

A COMPARATIVE ANALYSIS OF INDIVIDUAL BEHAVIOR IN RELATION WITH ONLINE PURCHASES IN EUROPEAN UNION COUNTRIES

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Today purchasing goods or services online is a regular activity. That is why in this paper we have analyzed the evolution of the online purchases of the individuals in the EU countries from 2010 until 2021 in accordance with the latest data provided by the Eurostat Database. For that we used charts, dynamic indices, and dynamic rhythms.

Key words: last online purchase, indices, rhythms of increase or decrease

INTRODUCTION

We have created our analysis based on the data provided by the EU survey on the use of Information and Communication Technologies (ICT) in households and by individuals.

The indicators from this survey are used for benchmarking purposes and also they support measuring the implementation of the priority called “A Europe fit for the digital age”.

For the practical view of the countries we have used the countries code, as follows: EU-27 (European Union 27 countries), AT (Austria), BE (Belgium), BG (Bulgaria), CY (Cyprus), CZ (Czechia),

DE (Germany), DK (Denmark), EE (Estonia), EL (Greece), ES (Spain), FI (Finland) FR (France), HR (Croatia), HU (Hungary), IE (Ireland), IT (Italy), LT (Lithuania), LU (Luxembourg), LV (Latvia), MT (Malta), NL (Netherlands), PL (Poland), PT (Portugal), RO (Romania), SE (Sweden), SI (Slovenia), SK (Slovakia). We have chosen to use the average online purchases individuals’ behavior for the EU-27 states considering the different political, economic and social policies that act as key variables in defining online shopping behavior.

DATA ANALYSIS

From the data provided by the Eurostat database we selected the ones regarding the last online purchase of the individuals in the EU countries, including the composite average for the EU-27 group of countries.

The first indicator that we have taken into consideration is the last online purchase made in the last 3 months. In Figure 1 we can observe that in Romania the percentage of individuals doing that slightly increased from 2% in 2010 to 15% in 2019. At the EU-27 level the

percentage increased from 27% in 2010 to 49% in 2019.

The second indicator that we have analyzed is the last online purchase made between 3 and 12 months ago. In Figure 2 we can observe once again that in Romania the percentage of individuals doing that slightly increased from 1% in 2010 to 9% in 2019. At the EU-27 level the percentage increased from 9% in 2010 to 11% in 2019. From 2017 to 2019 Romania was close to the EU-27 average.

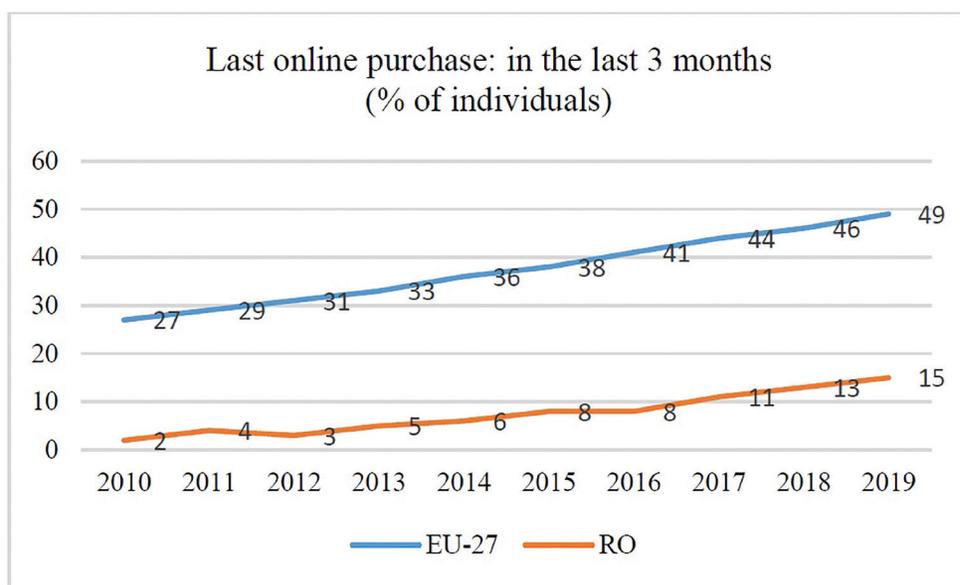


Fig. 1 Last online purchase –
in the last 3 months

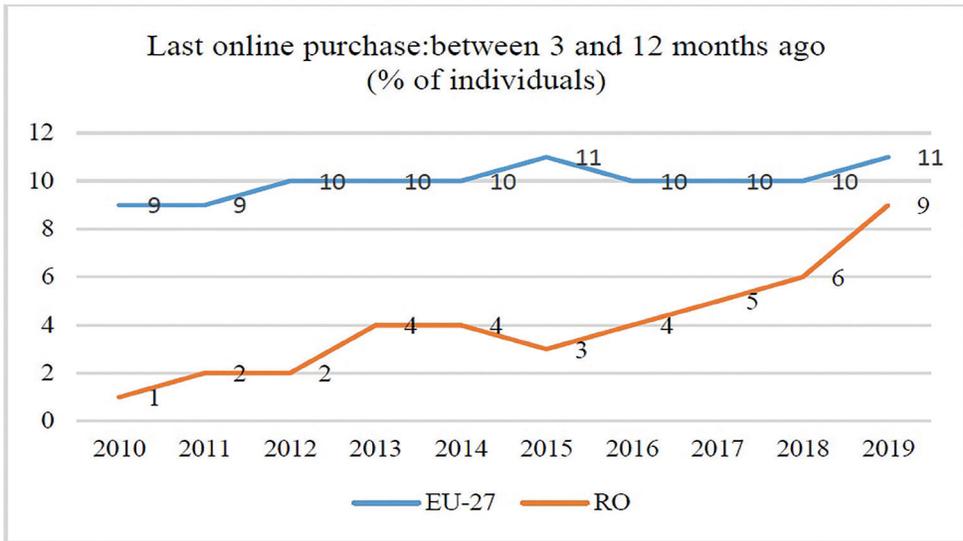


Fig. 2 Last online purchase – between 3 and 12 months ago

The third indicator that we have taken into consideration is the last online purchase made in the last 12 months. Figure 3 provides us the following data: in Romania the percentage of individuals doing that

increased from 4% in 2010 to 23% in 2019. The percentages are not close to the ones of the EU-27 that increased from 36% in 2010 to 60% in 2019.

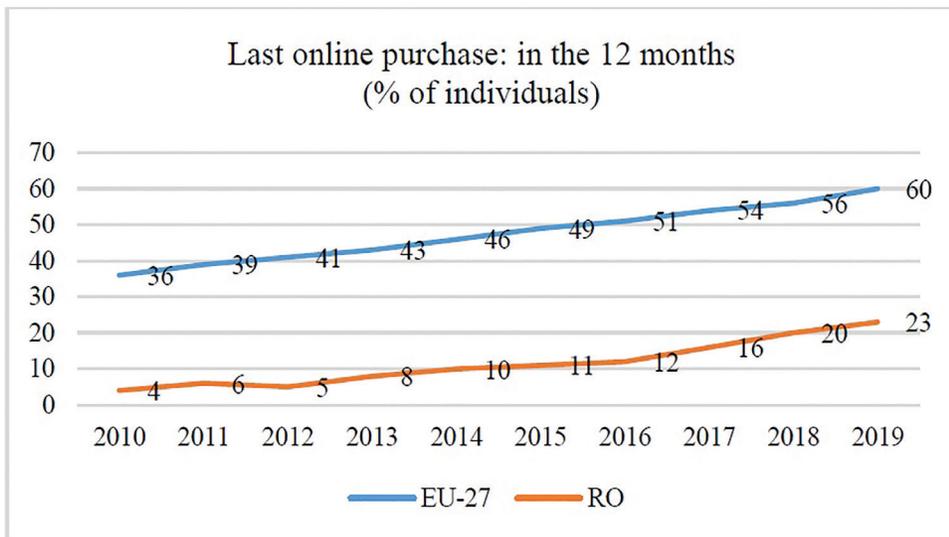


Fig. 3 Last online purchase – in the 12 months

The fourth indicator that we will analyze is the last online purchase made more than a year ago. In Figure 4 we can observe that in Romania the percentage of individuals doing that increased from 4% in 2010 to

only 10% in 2019. It is the first time when for the last 7 years at the EU-27 level the percentages are lower than the ones from Romania: from 7% in 2013 to 6% in 2019.

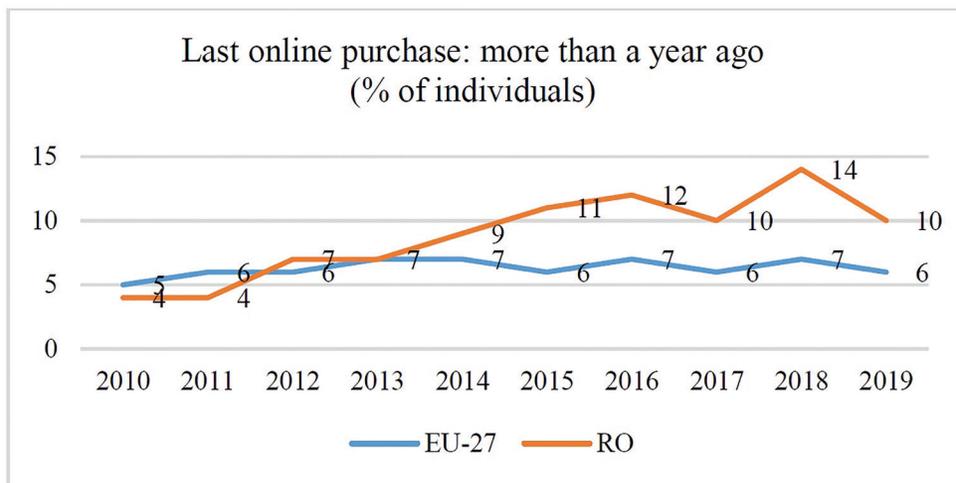


Fig. 4 Last online purchase – more than a year ago

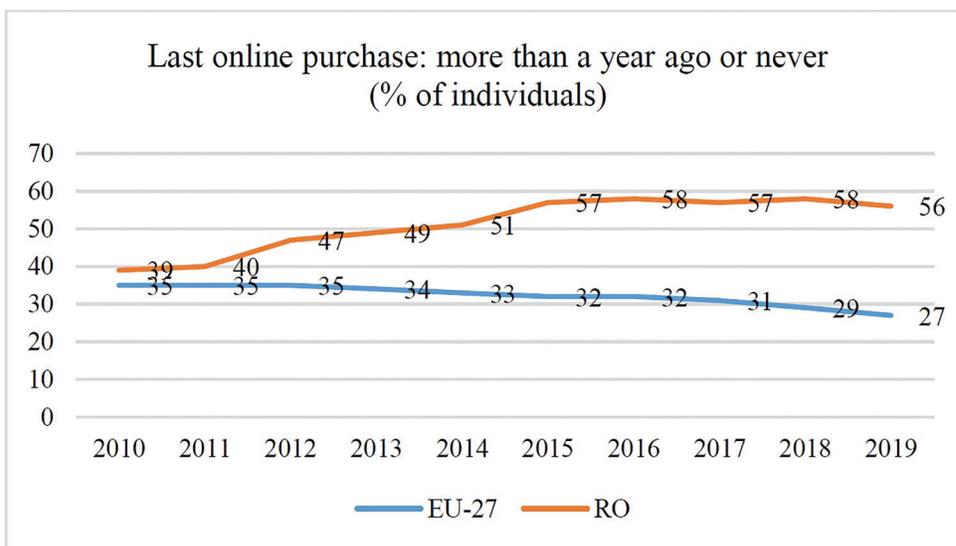


Fig. 5 Last online purchase – more than a year ago or never

The fifth indicator that we have taken into consideration is the last online purchase made more than a year ago or never. Also this time the percentages of Romanian citizens doing that are higher than the ones of the average EU-27. In Figure 5 we can see that in Romania the percentage of individuals doing that increased from 39% in 2010 to 56% in 2019 and at the EU-27 level the percentage decreased from 35% in 2010 to 27% in 2019.

In Table 1 we have calculated the values of the changing rates of

dynamic rhythms using the formula $r_{t/t-1\%} = (i_{t/t-1} - 1) \cdot 100$ where

$$i_{t/t-1\%} = \frac{y_t}{y_{t-1}} \cdot 100$$

We can see from the results in Table 1 that the percentage of individuals that made last online purchase in the last 3 months has constantly increased from 2010 to 2021 in Romania and also at the EU-27 level. For example in 2021 compared to 2015, in Romania, the percentage increased with 187.5% and at the EU-27 level with 50%.

Table 1 Dynamic rhythms for EU-27 and RO

Country	EU-27	RO
$R_{21/20\%}$	5.556	4.545
$R_{21/19\%}$	16.327	53.333
$R_{21/18\%}$	23.913	76.923
$R_{21/17\%}$	29.545	109.091
$R_{21/16\%}$	39.024	187.500
$R_{21/15\%}$	50.000	187.500
$R_{21/14\%}$	58.333	283.333
$R_{21/13\%}$	72.727	360.000
$R_{21/12\%}$	83.871	666.667
$R_{21/11\%}$	96.552	475.000
$R_{21/10\%}$	111.111	1050.000

In Table 2, Table 3 and Table 4 we have calculated the dynamic rhythms for all the EU member countries making a comparison between the percentages of individuals that made last online purchase in the last 3 months for the years 2021 and 2020, 2019, 2015, and 2010. The positive values represent an increase and the negative values represent a decrease.

Table 2 Dynamic rhythms for EU-27 – EL

Country	EU-27	AT	BE	BG	CY	CZ	DE	DK	EE	EL
R _{21/20%}	5.556	-3.571	1.538	25.000	41.935	6.780	-8.000	3.797	8.772	23.684
R _{21/19%}	16.327	0.000	20.000	42.857	41.935	46.512	-2.817	10.811	10.714	46.875
R _{21/15%}	50.000	17.391	57.143	66.667	131.579	142.308	7.813	22.388	34.783	95.833
R _{21/10%}	111.111	68.750	144.444	566.667	214.286	320.000	43.750	51.852	376.923	422.222

Table 3 Dynamic rhythms for ES – LU

Country	ES	FI	FR	HR	HU	IE	IT	LT	LU
R _{21/20%}	1.852	3.333	3.125	0.000	18.367	23.438	29.032	21.429	1.449
R _{21/19%}	17.021	12.727	13.793	31.429	65.714	33.898	42.857	34.211	11.111
R _{21/15%}	71.875	26.531	34.694	76.923	152.174	79.545	122.222	131.818	11.111
R _{21/10%}	223.529	51.220	65.000	411.111	480.000	182.143	344.444	628.571	48.936

Table 4 Dynamic rhythms for LV – SK

Country	LV	MT	NL	PL	PT	RO	SE	SI	SK
R _{21/20%}	34.211	5.556	7.792	2.128	14.286	4.545	6.849	13.462	43.750
R _{21/19%}	50.000	14.000	18.571	17.073	42.857	53.333	11.429	31.111	46.809
R _{21/15%}	88.889	29.545	40.678	100.000	73.913	187.500	39.286	110.714	97.143
R _{21/10%}	537.500	78.125	59.615	140.000	300.000	1050.000	56.000	247.059	263.158

In Table 5 to Table 8 we have made a grouping of the EU countries depending on the frequency of online purchases of the individuals in the last 3 months of 2021.

In Table 5, in 17 out of 27 EU countries the individuals making online purchases in the last 3 months of 2021: 1 or 2 times represent more than 16% of all individuals: 19% in EU-27, 17% in Austria, 19% in Denmark, 18% in Finland, 17% in Ireland, 17% in Lithuania, 17% in Latvia, 20% in Germany, 23% in Spain, 22% in France, 20% in Hungary, 20% in Italy, 22% in Luxembourg, 20% in Netherlands, 20% in Sweden, 26% in Belgium, 24% in Slovenia, and 31% in Slovakia.

In Table 6, in 24 out of 27 EU countries the individuals making online purchases in the last 3 months of 2021: 3 to 5 times represent more than 15% of all individuals: 15% in Cyprus, 17% in Greece, 17% in Spain, 16% in Croatia, 18% in Lithuania, 17% in Latvia, 17% in Malta, 17% in Poland, 15% in Portugal, 19% in EU-27, 21% in Austria, 22% in Belgium, 20% in Germany, 22% in Estonia, 21% in Hungary, 20% in Slovenia, 27% in Czechia, 25% in Denmark, 25% in Finland, 23% in France, 24% in Ireland, 23% in Luxembourg, 27% in Netherlands, 27% in Sweden, and 23% in Slovakia

Table 5 1 or 2 purchases in the last 3 months

Frequency of online purchases in the last 3 months of 2021: 1 or 2 times (% of individuals)	Countries	No of countries
8-12	BG,CY,HR,MT,RO	5
12-16	CZ,EE,EL,PL,PT	5
16-20	EU-27,AT,DK,FI,IE,LT,LV	7
20-24	DE,ES,FR,HU,IT,LU,NL,SE	8
24-28	BE,SI	2
28-32	SK	1

Table 6 3 to 5 purchases in the last 3 months

Frequency of online purchases in the last 3 months of 2021: 3 to 5 times (% of individuals)	Countries	No of countries
less than 15	BG,IT,RO	3
15-19	CY,EL,ES,HR,LT,LV,MT,PL,PT	9
19-23	EU-27,AT,BE,DE,EE,HU,SI	7
more than 23	CZ,DK,FI,FR,IE,LU,NL,SE,SK	9

In Table 7, in 24 out of 27 EU countries the individuals making online purchases in the last 3 months of 2021: 6 to 10 times represent more than 7% of all individuals: 9% in EU-27, 9% in Austria, 9% in Belgium, 7% in Spain, 9% in Hungary, 8% in Lithuania, 7% in Latvia, 7% in Portugal, 7% in Slovenia, 8% in Slovakia, 10% in Cyprus, 10% in Germany, 11% in Estonia, 11% in Greece, 12% in Finland, 10% in France, 11% in Croatia, 11% in Luxembourg, 11% in Malta, 10% in Poland, 15% in Denmark, 14% in Ireland, 15% in Sweden, 17% in Czechia, 17% in Netherlands.

Table 7 6 to 10 purchases in the last 3 months

Frequency of online purchases in the last 3 months of 2021: 6 to 10 times (% of individuals)	Countries	No of countries
1-4	BG,RO	2
4-7	IT	1
7-10	EU-27,AT,BE,ES,HU,LT,LV,PT,SI,SK	10
10-13	CY,DE,EE,EL,FI,FR,HR,LU,MT,PL	10
13-16	DK,IE,SE	3
16-19	CZ,NL	2

In Table 8, in 16 out of 27 EU countries the individuals making online purchases in the last 3 months of 2021: more than 10 times represent more than 8% of all individuals: 9% in EU-27, 8% in Austria, 10% in Belgium, 11% in Cyprus, 8% in Spain, 11% in France, 8% in Hungary, 8% in Lithuania, 9% in Latvia, 12% in Germany, 13% in Estonia, 13% in Luxembourg, 15% in Sweden, 17% in Denmark, 23% in Ireland, 20% in Malta, 20% in Netherlands.

has the lowest values of the percentages of the individuals doing that. Only 11% of the individuals made a purchase 1 or 2 times, the same as in Bulgaria. The lowest value was 8% in Cyprus. Also Croatia had 10%, and Malta 9%.

For the second variant – 3 to 5 time purchases, Romania has a percentage of 9%, Bulgaria 7% (the minimum value), and Italy 12%.

For the third variant – 6 to 10 time purchases, Romania has only 2%,

Table 8 More than 10 purchases in the last 3 months

Frequency of online purchases in the last 3 months of 2021: more than 10 times (% of individuals)	Countries	No of countries
0-4	BG,IT,RO	3
4-8	CZ,EL,FI,HR,PL,PT,SI,SK	8
8-12	EU-27,AT,BE,CY,ES,FR,HU,LT,LV	9
12-16	DE,EE,LU,SE	4
16-20	DK	1
20-24	IE,MT,NL	3

3.CONCLUSIONS

When analyzing the frequency of online purchases in the last 3 months of 2021 we can conclude that Romania

Bulgaria 1%, and Italy 5%.

For the last variant – more than 10 times purchases, Romania has 1%, Bulgaria 0%, and Italy 3%.

The conclusion is that in Romania people are making online purchases, but only at the lowest frequency – 1 or 2 times in the last 3 months. The reasons for that can be: not having access to the Internet, not knowing how to use the Internet, not trusting the sites or the stores / trademarks, not trusting the paying method etc.

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