4. Conditions for successful public-private collaboration for public service innovation

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INTRODUCTION

Digital transformation and public service innovation are being propelled by partnerships that unite public sector actors (e.g., governments, agencies, public hospitals, etc.) and private sector actors (e.g., third sector organizations, firms, grassroots organizations, etc.). The basic premise to use these types of configurations is that today's societal problems have become too large, complicated, and interconnected to expect solutions from individual organizations (Sørensen and Torfing, 2020). Public sector organizations are exploring different types of collaborative arrangements such as public-private partnerships (PPPs) (Brogaard, 2017; Callens et al., 2021), triple-helix partnerships, which include universities (Leydesdorff and Meyer, 2003), and public-private innovation partnerships (PPIs) (Brogaard, 2021; Di Meglio, 2013) to pursue public service innovation. The search for public service innovation is, however, often entangled with digital transformation initiatives, as disruptive technological innovations are a crucial part of digital transformation (Nadkarni and Prügl, 2021). In complex policy sectors, digital transformation through technological innovation can often only be achieved through collaborative partnerships, as no individual actor possesses all the required knowledge, resources, and capabilities to innovate. Furthermore, these partnerships are often *public-private* collaborations, as government organizations have important political incentives, regulatory powers, and public resources that can be directed towards innovation, while private sector organizations possess the specialized knowledge and capabilities to develop these innovations. Hence, partnership synergies emerge between public and private actors (Lasker et al., 2001), which can lead to disruptive and transformative public service innovations.

The purpose of this chapter is to develop a theoretical framework that unpacks structure and agency-related conditions of public-private collabo-

rations that are directed towards the creation and implementation of digital service innovations. The theoretical framework not only allows us to conceptually and analytically study the design and agency of such partnerships but also to gauge the effect of these elements on the success and innovativeness of these partnerships. The framework connects four different types of conditions, which influence the process of collaborative innovation. The first set of conditions focuses on the features of the collaboration at the level of the partnership. We explain how structure-related conditions, such as the partnership composition and governance structure, and agency-related conditions, such as the management of the partnership, can affect the innovation process. The second set of conditions considers features at the level of the individuals and organizations involved in the partnership. Conditions such as interpersonal trust, knowledge and skills, and external support are considered. The third set of conditions focuses on how technological structures such as the use of information and communication technology (ICT) affect the collaborative innovation process. ICTs are a central characteristic of digital transformation, but ICT use can also be an enabler for enhanced collaborative innovation, because of their impact on collaborative dynamics between partners, and on the service design. Last but not least, the fourth set of conditions is directed towards the involvement of service users in the innovation process. Users are crucial agents in innovation processes, as they can legitimate, support, and even drive the innovation process. We consider various features and conditions of user involvement.

DIGITAL TRANSFORMATION THROUGH PUBLIC SERVICE INNOVATION

Digital transformation is related to the changes organizations, sectors, and societies undergo as a result of the introduction and implementation of digital technologies (Vial, 2019). An important way to obtain digital transformation is through the adoption of public service innovation. Indeed, through the use of highly advanced digital service innovations, governments are able to transform their processes, routines, work tools, and service delivery (Mergel et al., 2019). However, digital transformation goes further than its impact on government organizations, as digital innovations have often a broad impact on industries, governance structures, and policy ecosystems (Eom and Lee, 2022). Public service innovations, such as smart city technologies, eHealth technologies, and COVID-19 response technologies affect many societal stakeholders (i.e., private companies, non-profits, public sector organizations, citizens and users, etc.), and have dramatically changed important aspects of our societies. For instance, digital transformation in healthcare affects the quality of healthcare (Agarwal et al., 2010), but also the health standard of communities and socie-

ties as new treatments become possible or crucial health information becomes accessible to healthcare providers. Hence, digital service innovation propels the digital transformation of significant parts of our society.

Although these digital public service innovations have a huge impact on our society, even now, innovation in the public sector is being exposed to much scepticism (Hartley, 2005), and, until recently, the word 'public sector innovation' was regarded as an oxymoron (Bommert, 2010; Torfing et al., 2020). While the concept of innovation as a research subject emerged from 'Schumpeterian' economics in the private sector, in recent decades, innovation has been intensively researched in the public sector as well. Indeed, evidence from the public sector shows how governments are often responsible for important technological breakthroughs, with classic examples such as the invention of the World Wide Web and biotechnological innovations (Windrum, 2008), but also that governments are at least equally proficient at organizational innovation as many private sector organizations (Djellal et al., 2013; Earl, 2004; Windrum, 2008). Public service innovation is regarded as a means through which complex societal issues can be solved, the rising demands of citizens can be achieved, and government resources can be spent more efficiently (de Vries et al., 2018).

Digital service innovations are digital services that are 'perceived as new by an individual or other unit of adoption' (Rogers, 2003, p. 12). The process by which these services arise is crucial to understand how organizational innovation can be stimulated. The innovation process is defined by Damanpour and Schneider (2008, p. 496) as 'the development (generation) and/or use (adoption) of new ideas or behaviours'. Two important components of the innovation process can be distinguished from this definition. First, during the idea generation phase of the innovation process, ideas are proposed, circulated, discussed, integrated, transformed, and selected by the innovators. Second, during the implementation phase of the innovation process, the selected ideas are translated into implementable digital solutions, which can be practically adopted by users. Idea testing can work as a gateway between idea generation and idea implementation, as selected ideas that are tested might either be eligible for idea implementation or, if they are not, they can be circled back to the idea generation phase of the innovation process (Meijer, 2014). This circular motion of the innovation process is illustrated in Figure 4.1. Note that the proposed characteristics of the innovation process are widely shared amongst innovation scholars in the public sector. Innovation scholars such as Walker (2007), Sørensen and Torfing (2011), de Vries et al. (2015), and Cinar et al. (2019) recognize similar phases of the innovation process. However, scholars also emphasize that innovation processes are intrinsically chaotic, and the phases might therefore overlap with each other (Meijer, 2014).

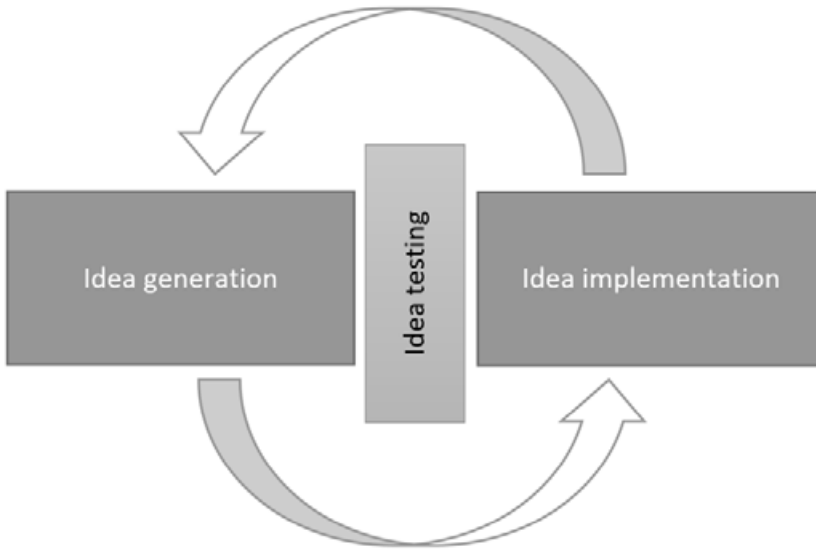

Figure 4.1 The innovation process

Although the literature on public service innovation has expanded dramatically in the last decades, there are still some challenges and drawbacks to public service innovation that need a proper discussion. First, critiques of innovation in the public sector argue that the government is often not suited for innovation because of its rule-bound, command-and-control, bureaucratic nature (Hartley et al., 2013). Second, in contrast to the private sector, where the concept of innovation was introduced by Schumpeter (1942), the public sector is less sensitive to or affected by competition dynamics. Innovation can be regarded as an optimization strategy in the public sector, while it is a survival strategy in the private sector (cf. 'creative destruction', Schumpeter, 1942). Even then, as governments are not directly punished with decreased revenues when their performance should go down, they are also not incentivized to use this optimization strategy (Gullmark, 2021). Third, governments are more risk-aversive than private sector organizations, as they use public resources that are externally controlled by politicians, the media, and the public (Gullmark, 2021). Fourth, innovation has a large disruptive potential, which is not always desired in the public sector (Wynen et al., 2020). As most government organizations have a monopolistic position, pursuing innovations that are simultaneously highly disruptive and very unpredictable, and risky, might endanger the continuity of public policy and service delivery.

COLLABORATIVE INNOVATION

In order to meet some of these critiques regarding innovation in the public sector, the field of public sector collaborative innovation has been growing exponentially in the last decades. On the one hand, service innovation is viewed as an important way to solve complex, wicked problems, which cannot be solved through traditional methods (Sørensen and Torfing, 2011). On the other hand, the public sector is influenced by an intricate network of different public and private sector stakeholders, and individual stakeholders have, therefore, problems solving these societal issues on their own (Bryson et al., 2015; Emerson et al., 2011; Osborne, 2006). The current complexity of societies and industries demands multi-dimensional solutions which can transcend organizational boundaries, policy sectors, and even spheres of societies (Crosby et al., 2017; Diamond and Vangen, 2017). For this reason, public and private sector stakeholders work together in networks and partnerships, from which new policies and services can emerge (Ansell and Gash, 2007; Bryson et al., 2006). These public-private collaborations are potentially valuable breeding grounds for innovation, as partnership synergies might arise from the close interactions between the involved actors (Lasker et al., 2001). Knowledge, resources, and perspectives from a diverse set of stakeholders are integrated in those partnerships, which might result in the adoption or creation of new frames and ideas, from which innovations might arise (Torfing, 2019). Recent research by Wilson and Mergel (2022) confirms the advantages of 'networking strategies' for overcoming structural and cultural barriers to digital transformation. The majority of the interviewed digital government champions in their study indicated that networks and collaboration enable the opportunity to learn from peers and exchange knowledge across contexts. Furthermore, collaborations are better able to share the risks and costs of creating and implementing innovation, which would otherwise all end up in the same organization (Appleyard and Chesbrough, 2017).

Collaborative innovation has several advantages over other forms of innovation (e.g., in-house innovation). We argue that these advantages can be summarized into two principal premises of collaborative innovation (see also Callens et al., 2020). First, collaboration has a *reinvigorating* effect on the innovation process. Collaborative innovation allows partners from different backgrounds to access new knowledge, connect and build on each other's ideas, and adopt new perspectives, which stimulates divergent thinking and generates creative momentum (Paulus et al., 2018). Collaborative innovation opens up the innovation process to a broader ideation context from which new ideas can arise more easily. By opening up the innovation process, collaborative innovation prevents the innovation process from being trapped in the convergent thinking

of like-minded people, which could lead to groupthink and tunnel vision, and which inhibits innovation (Torfing et al., 2020). Second, collaboration also has a *protective* effect on the innovation process. Indeed, through collaborative innovation, difficult problems such as wicked issues are shared amongst multiple stakeholders (Crosby et al., 2017), as are the risks and costs that are tied to inventing something new (Corsaro et al., 2012). Protecting the innovation process with the resources and commitment of multiple stakeholders is no unnecessary precaution, as innovations have a high chance of failure (Van der Panne et al., 2003). Furthermore, innovations often require significant investments, but do not always translate properly to a real-life context, nor are they always sufficiently adopted by the public or sustainable in the long run (Brown and Osborne, 2013, p. 187). In collaborative innovation, multiple stakeholders are responsible for creating and implementing the innovation, which increases their capacity to avert innovation failures. Furthermore, the collaboration might also create an isolated, socio-technical niche in which experimentation and trial-and-error behaviour are tolerated, without the risk of falling prey to highly competitive (market) dynamics (Hermans et al., 2013).

Sørensen and Torfing (2011) and Ansell and Torfing (2014) propose four interrelated processes of collaborative innovation. First, public-private collaborations integrate knowledge, perspectives, and resources from a variety of stakeholders, which increases the likelihood that *synergies* arise. Such partnership synergies are important for the quality of the interaction in collaborations (Lasker et al., 2001) but are also essential for the creation of something new, as new ideas can arise out of the combination of different knowledge pools and perspectives, and collective capacity can be activated by sharing and connecting resources and skills from multiple actors (Waldorff et al., 2014). Second, by interacting with each other, individuals exchange information and knowledge, which allows them to create new associations between distinct concepts and learn from each other (Ansell and Torfing, 2014). *Learning* is an important second process of collaborative innovation because it uses the available variance in the partnership and transforms it into novel and creative ideas, for instance, by building on other's knowledge and ideas (Hartley and Rashman, 2018). Third, *consensus building* allows the partners to arrive at a shared idea, towards which the efforts of the partners can be directed. Through consensus building, the partners can search for agreement and similarities between perspectives (Innes and Booher, 1999), which should eventually lead to joint ownership over the idea (Lindsay et al., 2020). Fourth, building *commitment* to implement the idea is a final process of collaborative innovation (Trivellato et al., 2021). Commitment refers to the willingness of the involved stakeholders to mobilize resources towards the implementation of the innovation.

However, as with public service innovation itself, collaborative innovation also has some drawbacks that need to be recognized. These drawbacks are

particularly related to the inherent tension between creative ideation and collaborative stability (Torfing, 2019), and the inefficiencies surrounding collaboration. Collaboration is often a lengthy and underperforming process, because of the consistent need for aligning and realigning different perspectives, visions, interests, etc. (Huxham, 2003). Klijn and Koppenjan (2015) discuss three types of network complexities that are common in partnerships (i.e., substantive complexities, strategic complexities, and institutional complexities), which need to be held in check if the partnership wants to optimize its performance. Several network management strategies are proposed by the authors to manage these complexities (i.e., exploring, connecting, arranging, processing rules). However, managing these complexities means that coordinators need to invest a lot of time into the network interactions, which increases the transaction costs, and potentially lowers its performance compared to other organizational arrangements (Jobin, 2008). Furthermore, as innovation thrives on the variance that is introduced in these partnerships (Sørensen and Torfing, 2017), collaborative innovation should increase these complexities and related transaction costs even further. In other words, the pursuit of innovation through collaboration might magnify the drawbacks of public-private collaborations. Collaborating for technological innovation might be even more challenging because of the technical complexity of the content of the innovation process, and the required variety of resources and knowledge in such partnerships (Picazo-Vela et al., 2018).

From these arguments, it becomes clear that pursuing digital transformation through collaborative innovation requires a prudent approach. Too much focus on conditions that stimulate variance and creative ideation might result in the premature termination of the partnership because of the increasing complexities and transaction costs. However, too much focus on reducing the transaction costs and complexities might extinguish any creative upsurge and increase the risk of groupthink. In the following section, we explore which conditions contribute to this delicate balance. Some of these conditions will be aimed at controlling and managing the collaborative innovation process (e.g., partnership structure, management, etc.), while other conditions will be focused on increasing the variance and creative potential of the partnership (e.g., knowledge and skills of partners, user involvement, etc.).

PUBLIC-PRIVATE INNOVATION PARTNERSHIPS

As mentioned in the introduction, multiple types of public-private collaborations can exist. We will focus in this chapter on public-private innovation partnerships (PPIs), which are partnerships between public actors and private actors that are aimed at producing innovative services, for which they often involve service users (Brogaard, 2021). These types of partnerships are

relatively short-term partnerships, in which not only commercial firms are involved, but also non-profit or third-sector organizations (Di Meglio, 2013). In contrast to, for instance, public-private partnerships (PPPs), PPIs are less formalized, and the public partner (e.g., government) often adopts a 'leading role as initiators, organisers and propagators of new ideas' (Di Meglio, 2013, p. 80).

CONDITIONS OF COLLABORATIVE INNOVATION

Figure 4.2 shows the conceptual model that we use in this chapter, which was part of the Horizon 2020 TROPICO research project.[1] Building on a broad variety of research, including literature on collaborative innovation research, public service innovation, collaborative governance and coproduction, the conceptual model integrates several types of conditions. We propose that these conditions stimulate the processes of collaborative innovation, which were discussed in the previous section. These processes of collaborative innovation enable public-private collaborations to generate innovative public services. While we recognize that *ex ante* (e.g., 'starting conditions', Ansell and Gash, 2007) and *ex post* conditions (e.g., diffusion-related conditions, Rogers, 2003) might also influence collaborative innovation, this chapter focuses particularly on the conditions during the process of collaborative innovation. We consider four clusters of conditions, that is, conditions on the level of the partnership, conditions on the level of the involved individuals and organizations, conditions related to ICT, and conditions related to user involvement. This section discusses these clusters of conditions.

As indicated in Figure 4.2, the first cluster includes features of the partnerships. We consider particularly structural partnership features and management-related features. For the structural partnership features, we focus on the composition of the partnership and the governance structure that is used in the partnership. With regard to the management-related conditions, we consider two types of management, that is, contract management and network management. The second cluster is composed of conditions on the level of the individual partners and involved organizations. We consider conditions such as the interpersonal trust between the involved individuals and organizations, the knowledge and skills of these individuals, and support of the external environment (e.g., policy sector, politicians, media). The third cluster introduces ICT-related conditions. We focus on multiple ways in which ICT can contribute to the collaborative innovation process, both internally (i.e., by stimulating collaborative interactions) and externally (i.e., by creating an enabling environment). The fourth cluster considers how users are involved in processes of collaborative innovation. Users are amongst the most important stakeholders in innovation projects because of their knowledge of and experiences in the

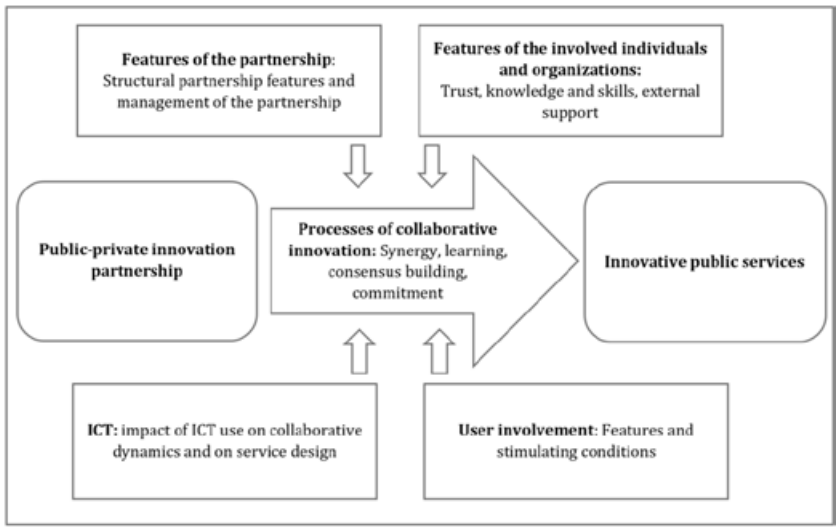

Figure 4.2 Conceptual framework

service context. We consider how different features and conditions of user involvement may affect the process of collaborative innovation.

FEATURES OF THE PARTNERSHIP

Partnership Structure

As we discussed in the previous sections, the presence of some initial variance in the partnership is necessary to kick off the innovation process. However, too much variance can lead to increased network complexities and transaction costs. This duality makes the selection of the partners in the collaboration extremely important. Partnerships with stakeholders that are very similar to each other might not produce enough synergies and learning opportunities to initiate the innovation process, while partnerships with stakeholders that are very different from each other might have difficulties working together and building trust, which can lead to the collapse of the collaboration (Torfing, 2019).

Furthermore, the composition of the partnership will also be dependent on the objectives of the partnership. Sørensen and Torfing (2017) argue that the selection of partners will differ if the goal of the partnership is to enhance the efficiency and effectiveness of public governance, enhance the democratic legitimacy of public sector organizations, or create public sector innovation.

If the partnership is established to enhance the efficiency and effectiveness of public governance (e.g., increasing the coordination between disparate public and private organizations), the authors argue that the partnership should include actors with resources and capabilities that are relevant to ensure optimal use of existing resources. A partnership that wants to enhance the democratic legitimacy of certain organizations or institutions, should, according to the authors, include a broad selection of representatives of the affected organizations or institutions (e.g., interest groups). Following Sørensen and Torfing (2017), partnerships that want to pursue public sector innovation should include a wide variety of stakeholders that possess innovation capabilities (e.g., expert knowledge, field experience, creative thinking, testing and implementation capabilities, etc.).

Note, however, that these three types of objectives of partnerships will often be intertwined in processes of collaborative innovation. Partnerships that want to pursue innovation will most likely also have to engage a wide selection of representatives, as public innovations will have consequences for public policy and service delivery, and are often part of or connected to government programmes. Furthermore, innovations are often aimed at introducing systems that allow more efficient and effective public governance, which means that stakeholders who can optimize the use of existing resources (e.g., by connecting disparate resources) will probably also be involved in innovation-oriented partnerships.

Governance Structure

The governance structure of a partnership is crucial for the interaction dynamics that unfold during the collaboration process. Governance structures build a framework around collaborative interactions, which determines which actors are included in the partnership, which responsibilities the involved actors have, how these actors are positioned towards each other, and how decisions are made (Lopes and Farias, 2022). For instance, in innovation partnerships, user involvement might be of particular importance because they are part of the context in which the innovation will eventually be adopted (see later). Through a governance structure, the partnership is able to structurally involve the users by, for instance, establishing a project team of which the users are part. This allows a more inclusive, transparent, and empowered engagement of the users, which might stimulate intensive user involvement throughout the whole innovation process. Furthermore, the governance structure of a partnership connects the resource support of the represented organizations (e.g., governments or private sector financers) with the bottom-up innovation initiatives (Lam and Li, 2018). Through various structures (e.g., steering committees, project teams, work groups, etc.), the partnership introduces a semi-hierarchi-

cal system that allows proper coordination, management, and accountability of the partnership's activities, but also protects the creative and experimental approach of the innovation process.

Provan and Kenis (2007) distinguish three types of governance structures. The first governance structure is the 'shared participant-governed' structure, which involves the equal involvement and contribution of all the involved actors in the partnership. All involved actors are responsible for the governance of the partnership and have equal decision power. The authors suggest using this type of governance structure when there is a limited number of partners, a lot of trust and goal consensus between the partners, and a low need for specialized network management skills. The second governance structure is the 'lead organization-governed' structure, which entails that one or a few actors are responsible for the governance of the partnership and have high levels of decision power. The lead actor functions as a central broker in the partnership and has the power to enforce decisions. According to the authors, this governance structure should be used in partnerships with a moderate number of participants, low levels of trust and goal consensus between the partners, and a moderate need for specialized network management skills. The third governance structure the authors propose is the 'network-administrative organisation'. This type of partnership structure establishes a separate administrative entity that is responsible for the network governance and acts as a broker. The authors advise using this type of governance structure in partnerships that have a large number of actors, a moderate level of trust and goal consensus between the partners, and need a lot of specialized network management skills (e.g., because of the presence of a lot of network complexities).

Note that there is no consensus in the literature on which type of governance structure is more suited to produce collaborative innovation. For instance, while high levels of goal consensus (e.g., in shared participant-governed partnerships) can stimulate collaborative interactions between the partners, it might also reduce divergent thinking and create tunnel vision. Similarly, the centralization of decision power (e.g., in lead organization-governed partnerships) might reduce open interaction and free circulation of ideas and perspectives, but it might also reduce the interaction costs that arise from network complexities. Some tentative results from recent research indicate that more centralized partnerships such as lead organization-governed partnerships are actually better suited for collaborative innovation (Lam and Li, 2018). However, future research should take a closer look at how different governance structures affect the collaborative innovation process.

Partnership Management

Contract management

Innovation in partnerships can be stimulated by managing the contractual foundations that underlie the collaboration. Indeed, many innovation partnerships have one or more (formal or informal) agreements between the involved partners that comprise what the partnership wants to achieve. Research into public procurement for innovation gives us insights into how contract management can stimulate innovation. Contract management is a demand-side instrument, which means that a public procurer demands a certain innovation from one or more contractors through conditions that are stipulated in a contract (Callens et al., 2021), which increases the control over the accomplishment of certain demands (Edquist et al., 2015). As innovation and collaborations are inherently risky and unpredictable, public procurers can formulate conditions in contracts, which protect them from undesired project deviations. Through contract management, the public procurer is able to share the risks of failure with the involved partners and reduce the transaction costs that are connected to the unpredictability of collaborative innovation processes. Indeed, demands that are stipulated in a written agreement can be legally enforced by the procurer, which gives the procurer a lot of control over the end result of the collaboration. This helps to increase the commitment of the partners to develop and implement the requested end product. Furthermore, the contract makes the objectives and conditions of the collaboration clear for every involved actor, which increases the goal consensus between the partners and eases the collaboration.

Contract management can be exercised through several instruments, which are listed by Uyarra et al. (2014). The contract instruments that are most often used are the inclusion of innovation-oriented output specification in the contract, innovation incentives in the tender award criteria during the procurement process, design freedom or contract flexibility that allow changes in the contract that are caused by the unpredictable nature of innovation process, and contract sanctions in case the partners deviate from what was agreed (Edler and Georghiou, 2007; Georghiou et al., 2014; Leiringer, 2006; Tadelis and Bajari, 2006). All these instruments direct the partners towards the expected outcome of the collaborative innovation process. Some of the instruments have a direct influence on the pursuit of innovation, for instance, by specifying what needs to be accomplished through output specifications or by selecting more innovative proposals through the use of innovation-oriented tender award criteria. Other instruments work indirectly on the contract partners, for instance, by allowing some flexibility in the contract in order to redirect the project when new information is obtained (e.g., new direction due to the results

of a testing phase) or by imposing sanctions on partners who refuse to deliver innovative solutions.

Network management

Whereas contract management is particularly focused on controlling the input (e.g., through innovation incentives in the tender award criteria) and output (e.g., through sanction management) of the process, network management is aimed at managing the collaboration process itself. Network management can be defined as 'the deliberate attempt to govern processes in networks' (Klijn et al., 2010, p. 1065). Literature on network governance and network management (e.g., Ansell and Gash, 2007; Emerson and Nabatchi, 2015; Huxham and Vangen, 2005; Klijn and Koppenjan, 2015; Klijn et al., 2010; Sørensen and Torfing, 2017) start from the premise that network complexities can only be solved by intervening in the collaboration process itself, instead of trying to control the input and output conditions (e.g., through contract management). Collaborative interactions are very dynamic, unpredictable, and interdependent, which means that the process needs to be controlled from the inside. By managing the interactions between the involved actors, network managers are able to align goals, vision, interests, and perspectives, and converge towards the same ideas. Network management resolves tensions and conflicts between collaboration partners and opens up discussions to explore the ideas and perspectives of the partners. As collaborative innovation is built on the collaborative interactions between the partners (i.e., synergy, learning, consensus building, commitment), innovation should also be stimulated by purposefully managing these collaborative interactions. Recent research has already indicated this stimulating effect of network management on collaborative innovation (e.g., Brogaard, 2017; Callens et al., 2021; Parrado and Reynaers, 2020).

Klijn et al. (2010) propose four different types of network management strategies. The first strategy is aimed at *exploring content*. This strategy searches for differences in perspectives and goals, which could strengthen the innovation process but might also hinder a smooth collaboration. Information and knowledge of partners is explored by using this strategy, and variation in ideas and solutions are identified by stimulating creative ideation. The second strategy involves *connecting* the partners together. The purpose of this strategy is to connect the perspectives, beliefs, and goals of the partners, but also their knowledge and resources. Klijn et al. (2010, p. 1069) point to several examples, such as the selective (de)activation of actors, resource mobilizing, the initiation of new series of interactions, coalition building, mediation, the appointment of process managers, and the removal of obstacles to and creation of incentives for cooperation. The third strategy is aimed at *arranging* the collaboration process. Whereas the governance structure represents the stable and rigid framework in which the collaboration process evolves, the

collaboration arrangements that are stimulated through the arranging strategy are aimed at capturing ongoing collaborative interactions in new, ad hoc, and often temporary governance structures (e.g., boards, project organizations, etc.). The fourth strategy entails the establishment of *process agreements*. Process agreements refer to rules that the partners agree on in order to govern the collaboration process. Since a strong bureaucratic structure is rare in temporary partnerships, these rules allow the partners to clearly articulate what is expected from them and how the partnership will act in certain circumstances. Examples of such rules are rules for entrance into or exit from the partnership, conflict regulating rules, rules that specify the interests of actors or veto possibilities, rules that inform actors about the availability of information about decision-making moments, etc. (Klijn et al., 2010, p. 1069).

FEATURES OF THE INVOLVED INDIVIDUALS AND ORGANIZATIONS

Interpersonal and Organizational Trust

Systematic literature reviews on public service collaboration and innovation indicate that interpersonal trust is a crucial condition for enhancing the collaborative interactions between partners (Brogaard, 2021; Cinar et al., 2019; de Vries et al., 2015; Lopes and Farias, 2022; Voorberg et al., 2015). Trust can be defined as 'a psychological state comprising the intention to accept vulnerability based upon the positive expectations of the intentions or behaviour of another' (Rousseau et al., 1998, p. 395). The presence of trust between collaborating partners increases the confidence in the decisions and actions of the partners (McNamara, 2012) and reduces potential tensions and conflict between the partners (Entwistle and Martin, 2005). Interpersonal trust also facilitates the coordination and acceptance of the roles and responsibilities of the involved partners (Poocharoen and Ting, 2015). Increasing the trust between the involved individuals is necessary for processes of collaborative innovation, as the cultural diversity that is present in these processes might cause tensions and conflicts, which may reduce interpersonal trust (Diamond and Vangen, 2017). Similarly, because of the inherently risky nature of innovation, stimulating interpersonal trust will be of great importance in collaborative innovation processes (Brogaard, 2021). Moreover, creativity and innovation require a certain level of psychological safety, which allows individuals to freely think, and act without any hesitation, and which is fostered when people trust each other (Edmondson, 2003; Paulus and Dzindolet, 2008). Furthermore, interpersonal trust also eases collaborative interactions that are crucial for collaborative innovation, such as intensive engagement, discussion and dialogue, and commitment (Sørensen and Torfing, 2011; Torfing, 2019).

Knowledge and Skills

One of the principal reasons for establishing a partnership is the opportunity the collaboration creates to access desired resources (Ansell and Gash, 2007). Knowledge sharing through inter-organizational networks allows governments to make sense of a complex environment but also stimulates cross-fertilization of ideas from which innovations can arise (Hartley and Benington, 2006). The latter is clearly visible in Triple Helix configurations between industry, government, and university, in which different types of knowledge are united and feed into each other (Etzkowitz and Leydesdorff, 2000). Recent research of Trivellato et al. (2021) indicates that collaboration indeed allows knowledge sharing and learning (which are central to innovation), but also that these dynamics strengthen the innovation capabilities of the organization and the system. In other words, integrating the right knowledge pools can have profound effects on the capacity of the partnership, organization, and system to innovate. For this reason, it is useful to distinguish different types of knowledge.

Vines et al. (2015, p. 190) make a distinction between personal knowledge and explicit knowledge. Personal knowledge corresponds to subjective knowledge that is embodied in the individual talents, habits, and skills of people, and in the unconscious propensity of people to act in a certain way. According to Vines et al. (2015), this knowledge is often tacit (i.e., unconscious) and implicit (i.e., not yet made explicit), and is developed through experience. Explicit knowledge, however, is objective knowledge that is codified in a certain 'database' (e.g., in language). Whereas personal knowledge is experiential, explicit knowledge is often technical. Both are, however, needed in collaborative innovation processes, as the presence of explicit knowledge unites objective information from different fields of practice, while personal knowledge introduces intuition, know-how, and experience from these fields (Hartley and Benington, 2006). Selecting actors in the partnership who bring solid objective information to the table, while also having the experience and know-how of working in a particular field, will be particularly important in projects which aim at generating something new.

Skills for collaborative innovation, as a part of the personal knowledge of individuals, come in different forms. The two main activities in collaborative innovation (i.e., collaboration and innovation) each require a different set of skills. O'Leary et al. (2012) conclude from their empirical research into the skills of successful collaborators that there are three important groups of collaboration skills. The first group includes *individual attributes* such as, among others, having an open mind, patience, and self-confidence, and being risk-oriented, flexible, unselfish, persistent, and diligent. The second group includes *interpersonal skills* such as being a good communicator, an excellent

listener, and being able to work well with people. The third group includes *group process skills* such as being able to facilitate, negotiate, solve problems collaboratively, deal with different personalities and organizational cultures, compromise, resolve conflicts, build consensus, and mediate. With regard to innovation skills, creativity and innovation literature indicates the importance of problem-solving skills (Lindsay et al., 2017) and creative-thinking skills (Anderson et al., 2014). Problem-solving skills refer to the ability to mobilize the proper personal and explicit knowledge for a certain problem (Vines et al., 2015). Creative-thinking skills correspond to a broad set of creative abilities, which essentially boil down to the core ability of divergent thinking, in which individuals refrain from drawing early conclusions, but consider multiple alternatives (Acar and Runco, 2012). Other authors point to the importance of having some previous experience with collaborative innovation (Sørensen and Torfing, 2017) and possessing the ability to critically question and evaluate assumptions (Sørensen and Torfing, 2021).

Besides collaboration and innovation skills, collaborative innovation processes are also highly dependent on who leads the process. Innovation leadership skills have been studied in many forms, from visionary leadership (van der Voet and Steijn, 2021), entrepreneurial leadership (Meijer, 2014), ambidextrous leadership (Giekse et al., 2020) in innovation research, to creative problem-solving leadership (Reiter-Palmon and Illies, 2004) and complexity leadership (Uhl-Bien et al., 2007) in creativity research. Similarly, collaborative leadership has also pointed to different leadership skills. For instance, Ansell and Gash (2012) propose a typology of three different leadership styles, each with its own skills (i.e., stewards, mediators, and catalysts). However, other authors have also looked at these (and other) leadership skills in collaborative innovation processes themselves. From this research, Lopes and Farias (2022, p. 124) extract leadership skills such as coordination capacity (Grotenberg and van Buuren, 2018), risk-taking (Mergel, 2018), commitment to the process organization (Hennala et al., 2011), and the ability to exert a certain patrimonial influence and authority over the process (Tuan, 2018).

External Support and Legitimacy

According to institutional theories of organizational development, organizational action is largely defined by the institutional environment in which the organizations operate. Through regulative, normative, and cognitive-cultural structures, the institutional environment gives meaning to the organization, and imbues the organization with legitimacy (Scott, 1995). In institutional theory, increasing organizational legitimacy is intricately connected with isomorphic pressures to conform to the value systems of the institutional environment (DiMaggio and Powell, 1983). The institutional environment defines what is

appropriate for an organization and what is not. Institutional scholars propose that innovation is a strategy of the organization to conform better to the value system of the institutional environment (de Vries et al., 2015). For instance, Verhoest et al. (2007) show that state agencies that lack legitimacy are more likely to express innovative behaviour. However, successfully innovating to conform to the institutional environment is only possible if the organization receives signals from this environment, in the form of external support for the innovation. This external support may originate directly from the policy field in which the innovation is produced (e.g., the health sector for eHealth innovations) but might also come from other actors. For instance, failed public service innovations have been linked to a lack of support from political representatives and entities (Bakici et al., 2013; Cinar et al., 2019; Meijer, 2015), and media attention has been found to exert important pressures on innovation projects (Borins, 2001).

Partnerships and networks are particularly interesting to search for the effects of external support on innovation because they often connect multiple institutional environments with each other. Indeed, institutional scholars argue that institutional logics are being transmitted through these networks from one organization to the next (Owen-Smith and Powell, 2008). As these institutional logics can come from different institutional environments, different institutional environments might be responsible for imbuing the innovation with legitimacy. This might lead to value conflicts between the partners, as institutional environments of which some of the involved organizations are no part, can play an important role in legitimizing the innovation. As Klijn and Koppenjan (2015) argue, this institutional complexity can hinder productive collaboration. However, it might also affect how innovations are generated and eventually implemented. Even with a successful collaboration, innovations might still fail because they receive insufficient legitimacy from a particular institutional environment. Successful innovations might therefore need to integrate multiple institutional logics (e.g., public value and commercial logics).

USE OF INFORMATION AND COMMUNICATION TECHNOLOGY

Information and communication technology (ICT) has a central role in joining up governments, as they can structurally connect disparate entities through digital means (Dunleavy et al., 2005; Margetts and Dunleavy, 2013). As such, ICT works quite similarly to partnerships and networks, as it increases the capacity of organizations to share information, coordinate strategies and activities, and work closer together. Hence, the question is how collaborative innovation processes are stimulated through the use of ICT.

We consider two different ways in which the use of ICT can influence collaborative innovation. First, ICT can have an internal effect on collaborative innovation by enhancing the collaborative dynamics during the process. Indeed, digital technologies facilitate extensive communication and interaction between individuals, while reducing the transaction costs that such interactions would entail if digital means were absent. ICT provides opportunities to interact with each other more frequently and efficiently without the transaction costs that come with normal interactions (e.g., physically going to a meeting), and also enables communication with distant partners, which would be very time-consuming in other circumstances. Although intensive interaction is a necessary condition for collaborative innovation, it may, however, also cause 'collaborative inertia', which refers to slow, inefficient, and lengthy interactions, with a lot of deadlocks (usually caused due to tensions or conflicts), and which never really generate any action (Huxham, 2003). ICT might be better at directing certain interactions between individuals, as it allows quick, informal and bilateral communication (e.g., through digital messages such as email or message apps on smartphones). This could ensure that deadlocks and related tensions or conflicts, which hinder collaboration, are addressed more quickly. However, too much ICT-enabled interaction might also be a barrier to collaborative innovation, as building interpersonal trust and social identity can be more difficult without physical interactions.

Second, ICT can also have an external effect on the collaborative innovation process. Particularly if technological innovations are pursued by the partnership, broader ICT infrastructures will often play an important role in connecting the innovation to the digital systems of the involved organizations. These external ICT structures may not only influence the successfulness of the implementation of the innovation, but may also be crucial in the upscaling, diffusion, and broader adoption of the innovation by the public. For instance, Kattel et al. (2020) show how regional and national ICT networks often enable the creation and expansion of digital services, by allowing the connection of new services to the overarching ICT network. These ICT networks also frequently determine which organizations can work together, how the partners interact with each other, and which actions the partners can undertake (Kattel et al., 2020). Hence, the overarching ICT network and infrastructure might determine the starting conditions of these collaborative innovation processes (e.g., who is involved, which digital services are possible, which digital resources are available, etc.), which emphasizes the importance of this condition for collaborative innovation.

USER INVOLVEMENT

Services users are crucial stakeholders in collaborative innovation processes, and insufficiently involving them in innovation projects is regarded as a major barrier to public service innovation (Cinar et al., 2019). As users are the stakeholders that will apply the newly created service in practice, they are key to providing legitimacy to the innovation process and its outcome. When the partnership pursues legitimate and user-oriented solutions, this will require information about the expectations and demands of users, which will largely shape the development of the innovation (Sørensen and Torfing, 2017). A direct way for the partnership to obtain this information is by involving the users in the innovation process. Besides information regarding the expectations and demands of users, this also allows the partnership to access information that is extremely valuable but also difficult and costly to come by, such as information about service experiences and the local implementation context (Simmons and Brennan, 2017; von Hippel, 1994). Von Hippel (1994) calls this information 'sticky information', because it is difficult to acquire, transfer, and employ in a new context. Involving users in the innovation process makes (some of) this information accessible to the service providers. Roszkowska-Menkes (2017) discusses two additional reasons why users should be involved in innovation processes. On the one hand, users often have heterogeneous needs, which require a certain level of customization of services. Involving the users in the innovation process makes this customization easier. On the other hand, while users provide essential information for the innovation, they are usually not interested in shielding the innovation from competitors (e.g., by patenting the innovation) or commercializing the innovation. This expedites the broad diffusion and adoption of the innovation, which increases the potential implementation and impact rates of the innovation.

Literature on user involvement in processes of collaborative innovation relies particularly on coproduction research (Callens, 2022). Through coproduction, users can be actively involved in the collaborative innovation process. However, different types of user involvement can exist. For instance, users might be involved for different purposes (e.g., providing legitimacy or knowledge), in different stages of the innovation process (e.g., conceptualization stage or testing stage), in different intensities (e.g., isolated, ad hoc involvement or repeated, structural involvement), and in different ways (e.g., consultation, deliberation, development, etc.) (Alam, 2002). Furthermore, the coproduction process can be conditioned on the role of the user in the service system. For instance, the role of service planner and deliverer might be exclusively placed with the professional service providers, but users might also be partially or fully responsible for the service planning and delivery (Bovaird, 2007), which

changes how these two stakeholders interact with each other in coproduction processes. Moreover, user involvement may also vary depending on the scope of the involvement. For instance, some users might only be involved on the operational level, while other users might be involved on the strategic level, or might even lead the whole process (i.e., respectively consumer, participative, and enhanced coproduction, Osborne and Strokosch, 2013). Alternatively, some user involvement might be aimed at service design *for* users (i.e., dominant role of service providers), *with* users (i.e., equal involvement of users and service providers), or *by* users (i.e., the dominant role of users) (Arnkil, 2010).

Multiple conditions have also been linked to successful (and unsuccessful) user involvement and coproduction, which can be clustered into two types of conditions. The first group of conditions relates to the capabilities of the users themselves. For instance, research has indicated that dialogue skills (Prahalad and Ramaswamy, 2004) and general psychological skills (Etgar, 2008) are important for successful user involvement. Additionally, Simmons and Birchall (2005) indicate that a certain degree of commitment to participate and invest time into the process is important for successful user involvement. Other scholars point to the qualities of the users that can inhibit effective user involvement. For instance, users might have a lack of motivation to radically innovate services or might have cognitive limitations (e.g., lack of knowledge) which hinders valuable input (Lettl, 2007). A second group of conditions corresponds to how the process of user involvement is organized and managed. For instance, a very rigid organization of the user involvement process, with specialized, isolated, and stable user tasks, might reduce the freedom for involved users to innovate (Torvinen and Ulkuniemi, 2016). Furthermore, managers should be aware to also involve 'unseen' users and to devote sufficient time to the active involvement of users (Gulliksen and Eriksson, 2006). Moreover, target groups for user involvement should be clear to the project manager, as should the proper balance between involving highly specialized users and involving users for legitimacy purposes (e.g., interest groups) (Karlsson et al., 2013). Also note that, although user demands remain essential to most user-oriented service innovations, some of the demands will be fixed and enforceable by, for instance, tenders, contracts, or grant agreements. This might cause tensions between what a public procurer or other financing institution demands, and what the users expect (Jæger, 2013).

CONCLUSION: TOWARDS A HOLISTIC APPROACH TO CONDITIONS OF COLLABORATIVE INNOVATION

This chapter provided an integrated framework for the conditions that influence processes of collaborative innovation for digital transformation. Through processes of synergy, learning, consensus building, and commitment (Ansell

and Torfing, 2014; Sørensen and Torfing, 2011), innovation is stimulated in public-private innovation partnerships. Four clusters of conditions that work on these processes were identified, that is, conditions on the level of the partnerships, the involved individuals and organizations, the use of ICT, and the user involvement. These conditions may have isolated effects on collaborative innovation. For instance, by increasing the trust amongst the partners, collaborative interactions become smoother and more constructive, which enhances the various collaborative innovation processes. However, different conditions may also have a combined effect on collaborative innovation. For instance, different types of management techniques such as contract management and network management might have a larger effect on collaborative innovation when they are combined with each other.

Such a 'holistic approach' is particularly interesting for inherently complex and chaotic innovation processes, which are subject to interconnected dynamics that evolve simultaneously throughout the innovation process (Meijer, 2014). Hence, multiple conditions may influence the success of the collaborative innovation process at the same time. Employing such a holistic approach to the conditions of collaborative innovation might generate insights into the intricate nature of diverse, and sometimes even contradictory dynamics in the innovation process. For instance, Torfing (2019) mentions that collaborative innovation is inherently paradoxical as conditions that stimulate intense collaboration might also inhibit extraordinary innovation (e.g., collaboration thrives in contexts of similarity, while innovation exploits diversity). A holistic approach might uncover and explain such tensions and give accurate advice on how conditions of collaborative innovation lead to innovative public services.

Such a holistic approach on collaborative innovation is applied throughout Part III of the book, 'Public-Private Collaboration for Digital Transformation and Innovation'. In Chapter 8, we test the theorized conditions on a large empirical dataset of 19 eHealth collaborations in five European countries, through a qualitative comparative case study. Several of the identified conditions are then empirically tested in more detail in the subsequent chapters of Part III. Chapter 9 is devoted to the contract management and network management conditions, in which we assess whether the combination of these conditions stimulates the innovativeness of the produced eHealth services in these partnerships. Chapter 10 considers how users view their own roles in processes of user involvement. Finally, Chapter 11 tests how partnership design, and more specifically the structure of the social networks inside the partnership affects innovative outcomes.

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