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Salvatore Russo and Stefania Simoni

NAVIGATING CO-PRODUCTION CHALLENGES IN HEALTHCARE PPPs: INSIGHTS FROM MULTIPLE CASE STUDIES

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NAVIGATING CO-PRODUCTION CHALLENGES IN HEALTHCARE PPPs: INSIGHTS FROM MULTIPLE CASE STUDIES

SALVATORE RUSSO
salvus @unive.it
Department of Management
University of Venice

STEFANIA SIMONI
stefania.simoni@unive.it
Department of Management
University of Venice

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Abstract:

This paper investigates the transformative potential of public-private partnerships (PPPs) in the healthcare sector, using the dual lenses of co-production and collaborative governance. Grounded in the New Public Service paradigm (Denhardt & Denhardt, 2000) and key theories of collaborative governance (Ansell & Gash, 2008; Emerson & Nabatchi, 2015), the study positions PPPs as instruments for fostering more participatory, inclusive, and sustainable models of public service delivery. Within this framework, co-production plays a central role envisioned as a process where public institutions, private entities, and citizens collectively design and deliver services (Loeffler & Loeffler, 2021; Scupola & Mergel, 2022). The study is guided by two core questions: How is co-production implemented in healthcare PPPs? And what are the main stages and challenges involved in the process? Using a qualitative multiple-case study methodology (Stake, 2013), the research analyzes two healthcare PPPs through semi-structured interviews and secondary data (Saldaña, 2021; Gioia et al., 2013). The findings point to diverse governance models and a relatively advanced level of co-production maturity despite the presence of notable obstacles. The results suggest that effective co-production within PPPs leads to more patient-centered care and enhances service quality. It also encourages broader stakeholder participation, moving away from traditional hierarchical roles toward shared decision-making and more responsive service design.

Keywords: PPPs, co-production, healthcare

Correspondence to:

Salvatore Russo Dept. of Management, Università Ca' Foscari Venezia
San Giobbe, Cannaregio 873
30121 Venice, Italy
Phone: [+39] 041-234 8760
E-mail: salvus@unive.it

1. Introduction

Public-private partnerships (PPPs) have emerged over the past few decades as a prominent governance model for delivering public services. Traditionally, governments supplied public goods in a top-down manner. However, by the late 20th century, there was a worldwide trend toward partnering with the private sector to enhance and extend public infrastructure and services (Batjargal & Zhang, 2022). The rapid global growth of PPPs since the 1990s reflects their use as a preferred tool for public procurement, combining public oversight with private-sector resources and expertise. A PPP is a hybrid arrangement, a long-term collaboration, in which public and private actors share risks, costs, and benefits in providing a public service or facility. This model gained popularity as governments sought innovative ways to finance projects, improve efficiency, and tap into private-sector innovation. Over time, PPPs have evolved from simple contractual arrangements into a broader governance perspective, wherein the public and private sectors jointly contribute to public value creation. This historical evolution of PPPs marks a shift from the hierarchical "government" paradigm to a more networked "governance" approach in public service delivery. Increasingly, scholars frame PPPs within the context of co-creation and co-production of public services, highlighting that these partnerships can move beyond traditional top-down provision. Co-production in public services generally refers to the active involvement of end-users or community actors with public authorities in designing, delivering, or evaluating services. It stands in contrast to the one-directional, provider-centric model of the past. As Elinor Ostrom and others observed, unlike the production of goods, the production of services "*is difficult without the active participation of the recipients*"(Ostrom, 1996; Sorrentino et al., 2018). Citizens or service users are not merely passive beneficiaries of government programs; rather, they become vital contributors to successful outcomes. In public administration theory, co-production implies a mix of production efforts by regular producers and consumer producers; in other words, outcomes result from the combined input of professional service providers (government, or in PPPs, also private partners) and the public. This collaborative paradigm transcends the traditional top-down governance model, embracing more participatory, bottom-up processes in which multiple stakeholders share power and responsibility. A direct implication is that by bringing together public and private actors as co-providers, PPPs can be

viewed as an institutionalized form of co-production. They marshal the resources and capabilities of both sectors to jointly produce services, rather than the government contracting out tasks in a one-way fashion (Rodrigues, 2023). In this sense, PPPs align with the broader shift toward collaborative and networked governance that seeks to harness the knowledge and co-operation of diverse actors to improve public service delivery. A rich body of theory on public service co-creation and collaborative governance underlies this shift. The New Public Service (NPS) paradigm (Denhardt & Denhardt, 2015) encapsulates a normative turn in public management, emphasizing that public servants should serve and respond to citizens rather than steer society (Robinson, 2015). Rooted in democratic theory, NPS calls for accountability to citizens and direct engagement with them, viewing the public not as customers or passive clients but as partners in determining and meeting public needs. This ethos naturally supports co-production, since treating citizens as integral participants in public services means inviting their input and involvement at every stage. Likewise, theories of collaborative governance and New Public Governance (NPG) highlight the importance of multi-actor networks in tackling public problems. Governance scholars note that over the last two decades, there has been a move "*away from traditional hierarchical forms of organization*" toward "*inter-organizational relationships, networks, collaborative partnerships, participatory governance and other forms of multi-actor relations*" in the public sector (Kekez et al., 2024; Sorrentino et al., 2018). In complex policy domains, no single agency has all the knowledge or resources to succeed alone; instead, including a plurality of actors such as public agencies, private firms, non-profits, and citizens is seen as a practical way to address shared challenges. Collaborative governance models (Ansell & Gash, 2008; Emerson et al., 2012) stress joint decision-making, trust-building, and resource sharing across sectoral boundaries, all of which are core features of co-production processes. Furthermore, contemporary public management has embraced a public service ecosystems perspective, drawing from service-dominant logic in marketing and public value theory. This view posits that public services are delivered within complex networks of interdependent actors (organizations, communities, and users) and that value is co-created through their interactions rather than produced by one authority alone. Recent studies on public service ecosystems develop integrative frameworks across multiple levels – institutional, organizational, and individual – to explain how diverse stakeholders co-create value in public service delivery (Osborne et al., 2021; Wang & Ran, 2023). In sum, paradigms like NPS, collaborative governance, and service ecosystem theory converge on a key idea: effective public services emerge from co-operative relationships among stakeholders, not top-down control. PPPs can be theorized within this milieu as vehicles that formalize co-creation between the public sector and private entities, embedding collaborative governance into service provision. The healthcare sector, in particular, has proven to be fertile ground for applying co-production and co-creation principles. Healthcare delivery inherently requires the active participation of patients,

families, and providers, an interaction that directly affects outcomes. Scholars in service management note that services are fundamentally different from products: services are always co-produced through the interaction of provider and user (Batalden et al., 2016). This is vividly apparent in health services, where a patient's engagement in their care (following medical advice, self-managing illness, providing feedback) is crucial to the effectiveness of the treatment. Failure to recognize this co-productive character of healthcare can limit the success of improvement efforts. Accordingly, there has been a growing emphasis on patient engagement, patient-centered care, and experience-based co-design in health systems. Many scholars now argue that healthcare should be co-produced with patients, viewing them as partners in designing and delivering care rather than passive recipients (Marsilio et al., 2021). Co-production is increasingly seen as a promising strategy to tackle contemporary health system challenges, from resource constraints to the rising burden of chronic disease, by leveraging the insights and efforts of patients and communities. Recent policy and research trends reflect this shift. For example, international health authorities and policymakers advocate more patient-centered, personalized models of care in which "*patients, their informal caregivers, and local communities share responsibilities with care. Providers, thus enabling them to feel part of a team and fostering the quality of services*" (Marsilio et al., 2021). By treating patients and community actors as co-producers of health outcomes, healthcare organizations can tap into new resources (such as patients' experiential knowledge and self-care efforts) and potentially improve service quality and sustainability. There is evidence that such co-production can spur service innovation as well. Engaging patients in the co-design of healthcare processes has generated solutions that improve clinical efficacy and organizational efficiency (Graffigna et al., 2017). For instance, a review by Hardyman et al. (2015) found that involving patients in co-creating their care pathways can lead to more tailored and effective services and enhanced patient satisfaction. Likewise, recent studies document that when patients contribute to decision-making and problem-solving, health providers can better reconcile rising demand for services with resource limitations. In short, healthcare exemplifies the value of co-production: the sector's complexity and personal impact demand collaboration between those who deliver services and those who receive them. This makes healthcare an arena where co-production, through patient engagement and stakeholder collaboration, is normative and often necessary for achieving value co-creation – whether that value is defined as better health outcomes, higher patient satisfaction, or more efficient care delivery. Within this context, PPPs have started to gain traction in healthcare as a model that can facilitate co-production and co-creation under the right conditions. Traditionally, health-sector PPPs were used to finance and build hospitals or infrastructure, focusing on economic and financial objectives such as mobilizing private capital, distributing risk, and improving efficiency (Rodrigues, 2023). Once these baseline financial viability and risk-sharing conditions are met, PPPs can be leveraged as platforms for

innovation and collaborative service delivery. The partnership structure in PPPs, which joins public authorities (e.g., health ministries or hospitals) with private firms (e.g., healthcare companies, investors, non-profits), inherently brings multiple perspectives and skill sets. When managed collaboratively, this arrangement can unlock value co-creation synergies that neither party could achieve alone. For example, a recent critical review of hospital PPPs concluded that close "*collaboration between public and private partners enhances value co-creation, boosts value-for-money, and lowers risk*" in service delivery (Rodrigues, 2023). The public partner contributes stewardship, policy alignment, and accountability mechanisms, while the private partner contributes innovation, specialized expertise, and agility, co-producing solutions to complex health needs. There are practical illustrations of this dynamic. One partnership in Vietnam, for instance, combined a government primary care initiative with a pharmaceutical company's resources in a co-creation model that strengthened community health services for chronic disease management. The initiative integrated public oversight with private-sector innovation and capacity building, improving service coverage and health outcomes. More broadly, PPPs in healthcare have shown a potential to enhance patient-centered service models. By involving the financing and construction of facilities and the operation of services, PPP arrangements can embed a culture of joint problem-solving and continuous improvement. Suppose key stakeholders such as government, private partners, clinicians, and patient representatives are all engaged through the PPP governance structure. In that case, the partnership can institutionalize co-production practices such as shared decision-making, transparency, and stakeholder feedback. In essence, once a health PPP's economic and contractual foundations are in place, the focus can shift to co-producing value: improving clinical services, innovating care processes, and co-creating health outcomes with patients. When designed with this ethos, PPPs become more than a financing mechanism; they transform into a collaborative platform that leverages the strengths of each sector. The public sector's mandate for equity and knowledge of community needs, combined with the private sector's managerial efficiency and technical innovation, can create a synergistic effect in service delivery. Studies have noted that such integration is critical for sustainable healthcare models and can lead to improved patient outcomes and greater system resilience (Abass et al., 2024). In sum, if oriented beyond narrow contractual metrics, PPPs hold great promise as a co-production model in healthcare, where public and private partners jointly design and deliver services to the end users. By marrying financial feasibility with collaborative governance, PPPs in health can facilitate the co-creation of value for patients and communities, ultimately advancing innovation and the public interest.

2.Theoretical framework

The concept of co-production is grounded in the idea that services, especially public services, depend on contributions, and it challenges the traditional view of public service delivery by proposing that services are the result of collaboration between providers and users (Sharp, 1980). It highlights the active participation of users in the design, implementation, and/or delivery of services. Additionally, it emphasizes creating long-term relationships and shared responsibilities between regular service providers and users, who are ultimately positioned as "*prosumers*" (Riessman & Banks, 2001), meaning active contributors or co-creators of services. Describing co-production as an underexplored path in public management, Alford (1998) argued that it offers advantages for citizens and public sector organizations. Citizens benefit by actively participating in the value-creation process, thereby enhancing the quality and relevance of the services they receive. At the same time, public entities are better positioned to fulfill their core mission: generating public value by improving service effectiveness and efficiency. In recent years, service co-production and value co-creation have become increasingly relevant concepts in healthcare provision. From a co-production perspective, healthcare provision is a dynamic interaction in which patients and healthcare professionals exchange information and collaboratively develop strategies to manage illness. This approach challenges the conventional provider-driven model, which assumes a one-sided dependency of patients on medical professionals. Instead, it acknowledges patients as active participants in their care, positioning them as co-creators of value in the healthcare process. From this perspective, service co-production and value co-creation are considered closely related and, in some cases, interchangeable concepts (Voorberg et al., 2015). They are closely linked to key themes frequently discussed by scholars and practitioners, including patient empowerment, patient involvement, patient-centered care, and self-management. Healthcare co-production aims to place patients at the core of service design and delivery, ensuring that care aligns more effectively with their health needs. As a result, co-production can be viewed as a strategic, organizational, and operational enhancement that reshapes healthcare systems by redefining interactions. Co-production can be composed in different forms, such as co-management and co-governance of health services, where co-management refers to the shared administration of public functions. In contrast, co-governance involves the active participation of the community in the development and planning of policies (Pestoff, 2006). In the healthcare sector, Tien and Goldschmidt-Clermont (2009, p. 264) conceptualized healthcare as a complex and adaptive service system composed of interdependent processes, products, and people. Service providers and users represent the most critical resources within this system. From this perspective, healthcare can be understood as a co-producing system where providers and patients actively engage in an integrated exchange of information, skills, and competencies to co-create value. This notion aligns with the idea that healthcare service delivery should be structured as a co-creating partnership between providers and users, ultimately enhancing value creation (Osborne & Strokosch, 2013). However, the concepts

of co-production and co-design in health and social care remain ambiguous, with no clear consensus on their precise definitions (Nabatchi et al., 2017). One of the main challenges identified in the existing literature is the fragmented understanding of the value generated by Public-Private Partnership (PPP) arrangements. While some critics argue that PPPs may not always represent a cost-effective solution (Hodge & Greve, 2007), there remains no clear consensus on what constitutes "value" in a PPP project, nor a comprehensive framework for assessing value outcomes (Hueskes et al., 2017). Within project management research, the importance of a value-driven approach is increasingly recognized, yet evaluating value remains a complex and unresolved issue. Notably, value definition, creation, and capture have received growing attention in business and project management studies (Martinsuo et al., 2019), indicating a need for refined conceptual models, particularly in PPPs. The traditional conceptualization of value in project management literature faces limitations when applied to PPP projects, necessitating a redefinition of value in this specific framework. PPPs involve a unique exchange process where multiple stakeholder groups interact within a service ecosystem, including public and private partners (first-order stakeholders), employees, end-users, and local communities (second-order stakeholders). However, the nature of the value generated through these interactions remains insufficiently explored. This study adopts the PPP projects as the unit of analysis, addressing the value that can be co-produced at multiple stakeholder levels (Fuentes & Smyth, 2016). In this sense, PPPs may serve as a holistic instrument to facilitate value co-production in healthcare, bridging the gap between public and private capabilities to improve service efficiency, quality, and accessibility.

3.The Italian context

The Italian legal framework governing Public-Private Partnerships (PPPs) aligns with the European Commission's "*Green Paper on Public–Private Partnerships and Community Law on Public Contracts and Concessions."* The Green Paper defines PPPs as collaborative arrangements between public authorities and private entities aimed at financing, constructing, renovating, managing, or maintaining infrastructure, or delivering services (European Commission, 2004) and it categorizes PPPs into purely contractual PPPs and institutionalized PPPs. Several external factors influence PPPs in Italy, including financial market conditions, community support, socio-economic factors, and macroeconomic stability. Regarding community support, PPP arrangements in Italy have faced criticism and politicization, which have hindered their growth. However, in recent years, the country has renewed its interest in PPPs as a tool for addressing social, digital, environmental, and economic challenges (Vecchi et al., 2022). The success of PPPs depends on the public sector's ability to leverage them strategically and the private sector's commitment to creating public value

(Vecchi et al., 2022). In Italy, PPPs have been particularly utilized in the health sector, serving as a strategic solution to finance and manage hospital infrastructure and health services, while alleviating the economic burden on the public sector (Torchia et al., 2015). Faced with emerging challenges, the NHS must address a series of priorities: rethinking the care network, investing in both tangible and intangible infrastructures in a "one health" perspective, and adapting to hybrid models of in-person and remote care, made necessary by the increase in chronic diseases; making the best and fastest use of the resources currently available; improving the sustainability of the assets, aligning with the climate objectives of the European Union, promoting the climate and energy resilience of buildings, as well as optimizing the use of resources, also through the involvement of private capital (Ricciardi & Tarricone, 2021; Di Costanzo, 2020). Given the importance of these issues, it becomes essential to explore collaborative governance models, in which co-production between public and private actors can represent a valid alternative to ensure the effectiveness, accessibility, and quality of health services (McMullin & Needham, 2018). In this context, the adoption of Public-Private Partnerships (PPPs) can emerge as a strategic solution to address infrastructural deficiencies and improve the management efficiency of the NHS. However, the Italian experience shows that PPPs in the health sector have encountered significant obstacles related to contractual complexity, governance risks, and the need to balance public and private interests (Vecchi et al., 2020). A co-production model applied to health PPPs could strengthen the public sector's capacity to actively involve different stakeholders, promoting a more inclusive and adaptive decision-making process. Through sharing resources, skills, and responsibilities, PPPs could transform from financing tools to collaborative governance models capable of improving innovation.

4. Research design

We adopted a multiple case study approach (Steke, 2013), selecting two examples of public-private partnerships (PPPs). In order to understand how a national government successfully created public value using co-production in its transformation efforts, we selected Italy. According to the most recent indices, PPPs in the Italian healthcare system have shown distinct trends and structural variations (De Matteis et al., 2024). The chosen facilities were selected for two main reasons: both represent well-established examples of collaboration between public health authorities and private entities; moreover, in both cases, innovative infrastructures were built through project financing to manage the hospitals' non-core services.

Our guiding research questions were two: Research question 1: How is co-production implemented in healthcare PPPs? Research question 2: And what are the main stages and challenges involved in

the process? We guided the data collection and analysis primarily through semi-structured interviews to answer this. The interviews aimed to identify the strengths and weaknesses of the projects and to understand possible future developments. In particular, the key figures of project management were interviewed: the RUP (Single Procedure Manager) for Hospital X and the Director of the Coordination Department for Hospital Y. For the private sector, both Chief Operating Officers were interviewed as coordinators of project financing. Once these figures were identified, they were contacted via email, explaining the purpose of the research and the main topics that would be covered during the interview. The interviews, lasting approximately two hours, were conducted in Italian between January and July 2021, both in person and online. Since the interviewees were the primary decision-makers and implementers of the project, they had a deep knowledge of all aspects of the contract. This made it possible to collect detailed and specific information on the projects. The topics of the interview questions focused on the sustainability of public-private partnerships (PPPs) in the health sector, including questions on the main reasons for choosing a PPP, the benefits of starting such partnerships, the difficulties encountered, the interactions between the actors involved, and prospects. The research team also visited the project sites to conduct fieldwork and personally examine the documentation of the various structures, thus obtaining direct information. After obtaining the interviewees' consent, the interviews were recorded and transcribed. A qualitative approach was adopted for the analysis of the interviews. The data were analyzed using a coding system, examining the transcripts line by line (Saldaña, 2021; Gioia et al., 2013). During coding, the information collected was organized into emerging themes, highlighting the opinions of the interviewees (Nowell et al., 2017; Giusti et al., 2022). The analysis was complemented by secondary material, including tender notices, contracts, and economic-financial plans.

5. Case studies

The Hospital X project in Veneto is a significant example of a public-private partnership (PPP), where the involvement of a private partner was crucial to the implementation and management of a wide range of services inside and outside the hospital. The concession contract has a total duration of 27 years and 6 months, an extended term that reflects the long-term nature of PPP projects. This duration allows for sustainable hospital infrastructure management and related services while giving the private partner the time needed to recover the investment and generate an economic return**.** The annual fee for managing hospital services is 34 million euros, plus vat. This amount represents the annual cost the public partner pays the private partner for managing the services and ensuring the hospital's ongoing operation. The total investment for the construction of the hospital was € 126.473.684,60 (VAT included). This sum was divided between € 8.719.000 paid by the health

authority and € 71.460.000 covered by regional funds. No revisions to the fee have been made to date, which could indicate stability in the initial contractual conditions or effective cost management by the concessionaire. The concession for Hospital X includes a wide range of essential services to ensure the efficient operation of the facility. The primary services included are cleaning and linen rental, which is essential for maintaining a clean and safe healthcare environment for patients and staff. In addition, the contract includes the supply of thermal and electrical energy and water, all of which are crucial for the proper functioning of hospital facilities. Catering for patients is another significant aspect of the concession, including the management of catering for external locations. These catering services ensure that patients receive adequate and balanced meals, contributing to their well-being during their hospital stay. Another important point is the management of laboratories and clinical analyses, a service that supports the hospital's diagnostic and therapeutic activity. The concession also includes support for the pharmacy warehouse and the integrated and subsistence warehouses, elements necessary for the correct management of supplies and equipment. A dedicated call center is provided to ensure continuous assistance and is responsible for managing reservations and responding to patient needs. Maintaining green areas is another essential service that helps create a welcoming and healthy environment for patients and visitors. The booking center is managed within the concession, allowing for centralized reservation management and improving the efficiency of the service offered. In addition, the concession includes concierge, porterage, and minor cleaning services, which support the hospital's daily operations. Only collection is envisaged for waste management, while civil and plant maintenance is crucial to ensure that all facilities are always in perfect working order. Finally, special attention is paid to the maintenance of dialysis water treatment, an indispensable service for patients who require this type of treatment. Overall, the concession is designed to ensure that Hospital X operates efficiently and responds adequately to the needs of patients and staff, ensuring a high-quality healthcare environment. The hospital took 4 years to build, a relatively standard period for the construction of hospital facilities of this scale. The project also includes measures to ensure long-term sustainability, such as monitoring, essential to contain operating costs and maintain a low environmental impact. The main critical aspect related to the project concerned the poor definition of the market test in the contract, which could have generated ambiguity or difficulties in the practical implementation of the partnership. The market test is a useful tool to verify the competitiveness of the costs and services offered by the private sector, and a poor definition could lead to inefficiencies or excessive expenses in the future. On the other hand, the public-private partnership (PPP) project for Hospital Y in Tuscany, consisting of four facilities, is structured for 24 years. Of these, the first 4 years are dedicated to the design, execution, and testing of the works, while the remaining 20 years will be reserved for managing the facilities themselves. The private

partner involved is a consortium composed of three companies. From an economic point of view, the project provides an annual fee of 52 million euros, excluding VAT. The total investment is estimated at 421.892.829 euros, which includes VAT and is divided into various items. As for the works, 339.432.521 euros have been allocated, including the costs for constructing the facilities in the various hospitals. In addition, there are 11.949.970 euros for compensation related to the expropriation of land, 11.620.000 euros for technical expenses, 9.833.028 euros for financial charges, 10.683.688 euros for costs related to the project finance operation, 36.373.621 euros for VAT on the investment and finally 2.000.000 euros for testing costs. The distribution of costs for the works in the individual hospitals is significant: for Hospital Y1, 68.613.415 euros are expected; for Hospital Y2, 75.837.605 euros; for Hospital Y3, 72.955.693 euros; and for Hospital Y4, 84,835,192 euros. These amounts are added 31 million euros for revaluation and 6.190.616 euros for safety costs, bringing the total work amount to 339.432.521 euros. The project is not limited to the construction of the structures but also includes the definitive and executive design and the fixed furnishings, as established in the specifications. The non-health services, which will be managed for the entire concession duration, include essential activities such as maintenance of the buildings and systems, cleaning and management of linen, and catering for patients, staff, and visitors. Sterilization, waste disposal, and green maintenance services will also be guaranteed. In addition, services for the "intra-moenia" freelance profession are planned and paid for by third parties, which will be aimed at users according to the established guidelines. Finally, the construction times of the structures were 4 years for each. However, also this project faced some challenges, including disruptions and additional costs that complicated the path compared to the initial forecasts.

6. Results

This study systematically analyzed the phases and main aspects involved in the co-production of healthcare services within Public-Private Partnerships (PPPs). The findings are structured into two key areas: the contextualization of the phases of co-production and the content analysis of the main themes emerging from the interviews.

6.1 Content Analysis

The transcripts are analyzed using a thematic approach, which supports the identification of recurring patterns and meaningful themes. This approach ensures a nuanced and context-sensitive understanding of the organizational and operational dynamics while maintaining a strong analytical focus on cost measurement and control processes. The thematic analysis included developing initial codes, searching for themes and names, and defining and naming themes (Saldaña, 2021; Nowell et

al., 2017). This process continues until over-arching coding (Gioia et al., 2013). In this section, we present some of our preliminary findings, corresponding to the first level of coding (Table 1).

Table 1. Phases of co-production

Theme	Sub Themes	Codes	Examples of data*
Collaboration between public and private actors	Sharing of resources and expertise	Resources, Knowledge, Expertise	The partnership allowed for the integration of advanced private-sector technologies with public healthcare expertise. (PuA) We provided management know-how and innovative tools. (PrA)
	Common objectives	Partnership, Alignment, Shared objectives, Planning	We worked from the beginning to align objectives between the parties, but it was not always easy to find common language and translate public sector needs into effective operational methods for the private sector. (PrA) It was necessary to align public and private priorities to ensure a sustainable management model. (PrA)
Joint implementation of services	System integration	Coordination, Synergy, Collaboration	A shared portal was developed where information and intervention steps could be entered. (PuA) Periodically there was an exchange of information between public and private managers. (PrA)
	Training of operators	Training, Competence development	We ensured that the staff received the necessary training to interact with the new system effectively. (PuA)
Monitoring	Evidence-based monitoring	Realtime data	We implemented a monitoring system based on concrete data. (PuA)
Evaluating results	Evaluation	Performance, Feedback	Key performance indicators and stakeholder feedback were used to assess the success. (PuA) We provided periodic progress reports. (PrA)

Evolution/adaptation	Optimization of services	Innovation, Adaptation, Improvement	The hospital was designed with modular solutions to adapt to future expansion and technological updates. (PrA)
	Corrections	Responsibility, New needs	One of the main issues was the misalignment of objectives and timelines, which caused delays and misunderstandings. (PrA) Over time, new needs emerged, such as adjusting services to user requests, which were not included in the initial contract and required adaptation and changes. (PuA) Disputes have slowed down operations. (Pua-PrA)
	Testing innovative solutions	Innovation, Creativity, Solutions	Innovative solutions were tested to improve service delivery and efficiency as a common co-ordination office to direct the project managers of the different hospitals involved. (PuA) The implementation of a more flexible management model would have allowed for service improvements based on continuous performance monitoring. (PrA)

*PuA: public actor
*PrA: private actor

The main areas of focus include collaboration between public and private actors, joint needs identification, monitoring and evaluation mechanisms, and continuous service optimization. In the first phase, one of the most prominent themes was the importance of resource and expertise sharing. The analysis highlights the integration of private-sector technological innovation with public-sector healthcare expertise. Public actors emphasized the role of regulatory compliance and long-term service planning, while private stakeholders focused on efficiency and operational innovation.

The co-definition of objectives was also critical. The private sector sought financial sustainability and cost-effectiveness, while the public prioritized equitable access and long-term service quality. In the second phase is highlight that effective co-production requires well-coordinated system integration and structured programs. Interviews revealed that integration efforts enhanced competence development and facilitated the smoother implementation of co-produced services.

In the third phase, both sectors underscored the importance of real-time data collection for performance assessment. Public entities stressed compliance with key performance indicators (KPIs), while private partners highlighted data-driven decision-making for operational efficiency.

Performance indicators and systematic feedback collection were instrumental in assessing the success of co-production initiatives.

In the last phase, a significant finding was the iterative nature of co-production, which allows for continuous service optimization. All the stakeholders stressed the role of evidence-based monitoring in adapting services to emerging needs. Participants noted that regular assessments and responsiveness to stakeholder feedback led to progressive refinements in service delivery, ensuring alignment with evolving needs.

Integrating public and private sector operations revealed critical barriers, particularly in process alignment and knowledge transfer. Differences in organizational priorities resulted in inefficiencies in decision-making and operational execution. Additionally, communication gaps between stakeholders hindered the seamless execution of shared tasks, leading to delays in project milestones and difficulties in defining clear accountability structures.

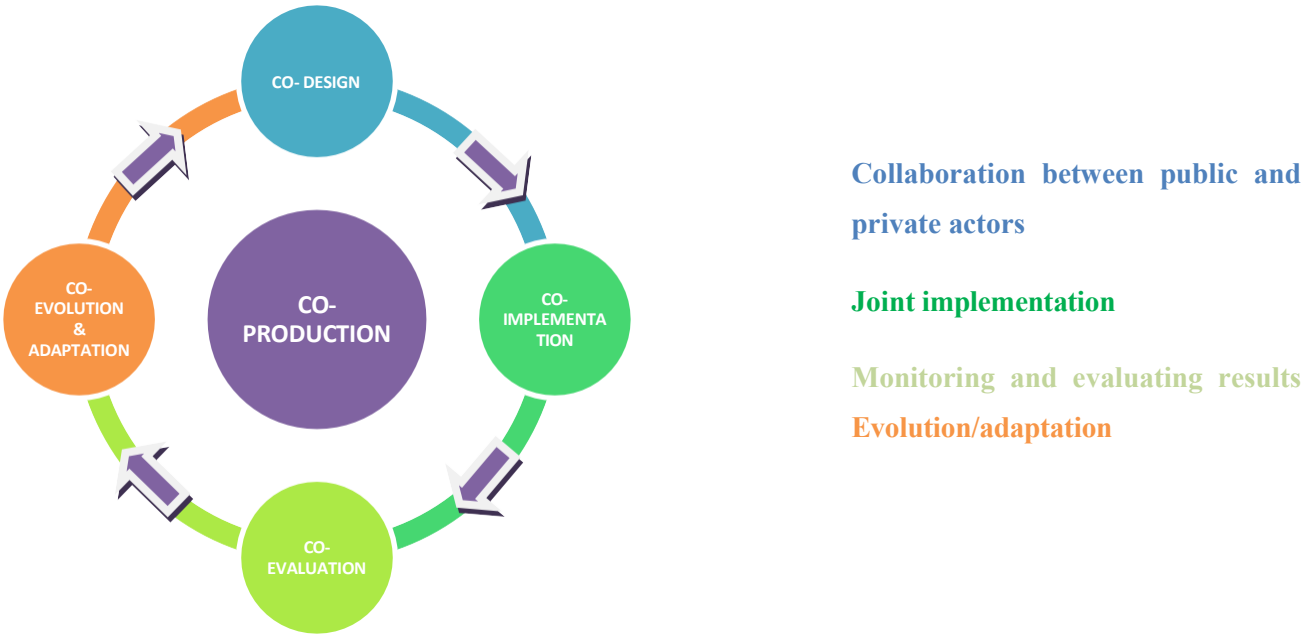
The dynamic nature of healthcare services necessitates continuous adaptation, yet rigid contractual frameworks often limit the capacity for iterative improvements. Emerging patient needs and evolving regulatory requirements demand ongoing modifications, which can create tensions between public oversight bodies and private service providers. Moreover, the absence of structured mechanisms for integrating innovation into service delivery constrains the potential for long-term optimization of hospital operations.

As evident from the interviews, co-implementation**,** and co-evolution represent the most critical moments in PPP hospital projects. While collaboration facilitates knowledge exchange and technological advancement, persistent structural and procedural misalignments necessitate more adaptive governance models. Persistent challenges—including contractual disputes, communication gaps, and evolving regulatory needs—demand continuous adaptation.

6.2 Phases of Co-Production in Healthcare PPPs

Theoretical models of co-production suggest that the process unfolds in several stages. Hawkins et al. (2017) describe co-production as a fundamental phase in public health interventions. This co-production process involves distinct phases, including planning, designing, delivering, and evaluating public services (Nabatchi et al., 2017; Rodriguez Müller et al., 2021). In particular, Nabatchi et al. (2017) outline a four-phase framework encompassing co-commissioning, co-design, co-delivery, and co-assessment of services. Based on the data analyzed in the previous section and the existing frameworks, the research identified four key phases of co-production succeeding each other during the PPP. The results are summarized in Figure 1.

Figure 1. Phases of co-production



Co-Design

Co-design creates an equal and reciprocal relationship between all stakeholders, enabling them to design and deliver services in partnership (Agency of Clinical Innovation, 2019). Aligning common goals involves agreeing on the problems to be addressed or the specific ways the service can be delivered (Frederiksen & Grubb, 2023; Lino et al., 2019; Poocharoen & Ting, 2015). This initial phase focuses on the joint definition of strategic and operational objectives, developing participatory service models, and identifying priority healthcare needs. The main actors include public health authorities, private sector operators, regulatory bodies, and patient associations.

Co-Implementation

Substantial levels of trust positively affect the quality of interactions by fostering open relationships, which subsequently enhance service quality. At this stage, both actors understand the interaction, start getting to know the new partner, and find their role. The strategic objectives and the creation of participatory service models defined in the previous phase begin to be implemented.

Co-Evaluation

Systematic feedback collection mechanisms are implemented to assess service quality and effectiveness. Feedback and performance assessments by PPP managers and regulatory authorities also evaluate the co-production model's performance.

Co-Evolution and Adaptation

Rosen and Painter (2019) demonstrate that the process of power-sharing in co-production is gradual and demands long-term institutional adjustments. In this phase, continuous improvements are

implemented to refine service models. This phase also includes revising and adapting existing frameworks and experimenting with innovative solutions to enhance effectiveness and sustainability.

6.3 Strengthening the Co-Production Model

The findings indicate that co-implementation is one of the most challenging phases in the co-production of health services within public-private partnerships. The strategies outlined during the co-design phase must be translated into concrete actions during this critical stage. However, this process faces several difficulties. A primary obstacle is the misalignment between public and private sectors, which stems from differences in decision-making timelines, operational priorities, and accountability mechanisms. This disconnect often results in inefficiencies and delays in project execution.

A key issue is the coordination between the two parties, particularly when integrating shared systems and processes. Implementing standardized technological tools and unified operating models can be challenging, especially if the organizational structures and workflows of the public and private sectors are not aligned. Additionally, having clearly defined roles and responsibilities is crucial. If the competencies of each party are not established, it can lead to overlaps or gaps in the operational management of the service.

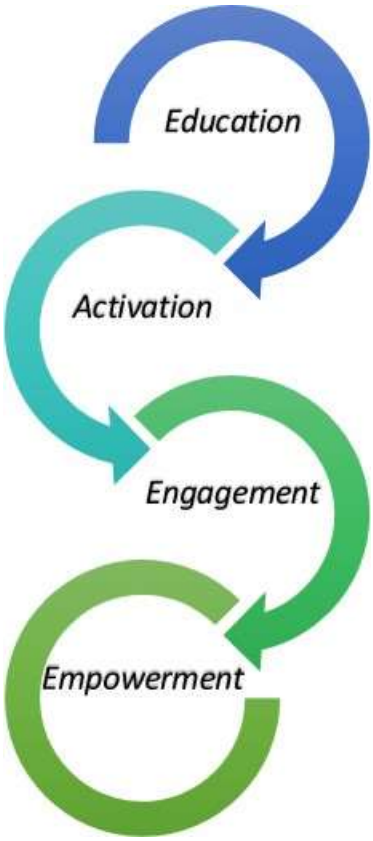
On the other hand, co-evolution and adaptation are crucial processes in continuously improving healthcare services. These processes require flexibility and innovation; however, contractual rigidities often limit the ability to implement necessary changes. Adapting to new patient needs and regulatory updates can be complex, mainly when contract review mechanisms are improperly structured. Additionally, resistance to change from specific stakeholders and the challenges of integrating innovations within a regulated environment hinder the full realization of co-production potential.

These challenges emphasize the necessity for more adaptive governance models and effective collaboration strategies to enable public-private integration, minimize operational inefficiencies, and guarantee a strong response to emerging health system needs.

How do we respond to emerging needs while improving the existing co-productive processes? Based on the problems that emerged from the interviews, there may be some facilitating tools, such as shared portals for data, digital tools for monitoring, a shared control unit, and the organization of periodic focus groups.

Based on the analyzed data, we present a cycle of four steps: Education, Activation, Engagement, and Empowerment, that can be applied to improving co-production processes in PPPs.

Figure 2. Implementation phases



In the context of health PPPs, the Education phase is critical to ensure that both public and private actors understand each other's objectives, constraints, and modes of operation. This step includes joint training, sharing best practices, and building a common knowledge base to facilitate collaboration.

This is followed by the Activation phase, where partners begin to implement the strategies they have learned. Here, it is crucial to create effective communication channels and shared tools to support operational implementation. Activating digital platforms for monitoring services and co-designing innovative solutions are examples of key actions in this phase.

The Engagement phase represents the active involvement of all stakeholders. Continuous and structured interaction between the public and private sectors fosters greater operational integration, improving responsiveness to emerging problems. Joint engagement in setting performance targets and monitoring results optimizes co-production processes.

Finally, the Empowerment phase refers to the ability of partners to adapt and innovate independently over the long term. An effective co-production system should not be static but should foster continuous evolution based on performance data, stakeholder feedback, and iterative improvements. This shift is particularly relevant in PPPs, where contractual rigidity can be an obstacle and stakeholder empowerment can help overcome operational barriers.

The picture suggests a dynamic model that could improve co-production processes in health PPPs by promoting a progressive and adaptive approach to strengthen public-private collaboration.

7. Conclusion

This study explored the implementation of co-production in Public-Private Partnerships (PPPs) within the Italian healthcare sector, focusing on two significant cases: Hospital X in Veneto and Hospital Y in Tuscany. The findings provide a comprehensive understanding of how co-production between public and private actors unfolds across multiple phases, highlighting the strengths and challenges inherent in these partnerships.

The analysis of the two projects reveals a relatively advanced level of co-production maturity within healthcare PPPs. Co-production is implemented through a collaborative process that involves sharing resources, expertise, and responsibilities across four main phases: co-design, co-implementation, co-evaluation, and co-adaptation. The implementation process begins with a co-design phase, during which stakeholders align their goals and develop a shared vision for the project. This is followed by co-implementation, where the agreed strategies are translated into operational activities, including integrating systems and services. Throughout the project's life cycle, co-evaluation and co-adaptation ensure that services evolve in response to changing healthcare needs, performance feedback, and emerging innovation opportunities.

These phases represent the empirically identified cycle through which co-production takes shape and evolves in healthcare PPPs, reflecting the dynamic interaction between public and private actors in planning, delivering, and refining services.

However, the study also highlights several barriers to the broader and more effective adoption of co-production practices, including rigid contractual frameworks and limited integration of information systems. Drawing on the gaps identified through stakeholder interviews, the research proposes an actionable pathway to strengthen and systematize co-production in healthcare governance. This pathway is articulated in four stages: Education, Activation, Engagement, and Empowerment. It is a practical guide for fostering collaborative capacity among public and private stakeholders. It is thought to complement the identified co-production phases by providing a structured process that builds awareness, encourages participation, and supports continuous learning and adaptation. Together, the two frameworks, the observed co-production cycle and the proposed four-stage pathway, offer both an analytical lens and a practical roadmap for improving co-production practices in healthcare PPPs.

Future research should extend the analysis to a broader range of cases and healthcare systems, with the aim of testing and refining both the co-production phases identified and the proposed four-stage pathway, in order to strengthen their applicability and practical relevance in diverse PPP settings.

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