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Operating Unit on Policy-Driven Electronic Governance

Digital inclusion

Improving social security service delivery

INTERNATIONAL SOCIAL SECURITY ASSOCIATION

This report was jointly prepared by the United Nations University Operating Unit on Policy-Driven Electronic Governance (UNU-EGOV) and the International Social Security Association (ISSA).

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Digital inclusion

Improving social security service delivery

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Contents

Executive summary

A digital transformation of society, including the public sector and social security, is underway. This trend has been accelerated further by the global COVID-19 pandemic. The digital transformation of service production and delivery entails the application of both new technologies and new concepts, alongside new ways of organising and producing value. Despite increased opportunities, the access to and use of digital infrastructure and tools is increasingly uneven. The COVID-19 pandemic has accelerated the pace of change and cemented existing divides. Globally, there is, therefore, a collective responsibility to maximise the positive impacts of digital transformation whilst managing, and minimising, the negative ones.

As the digital transformation accelerates, its benefits and challenges with respect to digital inclusion is emphasised. For this reason, securing equitable access and inclusion of all communities in an increasingly digital society is a vital cross-cutting theme in the Sustaibable Development Goals (SDG) Agenda. For social security, the strongly embedded goal of full inclusivity is a key feature which requires that no one is left behind service delivery is increasingly digital. Thereby, digital inclusion constitutes an essential co-occurrence with the technologies transforming society and service delivery.

Four interconnected dimensions influence digital inclusion: (i) access to electricity, the internet, and devices; (ii) literacy, digital skills and competencies; (iii) supportive conditions, such as affordability, communication, design, identification, financial inclusion, and security; and (iv) usage of online service offers to measure actual value creation and digital inclusion of marginalized communities.

In the context of growing service digitalization, just over half of the world's population uses the internet regularly. Reliability of internet access remains a key challenge for the 3.5 billion people yet to secure access to the internet. 1.7 billion people remain unbanked, which implies that they cannot benefit from online commerce, access social security services or receive non-cash benefits or payments.

The digital transformation is changing how people live and amplifying past patterns. While some patterns are positive, such as increased access to services in remote areas, others are negative, like exclusion due to lack of digital skills and limited or unaffordable internet access.

Differentiated mainly by the sheer pace of technological change, processes and organizational structures are also changing. These profound and interconnected changes result in a complete transformation in the fundamentals of how society interacts and lives.

In the context of social security, this report defines digital inclusion as the elimination of the digital divide by ensuring literal access, in conjunction with the requisite skills and ability to use digital devices and content confidently, safely, and effectively. The digital divide is defined as the gap between those with access to digital infrastructure and devices, and those who do not. Digital literacy is the skills and ability needed to access and use digital devices and content confidently, safely, and effectively.

In light of the ever-increasing pace of the digital transformation, risk of digital exclusion is real, requiring both individual and collective response. As stated by the Secretary-General of the United Nations António Guterres, there is a need for an "... urgent and open debate between governments, the private sector, civil society, and others on how we move forward together safely in the age of digital interdependence".

Contributing to the necessary dialogue, this report focuses on digital inclusion in the context of social security. Specifically, attention is paid to how factors such as access to technology and internet, skills, and the enabling environment impact both social security organizations and their diverse customers. While lack of access to the internet has traditionally been seen as a key barrier to improved digital inclusion, affordability is increasingly a reason behind the digital divide and digital exclusion. At the same time, skills and capacity to use digital solutions by social security customers go beyond traditional literacy and includes digital skills. Social security services are produced and delivered by individual institutions set the enabling environment and together with internal skills and capacities of social security institutions are in improving digital inclusion. This includes the legal and regulatory framework guiding social security, as well as the process, solutions and data enabling identity management, financial transfers amongst others.

Despite the important developments performed by social security organizations, improving the digital inclusion of social security customers remains highly challenging. On the one hand, several aspects are not in the mandate of social security institutions, such as internet access and electricity. On the other hand, enhancing customers' digital inclusion requires knowing them very well and may involve investments. To further digital inclusion in social security the report makes a set of nine recommendations grouped around three main themes: access, skills and the enabling environment.

The ISSA and UNU-EGOV have been addressing these issues through several activities, notably a series of four online ISSA webinars, a large survey (40 questions), distributed online, of social security organizations about their customers, the experiences and challenges they face, and the use of IT and technology in the production and delivery of social security services, and presentations in flagship ISSA events, such as the 16th ISSA International Conference on Information and Communication Technology in Social Security held in Tallinn from 4 to 6 May 2022.

As part of the joint work, this report aims to highlight key focus areas that need attention to achieve digital inclusion in social security and provide a series of recommendations mainly grouped in ways to support access, improve skills of customers and facilitate enabling environment based on past and current experiences, good practices in the public sector and within social security. Digital Inclusion is therefore key to continue to build trust acknowledging the differences in population cohorts and ensure beneficiaries are not left behind.

1. The context: Service delivery, technology and inclusion

1.1. The digital transformation

A digital transformation of society, including the public sector and social security, is underway. The past three decades have seen a move from our current info-industrial society towards a digital one. This trend has been accelerated further by the global COVID-19 pandemic. The digital transformation of service production and delivery entails the application of both new technologies and new concepts, alongside new ways of organising and producing value. Social security is no exception.

The United Nations (UN) 2030 Sustainable Development Goals (SDGs) [58] are a universal call to action. The overarching aim is to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. Securing equitable access and inclusion of all communities in an increasingly digital society is a vital cross-cutting theme in the SDG Agenda. For social security, the strongly embedded goal of full inclusivity is a vital feature that will mean no one is left behind where service delivery is increasingly digital. The primary aim of social security is helping those in need across society, to support all individuals no matter their age, gender, educational background, native language, culture, religion, or other social preferences. Thereby, digital inclusion constitutes an essential co-occurrence with the technologies transforming society and service delivery.

Digital inclusion is influenced by four interconnected dimensions [19, 64]:

- access to electricity, the internet, devices, and quality of that access;
- traditional literacy, plus digital skills and competences;
- supportive conditions, including affordability, communication, design, identification, financial inclusion, trust, and security;
- usage of online service offers to measure actual value creation and digital inclusion of marginalized communities.

1.2. The importance of digital inclusion

Globally, just over half of the worlds' population now use the internet on a regular basis [98]. Whilst this is certainly positive, it should not be forgotten that the remaining 3.5 billion people still do not have the opportunity or means to access the internet [38]. An estimated 750 to 780 million people do not have access to electricity to illuminate a light bulb, let alone charge a mobile phone, plug in a computer, or power an internet router [2, 101]. Reliability of internet access remains a key challenge for the 3.5 billion people yet to secure access to the internet [70]. While inroads have been made, 1.7 billion people remain unbanked. This implies that they cannot benefit from online commerce or receive non-cash benefits or payments [25]. Similarly, approximately 1 billion people do not possess documents to prove their legal existence [91] – never mind any ability to do so digitally – when applying for government benefits, attempting to open a bank account or purchase a simple pre-paid mobile phone subscription.

Building on past industrial revolutions affecting societal structures, the current digital transformation taking place is changing the way people live and amplifying past patterns. Some of these patterns are positive, such as increased access to services in remote areas, but some are negative, like exclusion due to lack of digital skills, limited or unaffordable internet access. Differentiated mainly by the sheer pace of technological change, it is discernible that various social, public, and private sector behaviours, processes, and organizational structures are also changing. These vast and interconnected changes are resulting in a complete transformation in the fundamentals of how society interacts and lives.

1.2.1. Duality of digital transformation

As the pace of the digital revolution increases, it brings with it more awareness of interdependencies and the risk of greater fragmentation. Despite increased opportunities, the access to and use of digital infrastructure and tools is increasingly uneven. The COVID-19 pandemic has accelerated the pace of change and cemented existing divides [13, 33]. Globally, there is therefore a collective responsibility to maximize the positive impacts whilst managing, and minimising, the negative ones.

If there is failure to address the negative impacts of digital transformation, those already marginalized face the real risk of further exclusion. This is particularly the case for: vulnerable or low-income households globally; those within low-income countries, such as small island states in the Caribbean and Pacific; and, additionally, for middle-income countries in Africa, the Americas, Asia, and the Middle East – not least in the aftermath of the COVID-19 pandemic and increasing fuel and food prices [50, 51, 77]. If efforts to improve digital inclusion are not successful, entire communities – and even countries – will not reap the full benefit of technology and digitalization. In fact, there are observable signs that traditional paths towards economic development are increasingly closing, particularly in emerging economies. This sits on top of the various challenges brought by the changes that technology brings to communities.

1.2.2. Defining digital inclusion

Since the mid-1990's unequal access to online content and services have been debated in political, social, economic, and academic circles [42]. The catch-all phrase, "digital inclusion" refers to financial, social, and political inclusion. Reference is often made to equality and equity in relation to access to government services such as social security, healthcare, education, jobs and employment, private services, and even decision making and influence in political spheres. As such, digital inclusion is the polar opposite of digital exclusion.

In contrast to common terms like digital divide and digital literacy, digital inclusion is still in its infancy [42]. The digitally excluded are individuals or communities which are, within a given context, subjected to marginalization or inequalities including the lack of access to digital infrastructure and ICT tools. Their exclusion is often a result of location, age, gender, skills, affordability, or a combination of these factors [19].

The digital divide is defined as the gap between those with access to digital infrastructure and devices, and those who do not. Like digital inclusion, the digital divide is closely associated with age, gender, skills, language, socio-economic status, affordability, geographical location, and other factors [19, 38, 95].

By comparison, digital literacy is defined as the skills and ability needed to access and use digital devices and content confidently, safely, and effectively [103][18]. It includes a minimum understanding of the hardware and software required to successfully use technology. An understanding of the language

(i.e., reading, writing and mathematical skills) in which content is available is a key precondition of digital literacy. Critical analysis skills enabling an individual to navigate digital content, and identify and understand digital deception, emotional manipulation, and cyber-crime are equally important [19].

By combining the two preconditions of access and digital literacy, digital inclusion is the fusion of digital divide and digital literacy concerns. In the context of social security, this report defines digital inclusion as the elimination of the digital divide by ensuring literal access, in conjunction with the requisite skills and ability to use digital devices and content confidently, safely, and effectively.

The importance of digital inclusion continues to be amplified as technology becomes a crucial component of modern life, not least in the wake of the COVID-19 pandemic and the resulting socio-economic and behavioural changes. The presence and use of technology impacts how individuals engage in society and – critically – they also influence access to government services such as social security, health, education, employment, civic participation, and socialization.

In short, technology advancement brings with it change and transformation. It is a collective responsibility to act appropriately to maximize the positive impacts and abate any negative ones. Politicians, public and private sector policy and decision-makers must lead by example, formulating progress measurements, implementing the appropriate strategies and initiatives, whilst prioritising provision of required resources to increase the digital inclusion of marginalized communities.

1.3. The analytical focus

In light of the ever-increasing pace of the digital transformation, risk of digital exclusion is real, requiring both individual and collective response. As stated by the Secretary-General of the United Nations António Guterres, there is a need for an "... urgent and open debate between governments, the private sector, civil society, and others on how we move forward together safely in the age of digital interdependence" [27].

Contributing to the necessary dialogue, this Report focuses on digital inclusion in the context of social security. Specifically, attention is paid to how factors such as access to technology and internet, skills, and the enabling environment impact both social security organizations and their diverse customers. Communication and design constitute secondary focus areas since these aspects are covered by the International Social Security Association (ISSA) *ISSA Guidelines on Good Governance*, *ISSA Guidelines on service quality*, *ISSA Guidelines on communication by social security administrations* and I*SSA Guidelines on information and communication technology*.

The report is based on past and current experiences, good practices in the public sector, and within social security in particular. Sources includes both national and international reports, and academic research. Over the course of the analysis, interim findings were discussed in a series of four online ISSA Webinars hosted between March and May 2021. Each webinar was attended by between 100 and 130 providers of social security on average representing 65–70 different countries (of 101 countries and territories). Webinars were conducted in English, French and Spanish with simultaneous translation provided. The chat functionality was actively utilized for participants to raise questions, provide observations, or voice opinions on the topics discussed.

In addition, the analysis integrates empirical data collected through in-webinar surveys (live polls in Zoom) and a large survey (40 questions), distributed online, of social security organizations. The survey was sent on 12 April 2021 to all the registered participants for the series of webinars on digital inclusion

– with a reminder email sent on 18 April 2021 – and responses were collected until 28 April 2021. Responding to a series of questions, the respondents were asked to reply in relation to their customers, the experiences and challenges they face, and the use of IT and technology in the production and delivery of social security services. In total, 138 surveys were completed by representatives working at 74 social security organizations, with respondents and their organizations based in 64 countries or territories. The questions of the in-webinar survey and extended main survey were aligned to complement one another and to help validate the results. The results of the in-webinar surveys were discussed during the webinars to enrich the discussion and this report. Both in-webinar survey polls and the survey were made available in English, French, and Spanish to facilitate ease of use and encourage participation. Both quantitative and qualitative data was collected and analysed for the report.

With this report, ISSA and UNU-EGOV highlight key focus areas that need attention to achieve digital inclusion in social security. To support this aim, there are a series of recommendations (see Section 4). Where appropriate and possible, the advisory actions identified come with associated activities. Social security organizations may apply these recommendations to effectively guide their efforts to improve digital inclusion and equality within their core target group of users and service recipients, including traditionally marginalized groups. The recommendations aim to support global, national, and sub-national efforts to facilitate a greater degree of digital inclusion across various social security areas and customer groups. The recommendations aim to aid policy and decision-makers at both strategic and operational levels. The report is built upon a foundation of rigorous desk-based research, alongside analysis of international and national policy and strategy documents.

This report is structured into four chapters, with this first chapter setting the scene. The second chapter focuses on identification of the "factors at play" in relation to digital inclusion and social security. The third chapter focuses on the state of affairs in relation to three key themes: (i) access, (ii) skills and capacities, and (iii) the enabling environment. Each of the sections outlines key challenges related to service delivery, social security, and provides good practice examples, showing successful action to address key digital inclusion and social security challenges. The fourth chapter concludes the report, with a set of key recommendations, and associated activities, to be considered by social security organizations with respect to digital inclusion. This final chapter also sets out an overview of suggested next-step activities proposed for ISSA and UNU-EGOV to pursue in this respect.

2. Factors at play: Digital inclusion and social security

Having outlined the opportunities and risks associated with the digital transformation of service delivery and society in Section 1 to set the context, what is the current state of digital inclusion in relation to social security?

2.1. Access channels

In terms of service offers, most social security organizations surveyed utilize a mixed set of service delivery channels for access. Of the responding institutions, 91 per cent have websites and offer online services, while 86 per cent utilize paper forms and physical service centres (see Figure 1). This is also reflected by 64 per cent of institutions still accepting letters and application forms via post. Surprisingly, only 58 per cent of the institutions have call centres, the use of which has proven highly effective and efficient as a service channel both before and during the pandemic. Almost half of the institutions, or

48 per cent, use various forms of SMS/text messaging in their communication with customers. A small number of institutions, or 46 per cent, have solutions based on mobile applications (or "apps") which often incorporate notifications. Least common, at 17 per cent, are stand-alone kiosks, but this is likely to be due to the other technology-based solutions being less costly and more flexible.

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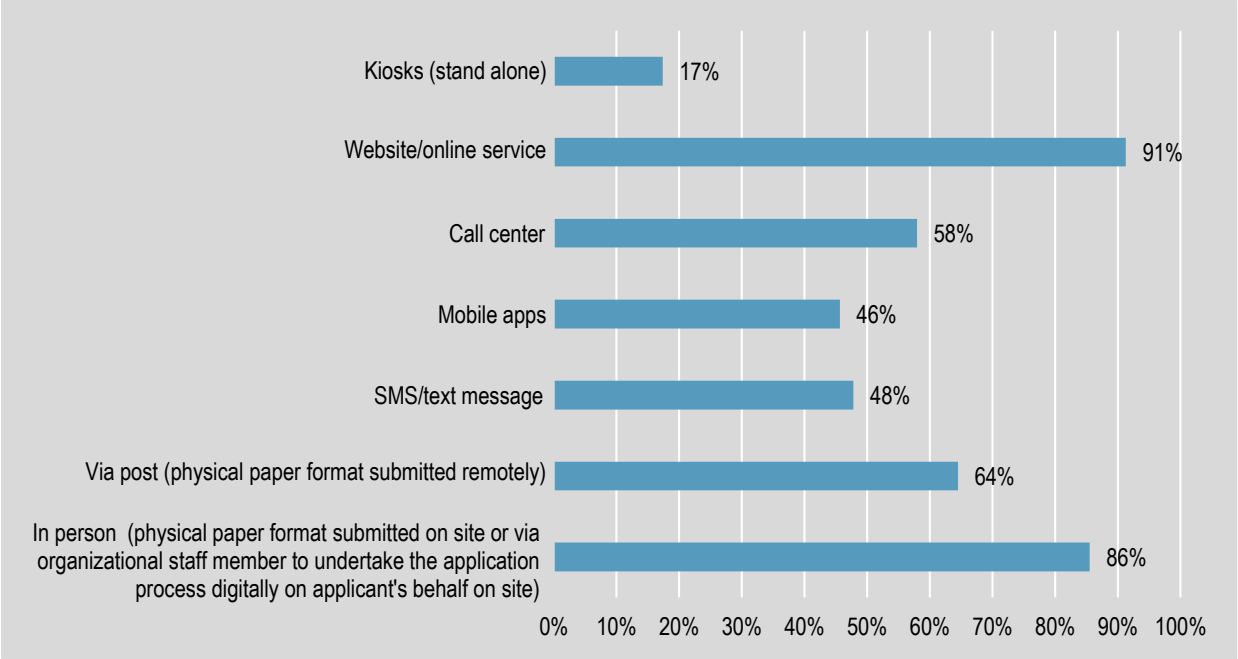
In short, online service offers exist but the customers' utilization of these electronic services (e-services) is still mixed, and for various reasons still limited amongst institutions that deliver and manage social security services globally. If the availability (or supply) of online content and transactional e-services is not therefore the key challenge facing social security organizations or the reason for customers being digitally excluded, then what is? What are the barriers to increased use of social security services online? Which customer groups are currently most likely to use social security services online?

Figure 1. *Use of service delivery channels by social security organizations (percentage)*



Note: N = 138. Question posed in the Survey "On what delivery channels do you offer services?", with option to select all that apply.

2.2. Customer groups and their likely use of online social security services

While the focus is on the use of online social security services, this requires that the user is covered. Social security coverage refers to whether an employee is affiliated to a social security scheme related to that job [37], i.e., whether the entity or individual contributes to or benefits from such schemes. Respondent institutions indicate that there are three key categories of customers (see Figure 2): regular, non-regular (or sporadic) or non-included. The first group of customers consists of "regular" customers such as employers, different employee categories and other professionals, particularly those employed in the formal sector. The regular customers are those employers, workers and beneficiaries enrolled in social security and who regularly using social security services to pay contributions and receive benefits, who are more likely to use online service offers, or "regular" customers. As a rule, regular customers are as a rule likely to be of working age and thus be above school graduation age (i.e., aged over 15 years old, often 18+), and below retirement age (i.e., below 60 or 65 years old). The second group of non-regular customers consists of individual citizens or residents (henceforth this report will use the term citizen to cover both) or the general public who engages with institutions for various types of services in a sporadic manner and is less likely to do so online. The third group consists of non-included customers and varies depending on the context; often they include individuals employed in the gig economy or working in the informal sector, and thus less likely to use online services, or even be covered by social security. Factors such as age, geographical location, native language, being a member of a minority group, or part of a migrant community, even employment type, job status, sector of employment are all factors influencing whether the individual customer is enrolled in social security or not.

Table 1 contains the definitions and some of the key characteristic and examples of the diverse social security customer groups, that is regular, sporadic, and non-included customers. Table 2 in turn outlines the key features of the formal and informal sectors including the gig-economy in relation to social security and their customers.

A full 66 per cent of institutions responded that regular customers are the most likely to use online service offers. That said, the institutions' experience shows that formal sector workers are roughly twice as likely to engage with social security organizations online compared to those who work in the informal sector. The self-employed including in the platform or gig economy, fall between the two other employee types. This is perhaps a result of heavy reliance on technology in gig economy business models, whilst simultaneously sharing features of the informal employment sector. Employers contributing to social security on behalf of their employees often apply technology for their business and administrative procedures, including engaging with authorities in relation to tax payments and various licences, particularly as the number of employees increase [41].

Table 1. *Overview of social security organization customer type*

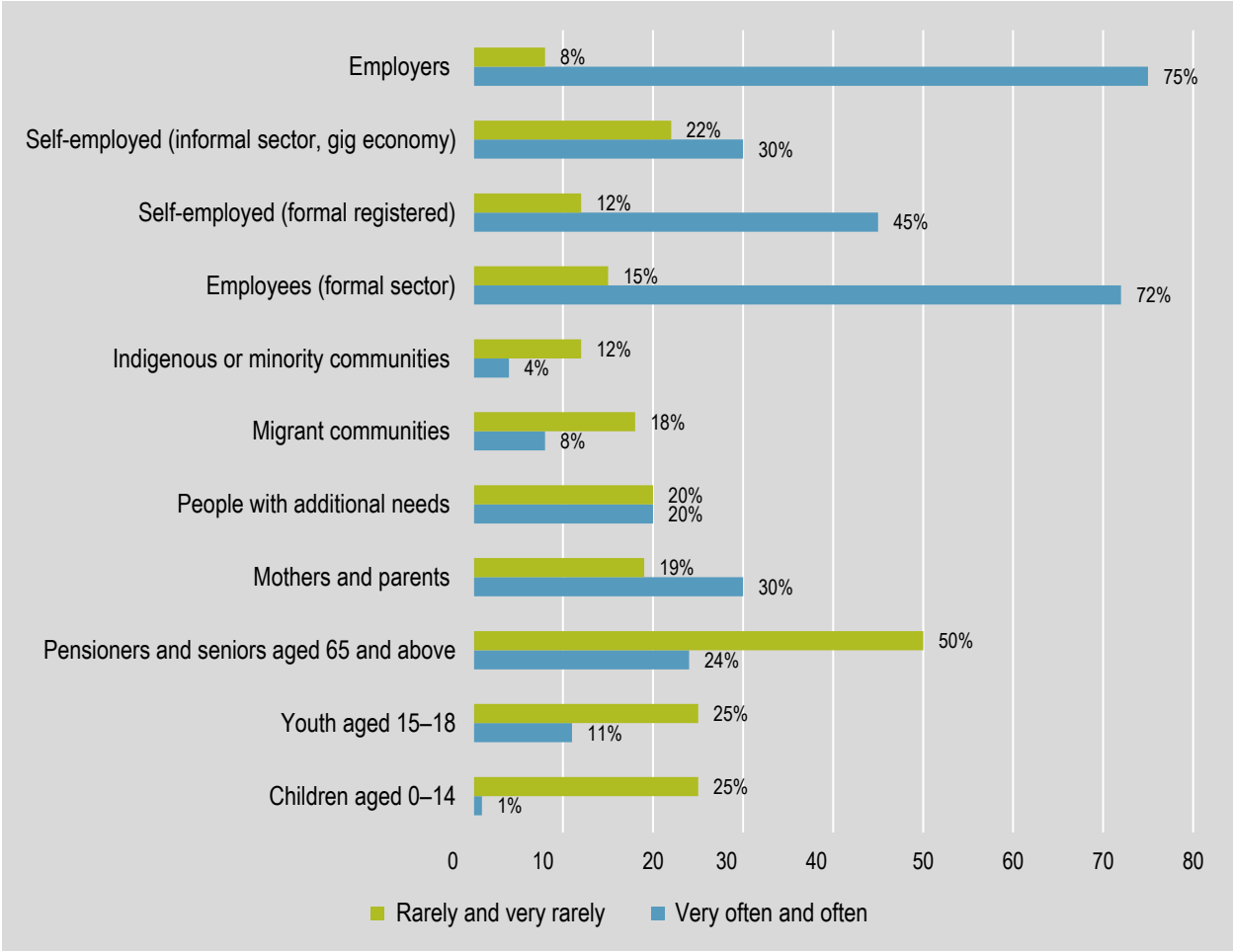
Customer groups	Definition	Characteristic and examples
Regular customer	Defined as those organizations, in any sector, who are "employers" of formally contracted individuals (i.e., employees), or self-employed individuals (i.e., contractors/sub-contractors). These organizations and individuals are officially enrolled to contribute to and/or benefit from social security benefits. Unequivocal registration with social security organizations. *Note:* refers to the individual level, not only organizational level customer.	This category of customers includes: • Employers are organizational entities that manage or contribute to social security activities on behalf of their labour force. Employers includes all company and organization sizes, no matter they location or economic sector. • Employees are on official contracts of some form which usually involves social security contributions by the employer. • Self-employed individuals are registered as such with the applicable agencies, such as social security and tax authorities and who contribute to their own to the social security system. • Employees and self-employed are generally of working age, covers both genders, all educational and income levels, also includes the part-time employees, persons with disabilities etc.
Non-regular or sporadic customers	Defined as those individuals (individual level) working in "gig" or "platform" economy; individuals previously enrolled in social security but now in household labour or outside the labour market; seasonal workers with social security etc. secured wither via their employer or via private enrolment.	This diverse category of customers includes: • Gig or platform economy employees across all sectors of working age, across all educational and income levels. Often lower incomes are a result. • Household labour often seen amongst stay-at-home women but also children and sen-ior citizens contributing to household chores or subsistence forming.
Non-included customers	Defined as those in informal and unofficial sector, with no formal employment.	This diverse category of customers includes: • Informal and unofficial employees across all sectors. • Often of working age, in low-income urban or rural areas. Over-representation of individuals with no or low educational, often migrants, refugees, women, youth and even children.

Table 2. *Overview of economic sectors and social security customers [37]*

Formal economy sector	Platform economy sector	Household sector	Informal economy sector
The formal sector consists of workers in incorporated enterprises. Workers are generally enrolled in social security by their employers or as individual customers.	The platform or "gig-economy" is a hybrid sector consisting of workers "regular" due to variations, linked to what precise form of work activity and "umbrella" organization groups are affiliate within their economic activity (the size and profile of the platform is relevant here). Workers often seen as self-employed Workers are generally not enrolled in social security unless they do so as individuals. NB: Some countries, e.g., Netherlands the UK and Uruguay, are currently in the process of formalising and regulating employment conditions in the platform economy including social security.	All workers in unincorporated enterprises that produce goods and services exclusively for own final use. It includes paid domestic employees, subsistence agriculture, construction of own dwellings, manufacture of own wearing apparel, own furniture, water and fuel collection for own use, among others. Workers are often not enrolled in social security. NB: Several countries, e.g., Latin American and South Africa, have attempted to formalising and regulating employment conditions in the household sector including social security.	The informal sector consists of workers unincorporated enterprises that produce at least partly for the market and are not registered. It excludes households that produce exclusively for own final use, subsistence agriculture, construction of own dwellings, etc. Workers are generally not enrolled in social security.

The likely usage of online services by different non-regular customer segments falls below that of both the self-employed in the gig economy and informal sector, as shown in Figure 2 contrasting two groups, the rarely / very rarely responses and the often / very often responses). The drop between the groups most likely to access online services and those less likely to do so is stark. Looking at the total count for the survey question option of "very often", mothers and parents are indicated by ten responding institutions as the user group most likely to engage with social security organizations online. This is followed by people with additional needs, including disabilities (chosen by eight respondents), pensioners and seniors aged 65 or more (selected by only 8 respondents). After that, the youth cohort aged 15–18 follows closely with respect to their likelihood to very often use online social security services, chosen by seven respondents. Lastly migrant and indigenous or minority communities (by four and two institutional respondents, respectively) are seen as the customer segments least likely to use online services. The upshot is that those outside the regular customer grouping are far less likely to access online services. Also, the underlying factors influencing the likelihood of online service use by different customer groups can be vastly different, thereby necessitating bespoke and tailored approaches.

Figure 2. *Social security organizations' customer groups likely to use their online services "very often" and "often" compared to "very rarely" and "rarely" (percentage)*



Notes: N = 138. Question posed in the survey, "How likely are your customer groups to use your online services?". Respondents answered by customer group, listed above, across a scale from "very often" to "very rarely", with an option to select "do not know". There was also a data point for 'no answer' per customer group (see below Figure 3). Percentages here are for the total group not per category.

The need is therefore to ensure a user-centric approach to communication, channel, and service design to achieve ease of use and accessibility for all, and this may also address any contextual impact that geographical location may have on a specific user group [43, 67]. It may also require new approaches to service production and delivery within social security organizations including new capacities and skills mixes of staff.

With respect to gender and age, the responses from institutions largely reflect those seen in past studies at international, national, regional, and local levels. No matter their national origin or core customers, from the research it is determined that 52 per cent declare women face challenges accessing online content and services, compared with only 30 per cent for men. Interestingly, non-binary gender is only indicated as having challenges by 18 per cent of respondent institutions , and this low percentage is likely the result of third or non-binary genders not constituting a legally defined category in the majority

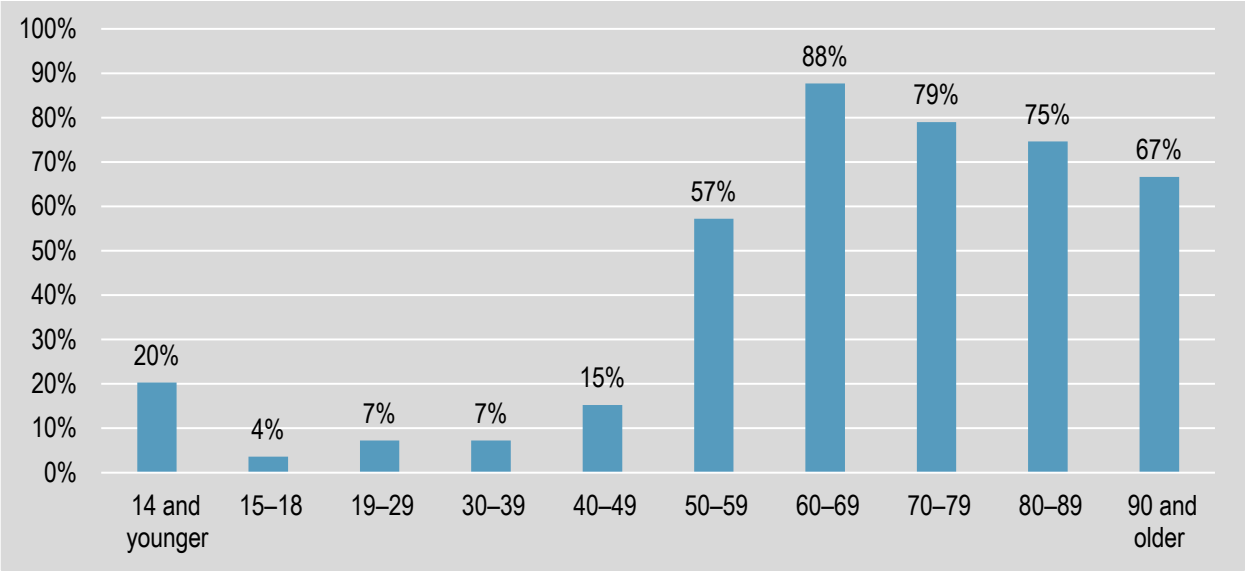
of countries globally. This likely sits alongside unfortunate public stigmas and attitudes in many parts of the world to those who do not conform with traditional gender types.

With respect to age, institutions also corroborate classical patterns of digital inclusion or marginalization identified by other studies [3, 20, 23, 90]. As a rule, the older the customer, the larger the proportion facing challenges in relation to online service offers. In relation to the future scale of digital exclusion, it is notable that, as shown in Figure 3, 20 per cent indicate that children aged 14 or younger are facing challenges in accessing services online. While this indicates that a smaller proportion of future social security customers will face potential digital exclusion, the challenge is nonetheless sizable and would benefit from early intervention and targeted policies. The reason for the potential exclusion of those aged 14 or younger could be the result of a lack of access to the internet, being unaware of the existence of such services, or their eligibility to qualify for social security offers. This confirms recent findings by a joint UNICEF and UNU research [72, 73].

The experiences of social security organizations also indicate a sharp rise in the proportion of customers facing challenges with online service use amongst those aged 50–59 and again aged 60–69. This pattern broadly reflects the advent of desktop computers and the internet in the 1990s, which catalysed mass utilization of internet connected computers, mobile devices, and software solutions during the past two decades. In short, those born as what gets termed "digital natives" since the 1990s–2000s, and those who have worked and lived with technology in their adult life, are facing less accessibility and skills challenges, although relative comfort and ease with technology does not necessarily correspond to the other important skills and capacities needed to effectively (and safely) participate in the digital society [44]. The challenges faced seemingly drops for the cohort aged 70 or above partly for three reasons. First, the number of customers needing social security such as pensions and low-income support once they reach retirement age in their late 60's, meaning that their social benefits have likely already been set up. Second, there is a lower relative number of customers as their age increases, due to life expectancy patterns globally and nationally. Third, many institutions are not targeting their online service offers to those with less digital skills i.e., customers aged 70 and above.

Although it may not reflect the state of affairs in individual countries, or specific service areas, what global statistics indicate is that countries with higher technology acceptance and use are faring better than the global average, as seen in e.g., the Nordic countries and Singapore where 80–90 per cent of key service delivery is online and there is a 70–90 per cent level of senior citizens online on a weekly, if not daily, basis [18, 35, 104]. Similarly, in statistics for Europe as a whole, 80–100 per cent of employers or companies engage with the public sector online [18].

Figure 3. *Social security organizations' customer age groups facing the biggest challenges to access online content and services (five chosen; percentage)*



Notes: N = 138. Question posed in the Survey, "Please indicate the five customer age groups which face the biggest challenges to access online content and services".

2.3. Key challenges faced by customers and social security organizations in relation to digital inclusion

In relation to digital inclusion, the two biggest challenges hindering customers in their use of online service offers are identified by social security organizations. These are, (i) lack of skills, digital and otherwise, which is emphasized as the main barrier by 65 per cent of responding institutions, compared to (ii) access, which 52 per cent see as the key barrier (shown in Figure 4). These two challenges are also seen as the hardest challenges to address (Figure 5). The rationale is likely two-fold: providing access to the internet and digital devices to access e-services is neither the core business nor is it within the traditional mandate of the institutions. Rather, this falls to other government entities responsible for education, life-long learning, telecommunication infrastructure licencing and prioritization, and in part public and private sector employers and the telecom sector. Related to the impact had by skills and capacities to improve digital literacy across employers, employees, customers and beneficiaries, leadership is seen as key, as well as design and communication (see Figure 21, plus the findings and discussion within both sections 3.2 and 3.3 broadly). This implies the need for leadership to drive focus on digital inclusion across activities and channels. The imperative of strong leadership, alongside clear messaging, and user support for online service provision, also requires that a "bigger picture" perspective for digital inclusion in social security service provision. Where a big picture overview is taken, it permits identification of cross-governmental and socio-economic levers enabling - or barriers hindering - social security organizations and its diverse customer base to be fully included, digitally and otherwise.

Figure 4. *Which are the two "biggest" challenges for customers using social security services online (percentage)*

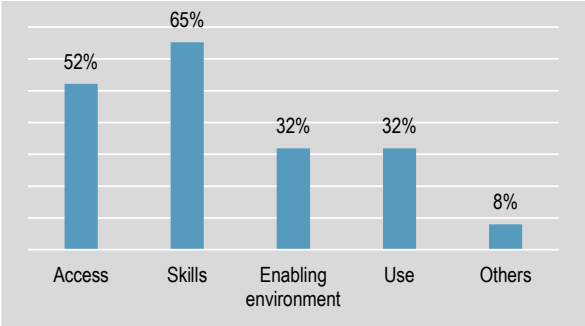
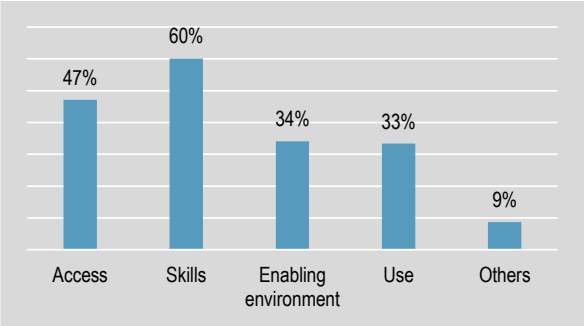


Figure 5. *Of the challenges faced by customers, which two are the "hardest" for social security organizations' to address (percentage)*



Notes: N = 138. Questions posed in the survey, respectively, Figure 4 "Choose 2 biggest challenges hindering beneficiaries using your e-services"; Figure 5 "Choose 2 challenges which are the hardest to successfully address"

So how does the general state of affairs regarding online social security and digital inclusion, set out above, affect access, skills and capacities, the enabling environment and usage? What activities have facilitated increased digital inclusion in relation to public service delivery and social security in particular? This is addressed in the following sections.

3. The state of affairs: Digital inclusion in social security

As seen in Section 2, key factors at play in relation to digital inclusion revolve around three main thematical clusters. These are: access, skills and capacities, and the enabling environment. How does this general state of affairs regarding online social security and digital inclusion play out in relation to access, skills and capacities, the enabling environment and usage? What are the activities which have facilitated increased digital inclusion in relation to public service delivery and social security in particular?

3.1. Access

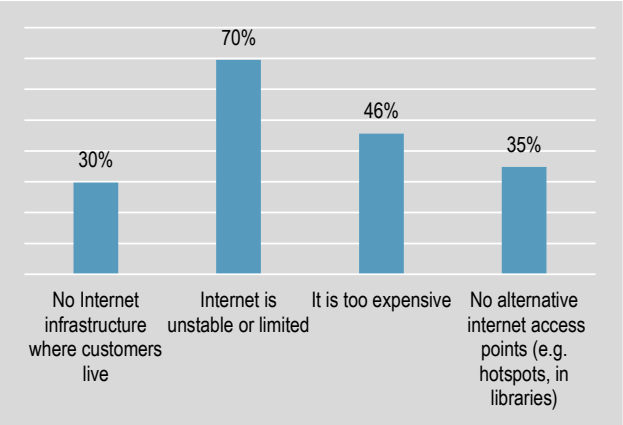
As a precondition for digital inclusion, it is important to improve internet access and ubiquity of associated technologies. Without the opportunity and the necessary skills to use ICT, or the financial means to access it, digitally marginalized members of society will still be excluded [19].

Globally, over 4.02 billion people are now enjoying mobile broadband subscriptions, yet a mere 1 billion households have internet access [35, 104]. Also, while great inroads have been made with less than 800 million people having no electricity at all [2], there are nevertheless as many as 3.5 billion people who have patchy or unreliable electricity, which is needed to power devices, internet infrastructure and devices [70]. With 52 per cent of surveyed institutions seeing accessibility a key challenge for achieving digital inclusion of their customers, it is the second largest barrier identified (see Figure 4). It also one of the hardest to address, with 47 per cent of respondents indicating it is one of the two challenges which is hardest for them to address directly (see Figure 5).

In fact, the "second generation" digital divide elements constitute key barriers for social security organizations. For instance, 70 per cent of institutions find that customers are influenced by limited or unstable access, with 46 per cent of institutions indicating that the relative cost of Internet access and devices is a key barrier to accessibility (see Figure 6), thereby confirming past research on the topic [63, 66]. The lack of infrastructure or alternative internet access points in a given geographical area or community constitutes less of a barrier, indicted as crucial by 30 per cent and 35 per cent of responding institutions respectively. This confirms the importance of alternative access points, but also illustrates the level of ingenuity and creative approaches by users and social security customers in finding alternative means to overcome their digital marginalization. That said, 63 per cent and 58 per cent of responding institutions nonetheless find it difficult to assist their social security customers with respect to internet access and devices (see Figure 7). By comparison, only half, or 51 per cent, of institutions finds it difficult to promote online service use to their customer base. The survey and webinars indicate that social security organizations do not have the mandate nor see themselves as responsible for ensuring customer access to the internet or relevant internet-enabled devices like mobile phones, tablets, or computers.

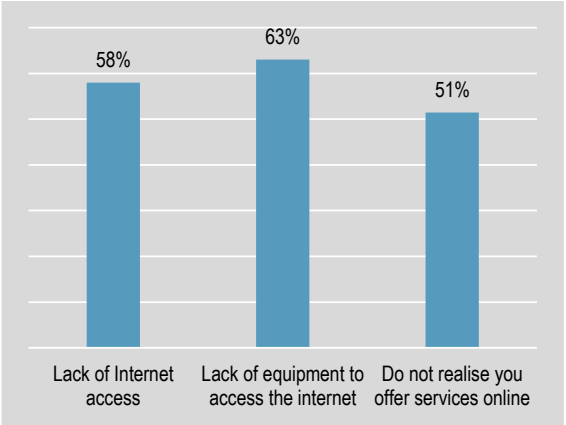
So, if access is a challenge to customers' use of online social security services, who are the least likely users? Which customer segments are the most marginalized in relation to digital inclusion?

Figure 6. *Which are the two main challenges facing social security customers getting online (i.e., getting internet access) (percentage)*



Notes: N =138. Question posed in the Survey, "Choose the two main challenges facing your customer Internet access (mobile and fixed line)"; respondents made two selections.

Figure 7. *Which are the two main challenges for customers to use social security services online (percentage)*



Notes: N =138. Question posed in the Survey, "Choose the two main challenges customers face to access your online services"; respondents made two selections.

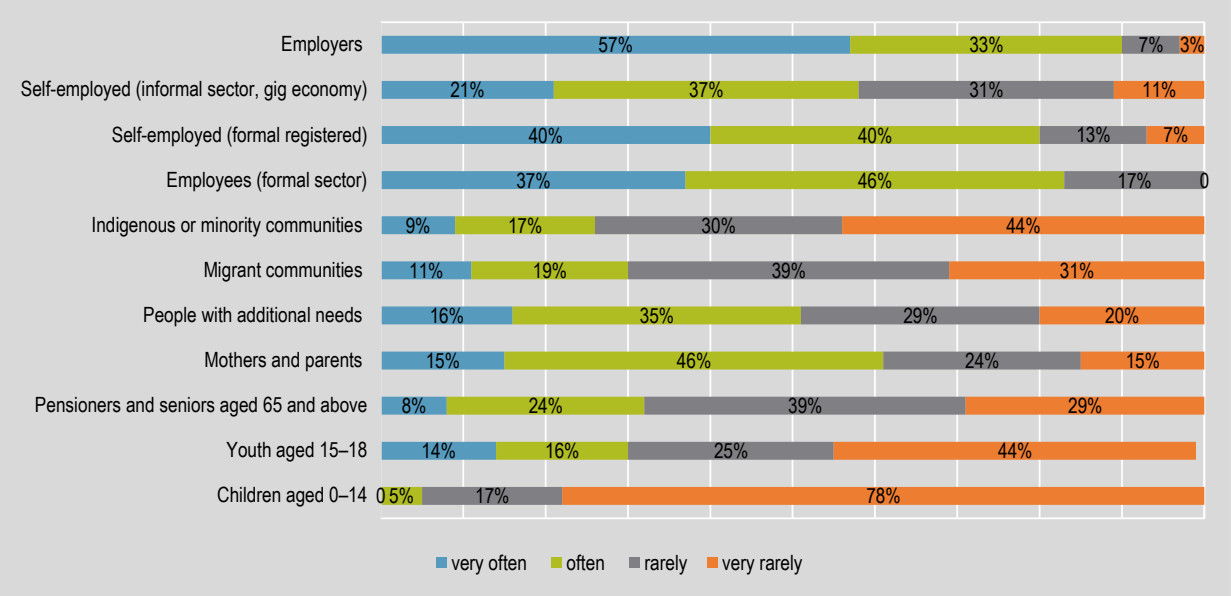
3.1.1. Internet access as a barrier for different customer types

The most likely users of online social security service offers are indicated as being what is termed here "regular" customers such as employers, different employee categories and other professionals, particularly those employed in the formal sector. Those customers employed in the gig economy or working in the informal sector are less likely to use online services. Age, geographical location, native language, being a member of a minority group, or part of a migrant community are all factors highlighted as decreasing an individual's expected use of their e-services. The picture is similar in relation to persons with disabilities and additional needs.

Propensity to use social security e-services, and the frequency of that use, serves as a proxy of the level of access a given customer group may have. For the regular customers category, employers are in general far more likely to be online. Internal business processes, entailing the utilization of technology associated with both productivity and competitiveness, serves to drive the take-up of ICT. Similarly, businesses, particularly those in the formal sector, are far more likely to already interact with the public sector, including government linked or run social security institutions, in relation to taxation and various licences. The larger the employer (in terms of employees, and turnover) – particularly in the formal sector – the larger the likely frequency and proportional volume of social security touch points. This implies that the larger the employer the more likely they are to engage with both employees and social security organizations online for: salary payments via bank transfer, social security contributions, receipt of social security services such as pensions, maternity, and parental leave payments, or unemployment benefits from institutions, including via online methods. For the self-employed in the gig economy, the tendency for technology-based business models implies that customers have access to both the internet for their work and thus also for engaging with social security organizations online. In fact, tax and social security authorities are increasingly working directly with the gig economy actors to counter tax avoidance, and also to capture customer contributions via both the gig economy platforms e.g., transport, accommodation, delivery, and other services, as well as the employees themselves. In the informal sector the dominant barrier is the relative affordability of internet access.

Non-regular customer groups are not uniform. Affordability of access may be a challenge to some, but not all, of e.g., youth, pensioners and seniors aged 65 or more. Disposable income is therefore the most likely barrier to access and the use of social security e-services. The same applies to low-income households, mothers and parents, and members of migrant, indigenous and minority communities. As a result, digital exclusion may be seen in all non-regular customer groups, but the proportion of customers will likely vary depending on the specific social security service in question. For instance, affordability of access is more likely to be seen amongst customers receiving benefits regulated by income level or specifically targeting low-income communities, households, and individuals. Similarly, some customer groups, like immigrants and some minority groups may find employment opportunities limited due to language skills, thus requiring government support. The unemployed, students, and persons with disabilities are more likely to face financial challenges due to their personal circumstances and relatively lower employability. It is notable that from the data, the group that the survey respondents were least able to comment about, thereby the group with the highest proportion of "no answer" or "do not know" responses, was that of indigenous and minority communities. Being outside of the mainstream and away from formal settings (such as the regular customers are within) leaves this group least well understood and therefore less able to be well served,

Figure 8. *Social security organizations' customer groups likely to use their online services (percentage, per category)*



Notes: Unique responses, N = 138; N varies per category: Children N = 36, Youth N = 49, Pensioners N = 102, Mothers N = 67, People with additional needs N = 55, Migrants N = 36, Indigenous N = 23, Employees N = 121, Self-employed (Formal) N = 78, Self-employed (Informal) N = 71, Employers N = 115: Question posed in the survey, "How likely are your customer groups to use your online services?". Respondents answered by customer group, listed above, across a scale from 'very often' to very rarely', with an option to select 'do not know'. There was also a data point for 'no answer' per customer group. Percentages here are per category.

3.1.2. Customer device preferences and barriers

Access to the internet, in theory or practice, does not equate to digital inclusion. This is apparent even if social security customers have affordable and realisable access to the internet and the electricity to power up a device to access online content and services. Mirroring past findings and current statistics, social security organizations emphasize that mobile phones are the most common communication device amongst their different customer groups, constituting the primary form of internet access. International statistics show that access to mobile phones far outstrips all other device types, this is mirrored by respondent institutions with 61 per cent indicating that mobile phones are used by their customers "very often" and 25 per cent for "often", shown in Figure 9. Reported numbers of customers accessing the internet and e-services via personal computers (PCs) and laptops are similar, although it is worth noting that the "rarely" and "very rarely" categories are noticeably larger for these types of devices, as compared to the mobile phone.

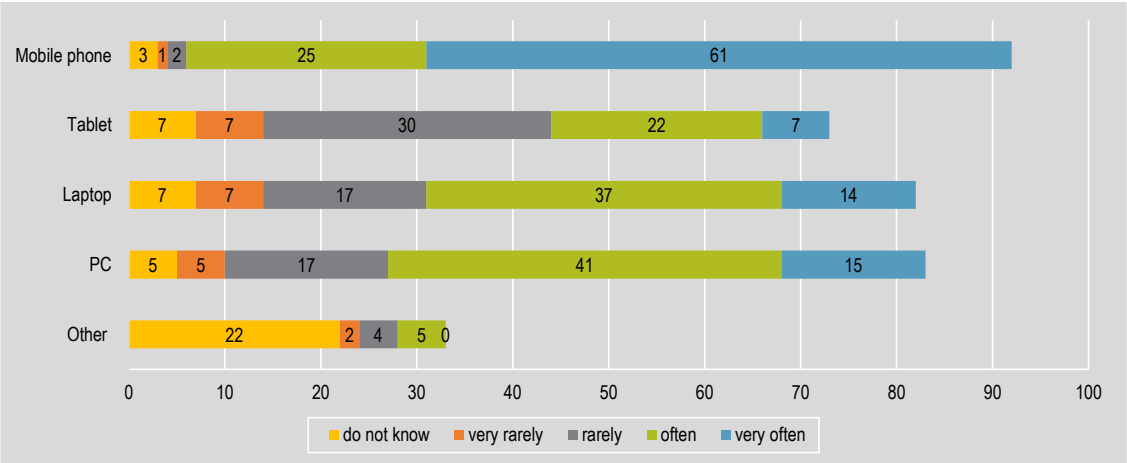
While not evident from the survey results, the penetration of desk and laptop computers increases in line with the relative wealth of a country, community, household or individual [31, 63, 66, 88]. Similarly, international statistics indicate that computers are more common amongst employers and employees than amongst households in general [18, 31]. Indications from global studies find that employers and employees in the gig and informal sectors are more likely to depend on mobile connectivity. This may be a result of the complexity of e-forms and e-services with which the formal sector must comply, the intricacies of ID-card based identification solutions (e.g., use of card readers) needed to use such online service offers, or the frequency of use, which may necessitate the use of a larger and more powerful device.

With respect to gender, women globally are on average 26 per cent less likely than men to afford digital devices such as smartphones, computers, and other digital technology devices. In places such as Africa and South Asia, these proportions stand at approximately 70 per cent and 34 per cent, respectively [68].

Affordability, behaviour, and usability are all key. As mentioned, mobile phone dominates with some 86 per cent indicating that this is the preferred device for their customers (taking the percentages for "very often" and "often" in sum). Research indicates that customers are influenced by the factors such as the offer of multiple functions, price point and availability. PC's (56 per cent), laptops (51 per cent) and tablets (29 per cent) follow in a scale of decreasing popularity. The observed preference for PCs and laptops is partially explained by the proportion of social security customers in the "regular" category and therein covering the formal institutional or institution-aligned groups (i.e., employers and formal employees). The high number of engagement and technology supported administrative processes means that PCs and laptops have a high penetration. There is some evidence that productivity of back-office processes is also higher on PCs and laptops compared to mobile phones and tablets due to the larger screens and use of separate keyboards, combined with the need for more reliable connectivity and processor capacities. Social service organizations initially digitized their interaction with employers, with these interactions generally more complex, regular and in higher relative volumes, meaning that many e-services were thereby designed for the larger screens usual to this user base. Combined with the earlier emergence of computers compared to mobile devices, this partially explains the mix of customer preference for particular devices.

For non-regular customer groups, tablets and smartphones seem to enjoy a high level of preference amongst pensioners and seniors. In Uruguay, government research showed the combination of touch screens, screen sizes and weight were particularly relevant [4, 75]. Similarly, anecdotal evidence for the Nordic countries supports such findings. A survey of Georgians with disabilities indicate that the relative preference is for mobile phones, due to their cost and multiple functionalities. If affordable, laptops are preferred due to their screen sizes, processing power and ability to support various forms of supporting software (e.g., read-aloud), but also alternative keyboards (e.g., for braille) – although this is dependent on online content being compliant with web accessibility standards [54]. For youth, device preference seems to be dominated by affordability and image [47, 86].

Figure 9. *Type of device used by social security organizations' customers to access the internet*



Notes: N =138. Question posed in the Survey, "What type of device do your customers generally use to access the internet?"; with choice of four levels of frequency (ranging from very often to very rarely), as well as a 'do not know' option and the 'no answer' response not included in the data visualisation [hence the total sum not amounting to 100%].

3.1.3. Key parameters influencing digital inclusion

With respect to internet access, several parameters influence the digital inclusion of exclusion of customers.

Age is a recognized parameter with respect to digital inclusion. Traditionally, the higher the age of the individual customer the lower the digital skills and internet use has been. This is nonetheless changing as those who have grown up with greater exposure to digital technology as the norm become older. Eurostat data from last two decades also emphasizes that the increasing degree of digitization has an indirect effect on older age groups because they are directly or indirectly encouraged – and sometimes arguably forced – to develop digital skills [18, 62].

While social security customers globally are increasingly online, statistics show that the relative number of women without access to the internet has risen from 11 per cent in 2013 to 13 per cent globally at the end of 2016. In other words, 250 million fewer women have access to online content and can afford online public services compared to men in 2016 [11, 28, 60]. This trend was also observed by OECD which found that 327 million fewer women than men had access to digital technology and the internet globally between the periods of 2013 and 2017 [68]. Gender is therefore also an important parameter effecting digital inclusion.

As already seen, disposable income and relative wealth is also a parameter influencing access to the internet, availability of devices, and the subsequent use of online services. For instance, internet connectivity increases with income levels, and studies in Europe have seen that reliance on alternative access points decreases as personal and household connectively increases [18]. Other factors that negatively affect digital inclusion include relative affordability and income level, but also remoteness of a community; factors which have been shown to result in a higher reliance on alternative access forms including mobile connectivity [66]. In a similar vein, much research has found that educational attainment levels both influence income potential as well as the digital skills of a person [3, 20, 31, 90]. The correlation between traditional and digital skills – whether high or low – is particularly seen in low-income household communities. Since the early 2000s, and particularly in the last decade, this has nonetheless changed with digital skills being acquired at a seemingly slower pace the lower the relative wealth in a community (or country) than traditional skills, while the reverse seemingly applies the higher the relevant wealth of a country. Countries with competitive and affordable internet and technology prices see a higher penetration amongst all customer segments, with the internet access increasing amongst low-income communities and amongst individuals with relatively low educational attainment levels. This is due to the affordability, but also the emergence of a critical mass of online content and e-services. Similarly, younger users are more likely to accept and adopt new technologies because they have grown up with such solutions.

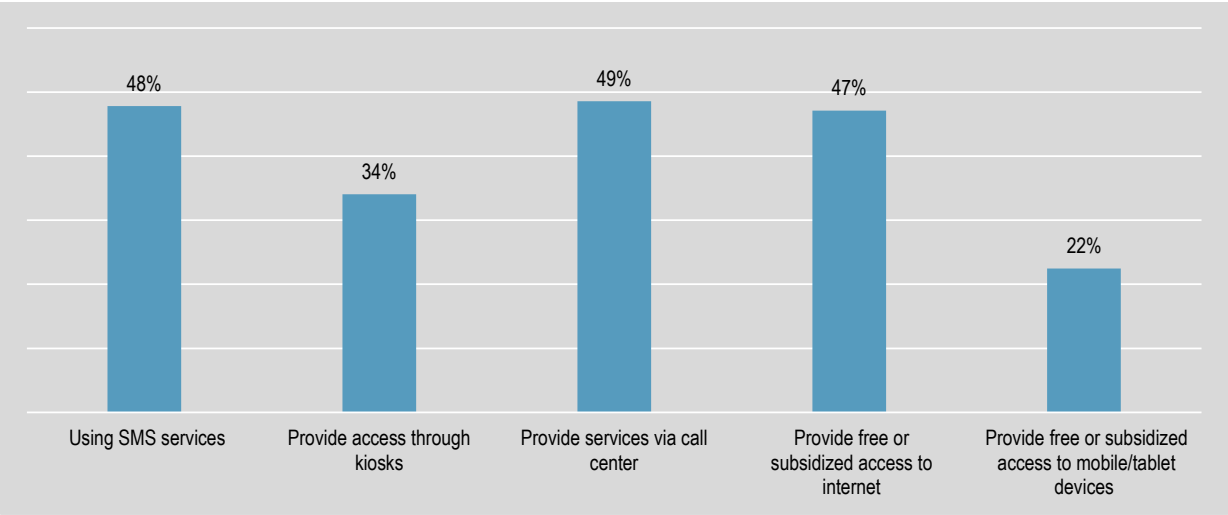
3.1.4. Good practice examples for improved access

To address the access challenges faced by users, the last three decades have seen a multitude of initiatives. Most have been by non-social security organizations. For instance, telecommunication regulators have aimed at increasing internet coverage of both mobile and fixed networks, to improve geographical coverage and increase affordability through licencing agreements and partnerships with the telecom section. This has often been guided by national policy objectives. While equipment in schools, libraries and community centres has long been equipped with both internet connectivity and devices, the caveat is that less has seemingly been done for internet enabled devices compared for infrastructure support.

Alternative channels are seen by social security organizations as a key solution to the lack of affordable and reliable access to the internet. For instance, call centres, SMS services, and kiosks are proposed as important alternatives by the entities responding to the survey, as illustrated in Figure 10. Existing trends and the COVID-19 pandemic have emphasized the cost-efficiency and effectiveness of call centres, and of SMS notifications, which are put forward as ways to address access challenges by the responding entities at 49 per cent (call centres) and 48 per cent (SMS) respectively. Free or subsidized internet access is seen by 47 per cent of respondents as having a potentially high positive impact on the level of digital inclusion but is considered slightly less relevant. That said, initiatives in Asia and Europe have proven highly successful in relation to providing alternative access points through e.g., libraries, community centres and public spaces. Improvements have also been achieved through innovative approaches to telecommunication network provider (or, "telco") licencing.

There are instances where free or subsidized internet access or devices have also been successfully applied. For instance, Argentina and Uruguay have provided free internet and devices to low-income households, or free devices to low-income students and retirees [75]. Such initiatives are often this is undertaken in partnership with other government partners, the private sector or civil society. The financial cost and required partnerships are often viewed as a hindrance. That said, many European countries in late 1990s and 2000s, along with the Gates Foundation (particularly in Sub-Saharan Africa), have successfully improved digital skills and inclusion though such measures as providing laptops to public school children, or facilitating free internet access and distributing tablets to low-income retires or households. The pandemic has also seen countries such as Ecuador and Germany exempting mobile phones, PCs, laptops, tablets, and internet routers from value added tax (VAT). In addition, countries such as Chile and Ecuador have considered providing free access to public sector IP addresses to ensure that all households and individuals have access to online health and education services [40], and the UK provides access to several official COVID-19 information sources (e.g., NHS webpages) freely, without any data charges [12]. In short, alternative access points have proven particularly successful when combined with practical help, and even digital skills courses have been made available to the users, which emphasizes that the skills and capacities of social security customers therefore impact digital inclusion.

Figure 10. *Two best ways to address the access challenges faced by social security customers (percentage)*



Notes: N =138. Question posed in the Survey, "Which are the 2 best ways to overcome access challenges?". This Survey question followed questions pertaining to telephone and internet access, methods of getting internet access, regularity of using internet, what people tend to do online, and choice of device.

Box 1. Uruguay – *Plan Ibirapitá* provision of free tablets and smart phones to low-income seniors for improved access (Social Insurance Bank (*Banco de Previsión Social* – BPS))

In Uruguay, the government has developed the "Plan Ibirapitá" that, since 2015, has been tasked to promote digital inclusion of the aged population. The programme, which is part of the governmental Digital Agenda, provides tablets, and later smart phones, with a specially developed interface that seeks to be intuitive and user-friendly for the target population of senior citizens. The device, whether a tablet or smart phone, is free of charge for low-income persons. Training workshops and support activities are organized for thosein need. As part of a cross-cutting public policy, it works together with other institutions to contribute to the construction of a new paradigm on old age and ageing from a rights-based perspective. The programme develops activities that encourage the use and appropriation of ICTs through learning spaces, topical workshops and dynamizing activities.

More than 270,000 tablets have been delivered throughout the country, representing about the 70 per cent of the population eligible to receive a device. The programme has already shown tangible results in digital inclusion: 56 per cent of the beneficiaries had their first contact with such type of digital device through the delivered tablet while 53 per cent of the total population still prefer to use has a smartphone over other devices.

The developed capacity played an important role support aged persons during the COVID-19 crisis. Since 2021, the strategy has switched to focusing on content production more than distributing devices, focusing on healthy entertainment, quality of life and cultural democratization.

Source: ISSA Webinar: Fostering digital inclusion in social security services – Challenges and good practice solutions (10 March 2021).

Alternative channels may be introduced and utilized, such as operating a call centre, a physical service centre, or civil servants and service delivery "on-the-go". Public sector provided wi-fi hotspots are often provided in and around public buildings, including schools, healthcare centres, libraries, schools, and community centres. Alternative internet access points have been particularly useful to seniors, youth, and low-income individuals. Alternative access points often requires that authorities adjust legalization, so it is not seen as unfair competition for the telecommunication companies. In addition, there are other risks to be mindful about: studies have found that in low-income communities, safety concerns are often an issue, particularly at night or for girls and women.

With respect to Universal Basic Income (UBI) as a tool to facilitate access, a significant amount of the respondent institutions finds it an interesting solution. However, they also indicate the proposition as being problematic because funds are not guaranteed to be used for internet access or devices. If UBI provision was deemed a viable option to improve access, it would – at least in part – need to be earmarked and processed accordingly to ensure use for internet access.

Potential solutions to improve affordable and reliable access are limited for many individual government agencies, including social security organizations, as this is largely the mandate of telecommunication authorities and ministries for finance which are responsible for telco licencing and auctioning. Similarly, the strategic direction is set by national government and mandated bodies. It is recommended that innovative approaches for telecommunication, internet and broadband roll-out are pursued, such as customer accessing public sector IP addresses for free, or VAT exemptions for certain basic internet and

mobile data packages, etc. Similarly, the deployment of floor walkers at physical service centres; this technique has long been applied by both public and private sector organizations in a variety of contexts, including social security.

Having identified the key challenges, and some of the solutions associated with internet access and the use of social security services online, it emerged that customers' skills and capacities often impact the customers use of the internet in general. The next section will address how the theme of skills and capacities fits into the picture, and also explore how affordability and different socio-economic factors impact digital inclusion.

3.2. Skills and capacities

Having successfully securing access to the internet and devices, the fact that online social security services exist does not mean they are used by the intended customers. One precondition often referred to in policy, research and service delivery circles is that online service use not only requires access to reliable and affordable internet, but also the skills and capacities to use the online services offers – whether public or private. What are the necessary skills and capacities, if any, required for customers using the online offers launched by social security organizations?

Widespread digital transformation, and the associated emergence of both disruptive technologies and new concepts pertaining to organization of society and service delivery, means that new skills are required in readiness for different job types and employment opportunities. Skills, including literacy of both traditional and digital varieties, together with access, constitute the preconditions for online service use and digital inclusion. With 65 per cent of surveyed social security organizations seeing the lack of skills as a key challenge to digital inclusion of their customers, it is the main barrier identified. It also one of the hardest to address with 62 per cent indicating it is one of the two challenges that are hardest for them to address directly.

3.2.1. Digital skills for the digital society

Since 2017 the World Bank GovData360 have assessed the level of digital skills (e.g., computer skills, basic coding, digital reading e.g., reading online) among populations to gage their potential capacities to actively partake in the rapidly emerging digital society [22]. The result is mixed. Some countries like Republic of Yemen have had the highest year-on-year average growth rate of almost 40 per cent between 2017 and 2019, albeit from a low level. However, many advanced economies have stagnated or have low improvement rates. This is particularly worrisome given that 44 per cent, or 169 million, of Europeans aged between 16 and 74 do not have basic digital skills [59], not least in light of the importance of such competences to success in today's workplace [92]. This is the case despite the United States experienced a negative year-on-year averaging minus 7 per cent, i.e., a worsening situation. Burkina Faso experiencing lowest year-on-year average growth rate at exceeding minus 14 per cent for the same period [22].

Essentially both the institutions and their customers are forced to adapt and increase their level of digital competence. Increased demand for analytical skills is required to realize the potential of Big and Open Data, estimated to add close to 2 per cent of GDP in 2020 for 21 different sectors in the 28 European countries [17, 22, 81]. As Artificial Intelligence (AI) and Machine Learning matures, it is estimated to save as much as 634 million hours of work or US$21.6 billion in labour cost in the US Federal Government alone, which adds up to US$15 billion to global GDP. This also means that traditional office workers will need to re-skill and up-skill to adapt [15, 21, 32]. While the potential positive impacts of

the digital transformation of society are substantial, the negative impacts of the digital transformation may be compounded if current inequalities and the potential negative disruptions are not proactively addressed. While other jobs will arise from AI and robotics, 40–60 per cent of current jobs are at risk of being digitized. In the long-term, jobs traditionally performed by women, such as services and retail, will be less affected than those by men, such as construction, administration, legal and financial professions [17, 81, 87]. It is projected that 44 per cent of workers may not have the skills to make the transition into other employment by the mid-2030's [17, 81, 87]. This will directly impact social security as demand increases, but contributions and government resources are reduced due to e.g., higher unemployment rates, failed businesses, lower levels of lifetime contributions and tax revenues.

In relation to digital inclusion, "skills" refer to a person's ability to increase the benefits gained from using digital technologies. It also refers to an individuals' ability to avoid the downsides that can [15, 21] ensue from digital engagement such as identity theft, phishing, and other types of online fraud [72, 73]. These types of skills are multifaceted and include reading, writing, and numeracy, but also critical thinking, problem solving, creativity and entrepreneurship. In the digital age, skills also include basic digital literacy. The European Commission's Digital Competencies Framework (DigComp 2.0) [32, 89] emphasizes five clusters of digital skills: information and digital literacy; communication and collaboration; digital content creation; safety; and problem-solving, including the ability to protect one's personal data and privacy. These are largely mirrored by the World Bank which identify five essential digital skills for life and work, these are: communicating; handling information and content; transacting; problem solving; and being safe and legal online [11], as summarized in Table 3 below.

There is an alignment potential here for the two entities, but also interestingly there is also some category cross-over. For instance, such cross-over is particularly evident for "problem solving", which for DigComp 2.0 includes elements of digital and specifically data literacy, as regards "the ability to protect one's personal data privacy". Also, the World Bank's "transacting" essential digital skills category could be seen as linking to the European Commission DigComp 2.0's digital skills cluster of "communication and collaboration", albeit that the World Bank separates out "communicating" into its own category.

Table 3. *Digital skills comparison: Digital Competence Framework (DigComp 2.0) and World Bald Banks Essential Digital Skills*

	Literacy and individual level usage skills	**Communication**	**Contribution to a two-way interaction with service providers**	**Staying safe online**	**Problem solving**
European Commission's Digital Competences Framework DigComp 2.0	Information and digital literacy	Communication and collaboration	Digital content creation	Safety	Problem-solving (including the ability to protect one's personal data and privacy)
World Bank's 2019 essential digital skills	Handling information and content	Communicating	Transacting	Being safe and legal online	Problem solving

Furthermore, the concept of "digital content creation" in DigComp 2.0 crosses over with communicating in general, and with the World Bank's essential skill of "handling information and content". There is a distinction to be appreciated between skills that enable a person's use of online spaces, with their access to services therein, and that of the broader transformation to the digital economy and readiness to take up associated jobs.

3.2.2. Skills-based readiness for the digital economy

With respect to the future skills of employers, including for those institutions surveyed, various research outputs illustrate the challenge. In the coming five years, the global workforce can absorb around 149 million technology-oriented jobs [56] and 54 per cent of all employees will need significant reskilling by 2022 [100]. It is significant that 85 per cent of Americans believe that digital skills will be important for achieving success in today's workplace [92]. A total of 69 per cent of US employers say they prefer employees with data science skills than those without [39], and 55 per cent of the employers who are most worried about digital skills say innovation is hampered by a lack of key skills [39, 76]. Estimates indicate that 44 per cent of Europeans between 16 and 74 do not have basic digital skills [83] and in the G20 economies everyone in the labour force will need an extra 101 days of learning by 2022 [100]. While this study refers to surveys of employers and the current digital skills of the present-day labour force in mainly advanced economies and high-income countries, it highlights three things in relation to social security: first, customers – whether employers, employees or general citizens – do not necessarily have the skills to use online social security service offers; second, the institutional providers themselves will need to re-skill and upskill existing staff in relation to the challenges of the digital transformation; third, there may be increasing demand and pressures on social security services particularly in those countries not successfully and proactively addressing the changing needs of the labour market. A potential fourth observation drawn from digital transformation studies is that the more labour intensive the economy, the less mechanized and digitized a country is, therefore the biggest challenge faced in the coming five to fifteen years.

3.2.3. Nuances of accessibility require more than technical skills

Customers aged 15–18 are members of so-called "born digital" generation (also referred to as "digital natives" in Section 2) who are avid users of digital services and products, while the older the category of seniors are less likely they are to have the digital skills required by a digital society. For youth, the underlying reasons for the lower likelihood of e-service usage is partly due to a lack of awareness or limited availability of social security offers for them, whether online or not. While the digital skills amongst people entering retirement have traditionally been lower than their younger peers, this is nonetheless changing over time as digitally competent workers will use the skills attained during a lifetime of work and study to access online social security services – as emphasized by statistical analysis via ITU, OECD and the European Commission, as well as the wider research community [18, 22, 34, 35]. For indigenous, minority and migrant communities the lack of affordable internet access is perceived as a main barrier to e-service use, but these communities are also facing marginalization due to geographical location, language barriers, low educational attainment levels or relative income levels. Persons with special needs or disabilities, particularly in high- and middle-income countries, are often very tech savvy as they rely on technology for more independent living (e.g., assisted living technology like chairs, or robots) and for online service access (e.g., through screen readers, read aloud software, etc.). Similar to older retirees in low-income communities, people with additional needs, including persons with disabilities, often face challenges related to the affordability and reliability of the internet and technical devices, especially

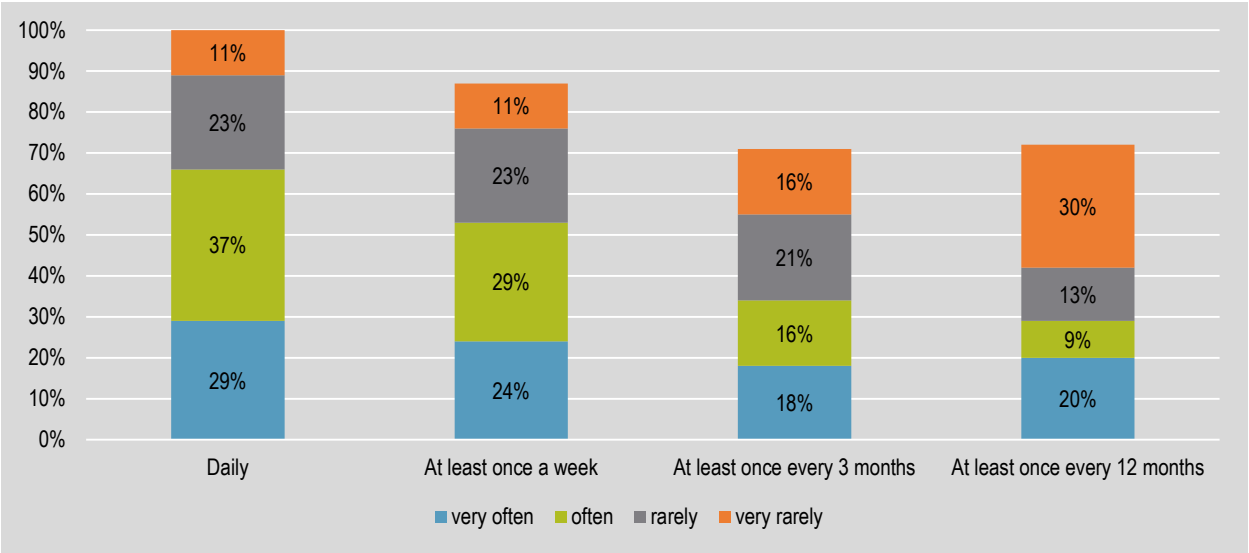
if there is no, or limited, support from social security organizations, relevant government agencies or non-governmental organizations and charities. Lastly, evidence shows that mobile devices increasingly dominate amongst youth, seniors, those on low income, and disabled communities due to a lower cost point, but this presents challenges in relation to usability of online service offers due to screen sizes, processor capacities etc. [20, 35, 36, 54].

3.2.4. Knowing the customer

From the social security organization responses to these topics, drawn from the online survey and webinars, it becomes clear that the challenges related to digital skills and accessibility reflect those experienced across the public sector. For instance, most social security customers are indicated as being frequent users of the internet, but this does not necessarily capture national or community variations within a given country or service area. For the survey question asked to glean a rich picture of customers' frequency of internet usage, within each response category (i.e., access "daily", "once a week", "once every 3 months", "once a year", "never"), the respondents unable to specify – answering "do not know" or making no answer was between 26 per cent (for the "daily" category) and 59 per cent (for "never"). The fact that between a quarter and a half of the social security organizations surveyed could not specify the internet habits of their target customers indicates a lack of insight and understanding of their customer base, their needs, wishes and behaviour online. It is therefore important that institutions compliment their strategies and initiatives with their own research e.g., surveys identifying the needs and behaviours of their customers. This will serve not only to improve service delivery but also in designing user-interfaces, their design, communication, and channel strategies.

When asked about their customers' use of public and private online service offers, close to two-thirds either did not respond or indicated that they do not know. The remaining responses indicated that customers are more likely to use various forms of online banking and payment solutions than government

Figure 11. *Amount of time using the internet by social security organizations' customers (Percentage, calculated per category of frequency)*



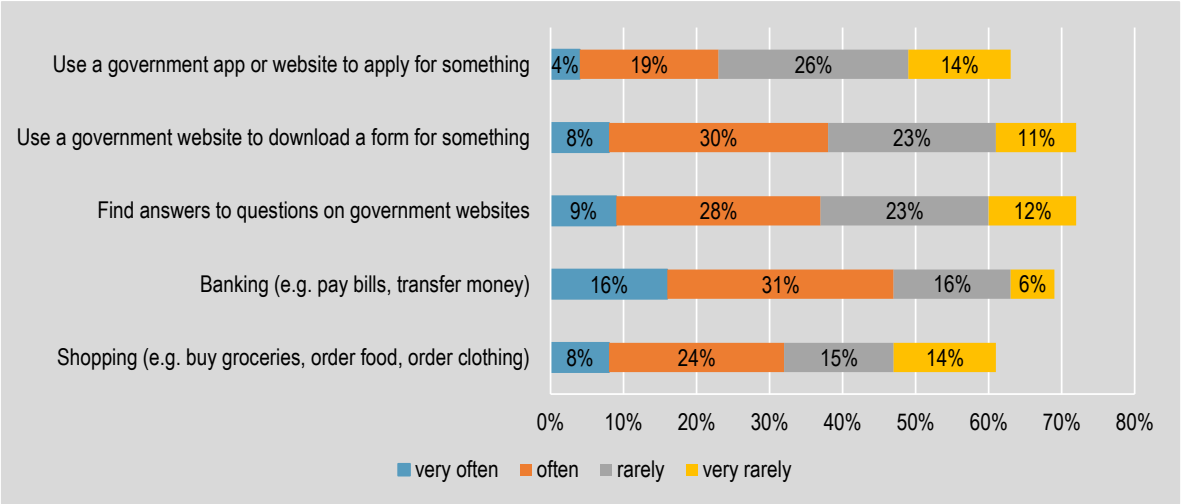
Notes: N =138. Question posed in the Survey, "How often do your customers generally use the internet?". N as total count per frequency category was varied: very often (95 selections), often (128), rarely (82), very rarely (76), do not know (117), no answer (330).

services. With respect to interaction with public sector, customers are seen as primarily downloading online forms or looking for information to specific queries rather than conducting transactions online. This is likely associated with three factors. First, customers seeking answers to specific questions online have a higher frequency globally, especially in low- and middle-income countries where users have lower thresholds for gaining access, for instance via the use of mobile phones (with smaller screens and where webpages often do not adjust to the particular device) and may have lower levels of digital skills. Second, that not all countries have completed the transition to two-way e-services, with global statistics [49, 97] emphasizing that many countries are still facing challenges with both analogue and digital identity management, which means that fully transactional services are simply not feasible at present [54, 79]. Thirdly, transactional services unfortunately are more likely to be designed to address internal business processes and requirements than with the end-user in mind [61, 84]. Again, it is caveated that this may cover large variations between specific countries, communities, and service areas.

In relation to the challenges faced by social security customers at large, as well as by the institutions themselves, the lack of digital literacy is indicated as the dominant challenge by 71 per cent of respondents, shown in Figure 13. The lack of traditional literacy is indicated as a challenge by 44 per cent and thus constitutes less of a barrier. In short, whilst customers are broadly literate – able to read, write and do basic numeracy – a significant proportion of customers are observed by the participants as unable to understand how to use social security e-services, i.e., lacking the digital skills required to use online services offers. Given the 71 per cent who highlighted customers' as lacking digital skills, it is interesting that almost half of the respondents, or 47 per cent, state that the biggest challenge faced by their customers is not knowing how or why to use online services provided by the institution.

There is an opportunity here: with increased digital skills, there may be an upswing in capability by the potential users of the online service already provided. The issue of comprehending e-services provision is a challenge which can be addressed by institutions improving their approach to service design and communication. An interesting result of the survey is that 30 per cent indicate one of the two biggest challenges is the fact that their customers are not aware of the online services offers. This indicates that

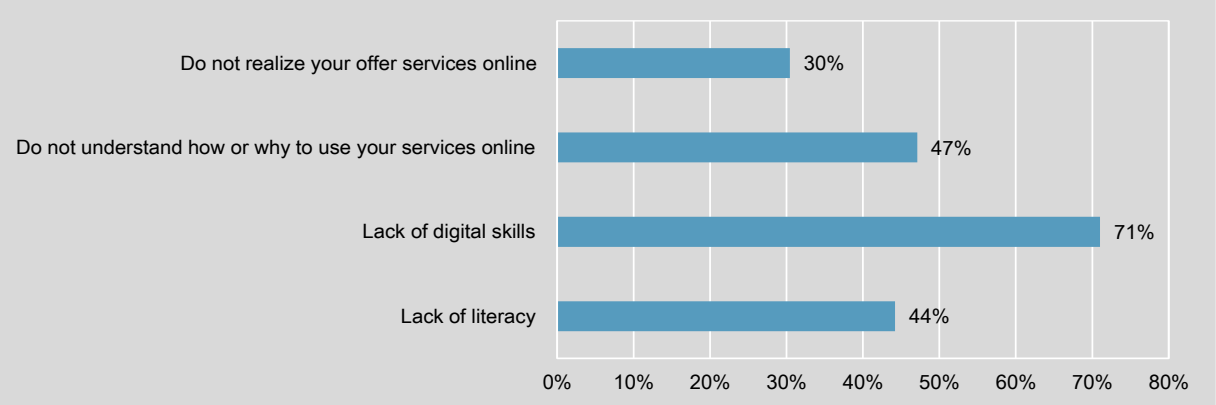
Figure 12. *The purpose for which social security organizations' customers use the internet (percentage)*



Notes: N =138. Question posed in the Survey, "What do your customers generally use the internet for?" [asked in relation to online services]. Multiple options (activities) available across scale of frequency, with a request to score across the full frequency scale in connection to each activity. There was an option for "do not know" and "no answer" also.

the current design and communication strategies applied by respondents can be optimized further. Like service design, this can be addressed by involving customers in the design of services and tailoring communication to customer groups [43, 54]. For instance, user testing or even co-design of services, user interfaces, language use and style of communication have proven highly effective in by service providing authorities in countries as Argentina, Australia, Canada, Denmark, Mexico, Singapore, South Korea, UAE, UK, Uruguay, etc. In fact, an increasing number of countries are implementing government guidelines and standards for both online usability and web accessibility [43, 67].

Figure 13. *Main access challenges faced by social security organizations' customers when using the provided e-services (percentage)*



Notes: N =138. Question posed in the Survey, "Which are the two main skills challenges customers face to access your online services?". Respondents selected two answers.

3.2.5. Good practice examples for improved skills and capacities

Some practical methods to make improvements have been highlighted by responding social security organizations, as shown in Figure 14. In a survey question asking, "what are the best ways to overcome the access challenges?", the majority (62 per cent) of respondent institutions conclude that simplified and user-centric service design will be key to facilitate digital inclusion and increase the use of social security e-services. Similarly, 49 per cent indicate that everyday language use and communication that is free of legal and bureaucratic jargon is a potential tool to help increase the use of online service offers for customers with limited literacy and digital skills and is thus a partial solution to help increase digital inclusion.

Experiences in Asia and especially Europe in the late 1990s and early 2000s have proven highly successful in relation to upgrading digital literacy in the general population, particularly youth and seniors but also amongst migrant and minority communities [29, 30]. Free or subsidized training courses at service centres or in partnership with libraries and NGOs have also been successfully applied. Partnerships with e.g., libraries and senior citizens organizations have been highly successful across the Nordic countries. Oslo municipality collaborated with immigrant communities and job centres increase employability, Norwegian and digital skills for women and girls with great success in the early 2000s [29, 30]. Often partnership occurs with entities who have the facilities, capacities and network to make training more relevant and accessible, thereby broadening the potential reach – especially if combined with national communication and channel strategies initiatives as seen in e.g., Denmark. The financial cost and required partnerships nonetheless are often a hindrance.

Box 2. France – Integrated approach delivering digitally inclusive family benefits (National Family Allowances Fund (*Caisse nationale des allocations familiales* – CNAF))

In France, improving customer services through digitalization has been a strong institutional objective for the National Family Allowances Fund (CNAF) to achieve its mandate which consists of providing family, kindergarten and home benefits to about 32 million beneficiaries.

CNAF's services have historically been developed with customer focus making their website one of the top sites accessed in France that provides services also accessible through mobile phones. The COVID-19 crisis accelerated the developments and increased the need to access public services.

Notwithstanding the efforts, they identified risks in the use of digital channels, notably excluding certain beneficiary population groups because they can't use the systems due to accessibility and lack of support for using the systems. About 25 per cent of customers have been identified as still having difficulties to use digital tools. As a result, CNAF's continues to make efforts to provide suitable solutions to individuals and are key part of the digital inclusion strategy which involved 4 axis:

- detecting digital exclusion situations;
- supporting customers ("accompaniment") to use digital channels. For instance, the CNAF organized workshops to explain and train customers on using the systems and coached customers by phone before and during the COVID-19 crisis;
- guiding users to partners providing digital skills and developing a large network and partners supporting digital inclusion at a national level, notably involving other social security institutions, to propose coordinated actions to customers;
- implementing tailored responses adapted to different customer groups and types of operation, keeping phone and presence-based when it's needed.

More recently, the CNAF has been involving customers in new system development to test the functionalities and user-friendliness through focus groups and integrating customers' comments in the tool's design.

Source: ISSA Webinar: Fostering digital inclusion in social security services – The state of play and the way forward (12 May 2021).

Alternative access points through e.g., libraries, jobs, community and senior centres have proven particularly suitable for both formal training and informal assistance when citizens use public wi-fi areas to access public and private sector online services [29, 30, 46]. The respondents also recognize the benefit of such initiatives, with 31 per cent acknowledging free or subsidized digital skills training courses serve as a mechanism to support requisite skills development in the general population, while 29 per cent and 20 per cent respectively point to alternative service delivery channels i.e., call and physical service centres, as being effective in ensuring that those without access, skills or in a unique situation can still be given assistance or submit their service requests "offline".

In summary, the above outlined contributions by social security organizations in relation to skills development and ways to minimize the burden faced, by support to customers through user-centric, logical, intuitive design and communication, reflect those found amongst their public sector peers across global good practice and recommendations. Still, there may be a need for internal skills development in

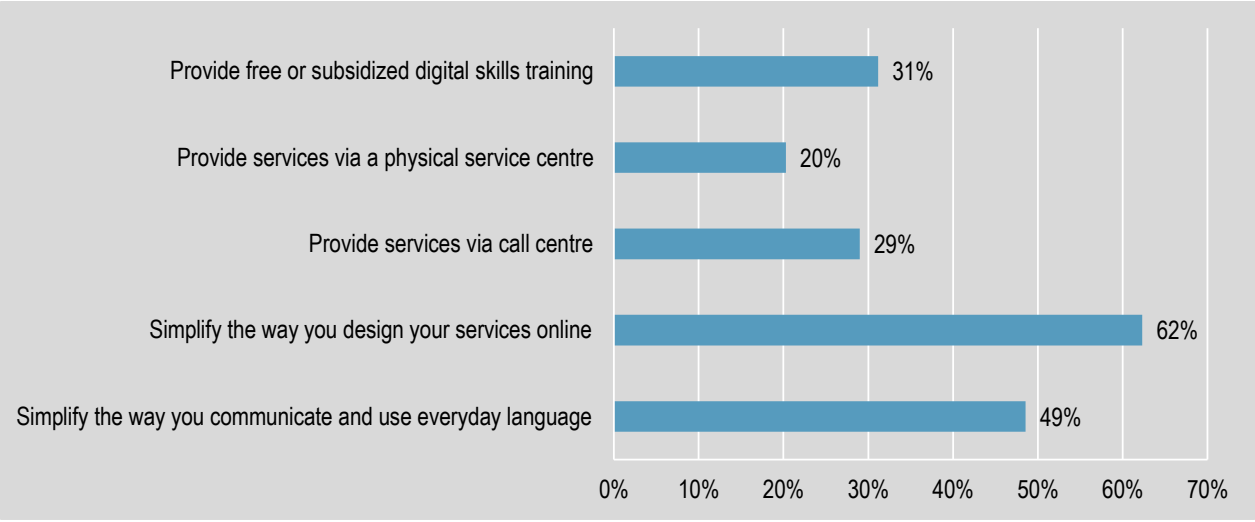
the institutions themselves, alongside commitment from both internal and national decision makers to ensure that the strategic direction is coordinated in a holistic manner across the public sector, with its various initiatives and service areas.

Potential solutions to improve the digital skills and capacities of social security customers are many. For instance, floor walkers at physical service centres have long been applied by both the public and private sector. Through observations, floor walkers help identify individuals who are using digital devices and thus have the potential digital skills, advise them on online service offers or assist customers on stand-alone kiosks or computers.

These various forms of assistance and channel strategies are often accompanied indirectly by initiatives such as the use of everyday language in communication, logical and intuitive user-experience (UX) and user-interfaces (UI), along with the implementation of communication and design guides and service standards. In addition to e.g., ISSA Guidelines, at least ten countries have national guidelines for usability and service design [67] and more than 150 countries have ratified the UN Charter on web accessibility for people with disabilities and special skills – but compliance is lacking (i.e., with WCAG) [54, 96]. Global leaders for design and communication guidelines include Denmark and the UK, with many others who are inspired by these countries' efforts in this area. Social security institutions in Canada and Spain are applying advanced design practices to implement solutions with tailored user interfaces. However, over-complicated and "one size fit all" approaches, such as those seen in e.g., India, seem to be counter-productive because they do not account for vastly different customer groups, user needs, service types or even business processes across government entities.

Having identified the key challenges – and some of the solutions – associated with customers skills and capacities, it is pertinent to consider if there are any forms of "soft", non-physical infrastructure which may facilitate digital inclusion of social security customers. Specifically, it is addressed in the next section if there are any underlying conditions which impact how social security services are designed, produced and delivered by social security organizations, and whether there is an improvement potential.

Figure 14. *The best ways for social security organizations to overcome the access challenges identified in Figure 13 (percentage)*



Notes: N =138. Question posed in the Survey, "Which are the best ways to overcome these access challenges?"; respondents asked to select two. Also instructed, "Choose two with the most potential positive impact for customers".

3.3. Enabling environment

The complexity of social security provision to diverse customers is further complicated by the rapid pace of technology change. The speed in technology evolution, if handled well, provides plentiful opportunities for both process, service/s and organizational innovation. There is potential to improve the efficiency and effectiveness of social security organizations, but in tandem, the impacts from fast uptake of ICT tools increase the complexity of digital inclusion. Access, skills, and capacities certainly influence the way that social security organizations tackle the digital transformation of both the backend service production and service delivery ecosystems. Some solutions may increase the access and user-experience for some customers but may unintentionally exclude others. The environment within which social security organizations operate, in terms of their "soft infrastructure", service delivery mode or preconditions, and thereby the inherent culture of work, must serve to promote accessibility and digital inclusion. So how does the myriad of underlying conditions around how social security services are delivered affect accessibility and influence digital inclusion? What is needed to ensure an effective enabling environment for social security service provision?

3.3.1. Increasing inequality

Despite previous gains and increasing positive impacts from ICT use across the world, the gap between the global north and south is growing. Varied pace of take-up and adjustment are resulting in this widening gap, with increased urban-rural divides and disparities in income, opportunities, and service access. Positive inroads made in the 20th century are eroding with income inequality rising 10 per cent since the 1980s [82, 85, 93, 94, 101]. As this gap continues to increase, access in conjunction with the quality and affordability of such access are universally accepted as essential indicators to assess digital inclusion. The enabling environment is multifaceted. It includes both accessibility issues, skills, and capacities of social security customers, but also the capacities within institutions with a role to provide social security services to effectively and efficiently design, produce and deliver those services, whether online or not. Across the institutions surveyed, 32 per cent indicate the enabling environment, including internal organizational factors, constitute a key challenge to efforts to increase digital inclusion of their customers. Interestingly, respondents are also relatively positive in their answers with only 34 per cent indicating the enabling environment as one of the two challenges which is hardest for them to address directly (see Figures 4 and 5 above).

Affordability has long been seen as a barrier to digital inclusion [66, 85]. While 75 per cent of Africans have a mobile phone, topics of access, affordability, digital empowerment, and gender inclusion require urgent attention. The African Union is making calls to accelerate the creation of a single African digital market to increase private sector opportunities, improve affordability via increased competition on Internet access and digital services and products [78]. Similar patterns are observed in Asia, Latin American and Caribbean contexts [78, 80] in terms of access, skills, affordability, and financial inclusion. Such regional initiatives could be complimented with holistic and multi-agency partnerships related to digital inclusion. Unfortunately, affordable and reliable access to the internet, devices and online services does not equate digital inclusion. Neither does access combined with the skills and capacities. Digital inclusion is also influenced by other factors.

3.3.2. Formal identification of social security contributors and benefit recipients

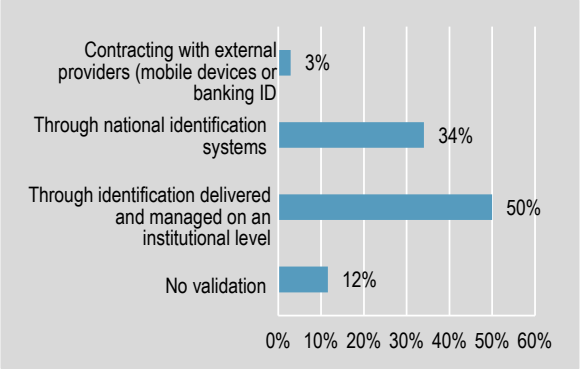
Legally valid proof of identity is an essential component of everyday life in both the physical and digital world, but it also constitutes a key challenge. For instance, over 160 countries require legally valid proof of identity (e.g., ID, birth certificate, drivers' licence, passport) for telco's to sell a simple pay as you go mobile phone or data plan to a person [8]. The challenges faced by traditionally marginalized communities are even greater when it comes to digital identification. While most emerging economies have some form of digital or electronic ID scheme (eID), it is either limited to specific purposes or in limited use. A mere 3 per cent of developing countries have foundational eID schemes that can be used to access a range of online service offers, with 24 per cent of developing countries having no eID system at all [57]. As a result, more than a billion people globally still have trouble proving their identity and therefore lack access to vital services including healthcare, social protection, education, and finance [91]. Of these, 47 per cent are below the national ID age of their country, and 63 per cent of children in low or lower-middle income economies have no formal identities, thus illustrating the challenge faced with respect to future social security customers. The recent phase of change in this area during the COVID-19 pandemic and subsequent lockdowns is not yet fully documented, but preliminary indicators are positive, including for social security institutions. Positive developments include capturing identities for customers without legal IDs; increased online services; and willingness to use "workarounds", all of which helped ensure business continuity and service delivery during the pandemic on digital and remote channels. Other examples include increased automation based on existing and shared data (more on data sharing below).

In fact, as shown in Figure 15, 50 per cent of those surveyed have operational solutions for security login and electronic identification at institutional levels, while 34 per cent use a national ID system or digital equivalent. Despite this scope for improvement, it is an encouraging finding that only a mere 12 per cent of the responding institutions do not yet utilize any form of identity validation in their service delivery (see Figure 15). The flipside of this is that 87 per cent do have some internal business process mechanisms in place to provide identity validation support. Accounting for the 12 per cent who currently do not undertake any identity validation, this could be a result of the lack of reliable internal or national population registries, or the cost of implementation [53]. In short, there is a need to step-up work with potential forms of eID solutions within the context of social security services. Only a minority of responding institutions, at 3 per cent, use private forms of eIDs. This may be due to practical issues around technical maintenance, security, reliability, and privacy issues, for instance as has been seen in Sweden [72, 73].

3.3.3. Data sharing for ID verification

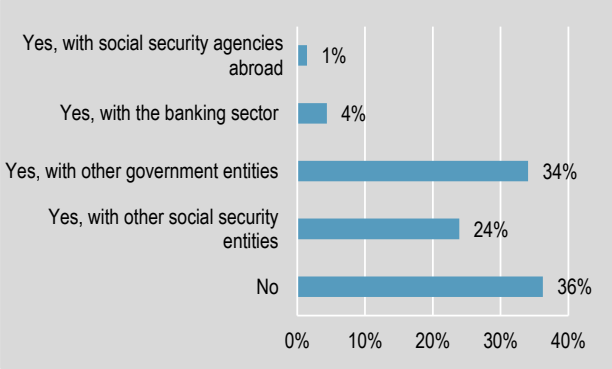
To address the issue of validating identities there is potential for increased collaboration between various social security entities and other national public sector partners. For instance, as can be seen in Figure 16 with respect to sharing customer identity data across other entities to increase productivity. Only 34 per cent of responding institutions use or share their data gathered for identity management with other government entities; 24 per cent do so with other national social security entities; and only 4 per cent do so with the banking / financial sector. A full 36 per cent do not exchange or share such data at all. Only 1 per cent share data for identity management across borders, with the majority likely being in the European Union or in countries with close ties to it. Others like South American MERCOSUR countries, Australia, Korea and Spain also implemented international social security data exchange [14].

Figure 15. *Social security organizations' methods to validate customer identity (percentage)*



Notes: N =138. Question posed in the Survey, "How do you validate customer identity when they use e-services?"

Figure 16. *Social security organizations' sharing customer identities (percentage)*



Notes: N =138. Question posed in the Survey, "Does your organization share customer identities with other entities to increase productivity?"

3.3.4. Financial inclusion and tools for monetary transactions

Without financial inclusion one cannot actively engage in the global economy, let alone benefit from the opportunities of online commerce and other private sector service offers online. Globally, 47 per cent of people now use the Internet [102], while the number of adults with an account at a bank or mobile money provider has improved globally and stands at 69 per cent, over 1.7 billion people remain unbanked [24, 57]. Zero-Rupee accounts in India and mobile banking akin to East Africa's M-Pesa are increasing financial inclusion. Globally, the majority of non-users are in low-income countries, half of the unbanked adults come from the poorest 40 per cent of households within their economy, and 56 per cent are women [16].

In terms of processes for sending financial benefits, shown in Figure 17, 41 per cent of responding institutions do traditional transfers, 33 per cent use bank, mobile, cash and credit apps, 17 per cent are unable to send or allow any form of transfer, implying they use cash (or cheque) payments. Considering the popularity and penetration of alternative payment forms based on SMS and app transfers, particularly in low-income emerging economies in Africa and Asia, it is remarkable that only 7 per cent of the institutions surveyed use such tools. This is especially surprising given the potential productivity gains and positive impact on digital and financial inclusion. It is also surprising that over half of responding institutions, or 54 per cent, do not share data related to financial payment or taxes with other government entities, and a mere 9 per cent do so with the banking sector. This contrasts with the 17 per cent of institutions who indicate that they share general data with the banking sector (see Figure 19). In short, some low hanging fruit exists in relation to both productivity gains within social security organizations and to improve the digital and financial inclusion of customers. Specific examples are the single account initiatives similar to the Indian Zero-Rupee account or the Danish *NemKonto* (or Easy Account), mobile pay and credit apps like M-Pesa. The Indian Zero-Rupee account initiative has been key in increasing the financial inclusion of low-income householders and rural communities, particularly women, but also single parents, seniors, and people with low educational attainment levels. The Kenyan M-Pesa has in turn been a source of inspiration across Africa but also in Asia-Pacific, Europe, and Latin America and Caribbean. Mobile money has allowed for the un-banked to transfer funds when engaging in online commerce benefitting both

Box 3. Madagascar – Targetted multi-channel and partnerships model for an inclusive National Social Insurance Fund (*Caisse nationale de prévoyance sociale* – CNaPS)

In the digitalization strategies developed by the Caisse nationalie de prévoyance sociale (CNaPS) face important economic and infrastructure barriers, such as the limited access to electricity. In addition, most of the population have 2G mobile phones instead of smartphones. This has meant that CNaPS's strategy had to be adapted to the country's reality. Its strategy mainly consists of:

- categorizing the customers according to their needs and digital capacity,
- developing partnerships with telecom companies, banks, and other public services to provide adequate solutions to the target population, and
- developing a multichannel approach, including mobile applications for 2G technologies, notably USSD messages, email for submitting documents, social networks as well as a call centre.

The CNaPS also developed tutorials and provides support services through the call centre to drive the adoption of digital channels, developing and training internal staff. To facilitate the use of the digital channels, the CNaPS develops an inter-institutional collaboration, data sharing and joint services with other public organizations, notably a one-stop-shop for salary declarations. It continues to establish financial inclusion solutions mainly based on mobile-money solutions.

While personal identification is being implemented through biometrics, the electronic documents are considered valid, and while a new law enabling digital signatures was enacted in 2014, it has not yet entered into force.

Source: ISSA Webinar: Fostering digital inclusion in social security services – The state of play and the way forward (12 May 2021).

Figure 17. *Social security organizations' methods for customers'' financial benefits (percentage)*

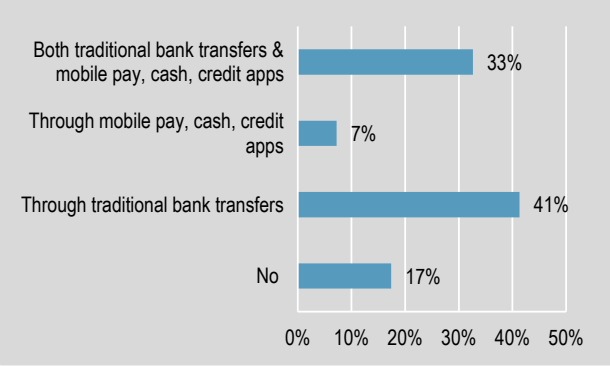
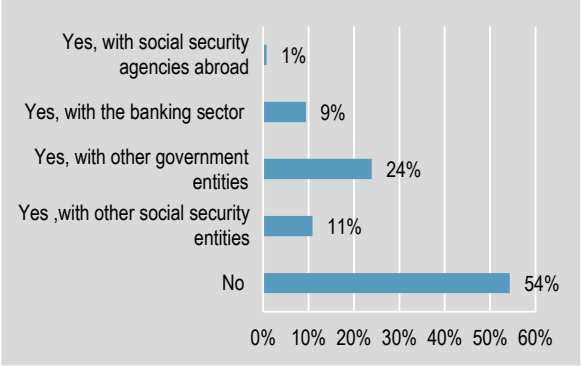


Figure 18. *Social security organizations' sharing customer financial information (percentage)*



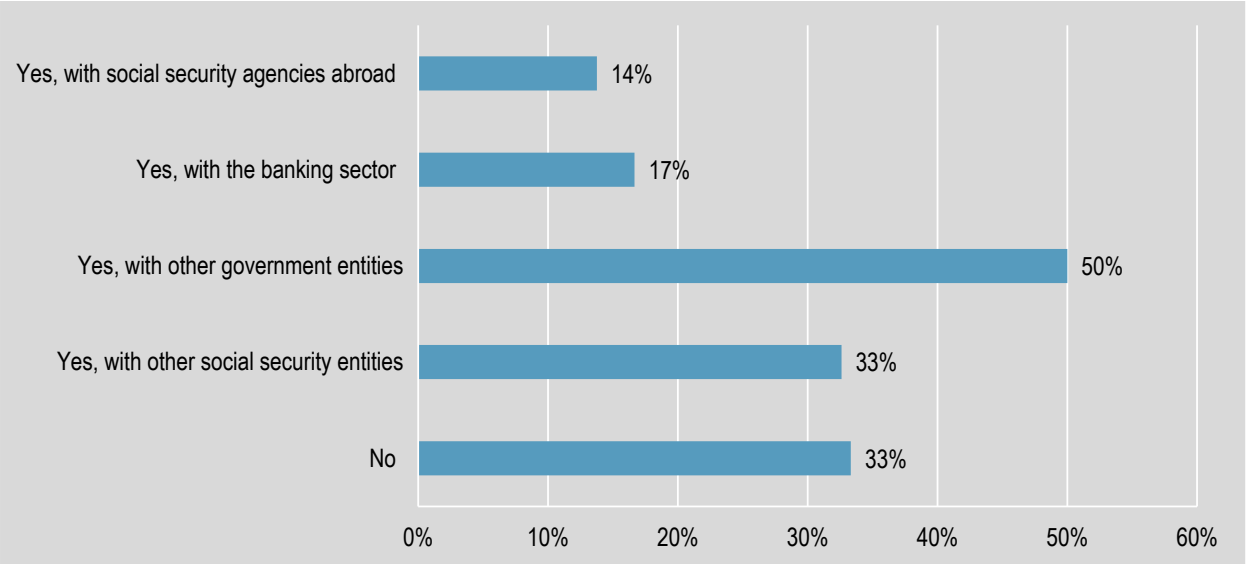
Notes: N =138. Questions posed in the Survey for Figure 17 and Figure 18 respectively, "Do you send or allow for financial benefits?", and "Does your organization share customer financial information or details with other entities to increase productivity?"

low-income households and rural communities, also lowering the cost of remittance domestically and from abroad. These digital means of financial inclusion also allow governmental and social security organizations to digitize transfers between themselves and customers. In fact, the Zero-Rupee account initiative is entirely financed by government savings now that transfers can be automated. Similarly, such initiatives allow better identity management by either linking to legal identities or by capturing identities through alternative means, including data sharing between different public and private partners.

3.3.5. Opportunities from data sharing via formal channels between approved agencies

Considering that the "once-only" principle of data exchange has been around for close to a decade, further expansion of this practice will afford scope to considerably reduce administrative burden, as well as enable improvement in productivity and usability for the 33 per cent of responding institutions which do not yet share data with other entities domestically. Continuing to draw out insights from Figure 19, while 50 per cent share data with other government entities, it is surprising that only 33 per cent do so with their domestic social security counterparts and a mere 17 per cent do so with the financial sector, e.g., for validating wealth, payments or even confirming identities. Interestingly, 14 per cent state that they share data with international counterparts; the majority of these are most likely to be within the European Union or in countries with close ties, such as the Nordic countries, Commonwealth countries, or South American MERCOSUR countries, plus Korea and Spain, all of whom have also implemented international social security data exchange [14, 45, 46]. Furthermore, Dubai's Community Service Authority's data exchange operates across three key agencies to eliminate multiple visits to government agencies and predict and tailor benefits to customers, French social security organizations share full social security data, which is also done in Luxemburg and Oman [107]. Data sharing is also a priority area for China's Ministry for Human Resources and Social Security who are currently developing national strategy and action plan for data governance and digital service transformation for the over 4,000 national, provincial, and local government entities involved.

Figure 19. *Social security organizations sharing customer data (percentage)*



Notes: N =138. Question posed in the Survey, "Does your organization share customer data with other entities to increase productivity?"

Box 4. United Arab Emirates – AI enabled innovation for tailored and cost-efficient social security in Dubai (Community Develoment Authority – CDA)

In 2021 the Dubai's Community Development Authority (CDA) identified a number of customer pain points and unnecessary administrative burdens, related to Smart Social Benefits Initiative. The CDA collaborated and integrated with government partners to redesign process, workflows, not least the exchange of data thereby eliminate the need for customer visits to separate entities, and remove the associated service fees. Based on the proactive exchange of data and the application of the once-only principle, CDA developed a number of technical tools including AI algorithms which now eliminate 90 per cent of the work carried out by case workers when assessing eligibility for benefits, the amount to be paid. For a secure, ethical and error free assessment, all automated assessments are validated and further tailored by the CDA staff with associated advisory support to the individual customer.

Implemented over the period of nine months, with minimal cost of updating the system to adapt to the new criteria, the pilot phase has resulted in the following tangible benefits:

- reducing the customer touchpoints with government from 3 to 1;
- increase the number of transaction yearly from 1,080 transaction to 394,000 transaction across multiple service and benefit areas by using the AI and robotic process automation with the same financial and human resources;
- processing time cut from 20 minutes per transaction to 1.5 minute per transaction;
- reducing the number of hours per employee per process which is now used to tailor and personal advisory services for customers for early prevention or quicker return to labour market.

Future plans include the adaption of almost all additional social security benefits services to the new AI and technology enabled workflows and concepts. These builds on the lessons learned and reuse the new technical infrastructure.

Source: Community Development Authority and The Executive Councile Dubai 24/04/2022. Video of system.

3.3.6. Trust in technology

Trust in technology, along with the development of clear online content and services, serve to positively influence digital usage and inclusion [1, 10]. Whilst hard to quantify, trust is a vital factor and can be measured in relation to national data protection laws, which can be used to gauge the confidence level in public and private online service offers. Regulatory decisions and perceived trustworthiness have long been seen as factors that can help facilitate and secure acceptance of technologies, for instance in how the online services themselves and any associated data (especially personal information) are managed [105]. Social security provision, including around healthcare, are extra sensitive to issues around trust and security. This is because most data that pertains to social security provision and healthcare matters is highly personal. Such information must be protected by data and privacy legislation. Furthermore, it may even be culturally sensitive since in some instances there is a discernible social stigma associated with receiving social benefits. For this research, no data was collected on these issues, but it is important to highlight how trust held by customers as potential users of online services may be broken, resulting in a risk of resistance to online services or sharing of personal information in a digital form [5, 7, 74, 105].

Thus, issues of security influence the use of technology in two ways: first, fear of falling victim to cyber-crime, such as identity theft; second, the fear of harassment or violent crime when using public Wi-Fi hot-spots. This is in turn linked to the digital skills levels and how individuals behave, critically assess, and consume online content. These factors are important elements for a thorough understanding of digital inclusion in relation to individual users and their readiness for digital transformation.

Trust and safety are supportive conditions which will underpin greater inclusion. Valid electronic identities and signatures can not only help increase access to services but also help improve online security, minimize risk of fraud and cyber-crime, thus facilitating greater trust in online services, financial transactions etc.

3.3.7. Channel strategies and communication plans

It is necessary to guide customer behaviour by promoting use of online services, within a supportive setting (i.e., with the conditions that enable the sought-after customer behaviour to be a permanent development). To achieve sustained behaviour change will not arise from one-off engagement and may therefore achieve limited impact in relation to channel choice and digital inclusion without a strategic approach. Social security organizations indicate that for many there is a need to focus on the entirety of the organization, in other words, a whole-of-organization and a whole-of-service portfolio that puts the various customers' needs at the centre of communication and service design, rather than focusing on internal business needs and processes. In line with global good practice and recommendations [29, 37, 39], the responses indicate a need for internal and government leadership to help drive this approach. ISSA has developed a Behavioural Insights Framework to address these issues [48].

With respect to the use of online social security offers, unawareness of the existence of services by customers may be addressed directly by institutions in their channel strategies and relevant communication plans. While most responding institutions indicate that they have channel and communication strategies (see Figure 20), the lack of awareness of these amongst the target customer groups indicates that these initiatives are in their infancy or that they do not have the intended impact. There may be an ineffective design, and potentially the strategies and plans in question have not been matched with behaviour-change incentives or the design of the individual service and service delivery channels, i.e., accessibility, usability, and user-experience (addressing matters around WCAG, UI and UX). Any channel strategies and communication plans should be developed with general and specific messages, for instance in relation to the social security service in questions. These messages must also be tailored to the specific customer group sub-segments including pensioners, the unemployed, mothers, single parents, low-income individuals, the disabled, various age groups, geographical location, etc. The aim is to ensure that the targeted customer group sees themselves reflected in the communication initiatives and are directed to the online service channel and are aware that help will be provided if there is an issue. Such approaches have proven highly effective (with various coverage) in countries like Denmark, Estonia, Latvia, the Republic of Korea, Singapore and the UK, but also for specific areas such as taxation or social security such as Service Australia and Service Canada [55, 71].

Box 5. Brazil – Comprehensive leadership model for technology enabled chatbots and personalized social security overview online (National Social Security Institute (*Instituto Nacional do Seguro Social* – INSS))

Brazilian social security faces significant challenges in delivering services, both in urban areas with a very high level of connectivity and services available to its users as well as in remote areas (e.g. the Amazonas) with a lack of basic connectivity.

To create solutions to this, the National Social Security Institute (*Instituto Nacional do Seguro Social* – INSS) has developed a multichannel approach, comprising of digital channels based on the My INSS portal and its chatbot, a call centre, and presence-based services using boats-offices in Amazonia remote areas which involve establishing mobile offices staff speaking aboriginal languages.

As part of the digital channel strategy, the INSS focuses on mobile due to the very large adoption in Brazil, taking advantage of the very high level of financial inclusion in Brazil, as about 70 per cent of the target population has bank accounts. Nevertheless, even in the regions which have connectivity, the cost constitutes the main challenge for using digital and phone channels among the low-income population. In order to address this, the INSS and the government are implementing initiatives to provide access to social security services without charging the end client.

To address the barriers of digital channel complexity, the INSS is implementing support and training centres in the INSS offices with the support of the UN Development Programme (UNDP). This initiative focuses on facilitating access to mobile-based systems.

Source: ISSA Webinar: Fostering digital inclusion in social security services – The state of play and the way forward (12 May 2021).

3.3.8. Entrenched accessibility issues across the public sector

From conducting the survey and in analysis of the responses, it becomes clear that the challenges related to accessibility and skills reflect those experienced across the public sector at large. With respect to the enabling environment, the organizational capabilities and direction of institutions are of particular importance. As shown in Figure 20, a full 62 per cent of the institutions surveyed already have strategies in place to facilitate inclusion of all customers, with 23 per cent planning to do so. Similarly, 75 per cent have a service design strategy, and 87 per cent have a communication strategy, emphasising a high level of awareness of the importance of such strategic initiatives. This also validates past ISSA recommendations in this respect. Although positive, the findings in relation to the actual use of social security e-services indicate that existing strategies are currently less effective than expected, due to challenges faced in relation to digital marginalization and exclusion of social security customers. It may therefore be beneficial to re-assess and adjust existing strategies. This should be done in combination with surveys, assessments, and engagement with targeted end-users. A full 45 per cent of responding institutions say they do not carry out regular assessment! Only 41 per cent indicate that they carry out regular assessments and 49 per cent state that they actively engage and work with their customers in relation to service improvements. In short there is ample room for improvement, not least where only 16 per cent and 14 per cent of respondents confirm plans to introduce such activities. Training is offered by 41 per cent of the responding institutions with 14 per cent considering introducing such initiatives.

With 45 per cent not offering, or planning to offer, formal or informal digital skills training, this is analysed in conjunction with earlier datapoints and found to indicate that the various institutions for social security service provision may view such initiatives as lying outside the scope of their core business or mandated responsibilities.

A positive finding is that more than two-thirds, i.e., 77 per cent of responding institutions have business resilience and continuity plans is in place, with a further 11 per cent indicating that they are planning to do so (see Figure 20). This survey was conducted in 2021, when the COVID-19 pandemic continued to cause vast disruptions globally, so it is therefore surprising that 12 per cent of respondents indicate that they neither have nor plan to introduce such measures. Perhaps this is due to a lack of resources, internal capacities and priorities, or it may be because they are covered by national continuity plans.

Box 6. Spain – User-engagement enhanses service design (General Treasury of Social Security – *Tesorería General de la Seguridad Social* – TGSS))

In Spain, the General Treasury of Social Security (TGSS), which collects contributions from employers and workers, has always identified itself as a committed organization towards innovation and enhancing its delivery models, particularly through digital channels. While there have significant advances, there are still barriers to using digital channels, particularly related to the design of the services. This propelled the organization to establish Importass, a new TGSS portal created in 2021 bringing about a radical shift in the organization's interactions with the general public, households and the self-employed.

Implementing the new online services comprised understanding the needs and characteristics of a wide range of people, as well as understanding the emotions experienced by users when attempting to fulfil their social security obligations through digital channels. For that, the TGSS applied methodologies including social research, usability tests, background interviews, shadowing and focus groups.

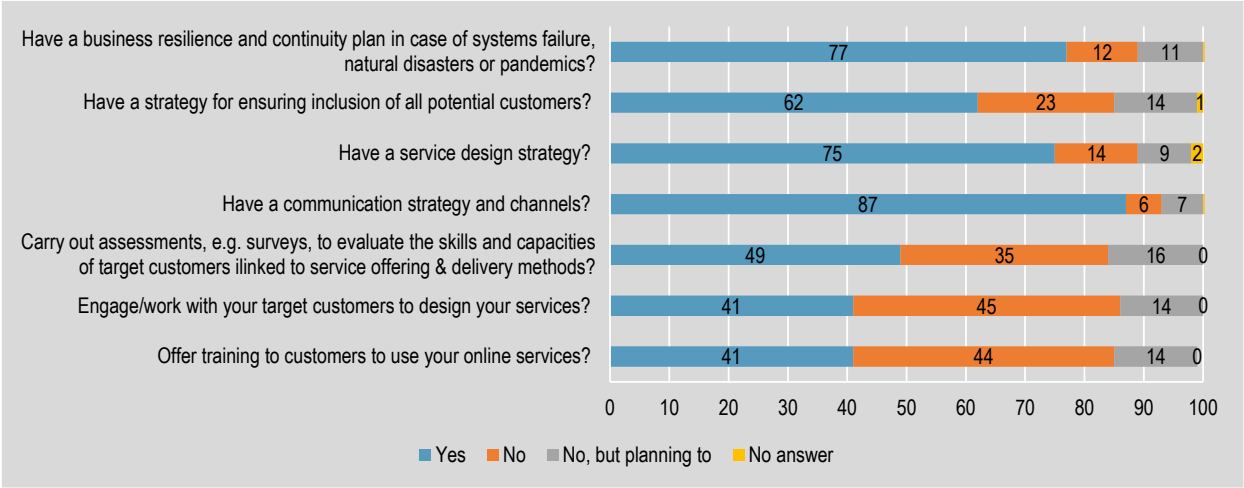
Concretely, users were involved in the portal design process, focused on simplifying the system and building a sense of trust when building the services. The TGSS established working groups to identify user needs, focusing on the household workers, which constitutes a population group particularly difficult to cover.

Between the portal's launch in April 2021 and September of the same year, it was visited by an average of 1.7 million different users each month. This figure shot up to 5 million in October thanks to an awareness-raising campaign involving the sending of 15 million text messages.

Among the success factors, the TGSS highlights the development of a collaboration-based model applying new ways of working between the various teams involved (the process, design, and technical teams).

Source: ISSA Database of Good Practices.

Figure 20. *Social security organizations' internal management mechanisms to facilitate digital inclusion and e-service use (percentage)*



Notes: N =138. Question posed in the Survey, "How do you ensure business continuity, resilience and facilitate digital inclusion and e-service use?"

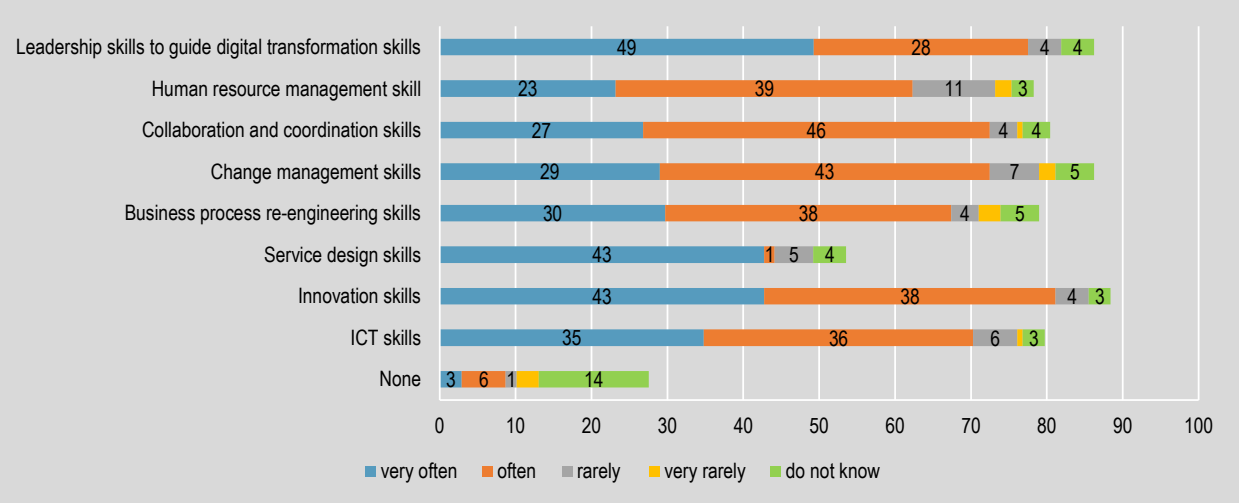
3.3.9. Leadership for digital transformation

Global good practice and recommendations emphasize that successful organizational change and the digital transformation of service production and delivery are driven by leadership and multidisciplinary approaches. In relation to the skillsets seen as having the biggest positive effect on digital inclusion, 81 per cent and 80 per cent of responding entities emphasize that, respectively, innovation skills and service design skills often or very often make that desired impact (see Figure 21 below, percentages calculated using the "very often" and "often" response rates). These were closely followed by 72 per cent highlighting change management, 71 per cent ICT skills and 68 per cent selecting business reengineering skills. Leadership skills are highlighted as vital to establish strategic direction of social security activities and to prioritize resources. Leadership is also emphasized in relation digital transformation, digital inclusion, and e-services use. Furthermore, leadership in conjunction with ICT enabled innovation and change management is determined as vital in the literature and good practice recommendations, validating findings from the survey and webinars.

Responding institutions were asked which skillsets they would most like to improve within their organizations, as shown in Figure 21. Innovation skills were emphasized by 51 per cent of respondents, followed by service design skills at 49 per cent and leadership skills to guide digital transformation highlighted by 46 per cent. Facilitating collaboration, change management, process re-engineering and ICT skills rank closely. Only 34 per cent emphasis ICT skills like, coding, systems design, etc., emphasising that digital transformation and digital inclusion is less about technology and more about what it can facilitate. Such an interpretation should however be caveated with recognition that there is potential propensity towards the "un-digital", downplaying the technological elements, where institutions and their staff therein remain less familiar with digitialization changes underway. It is interesting that classical skills such as HR management, coordination and collaboration come out the lowest, perhaps indicating that these are already well developed amongst a majority of social security institutions who participated in the survey. It could be argued that these classical skills would nevertheless benefit from

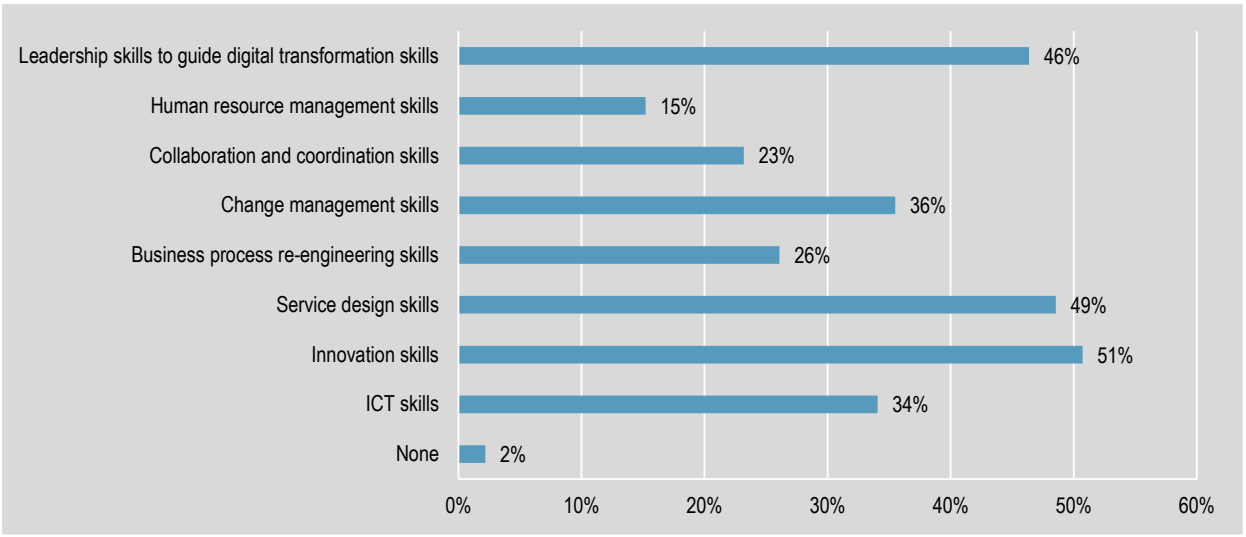
being revisited in light of digital transformation opportunities (and risks). The upshot of the findings is that the institutions tend to emphasize a desire to pursue initiatives for which they are in full control, such as innovative approaches to intra-organizational (i.e., internal) and discrete service design, or communication to facilitate use and increase awareness of online service offers. This is further reflected by efforts at prioritising re-skilling and up-skilling to improve leadership, innovation, and service design capacities within institutions providing social security services.

Figure 21. *Skill-set category in respondents' social security organizations with most positive impact on digital inclusion for customers (percentage)*



Notes: N =138. Question posed in the Survey, "Which skill-sets in your organizations would most improve digital inclusion for your customers?", respondents select all that apply across options in a range from "very often" (i.e., that skill-set improvement would have the most positive impact on the sought-after outcome of greater digital inclusion for the SSOs' customers) to "very rarely", with a "do not know" option and the data for "no answer" also provided.

Figure 22. *Section of the three skillsets respondents from social security organizations would most like to improve (percentage)*



Notes: N =138. Question posed in the Survey, "Which are the 3 skillsets you would most like to improve in your organization?"; respondents chose three options.

3.3.10. Good practice examples for improvements to enabling environment

Potential solutions to the two key challenges faced by the respondents are those related to identity management and financial inclusion. No matter the technology applied, efficient and effective identity management relies on high-quality and correct data. Without data, and its robust management, any technical approach will be a failure! Centralized population and company registries are the norm in countries successfully navigating the digital transformation of service delivery. Key registries are often jointly managed in a decentralized manner with the individual registry seen as a "single source of truth". Birth and death registration, as well as confirmation of entry and exit of a geographical area, are managed together with residency and address management. This is conducted by health professionals, immigration and tax operatives, and local authorities. Data capture, quality assurance and maintenance processes are essential for both analogue and digital identity management. National solutions, often device independent app-based solutions for three-factor authentication, are becoming standard for new solutions launched globally, not least in Asia, Europe and the Middle East. Solutions developed and financed in partnerships have proven especially successful, such as in the case of Australia, Denmark, Estonia, Georgia, Republic of Korea, Latvia, the UK, and the micro-dependency of the Faroe Islands [52, 55, 65, 71]. The benefit of such public-private partnerships is joint development, shared financing, roll-out and a common recognisable user-interface. Nonetheless, this does require formal governance mechanisms to enable the partnership and agreement by the public and financial sectors.

As a precursor to national eID solutions, many public and private entities have developed their own simple login-password solution based on captured identities from customers. Many middle-income countries have successfully applied this approach. The primary benefit is institutional control, but it can often lead to duplication of costs associated with maintenance, along with a fragmented and less user-centric user experience where customers have multiple solutions across the public sector. Distinct, multiple, and unconnected eID solutions can also be costly and impractical to maintain, with various roll-out and security issues tending to arise [53, 65].

Government service providers in countries like Norway and Sweden have also relied on electronic identifies from telco or financial service providers from the onset, although some have later developed – or are considering – national eID solutions based on unique identification numbers that are already in place. Anglo-Saxon countries such as Australia [106], Canada [9] and the UK [26] has done this, due to national ID hesitancy, as have low- and middle-income countries, out of necessity. While no direct development cost need be entailed and the scheme may capture many customers, the government entities have no control of development plans, with their systems needing to accommodate multiple private keys, and not always unique identities – which lead to costly adjustments, potential security, and fraud concerns.

For financial inclusion, increased productivity by the digitization and automation of payment processes, are the main objective of the Danish *NemKonto* (Easy Account) and the Indian Zero-Rupee national single account initiatives. Both initiatives capture and maintain a single national account for all individuals and entities (public, private or non-profit). Such a shared solution increases productivity and has substantial cost saving potential when applied. Similarly, they can help minimize fraud, formalize the informal cash economy through digitization, and ultimately facilitate customers' digital and economic inclusion. It even reduces the administrative burden for customers because they can maintain and continuously update a single account with all government entities. This nonetheless requires cross-governmental partnerships, a good data exchange model and strong cybersecurity and privacy legislation [6, 45].

Naturally, variations on the above may be applied. For instance, allowing both traditional bank accounts and mobile banking, money and credit apps, or SMS credit being linked to a single contact point for SMS services and notification. Examples can be seen in multiple countries, not least in relation to emergency and natural disaster communications [99]. A "single organization" approach to this form of local or national level resilience and emergency response preparedness is often seen. While no data exchange is required, and the level of organizational control is higher, such approaches may not capture all customers and may require more work. Over time parallel approaches and systems will be costly and less effective from a socio-economic perspective.

As previously touched upon, communication and channel strategies are used to promote both online service offers and alternative access points. Pioneered by the Canadian and Spanish government in the early 2000s, similar cross-governmental initiatives for joint national campaigns have been highly successfully in Denmark and for central government services in Australia, Republic of Korea, UAE and UK, to ensure online service use and alternative channels for those in need. In relation to supporting customers in a smooth transition to using online services – encouraged in many communication and channel strategies – the Dubai Water Authority have used floor walkers in combination with discounts on payments made electronically, or even done raffles amongst customers who have made a minimum of three consecutive payments online to encourage and cement behavioural changes. The success of channel strategies, communication plans and improved digital literacy means that many Dutch and Danish municipalities no long have floor walkers. However, it is worth highlighting that such a situation was after a considerable time period of utilising this "mixed" style of solutions. i.e., having digital and analogue provisions in place simultaneously as part of a strategic vision to improve online services, and increase digital inclusion. Provision of an alternative channel for advice and assistance during an online service process is a common global approach. For instance, help and advice through clear instructions, video guides, infographics, online and video chat are common. As are alternative channels such as call centre, physical service centre, mobile civil servants, and service delivery. Once again, the benefits of taking a holistic perspective are seen, as is the recognition that the digital transformation entails various transitions for users in their ways of engaging. These changes will proceed more effectively when they take account of the experiences and expectations of service users, allowing for a steady transition to the new ways of engaging with social security services. This point also connects to the one made above about the central importance of trust, in acknowledgement that when there is distrust then the ease of digital transformation will be negatively impacted. Success builds from a steady foundation built on mutual trust [69].

4. Recommendations

In response to the call by António Guterres, Secretary-General of the United Nations, for an "...urgent and open debate between governments, the private sector, civil society and others on how we move forward together safely in the age of digital interdependence"[27], this analysis focuses on the digital inclusion, or exclusion, of social security customers.

As a first step, social security organizations need to understand their customers, and the potential for online service provision, including risks associated with the opportunities – such as exacerbating digital divides and perpetuating exclusion – ultimately seeking improvements to the enabling environment within their own organizations.

Below are a set of overarching recommendations following the research undertaken for this Report. In conjunction to these recommendations, progress is advised on supportive methods that build the necessary partnerships and shared vision(s) needed for achieving the desired outcomes. It is important to promote digital inclusion across sectors and ensure specific mechanisms that facilitate distinct users' input, accommodating the various nuances, for online service provision design and delivery. If these steps are taken, there will be a positive impact for digital inclusion.

ACCESS

While lack of access to the internet has traditionally been seen as a key barrier to improved digital inclusion, affordability is increasingly a reason behind the digital divide and digital exclusion. A full 52 per cent of Social Security Organizations participating in the analysis indicate that access is the biggest challenge facing their customers use of online services. Securing reliable access is deemed the biggest challenge by 70 per cent of social security organizations, while affordability is highlighted by 46 per cent. Reliable and affordable access to the internet by social security customers are therefore key barriers to digital inclusion. While not within the traditional remit of social security organizations, the lack of disposable income is the most likely barrier to access and the use of social security e-services. Institutions who work with individuals at their most vulnerable moments can nonetheless add pressure to increase recognition of just how much poverty can limit and even dismantle the opportunities from digital transformation.

- **Recommendation 1:** Support initiatives that make internet devices and access more accessible by providing alternative access points. Provide free wifi hotspots at own physical service centres and surrounding public spaces; provide internet enabled kiosks including access to online public services including social security. Alternatively establish partnerships with libraries and community centres who can provide free access through Wi-Fi or internet enabled devices, plus provision of support for use, particularly for online social security services.
- **Recommendation 2:** Support initiatives that make internet devices and access more affordable. Work with regulatory authorities and telecom sector to ensure "zero cost" access to the IP addresses for social security organizations online service offers. Coordinate with other digital inclusion initiatives in the public, private and charity sector to provide free or subsidized internet devices and internet access to marginalized customer groups such as low-income families and individuals.

SKILLS

The skills and capacities of social security customers goes beyond traditional literacy and includes digital skills. Combined with support for digital literacy, it is essential that the barrier to online services is lowered though clear channel strategies for the promotion of both digital service offers, plus alternative channels and information about who to contact for assistance. A full 60 per cent of Social Security Organizations participating in the analysis indicate that the lack of digital skills is the biggest challenge facing their customers. Looking at various elements, 47 per cent of Social Security Organizations indicate that customers do not understand their online service offers, while 30 per cent of responding institutions indicate that their customers are simply not aware of the online services. Digital skills, communication and service design are therefore key barriers to online service use and digital inclusion. Channel strategies and publicity initiatives are often accompanied indirectly by initiatives such as the use of everyday language in communication, logical and intuitive user-experience (UX) and user-interfaces (UI), along with the implementation of communication and design guides and service standards. In addition to e.g.,

ISSA Guidelines, at least ten countries have national guidelines for usability and service design [67] and more than 150 countries have ratified the UN Charter on web accessibility for people with disabilities and special skills – but compliance is lacking (i.e., with WCAG).

- **Recommendation 3:** Promote digital inclusion, gender inclusion and digital empowerment through dedicated initiatives. Develop specific initiatives focusing on the digitally excluded and marginalized, including women, minorities and indigenous communities, migrants, refugees, seniors, persons with disabilities, and low-income households. Train both service providers and call centre staff to act as floor walkers and promoters of digital service offers and digital skills development initiatives. Actively monitor customers and proactively inform them of self-service terminals, tools to test online service offers, and digital skills training available. Develop short instruction videos and clickable demos of key services with targeted messages to marginalized custom groups. Provide material directly or through partnerships with libraries and community centres or stakeholders representing the customers group in questions.
- **Recommendation 4:** Strengthen and optimize channel strategies to promote digital services and offer alternative means for service access and assistance. Continuously work with the central strategic objective of increased online service use, by continuously promoting prioritized service delivery channels. Decide and design with data from the various delivery channels plus user-behaviour and literacy and skills levels. Adjust channel choices to specific social security customers and their level of digital inclusion and digital skills over time. Be inspired by the *ISSA Guidelines on communication by social security administrations* and *ISSA Guidelines on service quality*, as well as the *ISSA Framework on Behavioural Insights* and align to national strategic objectives in e.g., digital transformation and e-government strategies. Ensure that all channels work in unison, that they exchange insights on barriers and enabling factors, and that help is readily available and clearly communicated to customers work with other public sector partners to ensure a common message across service silos and levels of government.
- **Recommendation 5:** Apply service design standards to optimize the user-interphase. Adopt standards for usability and service design across all channels including online and apply *ISSA Guidelines on service quality*. Continuously work with user-friendliness of all service offers, no matter the channel. Design and update user-interfaces based on behavioral data, direct and indirect input from customers. This includes working with customer profiles and personas, the use of everyday language in communication, logical and intuitive user-experience (UX) and user-interface (UI), and testing solutions before and after launch. Ensure that minimum design and web accessibility standards are applied. Be inspired by design principles, e.g., from ISSA or the World Bank, and align to national design standards and principles including the international web accessibility standards WCAG, AA level, to comply with the UN Charter on Universal Access.

ENABLING ENVIRONMENT

Social security services are produced and delivered by individual institutions. The enabling environment consists of internal skills and capacities as well as key solutions and data. The latter includes data on individual customers such as identity, financial information, marital status and dependents, residency etc. It also includes the legal and regulatory framework guiding social security, as well as the process, solutions and data enabling identity management, financial transfers amongst others. Some 32 per cent of social security organizations, participating in the analysis, indicate that the enabling environment is the biggest challenge facing their customers and their digital inclusion. 81 per cent and 80 per cent

of responding entities emphasize that, respectively, innovation skills and service design skills often or very often make that desired impact. Reflecting on the various skills sets, 51 per cent of responding institutions indicate the lack of internal innovation skills as a key improvement area, with 49 per cent emphasising the need to improve service design and 46 per cent highlighting the need to strengthen leadership capacities to guide the digital transformation of social security. In addition to organizational stills and capacities, good data is essential for both analogue and digital identity management, financial inclusion, and service delivery.

- **Recommendation 6:** Strengthen innovation, design, and change management capacities. Continuously re- and upskilling employees within social security to increase performance and ability to innovate, design and manage change as technology is applied to processes. Establish innovation competences (e.g., teams, units, labs) to facilitate process, service, and organizational innovation within social security in combination with administrative burden reduction. Actively involve customers in the design of services and tailor communication to specific customer groups, through user testing or even co-design of services. It is important that institutions compliment their strategies and initiatives with their own research e.g., surveys identifying the needs and behaviours of their customers to help drive innovative digital transformation of social security.
- **Recommendation 7:** Strengthen institutional leadership to guide digital transformation. Facilitate a culture of innovation and continuous improvement within institutions by maintaining a clear and quantifiable strategic vision. Empower innovation and change leaders within social security to pilot and test new innovative solutions. Establish a clear governance model to coordinate, monitor and measure the impact of innovation and digital transformation. Apply the *ISSA Guidelines on good governance*, which provide orientations to the board and management. Leadership is vital to drive and facilitate cross-organizational and whole-of-government collaboration for improved social security and socio-economic outcomes, including strengthened data sharing between partner organizations, and the establishment of standards for data governance and exchange, identity management, signatures, digital communication, messaging and financial transactions. The leadership ought to proactively propose and help drive national strategic initiatives for increased access to affordable and reliable internet for marginalized communities including social security customers, as well as digital skills development amongst customers.
- **Recommendation 8:** Strengthen data governance and data sharing within social security and across the public sector. Good data is essential for both analogue and digital identity management, service production and delivery, but also for designing new innovative solutions and a core knowledge base to support decision-making with respect to social security customers. Monitor and measure the underlying factors influencing the likelihood of online service use by different customer groups, since these can be vastly different. This thereby necessitates bespoke and tailored approaches. Apply the *ISSA Guidelines on information and communication technology,* which provide recommendations on data management and data sharing. Reuse and share data within social security and with other government entities for predictive, proactive, and tailored services and better decision making. Combine this with transparency and data protection to build trust in technology and institutional actors/processes.
- **Recommendation 9:** Develop partnerships for joint identity management, digital messaging, and financial infrastructure. Actively explore public and private partnerships to develop, maintain and ensure customer take-up of key enabling infrastructure components for electronic identity management, signature, power of attorney, digital messaging (e.g. SMS, post), and financial

transfers. Focus on true cross-governmental or public-private partnerships to increase cost efficiency, increased usage, combined with secure and user-centric solutions. In this phase, data is isolated, secured, and preserved. It includes preventing people from using digital devices so that digital evidence is not tampered with.

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List of acronyms

COVID-19	Coronavirus Disease 2019
DeFi	Decentralised Finance
EC	European Community / Commission
eID	Electronic or digitised identity
ICT	Information Communication Technologies
ID	Identity
ISSA	International Social Security Association
NGO/s	Non-Governmental Organization/s
NHS	National Health Service for the UK
OECD	Organization for Economic Co-operation and Development
PC	Personal Computer
SDG/s	Sustainable Development Goal/s
SMS	Short Message Service (cellular phone text messaging)
SSO/s	Social Security Organization/s
UBI	Universal Basic Income
UI	User Interface
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNICEF	United Nations Children's Fund
UNU-EGOV	UN University Operating Unit on Policy-Driven Electronic Governance
UX	User Experience
VAT	Value Added Tax
WCAG	Web Content Accessibility Guidelines

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