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DIGITAL NATIVES INTERACTING WITH ONLINE PUBLIC SECTOR SELF-SERVICE: AN EXPLORATIVE CASE STUDY

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This paper presents an explorative case study of the generation of supposed Digital Natives in the Danish Køge Municipality who are nevertheless overrepresented among those who contact the municipality's Citizen Service in person, instead of using available public sector online self-service (PSOS-S) solutions. Our purpose is to suggest a more nuanced and user-centred approach to PSOS-S and to investigate the complexities this may entail. Key findings include the need to increase the knowledge of PSOS-S, the central, if ambiguous, roles played by parents, and the need to structure and present online information in a way more accessible to Digital Natives, reflecting their particular needs and behaviour.

1. Introduction

In this paper, we seek to explore why a generation, often described as Digital Natives, apparently has significant difficulties in using public sector online self-service (PSOS-S) solutions. The departure point was the experience of the Danish municipality of Køge that the supposed Digital Natives were overrepresented among those who contacted the municipality's service centre, either in person or by phone, with issues that they should have been able to solve themselves via various PSOS-S solutions. This experience also reflected a general, national tendency in Denmark (Statistics Denmark, 2018).

Central to this paper is a call to take seriously the young, citizen end users of PSOS-S as actual persons, rather than as abstract characters, constructed on the basis of statistics and general trends (such as their level of internet use, attitudes towards technology or similar 'thin' data). Only by actually interacting with the target group, especially through interviews and observations, can their particular needs and difficulties as regards PSOS-S be uncovered.

The paper itself is structured into five main parts: An introduction, a literature review, our methodology, our analysis (itself divided according to three overarching themes) and a final discussion.

As a part of the joint public sector Digital Strategy 2016-2020 (Agency for Digitisation, 2016), the Danish parliament has enacted legislation that either has or will make contact with the public service by digital means and through public sector online self-

service (PSOS-S) solutions mandatory for all citizens who are able to do so. The services affected are diverse and range from changes in address, to changing your general practitioner, applying for tax rebates or various subsidies, or for a new passport, as well of a host of other public services. The purpose of this legislation is to increase the efficiency of public sector service delivery as well as to make it easier for the citizenry to complete many of these tasks themselves at their leisure.

The topic of this paper is not only relevant in the light of a Danish case study, but represents an explorative study that highlights various issues of usability and user interaction that might be relevant for other countries interested in transitioning to using a higher degree of PSOS-S solutions in public service delivery. With its top ranking in both the EU's 2017 Digital Progress Report (EU, 2017) and the UN's 2018 E-Government Development Index (UN, 2018), Denmark may simply be early in experiencing these difficulties. Denmark might thus serve as an early warning signal that special attention must be paid to Digital Natives when designing and implementing PSOS-S solutions.

As part of this 'early warning' perspective, it is worth noting that it is only now, that the Digital Native generation begins to impact the public sector on a broader scale as increasing numbers of those born since 1995 enter legal adulthood, thus making up an increasing volume of the citizens that the public sector needs to address and serve.

2. Literature review

In this paper, we draw on two main lines of research literature. One deals with E-government, that is, the digitisation of public sector services, including the increased use of public sector self-service solutions. The other focuses on the generation born between roughly 1995 and 2005 that we, following Marc Prensky, term the *Digital Natives* (Prensky, 2001).

The literature on E-government tends to focus on the possibilities of using information and communication technology (ICT) as a way to engage more citizens while creating efficiency gains in the public sector. However, these possibilities have already been criticised as being overly optimistic and lacking sound empirical foundations (Bekkers and Homburg, 2007). Another criticism is the tendency for single sector, single country analysis using qualitative data (De Vries et al., 2015), which is considered to limit the understanding of E-government as a general phenomenon and its implications for the public sector's ability to innovate and the consequences of such innovation. However, as our focus is on usability and a user-centred approach, i.e. to approach E-government from one, particular group of citizen end users' point of view, this latter criticism is less pertinent to this paper.

While E-government has been the subject of a wide range of studies, these, nevertheless, tend to focus on the citizen end user in the abstract through statistical descriptions and analyses of internet penetration and familiarity with ICT in general. Indeed, even some of the studies that aim to explore user participation approaches use these formalistic, indirect approaches to the end users (Karlsson et al., 2012). One common proxy for indirectly measuring the level of 'digital literacy' is the level and frequency of internet access (OECD 2006, OECD 2010). This rests on the underlying

assumption that these technical data signals the users' ability to avail themselves of the public services available online in general, and of public sector online self-service (PSOS-S) in particular.

In an apparent confirmation of the need for caution about such expectations, a 2017 survey, published in April 2018 by Statistics Denmark, highlighted the weakness of employing internet use in general as a proxy for citizens' ability to use PSOS-S. Despite being the most frequent internet users of all age cohorts, the proportion (41%) of 15-20 year-olds who reported having to ask others for help when in contact with the public sector was almost equal to the proportion 65-89-year-olds who answered in the affirmative to the same question (Statistics Denmark, 2018). However, unlike the older age cohort, the 15-20-year-olds largely (32%) reported that the problems they encountered did not arise from the fact that the public service was digital. Similar experiences with significant proportions of young citizens calling or showing up at Køge municipality service centre with problems, which could have been solved by using of existing PSOS-S solutions.

It is perhaps also indicative that of the six personas developed for the Danish nationwide online citizen self-service platform, Borger.dk, only one depict a citizen below the age of thirty (Borger.dk, 2012). In addition, both 20-year-old 'Johannes' and the other personas have been constructed mainly on the basis of broad statistical surveys on attitudes to IT and background characteristics. While these are supplemented by qualitative interviews, the extent to which these have been used to provide more than 'flavour text' (i.e. the various quotations given) is unclear. In addition, these interviews do not seem to have been conducted while the interviewees were actually using Borger.dk and they were not supplemented by observations of concrete user behaviour. The personas also reflect general concerns about the 'digital divide' present in the literature on E-government and that this is mainly related to (old) age, education or disability (Clear and Dennis, 2009). By contrast, the 'average' young person is implicitly expected to be fairly skilled in dealing with and thus in need of little attention from the various digital, online public sector services.

Turning to the literature on Digital Natives, a complicating factor is the terminology of the young generation under scrutiny. It has variously been designated Generation Z (following Generations X and Y in the terminology of Strauss and Howe, 2000), the iGeneration (e.g. Rosen, 2010), Digital Natives (Prensky, 2001), or post-Millennials (e.g. Dimock, 2018), as well as several other terms.

In this paper, as well as during the preceding phases of our project, we have decided to use the term Digital Natives as, while it is not an uncontested concept (e.g. Bennett et al., 2008 and (Thomas (ed.), 2011)), it points to two of the paper's central topics. One is the expectations that the generation's is automatically skilled in using digital services, the other highlights the puzzle of the real world experiences in the public sector with this generation. The term also suggests that because this generation has grown up with digital media, it may have different expectations of usability and interface in PSOS-S solutions than prior generations whose formative experiences with public sector services has largely been through traditional forms and paperwork.

In terms of the existing literature on Digital Natives (and this holds true for the other terms for this generation as well), searching EBSCOhost as well as Google Scholar yields mostly studies of how the educational sector should prepare to receive them. This is perhaps not surprising since this is the generation currently filling the seats in

the secondary and tertiary educational sectors. Hence, only the oldest members of the generation have entered the labour market and it is also only fairly recently that the Digital Natives have begun to make their presence felt in other aspects of adult life, including the public sector services outside of the classroom.

Mark Prensky, who coined the term Digital Natives in 2001, has subsequently insisted that this metaphor has been interpreted either too broadly or in too predictive a manner (Prensky, 2011). Hence, it is perhaps worth quoting Prensky's reply to what he perceived as unfair criticism of his metaphor and pay particular attention to his qualifications:

It is about younger people's *comfort* with digital technology, their belief in its ease, its usefulness, and its being generally benign, and about their seeing technology as a fun "partner" that they can master, without much effort, if they are shown or choose to. (They don't, of course, always choose to.) (Prensky, 2011, p. 11).

It would appear that the unspoken assumptions behind the focus on general use of the internet and ICT in the E-government literature follow the line of thinking that Prensky dismissed as taking his metaphor too literally; i.e. that being part of a generation of Digital Natives automatically conferred skills in using any kind of ICT, including PSOS-S. This sanguinary view is then bolstered by using such proxies as internet use and positive attitudes to the use of (information and communication) technology in general, while missing Prensky's important caveats: That Digital Natives may choose *not* to use available technology and that they must be *taught* how to use it.

3. Methodology

The research in this paper is based on the specific case of the Danish Køge Municipality and its department for Citizen Service (for a broader defence of the case study as a genre, see, for instance, Flyvbjerg, 2006). The challenge the municipality faces is that the generation often defined as Digital Natives is less prone to use existing public sector online self-service (PSOS-S) options than their parents' generation, choosing instead to seek aid using face-to-face interaction with Citizen Service or by calling.

We are questioning not only the general assumption of Digital Natives being amenable to use PSOS-S solutions, but we also probe what specific reasons may prompt this target group to use or reject such solutions and aspects that need to be considered when (re)designing PSOS-S solutions to accommodate Digital Natives in the future. Consequently, it is not a matter of course that simply because a solution is digital, it automatically appeals to the Digital Natives, holds their attention or that they automatically know how to use it.

This paper also seeks to address characteristics of the Digital Natives and new insights into their behaviour in terms of designing services for the (online) public sector and which should be considered in the future. This requires the kind of involved and user-centred approach that is at the core of this paper.

As a part of this project, 125 students at the Zealand Institute of Business and Technology, interviewed and observed a selection of 100 youths in Køge municipality to

produce raw data. This also involved desktop research, shadowing, semi-structured interviewing representatives of the user group, personas, as well as user journey and pain mapping in order to provide insights into the target group, its thoughts and its behaviour. This raw data was supplemented by our own desk top research on the topic of Danish Digital Natives' use (or lack thereof) of PSOS-S solutions, mainly as presented through the media and the public sector's own documentation.

The use of teams of students was inspired by action based learning and participatory action research (PAR) (McIntyre, 2008 and Whyte (ed.), 1991). Our main idea in adopting this approach was to use the students as 'near-peer ambassadors' to open up the black box of why young citizens in Køge municipality did not avail themselves of existing PSOS-S solutions and what might be done to change this (cf. McIntyre, 2008, p. 1). While some of the students who were in contact with the target group were slightly older (in their mid- or late, rather than their early 20s), they often face a series of similar problems and challenges or have done so recently. These include such challenges as moving away from one's parents, having to apply for enrolment in further education, various types of public assistance or similar registration and application procedures, which in Denmark typically relies heavily on PSOS-S. Hence, there is the possibility for 'near peer' empathy and to generate a more natural environment than a more classical scientific survey or experiment. A part of this 'near-peer', exploratory approach was to allow a relatively free rein in terms of sampling with an emphasis on the concrete, personal experiences of young citizens of Køge municipality.

Where ours differ from at least one strain within PAR is that we do not draw from what might loosely be termed the 'activist' approach, which focuses on such topics as hegemony and empowerment, inspired by such social theorists as Marx, Gramsci and various incarnations of feminist theory (cf. McIntyre, 2008, p. 2-4).

The idea was to allow the casting of a 'wide net' to capture a range of possible experiences of, as well as responses and barriers to the use of PSOS-S, rather than to selectively test a series of preconceived theses. In terms of action-based learning and participatory action research, the idea was to challenge the students to be an active part of the research process, thus allowing them to gain practical experience in terms of defining and solving problems involving the gathering of new knowledge. In addition, our explorative approach also entails that we too expect this project to be part of a "continuous mutual learning process" (Whyte et al., 1991, p. 42) alongside the other participants in the process, including both students, the target group and the municipality.

Our subsequent analysis of the raw data employs of methods and techniques from user-centred design approaches. This includes both open and closed card sortings focusing on the current website of Køge Municipality (www.koege.dk) as well as think-aloud tests. From each of these, we have selected the 5 most salient representatives of the target group (cf. Nielsen, 2000), based on how detailed their responses were, thus allowing for the most in-depth look into the target group.

The open card sorting technique provides insights into how the users think and behave, the type and style of language they use, as well as where they expect to find information (Spencer, 2009). Closed card sorting, by contrast, is used to identify how the target group navigate their way through the different categories and how they interpret the language used, in this case by the public sector (ibid.). This is supple-

mented by think-aloud tests' emphasis on the target group's expectations, how its members behave and make decisions, as well as how they react when they meet a challenge (Nielsen, 1993). Think-aloud tests thus not only provides insight into the usability of the website from the users' point(s) of view, but also allow insight into their reasoning behind their behaviour.

While our exploratory approach has sacrificed a degree of replicability in favour of diversity, it has thus been conducted under a series of uniform requirement, specifically that it should produce a series of user journey maps (with an emphasis on pain mapping) and personas. While we do not rely directly on these user journey/pain maps or personas directly as data for this paper, the requirements necessitated the use of direct interaction with the target group through the aforementioned interviews and observations and it is from these two latter categories that we have sampled for our source material.

We have compiled sorted and combined this raw data with two overarching goals. One was to preserve anonymity of the students as well as the respondents (not least for legal reasons). The other was to assemble a kaleidoscope or mosaic of what we considered the most salient features for an explorative approach with a focus on generating 'rich data' (cf. Fusch and Ness, 2015), i.e. related to the complex context surrounding the target group's interaction with PSOS-S, as well as 'casting a wide net'. This allow us to outline both the variety and breadth of the challenges that young citizens in Køge municipality when interacting with PSOS-S, including reasons for choosing *not* to do so.

At the end, we reorganised and recontextualised the results to into the following three overall themes:

Confidence and skills. This theme addresses the doubt, lack of confidence and/or perceived lack of skills felt by some young citizens and how it may affect their interaction with public sector services, e.g. by them opting out or getting someone else to complete the process.

Structure and behaviour. This theme looks at the structure and visual design of online public sector communication, as well as how it may help or hinder young citizens' use of PSOS-S, including directing them to their desired online destination.

Public sector language. This theme comprises the difficulties of young citizens to understand and identify the meaning of, for instance, public sector terms of art and categorisations based on public sector organisation or routines.

The analyses of these three themes will each end with a brief summary. Following the last of these analyses, we will use all three summaries as the departure point for a discussion of our findings as well as of avenues for further research.

4. Analysis and results

4.1. Confidence and skills

One major 'skill deficit' among the target group is a lack of knowledge of their rights, obligations and responsibilities they citizens. In 2017, the Danish Agency for Digitisation published a statistic showing that only one in four Danes aged 15-17 checked their E-boks (a mandatory public sector mail service) when informed that they had received an electronic letter from the public sector (Agency for Digitisation, 2017). As the E-boks is the main conduit for the Danish public sector's communication with the citizens, this prompted the Agency and Local Government Denmark (KL) to prepare an awareness campaign to remedy this. A subsequent report (Advice, 2018) compiled for the Agency for Digitisation highlighted a prevalent, if faulty, assumption among the 15-17-year-olds that because they are legally minors, their parents would check these E-boks letters or be informed of any important issues simultaneously, a misunderstanding shared by the parents themselves (Agency for Digitisation, 2018).

One major factor in this information gap is that there is no systematic, national educational efforts accompanying requirements to use E-boks or PSOS-S solutions. Instead, it is up to each municipality to decide if and how it prepares its youth for the use of such digital solutions. In our investigation, the information gap also surface as part of a broader issue of the target group's lack of knowledge of the public sector in general, what it can offer them and why it is important for them to know about it. Several respondents thus indicated attitudes similar to one who stated, "I have heard of it, but I do not really know what it is all about".

These results, a general lack of knowledge and a perception of the public sector as relatively irrelevant to their lives, echoes the two first insights from the Advice report (Advice, 2018, p. 10) as primary causes for both the information gap itself and the lack of motivation to remedy it. As Advice pointed out, the lack of knowledge was the key feature, not a lack of confidence in being able to actually use the digital solutions.

One approach is that offered by the nearby Vallensbæk Municipality, which offers education in civil digital rights and obligations, as well as PSOS-S, as a part of the primary school curriculum. When interviewed, one Vallensbæk Municipality employee stated the municipality's goal as follows:

We would like it to be scheduled in 8th and 9th grade so it is mandatory for the students to participate, so they will learn everything they need to know about public obligations when the turn 15, being able to help themselves via the digital services. (...) It does not interest them or they cannot see the use of it, and that is why they often have no knowledge about their obligations and leave it out. So, it is our role to catch their interest and present it in a more delicate and useful way so they can see the meaning of it – when we come to the schools.

Our respondents also agree with the notion that their parents are key players as either gate keepers, mentors or outright substitutes when it comes to interacting with the public sector. This perspective includes sentiments such as, "My mom normally do it for me," or "I'll just leave it for my parents." Targeting the young people themselves, Vallensbæk hopes to change that attitude: "By teaching them about their rights and obligations, we can hopefully get them to take responsibility for themselves so the parents not always need to do it."

We also discovered a mismatch between the expectations the public sector has to the young people and the role of their parents. On turning 15, every Danish citizen is automatically assigned a personal E-boks through which, as already mentioned, practically all communications between the public sector and the citizens are supposed to be routed. Thus, all citizens are expected to check their E-boks regularly (and they can be prompted about new mail in the E-boks through various SMS, mail and other alerts). Missing important messages and deadlines, can thus result in serious consequences related to ignoring public regulation, including incarceration for missing the call to be evaluated for possible national service (Denmark still conscripts a proportion of each birth cohort for military or alternative service). However, since the age of full legal adulthood in Denmark is 18, many parents assume that they, as legal guardians, will be notified (e.g. through their own E-boks) of important information concerning their children. They are simply unaware that from the time they turn 15, it is their children's responsibility to check and react to information sent to the children's E-boks. One parent interviewed during this project summed up this notion (or, rather, misapprehension) as, "I assume, I will get notified, if it is something very important you need to react upon." Similarly, the parents contacted during our project also emphasised a feeling of obligation to help their children prior to the age of full, legal adulthood: "It is my responsibility that my son checks his mail from the public sector as long as he is under 18."

Our study also showed that the target group has need of digital service aid by way of an authoritative person, i.e. one to which they can relate or look up to, i.e. an *influencer* that will approach them as an equal. An example of how the Danish public sector has begun to adopt such an approach when teaching the young generation about their rights, obligations and responsibilities as a citizen, was the Facebook campaign launched by Borger.dk in 2017, *DigiTAL - Digital med det offentlige* (Borger.dk, 2017). The purpose of the campaign is to use popular Danish YouTubers to inform and prepare young people about how to use their E-boks, NemID (common, secure, online public sector login that is also used for home banking) and PSOS-S systems.

It is worth emphasising that there is a general, positive attitude to using PSOS-S among the target group, paralleling the basic, positive perception of technology that is key to Prensky's characterisation of the Digital Native generation. Hence, the relatively high level of face-to-face or phone interaction between this target group and Køge Municipality's Citizen Service does not appear to reflect an a priori decision to opt out of PSOS-S or a preference for these alternatives over PSOS-S. These positive attitudes towards PSOS-S, at least in principle, is neatly summed up by two of the respondents as "I prefer self-service as it is fast" and "I prefer self-service, because I don't want to waste my own or other people's time." However, this time sensitivity may also be related to a tendency towards impatience that we will address in the next analysis.

4.1.1. Confidence and skills: Summary

In sum, while we generally encountered positive attitudes towards using PSOS-S in principle, in practice there are several barriers to actually doing so among the target group. These mainly relates to a lack of knowledge and a perceived lack of relevance of the public sector to their lives among the target group, leading to a reliance on authoritative older adults, mainly parents and especially mothers. This reliance, and the assumption that parents would be notified of important information pertaining to their children under 18, was generally shared between children and parents.

4.2. Structure and behaviour

When it comes to the behaviour of Digital Natives when interacting with PSOS-S solutions, we discovered that they are impatient with slow or tedious steps in the processes and give up easily. This leads to the tendency, covered in our first theme, of Digital Native asking for help from perceived authorities, mainly parents or similar authoritative adults, including the Citizen Service. One example of this is illustrated in a think-aloud test conducted on Køge Municipality's website (www.koege.dk) which tested the usability of the website through the target groups ability to navigate through a specific task (e.g. changing their official home address). The results clearly indicated this particular issue with one participant responding, "I will ask my parents how to do it or maybe someone who already have tried to change their address before."

The Digital Natives under scrutiny also had a tendency to look for and use the search field on websites as the main function during the process of finding what they were looking for, rather than attempting to 'click their way through' the website's contents. This was likely a consequence of growing up with the opportunity to google anything. This tendency to use the search functions in general and Google in particular is also highlighted by Borger.dk's personas (Borger.dk, 2012). While 'Johannes', representing the Digital Native, is generally considered to be proficient when it comes to PSOS-S, the persona does highlight the target groups expectation of being able to google anything and find the correct answer. This also suggests that search engine optimisation (SEO) is a key aspect when designing PSOS-S solutions whose target group includes Digital Natives. However, the SEO raises issues of terminology and language, a topic we will deal with in depth in our third analytical theme.

Similarly to the process of providing Google with entire sentences to increase a hit on 'how to' processes, we observed several participants using the search field on the municipality website to navigate to the specific topic by typing in whole sentences, rather than keywords.

The target group also prefers quick information and only read the headlines, rather than reading the body text closely, even if the latter provides in-depth and detailed information that can provide them with answers to their problems. This ties into the impatience and necessitates the need for an approach that guides them through the process of completing PSOS-S tasks by breaking each up into clearly delineated and visualised step-by-step, rather than relying on text-heavy 'manuals', a solution the group generally considers unintuitive.

When asked how they would proceed with the task of changing their registered address, but without having their computer at hand, respondents answered that they would either simply google it, or they expect to be able to access the necessary PSOS-S function directly from their municipality's main page. However, several respondents simply answered that they had no idea what to do and that such a function was not relevant to them, as they were still living with their parents, pointing back to the problems of a lack of perceived relevance already mentioned. It is worth noting, in context, that these respondents were all 19-year-old and that the average age at which Danes move away from their parents is 21 (Finans Danmark, 2018, p. 25).

When asked to complete the same task, moving their registered address, but beginning on the main web page of Køge Municipality, the results were a little different. The respondents quickly clicked on to the section on "Housing, planning, construction

and moving”, but from there, most gave up when faced with the many opportunities that had nothing to do with the task, long texts perceived as incomprehensible, overwhelming or irrelevant, and no direct links guiding the respondents to the necessary PSOS-S function. When giving up on the municipality website structure, some respondents resorted to the site’s search function but then gave up when they did not get what they considered relevant or meaningful results of their initial search. This latter problem also ties in with our final analytical theme, to wit the mismatch between the terms the target group use in their searches and the terminology used in the public sector in general and PSOS-S in particular.

It is important to note one reason that may be highly pertinent to these problems with the target group’s impatience and limited perseverance: The public sector’s reliance on pull, rather than push communication. Being used to get notifications, reminders and alerts from digital services, Digital Natives are not used to having to spend significant time searching for necessary information. In addition, they are also used to receive tailored and targeted information in readily processed formats, meaning that they easily reach the point of information overload when faced with the prevalent public sector communication approach of using long, detailed texts or a host of links, presented en masse to be sought out and sorted by the recipient.

4.2.1. Structure and behaviour: Summary

The target group show strong tendencies towards impatience, to skim headlines or brief texts, while avoiding longer texts. Longer texts or a lack of understandable headlines were likely to cause the target group to give up and there was a clear tendency for the target group not to even attempt to click through the information architecture of public websites, instead attempting to search for their intended destination. On the one hand this puts less emphasis on a need to adopt a particular web architecture, but on the other it introduces a problem about search terms and carefully worded headlines and whether they match up with the terminology used by the public sector, a topic we now turn to.

4.3. Public sector language

Another interesting topic we stumbled upon through our research was the ‘public sector language’, which represents a clear barrier when communicating to our target group. Thus, one, simple closed card sorting in relation to the current information architecture of Køge Municipality’s website showed that the young citizens categorise topics using terms in a completely different fashion than the municipality itself. This means that the young citizens will be highly unlikely to be able to navigate the website due to the variant understandings of the meanings of the terminology employed by the public sector.

This phenomenon is not unique to our case and indeed the ‘public sector language barrier’ vis-à-vis the young Danes is one of the more serious hindrances for achieving the sector’s PSOS-S goals, as stated by a consultant to the Municipal Association who stated, “Our challenge is that young people do not get what we are talking about. Or rather, we do not explain it so they understand it” (Gudmundsson, 2011).

This language barrier ties into the earlier topics, causing the target group to either ask for help from their parents or similar ‘interpreters’ or to try to use the search field

to hit the right destination. However, the latter is also complicated by the language barrier, as the search terms and sentences used might not match the public sector terminology, yielding no, few or wrong results. Hence the target group reports that they tend to fall back on one of two ‘workarounds’, with the majority answering that they will seek help to find specific information or complete a particular task either by, “(...) ask my mom mostly but also my dad,” or that they will “will google it.”

Another example of the mismatch in terminology, or ‘language gap’ appeared through one of the open card sortings. Here the respondents decided on using the Danish term “social ydelse” as a category covering such services as applying for passports, driver’s licenses, public sector logins, and similar services. However, this term is most frequently used in both the public sector and general discourse to describe public benefits (e.g. unemployment benefits, pensions etc.). The key word here is the term “ydelse” which can be translated as either “payment” (i.e. financial benefit) or as “service” (typically in opposition to products). Nevertheless, in the combination used here, “public benefit” is both the English translation given by dictionaries and the more general interpretation in Danish. What is noteworthy is that neither the respondents, nor their student near peers seemed aware of this meaning of the term, suggesting not only a particular ‘public sector language barrier’, but also of broader, generational difference in the understanding of certain terms.

The issue with public sector language highlights the need for a specific communicative effort towards young citizens that ‘translates’ incomprehensible terms into a language the target group actually understands. This should be a key concern when designing PSOS-S solutions and necessitates testing such solutions specifically on young users. One possible option is to design a custom landing page using terminology and tone tailored to young users to help guiding them to the correct destination without resorting to public sector jargon. It may be necessary to communicate in quite a different tone to that used for other age groups, as the necessity of signalling seriousness by sober texts are less important than quickly relegating information by a few short headlines combined with appropriate iconography. Considering the earlier finding that a reliance on parents in particular as authoritative mentors, helpers and even substitutes when dealing with PSOS-S, and that this is not seen as a problem among the target group, it is likely that concerns about alienation due to the communication being regarded as too ‘parental’ would not present much of a problem.

4.3.1. Public sector language: Summary

The ‘public sector language barrier’ is not unique to the Digital Natives, but it does present additional problems when combined with divergent interpretations of even fairly common terms and not least when dealing with PSOS-S solutions which do not necessarily provide feedback or present information in a form or structure that the target group is readily able to process.

One aspect that must be addressed is the form and structure in which texts are presented, as the bar to information overload is fairly low. This entails the use of readily identifiable headlines and/or brief summaries, rather than longer, detailed, explanatory texts. The necessity to enquire into what terminology is used by the target group and how it relates to or translates into that being used in the public sector (and vice versa) is also a key aspect and one of particular importance, given the target group’s tendency to navigate websites and other PSOS-S solutions by searching, rather than clicking.

5. Discussion and avenues for further research

When discussing PSOS-S, it is important to keep one of its key aspects: That being a mandatory, public service, there is realistically no viable alternative to using it; especially in the Danish case with the legislation intending to phase out alternatives to online self-service solutions.

Among the most prevalent features of the Digital Natives in Køge Municipality in terms of their interaction with PSOS-S is the pervasive role expected to be played by parents in general and mothers in particular. This expectation that parents will be key gatekeepers, mentors, trustees, or even actual substitutes completing the PSOS-S tasks, is one that shared by both the young respondents and parents and the prevalence of explicit references to the mother as the one fulfilling this role is noteworthy. This is further complicated by the different age thresholds faced by young people, from the mandatory use of their own, personal E-boks at age 15, to full legal adulthood at aged 18 and subsequently the perhaps more important adult experience of moving away from home at the average age of 21. It is thus important not to neglect the parental role and to make a concerted effort to change the shared misapprehension among both children and parents that children under 18 do not have separate, individual responsibilities. Similarly, parents could gainfully be engaged in remedying the younger Digital Natives' lack of knowledge of the public sector overall and specifically PSOS-S, as well as their perception that the public sector is simply not relevant to them.

Another common topic was a tendency among the Digital Natives to have a relatively short attention span and limited perseverance when faced with copious amounts of informations, especially in the form of dense texts, but also too many choices from which they could not readily identify the one they sought. Such features tended to result in the target group either giving up immediately or resorting to using search functions, which, if they did not yield the desired results, would then lead to the respondents abandoning the effort entirely.

This behaviour is reinforced by a lack of ability to decode public sector language (a characteristic not unique to the target group), suggesting that careful investigations of search terms and phrases, as well as further think-aloud and card sorting tests, are needed to produce a 'public sector dictionary' that can be used when designing PSOS-S solutions to guide citizen end users to their desired destinations. Particularly important for our target group is the need to reorganise and pair back the current tendency to communicate by detailed texts and instead present communication in briefer 'chunks' that the target group is able to correctly identify and process.

Our explorative case study, while having highlighted some aspects of the problem and outline possible a few potential remedies, suggests that further research is needed. We have only scratched the surface and one avenue for further research would be detailed studies of exactly what types of language and design elements are most effective when trying to reach the Digital Natives and how to involve their parents in the process of preparing them to fully use the various PSOS-S solutions.

Another is to enquire what the transition to pervasive PSOS-S solutions demands of the public sector, especially in terms of organisation and communication, in order to allow citizens to actually largely process their own cases. It was perhaps indicative, that there had been little effort put into including the target group when developing

content for and structuring such central features as the municipality webpage in general and its subsections targeting local youth in particular. It was also clear that the organisation into the various departments also presented particular challenges in terms of user-centred PSOS-S, as the barriers faced by the users might relate to several department who are not aware of the interlocking or crosscutting effects that their cumulative actions might have on the end user.

This also reflects the fact that such public sector IT-systems do not merely serve the role of service conduits, but are also central in the public sector's internal work processes, as well as being used in measuring, evaluating its extensive, diverse and occasionally vague goals as defined by both upper civil servants, political leaders and the general populace. Facing such competing, perhaps conflicting, expectations while having to both process the usual caseload, communicate to the diverse audience represented by the combined citizenry, while maintaining core principles of equal access and opportunity, non-discrimination and due process, is far from a trivial matter. However, being able to shoulder such responsibilities is a sine qua non for a democratic welfare state if it is to live up to its ideals.

Finally, one perspective that did crop up during our project, but did not fit into the main purpose of this paper, was the particular perspectives of immigrants to and newcomers in Denmark. While these groups may match the age criterion of the Digital Natives, they often face existing or additional problems to a greater degree. They are even less likely to be aware of their digital rights and obligations vis-à-vis the Danish public sector, particularly if the Danish system differ markedly from their home country – a possibility made all the more likely considering the high Danish E-government rankings mentioned in the introduction. Furthermore, they are likely to face even higher public sector language barriers due to literal language barriers and the translation of already complicated public sector terminology from Danish into English. This particular group is also less likely to have easy access to such authoritative, experienced persons to ask for help, a significant problem considering the heavy reliance on parental advice, guidance of even completion of PSOS-S tasks already discussed in this paper. Even if immigrants and newcomers may be able to draw on the experience of peers, they are at a significantly increased risk of frustrations when interacting with Danish PSOS-S solutions and/or to face sanctions if they fail to do so successfully. As one respondent from this group put it, “When I arrived in Denmark, I did not know about all these formalities because we do not have it in my home country – my friends told me about it.”

Another complicating factor is that while [Borger.dk](http://borger.dk) does have an English version (lifeindenmark.borger.dk), Køge Municipality's own website is only available in Danish. Indeed, while some of the major, metropolitan municipalities, such as Copenhagen, Aarhus, Odense or Aalborg, do have dedicated English sites, many others either lack any foreign language version or rely on Google Translate bots to render the Danish version into one or more foreign language, with all of the scope for errors and mistranslations this entails.

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