
Offensive Strategy Approach of Aging Population in the Context of a Digital Society

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ABSTRACT

Population aging currently is a demographic challenge addressing two key issues: one is having a strong political framework with policies to sustain this phenomenon and another one is to create benefits and value in economy. Those two approaches are materialized in offensive and defensive strategies for silver population. One is focusing on mitigating the risk of this demographic imbalance, and another one on flexibility which can bring more added value on long term. Trying to maintain the balance between the two could lead to an unavoidable failure.

In this paper, the purpose is to evaluate the main drivers behind the IT sector, technology and innovation of the silver economy with the focus on an offensive strategy. Aging offensive side supports on creating new economic activities for the niche of elders with the help of technology. This strategy is sustained by two steps, adopting and accepting the technology.

The journey towards digital societies is very tough and digitalization can be a challenge especially for the elderly from the countries which are not ready to embrace this paradigm shift. Humanity is facing an unprecedented time in its history: an aging population and a global pandemic that has previously affected this category of the elderly. 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 search for medicines and vaccines.

Key words: aging population, offensive aging, digital society, technology.

JEL Codes: O30, J14.

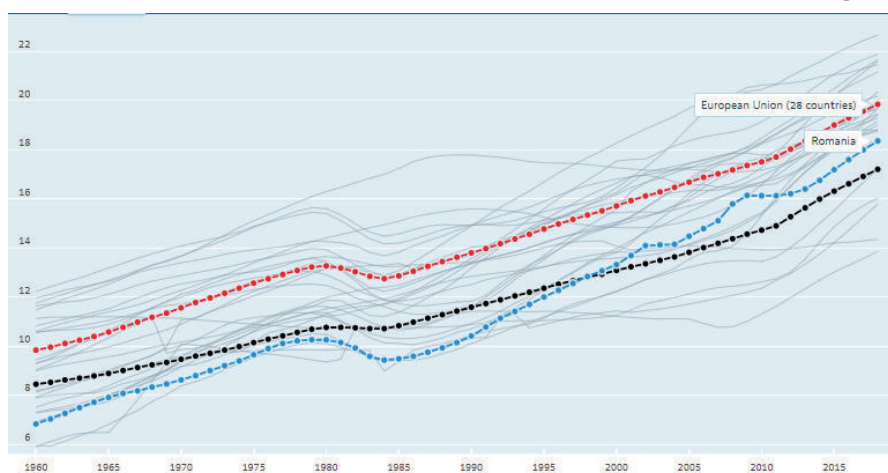
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1. INTRODUCTION

Population aging is a global challenge and it will become inevitable. According to the United Nations the total number of people aged 60+ is expected to reach by 2050, to 2.1 billion.¹ This silver tsunami affects the countries independent by the level of their economic growth or development. For Romania the trend of increasing the percentage of elderly population is ascendent and it's lower comparing with European Union figures.

The percetange of elders from total population (1960-2018)

Figure 1



Source: <https://data.oecd.org>

There are multiple factors as medical services, maintaining the elders in activity after retirement age that favored the design of new products and services for elders and the emergence of the concept of silver economy. Silver economy refers to the economy of 50+ age group, considering all their activities, products, needs and expenditures, mainly for this niche segment with strong buying power. Different impacted economic sectors are developing new products and services for seniors.

Sociologist Daniel Bell² (1977) was the first one describing the major contribution of digitalization, the main benefits of using the Internet seen as a new form of socialization, communication, development of community spirit.

1. United Nations, (2017), World Population Prospects

2. Paul DiMaggio, Eszter Hargittai, W.Russell Neuman, John Robinson, Social implications of the Internet, Annual Review of Sociology, 2001

Daron Acemoglu and Pascual Restrepo (2017) estimated the potential GDP/capita growth rate changing the percentage of silver people with the number of active age, and it was not found a relationship between the two.¹ This is also an assumption for this paper that we cannot avoid the impact of elders in economy but this can be mitigated and also seen as an opportunity.

In order to be able to evaluate the impact of elders in economy, especially in a specific sector, data is essential. In an article published in HBR², Davenport (2017) described data strategy from two angles: offensive and defensive. For silver population, offensive and defensive strategies are serving different aspects. Defensive part is related to the impact of aging population and translation into policies for the most impacted areas:

- Pensions and pressure on active population by increasing dependency ratio;
- Pressure on medical services and healthcare;
- Education.

The impact of the aging society has been explored through policy papers that were produced by international organizations such as OECD, European Commission or governments around the world, this topic being often added on public agenda. For instance, according to The 2021 Ageing Report, for long-term projections of age-related expenditure, the European Union is monitoring the evolution of aging and also is adding new features for pension systems in the European Union.³ The main role of a defensive strategy approach for aging is to mitigate the impact on different areas and not to eliminate it.

On the other hand, an offensive approach towards aging is a proactive attitude related to this demographic challenge, rather than reactive. When a society adopts an offensive strategy towards aging, it should do big investments in R&D area and also in technology to maximize the benefits. An offensive strategy is successful if it relies on the core values and capabilities of the silver population. The terms technology and elderly are unusually placed together. In a society there is a myth that old people are not up to date with technology.

1. Nguyen Tan Danh, (2021), Aging Population and it's impact on economy of Vietnam, Turkish Journal of Computer and Mathematics Education, Vol. 12 No.4 1681 - 1685

2. Davenport T, (2017), What's your data strategy?, Harvard Business Review, May-June 2017

3. European Commission, The 2021 Ageing Report: Economic and Budgetary Projections for the EU Member States (2019-2070)

Renaud and Van Biljon¹ (2008), reinforce the distinction between adopting and accepting technology by old people. Adopting the technology is an entire process, while accepting is an attitude however, they are interconnected.

Leading to a digital future of Europe is the goal of The Digital Compass (2021), an European initiative that translates the ambition of digitalisation for the next 10 years into steps and targets.²

The research focuses on analysing the main drivers for digitalisation of the aging population by comparing the results from Romania's economy with other European Union countries, from the perspective of accepting and adopting technology.

2. RESEARCH METHODOLOGY

This study uses normalised scores for the 24 indicators utilised and generated by the 2020 I-DESI study for European countries covering all 5 dimensions: connectivity, human capital, use of internet services, integration of digital technology and digital public services, described in the annex 1. Also, particular datasets from Science and technology theme were retrieved from Eurostat for timeframe 2011 – 2020.

The methodology used is the statistical observation, hierarchical clustering and analysis and correlation-regressive analysis.

Cluster analysis is a powerful statistical method to group the items that share the same characteristics. Hierarchical cluster starts by considering each object as an isolated cluster. Then, based on an iterative process the clusters that are closest are identified and then merged. Those steps are repeated until all the clusters are merged³.

Initialization:

$P_N = \{G_1, G_2, G_3, \dots, G_n\}$, where n is the number of isolated groups

$G_j = \{I_j\}$, where $j = 1, 2, \dots, n$

$k=1$

Current step:

WHILE $n - k > 1$ DO

SELECT $G_i, G_j \in P_{n-k+1}$ considering:

$G_{n+k} = G_i \cup G_j$;

1. Renaud, K.; van Biljon, J. Predicting technology acceptance and adoption by the elderly: A qualitative study. In Proceedings of the 2008 Annual Research Conference of the South African Institute of Computer Scientists and Information Technologists on IT Research in Developing Countries: Riding the Wave of Technology, Wilderness, South Africa, 6–8 October 2008; ACM: New York, NY, USA, 2008; pp. 210–219

2 European Commission, (2021), The Digital Compass Policy

3 Hansen P, Jaumard B, (1997), Cluster analysis and mathematical programming, Mathematical Programming, October 1997

$$P_{n-k+1} = (P_{n-k+1} \cup \{G_{n+k}\}) \setminus \{G_i, G_j\};$$

$$k = k + 1$$

END WHILE

The degree of association is measured using correlation-regressive analysis, which is one of the most used statistical methods to investigate relationships between different variables. The aim of correlation is to show the strength of linear association of two or more variables. The regression express the association into an equation.¹ The interpretation of analysis results required attention, particularly when looking for a causal relationship or when using the regression equation for prediction.

$$r = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}}$$

where \bar{x} is the average of the x values, and \bar{y} is the average of the y values.

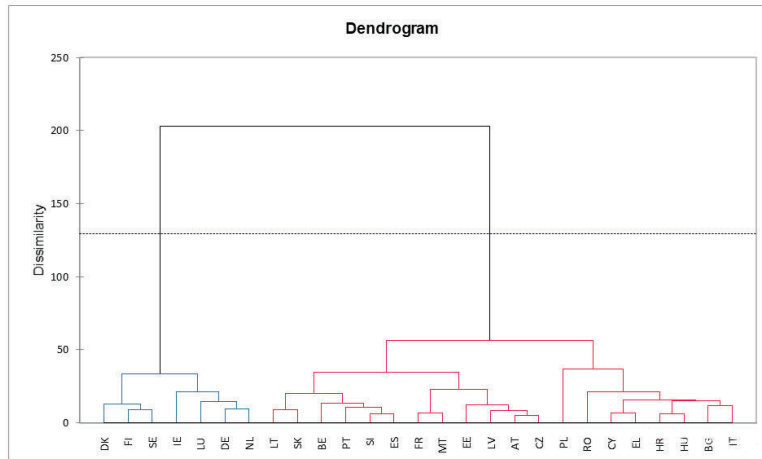
3. RESULTS AND DISCUSSION

According to I-DESI index 2020 values at European level there are two clusters of countries. Some of them are very advanced in terms of digitalization, for instance, Denmark, Finland, Luxembourg, Netherlands. The majority is evolving, with different speeds, in this second cluster we have three sub-clusters where countries with similar characteristics are associated. Romania is in the same cluster with Bulgaria, Italy, Cyprus or Hungary.

1. Bewick V, Cheek L, Ball J. (2003), Statistics review 7: Correlation and regression, Crit care 2003, 7(6): 451-459

Dendrogram for I-DESI index at european level

Figure 2

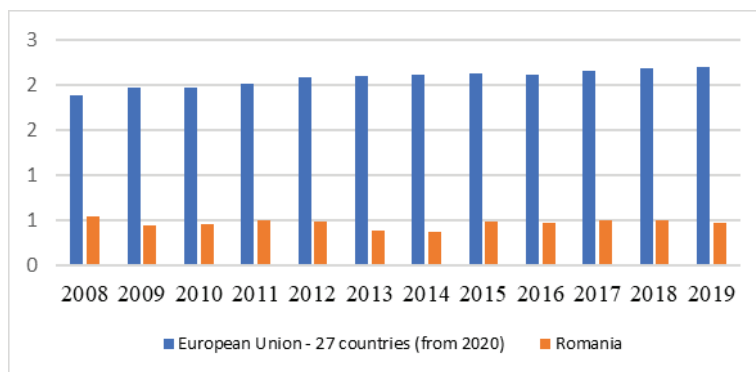


Source: authors analysis

By the graphical representation (figure 2) it is observed that comparing with European Union, in Romania it is invested annually around 1% from GDP, which is not in favour of an offensive strategy. Even if on short-term it is an effort and an investment, on long-term it leads to a sustainable economic development. Around €680 billion has brought ITC sector in EU in 2017 and since then the number is increasing.

Percentage of GDP in R&D expenditure

Figure 3



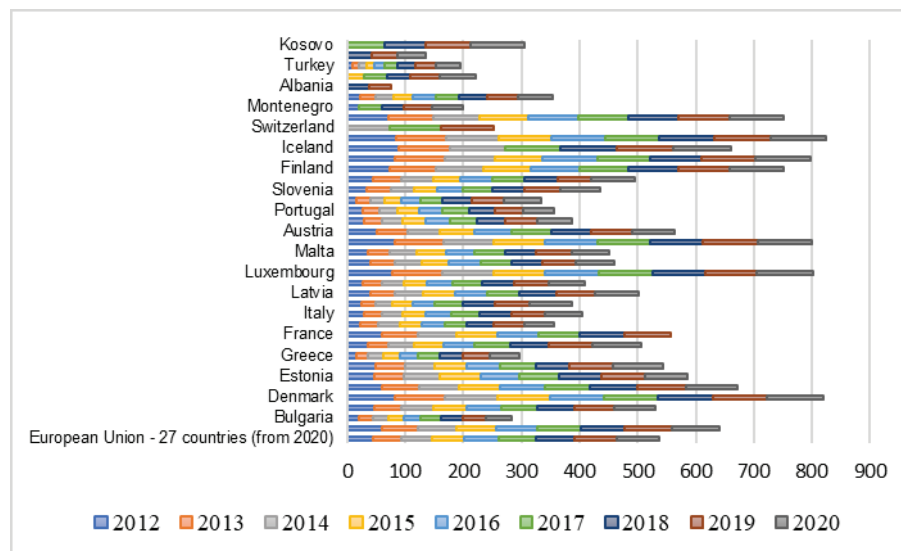
Source: Eurostat data

In terms of accepting the technology within the individuals aged 55 to 74 years old, the percentage of using the internet has increased in last years. For Romania, for instance, the percentage increased from 16% in 2012 to 63% in 2020. This is a big improvement and it is a fact that elders realized the benefits of digitalization.

Seniors started to adopt technology to remain connected with their families or for social activities in general. Analysing few activities for which elders are using the internet, in Romania just 4% of them are using internet for banking services, while an important 33% for telephoning or video calls.

Internet usage by people 55 – 74 years (%total population)

Figure 4

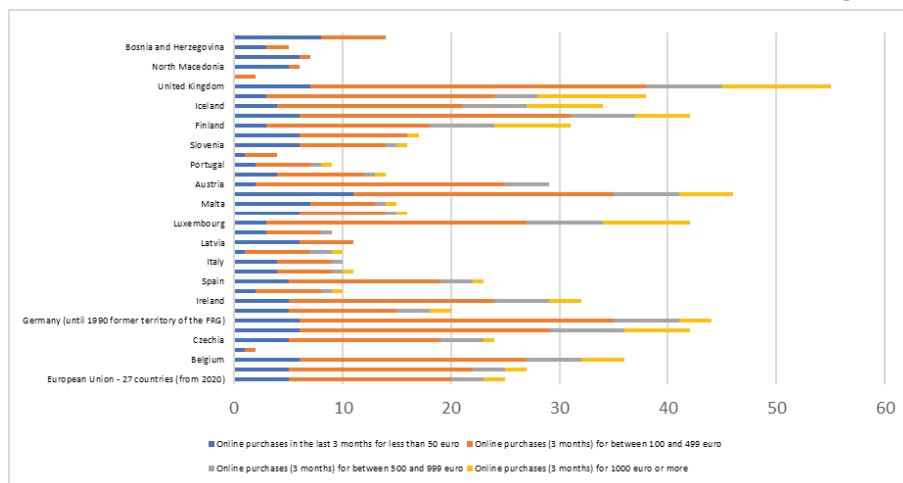


Source: Eurostat data

The offensive aging approach refers to the monetization of opportunities and to an increase silver economy's potential. Taking into account that the time spent by elders in front of smart phones, laptops and other gadgets connected to the internet increased, the e-commerce can be an area with big financial potential. At European level, the majority of elders spend around [100 and 499] euro for online purchases per quarter. In Romania the elders are not involved in online shopping, just 3% are spending [100 and 499] euro for online purchases per quarter. On the other side of the ranking, Germany and Sweden are top performers with 29% and 25%.

**Internet purchases - money spent in 2020 by people 55 – 74 years
(% population)**

Figure 5



Source: Eurostat data

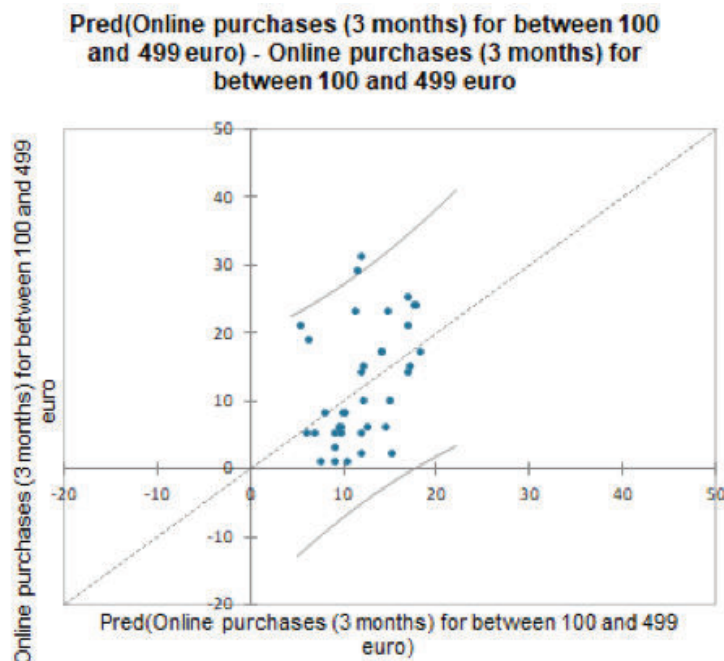
By analysing correlation of all those indicators for population aged 55-74 years, it was observed a strong correlation between internet usage in general and internet usage for specific activities and the money spent. Increasing the usage of the internet, can increase the online purchases as well. The regression equation is:

$$\text{Online purchases (3 months) for between 100 and 499 euro} = -5.86 + 0.20 * \text{Internet usage} + 6.17E-02 * \text{Internet use: telephoning or video calls}$$

Given the value of R^2 , 17% of the variability of the dependent variable Online purchases (3 months) for between 100 and 499 euro is explained by the 2 explanatory variables. The p-value of the F statistic computed in the ANOVA table, and given the significance level of 5%, the information brought by the explanatory variables is significantly better than what a basic mean would bring.

Predicted money spent for online purchases

Figure 6



Source: authors analysis

4. CONCLUSIONS

This study has demonstrated that population aging can bring also opportunities. Considered as an offensive strategy, technology can be a means of increasing value for silver economy. Based on the study results, in the majority countries across Europe, adopting technology and accepting it represents an incipient phase, however, there is still a long journey ahead until societies are fully transformed towards digital.

The I-DESI index is helping countries to identify fields requiring investments and actions to influence the levels of top ranked countries. It is an important tool that assures comparability in time and space, for tracking the evolution of the EU digital strategy.

The limitation of this research is by using just a quantitative analysis to evaluate the offensive strategy for aging based on technology. As a future extension there can be added also a qualitative analysis, to capture better the elders' opinion about digitalization.

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