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RESEARCH-ARTICLE

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Outcomes of Value Co-Creation and Co-Destruction in the Digital Transformation of Public Services

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Transforming public services from an analog to a digital delivery mode is generally assumed to have positive effects. Most recently, these transformations include the co-creation of newly designed digital services by including users in the design, development, and delivery process. The outcomes beyond creating a digital public service are, however, unclear. We, therefore, provide empirical evidence of the types of public value that are created but potentially also destroyed in these digital transformation processes. The results are based on the perceptions collected from 40 digital transformation experts who identify four types of public value in the co-production of digital public service development: (1) economic value, (2) administrative value, (3) citizen value, and (4) democratic value, and highlight that at times public value might also be destroyed in the process. Co-destruction occurs when digital public services lack user-centricity or representation.

CCS Concepts: • **General and reference**;

Additional Key Words and Phrases: Co-creation, digital transformation, public value, co-destruction

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1 Introduction

Co-production is an important practice in the development and delivery of public services. The academic literature highlights different forms and phases of co-production but focuses predominantly on analog social services [1]. With the digital transformation of the public sector underway, what has remained largely under-explored is why co-production of digital processes is initiated, how different service users benefit from their inclusion in these processes, and which factors may lead to the co-destruction of value instead. Our article, therefore, focuses on co-production in digital public service delivery, and we aim to understand what kind of public value is created or destroyed by including a user perspective throughout the whole co-production process.

The public management literature on public value creation has identified several frameworks and inventories of public values. Among them is Van Wart [2], who promotes five value sources for decision-making in the public sector: individuals' values, professional values, organizational values, legal values, and public interest values. Jørgensen and Bozeman [3] identify 72 public values, which include those held by citizens and other service users in politics as well as in the public sector. The e-government literature, instead, often addresses the impact of information and communication technologies (ICT) on the creation of public value [4, 5]. In this study, the interest is particularly on whether ICT has a transformational effect on public values and the users involved in the process [6, 7].

Our guiding research question for this article is, therefore: "How does the co-production of digital public services lead to public value?" We explore this research question in a specific empirical context: As service designers and agile project managers have entered the public service digitalization space and have introduced a renewed focus on user-centricity or generally human-centric design in digital public service transformation projects [8, 9]. They often start their work in innovation labs or digital units and then transfer the skills and competencies into the standard operating procedures in the public sector. As part of their work practices, they purposefully include different stakeholders in the co-production processes in digital public service development projects. Based on the insights of public servants who are central in leading this type of public value co-production process [10, 11], we aim to understand how these digital transformation managers perceive the type of public value their projects produce in digital co-production and service delivery processes.

The results lead us to identify four types of public value in the co-production of digital public service development: (1) economic value, (2) administrative value, (3) citizen value, and (4) democratic value. In our article, we show that these different types of public value are not only the intended outcome but also emerge as a by-product of each co-production phase. We show that these different types of values are not exclusive to the value-in-use phase—the phase during which users consume the service—as is generally assumed by the public management literature [12]. Additionally, not every co-production phase produces all the values; the creation of value does not necessarily remain stable across all phases, and value can also be (co-)destroyed.

In the following, we first provide an overview of the literature, then explain our approach to data collection and analysis, and present our findings. Finally, we discuss the findings and provide a conclusion with implications for theory and practice.

2 Conceptual Framework

To derive the conceptual framework to answer our research question, we first discuss different definitions and understandings of public value that were derived from the literature. We aggregated available inventories described in the literature review into four different types of public value (economic, administrative, citizen, and democratic) and used the concept of co-destruction to describe the negative consequences of co-production.

2.1 Public Value Creation through ICTs

Public value has two meanings: First, public value can be seen as an outcome of activities that produce benefits for public bureaucracies and society as a whole [11]; second, public value is described as a set of guiding principles intrinsic to the administration of public bureaucracies [3, 13, 14]. We distinguish between value and values [15, 16]. Value describes the outcome that is created through the strategic activities of public managers [11, 17, 18]. Values are the normative principles that “guide and justify the behavior of individuals, governments and societies” [16] and are part of the organizational culture [2, 3, 13]. In this article, we adopt the first definition (as originally proposed by Moore [11]). In this definition, the creation of public value is an intended goal and an outcome of strategic public management activities. For example, public servants influence service delivery processes, which then create individual value for citizens (i.e., through more user-centric services) or society as a whole as improvements to democracy [19].

To categorize different kinds of public value, we exclude those value typologies that focus on public values [3, 20] and rely on conceptual frameworks that examine the impact of ICTs on public value creation. There is an ongoing debate on public value generation through the adoption of ICTs, specifically, the value that results from (a) the involvement of citizens (and other service users) in the design and delivery of digital public services, and (b) from the implementation of the digital public service itself [21–23].

However, at this point, there is little empirical evidence on how and to what extent these different types of public value are created through the digital transformation of public services [7]. Providing a clear conceptualization of public value will help to develop measurement indicators for future evaluations. To do so, we expand the present public value conceptualizations, adding a fourth type of value (see Table 1) by focusing on four transformation areas: (a) the public bureaucracy itself, (b) the service that is delivered by the public bureaucracy, (c) the individual citizen or user of public services and (d) the society as a whole [4, 5, 24, 25].

We define economic value as the value that results from a change in the processes within public bureaucracies, for example, more efficient and effective administrative processes that lead to cost reduction, and re-allocation of budgets that result in increased government performance [26]. This includes a change in public servants’ behaviors through the introduction of ICTs and is comparable to duty-oriented value [4], improved administration [7, 27], managerial value [5], or performing governance value [28]. As an example, Deng and Karunasena [29] show that the introduction of ICT infrastructure led to re-designed and increased administrative performance.

Administrative value focuses on the impact of the delivery of public services and the processes themselves, e.g., more effective back-end processes of public service delivery through digitalization and service delivery methods that use apps, one-stop-shop governments, or the once-only principle. The administrative value category is comparable to Twizeyimana and Anderson’s [7] improved service category as well as the socially-oriented value (respect for the citizen ingrained in civil servants when designing public services) and service-oriented value (effective and efficient service delivery as an inherent value displayed by public servants) as proposed by Bannister and Connolly [4].

The third category includes citizen value, which focuses on value that directly affects the relationship between citizens and public servants and is directed at service users. Citizen value is created through improved forms of citizen participation, the direct involvement of citizens in decision-making, for example, through e-participation methods [19, 30], the protection of the users’ privacy, individual rights, and overall improved services [7]. Citizen value is created when the service is used by them or when the citizens voice their opinions during participation processes, leading to an increase in satisfaction and social equity in the design process of digital public services [24].

The fourth category synthesizes the existing notions of democratic value [4, 5]. It includes values such as strengthened democracy and more accountable and transparent public bureaucracies for the public and society [31, 32]. This value is directed at the public sphere or the public as a whole [24, 33].

In Table 1, we summarize the discussed categories of public value:

Table 1. Public Value Categorization

| Public value category | Definition |
|------------------------------|---|
| <i>Economic value</i> | Time savings Cost reduction Behavior of individual public servants |
| <i>Administrative value</i> | More effective and transparent processes Increased service quality Social orientation Service orientation |
| <i>Citizen value</i> | Service quality Citizen participation Citizen well-being Relationship between citizen and public bureaucracies Privacy and security |
| <i>Democratic value</i> | Strengthening democracy Increased transparency Improved policies Reduction of corruption |

In addition to the different categories described above, the four types of value in this typology are not necessarily independent of each other; rather, they are interrelated [3]. For example, more efficient internal processes might lead to more efficient service delivery, because most of the processes in public bureaucracies are designed to facilitate the delivery of public services. The increased service quality can only be experienced as a citizen value and is at the same time a change that the public bureaucracy itself has created, but needs to be felt by citizens [34, 35]. Furthermore, an increase in the transparency of the activities in public bureaucracies might result in increased democratic decision-making because citizens can then hold them accountable [36].

2.2 The Creation of Public Value by Co-producing Digital Services

Digital transformation also enables new forms of co-production. In the co-production of analog services, public value is created through the participation of citizens in public service delivery and is partly dependent on the quality of the interaction between the service provider and the service user [24]. However, in digital service delivery, this interaction has changed. The mechanisms through which public value can be created might be different. For example, due to the lack of direct interaction in digital service delivery, citizens might be more passive rather than active actors [28]. Lember et al. [37] show four different ways in which technology can be used to digitize public services and enable co-production: sensing technologies, communication technologies, processing technologies, and actuation technologies. For example, the so-called communication technologies can be used to engage with citizens in collecting feedback about digital services and to detach the interaction from “geographical, temporal and organizational barriers” (p.1671), whereas sensing technologies enable the collection of real-time (citizen) data that supports digital public service delivery. As a result, there are manifold ways in which the digitalization of public services might contribute to the creation of public value by enabling digital services tailored to the specific needs of its users [23].

2.3 The Destruction of Public Value by Co-producing Digital Services

The literature so far implicitly assumes that co-production might lead to the creation of public value. However, even well-designed digital public services that apply a human-centric focus or are well-intended might lead to the destruction of public value, for example, by shifting the administrative burden of providing the service to the user. This phenomenon has been labeled co-destruction [38]. In broader terms, co-destruction occurs when available resources are misused, responsibilities and accountability are rejected by powerful actors or inequalities inherent in co-production are reinforced [39]. For example, co-production may be particularly difficult when dealing with sensitive topics that are less engaging, where there is a need to engage marginalized or vulnerable populations, or when users do not perceive themselves as suitable contributors [12]. In the context of digital service delivery, public value co-destruction occurs when services are exclusively provided online and thereby parts of the population might not be able to access them. Conditions that lead to co-destruction may stem from the institutional culture itself when public servants fear taking risks or creating additional costs associated with the implementation of co-production [40] or lack internal support for the implementation of co-produced outcomes [41]. Co-destruction can also be caused by a discrepancy between public servants' perceptions or beliefs of what service users need and what the actual user needs are [42, 43].

Rather than showing value co-destruction, most of the empirical research points towards the key inhibiting factors of co-production rather than value destruction. Several studies identify the co-production barriers that might lead to co-destruction: Lönn and Uppström [44] suggest core inhibitors of value co-production aspects in the public sector (technical, organizational, compliance, and service value), but did not consider the co-production process itself or its outcomes. In the healthcare sector, challenges such as power imbalances, choice restrictions, users' perspectives and abilities, perceptions of the service, and inputs made during interactions between service users and providers may lead to co-destruction [45].

The digital transformation assumes that both government and citizens benefit from digitalization, so a more critical approach could enhance our understanding of the co-destruction of public value [46]. Lember [47] points out that there is “an entire cluster of digitally enabled technologies emerging that [will] potentially have a deep impact on how citizens contribute to public service delivery” (p.130). He adds that the advantages of digital co-production include outcomes such as user empowerment and new co-production practices, participation and inclusiveness, efficient and effective products and service delivery, and providing public servants a new role. But these new digital tools and processes may also lead to different or hidden goals and interests not desired by all, shift the power balance, reallocate power and control to certain groups, as well as challenge existing relationships and governance models—for good or bad. Thus, whilst some gains may be quickly visible and easy to understand, there may be drawbacks and long-term impacts that take a long time to become visible, and which may significantly change the nature and meaning of co-production.

Similarly, Cui and Osborne [48] recently argued that value destruction occurs at three stages during service delivery: when citizens refuse to participate or are not allowed to participate in the co-design of public services; because of mistakes, skill deficiencies, or personal conflicts between providers and users; or the intentional or unintentional misuse of resources or “maladaptive behavior by public service users” (p.3). In all cases, the result is the limitation or destruction of public value.

3 Research Design

Most research analyzes the co-production of public value as users' capabilities to produce public value and excludes the possibility that co-destruction, the opposite of public value creation, may also occur. Only recently has this almost dogmatic view shifted [39, 49]. We, therefore, chose a qualitative research approach to provide a holistic view of both sides: co-production and co-destruction of public value in public sector digital transformation processes.

The chosen qualitative, explorative approach is suitable to uncover different mechanisms underlying how value can be co-produced or co-destroyed in these innovative settings, where there is little empirical evidence,

but practices have been emerging and are advanced. The goal of this study is, therefore, to describe in depth the perceptions of digital transformation experts on how public value can be co-created or co-destroyed when public services are digitally transformed from an analog to a digital delivery mode.

3.1 Data Generation

To extract the perceptions on how public value can be co-created or co-destroyed, we chose to use expert interviews as the main data source. The digital transformation experts were from public bureaucracies and organizations that provide digital transformation approaches and work closely with public bureaucracies. We chose expert interviews as a qualitative data collection method to access procedural knowledge that is of particular relevance to our research question—a well-established method in the social and political sciences [50] and public management [51].

The sampling strategy followed a purposive sampling approach [52]. First, a small sample of international experts in the public sector digital transformation field was identified. The first sample of experts selected followed a fixed set of criteria. The criteria were derived from existing theories, the study's aims and research gaps, and the knowledge about the study's population. In a second step, snowball sampling was used to identify additional experts to be interviewed [53]. Resulting from this two-step interviewee selection process, 40 experts were included in the final sample. Most of the respondents came from Europe, with eight from Italy, six from Spain, five from Denmark and Austria, Germany, and France, respectively, as well as one each from Estonia, Belgium, the US, Israel, Greece, and the European Commission from all levels of government, including EU, national, state and local governments. A small number of additional experts came from the private sector, consultancy firms that work exclusively for public bureaucracies (see Table 2 for an overview of our experts, including the level of government or type of organization, the position they held, and their geographic location). Our experts include government CIOs from Europe, the US, and the UK, as well as management consultants who have a proven track record in implementing digital transformation in public bureaucracies. They were promised anonymity, given the critical aspects of the interview guide, and their responses are aggregated for analytical purposes.

The interview guideline is based on the literature review, practice observations, and existing management reports about digital transformation and focuses on the following themes: definition of digital transformation, digital strategies, and co-production in the design, development, and delivery of digital public services. We used a semi-structured interview guideline, this allowed for enough structure to compare the responses across the interviews and left enough room to understand the individual approaches and perceptions of the interviewees to be able to identify patterns that emerge across interviews.

The interviews were conducted in person, by phone, or by Skype and recorded for data analysis purposes. Before the recording, the interviewees were asked for permission to conduct and record the interviews and informed that their names and affiliations were anonymized to protect their identities. The recordings were transcribed ad verbatim by an external firm. The interviewers wrote short memos to document meaningful details, new insights, and open questions.

3.2 Data Analysis

We analyzed the memos and the transcripts using the qualitative data analysis software QSR NVivo [54]. In the first step, we selected those sections from the transcripts that focused specifically on the process of co-production of public value, by answering the questions “What is the role of citizens and other service users in the digital transformation of services?”, and “Can you provide specific examples of how citizens are involved in the digital transformation of public services?” to extract incidences of co-production across different phases [55, 56]. In the second step, we extracted the data that featured descriptions of the outcomes (the different types of public value) of co-production. During these two open coding steps, we gained an overview of what codes and themes emerged from the data [57]. We then coded the data using a thematic analysis approach [58]: We derived an initial coding list from the literature on co-creation and co-destruction to identify the creation of public value as well as its

Table 2. Experts Interviewed by Country and Organization

| Level of Government or Type of Organization | Number of Experts | Position* | Country* |
|---|-------------------|--|--|
| Supranational | 1 | Advisor to EC | EU |
| National | 16 | Head of Department: Public Entity Head of Department: Ministry Senior Advisor: Ministry | Denmark Italy Spain Austria Germany Estonia France Greece |
| Regional | 6 | Head of Department: Regional Government Head of a Public Entity Member of the Regional Council | Spain Austria (2) France Italy |
| Municipal | 6 | Head of Department: Municipality Councilor | Austria (2) Italy Israel Spain |
| Consultancy | 4 | Senior Consultant | Austria Germany Italy Spain |
| Education | 1 | Head of Department and Senior Lecturer | Germany |
| Private Enterprise owned by Government (“in-house association”) | 4 | Heads of Department | Italy |
| NPO | 2 | CEO | Italy France |
| Total number of expert interviews: | 40 | | |

*Positions, organizations, and countries are listed in alphabetical order.

destruction. For example, the four value categories, economic, administrative, citizen, and societal value were featured in the initial coding list. Using this coding list, we then categorized the data first into larger data chunks and, in a second step, analyzed them in-depth by adding and refining the categories derived from the theoretical literature following the Gioia methodology [59]. During the data analysis, more codes were added inductively, mostly the codes describing how the value was co-created and co-destroyed, as well as the conditions leading to either co-destruction or co-creation.

To increase transparency and intercoder reliability, we used a shared codebook that included all the codes and their definitions [60]. Each code and its application to the dataset were discussed as a team. The presentation of the data in the findings section is supported by quotes from the interviews to illustrate the experts’ perspectives. Using quotes enhances the transparency of the research process by showing how we interpreted the results and enables other researchers to follow our reasoning [61].

4 Findings

In the following section, we first show how digital transformation context factors for the creation of public value are necessary to involve users in the co-production of digital public services. Then we describe which kinds of

public value are created. In the last section, we shift the perspective from the positive effects to perceptions of co-destruction of public value. Here, we discuss the reasons why co-production might fail and result in the co-destruction of public value.

4.1 Context Factors for Value Co-creation

The interviewees provided important insights into the necessary mind shift of the expert opinions driving decisions in the design, development, and implementation of digital public services to human-centric practices that focus on digital public service users' needs. This mindset is a guiding principle of current digital transformation approaches.

In this section, we provide a detailed explanation of how public value in the co-production of digital public services is created. We identified three context factors that are necessary for this type of co-creation: first, a shift in mindset towards user-centricity enables public servants to provide more and better opportunities for co-production; second, the recognition that public bureaucracies must provide well-designed participation processes; and third, a general openness towards users' input and a better, more trusting relationship with them.

First, the mind shift toward human-centric design enables public servants to understand the opportunities co-production provides. This means that public servants begin to perceive users as a source of information and knowledge that goes beyond their own bureaucratic and often legal insights into how services can be designed. Opening up service design and delivery processes is seen as a valuable opportunity for users to contribute to tasks that were traditionally seen as the purview of public servants, as one of our interviewees points out: "From the government side they should use the citizens as the input givers, and not send them a long paper document that they have to read through, no, simply by [letting them] trying out using this, and then see, okay, will it get some traction, or is it only five thousand out of five million using the service".

Second, the process itself should be accessible, and users should be encouraged to participate. In essence, public servants need to proactively lower the barriers to possibilities of co-creation if they want a diverse range of users or stakeholders to participate in the co-creation processes of digital services. Furthermore, during the interaction between public servants and the service users, the goals need to be communicated clearly, as one of the experts points out: "You do that by involving different citizens in such small test groups, so to speak. [...]. We have a special function that allows the participation and involvement of citizens or units from civil organizations, and the question is how citizens can be involved in a legislative process, and how the expectations of citizens can be properly managed. The risk is, you open this up and then the citizens think they can change the text of the law." This clarification of the goals contributes to the responsibilities and the accountability of both the users and the administration.

Third, openness toward user engagement needs to be increased. For public value creation to succeed, the individual public servant must want to engage with users, listen to them, and respect the diversity of perspectives. In addition, the experts highlight that public servants must be willing to invest a significant amount of time to understand users' perspectives in-depth and their needs: "[T]hat you understand the daily life of the citizens, how can we then use technologies to provide services to them, so their lives get easier, they easier get back into jobs or keep a job. I think there is both an involvement, understanding how central the citizen's life is, and what matters to them. We also have to drive digitalization that matters for citizens." Citizen's expectations and accepting citizens' needs are prerogatives for public service design and increase the likelihood that public servants will accept the results of the co-creation process (even if they are not the results originally aimed for).

To sum up, a change in mindset paves the way for the co-creation of public value. In the next section, we discuss which kinds of public value are created through the co-creation of digital public services.

4.2 Public Value Creation and Destruction

Generally, we were able to identify the four types of public value theorized in the literature review section in the data collected through the expert interviews. The interviewees provided some hints about the potential for

economic and democratic public value creation, but did not have any measurable evidence for the creation of value. In the following, we provide our evidence for administrative and citizen value created through the co-creation of digital public services.

4.2.1 Co-produced Administrative Public Value. The administrative value affects different aspects of the public bureaucracies. More than half of our interviewees explain how the co-production of digital public services benefits the internal processes of public bureaucracies. In addition, four interviewees describe how the introduction of co-production processes for the digital transformation of public services makes administrative processes more efficient. One public servant explains how the introduction of a new tax reporting system also had beneficial effects on the public bureaucracy itself: “And this discount was not offered not because of the central aim, but because they immediately realized that [the integration of the tax reporting system] would automate a series of tasks that had previously done manually, and they could take two people who previously did routine work on payments and now work on other issues, such as tax evasion, etc. And thus, optimizing their processes.”

The administrative value enables public bureaucracies to (re-)allocate their financial and personnel resources, and to ensure that public servants work on tasks those require more human intervention or are more complex.

Internal processes, streamlined through the introduction of new services, require adjustments or new administrative processes. One poignant example includes the provision of an online payment system in Italy that made the (tax) administration more efficient, another example is the introduction of a new app in Austria: “Where citizens can report anything they notice: From the pothole to the defective bulb, whatever, automatically geolocated by the app and thus enables further processing electronic with a high degree of automation.” This app enables Austrian users to co-deliver safe and clean streets and improve internal processes as their requests and contributions are automatically processed: work orders are created that support public servants in deciding how to allocate resources and manpower.

Besides tangible changes resulting from the co-production of digital services, there is also a change in mindset. Public servants start to see users differently: they are recognized as a valuable source of information that enables public bureaucracies to improve their services. The interviewees highlighted that the co-production of digital public services supports public bureaucracies to learn from users and implement their suggestions. This openness towards other perspectives leads to unexpected results. For example, public servants recognize that the interoperability of public services and the introduction of the once-only principle may result in better services as users’ data can be managed more efficiently. One interviewee explains in this context how a lack of interoperability of different systems inhibits the exchange of data. He stated that oftentimes, the system breaks down when different databases are not exchanging already existing datasets, and users, as well as public servants, need to switch modes from digital back to analog to finalize a service transaction. As some public bureaucracies move faster than others, they show how innovative ways of digital public service delivery can improve the service and the relationship between users and public bureaucracies. Some respondents describe these spill-over effects by highlighting that cities’ public bureaucracies benefit and learn vicariously from others and replicate the co-designed digital public services. Such learning effects are accelerated as online services can be communicated and implemented more easily than their analog counterparts.

The economic value the interviewees hinted at is achieved as an indirect outcome of the co-produced digital public services, allowing public servants to reallocate their resources.

Summing up, the public value for the administration is created, on the one hand, through the improvement of the technological infrastructure that creates opportunities for the co-production of digital services. On the other hand, the benefits are created through a change in mindset that paves the way for developing digital public services that are human-centric and user-friendly.

4.2.2 Co-produced Public Value for Citizens and Society. The second type of value includes benefits for users and society as a whole. These values include citizen values and democratic values. However, similar to the benefits for the administration described above, the majority of the experts refer to value for individual users or

citizens, and only five interviewees described the benefits for society. We assume that citizen value also indirectly refers to societal value.

There are two ways in which users benefit from engaging in the co-production activities of digital public services. First, the service quality is increased, and usable and user-friendly services are (co-)produced. By inviting users to co-production activities, the administration can identify the users' needs voiced during the co-production process. According to the interviewees, most users expressed the need for accessible services that are easier to use than analog services. Second, users are more satisfied with the final service that fulfills their needs. This increased satisfaction is reflected in higher levels of online service use. For example, as users favor using online payment methods to pay for government services rather than cash payments and other types of bank transfers, the digital mode of service delivery subsequently becomes the preferred mode: "In the first month after the opening of the terminals for payment there was a 40% rise of payments made in comparison to the same period in the previous year, because many citizens who the year before had paid at the last minute, decided to pay immediately because they found it more comfortable to pay through the new means and most of the payments were made on the weekends of this year, so this provides very important testimony." Besides the convenience for users, public bureaucracies gain access to the payments earlier, resulting in reduced work and more financial slack.

Besides the noticeable improvements in service quality, users benefit from co-production activities in the development of digital services as they contribute to service design, development, and delivery, and create additional services that may not have been available before. By encouraging users to experiment with different technologies or approaches, the collaboration between public servants and users can be increased. This change in the perception of each other and empowerment of service users has an impact on and improves the relationship between them. As one interview partner told us, these additional activities contribute to increasing citizens' trust in public bureaucracies. He explained that value is created when a public bureaucracy proactively provides tax data to users, and they merely have to check the accuracy and trust the government: "Now you check yourself, so that is value coproduction of something, which I would say is tax compliance, that is the outcome of (digital) tax services".

Besides public value created on the individual level, society benefits from the co-production of digital public services. The main value stems from public bureaucracies' willingness to show their processes and create opportunities for co-production. This openness leads to more transparent public bureaucracies and helps users to understand how public service delivery works and how they can help improve it. The creation of user-friendly and accessible services allows public servants to remain open to ideas that may be useful during other stages of the service delivery process.

Figure 1 provides a summative overview of the codes and categories that include the vier different types of public value co-creation:

However, even though the experts highlight the many positive outcomes of co-production in digital public service delivery, it is not guaranteed that value is always created. The process described above and depicted in Figure 2 is vulnerable to co-destruction pre-conditions and processes that might jeopardize public value creation. These vulnerabilities, identified by experts in the sample of this study, are described in the next section.

4.2.3 Co-destruction of Public Value. Co-destruction can occur during several stages of the co-production process. The interviewees point out that both users and servants can contribute to the co-destruction of value. In the value (co-)production chain (see Figure 2), the participation of citizens and other service users is crucial. Some of our interviewees describe that low participation can be problematic because it prevents the public servants from accounting for representative insights from citizens and users, such as those from vulnerable groups or those who don't have access to digital public services.

Several interviewees assume that citizens and users are unwilling to participate in the co-production processes. Some of the reasons might include a lack of time, no incentives to participate, or the participatory processes are

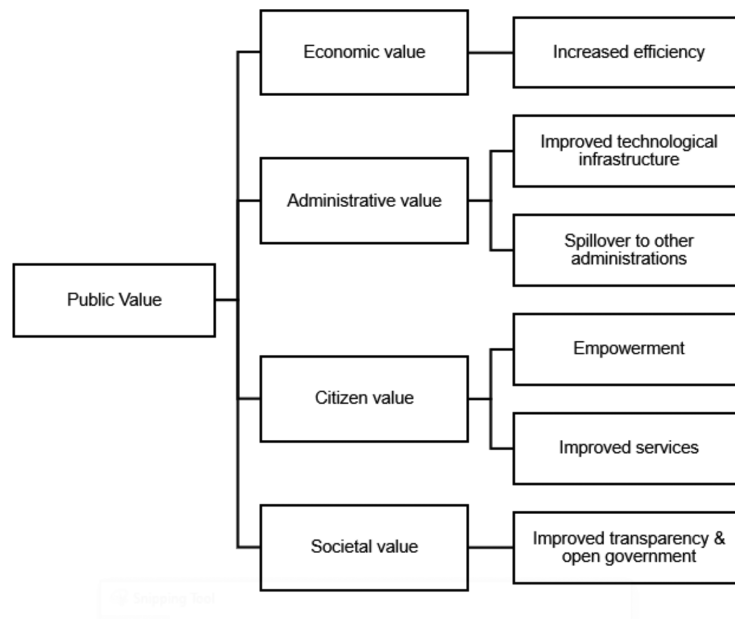


Fig. 1. Overview of co-production of public value.

not well-designed, as noted by one expert: “It’s tedious. And that’s not the way it’s supposed to be.” Others point to unrecognizable returns on investment of users’ time invested in the co-production process: “Thus, it is clear that something is wrong in terms of policy design, and, in addition, the ‘return’ is usually not observed, whereby citizens may consider participating in these processes of co-production rather useless and futile”. Fostering user participation is necessary as a lack of participants will jeopardize value-creation processes. Value might otherwise be destroyed if users who are not included in the co-production process may then decide not to use the digital public service. One way to mitigate the risk of cooptation is to invest effort into ensuring the participation of users who are traditionally not included or whose voices are not heard in participation processes: “A draft law is complicated with dependencies making it difficult for civil society and groups to keep an overview of it, whether I want to involve everyone now and not only the specialists who represent groups of interests”.

The low representation of the participants, therefore, becomes an important issue: Absence of user input impairs the process as the number of participants might be too low and no clear picture of the diverse needs and service requirements can be derived: “The administration sits there and says “we know exactly what the legal situation is and what does he/she want?”, and, “nothing will work”, and the citizen sits there and says, “these wackos with their wrong ideas, they have to be led into the reality of life”. Public servants must understand that co-production processes lead to benefits rather than being an unnecessary burden. They also need to understand how they are by simplifying digital public services and pay particular attention that all interests are represented equally and not co-opted by special interest: “Now, they are all very elitist, not in an economic sense, but there are a few citizens prepared to co-create, to co-design, and this can result in many biases, even of political nature.”

During the implementation of the digital public service, public servants must make sure that the citizens’ input from the co-production process is considered and carried into the development and implementation stages, as one of the interviewees highlights: “Commitment to implementation is very important because if I don’t implement what comes out of the co-production process, then citizens won’t often take part in such processes.” A lack of commitment to the implementation of the solution might lead to even lower participation in the future. Non-participation and non-compliance with citizen needs might also have an impact on the quality of the final digital

public service itself. Not responding to users' needs leads to services that are badly designed in terms of usability and accessibility: "It is not uncommon for us to find digitized public services that work very well technically, with very well-performing user interfaces, but offering very low usage levels. This usually happens because the level of service offered is not what the citizens demand. Bringing the service user closer to all stages is essential for granting the final success of the digital transformation process." Therefore, public value creation is inhibited by bad service design. Figure 2 shows the summary of codes and categories of the co-destruction of public value we extracted from the interview texts:

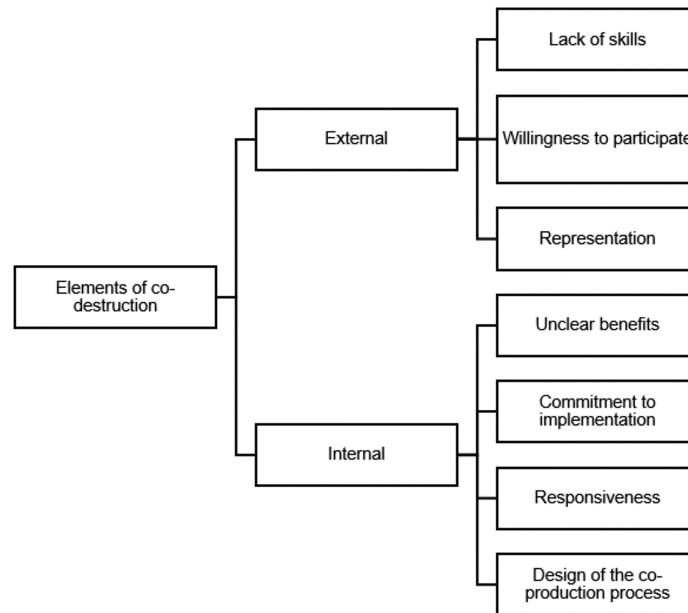


Fig. 2. Overview of codes and categories of co-destruction of public value.

4.2.4 The Complex Interrelationship between Public Value Co-creation and Co-destruction. The digital transformation of public services usually has a rather positive connotation in our dataset—as well as in the rhetoric that scholars, consultants, and public managers are using who study or are involved in these processes. Our empirical evidence shows, however, that this rather complex interrelationship also emerged as a two-sided sword.

On the one hand, digital transformation is generally seen by the experts in our study as a way to create public value, especially when future or potential service users and other stakeholders are directly involved in the co-production processes. As highlighted in Section 4.2.2, our interviewees were enthusiastic about the potential and promoted the continued involvement of potential public service users to gain deeper insights into their needs and the problems they might be encountering. However, they also mentioned that there is the rather theoretical issue of co-destructing public value, as shown in the findings Section 4.2.3.

On the other hand, while we saw that while public servants might want to engage in co-production practices, are motivated by the willingness of citizens to participate and at times even requested by law to contribute, the existing processes and frameworks counteract these efforts, as one of our interviewees explains: "We need specific requests to solicit the participation of citizens on these digital platforms."—highlighting that the requirements who and how to involve need to be extremely specific before public managers can proceed to include citizens or other stakeholders into the co-production processes. Another expert added, "[When] I took the time to explain to them how the process looked from our side, and they said: ok, that doesn't work out. It doesn't work out, and

at the end it's frustrating for both sides. Yes, because we have the requirement that you have to be transparent, you have to allow participation, but you do not have the framework conditions."—showing how frustrating the co-production process might be for both sides and that the existing preconditions are not in favor of including potential service users early into the process—effectively co-destructing public value when trust in the process is lost. In addition, the sources of co-production are oftentimes out of reach for public managers. They might not have access to citizens with the right skills or be unable to provide the right incentives to resolve issues around representation.

In summary, we find that the relationship between co-creation and co-destruction is rather ambiguous and at times not clearly identifiable. When the right conditions and processes for co-creation and co-destruction diverge, it leads to frustration; when they converge public managers, and their stakeholders see immense public value creation opportunities.

5 Discussion and Contributions

In our research, the term public value is used to describe the outcomes that result from public servants' activities in the digital transformation of their analog processes and services. Based on Moore's work [11], we show that the creation of public value can be both described as the initial aim of public service activities and as an outcome of these activities. From the existing literature, we initially identified four types of public value in the co-production of digital public service development: (1) economic value, (2) administrative value, (3) citizen value, and (4) democratic value. We found that not every co-production phase creates all of these values; they do not necessarily remain stable across all phases, and co-production activities can also lead to the destruction of public value. Our goal was, therefore, to answer our guiding research question: How does the co-production of digital services lead to public value?

The results of our qualitative research show that different types of public value can be considered as the intended outcome, but that they might also emerge as a by-product of different co-production activities. These are outcomes that are not exclusive to the value-in-use phase—the time when users consume the service—as generally assumed in the public management literature [12]. This allows us to conceptualize the outcomes of digital service design and delivery, and to understand the transformational effect that digital public services have on public value and the users involved in the process [6, 7].

The findings indicate that the actual creation of public value can occur when there is a shift in mindset that ensures opportunities for co-creation and the results of these processes are implemented. This means that the benefits of co-production have to be apparent to those involved, and that co-production does not always lead to positive effects but may lead to failures and even the destruction of public value [62].

When public services are digitized, the involvement of different types of users and stakeholders can create value through improved efficiency of administrative processes, more effective public service delivery, the increased use or even the switch from analog to digital services, potentially leading to cost reductions, as well as increased accountability or transparency of administrative activities. However, achieving these different kinds of public value requires certain contextual factors.

One context factor is that public servants must perceive citizen input as a valuable source of information. A second context factor is the provision of opportunities for co-production. Providing access to the process of service design and encouraging users to participate provides opportunities for the co-production of digital public services. The third context factor is the management and clear communication of expectations, the application of collaboration rules, the generation of outcomes, and the implementation of these outcomes. Fourth, public servants have to learn to engage with and listen to users' inputs and perspectives. A fifth context factor is an awareness of the difficulties and errors that can occur during the phases of the co-production process. By paying attention to these context factors, the experts involved in our study believe that the co-production of digital public services can lead to public value creation.

While we were initially able to synthesize four types of public value from the existing inventories in the literature, economic value, administrative value, citizen value, and democratic value, our findings show that although all four types of public value were mentioned and realized, the main focus of the experts directly involved in the digital transformation of public services is on achieving administrative and citizen value. This is no surprise, given that the creation of public value, while facilitated through the adoption of ICTs, is not dependent on the activities of public servants alone, but is dominated by the users' activities, needs, and expectations to be included in the service implementation process [37].

Administrative value includes the impacts that affect the delivery of public services. In particular, three kinds of administrative value can be achieved according to the experts: a change in technological infrastructure, the creation of knowledge, and the innovation spillover to other public sector organizations. While digital co-production benefits public bureaucracies' internal processes by making them more efficient, it also leads to changes in the digital infrastructure and channels for service provision and better services. The experiences that lead to the generation of knowledge improve the relationship between public servants and users and have learning effects for other public sector organizations.

Citizen value directly affects the relationship between citizens and public servants, e.g., through improved digital participation methods, direct user involvement in decision-making processes, the protection of user privacy and individual rights, as well as the provision of better services [37]. We were able to identify two types of citizen values: citizen empowerment and improved services. User participation in co-production activities allows them to express their needs, which may be different from public servants' legal or political needs, and digital service quality is perceived as improved, usable, and user-friendly. Users are also more satisfied with the inclusion of their needs, which increases satisfaction, further willingness to provide input and feedback, and more online service use.

We noted that some factors and behaviors can lead to co-destruction, which can occur during any stage of the co-production process, and that both users and public bureaucracies can contribute to the co-destruction of value. In particular, factors such as low levels of participation, users' unwillingness to participate in the processes offered by public bureaucracies, and the lack of representation or input from otherwise underrepresented user groups endanger the intended value-creation process. The process might also be co-destroyed by dominant groups who are willing to contribute, and their input might be perceived as the general public opinion. At the same time, public servants may themselves engage in behaviors that lead to co-destruction, for example, by not responding to the users' needs, not committing themselves to the outcomes produced, or not implementing the digital public services that were co-designed with users. Essentially, losing the trust of the co-producers who invested their time and goodwill into the process.

6 Conclusions and Future Research Agenda

Co-production of public services is an important practice in the development and delivery of digital public services. The academic literature highlights different forms and phases of co-creation [63, 64] but focuses predominantly on social services [1]. The literature has so far not particularly considered co-production processes for digital public services and does not discuss how public servants and users involved in the digital transformation of analog to digital public services help to create or destroy public value.

Our article focuses specifically on the co-production of this under-theorized area of public value co-creation and co-destruction in a digital transformation context. We show that if the co-production of digital public services leads to public value creation, then certain context factors are necessary, and the benefits of digital co-creation need to be highlighted. Necessary context factors include the recognition that user input represents a valuable source of knowledge, the provision of co-creation opportunities, a willingness to provide access to service design and delivery processes, encouraging users to participate, and defining the expectations and the rules regarding the collaboration and the outcomes to be achieved. In addition, an awareness of possible problems and errors can

help prevent or reduce the co-destruction of value. By fulfilling these context factors, the public value identified in the literature can be achieved.

In summary, we derived the following theoretical framework that outlines the pre-conditions for the co-creation of public values in the design, development, and delivery of digital public services and their outcomes in the form of public value creation or destruction:

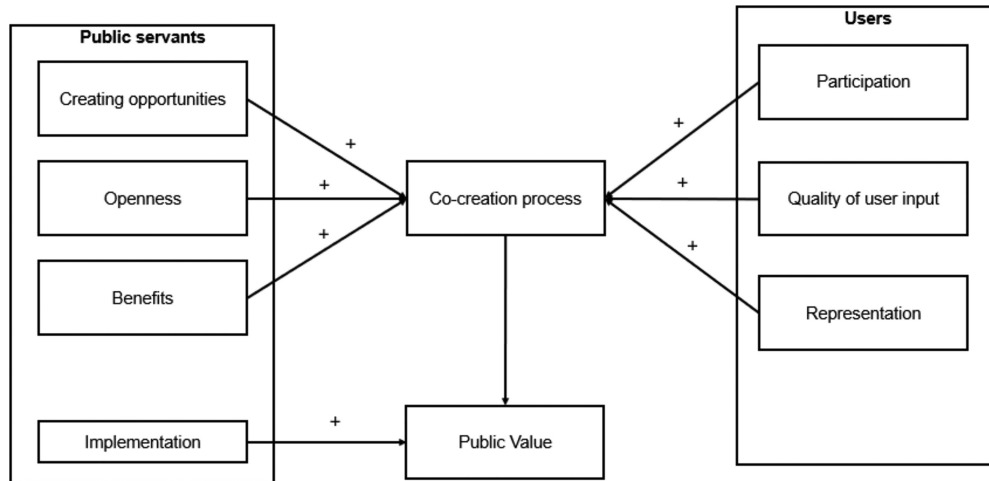


Fig. 3. Factors influencing the co-creation of digital public services.

Our study contributes to the existing literature on digital government theory by combining empirical evidence with insights from the public value literature in the public management field to understand the outcomes of co-production approaches in digital public service design. We aggregated the outcomes of these processes into four distinct dimensions of public value, effectively adding a practice-based approach to the predominantly theoretical inventories of public values [see, for example, 3, 5, 7, 21], but rarely empirically evaluated public value literature with respect to the digital transformation of public services. Previous empirical research has predominantly focused on quantitative survey data. Here we contribute to the method diversity by using (a) unique data sources (expert interviews) and (b) a qualitative interpretative approach to understand the co-creation and co-destruction themes in our data—an approach that was so far not used—and provide unique insights directly from those public managers in charge of implementing co-production practices in their digital transformation processes. The high number of experts included in this research project provides a depth and breadth of insights that help to provide a deeper understanding of the different types of public value dimensions and as well as their complex interrelationships.

Our work also contributes a new theoretical conceptual dimension to the public value literature: We show that the very positive viewpoint of the co-production of digital transformation of public services might not be viewed as salutary as the rhetoric of consultants and government strategy documents might imply—at least not yet. Many public servants and the users of their digital public services view digital transformation as a way of co-destructing value. While some citizens might strive in this fully digitally transformed environment of public service delivery, others might be excluded, lack direct interactions with public servants, and therefore might either not engage, miss out on public services they are eligible for, or stop the online process to go back to a more burdensome offline or analog interaction with public servants. We contribute this new aspect of public value co-destruction to the existing literature that was so far missing. Future research should take into consideration how digital co-creation processes may lead to co-destruction or reduce public value.

7 Future Research Agenda

Based on the relationships we identified in our theoretical framework (Figure 3), we propose that future research focuses on the following research approaches to answer open research questions:

- (1) We suggest that future studies focus on how public service users (be it citizens or other stakeholders) identify how they perceive the value creation or destruction aspects we identified here in our study. Are they willing to accept that some public value is destroyed for the convenience or expected efficiencies of digitally transformed processes? Do public service users perceive digitally transformed public bureaucracies, for example, as more open, transparent, and accountable? Questions like the ones posed here can be studied using a mixed-methods approach by combining a quantitative survey with focus group interviews.
- (2) Future research should also identify for what incidents public service users still need the option to interact face-to-face through analog service offerings with public servants. Unfortunately, we oftentimes do not have access to a counterfactual (analog vs. digital service provision), so this question seems to be the one that can more easily contrast both modes of service delivery. Studies on exceptional incidences can be conducted by using biographical narratives in which public service users are asked to recall incidences when they had to get in direct touch with public bureaucracies, even if a service was already fully digitally transformed.
- (3) We also propose that future research focuses on evaluating public value co-creation and co-destruction from the viewpoint of public servants, who oftentimes view the systematic involvement of citizens as a burden. We therefore suggest conducting in-depth interviews with civil servants who are involved in co-production processes. While they might not be able to compare the co-creation process 1:1 to the creation of the original analog process, they might still be able to provide insights into the output, impact, and outcomes of co-production approaches.
- (4) There is little evidence in the literature so far to what extent different types of co-creation methods are creating different types or quality of public value. We, therefore, suggest that future research might expand our understanding of co-production methods. Research can compare, for example, open space approaches with design thinking methods, synchronous vs. asynchronous input solicitation methods, and others. This can be done through ethnographic or participatory observations to capture the procedural insights over time.

8 Limitations

We identify several limitations in our research design. First, due to our sampling approach, the conclusions represent the experts' perspective of public servants on co-produced public values. The users' perspective is not represented here, and their viewpoint may differ from what the experts in our sample described. In addition, our final list of experts predominantly includes interviewees from European countries (39 experts) and only one from a non-European country (US). The findings therefore need validation from other administrative contexts and countries such as the UK, the USA, the southern hemisphere, or Asian countries. This is important as the perception of public value and its creation can be dependent on the cultural context and norms [11]. Finally, there might be limitations due to the lack of data triangulation, as only interview data were used to answer the research questions. This might be problematic because we were not able to validate the statements by the interviewees with additional sources, for example, observational or survey data from a citizen or user perspective [65].

However, we believe that the results obtained are useful for practitioners who want to implement co-production processes for digital public services and need to justify the outcomes of their actions. Further empirical research is necessary on the different types of values to be gained from the co-creation of digital public services, aggregating and organizing knowledge that different stakeholders may have, the type of value they would like to have as an outcome, and the factors that lead to co-destruction.

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