ISBN: 978-2-931089-15-6 PROCEEDINGS BOOK

COVID-19 and digital acceleration: An investigation about citizens' perception of digitalized public services in Italy

Andrea SESTINO*
Ionian Department of Law, Economics, Environment, University of Bari Aldo Moro – Italy (ORCID: 0000-0003-2648-4093)

Alberto SIMONETTI
Department for Digital Transformation - Presidency of the Council of Ministers, Italy

Luca GASTALDI
Department of Management, Economics and Industrial Engineering, Polytechnic University of Milan, Italy (ORCID: 0000-0003-1997-8423)

Abstract: The COVID-19 pandemic has helped to move online several daily activities that could hardly have been conducted in respect of social distancing: from education to free time, from recreation to contact with friends. The public sector also experienced this need and accelerated the digital transformation of public services through online tools and platforms. Through an exploratory research, this paper investigates the effects of this acceleration on the perceived utility and quality of public services in Italy. Results show that accelerating the digital transformation of public services has positive effects on citizens' perception of the activity of the public administration. Additionally, we shed light on four pivotal topics to be considered in orienting future digitalization strategies in public settings: 1) new technologies integration and citizens' assistance; 2) hybridization of digital services; 3) the key role of age: elderly citizens and socialization; 4) digital skills gap reduction strategies. Implications for managers and policy-makers are discussed.

Keywords: COVID-19; digital acceleration; digitalization; public services

1. Introduction

COVID-19 revolutionized the world economies and individuals' lives due to a great acceleration of digital transformation (Gabryelczyk, 2020). Digital tools represented and currently represent a central instrument for maintaining own lifestyle, habits, service access, and consumption considering the social distancing policies imposed to contain the virus spread (Amatulli et al., 2021). This transformation involved several sectors such as public and private education (e.g., in Magni & Sestino, 2021), healthcare (e.g., in Budd et al. 2020), physical activity support (e.g., in Nyenhuis et al., 2020), in which human relationships has been maintained through socialization platforms such as Skype (e.g., in Rogers, 2020). Consequently, companies accelerated their digital transition, by leveraging on those digital tools accessible to citizens and more streamlined and digitized service access processes (e.g., in Ullah, et al., 2021), including the public domains (Gabryelczyk, 2020).

Indeed, similar to the private sector, the public one suffered from this need as well, resulting in a great acceleration on existing digital public services and by facilitating the access to others through online tools and platforms (Iacono, 2021). Digital transformation is a global and holistic concept that allows for the revision of processes, culture, organization, relationships, and business models. In public settings it enables not only the delivery of sustainable results but also the creation of value for both citizens and organizations (Mergel et al., 2019). Therefore, digital transformation implies the creation of new skills in business management and public governance (Reis et al., 2018). Literature shows the positive impacts of digital solution on perceived usefulness and service quality (for a review, see Sestino et al., 2020). Given these premises, this paper aims investigating the effects of public services digitalization on citizens' perception.

We considered the Italian context as a convenient research setting since it has been the first nation of being highly affected by COVID-19. Results show that accelerating the digital transformation of public services has positive effects on citizens' perception of the activity of the Public Administration (PA). Results shed light on relevant issues and challenges to be implemented in terms of: 1) new technologies

* Corresponding Author: andrea.sestino@uniba.it

integration and digital strategies needs; 2) hybridization of digital services and citizens' assistance; 3) the pivotal role of age: elderly citizens and socialization; and 4) digital skills gap reduction strategies.

We contribute to literature in three different ways. First, we contribute to the research stream related to business digitalization by showing how the acceleration in digital transformation could lead to higher perceived usefulness and quality in individuals' perception. Second, we contribute to the public management literature by increasing knowledge on how citizens' perception could be influenced by acting in increasing the number of digitization services and ease of access through online digital tools and platforms. Third, we contribute to consumers' behavior literature, by considering citizens as consumers of a public service and showing how the digitization of public services can affect their perceptions and possible subsequent behaviors. Moreover, we shed light on interesting challenges and opportunities for public managers and policymakers.

The paper is organized as follows. In the next section we present the most relevant literature about the public service digital transformation, and some evidence from Italy. Then, we describe the research methods employed to collect and analyze the data. Next, we present the key findings produced through the research. Last, we discuss the findings and describe the implications of our study.

2. Overview of the study

2.1 Public service digital transformation

The public service has been defined by Goodsell as the interaction between citizen and PA personnel while communicating to conduct business (1981). This definition establishes a starting point from which analyzing the concept of meeting and public service before and after the digitization process. Indeed, the public service encounter is characterized by four fundamental parameters in terms of: 1) nature and purpose; 2) means of communication and location; 3) main subjects involved; and 4) begin, duration, and extent of the meetings.

To date, digitization has led to a substantial revolution also in the context of public meetings, through digital public services (Anthopoulos et al., 2007), thus concerning all those public services provided using internet-based technologies in which the interaction between the citizens and the PA is partially or completely mediated by a digital system (e.g., in Henman, 2013). This allows citizens to access information and public services from the comfort of their homes or any other location (West, 2004).

As for the nature and purpose of public service, Goodsell (1981) divides its purposes into three main categories: 1) exchange of information, required by citizens who want to better understand public services and functions, or by public officials who intend to carry out census studies; 2) provision of public services, based on citizens' requests in order to satisfy certain needs; and 3) control or constraint as a purpose mainly pursued by the PA, concerning the interactions aimed at monitoring and limiting the conduct of citizens (for example through the imposition of prohibitions and sanctions).

In this context, it emerges that digital public services are used in a balanced way to satisfy all these purposes, both individually and combined. Although from citizens' perspective these public services can be considered completely digital, the creation of the same involves in any case the involvement of the officials responsible for preparing, checking, and verifying the suitability of the service itself. Precisely for this reason, initially digital public services were intended as pure mediators of public services, allowing access to them by citizens, but without providing the actual service.

One of the main effects of the introduction of new technologies is undoubtedly the birth of new communication channels also available for public service and citizens' participation: email, certified email, online forms, applications from mobile devices, etc. (Milakovich, 2012). Through these digital means, citizens can send and receive information quickly and easily (Lindgren et al., 2019). Similarly, the PA can archive and organize citizens' data with greater efficiency and cost savings. To date, alongside this concept, there is the use of digital systems to achieve the same purposes, moving the classic location of the meeting from the personnel's' offices to the citizen's home or even to a public place, where the limit is dictated solely by the portability of technological devices.

Indeed, digitization has changed the relationship between citizen and personnel, by changing the tasks that both must perform in the public meeting; the latter no longer takes place exclusively in person, with the consequence of the removal of the parties involved, mediated through the use of digital equipment. From citizens' perspective, digitization allows the access to public services from subjects who previously had difficulty interacting in person, for example, due to health, logistics and similar issues.

However, despite all these advantages, new technologies may exclude other categories of citizens who intend to access the public service, as for elderly, destitute, or those who have difficulty accessing due to connectivity limitations (e.g., in Chen & Wellman, 2004; or in Petrillo et al., 2021 specifically as for the Italian context). Indeed, citizens who intend exploiting the advantages of digitization must have sufficient digital skills and a proper device (Iacono, 2021). Thus, despite the COVID-19 pandemic, the

digital tools represented and are currently representing a great opportunity to maintain unaltered individuals' relationships, to work, to access services, and purchase (Amatulli et al., 2021), the effect of the digitalization acceleration could produce both positive, and negative effects, enabling opportunities and or increasing difficulties in accessing some segments of the population.

2.2 Digital transformation of public service: evidences from Italy

At the Italian level, digitization strongly impacted the public sector (Datta, 2020; Tangi et al., 2021). Specifically, the results derived from the implementation of the provisions introduced by the Agency for Digital Italy (AgID), which coordinates various projects – including electronic invoicing, open data, digital security, Electronic Health Record, citizens digital identity, payments, etc. (Datta, 2020).

The results of these projects vary according to the complexity and longevity of the implementation path. Some actions currently record positive results. For instance, more than 30% (20 millions) of Italians has a digital identity (SPID) through which using one unique set of credentials to access the online services offered by all Italian PAs. Moreover, 18,147 out of roughly 23,000 Italian PAs adhered to PagoPA, a digital platform allowing citizens to pay for all public services in a more natural, fast, and modern way, relieving administrations from the costs and delays of handling digital payment methods. Finally, 11 millions of Italians downloaded and regularly use IO, a mobile app designed to comply with the provisions of the simplification Decree (Legislative Decree 76/2020), which allow simple, safe, and fast communication between the citizen and the various PAs. The mobile app offers several advantages and simplifications to the citizen such as: information, communications, notices near deadlines and reminders; possibility to obtain self-certifications, documents and submits applications or declarations with a simple click.

3. Methodology

3.1. Procedure and questionnaire

To assess the impact of the digitization of the PA and mainly the perception of digitalized public services, an exploratory research has been implemented. Particularly, we conducted a survey by administering a structured questionnaire to a random sample of citizens. The questionnaire was made available through Qualtrics (Smith and Albaum, 2010), and disseminated via a direct link, available 24 hours per day for 8 weeks.

The questionnaire was divided into three main sections. Firstly, in order to protect respondent anonymity and reduce evaluation apprehension (Podsakoff et al., 2003), we assured respondents that their responses would remain anonymous and that there were no right or wrong answers. Then, in the first part of the questionnaire, the level of use of new technologies and familiarization with them by the respondents was investigated. Next, we investigated the degree of use of digital technologies in terms of: time spent in using digital devices or in online environments, on a scale from 1 to 4 (1 = "less than an hour per day"; 2 = "from one to three hours per day"; 3 = "from three to eight hours per day"; 4 = "more than eight hours per day"); level of use of online tools to obtain any private service (e.g., for online shopping purposes), and use of online tools to obtain any public service (e.g. reservations, identity documents) on a scale from 1 to 4 (1 = "never"; 2 = "once per week"; 3= " three times per week"; 4 = "daily").

In the second part of the questionnaire, in order to evoke the correct concept of digital public service in the respondents, after a brief description, we asked them to think of some typical examples, including the request for documents in digital format, the consultation of institutional sites online, the use of applications to book certain types of public services, access to public services through digital tools (e.g., IO app), etc. We then investigated the perceived usefulness of digital public services (single items, adapted from Davis et al., 1989), and the perceived service quality level (adapted from Parasuraman et al., 1985) before, during, and after the lockdown.

Finally, we collected socio-demographic data relating to gender, occupation, age, level of education, and marital status, geographic area (North, Centre and South Italy).

3.2. Sample

The sample collected consists of 126 respondents, with an age between 19 and 77 years (M_{age}= 36.64; SD_{age}= 15.76). Of these, 60% were men, and 40% were women. 8% said they had a lower middle school certificate, 53% had a middle school or higher license, 34% had a three-year or specialist degree, and finally 5% had a master's or doctorate. As regards the geographical area of origin, 43% of respondents said they come from Southern Italy, 33% from Northern Italy, and 24% from Central Italy.

By following Belk et al. (2003), the analyses were conducted iteratively. Indeed, to narrow the analyses from the initially large list of themes, data were first analysed independently by three researchers and then reanalyzed jointly with several meetings and comparisons. We report the gender (M, F) and the age of informants where we quote material.

The interviews have been conducted through the online platform Qualtrics to a random sample of Italian citiziens: Individuals have been invited to write their answers in the questionnaire or to record them. Their statements have been transcribed verbatim and translated to English to increase results comprehensibility and accessibility. More specifically, respondents were also asked to write down any interpretation and answer that was useful for understanding the meaning of the proposed opened-questions (Belk et al., 2003).

4. Results and discussion

4.1 Sample characteristics

As regards the level of use of new technologies and familiarization with them by the respondents, each of them possessed more than one technological tool, and specifically, 94% said they own a mobile phone or smartphone, 83% have at least one ADSL, fiber or Wi-Fi connection available, 72% have a personal computer, and finally, 53% have a tablet.

Regarding a typical journey, most consumers have tended to increase their stay on digital platforms. By examining the following tables, it can be seen how the pandemic has forced a shift in the trends of citizens to stay online throughout the day, from the lower categories of permanence to the higher ones. Table 1 depicts that the most significant variation was observed in those who spent three to eight hours per day on digital platforms before the lockdown, which almost doubled in the concomitant and subsequent periods. Similarly, the number of users who spent less than one hour per day or from one to three hours per day on digital platforms decreased. A similar, but less marked, result can be observed about the time dedicated by individuals to use the computer specifically, including reasons of a playful and entertainment nature. On the other hand, the phenomenon of permanence on the network from any type of device has affected consumer trends to a lesser extent. Only 9% of individuals in the sample increased the number of hours spent online, passing from the lower to the higher ranges in the comparison between pre and post lockdown (as depicted in Table 2).

Table 1. *Time of use of digital technologies (devices)*

	Before the lockdown	***During and after the lockdown***	***Delta***
Less than an hour a day	19	12	-37%
From one to three hours a day	65	42	-35%
From three to eight hours a day	35	64	83%
More than eight hours a day	7	8	14%

Table 2. *Time spent online*

	Before the lockdown	***During and after the lockdown***	***Delta***
Less than an hour a day	16	8	-50%
From one to three hours a day	58	52	-10%
From three to eight hours a day	44	56	27%
More than eight hours a day	8	10	25%

As for the propensity of citizens to use applications, institutional sites, and portals to achieve official information and public services, the results are decidedly in line with the analysis carried out so far. The pandemic has inevitably pushed the citizens in approaching the public sector more frequently through the digital tools offered by the PA. This one, given the circumstances of the historical moment, had to promote different types of technological policies, to develop and disseminate the culture of digitization among public bodies and citizens themselves. As can be seen from Table 3, in the transition from the period before the lockdown to the concomitant and subsequent periods, there was an important variation in user trends. This is an important percentage of the number of citizens who, for instance, consult public portals three times per week to obtain clarifications, documents, and reservations.

Table 3. *Use of digital and online tools to access public services*

	Before the lockdown	***During and after the lockdown***	***Delta***
Never	28	22	-21%
Once per week	57	63	11%
Three times per week	22	31	41%
Every day of the week	16	19	19%

4.2 Results and discussion from the in-depth interviews

As shown in the literature review, digitization is influencing every aspect of the traditional public meeting, mainly changing the place of interaction, the role of the subjects involved, the purpose of the same, the terms of the beginning, duration, and end of the public meeting. These changes result in a new vision of the relationship created between citizen and public officials, both in terms of the perception of the interaction by single individuals of the community, and in terms of the analysis of new models rising from strategic and managerial viewpoints.

Accordingly, Russo et al. (2014) provide a general framework on the penetration of digital public services among citizens in the Italian context. Although Italy has made significant investments in the field of e-Government services, the level of acceptance and use of the same by individuals is considerably lower than the European average. While the rate of diffusion of e-Government services in Italy is higher than the rest of Europe (58% of the Italian PAs provides these services against 51% of the European average), only 17% of potential users have used digital public services at least once (compared to the average European Union by 30%, Eurostat, 2021).

Indeed, respondents provided various bases for discussion of the digitization process of PA imbued with suggestions, criticisms, and personal opinions, employing in-depth interviews conducted, which reflect the considerations of a much wider community that is currently facing advantages and limitations deriving from the introduction of technologies into one's daily context. The research shows the will on the part of citizens to obtain different types of benefits in the use of digital public services, raising criticisms and providing suggestions regarding all those elements that overall do not allow the use of these services according to the renewed requirements felt by the community. Particularly, the in-depth interviews shed light on four main topics in terms of: 1) new technologies integration and digital strategies needs; 2) hybridization of digital services and citizens' assistance; 3) the key role of age: elderly citizens and socialization; and 4) digital skills gap reduction strategies.

4.2.1 New technologies and digital strategies need

One of the aspects most highlighted by the sample of citizens interviewed is digital skills and the role of human resources that take part in the process of providing the digital public service. If, on the one hand, operators must have technological capabilities in line with the digital services offered by PAs, on the other hand, digitization leads to the automation of a part of public processes and, therefore, to the replacement of personnel with technological artifacts. Furthermore, citizens would like to increase their digital skills to become independent and carry out a large part of public services on their own.

Concerning the first aspect, the acquisition, and updating of the skills of public personnel take on a fundamental function, as the roles shift from personal interaction with the citizen to a form of communication that takes place on digital channels. In large part of cases, the public official is faced with tasks involving the receipt, processing and sending of information via computer, implying a sufficient level of knowledge of the technological tools and processes underlying the provision of digital public services. These kinds of skills are also fundamental concerning a further but not secondary function that the public official performs in the context of digitization such as support and assistance to users who use self-service applications and systems (Boll et al., 2015).

In this regard, a good number of citizens complain about the absence of efficient means of communication that allow immediate interaction between the individual and the public official, as well as the lack of general assistance from the public official that can allow them to overcome the difficulties encountered by citizens in using applications and websites. These aspects considerably influence the perception of digital public services by users, as indicated by some respondents of the research questionnaire:

"In my opinion, the only limitations that the process of providing digital public services currently presents is the non-timeliness in responding to requests for help from the individual user who finds himself in difficulty in one or more phases of using the service itself" (U23, M, 55).

Indeed, another respondent stated that:

"A suggestion could be the establishment of more efficient dedicated lines that allow physical operators to contact the citizen in difficulty, for example through telephone lines or chat messages" (U87, F, 48).

Unfortunately, by considering the latest version (2020) of DESI (Digital Economy and Society Index) in the area of Human Capital, Italy shows the worst performance among European countries (https://digital-strategy.ec.europa.eu/en/policies/desi-italy). Moreover, Eurostat survey (2021) highlights that the level of digital skills of Italian citizens is dangerously low: 42% of citizens do not reach basic skills and more than one million of Italians (3%) have no digital skills at all. This could create an important barrier for those citizens unable and unskilled, thus, not able to access such new services alone.

Coherently, in the Italian context a dense network of active policies has been implemented to support the relative transition. This is enshrined in the National Strategy for Digital Skills, which is the result

of a collaborative approach that has put Ministries, Regions, Provinces, Municipalities, Universities, research institutes, companies, professionals, associations and various branches of the public sector contributing to the same goal, as other member organizations (a dedicated Coalition based on a voluntary membership), and has been based on four axes of intervention, coherent with the four pillars of the European Coalition for Digital Skills in terms of: 1) *Education and Higher Training*, as regards the development of digital skills within the education cycles for young people, with the coordination of the Ministry of Education and the Ministry of University and Research; 2) *Active workforce*, with the aim of ensuring adequate digital skills in both the private and public sectors, including e-leadership skills; 3) *ICT specialist skills* with the aim of enhancing the country's ability to develop skills for new markets and new employment opportunities, largely related to emerging technologies and the possession of the skills necessary for the jobs of the future; 4) *Citizens assistance and digital skills improvement*, with the ambitious goal of developing the digital skills necessary to exercise citizenship rights and conscious participation in democratic life.

4.2.2 Hybridization of digital services and citizens assistance

Concerning the change in the roles of the actors involved in public interaction, digitization can in some cases lead to the complete automation of administrative processes. Although it is increasingly seen as one of the ways to make public organizations more effective and efficient, some research shows that the introduction of automation in the public sector requires caution.

In the first place, digitization could lead to the exclusion of some groups of citizens from accessing the public service, up to the risk of compromising the legitimacy of the public organization providing it (Wihlborg et al., 2016).

Secondly, it significantly affects all those cases in which the public operator must decide based on the analysis of the specific situation and resort to its discretion. If the decision rests with an automated system based on pure algorithms, rather than a human operator with whom the citizen can discuss, object, and negotiate the public service, the asymmetry that characterizes the public relationship between official and individual can only increase; in this case, citizens may find it difficult to find an explanation for the decisions taken, making it completely impossible to deal with the choice made by the public organization.

In this regard, the research has shown that citizens still prefer the minimum presence of a physical operator rather than being forced to interact with a technological artifact for the entire duration of the provision of the public service:

"Digitization could be a great improvement for many services, but it should not rule out direct contact with a physical operator" (U74, F, 36).

"I would suggest not to make everything completely digital, to still leave the possibility of creating contacts between people. Digitizing everything can be comfortable, but it also cancels humanity" (U55, M, 61).

A further insight suggests a careful division of the tasks to be performed between a public official and technological artifact: the simpler, mechanical, and repetitive tasks that do not require any level of discretion could be performed by machines while the tasks require monitoring and the application of a certain judgment by the public organization would remain the responsibility of the actual officials, with considerable benefits also brought to the citizens who approach these services.

According to Lindgren et al. (2019), the digitalization process of public services introduces, in addition to the traditional actors involved in public interaction, a new category of subjects, namely those who design and provide the technology that enables the digital public service. Often these are private individuals who make their tools and knowledge available to public organizations, or the technologies may be owned and financed by the public body but produced and supplied by a private company. In a context characterized by the change of all the elements distinguishing traditional interaction, the IT professionals who design the technologies could considerably influence the future of public meeting, in particular the perception of the digital service by citizens, who they largely postpone the success of innovation procedures to the level of simplicity and intuitiveness of the technology itself.

Another advantage that citizens seek by choosing to use the digital public service is greater speed and accessibility to the service itself. Most of the respondents believe that the streamlining of bureaucratic procedures and the reduction of waiting times constitute fundamental benefits capable of revolutionizing the classic concept of public service. Long waiting code, interminable response times, cumbersome and possible procedures could be left behind with the advent of new technologies. In the same way, being able to access the public service anywhere and at any time is an advantage that has met with considerable success among citizens, perhaps the true essence of digitization is necessary for them, especially as regards the transportability of public interaction on all those mobile devices that have now become part of the citizen's daily life. Focusing on speeding up and accessibility of the service could be a successful strategy for the PA, to pursue two types of results: the first, in the short term, consists in the

possibility of obtaining greater participation and collaboration on the part of the citizen; the second, broader and in a longer timeframe, concerns the possibility of providing individuals in the community with the digital skills they need and directing them towards successful coexistence within the current digital society. From this perspective, the management and empowerment of citizens is the main task of the front-line work of a PA, regarding how it is moved into the private sphere of citizens to create an efficient and digitized society.

For instance, to reduce the access barriers due to the decompensation between physical and digital channels, several initiatives have been launched at the Italian level to support citizens in some activities if they are unable to carry them out independently. Indeed, various digital facilitation services are currently already available on the national territory.

To facilitate and support citizens who needs for assistance and physical contact, in the use of digital technologies, these initiatives provide for the introduction of the figure of the "digital facilitator". This representation is a functional figure to identify the needs of individual citizens in the use of digital services and internet, and to provide them with support and guidance, with a development expected both in local administrations and in third sector associations. The services are already present in some regional projects (e.g., "Punto Pane and Internet" in Emilia Romagna, "DigiPass" in Umbria) and at city level (e.g., as for "Punti Roma Facile" in Rome) with similar characteristics. These helpdesks, hosted by libraries, municipal spaces, or recreational centers, are assisted computer spaces created to develop widespread inclusion and the digital competence of citizens, also thanks to widespread distribution throughout the local territory. At each point it is possible booking a free and personalized appointment with a trained "digital facilitator" for information and support on the use of computers, surfing the net, or accessing the main online services.

However, an organic plan is missing, which is to be implemented through the project of the "Network of Digital Facilitation Services" representing one of the actions of the Strategy and is included in the Next Generation EU. This intervention will allow a capillary, systematic, and not extemporaneous diffusion of the service throughout the territory, enhancing the spaces and infrastructures already present (e.g., as for all libraries and schools, but also youth and social centers).

4.2.3 The key role of age: elderly citizens and socialization

Although citizens recognize a lot of merits related to digital public services, the downside is represented by all those categories of individuals who encounter difficulties or have not been properly educated in the use of the technological tools through which the services are requested and provided.

Indeed, digitization produces, among other effects, the phenomenon of the *digital divid*e, excluding certain categories of subjects from the use of digital public services. For example, the elderly and, more generally, all those individuals who do not possess the knowledge suitable for the correct use of technological artifacts; individuals who do not have the ability to have an internet network or a device that allows access to the digital world;

"Digitization could certainly represent a strength, but to the detriment of elderly people and those who have difficulty in interfacing with the internet and with technology" (U38, F, 62).

"For young people it can certainly be an advantage to use a tool such as a mobile phone or PC to access goods and services online. On the other hand, the elderly find it very difficult, even assuming that most do not have a home internet network or, even more simply, a mobile phone" (U94, M, 29).

To prevent this phenomenon from persisting with the risk of frustrating the efforts pursued by the PA in the digital field, a successful strategy could consist in the maximum simplification of applications and websites that allow accessing and using digital public services. From this perspective, most of the respondents who have provided a contribution to this research report the absolute need to consult more intuitive and easier platforms, reducing the dispersiveness of digital interfaces and inserting practical guides allowing a clear display of the features built into the platform. To this end, it could be useful to implement additional forms of assistance by public officials to users in difficulty, or, to assist those with minimal digital skills, to prepare online tools that allow them to achieve the same goal without the physical operator help, such as simplified guides, information pages, information in the app, and so on.

Indeed, by leveraging on the concept of socialization strategies (Guido et al., 2019; Guido and Sestino, 2020) whereby young family members' assistance can improve both the cognitive (elderly's knowledge and interest) and behavioral (elderly's purchase intentions and technology usage) dimensions, thus facilitating the acquisition of complex skills that cannot be assimilated independently, several initiatives have been projected. Specifically, in the Italian context, a prominent one is Digital Civil Service (Servizio Civile Digitale). Part of National Strategy of Digital Skills and PNRR, this initiative is aimed at increasing citizens' digital skills and competencies, by encouraging the use of digital public services to promote the full enjoyment of citizenship rights and interact with PAs through the involvement of young volunteers (under 28 years old) as digital facilitators and related socialization strategies.

Those young "facilitators" will be adequately trained to operate in the target area, in neighborhoods, in local communities, and in public spaces organized to welcome and guide those who need support in the use of technologies. Moreover, similar activities aimed at fostering elderly digital inclusion and promoting active ageing, are proposed by third sector associations at local level (e.g., as for "Grey Panthers" in Milan or "Fondazione Mondo Digitale" in Rome. Such initiatives may constitute new scalable best practices at national and European level, also aimed to stimulate future actions.

4.2.4 Digital skills gap reduction strategies

In the modern digitized era, the information policies implemented by the PA also acquire a fundamental role, through means of communication that can be easily consulted and able to reach most of the community, including television advertising and newspaper articles, as well as omnipresent information. online through websites and social media. Some respondents to the questionnaire provided valid suggestions in reference:

"It would be useful to provide tutorials for those approaching technology for the first time" (U30, F, 44).

"In my opinion, an interesting idea could be to insert an in-app forum system where the community can discuss to solve any problems that may be encountered in the use of digital services" (U15, M, 40).

Concerning the current context, a good part of citizens say they have benefited significantly from the advantages offered by public services through digital rather than traditional channels, especially about COVID-19. These tools have made it possible to develop systems for the provision and use of public services in full compliance with the legislation in force. In this sense, digitization has made it possible to avoid the crowding of public offices and the creation of long waiting lines in a context in which social distancing and the contingency of individuals indoors are essential. Therefore, it is possible to say that accessing a public service from the comfort of your home, 24/24h, has never been so important both for the interest of the citizen and for the good of the entire community. As can be seen from the results, the perception of public services by citizens has increased considerably in a positive sense during the concomitant period and after the lockdown, evaluating the service itself very useful to speed up the process of providing the service, simplification of the methods of use and the possibility of creating a virtual connection with the PA.

From a social perspective, COVID-19 has likely brought individuals closer to the most widespread digital tools, allowing them to be used in practice, greater knowledge, and, in some cases, the identification and dissemination of new platforms and technological devices. In the public context, the pandemic has certainly led citizens to learn more about and use digital public services, generating both positive and negative opinions from every segment of the community, based on the merits and limitations encountered in the research, consultation, and use of the service.

In this regard, in the Italian context, the National Strategy for Digital Skills provides for a wide range of active actions and initiatives aimed at reducing - as mentioned in the previous paragraphs - the digital gap and increase the use of digital services among the citizens.

On the basis of the National Strategy for digital skills and the related Operational Plan, a series of actions are previsted in the fourth axis aimed to 1) provide digital and IT contents in those formal *training courses for adults* offered by educational institutions; 2) introduce *training courses within the non-formal educational circuit*, based on the enhancement of lifelong learning, e.g., by online learning platforms; 3) *digital facilitation path* to support and facilitate the access to public digital services; 4) *communication paths*, increasing individuals' awareness toward the relevance digital skills and competences with a systematic support deriving from the mass media (e.g., television, radio); and 5) *inclusion initiatives* aimed to those disadvantage social groups (e.g., elderly, immigrants).

Importantly, there are also numerous digital skills initiatives supported by different actors from small third sector companies to large players in the deep-tech sector (e.g., as for Amazon, Fastweb). These digital skills initiatives are part of the National Coalition instituted by the program called Repubblica Digitale. The aim of the National Coalition is to systematize and centralize the existing and virtuous initiatives, fostering collaboration and creating new synergies. Thus, by creating a synergistic network of active stakeholders, those successful initiatives even at local level may be shared and know by a wider audience in the attempt to provide more digital skills improvement stimuli for citizens.

5. Conclusion

Digitization has allowed companies and the public sector to simplify, speed up and make more precise their processes and the consequent products and services provided to third parties. This has generated a net improvement in efficiency and performance, with the possibility of guaranteeing end users simply excellent quality products and services. The COVID-19 pandemic has caused a necessary acceleration of

digital processes and services in order to maintain the lifestyle habits of individuals and the performance levels of the services offered both in the public and private sectors. However, the great acceleration and digital transition, especially for the public sector, while exciting for the results, is still a hazy question. The social impacts of such a profound transition process have created challenges and reflections on how to positively benefit from the wave of digitization.

Through an exploratory research design this paper shed light on four promising topics related to the acceleration of digital transformation of PA, revealing urgent challenges and opportunities in terms of new technologies and digital strategies need, hybridization of digital services, and citizens assistance, also by revealing the key role of age (e.g. as for elderly citizens) and the prominent need for digital skills gap reduction strategies.

Summarizing, our findings emphasize that the COVID-19 digital acceleration in the public services, and specifically about digitalized public services profoundly impact citizens' life. Specifically, our results may be particular useful for policymakers and managers to identify the future efforts both to make such services accessible as well as to design suitable digital tools. More importantly, our paper shed light on the relevance of reducing the digital skills among the national territory and provide important investment in digital knowledge transferring.

If national policymakers together with private institutions involves, pursue a simple technological adoption without considering a strategic framework, also by recognizing current citizens' capabilities results might be poor. They may blunt, or even undermine, their effort to generate value because of skills barrier to access to the proposed services (e.g., as for poor digital skills, elderly low competences). Thus, as part of a digital transformation acceleration, policymakers and managers should design a coherent framework able to sustain the transition, firstly acting in creating competencies and skills in the final users, and secondarily in implementing new technologies and digital tools. Moreover, the role of the e-leadership practices should be empathised as well. To this end, they need to not only equip themselves with the best available technology on the market but also develop strategies and practices for using it that will foster competitive advantages, together with strong managerial competencies, aimed to spread the increased value of the proposed digitalized services.

However, by considering the Italian research setting both digital tools and national policymakers efforts appear coherent and well metabolized by citizens. The considerable number of actions undertaken at the national level, also involving companies, universities, external entities, seems to be a successful and appropriate strategy to create a synergistic ecosystem of innovation with the ultimate goal of making technology at the service of citizens, without them represents an obstacle to the use of traditional public services. In addition, there are numerous ongoing activities aimed at increasing skills and planning refresher courses and continuous training.

As for the limitation, we acknowledge that a weakness of this paper could be represented by the number of collected answers that reduce the representatives of our findings, even if fitting with an exploratory approach. Thus, leveraging on more rigorous methods, future research could shed light on the variables influencing individuals' attitudes toward digitalized public services and possible consequence on their intention to use.

References

Amatulli, C., Peluso, A. M., Sestino, A., Guido, G. New consumption orientations in the COVID-19 era: Preliminary findings from a qualitative investigation, *Proceedings of the Marketing Trend Conference* 2021: 1-8.

Anthopoulos, L. G., Siozos, P., & Tsoukalas, I. A. (2007). Applying participatory design and collaboration in digital public services for discovering and re-designing e-Government services. *Government Information Quarterly*: 353-376.

Belk, R. W., Ger, G., & Askegaard, S. (2003). The fire of desire: A multisited inquiry into consumer passion. *Journal of Consumer Research*, 30: 326-351.

Budd, J., Miller, B. S., Manning, E. M., Lampos, V., Zhuang, M., Edelstein, M., ... & McKendry, R. A. (2020). Digital technologies in the public-health response to COVID-19. *Nature Medicine*, 26: 1183-1192.

Chen, W., & Wellman, B. (2004). The global digital divide–within and between countries. *IT & society*, 1: 39-45.

Datta, P. (2020). Digital transformation of the Italian public administration: A case study. *Communications of the Association for Information Systems*, 46: 11.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. *MIS Quarterly,* 13: 319-339.

Eurostat (2021a). Data explorer. Retrieved at: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_ciegi_ac&lang=en

Eurostat (2021b). A new comprehensive Digital Skills Indicator. Retrieved at: https://digital-strategy.ec.europa.eu/en/library/new-comprehensive-digital-skills-indicator

Gabryelczyk, R. (2020). Has COVID-19 Accelerated Digital Transformation? Initial Lessons Learned for Public Administrations. *Information Systems Management*, 37: 303-309.

Goodsell, C. T. (Ed.). (1981). The public encounter: Where state and citizen meet. Indiana University Press.

Guido, G., Pichierri, M., Pino, G., & Conoci, R. (2018). The segmentation of elderly consumers: A literature review. *Journal of Customer Behaviour*, 17: 257-278.

Henman, P. (2013). *Government and the internet: evolving technologies, enduring research themes*. In The Oxford handbook of Internet studies.

Iacono, G., 2021, *E-leadership. Come guidare la trasformazione (digitale) della PA*, Franco Angeli.

Lindgren, I., Madsen, C. Ø., Hofmann, S., & Melin, U. (2019). Close encounters of the digital kind: A research agenda for the digitalization of public services. *Government Information Quarterly*, 36: 427-436.

Magni, D., & Sestino, A. (2021). Students' learning outcomes and satisfaction. An investigation of knowledge transfer during social distancing policies. *International Journal of Knowledge Management and Intellectual Capital*, in press.

Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly,* 36: 101385.

Milakovich, M. E. (2012). Digital governance: New technologies for improving public service and participation. Routledge.

Nyenhuis, S. M., Greiwe, J., Zeiger, J. S., Nanda, A., & Cooke, A. (2020). Exercise and fitness in the age of social distancing during the COVID-19 pandemic. *The Journal of Allergy and Clinical Jmmunology,* 8: 2152.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49: 41-50.

Petrillo, A., De Felice, F., & Petrillo, L. (2021). Digital divide, skills and perceptions on smart working in Italy: from necessity to opportunity. *Procedia Computer Science*, 180: 913-921.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88: 879.

Reis, J., Amorim, M., Melão, N., & Matos, P. (2018, March). Digital transformation: a literature review and guidelines for future research. In World conference on information systems and technologies (pp. 411-421). Springer, Cham.

Rogers, Y. (2020). Is remote the new normal? reflections on Covid-19, technology, and humankind. *Interactions*, 27: 42-46.

Russo, C., Ghezzi, C. M., Fiamengo, G., & Benedetti, M. (2014). Benefits sought by citizens in multichannel e-government payment services: Evidence from Italy. *Procedia-Social and Behavioral Sciences*, 109: 1261-1276.

Sestino, A., Prete, M. I., Piper, L., & Guido, G. (2020). Internet of Things and Big Data as enablers for business digitalization strategies. *Technovation*: 102173.

Smith, S. M., & Albaum, G. S. (2010). An introduction to marketing research. Qualtrics Labs.

Tangi, L., Benedetti, M., Gastaldi, L., Noci, G., & Russo, C. (2021). Mandatory provisioning of digital public services as a feasible service delivery strategy: Evidence from Italian local governments. *Government Information Quarterly,* 38: 101543.

Ullah, A., Pinglu, C., Ullah, S., Abbas, H. S. M., & Khan, S. (2021). The role of e-governance in combating COVID-19 and promoting sustainable development: a comparative study of China and Pakistan. *Chinese Political Science Review*, 6: 86-118.

West, D. M. (2004). E-government and the transformation of service delivery and citizen attitudes. *Public Administration Review*, 64: 15-27.

Wihlborg, E., Larsson, H., & Hedström, K. (2016, January). *The Computer Says No! A Case Study on Automated Decision-Making in Public Authorities*. In *2016 49th Hawaii International Conference on System Sciences* (HICSS) (pp. 2903-2912). IEEE.