*, 39(1), 65–82. <https://doi.org/10.1016/j.futures.2006.03.005>
- Lusch, R. F., Vargo, S. L., & Tanniru, M. (2010). Service, value networks and learning. *Journal of the Academy of Marketing Science*, 38(1), 19–31. <https://doi.org/10.1007/s11747-008-0131-z>
- Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A Comparison of the Theory of Planned Behavior and the Theory of Reasoned Action. *Personality and Social Psychology Bulletin*, 18(1), 3–9. <https://doi.org/10.1177/0146167292181001>
- McColl-Kennedy, J. R., Vargo, S. L., Dagger, T. S., Sweeney, J. C., & van Kasteren, Y. (2012). Health Care Customer Value Co-creation Practice Styles. *Journal of Service Research*, 15(4), 370–389. <https://doi.org/10.1177/1094670512442806>
- Neulen, S. (2016). *Co-creation between citizens and the government*. 43.
- Osborne, S. P., & Strokosch, K. (2013). It takes Two to Tango? Understanding the Co-production of Public Services by Integrating the Service Management and Public Administration Perspectives. *British Journal of Management*, 24(S1), S31–S47. <https://doi.org/10.1111/1467-8551.12010>
- Pedersen, K. H., & Johannsen, L. (2016). Where and How You Sit: How Civil Servants View Citizens' Participation. *Administration & Society*, 48(1), 104–129. <https://doi.org/10.1177/0095399714555753>
- Prahalad, C. K., & Ramaswamy, V. (2000). Co-opting customer competence. *Harvard Business Review*, 78(1), 79–90.
- Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155–169. <https://doi.org/10.1007/BF01405730>

- Schmidhuber, L., Hilgers, D., Gegenhuber, T., & Etzelstorfer, S. (2017). The emergence of local open government: Determinants of citizen participation in online service reporting. *Government Information Quarterly*, 34(3), 457–469. <https://doi.org/10.1016/j.giq.2017.07.001>
- Sørensen, E., & Torfing, J. (2011). Enhancing collaborative innovation in the public sector. *Administration and Society*, 43(8), 842–868. <https://doi.org/10.1177/0095399711418768>
- Thomas, J. C. (2013). Citizen, Customer, Partner: Rethinking the Place of the Public in Public Management. *Public Administration Review*, 73(6), 786–796. <https://doi.org/10.1111/puar.12109>
- Torfing, J., Sørensen, E., & Røiseland, A. (2019). Transforming the Public Sector Into an Arena for Co-Creation: Barriers, Drivers, Benefits, and Ways Forward. *Administration & Society*, 51(5), 795–825. <https://doi.org/10.1177/0095399716680057>
- Tornikoski, E., & Maalaoui, A. (2019). Critical reflections – The Theory of Planned Behaviour: An interview with Icek Ajzen with implications for entrepreneurship research. *International Small Business Journal*, 37(5), 536–550. <https://doi.org/10.1177/0266242619829681>
- Vargo, S. L., Maglio, P. P., & Akaka, M. A. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, 26(3), 145–152.
- Voorberg, W. H., Bekkers, V. J. J. M., & Tummers, L. G. (2015). A Systematic Review of Co-Creation and Co-Production: Embarking on the social innovation journey. *Public Management Review*, 17(9), 1333–1357. <https://doi.org/10.1080/14719037.2014.930505>
- Xiao, M., Ma, Q., & Li, M. (2019). Research on value co-creation behaviour in a service industry based on the Theory of Planned Behaviour. *International Journal of Internet Manufacturing and Services*, 6, 185. <https://doi.org/10.1504/IJIMS.2019.098239>