The Impact of Digitalization in Mitigating the Effects of the COVID-19 Pandemic for Silver Population

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Abstract: *This paper treats an analysis of the evolution of the COVID-19 pandemic in Romania for the silver population category aged 60-69 years. The importance of digitization and supporting the silver economy is also emphasized in mitigating the impact of this health crisis.*

The development of activities and sectors of activity specific to the elderly, that silver economy, could become a saving factor and turn the problem of increasing the number of the elderly into an opportunity.

The conclusion is that the trend of the diseases is an increasing one and digitalization can be a challenge especially for the elderly, in the context in which the Romanian society is not ready to embrace this paradigm shift.

Keywords: *silver population, COVID-19 pandemic, digitization, silver economy;*

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Introduction

Population ageing is a consequence of multiple factors, including the increase in life expectancy, a context that has favored the design of goods and services for elderly

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consumers and the emergence of the concept of silver economy. Also, the structural inequalities within the societies as well as between them were increasingly highlighted.

Elders are often at risk of social exclusion due to poverty, poor health or social isolation. The Internet offers the potential to improve quality of life in multiple ways, for instance, access to facilities and information that they would not otherwise be able to access due to mobility or lack of transport or costs such as health services, banking, shopping, learning opportunities, communication with family or participation in civil society.

From an economic point of view, the impact of the growth of the silver population will have multiple implications. First, it will increase the dependency ratio. Since the retirement age remains fixed and life expectancy increases, there will be relatively more people claiming pensions, but at the same time, fewer people will be active in the labor market paying social security contributions. In Romania, the demographic projections show a quickly increasing ageing of the population and implicitly the quick deterioration of the ratio between the number of employees and the number of retirees. The dependency ratio for old age in Romania increased from 22.6 in 2008 to 28.1 in 2019, according to Eurostat[1].

State of the art

Digitization is an increasingly used notion, lately being associated with the silver population. Interactions with technology provide older people with the opportunity to shape their social life and the opportunity to monitor their health (Hülür & Macdonald, 2020).

In the current context, generated by the COVID-19 pandemic, it is necessary to emphasize, besides the advantages offered by the access to technology and, implicitly, to information, the fact that there is also the inconvenience generated by the non-existence of face-to-face contact that can lead to isolation (Antonucci et al., 2017). Studies in this area show a strong correlation between social isolation and the harmful effects of isolation on health and well-being. This is exacerbated with age, generating not only social but also health problems (Lelkes, 2013). At the same time, Lelkes (2013) points out that although one in 6 adults over the age of 65 is single, those who use the internet regularly are less isolated.

Basically, the use of the Internet by the silver population is a necessity, the latest studies showing the benefits reflected on well-being (Holt-Lunstad et al., 2015; Berkman et al., 2000; Victor et al., 2000). On the other hand, using an integrative research model,

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[1] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tps00198

Heo et. al (2015) also tried to demonstrate the influence of Internet use on psychological well-being. Practically everything that has been analyzed and exposed in previous years on this topic has been confirmed in the current context (generated by the Coronavirus pandemic). The use of digital technologies by people in the silver population requires adequate training. The integration of technologies based on Artificial Intelligence and their use in the usual way will allow an efficient management of the pandemic but also a reduction of economic costs and a mitigation of human losses (Naudé, 2020).

At the same time, the accentuated ageing of the population implies an improvement of the social security systems but also of the health systems. However, Jarke (2020) points out that the silver economy can support economic growth and that digitalization and AI are considered solutions to the social problems generated by the growth of the silver population. On the other hand, the so-called digital divide generated by the exclusion of adults over the age of 65 from social participation in the digital age is also analyzed (Jarke, 2020). All these disadvantages are amplified during this period when the physical distancing imposed by the current restrictions leads to a strong dependence on digital communication channels and digital public services and e-commerce services.

Analysis of the evolution of the number of daily cases for the silver population: data, methods and results

The COVID-19 pandemic that appeared at the end of 2019, was just a confirmation that the most vulnerable social category is that of the elderly, as they are part of the most affected age category. According to statistics provided by the World Health Organization, people over the age of 50 have a higher risk of severe illness than people over the age of 40. Similarly, people in their 60s or 70s generally have a higher risk of severe illness than people in their 50s. The highest risk of severe disease from COVID-19 is among those aged 85 years or older[1].

Analyzing the evolution of the number of reported daily cases in Romania for the population aged 60-69, it is observed that since at the beginning of the pandemic, the number of cases has been continuously increasing, the increase being more pronounced in the second half of the year corresponding to the second wave of infection.

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[1] World Health Organization, Factsheet May 2020, Vulnerable populations during COVID-19 response

Figure 1. Evolution of the number of new cases of COVID-19 in Romania during March - November 2020 for the age category 60-69 years
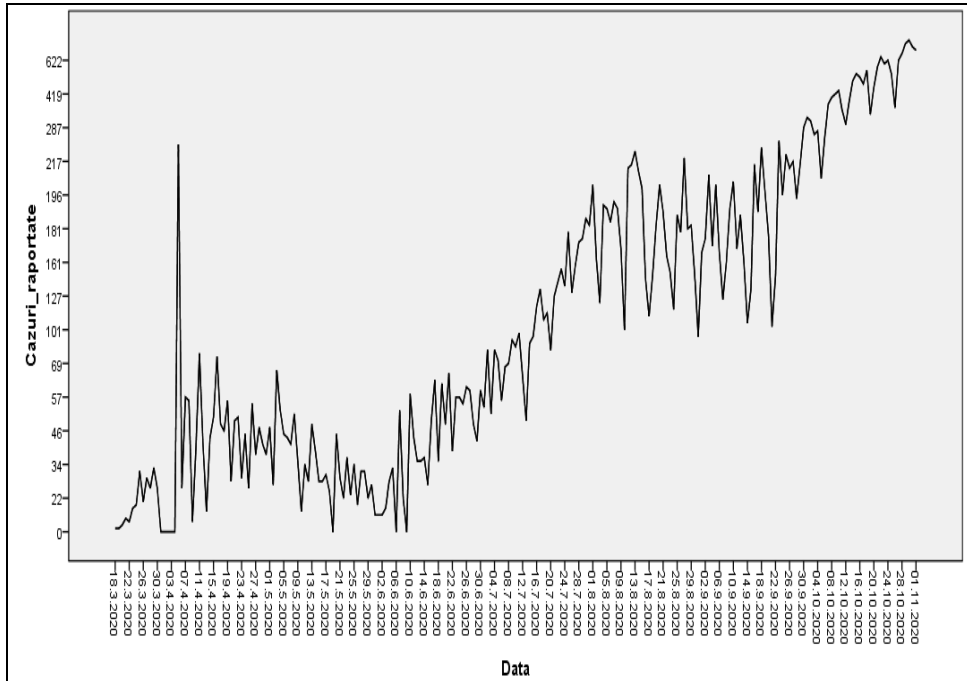

Source: Authors' calculations based on https://datelazi.ro/ data

Humanity is facing unprecedented times in its history: an ageing population and a global pandemic that has previously affected this category of the elderly. Statistical methods from which time series predictions have been successfully implemented in the past in the area of infectious diseases focus on analyzing previous observations of a random variable to develop a model that best captures the underlying relationship and its patterns. The model is then used to predict the future values of the random variable. This approach is particularly useful in two cases: when there is little or no knowledge available about the process that generates the underlying data or when there is no explanatory model that can adequately correlate the prediction variable with other explanatory variables.

Applying the Holt-Winters method to predict the number of cases that will be reported one year after the first case appeared in Romania, on March 18, 2021, we came to the conclusion that we will have approximately 3500 cases for category 60-69 years old.

Figure 2. Forecast of the number of new cases of COVID-19 in Romania in March 2021 (for the age category 60-69 years)
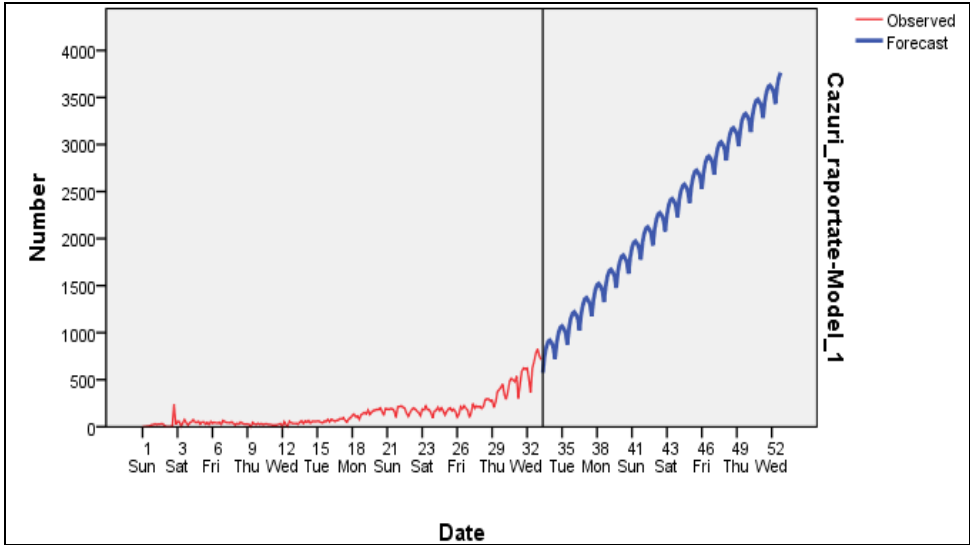
Source:Authors' calculations

Clearly, the model identified the daily seasonal pattern and upward trend at the end of the data, and the forecasts match the test data. The Box-Ljung test is a diagnostic tool used to test the mismatch of a time series model. The value of $\alpha = .012 < .005$ thus indicates that the test is not significant and the residues appear to be uncorrelated.

Table 1 – Winters' Additive test statistics

| Model Statistics						
Model	Number of Predictors	Model Fit statistics	Ljung-Box Q(18)			Number of Outliers
		Stationary R-squared	Statistics	DF	Sig.	
Cazuri_raportate-Model_1	0	.551	30.049	15	.012	0

Source: Authors' calculations

Silver population digitalization

With an increasing trend in daily cases, a strong economic and social impact on a vulnerable age group, the exceptional situation in which society finds itself can only be

mitigated by bringing innovative methods of quantifying the impact and changing long-term political paradigms. The current COVID-19 pandemic demonstrates the importance of digitalization and supporting the economy and society at large by enabling continued productive activity, tracking the spread of the virus and accelerating the research for medicines and vaccines.

Since 2014 at European level, the European Commission has monitored member states' digital progress in the reports quantified through the Digital Economy and Society Index (DESI). According to the 2020 ranking, Romania is at the bottom of the ranking.

Figure 3. Digital Economy and Society Index[1] (DESI) 2020
(Connectivity, ● Human Capital, Use of Internet, ● Integration of Digital Technology, Digital Public Services)
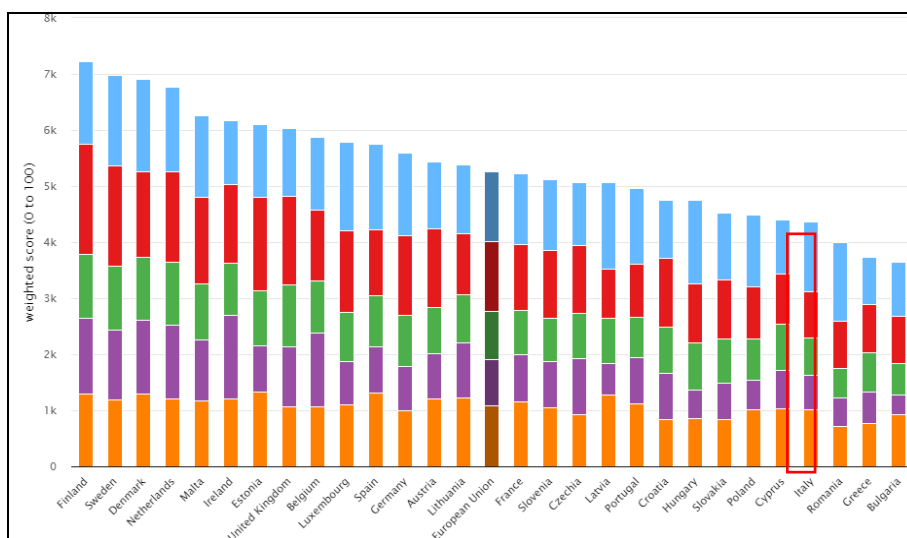
Source: European Commission, Digital Scoreboard

The digital economy and society index is a multidimensional composite indicator consisting of five dimensions: connectivity, human capital, use of internet services and digital public services.

For the quality of life of the silver population, all five dimensions have a strong impact. The key opportunity refers to the use of internet services and digital public services.

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[1] https://digital-agenda-data.eu/datasets/desi/visualizations

Digital health is the form of revolution and innovation of traditional medicine with state-of-the-art technology, telehealth, patient monitoring with smart tools outside traditional clinics, digital assistance, as well as economic prescriptions or exchange of medical data. Other examples may be related to assisted living spaces. Voice assistants such as Amazon Echo / Alexa and Google Home help seniors remember their daily schedules (when they need to eat, take their medication, or go to their doctors' appointments).

One of the dimensions of a decent standard of living also refers to leisure and recreation activities, activities that facilitate social integration. Thus, social distancing, the main measure taken in the case of the COVID-19 pandemic, brings the opportunity to stay connected and interact with family or acquaintances or to take advantage of online shopping platforms.

Of course, all these cannot be possible without connectivity and human capital, requiring a strong technological infrastructure and at least basic digital skills for the elderly.

Conclusions

As mentioned earlier, the digitization of public services is on the rise. However, when it comes to the silver population, accessing and using digital public services is a real challenge. However, age should not be a barrier to the use of modern technologies, whether we are referring to the use of social applications or those aimed at the physical or psychological well-being of people.

Learning to use technology by people over the age of 65 must be able to ensure the autonomy of people in the silver population category, thus reducing the problems caused by loneliness / isolation by maintaining offline interactions.

However, the terms elderly and technology are rarely mentioned together. The current context in which we find ourselves with an increasing number of infections and reinfections for the elderly, on short term it is necessary to adapt to a new lifestyle for an unknown period, an adaptation that can be made easier through digitization, and in the long term it will certainly be a challenge for the market to reinvent itself, the silver economy thus having an important role.

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