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Academic Article

Supporting Public Welfare Digitalization: A Supplier Perspective

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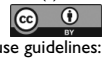
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Abstract

Local governments responsible for welfare provision regularly outsource information and communication technology (ICT) development and services. Despite the reliance on private-sector ICT firms, little attention has been paid to the capabilities of these firms and their perspective on public-sector digitalization. This paper addresses this research gap by examining how ICT-supplier firms view 1) what constitutes their most important capabilities in the context of public-welfare digitalization and 2) what factors influence their creation and character. The study employs an interpretative research design, using semi-structured interviews and thematic analysis. The results indicate that ICT suppliers rely on higher-order relational capabilities to enable them to deploy value-adding capabilities. Additionally, the results show that inadequate municipal ICT governance, public-sector coordination, and insufficient procurement practices cause systemic uncertainty, which ICT suppliers are required to manage.

Keywords

supplier capabilities, digitalization, outsourcing, public sector, public welfare, dynamic capabilities

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Key Points for Practitioners

- ICT firms may need to invest in relational capabilities to operate efficiently as suppliers in the public-welfare sector.
- ICT firms benefit from maintaining domain expertise and the ability to navigate the clients' governance complexity.
- Public-sector managers should consider how they can support collective sensemaking between ICT suppliers and welfare-sector practitioners throughout the procurement and implementation process.
- The efficient utilization of ICT-supplier firms may depend on public-sector governance and coordination. Consequently, sourcing strategies should take these factors into account.

1 Introduction

Public organizations responsible for welfare provision rely on private suppliers to support them and commonly outsource information and communication technology (ICT) services and development (Borg et al., 2020; Persson et al., 2023). Meanwhile, public-sector ICT projects often suffer from failures and frequent cost overruns (Anthopoulos et al., 2016; Wade & Shan, 2020). Given the centrality of public welfare in many societies, it is important to understand how digital technologies can be designed and implemented effectively. Thus, investigating the abilities of ICT suppliers and their contribution to the welfare sector emerges as an important topic for inquiry.

There is substantial research on the phenomena of digitalization, digital transformation (Annarelli et al., 2021; Escobar et al., 2023; Van Veldhoven & Vanthienen, 2023), and outsourcing (Gantman, 2011; Lacity et al., 2009, 2017). Despite

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this fact, the ICT-supplier perspective is largely missing from the literature on digital government, and it remains unclear what prompts ICT suppliers to support public-sector digitalization (Marco-Simó & Pastor-Collado, 2020). Accordingly, adopting a supplier-side perspective provides new insight, as this approach has been pursued in only a limited number of studies.

The present study examines ICT suppliers' abilities and the factors that influence them, utilizing a capability-based framework (Schilke et al., 2018; Teece, 2019; Winter, 2003). The research was conducted in a local government (municipal) context in Sweden, as municipalities are responsible for welfare sectors such as primary education, social services, and elderly care (SKR, 2025). The study is guided by the following research questions (RQ):

RQ 1: What do Information and Communication Technology (ICT) suppliers perceive as their key capabilities for supporting public-welfare digitalization?

RQ 2: What antecedents and moderators do Information and Communication Technology (ICT) suppliers perceive as influencing the development and nature of their capabilities in the context of public-welfare digitalization?

The paper is structured as follows: Chapter 2 describes prior research and the analytical framework, while Chapter 3 describes the methods used. The results are presented in Chapter 4 and discussed in Chapter 5. Concluding remarks and suggestions for future research and limitations are presented in Chapter 6.

2 Theoretical Background

Organizational capabilities are contextually embedded and should be studied as such (Piening, 2013; Teece, 2019). The approach of this study necessitates that any generic capability-based approach be adapted to fit the research focus, in this case, the act of supplying ICT solutions to public welfare organizations. This chapter describes the conceptualization of ICT-supplier capabilities and the analytical framework guiding the data collection and analysis.

2.1 Organizational Capabilities

The concept of "organizational capabilities" reflects an extension of the resource-based view of the firm (Eisenhardt & Martin, 2000; Schilke et al., 2018), originally devised to explain sources of competitive advantage (Barney, 1991). The term "capability" refers to an organization-level ability to utilize various resources for specific outcomes. While lacking a normalized terminology, "capabilities" are often described as combinations of competencies used to deploy assets through organizational processes (Day, 1994; Piening, 2013; Schilke et al., 2018; Teece et al., 1997). The position taken in the present study views assets (employees, knowledge, hardware, patents, etc.) as being utilized by competencies (individual or team expertise), sets of which form organizational-level capabilities (Perunović et al., 2012; Winter, 2003).

A capability does not comprise ad-hoc behavior or one-time occurrences, but references systematized patterns of action (Piening, 2013; Teece et al., 1997; Winter, 2003).

2.2 Ordinary and Dynamic Capabilities

There is a distinction between so-called *ordinary* or *operational* capabilities that pertain to the organization's regular mode of operations and *dynamic* capabilities, which enable changes in the resource base and incumbent capabilities (Piening, 2013; Schilke et al., 2018; Teece et al., 1997; Winter, 2003). Ordinary capabilities are predominantly concerned with effectiveness or optimization (Schilke et al., 2018), whereas dynamic capabilities refer to the modification of these ordinary capabilities (Schilke et al., 2018; Steininger et al., 2022).

2.3 Digitalization Capabilities

"Digitalization capabilities" are the specific capabilities that enable organizations to leverage combinations of digital assets and resources to create (digital) solutions (Annarelli et al., 2021; Sambamurthy et al., 2003).

Digitalization initiatives prompt a need for focused managerial practices (Sawy et al., 2016), where digital leadership is key to guiding the organization in such efforts (Annarelli et al., 2021). These practices include the ability to devise and enact strategies (Ellström et al., 2022; Konopik et al., 2022; Osmundsen et al., 2018; Tangi et al., 2021) and conduct systematic change-management efforts (Osmundsen et al., 2018; Rösler et al., 2021; Tangi et al., 2021; Van Veldhoven & Vanthienen, 2023). Such managerial capabilities also encompass competencies and resources that enhance managerial

cognition (Osmundsen et al., 2018; Rösler et al., 2021), enable the integration of value chains, and make organizations fit to operate within ecosystems (Annarelli et al., 2021; Escobar et al., 2023; Gil-Garcia & Flores-Zúñiga, 2020; Mikalef et al., 2022). While technical expertise constitutes a vital asset, the social and cooperative dimensions of digitalization and digital transformation are central in the reviewed literature (Escobar et al., 2023; Sambamurthy et al., 2003).

Digitalization is generally associated with the prevalence of regulatory frameworks and standards governing things such as personal integrity, security, or policy outcomes (Avila-Maravilla & Luna-Reyes, 2018; Gil-Garcia & Flores-Zúñiga, 2020; Irani et al., 2023). Functioning efficiently in such a context requires the ability to leverage legal and institutional frameworks to facilitate the development while proactively engaging with the policy level and relevant stakeholders to influence the development of future policy (Escobar et al., 2023; Irani et al., 2023; Mikalef et al., 2022; Panagiotopoulos et al., 2023).

Furthermore, the ability to create and maintain agile, adaptive ICT infrastructures that are fit for ecosystem utilization is central to most organizations (Ellström et al., 2022; Irani et al., 2023; Persson et al., 2023; Tallon et al., 2019), along with efficient governance and utilization of data and information assets (Anthopoulos et al., 2016; Konopik et al., 2022; Pavone et al., 2024).

Digitalization initiatives are often hampered by conflicting interests and ambiguous needs, resulting from, for example, a lack of alignment between stakeholder needs and ICT solutions (Anthopoulos et al., 2016; Frennert, 2018; Lindgren et al., 2021). Thus, there is a need to grasp core values specific to different professions and actors, and doing so requires the capability to manage stakeholders (Mergel et al., 2019; Rose et al., 2018) and enact user- or citizen-centric approaches (Lindgren et al., 2019; Rösler et al., 2021; Van Veldhoven & Vanthienen, 2023). It is evident from prior research that digitalization capabilities emphasize dynamic aspects, but they also cover more ordinary or operational capability dimensions of technology use.

2.4 Supplier Capabilities

The rise of outsourcing as a real-world phenomenon and research topic has prompted the need to focus on suppliers and clients as distinctive roles with specific abilities (Hätönen & Eriksson, 2009; Perunović et al., 2012).

There is a relative abundance of outsourcing literature with a predominant focus on client organizations, but the supplier perspective did not initially garner much attention (Levina & Ross, 2003). The lack of supplier-side focus is arguably still an issue regarding ICT outsourcing in the public sector (Gantman, 2011; Marco-Simó & Pastor-Collado, 2020).

Despite the sparsity of research on supplier capabilities, some general tendencies can be found in the extant literature. Levina and Ross (2003) propose that ICT suppliers' ability to create value is connected to the application of methodological, relational, and human resources management competencies. Human resources management refers to the supplier's ability to train and recruit personnel with relevant knowledge. Methodological competence is the ability to develop and execute efficient and systematic work procedures. Relational competencies are the skills and practices that support communication, stakeholder management, and shared understanding (Han et al., 2013; Levina & Ross, 2003). Lacity et al. (2017) make similar conclusions, mentioning capabilities relating to technology and method, human resource management, and relational management, while adding domain understanding, denoting the knowledge that suppliers have of their client's business, context, and practices.

Supplier capabilities are co-constructed or complementary, with client-side factors found to influence the abilities of the supplier and vice versa (Han et al., 2013; Lacity et al., 2017). Jain and Khurana (2016) found that systematic client/vendor relational work, such as communication, tech value sharing, knowledge sharing, and actions to support adaptability, is likely to influence outcomes. Consequently, suppliers must maintain relational management, contractual management, and absorptive capacities (Gantman & Fedorowicz, 2020; Lacity et al., 2017) and build competencies and assets that enable them to orchestrate networks to support the integration of resources and information in ecosystem settings (Mazumder & Garg, 2021; Vial, 2019; Warner & Wäger, 2019).

2.5 Antecedent and Moderating Factors

Antecedents shape how and what capabilities are built, and moderators influence the effects of their application (Schilke et al., 2018). Antecedents and moderators are constituted from intra-organizational factors, such as a firm's organizational design and culture, and contextual factors, such as environmental dynamism, inter-organizational structures, market conditions, and institutional settings. The concepts of antecedents and moderators provide a framework for understanding how the capabilities of ICT suppliers are shaped by their background and context (Schilke et al., 2018).

Building on this argument, public-sector organizations tend to be externally justified (Bryson et al., 2007), subject to political volatility, focused on non-economic values (Cordella & Bonina, 2012), constrained by bureaucratic procedures, and confined to operating in siloed structures (Marco-Simó & Pastor-Collado, 2020). Additionally, the organizations face

environmental complexity, which may be reflected in their application of ICT solutions (Gantman, 2011; Marco-Simó & Pastor-Collado, 2020). Given the sector-related idiosyncrasies in business processes, ICT solutions and their implementation in the public sector may require adaptation to fit the modes of operation and value systems of their intended operational context (Bozeman & Bretschneider, 1986; Cordella & Bonina, 2012). Hence, supplier firms must grasp the logic of joined-up production (Cordella & Paletti, 2018) and the variability associated with public-sector values (Bannister & Connolly, 2014; Chantillon et al., 2020; Heidlund & Sundberg, 2023; Jørgensen & Bozeman, 2007; Rose et al., 2015) to understand the mechanisms of digitalization in any public setting (Frennert, 2018; Lindgren & Van Veenstra, 2018).

Furthermore, any market context that ICT firms occupy may be subject to attempts at influencing or market creation from various actors. This interference entails proactive and deliberate actions to shape, e.g., narratives, mechanisms, or institutional settings, rather than reactively responding to incumbent conditions. This phenomenon has been highlighted in previous studies (Nenonen & Storbacka, 2021; Storbacka et al., 2022) and is a central characteristic of institutionalist approaches to understanding market dynamics (Kaartemo et al., 2020). In the case of public sector digital transformations, these notions of active market creation are concurrent with the discourse about the role of the state in societal shifts. It has been suggested that digital technology requires certain novel modes of governance (Dunleavy et al., 2006) and has prompted new roles for public officials (Bovens & Zouridis, 2002; Melin et al., 2024). In the case of digital governance and market creation, this notion implies that governments cannot simply procure technology but must assume an active role in mission formulation (Kattel & Mazzucato, 2018; Mazzucato, 2016) and institutional design (Kaartemo et al., 2020) to influence (among other things) supplier behavior. Doing so would require dynamic capabilities on the part of the public sector, too (Kattel & Mazzucato, 2018; Piening, 2013; Rösler et al., 2021). Given that governments are ultimately accountable for public welfare services, their capabilities and motives must be considered central antecedents or moderating factors.

2.6 Analytical Framework

ICT supplier capabilities can be studied using the concept of organizational capabilities as a foundation. Since organizational capabilities are context-dependent (Piening, 2013; Teece, 2019), their conceptualization requires adaptation to meet the requirements of the present study. This paper's analytical framework is an attempt at such adaptation.

As discussed in sections 2.2–2.3, digitalization is inextricably linked to the element of change, and organizations thus require dynamic capabilities to enable the design and implementation of, e.g., new, and/or innovative ICT solutions (Annarelli et al., 2021; Sambamurthy et al., 2003). However, the use of digital technology also requires organizations to leverage assets and competencies to support the continuous use and maintenance of implemented digital solutions, which require operational or ordinary capabilities simultaneously.

Furthermore, supplying ICT entails elements related to the practice of outsourcing, encompassing various functional domains, such as the ability to manage skills, relationships, or infrastructure, and to manage dynamic and operational aspects.

The present study argues that ICT-supplier capability should be viewed as a compound concept, combining digitalization capabilities and supplier capabilities, while emphasizing that ICT-supplier capabilities may have operational and dynamic aspects simultaneously. Any capability may be influenced by antecedents and moderators composed of intra-organizational or contextual factors. This conceptualization of ICT supplier capabilities provides a structure from which to collect empirical material and interpret the results.

The analytical framework was applied in three main steps. First, the interview guide was based on the concept of capabilities and designed to capture the foundational aspects of capabilities (dynamic and operational) and their antecedents, in accordance with the research questions. Second, the framework was applied to the analysis by using the various elements to categorize and label the empirical material at a high level of abstraction. Third, the various functional domains from the prior research were compared with the findings in more detail to determine the nature of the results and to formulate the conclusions. The operational definitions are summarized in Appendix A.

3 Materials and Methods

This qualitative study is based on interviews with ICT firms and municipal representatives working in the Swedish local government context. This chapter describes the empirical setting, along with details concerning the data collection and methods.

3.1 Empirical Setting

The study was conducted in Sweden, where public welfare plays a significant role, and local governments (municipalities) have a significant responsibility in welfare provision (Montin, 2016).

Sweden has 290 municipalities responsible for various welfare services, including education, social services, and elderly care (SKR, 2025). These organizations frequently attempt to implement digital solutions for various ends, such as citizen interactions or improved administration (Andersson et al., 2021; Frennert, 2018; Lindgren & Van Veenstra, 2018). There are significant expectations that technology can provide solutions to many of the challenges confronting the public sector (Heidlund & Sundberg, 2023; Nyhlén & Gidlund, 2022), and generally speaking, Swedish society has an optimistic view of digital technology and a tradition of adapting to technological change (Marenco & Seidl, 2021).

Swedish municipalities have a substantial degree of autonomy from the central government (Jacobsson et al., 2015; Montin, 2016) and regularly procure digital solutions independently (National Agency for Public Procurement, 2023) or through joint framework agreements (Adda, 2025). The legal capacity for municipalities to procure digital solutions independently gives them flexibility and freedom; however, demographics and resources differ between municipalities (Statistics Sweden [SCB 2025]bibr69-15701255261417507), and the operational conditions faced, for example, by small rural municipalities are not generally comparable with more densely populated and affluent areas. The resource inequalities may impact on the number of assets the municipality can allocate; thus, in-house ICT competence and procurement competencies can vary significantly between municipalities. Public procurement is a complex process (Moe et al., 2017) that requires strong competencies for effective implementation (Kuoppamäki, 2021).

Additionally, public sector digitalization is governed by various framework-type legislation to which the digital solutions must adhere, such as the General Data Protection Regulation (GDPR), the Network and Information Security Directive (NIS2), and the Web Accessibility Directive (WAD). GDPR governs how personal data can be collected, stored, processed, and protected. NIS2 establishes security standards and imposes oversight for cybersecurity, while WAD mandates that websites and mobile apps be accessible to all users. Such regulations introduce additional requirements that public organizations must manage when procuring or developing solutions. Furthermore, the Swedish public sector is frequently affected by issues of vendor lock-in (Lundell & Gamalielsson, 2018; Swedish Competition Authority, 2016) and legacy problems (Persson et al., 2023), constraining its maneuverability, a phenomenon also found in other countries (Irani et al., 2023; Wilson & Mergel, 2022).

3.2 Methods and Data Collection

This study employed an interpretive, abductive research design, using an iterative process of data collection and analysis to recursively refine theoretical insights. The interpretative approach and design were chosen to enable the research to highlight human perceptions and create an in-depth understanding of social phenomena (Klein & Myers, 1999).

The empirical material consisted of fifteen recorded and transcribed semi-structured interviews with ICT-supplier firm representatives and research notes from six informal interviews with municipal representatives. The empirical material is in Swedish.

The study used a purposive sampling strategy to recruit participants from ICT firms and municipalities who possessed recent experience with digitalization initiatives in the municipal welfare sector. This approach secured a broad range of relevant perspectives.

The municipal representatives were ICT professionals, such as architects or chief information officers, with extensive knowledge of municipal welfare ICT. The participants were drawn from a diverse set of municipalities with varying resource bases, including small, rural areas and larger, more populated municipalities.

The respondents were selected via a referral approach, where the municipal representatives provided a list of companies central to their welfare provision, each of which was then contacted. The included firms offer a broad range of technological solutions, including enterprise systems for social welfare and care administration, school administrative systems, communications applications for citizens, identity management software, accounting systems, and integration platforms. Some companies refused to participate or did not respond to the request, which prompted additional inquiries to find respondents. Fifteen requests were sent, and nine people from eight companies agreed to be interviewed. See Appendix B for an overview of the respondents. The empirical material was collected in three steps:

1. The collection started with an exploratory phase, comprising six informal interviews with municipal representatives. This step was taken to refine the interview guide and gain insight into the material gathered in the subsequent steps.

2. Nine semi-structured interviews with ICT-firm representatives were conducted, with inquiries about what constitutes ICT-supplier capabilities and the factors that influence them (see Appendix C - Interview Guide). The material collected during the second and third steps provided the basis for the thematic analysis (described below).
3. Six semi-structured confirmatory interviews were conducted, with the tentative results from the first round of analysis used as a basis for the interview questions. Six of the original nine interviewees were available for the second round of interviews. The respondents reflected and commented on the summaries provided to them. This step was taken to 1) generate more comprehensive insights and 2) manage bias and secure results that compensated for the lack of resources for multiple coders and analysts.

While there is no fixed number of interviews required for qualitative research, thematic saturation is often achievable with relatively small sample sizes, and some studies suggest that as few as seven to twelve interviews may be sufficient (Guest et al., 2006). However, larger numbers may be needed to ensure theoretical saturation (Rowlands et al., 2016). On that basis, the collected material in this study is too sparse to allow more than conservative conclusions to be drawn. However, the assistance of the three-stage confirmatory interview process ensures the conclusions drawn are supported by the material, even though the study is not generalizable.

Thematic analysis was applied to the material from the semi-structured interviews with the ICT firm representatives. The analysis process was inspired by the recommendations of Braun and Clarke (2006) and guided more closely by those of Thompson (2022), given the iterative and abductive research approach. The analytical process consisted primarily of five steps and is outlined in Appendix D.

Although similar findings from earlier research (discussed in Chapter 2) are evident in the empirical material, the analysis also revealed six key themes of particular significance. Since the material is broad and diverse, only these key themes, deemed to contribute to the academic discourse on ICT suppliers in the municipal welfare sector, are detailed in the results.

4 Results

The six key themes consist of three linked ICT-supplier capabilities (predominantly relational and higher order):

- The ability to gain access to influence the client´s management and strategy.
- The ability to gain access to client engagement and domain knowledge.
- The ability to gain access to conduct change management.

The capabilities appear to be influenced by another three prominent antecedent and moderating factors:

- Public-sector coordination.
- Municipal ICT governance.
- Client-procurement competency and complexity.

Subsections 4.1.1 to 4.1.3 outline the key ICT-supplier capabilities, while subsections 4.2.1 to 4.2.3 present the most significant findings regarding the antecedent and moderating factors that shape the development and configuration of the capabilities. All the results presented are based on the interviews with the ICT suppliers unless explicitly stated.

4.1 Relational ICT Supplier Capabilities

This section presents the key relational ICT supplier capabilities revealed in the analysis.

4.1.1 To Gain Access to Influence Clients' Digital Strategy and Management. According to the respondents, digitalization has become increasingly difficult in the complex, interconnected, and legacy-stricken municipal welfare sectors, as there are elevated expectations for goals aimed at achieving significant change.

> "I believe that during my first 10 years in the business, about 2005–2015, back then we really took the lead and drove the digitalization in the municipalities, for instance by building web applications for pre-schools or getting rid of paper forms, meeting the requirements of a (then) younger generation of parents. Back then, we had lots of good projects. Recently, in the last five or six years, it has become somewhat harder." (Respondent 5 on the state of municipal digitalization)

The material suggests that municipal managers within welfare professions often struggle to define how technology should support and enhance their operations. Therefore, supplier firms perceive a need for more comprehensive engagements with the public sector to address perceived shortcomings in the strategy and management of municipal welfare organizations. Any ICT project could require the supplier firm to assist in the development of competencies in the client organization to implement the ICT solution being procured, even if this were not the initial purpose of the contract. In situations where clients lack the competency and resources needed to handle the core responsibilities of the municipality, such as IT governance and implementation, ICT suppliers discern a need and demand for them to drive product innovation and provide technological expertise while assisting in the development of new business models, value propositions, and strategies.

> "People [the clients] haven't fully thought things through: what do we want to achieve with this [ICT projects]? What is the benefit, so to speak? What outcomes are we looking for? What problems are we trying to solve? Instead, it seems like things are just tested without clear goals, and then it's like, 'Thank you, goodbye,' and onto the next thing. It's poorly prepared." (Respondent 3 on the lack of adequate strategy and management)

While the participants stressed the importance of municipalities taking responsibility and being accountable for adequate requirement specifications, procurement practices, and implementation, they also discerned a need for more room to maneuver, conveying a contradictory view of the issue.

> "I think that suppliers [ICT firms] have a huge part in educating [the clients], but the requirements should originate from the customers. They should utilize what we offer, but the requirements should come from the inside [of the public organization]." (Respondent 9)

> "I often feel that failures are caused by clients doing all the analysis themselves, offering too constrained offerings when procuring, instead of using dialog-driven procurement practices and asking the market." (Respondent 2)

The statements above should not be interpreted as an indication that the supplier firms lack an understanding of public accountability, but should be viewed as a call for better organizational integration. Such integration, in the participants' view, would enable firms to better align customer expectations with technological advancements and educate public managers to set appropriate requirements. This point is deemed particularly important by the respondents from smaller municipalities and the decentralized entities of larger municipalities. Procured systems are regularly adjusted to meet perceived organizational needs, without thoroughly analyzing whether these requests are reasonable. The respondents stated that municipal leadership and ICT policy too rarely address this issue efficiently; hence, continuous adaptations are made to the technology instead of changing workflows or work content, often at considerable cost.

> "I think it's a cultural thing, inherent to the client organizations in the public sector. They are not used to… how should I put it… allowing room to maneuver for suppliers." (Respondent 7 on the problems of organizational integration)

Since the public sector is reportedly unable to produce such facilities permitting the requested level of cooperation and space, ICT suppliers maintain organizational capabilities to overcome this perceived issue and influence municipal managerial practices. Such capabilities include, for example, the ability to build and leverage informal networks (sometimes centered around current products), engage in standardization communities (e.g., ISO or SIS), engage in public debate, or efficiently manage the governance of public clients.

4.1.2 To Gain Access to Client Engagement and Domain Knowledge. Another prominent challenge for ICT suppliers is to gain access to and engage with the core business functions of the municipal welfare organizations. ICT suppliers must maintain relational capabilities (throughout the digitalization process), for example, utilizing relational capital and knowledge of how municipal governance operates, to access key stakeholders at different strata. Since the respondents convey a need for ICT firms to address disparate stakeholder views on the value and purpose of digital technology, the means of accessing such discussions are crucial. The respondents value flexible collaborative practices rather than communicating through formal requirements specifications.

There are few examples of explorative projects that leverage customer-centric approaches, and the respondents saw adverse effects as partly attributable to a lack of collective understanding of technology. For example, digitalization efforts in the education sector, where substantial investments in digital tools have been made, suffer backlashes, and some welfare

professionals appear to be promoting a more analog agenda. The criticism of digital technology in the municipal welfare sector is perceived to influence how projects are regarded, and consequently, it must be addressed by the supplier firms.

There are well-documented methods for analysis, eliciting of requirements, and testing of products, and the respondents reported that the ICT suppliers possess sufficient competencies in these areas. The challenge arises when these methods are to be integrated across organizations in which the room for collaboration is constrained.

> "... we can manage that [user involvement], but the client may tell us they are not able to free up time for domain experts. They have to do their regular jobs." (Respondent 3 on the problems of accessing domain expertise)

The material suggests that supplier capabilities relating to domain knowledge and user- or citizen-centric approaches primarily constitute being good at managing systemic constraints to "convince" municipal management to assign resources for exploring the tensions between domain practices and technology use, as shown by the statement below.

> "Well, they (the public organizations) balance on the margin all the time. I think they have really poor conditions to develop their business... There are constant delays, partly because they can't free up people from the core businesses to support requirements analysis or tell us how to make configurations and stuff like that. Those are things we cannot do ourselves; it's technically possible, but the results would be worthless." (Respondent 3)

Securing enough time and people may not be an easy task, given the resource shortages and lack of cooperation faced by municipal organizational entities. The results indicate that supplier firms leverage their in-house domain expertise predominantly for conducting change management (discussed below) rather than for acquiring new domain knowledge, as they already believe they have domain expertise.

4.1.3 To Gain Access to Conduct Change Management. Asked about implementation practices, the respondents described a tendency among clients to underestimate the amount of work needed to successfully deploy and use new business practices supported by digital solutions. A significant discrepancy exists between the perceived importance of systematic change management and its actual execution; although municipalities consider it central to successful implementation, it is seldom adequately performed. This fact was partly attributed to the client's inadequate resources and insufficient attention to the issues.

> "If you look at the welfare sector, it is very... how should I put it? It has a high density of people... And to change is hard. And when there are a lot of people in need of change, substantial insight is needed into what is required for change management to be successful." (Respondent 3)

> "In a municipality, specifically, there are a lot of people who have to get on board. It's not just digitalization and IT; the [local] politicians have to believe in it, and so on..." (Respondent 6)

The problems of accessing change management are also associated with the formal constraints of procurement practices. The change process starts before any procurement is made. Thus, the ICT suppliers cannot influence the initial phases (relating to the intended use of and presuppositions about digital technology), despite the responsibility they will assume later. This situation presents the suppliers with a problem that is difficult to manage.

Furthermore, municipalities may have an ambivalent stance on whether ICT solutions should be used as the designer intended or be amended to fit various local ideas of how welfare should be practiced. This suggests that ICT-supplier firms must develop and maintain organizational routines and competencies that promote understanding of the possibilities and limits of technology adaptation in both potential and current client organizations.

> "We must take more responsibility than we plan to and educate the customer more than we thought necessary." (Respondent 8 on the substantial amount of change management work required)

Again, supplier firms need to gain access to deploy change-management practices leading up to a contract by leveraging assets such as informal networks, public debate channels, and procurement offerings, as well as systematic change-management practices conducted when a project formally starts. These capabilities are essentially about creating space to work with collective sensemaking.

4.2 Antecedent and Moderating Factors

This section presents the key antecedent and moderating factors influencing the relational supplier capabilities revealed in the analysis.

4.2.1 The Influence of Public-Sector Coordination. The respondents assert that the ICT-supplier capabilities required to support digitalization and digital transformation in the welfare sectors are influenced by how public-sector cooperation is managed and structured, locally, and nationally.

> "The thing is, the municipalities must somehow cooperate around the big and important questions and state, 'this is the way we see it.' This will make it easier for everyone. . . " (Respondent 2)

There is a tendency among the respondents to view digitalization policy and national coordination as indistinct or disorganized, with governmental agencies and non-profit organizations failing to provide cohesive governance structures and guidance for the municipal sector. There are good examples of efforts to facilitate cooperation, such as SS12000 (an interface for information exchange between business processes in education), first published in 2018, which was developed by SIS (part of ISO) and arose through open participation. However, there are many other instances in which appropriate efforts have not been made. One example is the formulation of common requirements for ICT solutions to streamline procurement, though there are few uniform ideas in the empirical material about what these solutions would look like.

> "They [the municipalities] are rather similar, even though they stress their uniqueness. They would benefit from coordination at a higher level. If we look at the Agency for Digital Government, for instance, they should provide more guidance." (Respondent 6 on the perceived need for standardization)

The respondents view most municipalities as unable to drive transformative efforts, partly because they often lack time and resources for things not directly related to their core operations. Furthermore, the reported insufficient internal cooperation between legal departments or IT departments, for example, hampers discussions about the future role of technology and value creation, as any development process could initiate and converge at multiple points, simultaneously requiring resources from many different stakeholders.

The combined effects of poor national coordination and poor collaboration within the municipalities, most prominently between IT departments, legal procurement experts, and domain experts, influence what capabilities supplier firms believe they must maintain and where they must allocate their resources.

4.2.2 The Influence of Municipal ICT Governance. The respondents view municipal IT governance as intricately linked to the capability requirements of ICT suppliers. According to them, effective ICT project execution relies on order and structure. In this context, this involves data governance, proper documentation of system dependencies, and an understanding of how design choices affect operations and outcomes, as indicated by the quotes below.

> "The ones [municipalities] that do well, if we refer to this case, are the ones that have understood their system map [architecture], who know which roles exist and how the systems relate to each other. . . " (Respondent 5)

All the respondents had extensive prior experience working with public welfare as employees or long-term consultants. They reported that their firms consistently employ welfare practitioners, and any issues were unlikely to stem from a failure to acknowledge the need for domain-specific requirements. Instead, the empirical material suggests that ICT suppliers struggle to understand and adapt to the formal complexity of public governance (discussed previously) and the sheer number of ICT solutions. These issues predominate, rather than professional or domain-specific cultural differences. However, actions to fix these often complex and detail-oriented aspects of management can be challenging, especially when their short-term benefits are not readily apparent.

> "Well, more than anything else, it is perhaps the scope. The public sector is substantially more complex, and you need to have good knowledge and understanding of the various systems that need to integrate with another municipality, for example." (Respondent 4)

In general, the respondents called for increased accountability on the part of the client organizations in the implementation and value realization phases. The respondents reported that follow-up was usually based on deliverables specified

in the procurement process, which may omit relevant value dimensions that procurement contracts do not capture. There may be relevant accounting models that harmonize with the ambition to measure the business impact of digitalization initiatives in new ways, but it was not clear to the suppliers whether these were utilized.

> "The projects themselves are often managed flawlessly, and the reason for having a project is, of course, to create some kind of impact. But it is rare to check for the actual impact goals [afterwards]." (Respondent 6)

These statements seem to indicate encroachment, as the supplier firms suggest they must take various degrees of responsibility for system mapping and integration, as well as value realization, when implementing their products, indicating an assumption that municipal welfare organizations have a limited understanding of the costs and benefits of IT.

4.2.3 The Influence of Client-Procurement Competency and Complexity. Despite having a general understanding of the good intentions behind the procurement laws, many respondents perceive the praxis as cumbersome and inflexible. The procurement process demands substantial effort from the supplier side to interpret and adapt offerings to various requirement specifications that the respondents often considered poorly specified or unnecessarily detailed.

> "Well, the biggest obstacle really is too many precise requirements with a high level of detail. That can tie our hands behind our backs when we are designing offers. . . " (Respondent 1)

The ways in which municipalities formulate and express demands through tender documents may favor certain types of companies. Suppliers are required to demonstrate expertise and financial stability. While such requirements are essential for ensuring credibility, they can inadvertently stifle startups and innovation, especially when the procurer does not adequately address such challenges. Respondents recognized the public sector's need to monitor supplier credibility and financial stability, but they noted that this oversight must be balanced more effectively with a focus on fostering trust and collaboration.

The empirical material reveals several examples of public-sector procurement practices limiting suppliers' ability to create effective solutions due to strict requirements, poor risk management, and excessive focus on upfront costs. Suppliers, collectively, have the impression that municipalities do not always comprehend how their requirements and specifications impact their overall operations.

> "Yes, it [procurement] is very resource-intensive and puts heavy demands on the client. You have to have procurement experts who are in sync with the core business departments, and that's a problem today." (Respondent 7)

The respondents suggested that the industry is under significant price pressure, making improvements difficult to implement due to a lack of profit margin. Qualitative IT is, in reality, more expensive than the general discourse implies, and there are certain misconceptions about what can reasonably be expected for the money invested.

> "It is a price race, but I mean, the suppliers are not without fault. You need to adapt your system offerings to the lowest price and read all the specifications with great rigor, or else you lose." (Respondent 2)

Furthermore, procurement is routinely complicated by not only procurement laws but also the multitude of framework-like regulations that must be included in the requirements. This is exemplified by the reported increase in focus on security and the ever-evolving guidelines for professional practices issued by central government authorities.

These lines of reasoning generally resulted in calls for standardization and structuring of cooperation within public organizations and the ecosystems they inhabit.

Since standardization and digital infrastructures are national and supranational issues, it is difficult to determine the level of responsibility an individual municipal welfare organization could reasonably be expected to take.

The demand for improved modes of cooperation and organizational integration is also evident in the critique of procurement practices, especially regarding the initial stages of ICT initiatives. However, the material is inconsistent on this point, as the respondents reported a general need for more flexibility and mission-oriented approaches while still calling for clearer and more detailed requirements and specifications.

While price-focused competition can be a desirable strategy for procurers, the respondents suggested that this tendency may be due to shortsightedness rather than deliberate strategy. The implications of these results are that the mode of procurement and how clients practice it tend to force ICT-supplier firms to retain static operational capabilities rather than

invest in the ability to innovate. Additionally, the complexity of procurement law and various legal frameworks warrant investment in ICT firms' legal capabilities.

5 Discussion

In many respects, the findings are consistent with existing research on digitalization and outsourcing. The previously discussed functional domains of organizational capabilities highlighted in the literature (see Chapter 2) are also evident in the empirical material. Being a cooperative activity, supplying ICT naturally entails relational and legal dimensions, as evidenced in this study's results and prior research (Han et al., 2013; Lacity et al., 2017; Levina & Ross, 2003; Mazumder & Garg, 2021). Additionally, domain knowledge and customer-centric approaches are frequently cited as central to ICT projects (Frennert, 2018; Lindgren et al., 2019; Rösler et al., 2021; Van Veldhoven & Vanthienen, 2023).

Despite these anticipated findings, a key observation is the extent to which supplier firms implicitly and explicitly prioritize competencies and assets that enable them to influence the digitalization of municipal welfare practices. The results imply that ICT-supplier capability in local governments generally involve the ability to gain access to enact digitalization capabilities, maneuvering client-side or systemic constraints to deploy value-adding competencies and resources. In essence, these capabilities are higher-order relational capabilities that shape the ability *to influence how to influence* digitalization.

While not novel, there has been limited evidence of such findings in the context of public welfare. The strong focus on abilities to manage, circumvent, or adapt to constraints stemming from limited public-sector competencies and systemic design is noteworthy.

Contrary to prior findings that private firms may lack an understanding of public sector logics and their core operations (Kuoppamäki, 2021; Wilson & Mergel, 2022), the present study's results imply that these firms possess good insight, partly because they employ professionals from the welfare sectors. This indicates that it may be wrong to assume that failed digitalization stems from a poor understanding of the public welfare professions. However, it must be acknowledged that the empirical material captures a specific viewpoint, time, and context. It does not reveal the extent of the practice of employing welfare professionals or whether it is a recent phenomenon. Moreover, knowledge of various welfare professions does not equate to an understanding of the complex governance of municipalities, something the respondents appear to view as problematic, especially if governmental organizations become increasingly interconnected.

The results suggest that some environmental factors are perceived to be especially influential for ICT-supplier capabilities — primarily, the public sector's ability to coordinate efforts, municipal IT governance, and client-procurement competency and complexity. The respondents believe the antecedent and moderating factors are predominantly contextual (relative to the supplier firms), rather than intra-organizational.

The substantial number of different ICT solutions deployed by the municipalities, including legacy systems, may require considerable attention during implementation and service management. Thus, the issues appear to relate to a combination of public sector organizational management, the state of the incumbent system architectures, and legal practices. The representatives from municipalities and supplier firms differed in their views on accountability; for instance, suppliers rarely attributed shortcomings to their capabilities or business models, although they did acknowledge some internal challenges. As evident in the empirical material and prior research, the public sector consists of complex organizational networks (Cordella & Bonina, 2012; Marco-Simó & Pastor-Collado, 2020), and similarly, the supplier side comprises integrated systems of subcontractors. This situation provides significant space for divergent views on the role of digital technology and its intended purpose or management, an issue discussed in previous studies (Bannister & Connolly, 2014; Bozeman & Bretschneider, 1986; Chantillon et al., 2020; Heidlund & Sundberg, 2023; Rose et al., 2015).

In this study, the respondents describe the present situation as a state of systemic uncertainty regarding municipal ICT governance and the coordination of digitalization, with the implication that the development of new business models and capabilities may become problematic. Supplier firms might benefit from poor coordination that leads municipal clients to procure solutions in competition with each other, but this is not evident in the interview material. On the contrary, there is a manifest demand for better procurement competence that would create room for exploration and innovation.

This finding may imply that the public sector's collective inability to articulate a coherent and feasible narrative regarding the role of digital technology within municipal welfare organizations and to adapt the systemic mode of operations contributes to the perception that it is difficult for any organization to invest in capabilities that would enable it to truly drive digitalization or innovation. These results align with the findings of Lindgren and Van Veenstra (2018), indicating that digitalization requires the redesigning of not only organizational processes or technology but also the institutional layer. The findings also support conclusions emphasizing the importance of building dynamic capabilities within the public sector and adopting mission-oriented approaches to societal change to cover the multifaceted expressions of public value (Mazzucato, 2016). This perceived systemic uncertainty and lack of direction in national and local policy appear to drive

ICT firms' focus on higher-order relational capabilities, as they struggle to deploy their core value-adding competencies and assets.

6 Conclusions, Future Research, and Limitations

This paper examines what constitutes the key ICT-supplier capabilities of firms supporting public-welfare digitalization (RQ1) and the factors influencing the creation and character of these capabilities (RQ2). By taking a supplier viewpoint, this paper makes a modest contribution to the understanding of how ICT suppliers manage perceived challenges related to the outsourcing of ICT.

The results indicate that higher-order relational capabilities are vital for ICT suppliers in the municipal welfare context, enabling them to access lower-order digitalization capabilities by navigating the formal and informal complexity of municipal governance, incumbent ICT architectures, and public procurement processes.

The empirical material reflects divergent and at times contradictory ideas about the roles of different actors and their presumed responsibilities. The respondents perceive a lack of coherent narratives regarding the purpose and process of digitalization within the welfare sectors. This study suggests that even if there are reported improvements in digital governance, more constitutive work is required before market actors are utilized to their full potential. Such constitutive work may require a more active public sector role in market making or market influencing to address the structural aspects of digitalization governance.

6.1 Future Research and Limitations

While this study offers preliminary insights, a more comprehensive investigation is needed to fully understand how relational capabilities are formed and the specific competencies and assets they rely on. Further investigation is required to reach more detailed conclusions about this complex phenomenon. Given that the municipal perspective is only indirectly represented in this study, future research should consider a more comprehensive approach.

Furthermore, the material's prominent focus on contextual factors (e.g., antecedents and moderators) suggests the need for deeper inquiry into how ICT supplier firms relate to institutional constraints and affordances. There is also the question of why so little attention was put on market failures by the respondents. This study did not explicitly examine such perspectives, but they would be feasible avenues for future research.

Finally, the empirical material in this study is limited and should be regarded as tentative. Future research should expand the empirical material to include additional cases or other contexts.

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Notes

1. Education Technologies
2. Electronic Healthcare
3. Internet of things

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Author Biography

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Appendix A: Analytical Framework

Component	Description	Example Sources
Organizational capabilities	Organizational routines or (conscious) patterns of action utilizing competencies and resources (Section 2.1).	Schilke et al., 2018; Perunović et al., 2012; Winter, 2003.
Ordinary/operational capabilities	Capabilities supporting an organizationś incumbent mode of operation (Section 2.2).	Schilke et al., 2018; Winter, 2003.
Dynamic capabilities	Higher-order capabilities enabling changes of other capabilities, competencies, and resources to support novel modes of operation (Section 2.2).	Schilke et al., 2018; Winter, 2003.
Digitalization capabilities	Specific capabilities, predominantly dynamic, enabling digitalization (Section 2.3).	Annarelli et al., 2021; Escobar et al., 2023; Steininger et al., 2022.
Supplier capabilities	Specific capabilities enabling the act of supplying, comprising the dimensions (Section 2.4).	Gantman, 2011; Han et al., 2013; Lacity et al., 2017; Levina & Ross, 2003; Mazumder & Garg, 2021.
Antecedents and moderators	Contextual or organizational factors that influence the creation or enactment of capabilities (Section 2.5).	Schilke et al., 2018; Steininger et al., 2022.
ICT-supplier capabilities	Capabilities that enable the act of supplying digital technology, combining supplier capabilities and digitalization capabilities (dynamic and ordinary)—influenced by antecedents and moderators.	The sum of the above.

Appendix B: Summary of Respondents

Summary of Respondents - Informal Interviews

ID	Role	Municipal Size (Citizens)
I1	IT Strategist	Approximately 100,000
I2	IT Architect	Approximately 100,000
I3	IT Coordinator	Approximately 25,000
I4	IT Strategist	Approximately 10,000
I5	Procurement Expert	Approximately 10,000
I6	Chief Information Officer	Approximately 50,000

Summary of Respondents - Semi-Structured Interviews (Round 1)

ID	Role	Duration(min)	Company
1	Head of IT Architecture	54	Ed. tech[1]
2	Vice President	57	Multi-sector
3	Consultant (Management)	52	E-healthcare[2]
4	Account Manager	47	Ed. tech
5	Key Account Manager	53	Ed. tech
6	Owner and Head of Sales	51	IoT Platform[3]
7	Procurement Consultant	35	Multi-sector
8	CEO	46	Ed. tech
9	CEO/Head of Development	46	Multi-sector

Summary of Respondents - Semi-Structured Interviews (Round 2)

ID	Role	Duration (min)	Company
9	CEO/Head of Development	56	Multi-sector
3	Consultant (Management)	82	E-healthcare
7	Procurement Consultant	57	Multi-sector
5	Key Account Manager	58	Ed. tech
8	CEO	53	Ed. tech
4	Account Manager	70	Ed. tech

Appendix C: Interview Guide

Semi-Structured Interviews

1. General question 1: What constitutes supplier capabilities (in a public-welfare context)? Follow-up questions/elicitation questions:
    a. In your opinion, are the digitalization projects in the welfare sector successful?
        i. What succeeds?
            1. What makes it succeed?
        ii. What fails?
            1. What makes it succeed?

   iii. Are there any differences between digital transformation and digitalization?
   b. Are there abilities relating to supplying digital solutions that are important when collaborating with the public-welfare sector?
      i. Are there obstacles?
   c. Are there abilities that are particularly important when supplying novel or innovative solutions?
      i. Are there obstacles?
2. General question 2: How are supplier capabilities created (in a public-welfare context)? Follow-up questions/elicitation questions:
   a. Is there something that would create better conditions for you to deliver value for the welfare sector?
      i. If yes, what?
      ii. If no, why not?
      iii. What (if anything) should be done to create better conditions?
   b. What factors are you able to influence?
   c. Are there factors that would deter you from taking on a project?
      i. Are there factors that would make the projects unattractive (or unprofitable) for you?
   d. If you were a municipal IT manager, what would be your greatest challenge?
      i. When it comes to influencing supplier capabilities?
         1. What (if anything) would you do about it?
3. General question 3: How do supplier capabilities influence the outcomes? (Not connected to RQs - asked to provide contextualization/elicit additional perspectives.) Follow-up questions/elicitation questions:
   a. Are there outcomes that are harder to achieve? If yes, why?
      i. In your view, what is the purpose of technology?
   b. Is working with public-sector clients different from working with private-sector clients?
      i. If yes, describe how and why this is.
   c. In your view, what does a successful project entail?

Appendix D: Analytical Process

1. Familiarization with the material: The interviews were recorded and transcribed using a transcription tool (Microsoft Teams), after which the auto-generated text was corrected while listening to the recording. The recorded and transcribed material was then listened to again and reread several times to ensure familiarity with the content.
2. Coding: The coding was conducted in two rounds by one coder. The first round was theory-driven and involved scanning the material for segments referencing the components of the analytical framework. This exercise generated codes assigned to the themes provided by the framework: ICT-supplier capabilities (dynamic and ordinary), competencies, assets, moderators, and antecedents. In the second round, the themes and codes were expanded or refined, and additional themes, sub-themes, and descriptions of their relationships were generated.
3. Development of themes: Based on the results from the previous step, this step involved looking for patterns and implicit meanings in the material. This stage saw the emergence of the prominent themes capturing the key findings presented in the conclusions.
4. Confirmatory review: The material from the confirmatory interviews was compared to the tentative findings. Themes and codes were modified based on the new input. The results of this exercise generated the finalized material, which formed the basis for the conclusions. The confirmatory interview was conducted to improve the credibility and quality of the preliminary results by having them reviewed by the respondents.
5. Generating conclusions: The finalized material was analyzed, comparing the extant literature with the findings to determine the theoretical and empirical contribution of the study. Please note that, as the material was broad and diverse, only the most prominent findings were selected to be presented in the results and conclusions. Data confirming prior research were not detailed in the results.