

LANDMARKS ON THE EVOLUTION OF E-COMMERCE IN THE EUROPEAN UNION

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Abstract

In this paper are presented and analyzed a number of statistical indicators to highlight the size and the trends in the European e-commerce market in recent years, namely - the turnover of e-commerce, the share of turnover from e-commerce in total turnover of the organizations, the share of enterprises conducting online sales in total enterprises, the population share which shop online in total population. Information is presented both aggregated and individualized, allowing highlighting disparities between European states. The paper also captures a number of correlations between the orientation to online purchasing and level of development of European countries, on the one hand and access to technology on the other. The survey is based on official statistics provided by Eurostat (data from European Union countries) and information provided by EMOTA - European Multi-channel and Online Trade Association - (data pooled across all European countries).

Keywords

e-commerce market; turnover from e-commerce; orders over internet; EU market

JEL Classification

M31

The evolution of e-commerce market was marked by remarkable growth in recent years in the European market. This is not surprising in the context of increasing access of the population to technology (an increasing proportion of the population had access to the computer and used it), on the one hand, and as a result of changes made to purchase behavior and consumption, on the other hand. Thus, e-commerce is keeping up with the convenience buying process, allowing procurement in a very short time and from a large area (national or international), giving the possibility for comparing a large number of offers in terms of product characteristics and price, offering the ability to purchase products at lower prices than those of traditional distribution networks etc.

Europe's place in the e-commerce world market

Thus, in Europe in 2013 according to data from EMOTA (European Multi-channel and Online Trade Association) turnover from e-commerce reached 352 Billion Euros, representing an increase of approximately 17% over the previous year and almost 2 times bigger than the turnover of 2009. (Figure 1).

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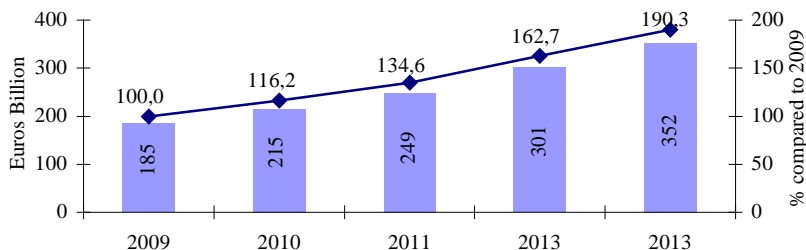


Figure 1 Evolution of E-commerce turnover in Europa, in 2009 – 2013 period (Billion Euros)

Source: Taken and worked up from E-commerce and Distance Selling in Europe Report, EMOTA (European Multi-channel and Online Trade Association)

Europe is, in fact, the largest e-commerce market relative to other major regions of the world (Asia Pacific and North America). Thus, in 2013, according to the same data sources indicated above, in Europe held in global online trade a share of 33%, followed by Asia Pacific with 32% and North America with 30%. (Figure 2).

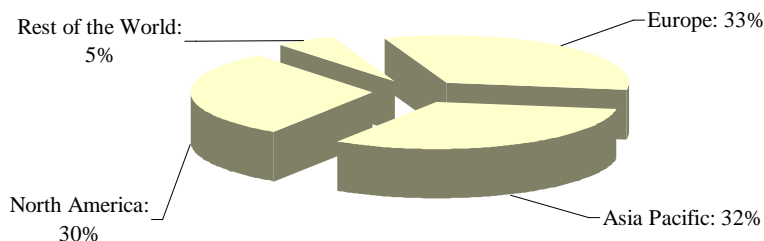


Figure 2 Share of turnover of e-commerce in the regions of the World in the total turnover of e-commerce worldwide in 2013

Source: Taken and worked up from E-commerce and Distance Selling in Europe Report, EMOTA (European Multi-channel and Online Trade Association)

Population access to technology in the European Union

As we said before, a contributing factor in the development of electronic commerce is increased people's access to technology in recent years. In the European Union (EU-28 countries), according to data for 2014, 79% of the total population of 16-74 years have used the computer in the last 12 months, which represents an increase of over 11% compared to 2009, respectively over 21% compared to 2007. Regarding the data for individual countries, there were major differences, the most spectacular growth was recorded in general in the former communist countries and in some of the less developed countries in the older EU members (Greece, Portugal).

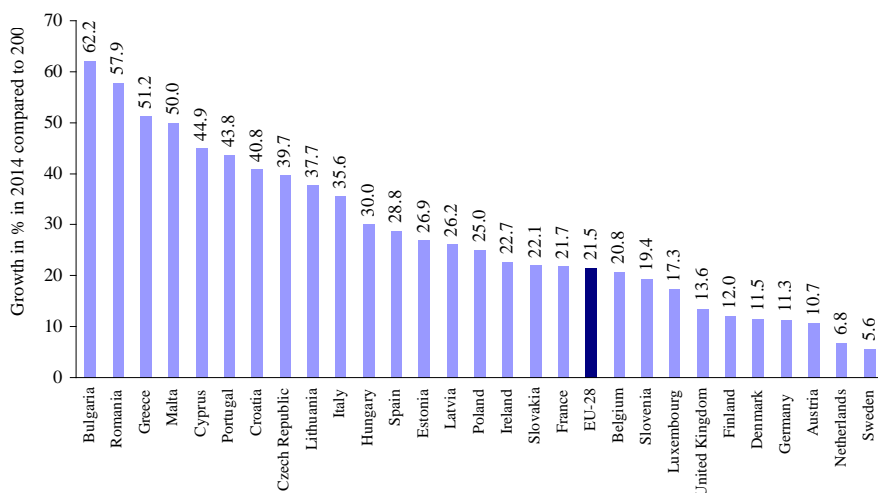


Figure 3 Evolution of the proportion of people who used the computer in total population, for the EU countries in 2014 compared to 2007

Note: are considered persons who have used the Internet in the last 12 months of the reporting period. The data refer to the population of 16-74 years

Source: own processing from Eurostat

Despite the spectacular increase of people's access to technology in recent years in new EU member states, these states have continued to record values below the EU average in terms of computer usage by the population (Figure 4). This constitutes a limiting factor in the development of electronic commerce, which, however, while maintaining the growth rate of the population access to technology in these countries in recent years, will be lowered in time.

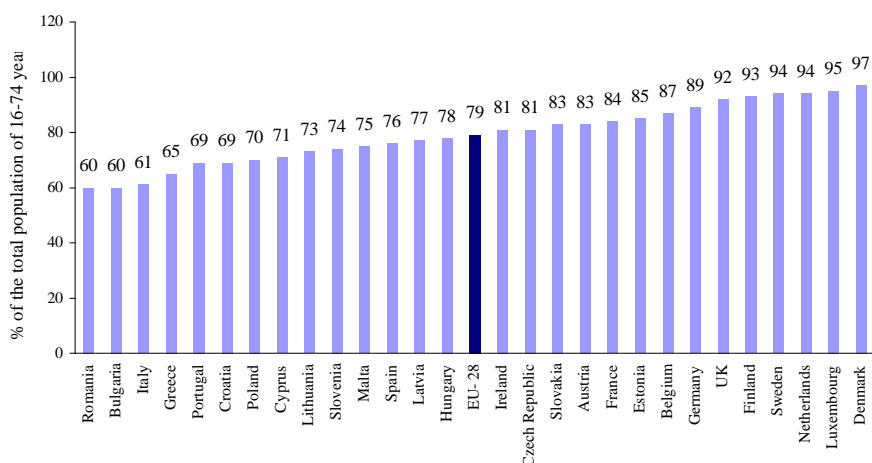


Figure 4 The share of people who used the computer in total population, in the countries of the European Union in 2014

Note: are considered people who used the computer in the last 12 months of the reporting period. The data refer to the population of 16-74 years

Source: own processing from Eurostat

The orientation of the EU population to online purchases

In connection with the evolution of the population access to technology, the share of people who shop online in total population of 16-74 years also recorded an upward trend, from 30% in 2007 to 50% in 2014. (Table 1)

Table 1 Evolution of the share of people who used the computer and the share of people who made online purchases in the total population and the share of those who made online purchases in all those who used the computer

Indicator	Year							
	2007	2008	2009	2010	2011	2012	2013	2014
Percentage of individuals who used the Internet	65	68	71	73	75	76	78	79
Percentage of individuals who ordered over the Internet	30	32	36	40	42	44	47	50
The share of those who made online purchases in all those who used the computer	46.2	47.1	50.7	54.8	56.0	57.9	60.3	63.3

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period. The data refer to the population of 16-74 years

Considering the data for the 2007 - 2014 period, we found that the correlation between the percentage of those who used the computer and the share of those who made online purchases in the last 12 months in the EU-28 is a deterministic one, correlation ratio being closer to the value 1.

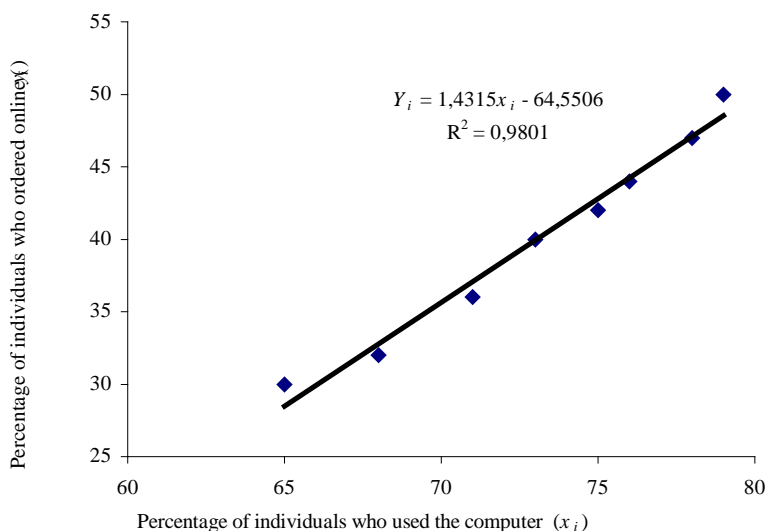


Figure 5 The relationship between the percentage of those who used the computer and the share of those who bought online in the EU - 28 in the 2007-2014 period

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period. The data refer to the population of 16-74 years

Table 2 The relationship between the share of those who used the computer (x_i) and the share of those who shop online (y_i) in the EU - 28 in the 2007-2014 period

Regression equation	Source of variation	Sum of the squares	Coefficient of determination	Correlation coefficient	F-Value	Significance level	Critical value for the F statistic
$Y_i = 1,4315$ $x_i - 64,5506$	Total	348,9	98,01%	0,99	295,86	0,05	5,99
	Model	342,0					
	Error	6,9					

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period. The data refer to the population of 16-74 years

Comparing the dynamics registered in the share of those who used the computer to the dynamics of the share of those who made online purchases we observe a much faster trend regarding the later indicator (21.5% versus 66.7% in the 2007 - 2014 period). This demonstrates that increasing the share of those who made online purchases was generated both by increased access to computer and by change over time of buying habits (people who although had the technology but not using to buy online, have acquired this behavior). This fact is emphasized by the increased share of those who made online purchases in all those who use computers (Table 1).

In EU countries it was found that online purchases are specific mainly to old EU countries, while in the new states, the share of those who make online purchases in all those who use the computer lies also below average.

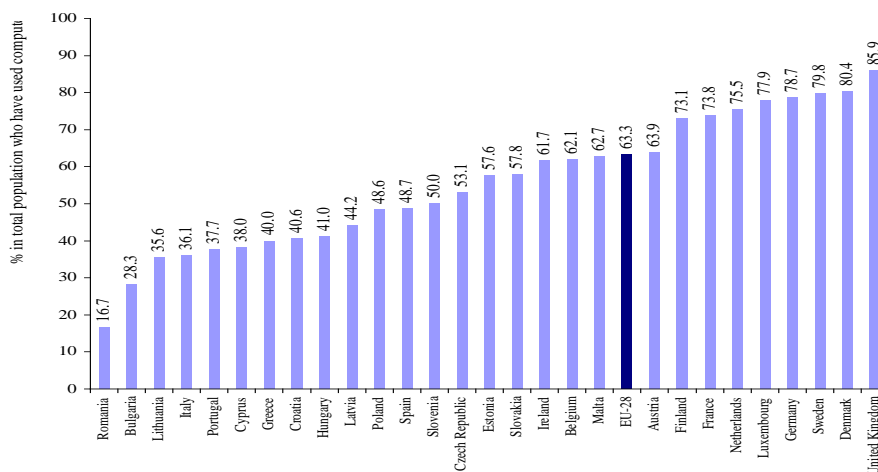


Figure 6 The share of those who made online purchases in total of those who used the computer, the EU countries in 2014

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period. The data refer to the population of 16-74 years

The EU countries which recorded the lowest values of the share of people shopping online in the total population of 16-74 years and the biggest increases in this indicator in recent years are generally old communist states and some of the less developed old states. Age groups who experience the greatest propensity to online purchase are 25-34 years, followed by 16-24 years group and that of 35-44 years. (Table 3)

Table 3 Share of population who made online purchases in the total population by age, and dynamics in 2014 compared to 2009

Countries	Share of population who made online purchases in the total population, in 2014							The dynamics of population share of 16-74 years who made online purchases in the total population, in 2014 compared to 2007 (%)
	Total population (16-74 ani)	Out of which, by age						
		16-24	25-34	35-44	45-54	55-64	65-74	
Belgium	54	62	71	69	55	36	22	257.1
Bulgaria	17	33	30	22	12	4	0	566.7
Czech Republic	43	62	63	53	40	22	11	252.9
Denmark	78	89	89	85	81	67	53	139.3
Germany	70	77	92	87	74	56	33	134.6
Estonia	49	67	77	58	44	25	11	544.4
Ireland	50	61	66	62	48	28	15	151.5
Greece	26	39	39	33	24	12	4	325.0
Spain	37	45	54	49	37	20	7	205.6
France	62	71	83	74	61	47	32	182.4
Croatia	28	46	47	36	23	10	2	400.0
Italy	22	29	34	30	22	13	5	220.0
Cyprus	27	36	44	34	20	7	4	270.0
Latvia	34	52	60	43	28	14	5	309.1
Lithuania	26	39	49	34	19	9	2	433.3
Luxembourg	74	71	85	80	73	68	55	157.4
Hungary	32	47	47	44	29	17	6	290.9
Malta	47	80	69	55	40	22	14	235.0
Netherlands	71	83	87	79	72	61	38	129.1
Austria	53	77	73	67	48	32	17	147.2
Poland	34	52	60	48	26	13	6	212.5
Portugal	26	41	49	38	21	7	4	288.9
Romania	10	17	18	12	7	3	1	333.3
Slovenia	37	65	60	50	25	14	7	231.3
Slovakia	48	65	68	59	45	25	10	300.0
Finland	68	81	89	87	73	50	29	141.7
Sweden	75	80	85	84	79	68	50	141.5
United Kingdom	79	83	90	88	81	70	53	149.1
European Union (28 countries)	50	61	68	60	50	35	23	166.7

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period

There is in fact a strong link between the degree of development and therefore the purchasing power of the population and the extent of Internet use to purchase goods and services in the EU countries. Thus, taking into study the levels of GDP / capita at purchasing power parity (Gross domestic product at market prices in current prices, PPS per capita) and the share of individuals who in the last 12 months of the reporting period have shopped online, in 2013 for which we have data for both indicators, it appears that at the level of the 28 EU members, higher levels of purchasing power are associated with greater tendency of people towards online purchases. (Figure 7)

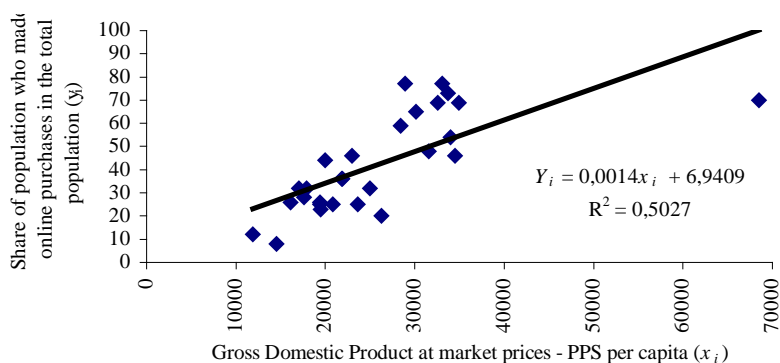


Figure 7 The link between Gross domestic product / capita and the share of the population who made online purchases in the total population in EU countries in 2013

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period.

From regression and correlation analysis there is a significant link between Gross domestic product / capita and percentage of individuals who ordered over the Internet in all EU countries, the correlation coefficient having the value of 0.709. (Table 4).

Table 4 The link between Gross domestic product / capita and the share of the population who made online purchases in total population in the EU-28, in 2013

Regression equation	Source of variation	Sum of the squares	Coefficient of determination	Correlation coefficient	F-Value	Significance level	Critical value for the F statistic
$Y_i = 0,0014x_i + 6,9409$	Total	11533,3	50,27%	0,709	26,28	0,05	4,22
	Model	5797,3					
	Error	5736,0					

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period. We studied the value of Gross domestic product at market prices in current prices, PPS per capita

In fact, if we remove from the analysis Luxembourg, which in terms of the analyzed indicators is found to deviate from the general trend recorded in the other EU countries (see Figure 7), the link between the two analyzed indicators is one more stronger (correlation coefficient is 0.829).

Table 5 The link between gross domestic product in current prices, PPS per capita and percentage of individuals who have bought online in all EU countries (excluding Luxembourg), 2013

Regression equation	Source of variation	Sum of the squares	Coefficient of determination	Correlation coefficient	F-Value	Significance level	Critical value for the F statistic
$Y_i = 0,0024x_i + 18,0033$	Total	10734,7	68,69%	0,829	54,86	0,05	4,24
	Model	7374,1					
	Error	3360,6					

Source: own processing from 2015 Eurostat data

Note: are considered people who have used computer / made online purchases for private use in the last 12 months of the reporting period. We studied the value of Gross domestic product at market prices in current prices, PPS per capita

Percentage of turnover from e-commerce on enterprises' total turnover

The development of this form of trade is reflected in the evolution of the turnover from e-commerce of EU organizations. Thus, in 2010, 14% of the turnover of companies with over 10 employees (excluding the financial sector) was obtained from electronic trade, a share that reached 15% in 2014. There is big difference, however, between EU members in this regard. Thus, from table 6 is seen that this is not a generalized phenomenon (countries like Lithuania, Germany, Netherlands, and Denmark recording declines in terms of the analyzed indicator). A dramatic increase in this indicator was recorded by Cyprus where turnover from e-commerce on enterprises' total turnover was raised by 8 times. It is found that in almost all EU countries there is a certain relationship between firm size and the percentage of turnover from e-commerce on enterprises' total turnover. Thus, except for Estonia, Cyprus, Latvia and Lithuania, in all other EU countries for which data are available, the lowest share of turnover from e-commerce were recorded in the category of small enterprises and higher levels in the category of large enterprises.

Table 6 Percentage of turnover from e-commerce on enterprises' total turnover, on some of the EU countries in 2014, and dynamics compared to 2010

Countries	Percentage of turnover from e-commerce on enterprises' total turnover (*without financial sector)				Dynamics of percentage of turnover from e-commerce on enterprises' total turnover (All enterprises with 10 persons employed or more) in 2014 compared to 2010 (%)
	All enterprises with 10 persons employed or more	Small enterprises (10-49 persons employed)	Medium enterprises (50-249 persons employed)	Large enterprises (250 persons employed or more)	
Bulgaria	3	1	2	6	150,0
Czech Republic	29	15	21	37	152,6
Denmark	16	11	18	19	94,1
Germany	13	7	11	15	72,2
Estonia	18	16	12	25	163,6
Ireland	52	28	45	63	216,7
Greece	2	n.d.	3	3	n.d.
Spain	15	5	11	21	136,4
France	15	6	14	20	115,4
Croatia	13	10	12	14	144,4
Italy	7	2	8	11	140,0
Cyprus	8	13	6	3	800,0
Latvia	8	3	13	10	114,3
Lithuania	7	4	11	8	50,0
Hungary	20	4	9	32	125,0
Malta	9	2	5	22	n.d.
Netherlands	12	5	8	17	85,7
Austria	13	4	9	22	100,0
Poland	12	n.d.	n.d.	18	150,0
Romania	6	4	5	8	150,0
Slovakia	13	4	8	19	118,2
Finland	19	n.d.	n.d.	n.d.	105,6
Sweden	18	9	18	22	100,0
United Kingdom	20	6	10	26	125,0
European Union (28 countries)	15	6	11	20	107,1

Source: own processing from 2015 Eurostat data

Percentage of enterprises selling online on total enterprises

Closely related to the shown indicator (Percentage of turnover from e-commerce on enterprises' total turnover), the proportion of businesses selling online in all EU-28 enterprises has been growing in recent years. Thus, referring to firms with over 10 employees (excluding the financial sector), 15% of these sales were made online in 2014 (minimum 1% of turnover), compared to 13% in 2010. Percentage of enterprises selling online on total enterprises by size confirms that greater orientation towards

electronic commerce is at the level of large enterprises, followed by the medium ones. (Table 7)

Table 7 Percentage of enterprises selling online (at least 1% of turnover) on total enterprises with 10 persons employed or more (without financial sector), in 2010-2014 period

Categories of enterprises (without financial sector)	Years				
	2010	2011	2012	2013	2014
Small enterprises (10-49 persons employed)	12	11	12	13	13
Medium enterprises (50-249 persons employed)	20	20	22	22	22
Large enterprises (250 persons employed or more)	31	32	35	35	35
All enterprises, (10 persons employed or more)	13	13	14	14	15

Source: own processing from 2015 Eurostat data

Categories of goods or services ordered over the Internet

As regards goods purchased online there is a greater propensity to purchase clothes and sporting goods at EU-28, 59% of 16-74 years population making Internet purchases of such goods (at least one purchase in the last year of the reporting period). Also, household goods, tickets for events, books / magazines / e-learning are among the categories of products purchased by a larger proportion of the EU population. (Table 8)

Table 8 Percentage of individuals who ordered goods or services, over the Internet, for private use in 2014, in the last year

Countries	Categories of goods or services									
	Food/ groceries	Clothes, sports goods	Electronic equipment	Computer software	Computer hardware	Shares/ financial services/ insurance	Films/ music	Household goods	Tickets for events	Books/ magazines /e-learning material
Belgium	9	47	17	18	11	6	21	26	39	27
Bulgaria	20	73	19	7	9	2	8	31	15	13
Czech Republic	6	52	27	6	4	4	5	12	35	16
Denmark	15	58	29	21	28	17	38	40	66	31
Germany	15	67	37	30	31	10	38	52	44	52
Estonia	13	53	20	11	13	21	12	30	50	20
Ireland	10	55	29	15	8	16	32	26	59	38
Greece	6	51	31	4	18	2	6	18	17	13
Spain	14	43	22	17	22	8	14	26	42	29
France	18	57	13	20	22	5	20	37	29	34
Croatia	5	48	22	9	24	4	7	24	18	23
Italy	6	35	21	15	9	6	13	26	21	31
Cyprus	11	61	24	10	23	2	4	11	13	14
Latvia	4	48	30	4	18	28	7	29	32	10
Lithuania	13	59	17	8	13	14	11	33	42	15
Luxembourg	15	50	28	33	20	8	37	32	52	62
Hungary	11	49	29	8	11	3	11	29	27	29
Malta	4	66	30	25	29	7	22	24	29	36
Netherlands	21	63	32	32	15	10	28	37	55	50
Austria	13	62	33	25	21	4	28	31	38	49
Poland	24	61	19	14	14	4	12	42	16	26
Portugal	16	42	18	30	7	11	21	21	23	32
Romania	6	58	21	9	11	3	15	16	18	29
Slovenia	24	53	22	11	28	5	10	37	34	27
Slovakia	10	61	18	8	6	3	10	40	16	30
Finland	5	65	27	27	23	27	31	29	56	36
Sweden	12	60	23	:	26	26	34	30	66	45
United Kingdom	32	67	34	32	19	29	43	57	48	46
European Union (28 countries)	18	59	27	24	21	13	28	41	40	39

Source: own processing from 2015 Eurostat data

Conclusions

The European market for e-commerce has shown a strong dynamics, as reflected in both turnover in this category of commercial activity, as well as in the growing number of consumers that purchases online. Market expansion was generated as a result of increased access of the population to technology, and by acquiring the habit of online buying by a increasing number of EU consumers. Thus, according EMOTA, turnover of e-commerce at European level increased from 185 Billion Euros in 2009 to 352 Billion Euros in 2013. Also at EU level, the share of those who made online purchases increased by 38.9% during 2009-2014 and by 66.7% in the period 2007-2014, and the share of turnover from electronic commerce of businesses with over 10 employees (excluding the financial sector) increased from 14 % in 2010 to 15% in 2014. The main categories of products purchased online are: clothes and sports goods, household goods, tickets for events, books / magazines / e-learning.

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