



# Unprocurable essentialities: Situational and relational knowledge in publicly procured security services

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## ABSTRACT

In most cases, the procurement of services depends on a description of a service as a set of specified entities. Detailed specification and reporting provide transparency and accountability in service production and give the buyer more control over service quality and efficiency. However, some features and qualities of operational work are difficult to specify and procure in such a manner. In the present study, we examine how security service personnel view the influence of public procurement regulations on intangible organizational qualities. We focus on situational and relational knowledge, two social dimensions within and between organizations. Situational and relational knowledge is important for resilience and reliability and more generally for quality but are less manageable entities to specify and procure. Based on studies of the public procurement of two different forms of security services, we analyze how such qualities fare within an organizational discourse of procurement processes where standardized specifications, contracts, accountability, and audits are dominant. We find that situational and relational knowledge are created through experience in discussions, work operations, and joint learning with coworkers and other actors in the security network. Such organizational qualities are rarely specified in procurement, since tenders, contracts, and the systems for overseeing the service provider address other qualities. As our study shows, unprocurable knowledge still exists in the shadow of more explicitly specified qualities.

## 1. Introduction

Both private organizations and the public rely on the procurement of services. For decades, the outsourcing of non-core activities has been common (Hayes and Tillement, 2022). When an organization chooses to subcontract a service, it usually does so because that approach offers more benefits than keeping that competence in-house – it may provide flexibility in terms of staffing, be less costly, and give access to a broader knowledge base. Some monoliths still exist; a few organizations keep every activity from core operations to expert analyses, office cleaning, and cafeteria services in-house, but it is increasingly common to contract out activities that are external to the core of a business.

However, it is not just bits and pieces of organizations that are outsourced; sometimes, entire public services have been detached for procurement. Even socially critical services, such as infrastructure and

security, are contracted out by the public (Almklov and Antonsen, 2010; De Bruijne and Van Eeten, 2007; Schulman et al., 2004; Slotsvik et al., 2020; Slotsvik et al., 2023). This often results, as seen in the outsourcing of critical infrastructures, in formerly state-owned utilities being replaced by myriad separate organizations. Each organization and the web of organizations as a whole are needed for the infrastructure to work reliably and thus for societal safety (Almklov et al., 2018). Therefore, society depends on components both in each organization and in their “networked reliability” (Almklov and Antonsen, 2010, 2014; Berthod et al., 2017; De Bruijne and Van Eeten, 2007; La Porte and Consolini, 1991; Roe and Schulman, 2008; Schulman and Roe, 2011; Slotsvik et al., 2023). When the public contracts one component of the important whole, certain rules apply.

In Norway, public procurement is regulated by, among others, the European Procurement Resolution and the Norwegian Public

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Procurement Act, which aim at fair competition and reasonable use of public resources. However, the goal of neutral competition has made *quality* a challenging criterion that is sometimes left out of the equation (Gullestad, 2013; Slotsvik, 2023; Størkersen et al., 2017). Procurement laws designed to achieve fair, transparent competition and to avoid corruption and favoritism have implications for the ways service providers can operate and influence relations among the parties involved and the types of knowledge that are valued.

Organizational fragmentation and its implications for societal safety have been subject to attention in studies like the ones mentioned above, but questions remain regarding the organizational qualities that make procurement influence societal safety (Slotsvik et al., 2020).

In the present study, we examine how different security service personnel view the influence of public procurement regulations on intangible organizational qualities like situational and relational knowledge. For security services, important *situational knowledge* involves skills and competence coming from experience and education, which enables personnel to know their neighborhood and understand how to prevent escalation in volatile situations (Wathne et al., 2023). In this setting, security services' *relational knowledge* in a social system is imperative: personnel must know their clients, the roles of other professions, and how the security service can contribute to or obtain contributions from other professions to mitigate and ideally avoid hazardous situations (Ibrahim, 2014).

Our argument is as follows: the emphasis of procurement regulations on fairness and transparency provides less flexibility than what security services need – to do their tasks with the necessary situational and relational knowledge. In public procurement, all relevant aspects of a service must be specified in advance, thus making it difficult to put sufficient weight on less tangible organizational qualities. We discuss the public procurement of security services based on two different empirical studies. These two examples, security controlling (also known as security guards) and avalanche monitoring, reveal from different angles how important qualities of relational and situational knowledge are developed and at stake every time a contract expires.

In Section 2, we briefly explain Norwegian public procurement. Section 3 discusses research on societal safety which may help interpret the results. Section 4 delves into the study's methods and limitations. Section 5 is about the security controlling case, describing both the context and the study results, while Section 6 does the same for avalanche monitoring. In Section 7, we discuss procuring of situational and relational knowledge in both cases.

## 2. Public procurement of critical services

Due to Norway's close ties with the EU, its public procurement regulation is largely an adoption of the European public procurement regulations. The purpose of the Norwegian Public Procurement Act is "to promote the efficient use of society's resources. It shall also contribute to the public sector acting with integrity, so that the public has confidence that public procurement takes place in a socially beneficial manner" (§ 1).

In the EU as in Norway, rules apply for service contracts of more than EUR 140,000. There are several types of public competitive procurement procedures, such as *open procedure* (where anyone can submit a tender) and several types of restricted procedures. *Competitive dialogue* can be used by a public contracting authority that wants "a method of addressing a need defined by the contracting authority." There are separate regulations for security services that can be called defense services, but the cases in this study are typically viewed as commercial security services. The open procedure is most commonly used for these security services.

According to Norwegian and European public procurement law, procurement officials should not fraternize with service providers, since they run the procurement process as an open procedure and not a competitive dialogue. Further, there are limits on how much a

contracting organization can involve itself in the internal workings of a supplier, as it is generally the service provided that is the object of the tender. The regulation also restricts flexibility as to adjusting contracts after a tender is won, as changes in scope might lead to legitimate complaints from unsuccessful bidders. Such complaints also mean that legal jeopardy needs to be considered by the contracting organization. A poorly designed tender can lead to lawsuits and other conflicts that can disrupt effective service provision (Slotsvik, 2023). In sum, public procurement regulations create limitations on an open dialogue between buyers about how to organize the service production, such as how to facilitate knowledge development, and restrict the parties' ability to change the service during the contract period. Moreover, to avoid favoritism, professional relationships between buyers and suppliers that may develop in the course of a contract period cannot be given weight when procuring new contracts. For more about Norwegian public procurement, see Losnedahl (2023); Slotsvik (2023).

## 3. Existing research

To understand how organizational qualities like knowledge and relations can be procured to achieve societal safety, we draw on the literature from several fields. Below, we introduce previous research about multi-organizational services, procurement criteria, the commoditization of operational work, and knowledge building.

### 3.1. Multi-organizational services

Society depends on reliably functioning services that must maintain stable outcomes in spite of task variability (Farjoun, 2010; Pettersen and Schulman, 2016). A function's reliability is determined by its robustness and redundancy (Hood, 1991) and the resilience of the organization responsible for the function, including the ability to adapt to new and unexpected events and the ability to return to normal operation after disruptions (Hollnagel et al., 2008). In procurement, control is made utterly explicit and the service quality sought is captured in standards and prescriptions, 'resilience as sustained adaptability' entails a flexible response to external circumstances, so that the critical function is reliable in all periods (Woods, 2018). Further, high-reliability organizations (HROs) are often characterized by their organizational redundancy (La Porte and Consolini, 1991) and sensitivity to operations (Weick et al., 1999).

Many parts of society depend on an increasingly interconnected network of agencies and organizations. Moreover, as demonstrated by Rasmussen (1997), politicians, regulators, associations, companies, management, and operational personnel can all affect how work can be performed, and those actors all are pressured by outside factors like the political climate and market conditions. They depend on one another for sufficient resources and support from upper levels to be able to establish the right priorities and do their work safely (e.g., Perrow (1983); Rosness et al. (2012)). Regulators or management "control the resources, constraints, and multiple incentives and demands that sharp-end practitioners must integrate and balance" (Woods, 2010, pp. 1, 8).

Critical societal services must be reliable and since they involve several organizations, that reliability has to be achieved across multiple actors (Roe et al., 2005). The provision of critical services depends on cooperation between public agencies and private companies. These can include providers of IT or energy systems, public housing and support services, avalanche security, the transport of critically ill patients, and security control services. The importance of interorganizational collaboration is recognized in safety science but not yet sufficiently understood (De Bruijne, 2006; Gotcheva et al., 2020). Although the various actors differ in profile and purpose, they need to collaborate and coordinate (Milch and Laumann, 2016) to develop intraorganizational conditions. Reliability, safety, and security are *networked*, and understanding how these *systems* achieve these qualities is still an emerging research field. We contribute in the present study to this research stream by

examining the how public procurement regulations and processes affect the interactions between service providers and responsible agencies and, ultimately, the nature and quality of the service provided.

### 3.2. Criteria in procurement

Public procurement of private services is intended to ensure efficiency, reliability, and satisfied end users (Pollitt and Bouckaert, 2004) since private companies compete to be selected for having the most efficient ways to run the service. A heavy focus on price in procurements has been a problem worldwide (Eriksson and Laan, 2007) and is said to have led to, for example, the Rana Plaza collapse in 2013, where 1138 Bangladeshi textile workers lost their lives. Many deaths in the February 2023 earthquake in Turkey have also been associated with shoddy construction resulting from contractors' desire to cut costs. When several organizations are involved, economic pressures negatively affects the shared sense of responsibility (Milch and Laumann, 2016). Oswald et al. (2020) demonstrate empirically the safety-related risks of low bidding to win procurements on large infrastructure projects. In maritime transport, public procurement of passenger services has led to operations with minimal safety investments and skeleton crews (Størkersen et al., 2017). Since price is the most readily measurable aspect of many procurements and is often the main award criterion, the least expensive vendor is frequently chosen. Selecting the cheapest option – or “squeezing the contractors” – may be costly in the long term, as illustrated by Bye and Fenstad (2008). Procurement officials' competence on how to include other criteria has been lacking in Norwegian public transport procurement (Gullestad, 2013), while the health care literature contains numerous examples of systems that were purchased but failed to meet user needs and ultimately led to safety issues (Kushniruk et al., 2010, p. 54). While researchers and likely the public are aware of the risk of focusing too narrowly on price for both public and private buyers, there are also more intricate issues regarding how work is represented in tenders and contracts, and how that relates to safety.

In a recent study of the public procurement of Norwegian air ambulance services, Hayes et al. (2023) found that quality, knowledge, safety, and performance were of great importance for delivering a safe service but are of course difficult to detail and measure in contracts. In this case, to use a criterion other than price, another indicator was created as a proxy for service quality: availability. The indicator became highly symbolic and was followed more closely than originally intended, as all attention was paid to availability instead of quality, safety, and performance.

### 3.3. The commoditization of operational work

Almklov and Antonsen (2010) address this issue in the procurement of critical functions. They argue that outsourcing in infrastructure sectors typically relies on organizational *modularization* and the *commoditization* of operational work. Essentially, modularization means that organizations providing parts of a service need to be interchangeable but with standardized interfaces (i.e., the contract). For accountability and control, the workflow is also organized into specific delimited entities, a set of standardized tasks, that are possible to manage, measure, and audit. Since manageability makes services easier to contract, they can be turned into commodities in the public market of function providers. In most cases, outsourcing relies heavily on the detailed specification, data collection, and audit of the service to ensure the buyer's control and avoid becoming overly dependent on a given contractor's system knowledge (Almklov and Antonsen, 2010).

However, although both a tender and a contract describe the procured service, work descriptions are always underspecified (Suchman, 2007). Of course, some organizational qualities are harder to describe. For example, situational adaptation and improvisation are features that can effectively be invisible and hard to specify, to measure, and thus to trade (Almklov and Antonsen, 2014). When a service is outsourced, an

interface is created between the contracting agency and service provider. This interface – and hence the work to be done by the service provider – is defined and regulated by a contract between the parties. However, the professional competence invested in the strategic planning and the operational execution of work is not (necessarily) made subject to that contractual relation. Procurement processes may introduce periods of instability and change in the organizations involved, potentially affecting the core processes (La Porte and Consolini, 1991). The fact that descriptions of work are always underspecified is more generally the case of procedures and plans in all organizations, but when these descriptions are a part of a contractual transaction – when procedures and plans are specifications for a “product” that is bought and sold – this tendency to render work invisible is strengthened. Some identified dimensions of work that typically become less visible in such arrangements but still arguably remain important for work execution are situational adaptations to varying concrete circumstances, temporal dimensions, operational history, and the role of social interactions and knowledge exchange within the community of practice (Almklov and Antonsen, 2010, 2014). In the procurement specification, this may be carried out by specifying formal experience, education, training, and the like, but those details will struggle to fully capture the contextual and social nature of situational and relational knowledge.

Procurement involves the fragmentation of structure, management, coordination, and information flow (Milch and Laumann, 2016). This phenomenon has also been studied in the construction industry, where smaller units can have conflicting interests, ambiguity about responsibility, inadequate communication and teamwork, and differences in safety cultures between general contractors and subcontractors (Manu et al., 2013). One consequence may thus be an urge to craft more standards across contexts or specified tasks. More detailed tasks can lead to narrower responsibilities and less of an overview of the infrastructure and thus make the operations less adaptable and resilient (Dekker, 2015).

There is a growing recognition, particularly in the resilience engineering tradition of research, that “work as imagined” (in this case in tenders and contracts) is not the same as “work as done” in concrete contexts, with all their peculiar details (Hollnagel et al., 2006; Woods, 2010). When services are procured, it is primarily the work as imagined that is the object of tenders and regulations. In the reality of procurement, rationality and precision are enhanced, so even public services are transformed into commodities in a market (Gregory, 2017, p. 223). When people are commodified as “resources” in a tender, they can be controlled and traded. However, the traits that on offer must be precisely defined and preferably measurable. This specificity is necessary for a procurement process (i.e., the trading) to be transparent, fair, and accountable. Situational and relational knowledge cannot be precisely defined or measured and are thus left out of most tenders. However, although it may seem useful to include that knowledge in tenders, it could lose its value in the process. If situational and relational knowledge were transformed into a precise entity that could easily be traded, it could paradoxically become of less value (Gregory, 2017, p. 233). Precise and measurable knowledge does not have the same qualities as subjective, situational, and relational knowledge. In this logic, it is a paradox to strive for more precise targets on subjective qualities. For example, if an organization aims for zero accidents and implements safety indicators, the documentation of indicators may take attention away from safe work practices. This can lead to perverse results and goal displacement: the measures are not hitting their targets but rather distorting it. To ensure room for work that cannot be precisely measured may be a better way to reach the goal (Gregory, 2017, p. 240).

### 3.4. Building situational and relational knowledge

The knowledge needed for a given job may only become clear after a certain amount of experience, which takes time. It consists of situational and relational knowledge, among other things. However, knowledge is

not always a commodity that can be swiftly and effortlessly acquired from the market. It operates in specific contexts and is not readily interchangeable across contexts.

Quality can be achieved through workers' skills and experience (Dekker, 2017). Experienced personnel often improvise on a set of embodied action alternatives to make operations work smoothly (see also Klein, 1993; March 1994; Rasmussen, 1997; Rosness, 2009). In the context of resilience engineering and sociology, this decision making occurs because experienced operators have internalized how to respond to normal variability in their operations and what to monitor so as to anticipate unexpected events. As Schulman and Roe (2007) argue, the reliability of large networked systems depends on reliability professionals, mid-level managers with extensive operational work experience in many departments of the same infrastructure system. However, that experience and knowledge are embedded in a specific context and often tacit, meaning that they are not easily conveyed to colleagues or documented in protocols (Polanyi, 2009) and are therefore often invisible to others, including those responsible for procurement.

Ad hoc coordinating work, which means adapting a formal workflow to situational contingencies, is sometimes referred to in the sociology of work as "articulation work" (Schmidt and Bannon, 1992; Strauss, 1985; Suchman, 1996) and is less highlighted in the sociology of safety (but see e.g. Almklov and Antonsen, 2010; Grøtan et al., 2020; Haavik, 2014). This notion is particularly relevant in cases where contracts and procedures are rigid and standardized and need to be adapted to contextual variability to be executed smoothly. Due to its situational nature, articulation work is often invisible in representations of work. Without it, however, even well-formulated descriptions of work in an otherwise smoothly functioning division of labor would be fragmentary and ineffective as soon as situational conditions deviate from the expected.

In 2022, Wathne et al. (2023) carried out a central survey of security controllers, who reported that it was imperative to have skills in communication and conflict handling. This involves situational and relational knowledge. Furthermore, their study showed that most security controllers have a variety of tasks and limited resources with which to complete them. They often work alone but rely on social relations with others, such as clients, neighborhood shopkeepers or security services, and the police. Expectations from customers and the public are high, and security controllers try to meet those demands, but they often do not have enough resources, while customers may have downsized the number of security personnel in the contract, there may be conflicting expectations, and sometimes those expectations are greater than what has been formally approved in regulations or agreements (Wathne et al., 2023, pp. 49-50). Indeed, 75 % of the controllers said they had not received sufficient training, with one saying in an interview that the lack of training was due to formalities in the procurement. This was also touched upon in an earlier study that demonstrated how security controllers play an essential role in the security system buttressing social safety in Norway but that the responsibilities and borders between institutions vary from situation to situation (Ibrahim, 2014).

#### 4. About the cases and methods

The present study is based on a case study involving two cases of services contracted by Norwegian public agencies. To make a viable connection between a particular context and more general applicability, there should be a conscious strategy behind any case selection to allow for deliberate choices about variation in the contexts of the phenomenon under study. This renders possible a form of "variable control" (Antonsen and Haavik, 2021).

The security sector is a good case to study procurement and situational and relational knowledge. Security services are part of the infrastructure of interconnected organizations ensuring societal safety. Security services work in close connection with citizens, companies, public emergency services, and other actors (Wathne et al., 2023). In

addition, security services come in different sizes and forms and are privately and publicly contracted all over the world (Nøkleberg, 2022; Van Steden and De Waard, 2013). The security controller case represents a highly direct and visible security service, while avalanche monitoring is not as noticeable in society. The avalanche case is particularly suitable for identifying categories of qualities that more implicitly contribute to a service and thus may not be described as such or even mentioned in tenders. In both cases, we have interviewed different types of personnel (see Table 1) about how they perceive the quality and security in their services and what is influencing that. Hence, rather than comparison, the rationale behind the case selection is to use cases with different characteristics to identify the various mechanisms influenced by procurement regulation.

The methodological approach differs somewhat between the cases. The security controlling study was explicitly designed to investigate the procurement of security services, whereas the avalanche monitoring study was broader in scope but revealed some of the same dynamics, inspiring a combined analysis.

##### 4.1. Approaches to the security controlling case

For one case, the present study focuses on security control services in public urban spaces and public buildings. The ambition was twofold: to gain more knowledge about an understudied sector that is important for societal safety in Norway and more specifically to investigate how the public procurement process influences the provision of that service. It was conducted as a part of a joint project with legal experts that had the goal of opening the black box of procurement law regarding public-private cooperation in the realm of societal safety and security. We conducted semi-structured interviews with personnel on many levels of organizations – 20 interviews with personnel in different parts of the security sector in Norway (see Table 1). Their roles were to contract for public and private security control services, managers, and staff in private security companies, along with personnel in the public organizations working with publicly employed and privately contracted security controllers.

The security services included in this study were contracted by a large municipality and a large infrastructure provider in Norway. The services fall within municipal services on the streets, protecting buildings and objects, and aviation and transport passenger security. The publicly procured contract periods are of different lengths for specific security services and run up to five years. In addition to the controllers and managers interviewed, the companies also employ other personnel not included in the study, such as control room surveillance operators. The study is not about control room operations, privately hired assignments, or in-house public security but includes perspectives and knowledge from people with such experience, when that is relevant to shed light on publicly contracted security control services performed by private security companies.

The interviews were performed in 2020–2022 through video link; they lasted between one and two hours, with two researchers and one or

**Table 1**  
Interviewees in the two cases.

Case	Position	Number of persons interviewed
1	Security controllers	6
1	Security managers (employed by security company)	5
1	Security managers (employed by contracting organization)	5
1	Procurement professionals	4
2	Local observers	6
2	Avalanche forecasters	3
2	Procurement professionals	4
2	Other (e.g. public servants, consultants, citizens)	10
	<i>Total</i>	<i>43</i>

two interviewees. The interviewees were usually in their home office or an office at their workplace. The interviews were recorded and fully transcribed verbatim.

The plan, which was derailed by COVID-19, had been to conduct the majority of interviews at workplaces and include visits and brief field observations. That would have provided additional context, but given discussions' core focus, we believe that semi-structured interviews provide sufficiently robust data.

In Section 5, we present the results from this case study with indirect descriptions and direct quotes from the interviews. All the interviewees supplied important information for this study, but it is primarily security company managers who are cited in the quotes. This is because the core of the study is also the core of their job, resulting in more directly relevant quotes from the five managers from the private security companies.

#### 4.2. Approaches to the avalanche monitoring case

The avalanche monitoring case was studied as part of the ArctRisk research project, which focuses on climate-related systemic risks and the measures taken to cope with such risks. A central case is the avalanche monitoring services at Svalbard, an archipelago in far northern Norway. With 2400 inhabitants, Longyearbyen is the administrative center and the largest settlement on the Svalbard island of Spitsbergen.

Situated in a valley surrounded by steep mountains, Longyearbyen is exposed to avalanches during the winter season. This was demonstrated by two severe accidents in 2015 and 2017. In both cases, avalanches hit buildings in Longyearbyen, with the 2015 avalanche causing two fatalities. In both avalanches, abnormal and extreme weather conditions were important contributors (Antonsen et al., 2022; Engeset et al., 2020); in their aftermath, an avalanche monitoring and warning program was established to alert and, if necessary, evacuate the public when avalanche risk is high.

Interviews were conducted with representatives from all parts of the avalanche monitoring and warning service chain – the responsible governmental body (Norwegian Water Resources and Energy Directorate – NVE), local observers, representatives of the avalanche expert company (the service provider), and the local governor. The interviews lasted for 60–90 min and were recorded and transcribed verbatim before analysis. Some of the interviews were done face-to-face in Longyearbyen, but due to Svalbard's remote location and travel restrictions during the pandemic, many were done over video link on Microsoft Teams. In the present study, we draw on material from a total of 23 interviews. In addition, we have observed decision-making meetings when the avalanche risk was elevated. However, as the ArctRisk project was not designed explicitly to study procurement, our analysis of these interviews is based on data from informants who discussed procurement on their own initiative as a problematic issue in the context of avalanche monitoring.

#### 4.3. Analysis

In qualitative research analysis, the foundation is understanding the empirical data. Further, the analytical process is improved when researchers have an overview of the existing literature and theory. The basis of *reflexive thematic analysis* is to bring this theoretical sensitivity and reflexivity into the analysis of qualitative data during six phases (Braun and Clarke, 2021, p. 331): data familiarization; systematic data coding; generating initial themes; developing and reviewing themes; refining, defining, and naming themes; and writing. The phases do not have to be rigorously followed by experienced researchers, but they illustrate the content of a qualitative analytic process that combines inductive and deductive elements. In the present study, reflexive thematic analysis was employed because it opens the way to a better understanding that can be provided by these non-streamlined cases.

When the researchers *familiarized* themselves with the two cases,

they already had suppositions based on earlier research in other sectors and knowledge of the theoretical field. Meanings were explored through both what the informants said directly and more implicit aspects; that is, how they portrayed their situations through stories and choices of words and examples. This immersion in the empirical material “is far from mechanical and is a process that requires ‘headspace’ and time for inspiration to strike” (Braun and Clarke, 2021).

This background knowledge and the experience of interviewing were brought into the *coding* phase, where all researchers read the interview transcripts and notes, labelling sections with their own codes that related to societal safety, operational safety, quality, knowledge, relations, procurement, actor perspectives, regulations, and other organizational conditions and interconnections in the fields of security and procurement. As the study and its data emphasized the views of security service personnel, those were the data that were further analyzed. The qualitative coding was not subject to predefined codes; rather, it reflected the researchers' good faith attempts to understand the empirical field, with from experience and the existing literature as a foundation. This approach can be viewed as strengthening the results in the present study, from the perspective of reflective thematic analysis<sup>1</sup>:

*Demonstrating coding reliability and the avoidance of “bias” is illogical, incoherent and ultimately meaningless in a qualitative paradigm and in reflexive TA [thematic analysis], because meaning and knowledge are understood as situated and contextual, and researcher subjectivity is conceptualized as a resource for knowledge production, which inevitably sculpts the knowledge produced, rather than a must-be-contained threat to credibility. (Braun and Clarke, 2021, pp. 334–335)*

Analyses of the interviews as a whole or specific topics were presented in meetings between the researchers and discussed informally and according to several perspectives. During these individual and collective analyses, the researchers had the chance to reflect on knowledge, shared understandings and situated realities in the empirical data (Coffey and Atkinson, 1996, p. 86; Sohlberg and Sohlberg, 2002). Based on this, *themes* of situational and relational knowledge emerged. In reflexive thematic analysis, “the coding process is integral to theme development, in the sense that themes are an ‘outcome’ of these coding and theme development processes” (Braun and Clarke, 2021, p. 332). The themes in the current data centered on the specificities in the work situation, the importance of relations between actors, knowledge as a central quality in the service, and regulatory requirements, as is detailed in Section 5. This indicated how relational and situational knowledge are influenced by procurement regulations; the refined themes of commodification, fair competition, and costs are discussed in Section 6.

#### 4.4. Limitations

The present study examines the organizational qualities of security services. This means that the analysis emphasizes the service providers' perspectives, as their organization and work processes are the main topics of interest. However, in both security control and avalanche security, procurement officials were also interviewed and observed. Indirectly, the empirical descriptions and the discussions are balanced by their comprehensive overview of the process.

One potential limitation is that the data come from two different projects, only one of which was specifically designed to investigate the issues at hand. This means that many interviews in the avalanche risk study are less relevant or superficially discuss the topic of procurement. However, the broad scope of the data gathering in the avalanche study resulted in many examples of how avalanche security personnel view the

<sup>1</sup> The point about subjectivity and knowledge production may even add weight to the study findings (showing the importance of situated and relational knowledge for quality in services, and how this can be hampered by pre-defined measures in procurement processes).

influence of the public procurement regulations on intangible organizational qualities like situational and relational knowledge, even though that was not the central research focus of the broader ArctRisk study. Indeed, this may even strengthen the empirical basis by stressing that procurement regulations can heavily influence intangible organizational qualities. The results are driven by both an understanding of the literature and the empirical field, along with surprising findings that presented themselves during data gathering (see Section 4.3 on reflective thematic analysis). In addition, there are fewer previous studies of avalanche security, making it useful to have thick descriptions of and ample quotes from the avalanche data.

## 5. Empirical case of security controlling

The first case is about security controlling in several areas of Norway.

### 5.1. Facts and regulations

Security controlling services come in many forms, with personnel called security controllers, guards, patrols, hosts, and other titles. All perform a controlling service on behalf of an employer or customer. The aims of security services are to avoid unwanted events and manage conflicts, and their role is mainly preventive (Wathne et al., 2023).

There are approximately 8000 security controllers in Norway, compared with 10,000 police. While most of the latter are in offices or patrol cars, the majority of security guards operate in the public spheres. Among the security controllers in the largest union – The Norwegian Workers' Union – there are 71 % men and 29 % women, with a median age of 36 years (Wathne et al., 2023).

The Norwegian law on security controlling has several aims, including ensuring quality security services. According to this law, security services are defined as the use of people or technology to control or supervise areas or transport, to escort persons, or for emergency response, along with training to provide these services. In Norway, a security controller needs to be authorized after 140 h of certified training in topics like regulations, human rights, ethics, conflict management, reporting, first aid, health, security, and the environment, and risk analysis).

Security controllers in Norway are often understood to have the same role as traditionally played by the police, since controllers are visible in public spaces to maintain law and order, while police have other priorities (Ibrahim, 2014; Wathne et al., 2023). This gives security services different expectations and requirements than their contract agreements. Importantly, security guards do not have any more authority to use force or apprehend people than ordinary citizens. Thus, their “power” depends on their effective coordination and training.

The largest contracts for security controlling in Norway include several airports; they run over several years and have different types of content. At the other side of the scale, there are individual assignments for security at one-day events. The contracting organizations include public and private enterprises of all sizes. Some controllers or guards are also employed directly by a municipality.

### 5.2. Results from the interview study of security controllers

Security guards *monitor* and *control* activities in public spaces and material objects, open areas, buildings, and airports. In their work, knowledge and relations are essential. The guards need close relations within their team and effective coordination with other organizations, such as building owners and the police.

#### 5.2.1. Specifying situational and relational knowledge

In the interviews, security service personnel reported that experience, social relations, and tacit knowledge are key qualities in that service but are easily lost in new contracts. This situational and relational knowledge is often based on experience and grown over time; it is

not straightforward to specify and procure. According to how procurement law is practiced in the security procurements we studied, a procurement process considers only what is explicitly documented in the offer. In this discourse, the more personal and situational nature of knowledge and the relations established within and beyond an organization are hard to specify. In the interviews, the formal nature of the public procurement process was often brought up by security personnel. They were annoyed that their accrued skills could not be valued as a reason to obtain a renewed contract in the same area and thus continue their work, especially if a competitor could document that it offered better formal competence.

*Municipalities and the state can't take that into account, so they lose the real knowledge we achieved during the years we had that contract. It disappears overnight, and [they] need to accept something “better” than we described. (Manager, private security company)*

For example, one manager explained that in procurement processes, the contracting municipality or state agency will usually grade competence only through the education and previous positions of a potential supplier's personnel. Firms must enclose CVs of the staff they plan to use for the assignment in question. Based on the CVs, the contracting organization must determine whether guards are suitable for the assignment, even though their most important qualities do not appear in those documents. The manager has experienced receiving poor scores on well-suited personnel because the knowledge needed is not documented on their CVs.

*We may experience that those are the best we have to, for example, talk with youths with other religions. [...] This is suitability; it's success in everyday life, and it's something only the closest manager knows. (Chief operating director, private security company)*

This director and other managers stated that they rarely use formally skilled personnel (i.e., those with a certificate of apprenticeship) for public assignments; because public procurement processes are so focused on price, firms use minimally qualified personnel. If a tender does not specify the need for certified skilled security guards, the winning bidder cannot pay for skilled security guards. A manager explained that “security controllers with education are used in other missions instead,” which implies for privately owned clients. In addition, some public assignments do not require teams and security guards who can support each other, so that “you'll only get one security guard working at a time” (Security controller, private company). Personnel with long employment histories and competence also mean higher salaries, which lead to more expensive bids. The interviewees elaborated that “when costs are the most weighing criterion in the procurement, there are few resources for courses and meetings with professional discussions” (security controller, private company) or for skilled personnel and good teams.

*When you weight costs at 80 % and quality at 20 %, what are you asking for? It has happened. I feel the private [clients] are better here; they don't weigh [costs] as much. They're asking for quality; that's where you start. (Manager, private security company)*

#### 5.2.2. Room for quality – You get what you ask for

The security control companies want to have good relationships with their clients, as this is viewed as important for service quality. The interviewed security company managers regard public clients as competent in terms of documentation and formalities, but less successfully in engaging in the dialogue and facilitation necessary for quality.

All the interviewed company representatives agreed that the best service quality is achieved when companies have some freedom to describe their proposed solutions in their bids. This is often the case in private contracting but not in public procurement. The company interviewees were certain that regulations allow for procurement processes where the competition starts with an overall aim instead of

detailed specifications for the service in question. Managers working in security control of public areas are particularly interested in specifying their assignments themselves and competing on proposed solutions. They underlined that in a competition with aims they could also describe a service with measurable results that would thus be possible to compare in a fair manner. They offered many suggestions for measurable indicators, such as the number of police reports, emergency room visits, injuries from tram collisions, and public disturbance complaints, with lower numbers indicating better quality. However, public procurement processes are based on predefined tasks with a number of specifications. This approach is not popular among the security control companies that are eager to deliver the best possible security.

*I've experienced not bothering to submit [a bid] because the requirements are so specific that we can't get the dynamics in our assignment. The requirements become everything. We want to give more of ourselves and think about the assignment and how to contribute. We think the assignment improves by this instead of just going into a system that's already been chewed and eaten.* (Customer relations officer, private security company)

According to security controllers and their managers, dialogue about the service during the contract period is also important for achieving and maintaining high quality. The public procurement officials involved in the present study strictly enforce procurement regulations, which means that they allow few possibilities for such cooperation during the contract period. The interviewed managers sought communication to develop the service, thinking innovatively about the mission and solutions along the way.

*A pitfall in today's procurement processes is that you get what you ask for, and there is no discussion of whether that is a good or even sufficient solution. If you didn't require – or pay for – the best knowledge or redundancy in personnel, that isn't put into the offer.* (Chief operating director, private security company)

The interviewed company representatives had many ideas for how quality, including situational and relational knowledge, can be achieved in public procurement. However, they do not see this as addressed in today's reality; procurements focus on predefined elements with a high degree of specificity rather than more systematic views of quality. Still, the security control personnel described how they were driven to provide quality services as best they can within the framework of a contract.

## 6. Case: Avalanche monitoring services

The second case is avalanche monitoring services in the archipelago of Svalbard in far northern Norway.

### 6.1. About the avalanche monitoring organization and context

Norwegian winters are characterized by large but variable amounts of snow. Although it is central to the country's winter culture, with people skiing in the mountains, snow also carries the risk of avalanches.

The NVE is responsible for avalanche observation and warning services in Norway, including Svalbard. These services are offered to provide residents and hikers with information about and analyses of snow conditions. Throughout winter, daily analyses of snow conditions and avalanche risk in specific areas are developed and made publicly available on the internet. The analyses are developed from both human and sensor-based observations and measurements.

The NVE provides both regional and local services; the former regional covers a larger area and is thus less specific than the latter. While the regional service administers general avalanche-related observations for larger areas and makes the raw data publicly available, local observation and warning service provides detailed analyses, prognoses, and advice with more granular references. Local avalanche warnings covering the upcoming two days are published daily from

December to May.

Local observation and warning services have a three-part organization (Fig. 1). The responsibility for the service, including updating website information, lies with the NVE. For analyses of avalanche risk and the provision of advice to residents and hikers, NVE employs the services of external snow and avalanche experts. The expert company is remotely based, with a main office on the mainland and limited first-hand experience of Svalbard's local conditions. These experts in turn depend on raw data from contracted local observers. The procurement of external snow and avalanche analyses are subject to the law on public procurement. Companies providing snow and avalanche analyses are contracted for two years at a time, after which a new procurement process must take place.

Snow and avalanche analysis is a safety-critical societal function, as it is a service on which the safety of not only hikers but also residents in certain avalanche-prone areas depends. For example, Longyearbyen on Svalbard and Honningsvåg in Nordkapp municipality are permanent settlements that are exposed to avalanches.

### 6.2. Results from the avalanche security interview study

The three-part organization of avalanche warning is such that two organizational intersections exist; one between the directorate and the avalanche expert company, and one between that company and local observers (Fig. 1). The consequences of a shift in service provider on Svalbard from the company delivering expert analyses today to a new company must be viewed in connection with the local context. In Svalbard, local observers are employed by the directorate but collaborate closely with the expert avalanche analysis company. In the end, the expert company provides its evaluations to the local authorities, who are responsible for taking any necessary action, which in severe cases could mean the evacuation of residents.

The local observers constitute a mixture of snow experts and winter sport enthusiasts who all live in Longyearbyen, with substantial locally anchored avalanche expertise, both individually and collectively. Several times a week, local observers visit the area's different observation locations and note parameters relating to the amount, qualities, and history of snow. In this context, the experts and observers have discussed what provides quality to the avalanche security service and how the public procurement regulation influences quality.

#### 6.2.1. Quality in avalanche monitoring: Knowledge types

As these snow measurements and evaluations are not easily standardized, the final quality of the avalanche warning depends on the skills of individual local observers, the social and professional dynamics within the group of observers, the local experience of experts, and – not least – the relations and communication between local observers and the expert company. To fully understand the potential consequences of a change in service provider, it is necessary to grasp where knowledge and

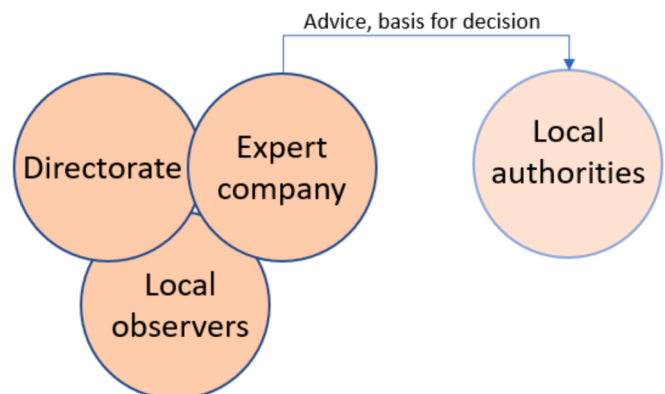


Fig. 1. The three-part model of the Svalbard avalanche warning system.

experience are situated in the avalanche warning system.

When local observers describe the knowledge involved in their work, they describe it as essentially residing in four different “locations” (visualized in Fig. 2). First, there is the individual expertise and knowledge derived from training and experience. This expertise is often described as more than a professional skill; rather, it is a highly personal interest and almost part of people’s identity.

*So, when we are [doing observations], we’re constantly sniffing for the best snow. That’s what we dream about spending time on. [...] My kids know what kantkorn is, to put it that way. If you look at our group of observers, those who have survived are those who are most excited to be on tour. So, I think that is an incredibly important motivational factor. The main reason why I do this kind of observer work is to get better at snow.* (Local observer)

Second, local observers reported a strong social-professional community among observers. A typical anecdote involves two observers meeting at the local grocery store and immediately starting to discuss the snow conditions in avalanche-prone areas.

*So I would say that is one of the best things about the local avalanche observer group: the community between us; the discussions we have about the snow cover; the nerding out that we do. We meet at the grocery store, right, and the first thing we talk about is that now I saw some [...] snow grains on the side there, and there’s a lot of nerdiness there. We learn a lot from that, I think.* (Local observer)

This says much about the local observers’ combined interest in and commitment to snow conditions and their role in warning of avalanches.

Third, snow avalanche warning is described as highly context-sensitive. The combination of topography, climatic conditions (including wind directions), and snow leads to very different conditions from place to place, so that monitoring and analyzing remotely, without local knowledge, is at best challenging and may be woefully inaccurate. Three observers reflected on how the first season might go if the expert company lost the contract and was replaced by a new firm with little local experience.

*It will be adult education.* (Local observer)  
*It depends entirely on who is sitting at the other end, because there may be someone with Svalbard experience who has a lot [local experience], right; but if it’s just anyone [...] then we’d have to go through again quite a lot of what we have gone through with today’s expert company; in addition, [named person] in that expert company has so much Svalbard experience.* (Local observer)  
*So a good forecaster is someone who has a good understanding of the snow [...] and all that [...] but who also [...] understands that when we say that in Svalbard it’s a bit like that, he manages to think “yes” [and ...]*

*also sort of understand that things are different here due to temperature or terrain.* (Local observer)

In addition, although avalanche expert companies may have a substantial general and even specific knowledge, it takes time to develop the necessary structures and routines for a particular context. One stakeholder who uses the avalanche expert company’s services said the following regarding a possible future change in service provider.

*How dependent we are on [the expert company] as an organization and the people and expertise they employ? Completely dependent; we have no one who can swiftly replace them and build up structures and routines around the local observer team and that has a standardized way of approaching this service.* (User of expert company services)

Fourth, both local observers and the expert company described the relations between the observers and the experts as very important and in practice one where the knowledge resides as much in those relations as among any of the different parties. Personal relations and trust built over time are described as essential for the communication, filtering, and translation of snow observations.

*It’s clear that if you have good [local observers] who you know have good experience with this, then you know that the quality of the observation is higher and then it’s a [less ambiguous] picture than if you have beginners who are out there. And if the beginners are out doing one thing or another, you must put a little more filter on the observations. Then you can’t give that observation as much weight as some of the experienced ones; that is, we know, that’s also what it’s about here, that we know the people who are out there so well. So we emphasize some observations more than others, and we actually do that manually.* (Avalanche forecaster)

Indeed, although highly informal, the company developed a kind of grading scale for the observers as they got to know them better. The grades were based on the observers’ practically demonstrated knowledge, competence, and communication style. This helped the company systematize the trust developed through interaction over time.

*We have other projects where we don’t know the people who are out observing, and then it takes a while before we learn the dialogue with that person and we perceive whether that person, to a greater or lesser extent, has tried that before, for example. So it actually requires a bit of getting used to the person doing the observation.* (Avalanche forecaster)

Note that this fourth “location” for knowledge, the relations between the local experts and the expert company, very much presented emerged on its own during the empirical investigations. The researchers had not in advance specifically identified this category as a candidate, and this element of surprise and the fact that they did not in any way have to pull it out of their informants, was felt to add weight to both the significance and the trustworthiness of the finding.

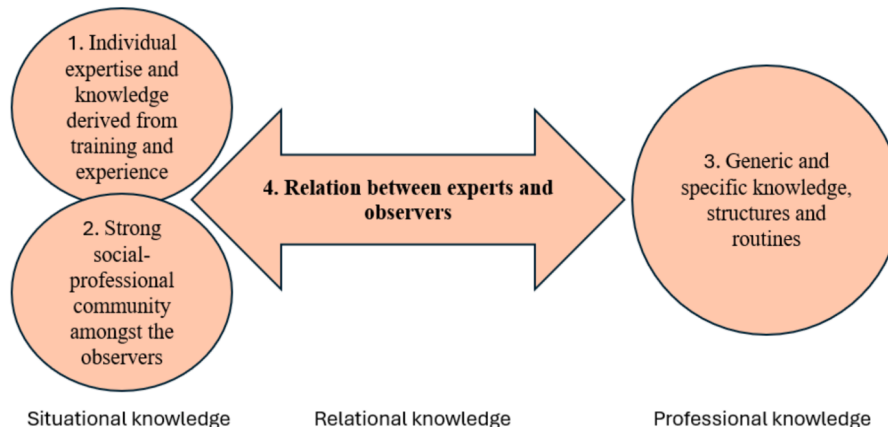


Fig. 2. Situational and relational knowledge in snow avalanche monitoring.



### 6.2.2. When procurement removes knowledge

As observed above, particularly in the fourth location of knowledge, several of our informants expressed concern with respect to a potential change in service provider. It was not so much that the competence of a new provider was questioned; rather, the relational qualities entering into the collaboration between the expert company and local observers were at issue. The stories from the forecasters were confirmed by similar stories by local experts. Knowing the person one is communicating with and his or her type and level of competence makes a major difference to the efficiency of the communication and collaboration.

*I was on duty last winter when the first cornice released, and at that time I was in continuous communication with the forecaster, but now there are multiple forecasters I don't know and that makes it harder to send a text or to call. (Snow observer)*

As the forecasting service develops, the number of observers and forecasters both tend to rise, creating challenges related to not knowing the people one speaks with well enough.

*These days, the observer team is huge, and it's almost like I don't have an overview of who's an observer anymore, and it seems like not all of [the forecasters] know how they can use observers as a resource. I might have an expectation and an understanding of how one might use observers, while the new forecasters might be cautious and might not use them to their full potential. (Snow observer)*

In the last quote, several of the knowledge types or locations come together in a concrete situation, illustrating how the elements of forecasting are far more than mere commodities that can be replaced without consequences.

*Two weeks ago, I said, "the cornices on the west side of Platåfjellet are pretty big, and the cornices on Gruvefjellet are small compared to how they are seasonally." But the absolute cornice size on Gruvefjellet is still much bigger than on Platåfjellet; they just get much bigger on that side. We were talking last week about cornices on Gruvefjellet, and I said, "Yeah, I think they're still pretty small; now they have gotten bigger, but they're still pretty small. I don't think it's the same cornice issue as last year." Then, one of the forecasters said, "I thought you said that last week that the cornices were quite large," and I had, but I was talking about the other side of the valley, and it just, it means that the context is totally different. That's just one of the ways where if you think about it every day and see it every day, it makes sense, but you have to be very careful how you word it when you talk to the forecasters, so it makes sense to someone who doesn't see it every day. (Snow observer)*

The avalanche monitoring case serves well to raise awareness of how knowledge always has not only a local component but also relational qualities residing across organizational boundaries. This complicates the idealized, compartmentalized knowledge perspective implying that knowledge bodies are interchangeable commodities.

## 7. Discussion: Procuring situational and relational knowledge in security services

Few readers familiar with the literature on rules, procedures, and safe work practice (e.g. Bourrier, 2017) will be surprised by our observation that in our studied security cases, there is more to work operations than what can easily be specified in advance. Our informants have pointed to two broad qualities that are important for their work practice but that tend to become invisible or altered in the procurement process: situational knowledge and relational knowledge. Knowledge, relations, and procurement are all nodes in the network producing the studied security services and belong to the network producing societal safety. The overall concern, then, is whether the nature of some nodes in the network of societal safety suppress important qualities of the services delivered.

First, while knowledge understood as formal qualifications and

certificates is visible and relatively straightforward to include in contracts, situational and relational knowledge gained through *experience* is less tangible. Situational and relational knowledge can be tacit, but in its more explicit form tends to be hard to standardize and explicate within these processes, as we elaborate on below. Moreover, situational and relational knowledge are practical. They are not only knowledge about facts but also about how to assess and approach situations, and it may be social. Knowledge is both a personal quality and something that can be manifested as interactional patterns between colleagues and towards the surroundings. Tacit knowledge shared among colleagues can be considered part of the organizational culture, which is one way to articulate the common denominator of HROs (Weick, 1987).

Second, and related to the social dimension of knowledge, our informants describe the importance of networks and relations to the successful execution of their work. This refers not only to their own colleagues but also to external parties with whom they interact to conduct their work in a good manner. For security controllers, that may refer to business owners, airport personnel, or representatives of the contracting organization. For avalanche monitors, it can be tourist guides, specialists in other organizations, and those in the contracting organization itself. Relations are often informal and personal. They grow between professionals who share common interests and do not necessarily abide by formal organizational boundaries. And they are, in both cases, essential for effective service provision, but situational and relational knowledge fit poorly among the formalities in the procurement process.

Our empirical data points to a few formalities around the public procurement enforcement and practices that hinder a focus on knowledge and relations in security services:

1. Commodification: The specification of the service as consisting of standardized and delimited tasks.
2. Fair competition: Procurement regulations are aimed to ensure transparent and fair competition. Asking for intangible, emergent qualities like those studied here risks skewing the competition in an unfair manner.
3. Cost: Public procurement officials are often strongly incentivized to save money, and price as an easily measured metric tends to trump quality, particularly these aspects of quality that are hard to specify.

We discuss these three aspects in detail below.

### 7.1. Commodification of situational and relational knowledge in tenders and contracts

Procurement of services is based on a specification of the desired "product" that the buyer wants to pay for. In the realm of safety and security, where production is often the absence of undesirable events, outputs can be difficult to specify (Slotsvik et al., 2023). Thus, procurement officials tend to operationalize safety and security indirectly through specification of qualities and quantities that are believed to lead to the desired outcomes of safety and security. We note several empirical examples in the current study. For example, to have a trained and certified security controller on watch in an urban area is believed to increase safety and security, but it is not straightforward to specify in detail how to perform the actual work in an optimal fashion. As noted, security personnel will need to cooperate with other organizations in this interconnected reality. Articulation work (Schmidt and Bannon, 1992; Strauss, 1985; Suchman, 1996) is crucial for both security controllers and the avalanche security; that is, to understand what a situation means and to act upon that knowledge. This improvisation or graceful extensibility (e.g. Woods, 2018) of the described work and procedures is important in almost all work, especially where there is variability, complexity, and the need for intervention. Work execution is always underspecified in plans and procedures, and the situational adaptation necessary to work effectively and safely is challenging to

specify in advance. A recent study in Norwegian security controlling also shows the importance of situational knowledge and supporting relations and demonstrates that such favorable organizational conditions are rarely achieved (Wathne et al., 2023).

To take this further, our interviewees explain that their conditions are formed by the procurement process. Public procurement practices generally call for static specifications of security services, as they strive for details that can be prescribed beforehand and not changed underway in the contract period. This is complicated since many (formal and informal) organizational qualities are systemic and not easily reduced to checklist items in a tender and, later, a contract with the successful bidder. Both the empirical cases indicate that it is not easy to capture these essential elements of practice in the procurement of security services. Even though the practitioners and likely the contacting agencies know what they want in terms of situational and relational knowledge, it fits poorly into the discourse of tenders and contracts.

In the literature on HROs, a number of cultural and partly intangible traits are highlighted as decisive for reliability. These include contextual knowledge – that is, deep knowledge of the particular situated context of work that is necessary for what in the HRO literature is called “sensitivity to operations” (Weick et al., 1999). HRO research also points to “organizational redundancy” (La Porte and Consolini, 1991), which is something that cannot be easily determined; organizational redundancy, in the form of mutual awareness and usability of each other’s partly overlapping knowledges, is a relational quality that tends to be developed through collaboration over time and across organizational boundaries, as the avalanche warning case study shows. In addition, a company cannot easily “sell” its relations to other parties, as this is something beyond their formal control.

The findings from the study of procurement of safety critical services suggest that the framework conditions of the procurement regulation can to some extent run counter to the creation of high reliability of the same services. This study illustrates how considerable system knowledge may reside – although not always in a highly visible manner – in relations that stretch across the larger system (Fig. 2). These relations are not easy to make subject to contractual arrangements and are at risk of disappearing when service providers change after new procurement processes. One implication noted as a concern by our informants is replacing an avalanche monitoring company without a potentially considerable cost of building the needed relational knowledge. This cost tends to be invisible in the procurement process. These qualities are difficult to measure and difficult to both choose in a competition and to evaluate whether an organization has fulfilled its requirements during the contract period.

One might actually argue, with support from more generic considerations on sociotechnical systems (Haavik, 2011), that in the collaboration between local observers and external forecasters, relations are more important than the discrete capabilities within the different groups.

Consequently, the security cases offer empirical examples of topics touched upon in earlier research; namely, how situational and relational knowledge are important for safety and difficult to address directly in tenders and contracts. The discourse of these formal documents emphasizes items that are standardized and measurable.

## 7.2. The cost of fair competition: Procurement law disregarding intangible traits

Section 6 elaborated on the generic problem of managing aspects of work that are effectively invisible in organizational discourses. The present study also adds to this literature by addressing a specific subset of this problem: how public procurement laws further stresses easily specifiable and measurable aspects of the service to be acquired. These laws and regulations are implemented to achieve fair competition when private companies compete to win public contracts, to avoid corruption and favoritism, and to open national markets (within the EU) to more

suppliers, thus achieving greater competition. A private company can easily choose a supplier with which it has good relations, personal or otherwise, and where it has a good impression of the supplier’s practical experience. A public agency acquiring services, by contrast, must arrange a fair and transparent competition in which written documentation is paramount so that the procurement process is predictable and transparent.

In a public procurement competition, a service, when described by different suppliers in a transparent and standardized way, can be evaluated in a fair manner. Fairness and ease of comparison are further strengthened if the contracting agency can compare numerical measures and carry out predictable grading. Public procurement thus places further restrictions on an agency’s ability to ensure the resilience of the procured service, unlike private contracts where the buyer does not have to abide by these kinds of regulations. To avoid potential corruption or favoritism, established personal and professional relationships between personnel on the buyer and supplier side cannot be given weight in public procurement processes. So far, so good.

However, that fairness can also lead to unintended consequences. Local knowledge and system knowledge beyond what can be clearly specified in a standardized manner are qualities that cannot be included without potentially favoring one supplier. Due to regulations aimed at fair, transparent, and predictable competition, experience and relations built up over time must be taken out of the competition or described in a standardized manner so as to not favor one supplier. One reason for this is that emphasizing these qualities would often favor existing suppliers, leading to undesirable lock-in effects. This resembles what is described by Gregory (2017) and Hayes et al. (2023), underlining that technically rational solutions with precise measurements can fail to achieve quality, prevent us from understanding ambiguities and uncertainties, and instead lead to reverse effects and counter-productive outcomes.

Another aspect of fairness in the procurement regulation is that once a contract is awarded, it cannot be substantially changed beyond what is described in the tender. For example, if after a while, the need for more personnel than initially assumed emerges or other types of equipment or methods than described in the supplied proposal are preferable, this might trigger a new procurement process. The losing competitors can then, with support from the regulations, legally argue that if this was the service the organization actually wanted, they could have submitted a better proposal and perhaps won. This has relevance for flexibility and experience-based innovation. Change and innovation generally move stepwise, as the buyer can ask for innovative solutions in the next tender. Thus, the unintended effects of the regulation may mean that it is difficult to achieve situational and relational knowledge and to foster the innovation promoting them.

The laws and regulations governing public procurement are based on good intentions, and there are likely few alternatives to these core principles within the current political system. The argument presented here is thus not against regulation per se but to illustrate some of its side effects, especially how it reduces the leverage for creativity and innovation and downplays the value of experience. One effect is the one exemplified above, where informal organizational traits – although important for safety and security – cannot be easily measured or quantified and thus are not procurable within this system. Over the longer term, it is also possible that the regulations shape the organizations involved, leading management to develop services that are most suited to fulfil the benchmarking criteria of the procurement process rather than focusing more holistically on actual service quality (Jensen and Winthereik, 2017).

The challenge described here can be formulated (if somewhat simplified) as a trade-off between fairness and quality. Fair competition for service providers comes at the cost of reduced quality of services for buyers and users. Although it is not necessarily or always the case, the qualities associated with intangible traits are always at risk of being sacrificed when they are not included in the competitive comparison and thus not in contracts. When those qualities are not specified and not

ordered by the buyer, there is a risk that no one will be willing to pay for them.

### 7.3. *Nothing else matters (except price)*

A key aspect of public procurement is cost-effectiveness. Although it is obvious that public procurement officials need to consider that protection and costs of the procured service may be conflicting goals (Reason, 1997), the matter still needs to be discussed. No state has unlimited resources, and outsourcing is often partly or wholly motivated by cost reductions, as interviewees from both security service providers and contracting agencies made clear. Reasonably priced services need to be procured so that they do not use more taxpayer money than necessary. Moreover, procurement represents a principal-agent situation in which paying more for a service does not necessarily improve quality. Surplus funding can be pocketed by a supplier rather than leading to improved service quality. So, quite understandably, price is a key parameter when evaluating suppliers, even in cases where quality, safety, and security count for a great deal. In contrast to the qualities described in Section 7.1, price is a very tangible and readily comparable criterion, so when a public organization is evaluating offers from different suppliers, it is difficult (but not impossible) to argue against the least expensive one, especially if there are few concrete differences in quality. Thus, the invisibility of the qualities discussed above leaves them discursively weak when compared to price.

In practice, the result is often that price dominates procurement considerations, with the least expensive alternative chosen. For example, according to our informants, prioritizing lower costs over quality has led to situations where unskilled security controllers work alone: they do not have formal training for the job and do not work in pairs – which is preferable – because the procurements do not pay for sufficient numbers of formally trained personnel. The result is organizations rigged for the minimum. They do not have (the potentially buyable) formal qualifications or redundancies, like personnel working in pairs with backup resources, as the empirical data here and Wathne et al. (2023) call for.

When a service is difficult to describe accurately and in sufficient detail, costs are easy to turn to as a key decision factor. It is difficult to place a value on intangible qualities such as situational and relational knowledge and thus easy to keep the price down. There is always a tradeoff between production and protection and safety and profit, but the situation worsens when a contacting organization has the competence and motivation to design the cheapest contract. This adds to the problem of turning safety into a commodity.

## 8. Conclusion

For several decades, services that are critical for societal safety and security have increasingly been provided by networked organizations; public agencies increasingly procure operational work and specialist services. The existing literature (e.g. Almklov and Antonsen, 2010; De Bruijne and Van Eeten, 2007; Hayes and Tillement, 2022; Milch and Laumann, 2016) has addressed to some extent what this means for reliability and resilience, such as how well-designed organizational interfaces are a critical issue for reliability. The presented cases have expanded these findings by including considerations of how public procurement law imposes restrictions on the interactions between buyers and sellers. The paper does not claim to address all the consequences of public procurement for societal safety but zooms in on how procurement processes address – or ignore – situational and relational knowledge in two types of security services. Security controllers and avalanche monitoring services require intangible qualities that are difficult to standardize and measure but nevertheless important or even crucial for service quality and ultimately for societal safety.

When critical services are supplied by networks of organizations, grasping the nature of their boundaries is a critical part of understanding

reliability. The present study is an initial attempt to unpack the implications the critical aspect of the constraints imposed by public procurement law. Under these restrictions, we have shown how procurement processes may focus on readily specified and delimited tasks that are easy to measure and compare fairly, thus suppressing less tangible organizational traits. Furthermore, the ambitions of fair and transparent competition conflicts, in some instances, with the organic emergence of experience-based contextual knowledge and relations among the personnel. Finally, as weight is put on tangible and measurable qualities in procurement processes, we observe the tendency to resort to the most tangible of all: price.

Procurement law regulates how the procurement of services is to be conducted and gives some intangible organizational traits an uphill battle. However, those constraints are not absolute; the legal room for maneuver is greater than what has been portrayed, and the battle is not lost. The observations in this paper suggest that legal and safety science experts should work jointly to explore the leverage within existing regulations for ways to design procurement processes that alleviate these concerns. Rather than conservatively heeding constraints to avoid legal problems, the advice to practitioners is to work strategically and interdisciplinarily with procurement processes to give such traits room to exist. Our informants suggest that this could be done within existing procurement regulations, as long as people are willing to be innovative.

Avalanche monitoring and security control services differ in many ways. In both cases, though, procurement law has similar effects on work and how situational and relational knowledge are suppressed in the procurement process, with implications for quality and potentially societal safety. For safety science scholars, this elaborates on known concerns when critical services are delivered by outsourcing, but it also serves as an invitation to consider law not as a static constraint but rather as a field of study that can be productive for improving societal safety.

### CRediT authorship contribution statement

**Kristine Vedal Størkersen:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization. **Torgeir Kolstø Haavik:** . **Petter Grytten Almklov:** Writing – review & editing, Funding acquisition, Conceptualization. **Asle Årthun Gauteplass:** Validation, Methodology, Investigation, Data curation, Conceptualization. **Sissel Haugdal Jore:** Writing – review & editing, Validation, Investigation, Funding acquisition, Conceptualization.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

The data that has been used is confidential.

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