

# Assessing the effect of digitalisation on a public “self-servicing” service

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## Abstract

**Purpose** – Digitalisation should increase participation by making it easier to engage citizens and other stakeholders, which in turn should reduce costs and increase service quality and accountability. Yet, evidence shows that it might create further divides, harming inclusiveness, and increasing burdens due to hidden costs not only for citizens but also for public officials. The article explores whether and how digitalisation influences public administration’s co-production efforts and what the key benefits and challenges are from the perspective of public officials.

**Design/methodology/approach** – Following a literature overview, we selected a public “self-servicing” service that was recently digitalised in the Friuli Venezia Giulia Region in North-East Italy. We reviewed the relevant legislation and interviewed public service providers to map processes and identify gains and losses from their points of view.

**Findings** – Results show that digitalisation can hinder public administration in its co-production efforts because the dysfunctional role played by digitalisation may increase burdens and negatively influence engagement for public officials, as it may have a negative impact on data accessibility, easiness of interaction, tailoring, and simplification.

**Practical implications** – Findings contribute to the debate on the impact of digitalisation on public services, while policymakers can learn about how to foster co-production through digitalisation and how to mitigate the challenges and risks arising from it.

**Originality/value** – The research focuses on public employees, their experiences, and perceptions on how the digitalisation of public services impacts efficiency and engagement, while much of the literature has so far explored mainly citizen engagement and participation through digital technologies.

**Keywords** Co-production, Stakeholder engagement, Public administration, Street-level bureaucrats, Administrative burden, Red tape

**Paper type** Research paper

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## Introduction

Information and communication technologies (ICTs) have attracted increasing attention in public administration and government studies (e.g. [Agostino et al., 2022](#)). This interest stems also from the perceived potential of new technologies, like social media and digital platforms, to enhance interactions between public administrations and citizens. Economic shifts, welfare state changes, decentralisation, and evolving knowledge-sharing dynamics have led to a growing need for strengthening governance by increasing the collaboration between citizens and governments ([Carstensen et al., 2023](#)). Among these practices, co-production involves leveraging the assets and resources of both the public sector and citizens to reach improved outcomes and efficiency ([Edelmann and Mergel, 2021](#)). It is seen as a way to address the declining legitimacy and resources of the public sector by tapping into society more effectively

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and fostering participation and social cohesion in increasingly fragmented communities (Bovaird and Loeffler, 2012).

In this respect, digitalisation, the use of ICTs to convert information, processes, and services into an electronic format (Mergel *et al.*, 2019), should allow to increase participation by making it easier to engage citizens and other stakeholders (Mergel *et al.*, 2019), which in turn should reduce costs and increase service quality and accountability (Garlatti *et al.*, 2020; Ianniello *et al.*, 2019). Yet, some studies have shown that it might create further divides (Linders, 2012), harming inclusiveness (Palumbo and Manesh, 2023), and increasing costs (Garlatti *et al.*, 2023). Indeed, the experience of burdensome digital processes can undermine efficiency and participation (Peeters, 2023) and may affect both citizens and public employees (Garlatti and Iacuzzi, 2020).

However, while numerous authors have considered citizen engagement and participation in government activities facilitated by digital technologies (Pauluzzo *et al.*, 2024; Rodriguez Müller *et al.*, 2021), relatively few studies have specifically examined the impact on public employees who are involved in the provision of such services (e.g. Åkesson and Edvardsson, 2008; Edelmann and Mergel, 2021; Ryan, 2012) and how such experiences affect efficiency and engagement from their perspective (Kuhlmann and Heuberger, 2023). Thus, studying the involvement of public employees can provide insights into the challenges they face, the strategies they employ, and the impact they have on the success of digital co-production. Specifically, the paper investigates the impact of digitalisation on co-production in public administration, examining its advantages and challenges from the perspective of public officials. Indeed, while digitalisation is expected to enhance participation, reduce costs, and improve service quality, it may instead create barriers, increasing administrative burdens and limiting citizen engagement. Hence, the present study addresses the following research questions: How does digitalisation influence public administration's co-production efforts? And what are the key benefits and challenges from the perspective of public officials?

The paper is organised as follows. In the second section, after a brief review of the relevant literature, the paper illustrates the case studies developed to investigate the research questions. Methodology is described in the following section. Specifically, we employed a multiple case study approach and a narrative interpretative methodology to analyse data collected from semi-structured interviews conducted with public servants responsible for a social service which was enacted 15 years ago and recently digitalised in the Friuli Venezia Giulia Region in North-East Italy. We focused on this region because it has emerged as a leader in digital public administration in Italy (ISTAT, 2023), setting an example for others aiming to enhance social services through digitalisation. In the fourth and fifth sections, findings are respectively illustrated and discussed in light of the literature and according to the framework by Larsson and Skjølsvik (2023), in order to appreciate the impact of digitalising public services on co-production efforts. Finally, the conclusion outlines challenging issues and avenues for future research.

## Literature background

### *Public services and co-production*

The concept of co-production, introduced by Ostrom *et al.* (1978), describes citizen involvement in public service production. Originally a public-sector concept, it later extended to private-sector studies (Lember *et al.*, 2019). Today, it is seen as a tool to strengthen governance (Carstensen *et al.*, 2023) by leveraging societal resources and placing citizens at the centre of value creation (Falco and Kleinhans, 2018; Ryan, 2012). Bovaird and Loeffler (2012) framed it as a shift from “public services for the public” to “public services by the public” emphasising reciprocity. Thus, co-production can enhance efficiency, innovation, and service personalisation (Garlatti *et al.*, 2020; Osborne *et al.*, 2016; Radnor *et al.*, 2014).

While citizens are central to co-production, as they contribute skills, knowledge, and feedback, significantly impacting service delivery, public administrations play a supporting

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role (Breit and Salomon, 2015; Edelmann and Mergel, 2021; Verschuere *et al.*, 2012). Nonetheless, the role of public employees is often overlooked in co-production (Gofen *et al.*, 2024). Yet, they are crucial as they implement, facilitate, and drive these initiatives (Åkesson and Edvardsson, 2008; Ryan, 2012; Sorrentino *et al.*, 2024). Edelmann and Mergel (2021) identified two key roles for them: providing services and information and establishing frameworks for citizen engagement.

### *The impact of digitalisation on public service co-production*

Digital technologies are changing the ways service users and providers can be engaged, thus rearranging relations between citizens and public administrations. Users, intermediaries, and other stakeholders in general can take on roles as contributors, testers, and co-designers of digitalised public services, leading to a more participatory approach to service design and delivery (Meijer, 2011). This is strictly related to the widespread use of ICTs that have been transforming the ways services are conceived, developed, and delivered.

In this regard, several studies have attempted to delineate the levels of citizen involvement in governmental initiatives facilitated by digital technologies, mainly focusing on three levels of engagement characterised by increasing degrees of interaction (Bovaird and Loeffler, 2012; Falco and Kleinhans, 2018; Linders, 2012):

- (1) Information sharing: government provides data to citizens, enabling informed decisions.
- (2) Consultation: two-way communication develops, allowing dialogue and feedback between citizens and public employees.
- (3) Co-production: citizens and public officials collaborate, combining resources to achieve better outcomes and efficiency.

Digitalisation can thus play a crucial role in transforming public services by enhancing citizen participation and leading to co-production (Lember *et al.*, 2019). Through digital platforms, citizens can actively engage in decision-making, providing feedback and ideas, which fosters a sense of ownership and accountability (Ciasullo *et al.*, 2016). As citizens become more involved, their participation can transition into co-production, where they collaborate with government agencies in designing, delivering, and evaluating public services. Digitalisation streamlines this process by enabling efficient communication, data sharing, and problem-solving, making public services more accessible and responsive (Larsson and Skjølsvik, 2023). By promoting transparency, accountability, and engagement, digital platforms empower citizens to co-produce public services, resulting in more relevant and effective outcomes (Garlatti and Iacuzzi, 2020).

However, while research has focused on citizen engagement in digital co-production, there has been less emphasis on the role of public employees in these processes (Haug *et al.*, 2023). This gap highlights the need to explore how public officials contribute to co-production, as they often serve as intermediaries between the government and citizens, facilitating collaboration and ensuring effective implementation (Ryan, 2012).

The concept of public employees as key actors in co-production and digitalisation processes might be linked to the framework of street-level bureaucracy, first introduced by Lipsky (2010). This framework emphasises the pivotal role of public officials and frontline employees, or street-level bureaucrats, who engage directly with citizens during service delivery. Public employees serve as the face of government, shaping citizen-government interactions and, by extension, the perception of public institutions (Gofen *et al.*, 2024). They can be implementers, intermediaries, and leaders, reflecting their centrality to a sustainable public service transformation (Enang *et al.*, 2022).

As implementers, public employees might exercise discretion to adapt policies and services to individual citizens' needs and circumstances (Lipsky, 2010). This discretion is both a

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practical necessity and a resource for informed decision-making aimed at achieving desirable outcomes collaboratively (Eriksson and Andersson, 2024). Implementers balance formal directives with situational demands to ensure public service delivery and outcomes while remaining adaptable and responsive (Madsen, 2024). Their expertise is essential for successful digitalisation (Gofen *et al.*, 2024) and co-production initiatives, as they bridge government operations with community needs.

In their role as intermediaries, public employees bridge technological advancements and citizen participation. Through digitalisation public administrations leverage citizen interaction and data to simplify and tailor co-produced public services (Larsson and Skjølsvik, 2023), which can be classified into four categories: dialogue, automated, registry-based, and self-servicing services. Self-servicing services, in particular, maximise co-produced value by leveraging structured data, allowing citizens to self-serve or provide information on web platforms. These systems better tailor services to citizens' needs while simplifying government data collection (Breit and Salomon, 2015).

As leaders, public employees act as ambassadors for digitalisation and co-production, fostering innovation and collaboration within their organisations (Åkesson and Edvardsson, 2008). Their ability to empower citizens is key, as they instill confidence in service users (Jenhaug and Askheim, 2018). This role demands expertise, flexibility, and resilience to manage resource constraints, conflicting policies, and unpredictable environments (Gofen *et al.*, 2024). Leadership also requires balancing efficiency with human oversight to maintain fairness and trust in public services, particularly when addressing standardisation and administrative burdens that mirror red tape (Madsen, 2024).

#### *Benefits and challenges of digitalisation for co-production from the perspective of public employees*

As shown by the literature explored earlier, digitalisation offers transformative opportunities for co-production in public services, but it also presents challenges that require careful navigation. Employing the framework proposed by Larsson and Skjølsvik (2023), this discussion systematically evaluates the benefits and challenges of digitalisation from the perspective of public employees through the four key elements they identify: data, interaction, tailoring, and simplification.

**Data:** The strategic use of data in digital co-production enables improved decision-making and service customisation, through the collection and analysis of large volumes of data, which provide insights into citizen preferences, behaviour, and usage patterns (Linders, 2012). When citizens actively supply data, such as through self-service platforms, governments can co-create tailored services, reducing operational costs and fostering collaborative visions (Breit and Salomon, 2015). Similarly, registry-based systems leverage government-collected data to simplify service delivery, ensuring consistency and speed (Scholta *et al.*, 2019). However, issues such as data quality, confidentiality, and interoperability present significant risks (Garlatti *et al.*, 2023). In a publicly accountable institution, a “silo” mentality and top-down approaches, coupled with the lack of standardised data frameworks and insufficient open government data, limit data connectivity and sharing (Clarke, 2020; Cuadrado-Ballesteros *et al.*, 2023; Paskaleva and Cooper, 2018). Additionally, power imbalances in data collection processes may lead to resistance from stakeholders unprepared for the resource and effort demands of co-production, while the potential to create value by improving processes and services from analysing the increasing amounts of data remains unexploited (Pauluzzo *et al.*, 2024).

**Interaction:** Digitalisation reshapes the interaction between citizens and public administrations by enabling both enhanced dialogue services and automated processes. For instance, co-production benefits include improved organisational culture, as digital tools foster greater accountability and allow public administrations to assume new responsibilities efficiently (Lember *et al.*, 2019; Linders, 2012). Enhanced interaction also empowers citizens

by enabling real-time engagement, particularly on platforms that facilitate collaboration and innovation (Meijer, 2011). However, challenges arise when interaction is limited due to fragmentation or siloed approaches within institutions (Clarke, 2020; Cuadrado-Ballesteros *et al.*, 2023; Paskaleva and Cooper, 2018). On the one hand, in co-production initiatives, service providers must assume new responsibilities and roles that require extra effort, resources, time, and capacity to give external stakeholders the opportunity to cooperate (Linders, 2012; Rodriguez Müller *et al.*, 2021), which may pose a challenge to power dynamics (Pauluzzo *et al.*, 2024). On the other hand, services may become less effective if public employees lack familiarity with digital tools, limiting their ability to adapt service models inclusively (Edelmann and Mergel, 2021). Moreover, a lack of expertise may generate resistance to change, which is common among public officials in many countries (Kuhlmann and Heuberger, 2023), since digitalisation introduces different methods and expectations that must be managed to achieve desired outcomes and resolve power tensions (Hepburn, 2018). The autonomy of local governments and independent agencies can exacerbate these issues, complicating efforts to implement unified digital solutions (Vermiglio and Valenza, 2017).

**Tailoring:** Tailored digital services, such as self-service applications, empower employees and citizens to customise services and act as their own caseworkers (Breit and Salomon, 2015). This aligns with Larsson and Skjølvik's (2023) observation that tailoring enhances value by leveraging citizen-provided data. This also enhances accountability and favours changes in organisational culture, procedures, and capabilities (Hepburn, 2018). However, poorly designed systems may fail to meet policy objectives, resulting in delivery failures and eroding trust in digital services (Peeters and Widlak, 2018). Moreover, the rapid evolution of technology can outpace regulatory frameworks, raising legal concerns on the one hand, and potentially reducing the need for active citizen participation on the other (Lember *et al.*, 2019). Digitalised services may create a digital cage (Peeters and Widlak, 2018), turning into a black box that reduces face-to-face interactions and undermines personalised service delivery (Bovens and Zouridis, 2002). By channelling automated solutions that lack personalisation, they reduce public employees' discretion and morale, limiting their ability to address social complexity (Peeters and Widlak, 2018).

**Simplification:** Simplification through automation minimises the need for interaction, exemplified by proactive "no-stop shop" solutions that provide seamless service delivery (Scholta *et al.*, 2019) with the input of information and resources from various stakeholders, which can lead to reduced costs and resource requirements for public service providers (Meijer, 2011). Automated services can alleviate administrative burdens and streamline co-production processes, as public officials experience fewer inefficiencies when digital systems function effectively (Bozeman and Feeney, 2011). Simultaneously, registry-based services simplify the range of citizen input, focusing on predefined government processes. However, digitalisation also introduces hidden costs, such as cognitive and operational fatigue among officials adapting to new systems (Kuhlmann and Heuberger, 2023), as emphasised by the technology acceptance literature (Davis and Granić, 2024). The technology acceptance model (TAM) identifies two key drivers of user acceptance, that is perceived usefulness and perceived ease of use (Davis, 1989). Hence, on the one hand, the burdens that public employees experience in learning, coping, and complying with new practices, guidelines, or rigid rules (Bozeman and Feeney, 2011) can hinder meaningful interactions and decision-making, reducing job satisfaction and motivation (Jacobsen and Jacobsen, 2018; Tummers *et al.*, 2015). On the other, standardised solutions, while simplifying processes, may fail to accommodate diverse local needs, reducing their overall effectiveness (Roy, 2021). Poorly executed automation risks may disconnect services from the needs of citizens, undermining the value of digitalisation (Osborne *et al.*, 2016). To face these challenges, public employees often adapt informally or bend rules to address citizens' needs effectively within rigid frameworks (Potipiroon, 2022), preserving personalisation and responsiveness in service delivery.

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By systematically applying Larsson and Skjølvik's (2023) framework, the analysis of the above literature highlights how digitalisation can enhance co-production in public services through data-driven strategies, interaction, tailored solutions, and simplification. However, realising these benefits requires addressing challenges such as data governance, fragmentation, organisational resistance, and technological misalignment. Our study builds on these insights by critically examining the impact of digitalisation on co-production from the perspective of public officials. While digitalisation is often seen as a means to enhance co-production, the literature reveals that it may hinder public administration's efforts to reduce costs, improve service quality, and increase accountability as shown in Table 1, which summarises benefits and challenges, providing a structured overview informed by the four elements of Larsson and Skjølvik's (2023) framework.

### Methodology

This study employed a multiple case study approach rooted in Stake's (2000) perspective. This methodology emphasises the intrinsic value of each case, allowing for an in-depth understanding of the unique context and experiences of public officials. By focusing on the particularities and meanings within each case, this approach fosters rich, nuanced insights into the complexities of digitalisation and its impacts. This emphasis on interpretive engagement enables the researcher to shed light on varied perspectives and uncover emergent themes. The use of multiple cases further enhances this exploration by offering a comparative lens to examine similarities and differences across contexts, enriching the depth and relevance of the findings.

### Case description

In order to explore whether and how digitalisation can hinder co-production in the public sector and what the consequences are from the perspective of public officials, we focused on the digital transformation of "Carta famiglia" (Family Card) in five local administrations in the Friuli Venezia Giulia (FVG) Region in Northeastern Italy, which, even though it has a population of only around a million distributed over 215 municipalities, is the most advanced area in terms of the digitalisation of Italian public services according to a survey by the National Institute for Statistics (ISTAT, 2023). Family Card is a regional program designed to promote and assist families with dependent children living in the FVG Region. In Italy, most social services are provided locally, either by regional or municipal authorities.

In 2022, co-production played a significant role in the operations of Italian public administrations, with 34% of them (48% in the North-East macro-region) actively supporting citizen engagement through digital tools. These administrations provided platforms for communication and interaction among users, such as forums, mailing lists, instant messaging, and chat services, as well as tools for collaboration and group work, including shared agendas, virtual workgroups, e-rooms, and video conferencing. Through these interactive and collaborative services, citizens actively and consciously contributed to the design and delivery of several public services. Digital tools and platforms enabled citizens to co-create services (Agostino *et al.*, 2022), such as appointment booking, reporting service disruptions, requesting and receiving assistance, accessing documents, receiving notifications and deadline alerts, and providing feedback on user satisfaction (ISTAT, 2023). These practices highlight co-production because they go beyond passive use of services; they involve the deliberate and conscious engagement of citizens as active partners who shape and enhance public services, ensuring that they better reflect users' needs and priorities. This participatory approach strengthens collaboration between public administrations and citizens, fostering a more responsive, inclusive, and citizen-centred public service system.

Family Card is a means-tested benefit available to households with minor or dependent children who have resided in the FVG Region for at least two years and have a household

**Table 1.** Benefits and challenges of digital co-production for public administrations

Elements/goals	Benefits	Challenges
<ul style="list-style-type: none"> <li>Data</li> </ul>	<ul style="list-style-type: none"> <li>Data volume: Digital co-production tools facilitate the collection and analysis of large volumes of data, providing public employees with insights into citizen preferences, behaviour, and usage patterns (Breit and Salomon, 2015; Linders, 2012).</li> <li>Data quality: Better quality and more timely data enhance government operations, refining decision-making processes, capabilities, and capacity (Scholta et al., 2019).</li> </ul>	<ul style="list-style-type: none"> <li>Data issues: With digital co-production there are issues related to data quality, confidentiality, interoperability, and limited open government data (Clarke, 2020; Garlatti et al., 2023).</li> <li>Value from data: The potential to create value by improving processes and services from increasing data is currently unexploited (Pauluzzo et al., 2024).</li> </ul>
<ul style="list-style-type: none"> <li>Interaction</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration: Digitalisation improves the sustainability of public service provision through collaborative practices between service providers and users (Lember et al., 2019; Linders, 2012).</li> <li>New idea generation: Digital co-production allows the generation of innovative ideas and solutions by public employees, as well as partnerships with diverse expertise and resources (Meijer, 2011).</li> </ul>	<ul style="list-style-type: none"> <li>Challenge to power dynamics: digital co-production leads to increased pressures for public employees due to changes in the structure and tasks of those responsible for digitalised services as well as supervising and coordinating digitalisation processes (Linders, 2012; Rodriguez Müller et al., 2021; Pauluzzo et al., 2024).</li> <li>Resistance to interaction: Power dynamics, coupled with a “silo” mentality and a lack of expertise among public employees, may provoke resistance to interaction because of new responsibilities and roles, that require extra effort, resources, time, and capacity (Clarke, 2020; Cuadrado-Ballesteros et al., 2023; Kuhlmann and Heuberger, 2023; Paskaleva and Cooper, 2018).</li> </ul>
<ul style="list-style-type: none"> <li>Tailoring</li> </ul>	<ul style="list-style-type: none"> <li>Customisation: Digital co-production brings enhanced performance and customisation of public service delivery by citizens and public employees (Breit and Salomon, 2015).</li> <li>Accountability: Engaging in digital co-production enhances the accountability of public service providers and favours changes to strategically manage user participation as it brings shifts in organisational culture, procedures, and capabilities (Hepburn, 2018).</li> </ul>	<ul style="list-style-type: none"> <li>Out-of-date regulations: A rapidly evolving digital landscape can outpace existing regulations and even reduce the need to engage citizens directly (Lember et al., 2019).</li> <li>Missing the mark: The information collected may not allow digitalised services to align with expectations by public employees (Peeters and Widlak, 2018).</li> <li>Standardisation: Digitalisation requires centralisation and standardisation, rather than tailored co-production (Bovens and Zouridis, 2002).</li> </ul>

(continued)

**Table 1.** Continued

Elements/goals	Benefits	Challenges
<ul style="list-style-type: none"> <li>• Simplification</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced costs: Digital co-production leads to reduced costs in terms of resource requirements (Bozeman and Feeney, 2011; Meijer, 2011).</li> <li>• Reduced times: Digitalisation leads to reduced times needed for co-productive interactions which are made easier for both public employees and citizens (Scholta <i>et al.</i>, 2019).</li> </ul>	<ul style="list-style-type: none"> <li>• Higher burdens: Complex regulations and limited technology acceptance increase operational costs and extend the time needed to execute ICT-enabled initiatives by public employees (Bozeman and Feeney, 2011; Jacobsen and Jakobsen, 2018; Tummers <i>et al.</i>, 2015).</li> <li>• Disconnected requirements: Digital operations may be based on an information architecture which does not favour ease of use and perceived usefulness by public officials as it is disconnected from the requirements of policy execution and co-production (Osborne <i>et al.</i>, 2016; Roy, 2021).</li> </ul>

**Source(s):** Table created by authors

income below €35,000. The grant amount increases if the family has resided in the Region for more than five years or if a family member has a disability. Since 2009, the service has been regulated, designed, and funded at the regional level and administered by municipalities. Family Card provides access to discounts on basic services like energy costs and staple foods, a grant for new-borns for three years, reimbursement for babysitting and summer camp costs, grants for school-related activities, and a contribution to a complementary welfare fund for children up to 14 years old. Municipalities can supplement the card with additional funds and services to address local needs. The card is valid for one year, and families must reapply annually by December 31st.

Initially, before digitalisation, municipal officials collected applications manually, conducted preliminary investigations, and forwarded results to the Region, which then verified eligibility, assessed benefits, issued physical cards, and sent them back to municipalities for distribution. From 2019, citizens could apply online, track applications, and use QR codes instead of physical cards. However, citizens who were unable or unwilling to apply online could still submit paper applications. This hybrid system allowed municipalities to manage both digital and manual applications while gradually introducing digital tools. Digitalised Family Cards became the unique option in 2021, transforming it into a “self-servicing” digital public service (Larsson and Skjølsvik, 2023). Automated data entry and AI tools have sped up processing and data analysis, boosting efficiency and accessibility, and increasing beneficiary households by 9%, from 34,000 in 2019 to 37,000 in 2023. Now users interact with public officials through an online platform and manage the service through an app, using a barcode and QR code instead of a physical card. Municipalities and the Region use an online back-office system linked to the National Social Security Institute (INPS) and the National Register of Resident Population (ANPR) for automatic eligibility checks. This digital shift redefined service delivery by requiring citizens to actively engage in the process, providing valuable personal information through the platform to verify their eligibility. This conscious engagement of users serves as a cornerstone of digital co-production. By submitting accurate data and engaging with the system, citizens directly influence the efficiency of the service, enabling public organisations to process applications more swiftly and tailor service delivery to meet eligibility standards effectively. Indeed, self-servicing services seek to maximise the value co-produced during the interaction by leveraging structured data (Larsson and Skjølsvik, 2023). Digital services, enabling citizens to self-serve or provide relevant

information on web platforms, allow to better tailor public services to citizens' needs and simultaneously simplify data collection efforts by governments (Breit and Salomon, 2015). Public officials play a crucial role in modelling citizen requests based on the information provided to ensure they align with the standards of the service. As in other digitalisation processes (Bovens and Zouridis, 2002), the role of frontline officials should change from "street-level" bureaucrats who interact with citizens to collect data, first to "screen-level" bureaucrats mainly entering forms filled in by users into computers, and then to "system-level" bureaucrats mainly informing and assisting citizens. This iterative process involves monitoring user-submitted data, addressing discrepancies, and refining service propositions to meet eligibility criteria while accommodating individual needs. This one-to-one relationship empowers citizens to shape the service while reinforcing their role in its operational efficiency.

Public officials and citizens both adapt their behaviours within this digital framework. For users, the platform necessitates active participation and precise data submission, fostering a sense of accountability. For public officials, the digital service eliminates typing data records, enhances the capacity for efficient data verification, and streamlines decision-making, leveraging the input provided by users. This reciprocal interaction exemplifies "self-servicing" digital co-production, where the conscious involvement of citizens not only improves service delivery but also transforms the dynamic between users and providers, creating a collaborative model that benefits both parties (Larsson and Skjølvik, 2023; Nabatchi et al., 2017).

#### *Data collection*

To understand the impact of transitioning to a digitalised service, narrative expert interviews were conducted between January and March 2024 to "collect stories" (Czarniawska, 2004, p. 35). The interviewees were public officials responsible for the digitalised service and managers overseeing the broader transition to digital platforms and were chosen for their ability to provide insights from diverse perspectives on digital co-production, based on their professional roles in public administrations across various levels of government (regional and municipal) and sectors (social services and IT). To identify suitable participants, we began with a purposive selection of experts (Ritchie et al., 2013), starting with the Regional Officer responsible for the Family Card program. From there, a snowball sampling technique (Atkinson and Flint, 2001) was employed, asking the regional expert to recommend municipal-level individuals, specifically from municipalities with significant experience—both positive and negative—in the digitalisation of the Family Card. This chain-referral method (Biernacki and Waldorf, 1981) was chosen as it yields a study sample through referrals made among individuals who know others with relevant expertise. Ultimately, 10 experts in five municipalities were interviewed, including officers responsible for the Family Card and digitalisation efforts in five different municipalities, as well as the Regional Coordinator for Family Card. The selection of the five municipalities was guided by the need to achieve saturation in findings (Glaser and Strauss, 2017) while covering a significant range of municipal sizes within a relatively small regional population of approximately 1.2 million inhabitants. The chosen municipalities represent a broad spectrum of dimensions, ranging from around 1,600 to over 50,000 inhabitants. This diversity ensures that the findings capture the varied challenges and opportunities associated with digitalisation and co-production across different organisational contexts, thereby providing a comprehensive understanding of the phenomenon within the region. Table 2 provides details on the roles and organisations of the 10 interviewees.

The interviews adhered to a predefined interview protocol guided by the theoretical frameworks proposed by Larsson and Skjølvik (2023) and were based on an adapted version of the diagnostic questions used to explore participation based on testing the presence of the

**Table 2.** Interviewees

Organisation	Interviewee
Municipality 1 (ca 1.600 inhabitants)	Officer responsible for Family Card and for Digital Transformation
Municipality 2 (ca 4.000 inhabitants)	Officer responsible for Family Card Officer responsible for Digital Transformation
Municipality 3 (over 6.300 inhabitants)	Officer responsible for Family Card Officer responsible for Digital Transformation
Municipality 4 (over 15.000 inhabitants)	Officer responsible for Family Card Officer responsible for Digital Transformation
Municipality 5 (over 50.000 inhabitants)	Officer responsible for Family Card Manager responsible for Digital Transformation
FVG Region	Coordinator for Family Card

**Source(s):** Table created by authors

elements that characterise the interaction that takes place between providers and users if a service is co-produced (Lember *et al.*, 2019) (Table 3).

### Data analysis

Following Creswell and Plano Clark's (2011) recommendation, we thoroughly reviewed the interview transcripts multiple times to develop a comprehensive understanding of the data collected. During this process, we made notes in the margins and systematically analysed data at various levels – individual words, phrases, sentences, or entire paragraphs – to identify emerging patterns. This involved identifying overarching themes or dimensions, related to digital co-production, including changes in citizen engagement, administrative burdens, and the evolving role of public officials, which were then examined for connections to one another or to theoretical constructs outlined in the research framework. In particular, the analysis focused on mapping processes, identifying perceived barriers and challenges to co-production, and exploring the consequences of digitalisation from both a service delivery and administrative perspective. This approach allowed for a deeper understanding of how digitalisation influences co-production efforts and its impacts on public officials' roles and workflows.

### Findings

This section presents findings from interviews with the Family Card Regional Coordinator and with the municipal officials in five municipalities involved in the Family Card service. It

**Table 3.** Diagnostic questions

- How has Family Card changed with its digitalisation? (RQ1)
  - What have been the consequences from the perspective of public officials? (RQ2)
- In particular:
- Can public employees and citizens actively engage in the design and/or delivery of Family Card through the digital platform?
  - Is there an opportunity for direct interaction between service producers and users?
  - Do service providers foster any co-production process?
  - What resources or inputs do public employees and users bring to the service?
  - In how far are users involved in decision-making about the service? Do they share full responsibilities, are they active co-producers, are they merely consumers, or are they passive beneficiaries of the service?

**Source(s):** Table created by authors

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highlights the challenges and improvements in the digitalisation process, showcasing the experiences of various public entities in adapting to new systems and engaging with citizens.

### *FVG region*

The Family Card Regional Coordinator highlights that digitalisation has streamlined operations, resulting in a 9% rise in beneficiary households, increasing from 34,000 in 2019 to 37,000 in 2023. Citizens now have the convenience of applying online, tracking their application, and using a QR or barcode instead of a physical card. Municipalities benefit from faster processing times due to automated data entry, while both they and the FVG Region can use AI tools to analyse user data.

Nevertheless, early resistance to digitalisation meant that both paper and online services were available until 2021. Several challenges persist, including higher costs from uncorrected application errors, difficulties for municipal staff with limited digital skills who must interact with the platform or use registered mail to request corrections, and weak integration with the Information System of Social Benefits and Needs (SIUSS) at INPS, stemming from privacy concerns and siloed operations within public institutions. This lack of integration prevents pre-filled forms from being used, requiring manual cross-referencing of databases and increasing workloads. This demonstrates the need to account for the systemic nature of organisational changes when implementing digital services (Garlatti *et al.*, 2023).

Improvements introduced since 2021 include allowing photo uploads instead of PDFs, establishing a central helpline, and creating a step-by-step video guide for applicants. These changes, made through collaboration between regional officials, IT providers, and larger municipalities, did not include citizen input, limiting co-design opportunities. The Family Card Regional Coordinator notes that user co-production, apart from form submission, was not anticipated from the start, even before the service was digitalised. She regrets the absence of national-level workshops to exchange best practices across regions and points out that applicant data has yet to be fully used to enhance the service. Family Card data are not extensively analysed or used to improve, customise, or innovate the service, nor even to evaluate the linked benefits.

Municipalities largely supported this evaluation, offering additional details on administrative burdens and limited co-production efforts.

### *Municipality 1*

This municipality is considered small, even by FVG's standards. It has around 1,600 residents and 12 staff members, including 3 officers who manage various services and functions, though many of them work part-time as they are shared with neighbouring municipalities. The Officer responsible for the Family Card also oversees Digital Transformation, along with several other tasks such as managing demography, local taxes, and more. The municipality has only digitalised services that are part of national or regional platforms.

In 2023, they processed 22 Family Cards. However, digitalisation has not necessarily made procedures easier, as employees have not yet received any training or consultation. Although some training is planned for 2024 using Next Generation EU funds, it remains unclear which services will be covered. Luckily, Municipality 1 has a partnership with a larger neighbouring municipality, allowing them to jointly offer several social services, including the Family Card. When municipal staff encounter difficulties, they often escalate the situation to the larger municipality. This happens frequently, as some applicants still do not understand or even refuse to learn how to complete the online forms. "They refuse even to read what they have to do and prefer to call us and demand to be guided through the online application as they prefer a personal interaction to an uncaring platform to which they cannot ask simple questions. They call even for the simplest issues. For example, if they have not received confirmation emails that often end up in their spam folder." Furthermore, when applications are filled out incorrectly, municipal officers tend to bypass formal procedures and contact applicants

directly by phone to resolve issues, rather than requiring them to manage the correction through the online platform, as the system dictates.

### *Municipality 2*

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The second municipality is a small, yet vibrant, town. With approximately 4,000 residents and 17 staff members, including four officers responsible for various services, some with IT expertise, they began digitising their services six years ago, before the Family Card was digitalised by the FVG Region. They developed a portal on their website where citizens could access services like school transport, meal tickets, social services, and building permits. Now, they are connecting or transitioning these applications to national and regional platforms, although they argue that their custom-built interfaces were more user-friendly, colourful, and welcoming, featuring images of the local area, which enhanced the online experience and helped build citizen trust.

The Digital Transformation Officer, who also serves as the Town Clerk, regrets that digitalisation began on the wrong foot: initially, local administrations were tasked with digitising their services to align with national platforms like PagoPA, slowing down adoption. In 2022, with the Next Generation EU plan, the digital transformation process was centralised to accelerate things, leading to the development of national platforms and procedures. However, “the imposition of centralised platforms without taking into consideration local experiences has lowered employee morale: they feel it is an imposition from above and so do citizens too who have to deal with impersonal interfaces, automated help lines and centralised call centres from far away.”

The municipality manages 60 to 70 Family Cards annually. The service is now fully digitised. Initially, the Family Card officer was overwhelmed with inquiries about how to apply online, but now most citizens are familiar with the platform and appreciate having up-to-date information readily available regarding benefits and eligibility, if they know how to find or search for it. She still handles more complex applications manually, which require additional eligibility checks. Nonetheless, she believes digitalisation has made the process more efficient and less emotionally charged, as “most people apply online and do not bring their personal issues to the counter trying to squeeze some more benefits.” She hopes that one day people will not need to apply for the service, but the system will be able to select and automatically inform those who are eligible because “they are all situations which can be known by cross-referencing data over a few databases”. This would reduce the annual effort of applying and tracking changes to eligibility criteria or application procedures.

### *Municipality 3*

With over 6.300 inhabitants, Municipality 3 is considered mid-sized for the FVG Region. The municipality employs 28 staff members, including 5 officers overseeing various services. The two interviewees oversaw administrative and social services, as well as demographic services and digital transition. In smaller public entities, officers often cover multiple roles, which broadens their responsibilities but may limit their specialised expertise.

So far, most of the municipality’s digitalised services are those provided by national platforms, such as the National Register of Resident Population, the secure national payment system PagoPa, and the Family Card.

The Officer for Digital Transition noted that digitalisation has not progressed as quickly as expected due to several factors: many national platforms are still under development, stringent standards for selecting service providers have led to long processes, and the availability of large budgets through Next Generation EU funds (€150,000 allocated just for Municipality 3’s digitalisation) has been both a benefit and a challenge, as these funds must be properly managed and accounted for. He emphasised the significant psychological toll digitalisation has taken on staff, stating: “digitalisation has created a tsunami because it is not easy to manage; there are so many issues to deal with and staff experience them with considerable

discomfort.” He believes that more coordination from regional and national authorities is needed, noting that they were not consulted in the design of new digital systems. It is telling that the new platforms include helpdesks but no feedback forms. He also observed that municipalities with structured IT departments are advancing more smoothly, whereas those with only one person managing digitalisation are struggling—particularly when the workforce is older and views digitalisation as a burden rather than a priority.

Regarding the Family Card, Municipality 3 manages about 100 applications. While processing an application has generally become faster and easier following an initial learning phase, some manual checks are still required because systems from different public bodies are not fully integrated. The impact on citizens is unclear, as some still visit the counter to complete their online applications with the assistance of public officials.

#### *Municipality 4*

The fourth Municipality counts over 15,000 thousand inhabitants. It has 71 staff members with 16 officers in charge of various services, one member of staff dedicated to social contributions and means tested benefits such as Family Card and one junior member of staff responsible for digital transformation which is overseen by the Town Clerk. Since they are relatively large, they digitalised most of their services relatively early with respect to neighbouring municipalities even with own software which then had to dismiss or adapt to platform proposed by central regional or national authorities. The officer responsible for digital transformation refers that “often our internal software was more functional and intuitive than what the regional and national providers have come up with. We have tried to suggest improvements and sometimes they have been receptive, but in most cases, they have been rather deaf and sometimes you do not even know where to go or who to talk to.”

The Municipality deals with over 1800 Family Card. The Officer in charge was hired after digitalisation and colleagues told her (1) that “she has it much easier” now that she does not have to copy into the regional system all the forms filled in manually and (2) that even the portal has improved over time thanks to suggestions from previous colleagues to the regional provider. Yet, she maintains that around 10% of applications are not completed solely online, but beneficiaries need her support and “I often have to spend a lot of time querying other databases to get answers that are rather simple but cannot be disclosed so easily because of alleged privacy issues”. However, she believes that it is the application form that is too cumbersome and should be simplified in virtue of all the information regional offices already have about a family residing in the Region. “The information is there, we have, they have it; it is just that it needs to be authenticated by that or the other agency, but we all know about it. Like this it becomes difficult to give quick answers, and simple procedures take days if not weeks!”. She wishes the Region would simplify access and delivery rules for Family Card, since with a digitalised application form it is “practically impossible to cheat”.

#### *Municipality 5*

This is a large city by FVG standards. With a population exceeding 50,000, they manage around 3,400 Family Cards. The city employs over 400 people, with a dedicated officer for Family Cards and a team of four responsible for digital transformation. From the outset, they were involved by regional authorities in the digitalisation process for various services, including the Family Card. Numerous meetings were held to discuss the requirements and functionalities for both the back office and the front end. Ongoing issues are being addressed through such consultations, with minimal top-down imposition. Requests are typically approved when supported by multiple municipalities and not opposed by others. The Family Card officer believes that involving applicants is unnecessary, as officials with long-standing responsibility for the service know what is needed.

The advantages of digitalisation are evident to local officers: online archives are far easier to access than physical ones, which are cumbersome and take up space since records must be

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stored for at least ten years; queues have been eliminated, offering both operational and psychological relief; data no longer need to be manually recorded in separate files for eligibility checks and later uploaded to the regional system; and much of the investigation process can now be handled entirely online without any need for printing.

In the initial phase of 2019 and 2020, before full digitalisation, these benefits were not immediately felt because much time was spent training employees and addressing applicants' queries. One staff member was fully dedicated to assisting with the platform and online applications. Many individuals, especially those disadvantaged, lacked a digital identity needed to access the service, so an employee sometimes had to help them obtain one, even booking appointments at the post office to complete the digital identity process. Without this, applicants would not have been able to log onto the service, let alone fill out the application form.

The Family Card officer estimates that 20% of applicants still require assistance because "they feel much calmer in front of an operator; there is distrust and insecurity with the online process and they call to check that everything is ok; it is a common impression that bureaucracy has always worked badly and that personal relationships were the solution, so people do not trust online answers and want to be reassured." Additionally, the officer notes that some applications are complex and need verification, especially since the Family Card platform is not yet fully integrated with all the necessary databases.

### Discussion

The first consideration from the digitalisation of Family Card is that overall, the number of Family cards increased with digitalisation, which implies a success. However, in terms of the impact of digitalisation on public service co-production, the evidence from Family Card is at best mixed and offers insights both for theory and for practice. On the one hand, digitalisation has had little impact on the co-production efforts of Family Card as it was limited before digitalisation and it remained so with it. On the other hand, the research highlighted several challenges and some benefits for co-producing from the perspective of public officials.

Table 4 summarises the results from the case studies according to the framework based on the literature (Table 1) to systematise the benefits and challenges of digital co-production from the perspective of public employees. Findings confirm that digitalisation can generate some benefits and positive outcomes for co-production, but also important challenges as highlighted by several scholars (Garlatti *et al.*, 2023; Hepburn, 2018; Kuhlmann and Heuberger, 2023; Paskaleva and Cooper, 2018; Pauluzzo *et al.*, 2024; Peeters and Widlak, 2018; Rodriguez Müller *et al.*, 2021).

First, considering in turn the four elements and goals in Table 4, digitalisation improved data management, in general. The digital version of Family Card as a self-servicing tool (Larsson and Skjølsvik, 2023) has enhanced co-produced value by enabling citizens to supply relevant information, thereby partially simplifying public employees' data collection efforts. This improvement aligns with the emphasis on data quality in government operations, as highlighted by Scholta *et al.* (2019), where better-quality data enhances decision-making processes and capacity. Similarly, the digitalisation of Family Card also contributed to an increase in data volume, reflecting the potential of digital co-production tools to collect and analyse large datasets, as underlined by Breit and Salomon (2015) and Linders (2012). However, the Family Card system has faced significant data issues, primarily due to the lack of integration with other digital platforms. As highlighted by Clarke (2020) and Garlatti *et al.* (2023), interoperability and insufficient data-sharing frameworks remain critical challenges in digital co-production. This disconnection has hindered the seamless sharing of information, which is essential for streamlining processes and enhancing efficiency. As Scholta *et al.* (2019) note, registry-based systems are expected to ensure consistency and speed, but Family Card fails to leverage such benefits fully. For instance, applications cannot be pre-filled with existing data, forcing applicants to manually enter information that may already be available in other databases. This redundancy has not only burdened users but also increased the likelihood

**Table 4.** Summary of the results for co-production with the digitalisation of Family Card

Elements/goals	Benefits	Challenges
<ul style="list-style-type: none"> <li>Data</li> </ul>	<ul style="list-style-type: none"> <li>Data volume: Digitalisation has made easier for public employees to access to data and archives as they are now online.</li> <li>Data quality: Easier analysis of the wealth of information from users could be performed by officials.</li> </ul>	<ul style="list-style-type: none"> <li>Data issues: Lack of integration with other digital platforms does not allow information to be readily shared or applications to be pre-filled or applicants to be pre-identified.</li> <li>Value from data: No real data analysis has been carried out so far on the Family Card data.</li> </ul>
<ul style="list-style-type: none"> <li>Interaction</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration: Agreements for digital support from larger municipalities foster interaction and provide relief to smaller ones.</li> <li>New idea generation: Digitalisation brought regional authorities to seek a continuous consultation with larger and more digitally savvy municipalities to inform the digital transformation process and the new platform with quality improvements for public employees and users.</li> </ul>	<ul style="list-style-type: none"> <li>Challenge to power dynamics: Solutions are imposed from above and there is little, if no interaction with street level bureaucrats, let alone citizens.</li> <li>Resistance to interaction: A silo mentality typical of public sector organisations does not favour collaboration among agencies or coordination between regional and national authorities.</li> <li>Resistance to interaction: Some providers have been involved in decision-making about the service, but most are passive deliverers of the service.</li> </ul>
<ul style="list-style-type: none"> <li>Tailoring</li> </ul>	<ul style="list-style-type: none"> <li>Customisation: The back office of the Family Card platform has been designed together with some municipalities to better serve the needs of their employees.</li> </ul>	<ul style="list-style-type: none"> <li>Missing the mark: Helpdesks but no feedback forms are present in the Family Card platform.</li> <li>Standardisation: The imposition of centralised platforms without taking into consideration local experiences has lowered employee morale.</li> </ul>
<ul style="list-style-type: none"> <li>Simplification</li> </ul>	<ul style="list-style-type: none"> <li>Reduced costs: Digitalisation has made the process overall more efficient for public officials with no more queues to handle, no need to manually record data, and much of the investigation completed online.</li> <li>Reduced times: Digitalisation has resulted in a significant drop in processing times for most applicants.</li> </ul>	<ul style="list-style-type: none"> <li>Higher burdens: Mistakes by users imply checks and additional compliance efforts.</li> <li>Higher burdens: Complex applications need to be verified and often dealt with manually.</li> <li>Higher burden: Given the limited acceptance because of little perceived usefulness and no ease of use, municipal officers prefer to call people to sort out issues on the phone, rather than handle them through the online platform.</li> <li>Disconnected requirements: Officials and applicants' distrust for the online process increases burdens.</li> <li>Disconnected requirements: A lack of training has made dealing with digitalisation more complex and less accepted.</li> <li>Disconnected requirements: Strict standards have been enacted to select service providers resulting in lengthy processes.</li> </ul>

**Source(s):** Table created by authors

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of errors and inconsistencies, which public employees are called to solve. Moreover, the inability to pre-identify applicants based on existing records has slowed the overall processing time and reduced the system's responsiveness to user needs (Roy, 2021). Additionally, despite the vast potential of Family Card data, no substantive analysis has been conducted to date. This situation contrasts with the value creation opportunities discussed by Pauluzzo *et al.* (2024), where analysing increasing data volumes could significantly improve processes and services. By uncovering insights into usage patterns, demographic trends, and areas for policy improvement, policymakers could make more informed decisions, tailor services to better meet the needs of families, and optimise resource allocation (Breit and Salomon, 2015). Therefore, addressing these data integration and analysis issues are critical steps toward enhancing the efficacy and value potential of the Family Card system.

Second, in terms of interaction, the collaboration between regional authorities and larger municipalities has proved instrumental in advancing digital support and fostering interaction. As highlighted by Lember *et al.* (2019) and Linders (2012), digitalisation enhances collaboration, enabling larger municipalities (Municipalities 4 and 5) with advanced infrastructures and resources to extend their support to smaller ones (Municipality 1), which often lack the capacity to develop and maintain sophisticated digital systems independently. This cooperative approach not only alleviates the technological and administrative burden on smaller municipalities, but also fosters a cohesive and uniform digital landscape across the Region, aligning with the idea that digitalisation reshapes the interaction between public administrations and citizens by fostering accountability (Rodriguez Müller *et al.*, 2021). Furthermore, the push for digitalisation has inspired regional authorities to engage in continuous consultation with larger municipalities. By engaging larger municipalities and learning from their experiences, regional authorities can enhance their knowledge to improve digital strategies and service delivery. This can ultimately create value and provide better support to communities in a co-production effort where citizens are represented by their local governments who are key to improve service quality and mitigate burdens for all sides (Enang *et al.*, 2022; Peeters, 2023). This dynamic and collaborative efforts highlight the importance of multi-level cooperation in achieving comprehensive digital transformation (Gofen *et al.*, 2024). However, in contrast to what is reported by Lember *et al.* (2019), the Family Card initiative did not sufficiently leverage digital tools to engage citizens directly in the design or assessment of services. While digitalisation often enables real-time engagement and collaboration platforms, as Meijer (2011) suggests, the lack of user consultation in the Family Card's development highlights a missed opportunity to harness these co-production benefits. As highlighted by Rodriguez Müller *et al.* (2021) and Pauluzzo *et al.* (2024), co-production initiatives often introduce new roles and responsibilities for service providers, requiring significant resources and effort. This dynamic is evident in the Family Card experience, where public employees had to work outside the digital framework to solve issues, reflecting the challenges to power dynamics noted by the literature. Furthermore, this misalignment underscores resistance to interaction, which can arise when public employees lack familiarity with digital tools or face increased workloads, as observed by Kuhlmann and Heuberger (2023). The Family Card case also reveals an absence of the organisational change needed to enhance stakeholder engagement, as there was no direct user consultation in the design or the assessment of the digitalised version of Family Card as auspicated by the literature (Larsson and Skjølsvik, 2023; Lember *et al.*, 2019), and only some municipalities are actively involved by regional authorities in its continuous improvement. As far as service delivery, co-production frameworks were developed by public employees (Edelmann and Mergel, 2021), but inappropriately and outside the digital set-up foreseen by the online platform with municipal officials bending rules (Potipiroon, 2022) to solve issues with digital applications. Hence, the Family Card experience confirms that it is not always the case that digital platforms and tools allow stakeholders and in particular citizens to be involved more actively in the decision-making processes of public services, providing ideas or feedback as suggested by the literature (Ciasullo *et al.*, 2016).

Third, as far as tailoring is concerned, there is some evidence that digitalisation has improved work quality for public employees, but no evidence that it has led to better satisfaction of citizens' needs (Breit and Salomon, 2015). As highlighted by Lember *et al.* (2019), the rapid evolution of technology often reduces the need for direct citizen engagement, which aligns with the observation that the digital interaction with citizens in the Family Card system remains limited to inputting information into the online platform. This approach reflects more of an information-sharing model (Falco and Kleinhans, 2018; Linders, 2012) rather than fostering true co-production (Bovaird and Loeffler, 2012). In contrast to what is reported by Hepburn (2018), who suggests that digital tailoring can enhance accountability and encourage organisational changes, the Family Card system demonstrates that poorly designed systems may fail to meet such goals. Issues with deployment and the development stage of ICTs have created hurdles. For example, the need for standard and centralised applications should not entirely disregard the efforts made at the local level (Municipality 2 and 4) to avoid demoralisation and demotivation among public employees (Jacobsen and Jakobsen, 2018; Tummers *et al.*, 2015). Local actors should be engaged (Municipality 3 vs. Municipality 4 and 5) and properly trained (Municipality 1), to ensure positive outcomes. This aligns with the idea by Bovens and Zouridis (2002) that a shift to system-level bureaucrats requires strategic investments in training and engagement. Moreover, the need to “balance centralisation with distributed agency”, as emphasised by Carstensen *et al.* (2023; p. 36), is evident in the Family Card experience. While a centralised model may streamline processes, it risks alienating local actors and increasing technological fatigue and resistance to change (Davis and Granić, 2024; Kuhlmann and Heuberger, 2023). Thus, in contrast to a one-size-fits-all strategy, flexibility and adaptation are crucial to fostering positive outcomes. The Family Card experience also confirms that introducing a digital system while retaining the paper option creates a dual system that is easier for citizens to navigate but fosters expectations that a full transition may never occur. This duality mirrors the challenges of balancing standardisation with personalisation, as noted by Peeters and Widlak (2018). Switching to a digital-only system right away may simplify procedures for public officials, but risks alienating users unless accompanied by adequate support measures. In this respect, the transition from street-level to system-level bureaucrats requires careful management to ensure that digitalisation enhances rather than undermines service delivery, thus favouring citizens' acceptance (Bovens and Zouridis, 2002; Madsen, 2024). Yet, while social infrastructures, helplines, and similar support mechanisms can facilitate smoother digital transitions and mitigate the digital divide, they come with added costs and resource demands. As emphasised by Hepburn (2018), tailoring digital services requires changes in organisational culture and procedures, which must be accounted for in planning and implementing digital systems.

Fourth, in terms of simplification, with the digitalisation of Family Card, the informational and financial benefits of co-production (Edelman and Mergel, 2021) were emphasised with more accurate data and less resources spent on its collection and processing. This aligns with what is reported by Meijer (2011), who highlights that digitalisation can reduce costs and streamline processes, thereby enhancing productivity. However, in contrast to the seamless automation suggested by Scholta *et al.* (2019), the evidence from Family Card demonstrates that while some costs were reduced, making processes leaner and eliminating redundant efforts, the introduction of digitalisation has also created additional red tape and administrative burdens. For instance, public officials who are less familiar with digital procedures (Municipalities 1 and 3) face significant challenges, as well as those handling non-routine cases, which are often excluded from the “automated happy flow” (Peeters, 2023) and subjected to a more burdensome procedure (Municipalities 2, 3, 4, and 5). This is evident in the Family Card case, where pre-digital barriers have been retained, and new digital obstacles have been introduced. These include the inability to log on to the service without a digital identity, the failure of citizens to answer eligibility questions without assistance, and the need for manual checks in certain cases. Such challenges align with Osborne *et al.* (2016), who argue that poorly executed automation risks disconnecting services from citizens' needs,

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thereby undermining the value of digitalisation. On the one hand, this has also fuelled the feeling that digitalisation means simply shifting work from the front to the back office (Kuhlmann and Heuberger, 2023), leading to cognitive and operational fatigue for public employees, particularly those adapting to new systems, and to the detriment of any co-production efforts by public employees. On the other hand, the insufficient interoperability between local governments and other agencies, together with the “silo” mentality typical for public administrations (Clarke, 2020), added to the time and frustration of local employees. The case of Family Card thus confirms that the use of ICTs requires planning how public services should be digitalised and what the roles of different actors should be in this process. In line with Åkesson and Edvardsson (2008), the Family Card experience confirms that digital services often need to be redesigned to build trust and ensure technology acceptance among public employees (Davis and Granić, 2024). Without such considerations, digitalisation risks further hindering job satisfaction and motivation (Jacobsen and Jakobsen, 2018; Tummers *et al.*, 2015). The case of Family Card thus reinforces the claim that any change cannot be promoted in isolation, but requires to take into consideration the systemic nature of an organisation (Garlatti *et al.*, 2023). Planning for digitalisation must consider the roles of various actors, balancing standardisation with flexibility to address local needs and avoiding the unintended consequences of poorly integrated systems. This highlights once more the need for more thoughtful design and implementation of digital services to ensure that the benefits of digitalisation can be fully realised.

### *Practical implications*

Overall, the research has shown that pre-filled applications would help reduce administrative burdens and increase efficiency through as public employees would find it less burdensome and would be encouraged to switch immediately to online platforms. This would have the additional advantage of correcting and updating existing databases while citizens apply for digital services. Digitalisation could even support automatic enrolment based on information about individuals shared by public administrations. Yet not all information and databases are interoperable. By investing in data systems that can integrate data across programs, public administrations can both reduce the need for citizens to provide the same data multiple times and further reduce the need for manual cross-checks by public officials, while improving accuracy. This would allow shifting administrative burdens onto digital platforms, but it does not come for free. These technologies demand smart and trained public officials coupled with investments in information technology to make databases fully interoperable and overcome privacy issues and silo mentalities.

In addition, user mistakes during application submissions necessitate additional checks and compliance efforts, thereby driving up operational costs. These errors have often stemmed from the complexity of the applications, which have often required extensive verification and to be processed manually, further straining resources. The distrust of the online process among both officials and applicants has exacerbated these issues. This scepticism led to increased administrative burdens as more resources have had to be allocated to assure compliance and accuracy. A further simplification and standardisation of procedures could help reduce these costs by making it possible to also automate the filling in of more complex cases.

In the case of Family Card, the situation was compounded by a lack of adequate staff training, making the transition to digital systems more cumbersome and less efficient. Without proper training, both the implementation and management of digital processes can be problematic, reducing the overall efficacy of the system. On the other hand, findings show that training may be less of an issue if a dedicated office for digitalisation is present within a municipality (Municipalities 4 and 5), compared to cases where digitalisation is treated as a transversal issue across multiple offices (Municipalities 1 and 3) with no employees with such competences (Municipality 2). Hence, the “digital vibrancy” of a municipality seems to be related to its size, since larger Municipalities can afford an IT office (Municipality 5) or, at

least, an IT dedicated employee (Municipality 4), even though even smaller municipalities can have officials with good digital skills (Municipality 2). This suggests that promoting digital experiences and trainings across different areas of life may support the digitalisation of public services as well.

Lastly, strict standards for accounting for EU funding and selecting service providers have resulted in lengthy and protracted processes. It should be verified whether, maintaining quality and security, these stringent criteria can be relaxed as they have often delayed the onboarding of necessary digital services, hindering the pace of digital transformation.

## Conclusion

This paper has explored the role and impact of digitalisation on co-production from the perspective of public officials. The digital transformation of Family Card has brought forth little evidence that digitalisation favours co-production, on the contrary it might hinder public administration in its efforts to reduce costs, increase service quality and improve accountability, because the dysfunctional role played by digitalisation may negatively influence engagement, as it may have a negative impact on data accessibility, easiness of interaction, tailoring, and simplification.

As far as the second research question is concerned, while digitalisation can improve certain administrative processes and data accuracy, its impact on citizen engagement and tailoring public services to individual needs is limited from the perspective of public employees. Moreover, it can create new administrative challenges and does not automatically result in the organisational change required for co-production. From the perspective of public officials, local engagement, staff training, and further data interoperability are needed. This would help balance centralised and local efforts, overcome trust issues as well as silo mentalities and the passive involvement of service providers. Further co-production is not really envisaged in the delivery of public services so much that it is not often contemplated by public officials.

The analysis revealed the importance of identifying when and where providers experience red tape and burdens. They are often hidden and overlooked aspects of onerous experiences with public policy implementation and service delivery which need to be appreciated and dealt with, avoiding a narrow focus on efficiency for the sake of digital government innovations, which risks an “automation hubris” (Peeters, 2023), or overconfidence in automated processes, data sharing, and impersonal interactions at the expense of the human factor, which seem to remain fundamental in the delivery of digital public services, as long as digital divides persist. The research has also highlighted broader considerations for any innovations, emphasising the need to harmonise effectively with an organisation’s systemic nature, that is its structures and personnel, to be successful (Garlatti *et al.*, 2023), so much that an organisation sceptical of the benefits of digitalising public services is unlikely to readily embrace it for citizen engagement (Hepburn, 2018). It must be considered that often digitalised data and resources are controlled by central government entities, while the delivery of public services often depends on local authorities, whether regions or municipalities (Vermiglio and Valenza, 2017), and should take into consideration the specific needs of citizens, let alone be empathetic when they are welfare services as in the case of Family Card. Hence, it is important to tailor digitalisation because, while it often entails elements of centralisation and standardisation, its successful adoption by public officials would call for some elements of flexibility and adaptation (Roy, 2021).

This research has some limitations since it focused on multiple case studies of a specific public service, which allowed us to delve into its features, but results would benefit from comparisons with other public services and other geographies. This contribution investigated a specific welfare service, while the nature and characteristics of other co-produced digitalised public services may be different and require other considerations. Moreover, to further contribute to the debate and good practices of public service digitalisation, future research

could focus on service users' perceptions to investigate both the impact of digitalisation on their engagement and co-production efforts, as well as the attributes of digital public services that increase or restrain administrative burdens as perceived by citizens.

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