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# The Role of Domain-skills in Bureaucratic Service Encounters

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**Abstract.** Citizens are increasingly expected and even required to go online for much of their interaction with government, making the skills citizens bring to these encounters particularly important. Several skillsets for the use of online resources have been proposed in the general e-government literature. However, few empirical studies explore the experiences and strategies of citizens themselves related to the role of skills in their interaction with government. Consequently, there is a gap in the knowledge regarding which skills are specifically relevant when dealing with *government* online. To explore this gap, this paper presents a qualitative analysis of interviews with citizens in Danish municipal service centres. The analysis takes its departure in a review of the literature that addresses aspects of skills relevant for the (digital) citizen-government encounter. The paper contributes to the e-government literature, by introducing the concept of domain-skills as a central skill set for citizen self-service. Domain-skills constitute a scaffolding citizens can build on, when looking for and interpreting information and contextualizing it to their situation, making it easier for them to act on their own, with confidence.

**Keywords:** Citizen, e-government, skills

## 1 Introduction

### 1.1 Background

Every year, millions of encounters take place between citizens and public authorities administering the services and benefits of the welfare state, be it face-to-face, by phone, e-mail, chat, video, or via self-service-systems. These “bureaucratic service encounters” [23] or “BSEs,” are the primary context for contacts between citizens and authorities; it is here, authority comes to life.

In recent years, it has become mandatory for citizens in Denmark to conduct almost all text-based communication with authorities online. At the same time, access to other channels (phone and face-to-face) has been restricted in several areas, all putting a stronger emphasis on citizens’ abilities to do things on their own online – to a certain extent having to become their own caseworkers [32]. Similar changes are taking place in other countries. In the face of these changes, the skills the citizens bring to the encounter acquire additional importance [28].

The question of general ICT- or “internet” skills has been studied extensively in the e-government field [46], [47], [21], [4], [19]. However, little focus has been given to what skills might be specifically relevant to the situations where citizen encounter *government* online, and how these skills might affect citizens’ strategies for these encounters. To address this gap, this paper analyses a large corpus of interviews with Danish citizens in the context of actual encounters with government.

The study offers an empirical contribution based on a detailed study of citizens’ accounts of their experiences and strategies in relation to BSEs, as well as a theoretical contribution to the e-government literature by establishing a category of “Domain-skills” of specific relevance to the BSE.

## 1.2 Research Question

The overall research question guiding the study presented here is *how skills of particular relevance for the BSE, manifest themselves in citizens’ experiences with and strategies for the encounter, above and beyond general skills related to the use of ICT.*

Exploring this question through an approach inspired by grounded theory [10], [9], this paper addresses the general call for research within the e-government field, that takes a clear citizen perspective and investigates how citizens perceive public sector digitalization and its effects [40], [25], [20], [42], [28].

This paper is structured as follows: Section 2 presents related research in order to further identify and describe the gap this paper aims to address. Section 3 presents the method for data creation and the analytical strategy. Section 4 presents the findings of the study, and section 5 discusses these findings in relation to previous research. Finally, section 6 presents concluding remarks, reflections on the limitations of the study, and suggestions for future research.

## 2 Related research

The skill-gap has generally been addressed in the e-government literature as an aspect of a “digital divide” [12], construed as a matter of ICT skills [21], [46]. The skill-gap is usually linked to demographic factors such as age, education, employment, or disabilities [13], [35], [5], [38].

Empirical studies show that access and digital skills are not the only skills relevant to the BSE [30], [29]. A recent framework, suggested by Van Deursen, Helsper, and Eynon [47], based on a review of the literature, establish an Internet skills framework consisting of five types of skills. The basic technical skills to 1) use the internet and 2) use mobile technology, 3) Information navigation skills, related to searching, findings, selecting and evaluating sources of information, 4) Social skills, related to using online communication and social media, 4) Creative skills, related to content creation. The skills described in this framework are general-purpose skills applicable to the general use of digital devices, the internet, and social media. They do not address or purport to address, skills specifically relevant for the BSE.

Also, frameworks like this do not address the social and cognitive capacities involved in using technology for specific ends [8], the importance of having the understanding, and the capacity to "engage" and solve a problem [12], [3], [4]. Van Deursen and Van Dijk argue that such "cognitive resources ...are largely responsible for differences in internet use and in the digital skills of different educational groups" [47:897] (they do not, however, elaborate on what these resources might entail). The Danish Technological Institute defines cognitive skills as reading/writing, problem-solving, spatial, visual, and mathematical skills. They concern "the ability to understand and interpret a given interaction or task in its context" [45] (my translation); this includes interpreting information, acting on it, and understanding the implications.

Two sets of skills then, apart from ICT-related skills, could be important for citizens successfully to engage in BSEs: 1) Skills of particular relevance for the BSE context and 2) social and cognitive skills. This paper focuses on the former.

## 2.1 Skills of Particular Relevance for the BSE Context

Gordon [18] suggests that "bureaucratic competence" is important for citizens' success with their BSEs. This entails knowing one's rights and mastering the formal aspects of bureaucracy (terminology, forms, documents), putting things in writing, the ability to handle the citizens part of the bureaucratic processes, and knowledge of how the system works. These skills are not explicitly tied to the use of technology but to the navigation of the bureaucratic context. Grönlund, Hatakka and Ask [19] use the term "administrative literacy," which they describe as the ability to understand and navigate bureaucracy, having a general idea how the institutions of society work, understanding the terminology applied by the authorities, knowing where to go for information and services, and understanding the information and being able to act on it. Bertot and Jaeger [6] use the term "Government literacy," which they describe as understanding the structure of government.

Bureaucratic competence/administrative literacy/government literacy (henceforth: "bureaucratic skills") are all described as general skills, in principle applicable to any citizen-government interaction. However, "government" covers many agencies delivering a wide range of services based on a comprehensive set of rules and regulations. Even more specific skills might be necessary for specific contexts.

Byström and Järvelin [7:195-196] divide the information needs for *professionals* in public administration when serving citizens into 1) Problem information: "describes the structure, properties, and requirements of the problem at hand." 2) Domain Information: "consists of known facts, concepts, laws, and theories in the domain of the problem," 3) Problem-solving information: "covers the methods of problem treatment." In a self-service context, citizens are expected to some extent to be their own caseworkers [29], and thus presumably to have and handle similar information needs. Seen from a citizen/skills perspective, this entails: 1) having a sufficient understanding of their problem and situation, 2) having a sufficient general understanding of government and bureaucracy (general bureaucratic skills) as well as a 3) a specific understanding of the particular rules and procedures relevant to the service in question (specific bureaucratic

skills), and 4) knowing how to act in a relevant way in the situation, including searching for the right information in the first place.

Borrowing the meaning of the concept "domain" from cognitive linguistics, I propose to call these contextual and contextualizing skills, in a citizen context, "domain-skills." In cognitive linguistics, words and concepts are understood with respect to domains of experience. A domain "represents a schematization of experience," which "relates elements and entities associated with a particular culturally-embedded scene, situation or event" [14:211]. It provides background information against which concepts can be understood and used. In cognitive linguistics, domains are interpretive contexts for words and phrases, I will here use the term in an expanded sense, as the interpretive frame for the information and tasks the citizens face in BSEs.

This set of skills, together with cognitive skills and ICT skills, arguably constitute the foundation for citizens to do things on their own online with government. However, the importance and meaning of such skills has not been studied in the context of citizens' choices and strategies in the face of actual bureaucratic service encounters.

The next section outlines the methods for exploring this issue, followed by a discussion of the findings.

### **3 Methods**

The paper is based on an analysis of 332 interviews with citizens in citizens service centres, jobcentres, and benefits-centres in Denmark, conducted between 2010 and 2014. The data was generated as research for the author's Ph.D. thesis [43].

In order to explore citizens' experiences, perspectives, and strategies as close to actual encounters as possible, the study applied an "ethnographically informed" approach [11], drawing on key elements of ethnographical work: a long-term presence in the physical context where encounters take place, and a sensitivity to the life-world of the participants [48].

These experiences were explored through semi-structured interviews [26] with citizens onsite at municipal citizen service centres, benefit centres, and job centres, and by phone with citizens who had recently conducted a digital BSE. The interviews were supplemented by observations of face-to-face encounters, and of digital encounters in which citizens completed their online applications at the service centres.

Alvesson [2] expresses scepticism about the use of interviews to investigate the way participants create meaning. The risk is, he argues that their statements will be too much influenced by the interview situation and context, and by the cultural scripts about how one normally expresses oneself about specific topics. Participants in interviews may be expected to behave "appropriately" when confronted with someone with the special status of "researcher" [37]. They will try to cast themselves in a positive light. Also, participants may often be asked to discuss matters about which they may never have expressed any explicit thoughts or discussed previously. Here they draw not only on the discourse they immediately connect with the themes introduced by the interviewer but also on the "cues" given in the conversation – which frames the discourse in a specific way [15:72]. As a researcher, I attempted to counter this by being an attentive and

appreciative conversation partner, to establish a rapport that allowed me also to ask questions that went beyond any "appropriate" answers, and by attempting to frame my inquiry as openly as possible and to be sensitive to and follow up on the framing the citizen herself applied.

Finally, I have attempted to counter possible framing effects by triangulating with other data sources [41]. On the one hand, knowledge from conversations with other participants in the study who had different backgrounds, were in different situations, and were reflecting on different experiences. On the other hand, my knowledge about the situation and the field based on five years as head of a citizen service centre. This enabled me, as Allina-Pisano puts it, to "distinguish ritual talk which captures the zeitgeist, from talk which deals with specific experiences" [1:70].

### 3.1 Selection of Participants and Sites

The aim has been to capture the difference in participants' backgrounds, attitudes, age, level of education, etc., as well as, as much variation as possible, in situations, experiences, motives, and strategies regarding the service-encounter [34], [44]. This aim has been achieved not by an elaborate sampling strategy, but by casting a wide net, basically through the selection of sites (municipalities and service-centres) for the fieldwork. The sites were strategically selected [16:475] to represent a broad range of services and citizens and to reflect different types of municipalities. Interviews were conducted in four municipalities, at citizen service centres with a broad range of services, as well as in benefits-centres and jobcentres. The sites were located in a large city, two municipalities in more rural areas, and a suburban municipality. Citizens with business in the service centres were approached when they left the centre or immediately after they had been served. Some had not had business relevant to this study, and of those who had, few declined to participate. There is no obvious pattern to those that declined.

The participants' business with the authority represented the whole range of services available at the sites in question with an overrepresentation of housing-benefit, pension, and taxes – all services that are often considered complex and are often consequential for the citizen. With a few notable exceptions, the participants reflect the general Danish population at the time, with regards to the distribution of age, level of education, general internet use, use of home banking, and experience with doing their taxes online (see appendix 1 for more details on the profile of the municipalities and the participants).

Younger participants (age 18-29), participants around the age of retirement (age 65-69), and participants with a high-school level education are overrepresented. Thus the study primarily represents the perspective of citizens with a shorter-level education, and in life-phases where context with authorities are more frequent and where most of the dealings with government are in situations, the citizen has never encountered before – the very situations where domain-skills may be most challenged. However, challenges with domain-skills are found in the study for citizens of all ages and all levels of education, indicating that domain-skills may be important to all citizens.

### 3.2 Analytical Strategy

The transcribed interviews in themselves constitute small “stories” about participants’ experiences and attitudes, their motives, goals, and strategies. These stories are kept “alive” by exploiting and profiling what Gee [17] calls the “poetic” aspects of language; that is, drawing on the information that the spoken language contains, but which is often filtered out in transcriptions. This entails dividing the text into lines, which serve to emphasize the structure of the spoken account, its rhythm, intonation, and pauses. The text is used verbatim but sometimes abbreviated, with a minimum of contextual information (inserted in square brackets) where necessary to provide context. This reduction is not “innocent,” even though it is based on “clues” in the spoken language. It is in itself an interpretation and frames the accounts in a particular way. The analysis itself has therefore been carried out on the reduced version with continuous consultation of the full transcript to ensure that this framing did not introduce problematic biases.

The coding was divided into three steps, roughly following Layder’s [27] method of “adaptive coding,” which again is inspired by the principles of coding espoused in grounded theory [10], [9]. The perspectives on domain-skills presented in the next section emerged from this analysis.

## 4 Results

This section presents the findings and answers to the research question. The findings are presented according to the five perspectives on domain-skills generated by the analysis (table 1).

**Table 1.** Five perspectives on situation-related skills

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1. Experience with the situation and context
2. The language used by government online
3. The basic understanding needed to search for and evaluate information
4. The role of other skills in handling things with government on your own
5. The effect of domain-skills on the citizen’s sense of control and identity

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### 4.1 Experience With the Situation and Context

When you have never been in a similar situation before and have no experience with a service or benefit or with the municipality in general, it may, as Anette, Naja, and Dan explains (all quotes in table 2), be challenging to understand the information you find and what to do with it. Or you may, as Karen, have been in this situation before, but it is too long ago for you to remember how things went on (and rules and procedures may have changed since then). However, as Naja explains, when you do have the experience, it may be a lot easier to do things on your own. Anette emphasizes the importance of a sufficient understanding in the situation she is in. This is present in many of the participants’ accounts: the nature of the situation and the importance of the information for handling the situation affects the importance of a perceived lack of skills.

**Table 2.** Insufficient experience with the situation and context<sup>1</sup>

Unfamiliar situation	“It is difficult for me to understand these things / because its all very new to me /there is so much I need to understand about tax / and how it works / I have very little knowledge about this ... / and it was important for me to understand it” (Anette, 43, taxes)
No experience	“I know nothing about this subject / I have no experience / so ... it’s more efficient / to have face-to-face contact / But if I know what to go for / and what to look for online / then I go online” (Naja, 46, supplementary social benefit)
Little contact with municipality	“I am very rarely in touch with the municipality / I don't know all them there rules and such / that’s why sometimes / I find it easier to come here / because I'd be damned if I understand all those things / things I have never really tried before” (Dan, 42, housing benefit)
Recent experience important	“Even though I have tried to apply before / it's all so far away / that you really have no idea / what’s actually going on / then it's out of your hands / you know” (Karen, 39, Social security)

## 4.2 The Language Used By Government Online

Bureaucratic language and vocabulary may add to the challenges of an unfamiliar situation. The authorities use, as Vibeke puts it, "mysterious words" (all quotes in table 3), which make the exact meaning unclear and ambiguous. Frederikke, who studies communication at the university and should be reasonably adept at understating complex texts, calls it "paragraph-speech." Valdemar, an elderly much read gentleman who prides himself of his knowledge of languages, likens government language to "equations with three unknowns."

**Table 3.** Inaccessible language online

Paragraph-speak	“It’s in paragraph-speak much of it / So you really have to concentrate / and I found it really hard to figure out” (Frederikke, 20, taxes)
Unknown terminology	“I am quite good with computers / but .. [online] / Often I find that they use mysterious words / and then you don’t know exactly what they mean (Vibeke, 31, social security)
Strange language	“I am pretty good at languages / but this language / The language that they use in the public sector / it’s some kind of higher-level math / equations with three unknowns” (Valdemar, 71, tax, pension, housing benefit)

<sup>1</sup> The quotes are presented in poetically reduced form. ”/” indicates a line break, ”//” indicates a stanza break, ... indicates passages that are left out. ”[ ]” indicates contextual information from the rest of the interview. Participants are given fictitious names that reflects their gender and age. All quotes are translated from Danish by the author with an aim of preserving the tone and “spoken language” style of the participants.



### 4.3 The Basic Understanding Needed to Search for and Evaluate Information

As Rebecca describes it (quotes in table 4), figuring things out online is a question of having sufficient knowledge and experience to provide a mental map or scaffolding you can build on when you encounter new information, having this, not only makes it easier for you to understand information but also to say the right things and ask the right questions. However, as Lærke explains, if you have no idea what it is about, you have no idea where to start. Ingelise's account shows how educational background and work experience may also contribute to situation-relevant skills, but also that this has its limits. She finds tasks that are heavily focused on financial information reasonably easy to do on her own, but tasks that she cannot build on her experiences are much more challenging to do. This indicates that the amount of transfer between different contexts may be limited. One thing is to understand the language and the rules in principle; another is to understand their relevance and applicability for the context – for the situation the individual citizen is in, right now, as Helle explains. What are my rights, obligations, and possibilities? A mapping from general rules to a specific situation is often challenging to do without sufficient situation-relevant skills. Without such skills, you have to guess – or as Lasse puts it – "read between the lines" to establish a sufficient understanding, and there is, as Lasse explains, no guarantee that you will succeed.

**Table 4.** No place to start / nothing to build on to search for and evaluate information

Knowledge to build on	"It's complicated, isn't it / You don't have the knowledge necessary to learn about it / and you don't know what you can say / if you are not used to it" (Rebecca, 19, housing benefit)
A place to start	"I can't figure taxes out / it's the only thing I can't figure out / everything else is under control / I have no idea what it's about / I have no idea where to start" (Lærke, 29, housing benefit)
Limited transferability	"I find it hard to understand all that / what I may, and may not do / and how they do it / and what it means to me" (Ingelise, 65, housing benefit)
A basis for contextualization	"Often what they write is very technical / So you can't understand what they write / You would like a better explanation / and to understand in what context it [the different rules] is important / and things like that" (Helle, 64, Pension)
Reading between the lines	"And then [when face to face] you can look them in the eye / and get better guidance / rather than have having to read it / and what it says between the lines / and having to do it over and over / it's easier to be at the right place at the right time" (Lasse, housing benefit, deposit-loan, change of address)

### 4.4 The Volume and Complexity of Information Online

The sense of complexity as an issue in the BSE is already present in the accounts quoted above. In some accounts, complexity raises the bar on what skills are necessary to master the situation; in others, a lack of situation-relevant skills appears to induce a sense of complexity to the situation and the information. As Dan's account shows (all quotes

in table 5), when you lack situation-relevant-skills, it is difficult to filter the information you get into what is relevant and what is not, and this makes it difficult to manage the self-service process.

The situation itself may add to the complexity, when, as in Ronja's case (she just had a child), there are many things you have to take care of and what you should do and the order of doing things you should follow may be difficult to carve out of a large amount of information and possibilities. This theme is repeated in Charlotte's account, it is difficult for her to find out where to go, in the face of a multitude of options, because she has no situationally relevant "map" of who does what and where to go for what services, online.

Rikke's account outlines the strategy participants most frequently apply when they feel their skills are insufficient: establishing a framework or scaffolding through dialogue with someone with authoritative, professional knowledge of the matter. This was a frequent observation at the counters during my fieldwork: how citizens could start with very little information, even with a very vague idea of what they needed to know or wanted to do, and through a dialogue with the staff-member, gradually construct a (shared) and contextualized framework for understanding what was necessary to proceed. Such a dialogue is not merely an exchange of questions and answers, but a mutual construction of a shared understanding and the sharedness of this understanding contributes to making it safer for the citizen to proceed on her own afterward, at the same time being both empowering and assuring [43].

**Table 5.** Overwhelming amounts of information and complexity online

Lots of information	“I have tried to apply for housing-benefit online / There are so many, many things you have to know / And where to start / And lots and lots of information / And then I have to click on that / And then then this thing pops up / And how am I going to proceed from there?” (Dan, 42, housing-benefit)
Difficult to find your way online	“I have been to the website / but I found it a bit confusing / where to go and [what to do] / there is <u>so</u> much information there” (Ronja, 27, Housing benefit)
Public sector complicated	“The public sector is very complicated / You have to look under a lot of things / Before you find what [you need] / And then / You often end up in the wrong place” (Charlotte, 45, taxes)
Dialogue a way to de-complicate	“It gets too complicated / when there is no one to ask / and get some guidance from / about the rules you have to know / if you want a benefit or help or something / To appear in person / and ask a lot of questions / has always worked for me” (Rikke, 20, medicine supplement)

#### 4.5 The Role of Other Skills in Handling Things With Government

Even when you consider yourself good at understanding things (like Valdemar) or good at using a computer (like Ellen) or have a strong educational background (like Frederikke and Charlotte), understanding government information and procedures online can

be a challenge, indicating that situation-relevant skills are indeed something separate from cognitive skills and ICT skills.

**Table 6.** Other skills insufficient for handling things on your own

Com-puter skills not sufficient	“I need help with all these strange questions / interest, and dividends and all that stuff / it's all Greek to me / I sure as hell never did my tax-returns / or things like that / I really have no idea about things like that / I really don't” (Ellen, 65, pension)
Educa-tion not sufficient	“I am extremely bad at figuring out tax stuff / I have had a huge bill from the tax-man before / And I don't want that again / I am well-educated and have a chal-lenging job / I should be able to figure out my own taxes / But I can't / It's very opaque” (Charlotte, 41, Taxes)

#### 4.6 The Effect of Domain-Skills on the Citizen's Sense of Control and Identity

Karen and Charlotte (quoted above in table 2 and table 6) describe another aspect of the effects of a lack of understanding: a sense of insufficiency, of diminished control and autonomy. For Vibeke (quoted above in table 3), her lack of understanding is especially problematic because she has low trust in the authorities and lack of understanding may contribute to a lack of control and a lack of power vis a vis the authority<sup>2</sup>.

The theme of lack of control is also prevalent in Anne's account (table 7 below), where it is coupled with a sense of doing the right thing, being seen as a good citizen, and not a "social fraud." This is a strong theme in many interviews with participants who apply for social security, but also, as in Anne's case, for participants who are not under the stigma of being a "social benefit-recipient," but who feel intimidated by the discourse often connected with making mistakes in applications and filings, framing it as "cheating." Anne likes to be in control and project competence, and that is hard if you feel that you do not know what you are doing. She feels that she is being tested. She falls short when she does not understand what she is supposed to do and make mistakes. For Anne, it is a matter of identity, of being recognized as a good and worthy citizen, who follows the rules and does what is expected of her.

**Table 7.** Insufficient situation-relevant skills may affect a sense of control and identity

Con-trol, identity	“I simply can't / when you read those descriptions / on the tax-website / I can read those rules five times / and I still don't understand. I like to be in control of things / I I don't feel that I am in control / If I don't understand what I am doing It's this feeling / that I understand completely which box to check / but if you feel that / no matter how many times you read it / you could still check all four boxes / checking the right box / is like passing an exam / proving that you have understood And you quickly gets to feel like some kind of fraud / when you cant explain what you are doing / and that's not a very nice feeling / So it's personal in a way / you
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<sup>2</sup> This information is from the interview, but not part of the quote.

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want to be a law-abiding citizen / its a matter of honour to do things right / and its extremely important for me / no doubt about that”  
(Anne, 28, taxes)

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## 5 Discussion

The analysis confirms previous findings that access and digital skills are not sufficient for handling the BSE [30], [32]. The skills the participants describe, include the basic bureaucratic competencies of knowing and understanding the rules and procedures, understanding bureaucratic language, and engaging in bureaucratic processes (as described by [18], [19], [6], but also the ability to draw on previous experiences to establish a frame for understanding information and procedures, and the skills required to grasp what is situationally important of this bureaucratic frame and to apply this in relation to the situation, needs, and resources at hand.

With no similar or sufficiently similar experiences to draw on, it can be hard to seek, interpret, and act on information with confidence. When looking for government information online, you have to know what you are looking for and, without sufficient skills, it may be difficult to identify and formulate the right questions, and you may easily end up using the "wrong" search terms.

Citizens need a basic scaffolding or frame for seeking, interpreting, contextualizing, and applying information. This scaffold creates a mental map that serves as a guide for how to proceed in the situation.

Based on this analysis, the following definition of "Domain-skills" is proposed:

*Domain-skills are the ability to look for and, to the extent necessary, understand and meaningfully apply information (e.g., concepts, rules), procedures and roles, drawing on the contextual knowledge provided by relevant previous experiences (with the same or similar situations or authority or with the same or similar services), as well as by a general understanding of the workings and norms of bureaucracy and government, including basic knowledge of who does what and where to go for information and services.*

The participants' accounts show how the nature of the situation may accentuate the importance of sufficient domain-skills. When something is at stake – substantially or identity-related, in situations of high uncertainty or high vulnerability, it becomes extra important to have a sufficient understanding and to do things correctly to be a "good citizen," project competence and gain recognition. A lack of domain-skills is then more than a merely practical issue, which may confound an application process, or a substantial issue which may determine whether you get a benefit or not, but also a matter of identity, recognition, and self-worth, and a sense of self-efficacy.

Another driver of the need for domain-skills, as well as a source of a sense of insufficient domain-skills, is the perceived complexity of the situation, information, and procedures, as discussed by Pieterse [39]. The sense of complexity is driven by the

amount of information and complex language, as well as how many tasks and authorities are involved in the situation and how complex the whole task-journey is.

Several of the accounts show how dialogue can be important to establish the domain-framework. Dialogue creates a shared understanding which provides a safe platform from which to proceed, and this shared understanding assures the citizen in her understanding.

As Helbig et al. [21] argue, different skills should not be understood as discrete and independent, but as interacting and recursive. Domain-skills are closely related and can sometimes be hard to separate from cognitive and ICT skills. Difficulties in reading and writing may be the underlying causes of deficient domain-skills – or of difficulties in acquiring the necessary skills. What participants themselves may identify as lack of the necessary ICT skills may, in fact, often be the lack of domain-skills – as evidenced by them being otherwise digitally active and competent.

Domain-skills may be acquired through experience, education or work, or from family and friends. As demonstrated by previous studies for digital skills [13], [35], [5], domain-skills appear to be especially challenging for participants with less education, but also for quite a few with a higher education.

In many cases, it may not be the "absolute" skill as such that matters, but the skill relative to the citizen's perceptions of what skills are necessary to perform the task, solve the problem and fulfil her needs – the perceived skill gap – that matters [33].

The bar for what would be sufficient domain-skills may be raised by the bureaucratic artefacts citizens encounter, such as self-service systems, websites, or letters, or even the buttons on the queue system at the service centre or the menu phone system [43]. These artefacts may be organised according to principles that make sense internally in the organisation but not to the citizens and apply terminology with which citizens are not familiar. Difficulties in finding the right information, finding the right form, finding the self-service system, and navigating the information space, may have to do with some degree of mismatch between the organising principles of the site or DSS, and the initial frame of understanding with which the citizen approaches the issues. This may exacerbate any lack of skills or render otherwise reasonable skills insufficient.

Finally, the participants' accounts indicate that there may be a limited transferability between domains. The basic understanding of bureaucratic organizations, language, and procedures may be transferable. However, the specific understanding of the situation, the organisations involved, the specific rules and procedures, and how they apply to the specific individual and situation may be less transferable. Sufficient domain-skills for handling a change of address involving an application for housing benefit may, for example, be of little relevance to another situation involving loss of employment and application for social security.

## **6 Conclusion**

This paper set out to investigate how skills relevant for the BSE manifest in citizens' experiences with and strategies for the encounter, above and beyond ICT skills.

Through an analysis of a large corpus of interviews with citizens in the context of situations where they needed contact with government, I have identified a specific set of "domain-skills" of particular relevance for the bureaucratic service encounter. Domain-skills constitute the conceptual scaffolding, which assists citizens in finding, evaluating, and applying information on their own.

Citizens' perceptions of their mastery of these skills have a significant influence on their strategies towards the BSE. If domain-skills are insufficient, the situation will often be characterised by ambiguity, making it difficult for the citizens to do things on her own with a sufficient degree of certainty. This is especially problematic in situations where something is at stake for the citizen. Some domain-skills elements may be transferable between different domains, while others appear to be relevant only for specific domains. This arguably makes domain-skills less transferable than other types of skills (i.e., ICT skills and cognitive skills). Participants' primary strategy in the face of insufficient domain-skills is to seek a dialogue with an expert, with whom they can create a shared understanding and thus establish the necessary framework to proceed confidently on their own.

This has implications for the design of service-processes and self-service systems and for how much government can expect citizens to do on their own. In some cases, the most efficient solution may even be to frontload a process with communication/dialog to establish sufficient foundations for the citizen to proceed on her own.

As domain-skills are, to a large extent, context-specific, the concept may apply to other types of online-interaction outside the public sector.

The study is based on data which are 6-10 years old, generated in the years where mandatory self-service was being implemented. However, domain-skills do not appear to be dependent so much on citizens' experience with technology, as on their experience with government and with the life-situations where they need to interact with government. There is therefore no reason to believe that the nature and importance of domain-skills will have changed since the interviews were conducted. This also entails that the findings should be applicable in other countries with a different level of digitalization in the population and in the interaction between citizens and government.

The influence of domain-skills on citizen's choice and use of channels may change over time when and if changes in the channel's enactment increase or decrease the level of support given to the citizen to establish the level of domain-skills needed in the situation. To give two hypothetical examples: if self-service systems get better at contextualising and framing the service in question, this may increase the utility of self-service systems for citizens with insufficient domain-skills. Conversely, if staff at callcentres and at the counter become less capable at providing the contextualization and framing that citizens seek in these channels (e.g. because of deskilling of staff), citizens may use these channels less frequently, or be less satisfied with the service they get.

Future studies could explore the influence of digitalization and centralisation on citizens' ability to build domain-skills when this increasingly has to be done through online interaction, as well as the influence of better design of websites and self-service-systems on the type and scope of domain-skills necessary and of the effect of "deskilling" and other types of limitations in the interpersonal channels on citizens choice of these channels to compensate for lack of domain-skills. Further studies could also

investigate the relationship between domain-skills and other types of skills at play in the BSE – most notably ICT skills and cognitive skills, and they could investigate for what types of services, situations and citizens frontloading the process with in-person communication (phone or face-to-face) might increase efficiency, quality and satisfaction.

## Appendix 1: Profile of Sites and Participants

The demographical profiles of the municipalities serve to show how typical they are for the Danish context in general, as well as to outline any specific issues that may affect the contact patterns of the authorities involved – specifically: a high unemployment rate, many young or elderly people, many with low education levels.

Demographical data on the municipalities involved show that apart from Copenhagen (on several parameters), and Ballerup – on public housing, the municipalities involved are fairly representative of Danish municipalities in general, on the selected parameters (all data from Danish Statistical Databank for 2013, unless otherwise stated).

**Table 8.** Demographical profile of the municipalities where fieldwork was conducted

Municipality	Ballerup	Næstved	Holbæk	Copenhagen	Denmark
Population	48.500	81.272	69.093	569.000	Median: 42.615
Unemployment %	6,3	5,8	4,8	7,2	5,6
18- to 66-year-olds on social security	5,5	4,9	5,1	6,4	4,9
Pct. of households receiving housing benefits	71,7	53,9	48,2	43,2	48,6
Average income (1000 Dkr/individual) <sup>3</sup>	294	279	288	283	292

### A1.2 Demographical Profile of Participants

All age groups are represented in the data, some more than others. Figure x shows the differences between the age-profile of the participants (whose age was registered) across all sites and the age profile of the general Danish population<sup>4</sup>.

<sup>3</sup> Data from Denmark's Statistic 2012

<sup>4</sup> The source of population data is the Danish Statistical Databank, except when otherwise stated.

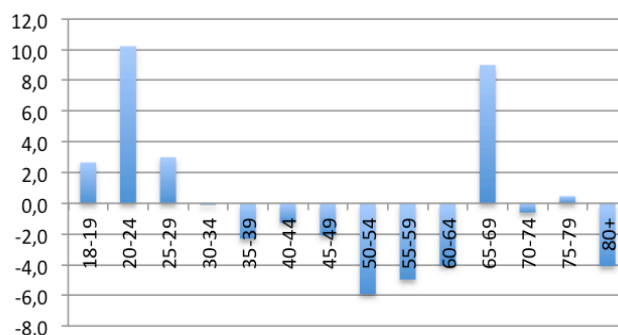


Figure 1: Over-/underrepresentation of age groups in study, compared to DK population (in %) n=335

The age of the participants reflects the age of the Danish population [49] a deviation of 6% or less for all age groups, except for the age-group 20-24 which has a 10% overrepresentation and the age-group 65-69 with a 9% overrepresentation. This was to be expected as younger citizens and citizens around the age of retirement typically have more frequent interactions with authorities and are more often in situations they have not been in before, which tends to lead to a greater need for face-to-face interaction [43]. The level of education also represents the Danish population with a deviation of less than 5% except for those with only a high-school education.

Figure 2 shows the education profile of all participants of 20 years or over compared to the total Danish population (also 20+).

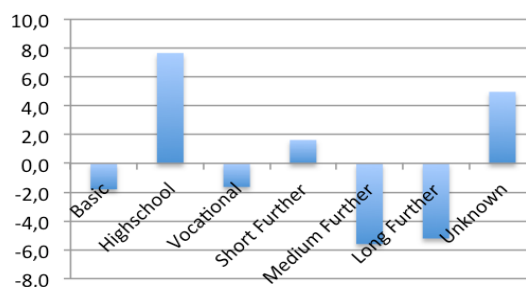


Figure 2: Over-/underrepresentation of level of education in study, compared to DK population (in %) (further = further education, short = 2-3 years, medium = 3-5,5 years, long = 5-6 years) n=335

The overrepresentation of high-school graduates can be explained by the overrepresentation of the younger age-group where many are still studying. The underrepresentation of citizens with a medium to longer education could be explained in part by the overrepresentation of elderly people – a group in which fewer people got a longer education than in the younger groups. But it may also be because the need and indeed eligibility for citizen services (especially the various benefits) is smaller among the well-educated, or because they have less need for face-to-face contact, being more able to take care of themselves through other channels.

For the variation of the perspectives represented in the study, this data would imply that we may lack perspectives from well-educated citizens, who may have different



experiences with and find different meanings in digitisation and centralisation than citizens with less education. At the same time, this group of citizens could arguably be expected to have an easier time compensating for lack of domain-skills and thus less need of contextualization and framing.

Participants use of the internet, of homebanking and their experience with doing tax online (representing a “service” all adults need to interact with at least once a year) – deviated 5% or less from that of the general population [49].

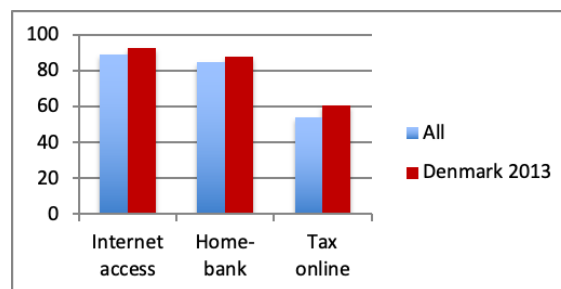


Fig 3: Participants accesses to, homebanking and Tax-self service. N=335

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