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INCOMES AND EXPENDITURES OF EUROPEAN E-CONSUMERS. COMPARATIVE ANALYSIS

Introduction

Internet sale continually increases in European countries. The increase amounted 16,1%¹ in 2012 compared to the previous year (in Poland, which is a country where the highest increase has been observed – 24,0%). Does in the era of growth slowdown of European economies (and lingering crisis in several countries) such a result surprise? And perhaps we could ask a question: how much would an increase in Internet sale amount if there was no slowdown and crisis in European economies? Such a big increase of Internet sale is consumers' merit, who while purchasing products to satisfy their needs more and more frequently use the Internet (where cheaper products may be found). The percentage of consumers in the countries of the European Union using the Internet increased in the years 2007-2012 of 14 percentage points (to 71%), including the increase of percentage of the Internet buyers which amounted to 11,9 percentage point².

The cognitive objective of the article is the analysis of incomes and expenditures for shopping on the Internet by consumers from selected European countries. The application objective is identify collection of the information, which could provide the basis of information in the decision making process for companies doing business on the Internet and directing their offer to e-consumers from selected European countries. It is assumed that the variation of expenditure in Europe e-consumers the same size as income differences. The results of direct research concerning comparative analysis of e-consumers' behaviour in Europe conducted in 6 ultimately selected European countries (France, Poland, Portugal, Romania, Slovakia and Italy) will be used to meet this objective. The research is

¹ Sprzedaż internetowa w Europie 2012. Raport Trusted Shops.

² <http://www.eurostat.eu>.

a part of the project titled *E-consumer in Europe. Comparative analysis of behaviour*. The project was financed from the sources of National Science Centre. The research of e-consumers' behaviour was conducted by a technique of random survey in 2012 on a sample of 1800 e-consumers aged 18-25. This sample comprised 54,5% of women and 45,5% of men. Almost 2/3 of respondents did not work. Every third respondent represented a 4-people household, every fourth a 3-people household, every fifth a 5-people household and bigger ones.

1. E-consumers' incomes

E-consumers' purchasing behaviour are dependent on the amount of financial sources, which are at their disposal. They, however, are a derivative of the amount of their financial budget, which is a juxtaposition of their incomes and expenditures. The source of e-consumers' incomes may, in most cases, be financial incomes, being a remuneration for work (characterized by a regularity of arrival) and the remaining incomes (mostly irregular ones), which comprise incomes from rent, bonds, interests, donations, inheritance or awards. In case of young e-consumers the source of income may be also scholarships and pocket money received from parents and other family members.

For most of studied e-consumers the source of financial income is work and pocket money received from parents. The work constitutes the income for over 60% of studied e-consumers from Portugal and Slovakia, every second French, almost 40% of Poles, every fifth Romanian and only every sixth Italian. Pocket money from parents is a source of income for over 80% of studied Romanians, almost 2/3 of Italians and Poles, for every second Slovak and less than 40% of the French and Portuguese. Every third studied French and every fourth Pole and Romanian obtains income from scholarship, where among the subjects from the remaining countries there are no more than every twelfth of them. More Poles and Romanians than the subjects from other countries obtain pocket from other family members (Table 1).

Table 1

E-consumers' sources of incomes from selected European countries (in %)

Specification	France	Italy	Poland	Portugal	Romania	Slovakia
Work	54,2	16,5	38,8	60,3	18,6	60,2
Scholarship	33,1	8,5	22,4	6,0	24,3	4,8
Pocket money from parents	36,9	70,2	65,3	39,0	83,8	55,4
Pocket money from other family members	11,4	12,9	16,7	5,7	17,2	7,8

Over half of studied French people possess income over €501, and almost every third between €251 and €500. Almost every fourth Slovak, every fifth Italian and Portuguese and a very small percentage of studied Poles and Romanians possess over €501 at their disposal. The income amounting €150 is at disposal of almost half of studied Romanians and Poles, but as well as for every third Italian and every fourth Slovak. On average the highest monthly income is obtained by studied young French, and the lowest one by Romanians. There is a lower level of income median observable among studied Italians than among the Portuguese (despite higher income median), which denotes that most Italians possess a relatively smaller income than the Portuguese. However, a higher income median was observed among Slovaks than among Italians and the Portuguese (Table 2).

Table 2

E-consumers' monthly net income from selected European countries

Specification	France	Italy	Poland	Portugal	Romania	Slovakia
(in %)						
to €150	4,3	35,5	44,8	2,2	47,3	23,9
€151–€250	3,7	17,7	27,0	63,6	33,5	20,8
€251–€500	35,6	29,0	22,6	16,9	15,6	31,4
over €501	56,4	17,7	5,6	17,3	3,6	23,9
(in €)						
average	653,53	496,29	221,56	434,19	180,56	400,28
standard deviation	379,09	674,60	161,79	408,76	133,19	382,74
median	600,00	230,00	176,50	250,00	154,00	300,00
dominant	600,00	100,00	120,00	250,00	119,00	200,00
minimum	50,00	40,00	12,00	100,00	22,00	20,00
maximum	3000,00	3000,00	925,00	3000,00	768,00	3000,00

The amount of e-consumers' income does not directly result in the evaluation of their financial situation. The Romanians, in spite of nominally lowest monthly incomes were evaluating their financial situation best – almost 3/4 of them considered it good or very good. Almost 2/3 of studied French, Poles and Slovaks, about 40% of Italians and only every third Portuguese also evaluated their financial situation as good and very good. Simultaneously, almost every sixth Portuguese and almost every tenth Italian estimated his/her financial situation as bad or very bad (Table 3).

The young e-consumers' incomes as a main determinant of purchasing behaviour do not basically diverge from the income of consumers not buying products on the Internet. Does the ease of doing shopping on the Internet (related, at least, to the opportunity of comparing products and prices by means of price

comparers in a very short time and in one place) result in e-consumers' expenditures?

Table 3

The evaluation of e-consumers' financial situation from selected European countries (in %)

Specification	France	Italy	Poland	Portugal	Romania	Slovakia
Very good	13,6	3,3	8,6	3,8	5,4	9,0
Good	51,9	38,9	55,5	29,1	65,7	51,0
Neither good nor bad	27,6	47,8	31,8	49,8	28,3	35,7
Bad	5,8	7,0	4,0	12,5	0,7	3,3
Very bad	1,2	3,0	0,3	4,8	–	1,0

2. E-consumers' expenditures

E-consumers' expenditures on single shopping on the Internet are diverse and fluctuate between €2 and €4050. Almost 2/3 of studied Poles, almost half of Italians, the Portuguese, Romanians, and Slovaks, and only every fifth French spend no more than €150 on single shopping on the Internet. However, over €451 is spent on such shopping by every fourth Portuguese and Slovak, almost by every fifth Romanian and French and by every sixth Italian and Pole. The highest average spent on single shopping was observed among the French, and the lowest one among Poles (Table 4).

The expenditures of studied e-consumers on single shopping on the Internet from a category of clothes and footwear are between €2 and €600. The Portuguese spent on average the most on single shopping (€108,42), and Poles the least (€31,95). Single expenditures on shopping for a category of books and multimedia range from €2 and €300. The Romanians spend on average the least (€22,22), and the Italians the most (€35,20).

Table 4

The amount spent by e-consumers from selected European countries on single shopping on the Internet – total

Specification	France	Italy	Poland	Portugal	Romania	Slovakia
1	2	3	4	5	6	7
(in %)						
to €150	19,8	56,1	66,0	49,7	55,8	48,9
€151–€300	26,2	21,1	10,4	17,8	13,4	17,7
€301–€450	32,7	7,3	9,7	7,6	8,8	8,0
€451 and more	21,3	15,4	13,8	24,8	22,1	25,3

Table 4 contd.

1	2	3	4	5	6	7
(in €)						
average	387,79	264,55	192,25	365,42	270,39	304,02
standard deviation	348,04	362,52	241,91	536,80	359,04	354,85
minimum	6,00	4,00	2,00	6,00	2,00	6,00
maximum	2250,00	1670,00	1361,00	4050,00	2551,00	2312,00
median	330,00	130,00	86,00	155,00	100,00	160,00
dominant	285,00	70,00	24,00	40,00	22,00	50,00

The highest average expenditures on single shopping by studied e-consumers were devoted to a category of computers and software. On average the most was spent by studied Slovaks on shopping for such products (€348,07), and almost twice less by the French (€184,07). The median of single expenditures on computers and software incurred by Poles is four times lower than among Romanians. The expenditures on single shopping for products in a category of sport and tourism range from €2 and €2000. The highest average expenditures on single shopping for such products are incurred by the Portuguese (€201,19). Almost four times less for this purpose is spent by the French on single shopping. Half of Poles do not spend more than €24 on single shopping for products in a category of sport and tourism (Table 5).

E-consumers spend once on products from a category of electronics and photo to the amounts ranging from €2 to €3050. The highest average amount spent on single shopping was noted among the Portuguese (€178,22), and the lowest among the French (€60,24). The median of single expenditures on electronics and photo is twice smaller among the Italians in comparison with Poles, the Portuguese and Romanians.

Table 5

The amount spent by e-consumers from selected European countries on single shopping on the Internet in accordance with a category of products – selected indicators (in €)

Specification	France	Italy	Poland	Portugal	Romania	Slovakia
1	2	3	4	5	6	7
Clothes and footwear						
average	66,16	80,76	31,95	108,42	50,12	61,33
median	50,00	55,00	24,00	62,50	26,00	50,00
dominant	100,00	30,00	24,00	100,00	22,00	20,00
Books and multimedia						
average	33,05	35,20	13,38	37,17	22,22	27,74
median	30,00	25,00	10,00	20,00	9,00	20,00
dominant	20,00	20,00	7,00	20,00	2,00	20,00

Table 5 contd.

1	2	3	4	5	6	7
Computers and software						
average	184,07	276,40	188,95	276,47	317,74	348,07
median	50,00	100,00	74,00	100,00	313,00	300,00
dominant	50,00	50,00	24,00	50,00	330,00	200,00
Sport and tourism						
average	58,46	178,25	64,84	201,19	93,10	94,20
median	32,50	135,00	24,00	100,00	26,00	50,00
dominant	50,00	200,00	24,00	50,00	219,00	50,00
Electronics and photo						
average	60,24	172,63	129,51	178,22	122,01	89,69
median	40,00	30,00	65,50	60,00	66,00	50,00
dominant	50,00	2,00	49,00	10,00	20,00	20,00
Health and beauty						
average	41,76	31,45	16,38	45,45	30,10	32,31
median	35,00	20,00	12,00	27,50	22,00	28,50
dominant	40,00	2,00	7,00	20,00	22,00	10,00
Food						
average	86,64	57,25	12,08	63,15	42,28	24,40
median	80,00	60,00	7,00	40,00	22,00	15,00
dominant	100,00	9,00	4,00	50,00	22,00	20,00

Nominally, e-consumers spend small amounts on single shopping for products from a category of health and beauty. On average the most is spent by the Portuguese (€45,45), and the least by Poles (€16,38). The expenditure of tested e-consumers on single shopping for food products range from €2 to €350. On average the French spent the most on single shopping for food (€86,64), and Poles the least (almost seven times less than the French). Half of the French spend once on food at least €80, whereas half of Slovaks no more than €15, and half of Poles no more than €7 (Table 5).

The expenditures of e-consumers on single shopping on the Internet do not directly result in their annual expenditures. High single expenditures are not a clear equivalent of frequent shopping, either. Almost 80% of the French spend more than €800 annually on Internet shopping. At least €800 annually is spent for this purpose by every fourth Portuguese, every sixth Slovak and every seventh Romanian as well. No more than €100 annually on Internet shopping is spent by over 40% of Italians, every third Pole and Romanian, every fourth Portuguese and every fifth Slovak. Over half of the French spend for this purpose at least €2050 annually (on average the French spend €1804,04), however, half of Poles not more than €159 annually (on average Poles spend €293,02) – Table 6.

Table 6

Annual e-consumers' expenditures from selected European countries on Internet shopping – total

Specification	France	Italy	Poland	Portugal	Romania	Slovakia
(in %)						
to €100	5,8	41,5	36,0	23,9	36,4	20,1
€101–€300	7,9	18,9	35,2	23,1	21,0	27,1
€301–€800	7,9	32,1	20,2	27,4	28,4	35,5
€801 and more	78,3	7,5	8,5	25,6	14,2	17,3
(in €)						
average	1804,04	310,40	293,02	684,51	394,51	569,06
standard deviation	997,16	369,51	408,83	946,27	497,63	596,06
median	2050,00	200,00	159,00	350,00	226,50	320,00
dominant	2200,00	100,00	74,00	100,00	22,00	50,00

The expenditures of studied e-consumers on annual shopping on the Internet for products from a category of clothes and footwear do not exceed €4000. On average the French spend the most on annual shopping (€305,13), and Poles the least (€87,97). Annual expenditures on shopping for products from a category of books and multimedia amount to €600. On average the most is spent by the French (€141,83), and the least by Romanians (€36,85). Slovaks spend the most on average annually on products from a category of computers and software (€383,47), and Poles spend the least (€192,50). The median of expenditure for this purpose is almost four times lower among Poles than among Romanians. Italians and Portuguese are the leaders in the amount of annual expenditure on products from a category of sport and tourism – on average annually they spend for this purpose at least €100 more than the French, Poles and Romanians. The Portuguese spend the most (€230,64), and Poles, the least (€92,85) on average annually on products from a category of electronics and photo. Half of the French spend on such products at least €150 annually, whereas half of Italians and Poles no more than €50 annually. The expenditures on products from a category of health and beauty are very diverse among e-consumers from selected European countries. The French spend four times more for this purpose than Italians. However, Slovaks spend maximally annually as much as €1400 on such products. The biggest differences in annual expenditures among consumers from selected European countries are observed in case of food. The French spend on average €1030 annually on food, whereas Romanians only €87,42. Very noticeable differences are observable in the median of expenditures among countries – especially between France and Italy, Poland and Romania (Table 7).

Table 7

Annual e-consumers' expenditures from selected European countries on Internet shopping in accordance with category of products – selected indicators (in €)

Specification	France	Italy	Poland	Portugal	Romania	Slovakia
Clothes and footwear						
average	305,13	110,78	87,97	206,24	163,76	222,40
median	300,00	70,00	49,00	100,00	86,00	100,00
dominant	400,00	100,00	49,00	100,00	219,00	100,00
Books and multimedia						
average	141,83	81,25	45,82	92,54	36,85	69,75
median	150,00	60,00	24,00	50,00	22,00	50,00
dominant	150,00	100,00	49,00	50,00	2,00	100,00
Computers and software						
average	272,03	283,36	192,50	320,96	318,08	383,47
median	200,00	150,00	74,00	200,00	263,00	200,00
dominant	200,00	50,00	74,00	100,00	330,00	200,00
Sport and tourism						
average	161,06	270,61	131,73	262,25	164,59	187,83
median	150,00	200,00	49,00	100,00	44,00	100,00
dominant	150,00	300,00	74,00	100,00	219,00	100,00
Electronics and photo						
average	166,67	178,00	92,85	230,64	178,46	158,72
median	150,00	50,00	49,00	100,00	66,00	100,00
dominant	200,00	50,00	24,00	100,00	44,00	50,00
Health and beauty						
average	202,29	48,90	65,38	163,88	65,76	110,32
median	180,00	25,00	38,00	55,00	33,00	80,00
dominant	200,00	15,00	49,00	50,00	22,00	100,00
Food						
average	1030,50	265,25	114,33	371,47	87,42	483,80
median	1200,00	29,50	24,00	200,00	33,00	80,00
dominant	1200,00	2,00	24,00	200,00	22,00	50,00

On the basis of data concerning annual incomes and annual expenditures of e-consumers from selected European countries on products from selected categories (excluding food and products from a category of health and beauty) Törnquist II functions were estimated³.

³ R. Wolny: *Metody ilościowe w badaniach rynku*. Wydawnictwo Akademii Ekonomicznej, Katowice 2009, pp. 50-51; R. Wolny: *Zastosowanie funkcji nieliniowych w modelowaniu popytu na usługi*. In: *Badania Marketingowe. Metody, Nowe technologie, Obszary aplikacji*. Red. K. Mazurek-Lopacińska. PWE, Warszawa 2008, s. 300-301; J. Gliński, K. Nowaczek: *Analiza komparatywna metod estymacji parametrów funkcji Törnquista*. In: *Zarządzanie przedsiębiorstwem. Wybrane aspekty*. Zeszyty Naukowe Uniwersytetu Gdańskiego, Gdańsk 2003, nr 2, p. 82; Z. Bartel: *Ekonometryczna analiza rynku*. PWN, Warszawa 1962, p. 79; B. Ciepielewska: *Proste metody ekonometrycznej analizy rynku*. Wydawnictwo Akademii Ekonomicznej, Katowice 1974, pp. 93-96.

Törnquist functions are used to approximate Engel curves (analyzing the influence of income on demand) and they take many forms depending on a kind of goods and services, for which they are estimated. In case of function evaluation for higher services it is assumed that demand occurs only when the income will exceed a given level and aims to a given permanent and limited boundary.

The evaluation of parameters of function demand was done by means of a method of quasi-Newton and Gauss-Newton (using the programme Statistica).

The evaluated demand model for products bought on the Internet is the following:

$$\hat{y}_t = \frac{777,25(X - 1057,00)}{X - 1995,47}$$

where:

\hat{y}_t – total annual expenditure,

X – annual e-consumers' incomes.

This model defines dependence of expenditures on products on the income of studied e-consumers, while establishing a fixed price level (Figure 1).

The estimation of function parameters indicated that demand on products on the Internet is noticeable in a studied group of European e-consumers when their annual income will reach a level of €1057,00 (γ). The saturation level of Internet products amounts in this case €777,25 (α) and constitutes an asymptote of annual expenditures on Internet products.

It is worth emphasizing in this case that average annual expenditures on Internet products constitute about 86% of saturation level of such shopping (depending on the country the saturation level may diverge from the average, e.g. in case of France it will be higher, and in case of other countries it will be definitely lower).

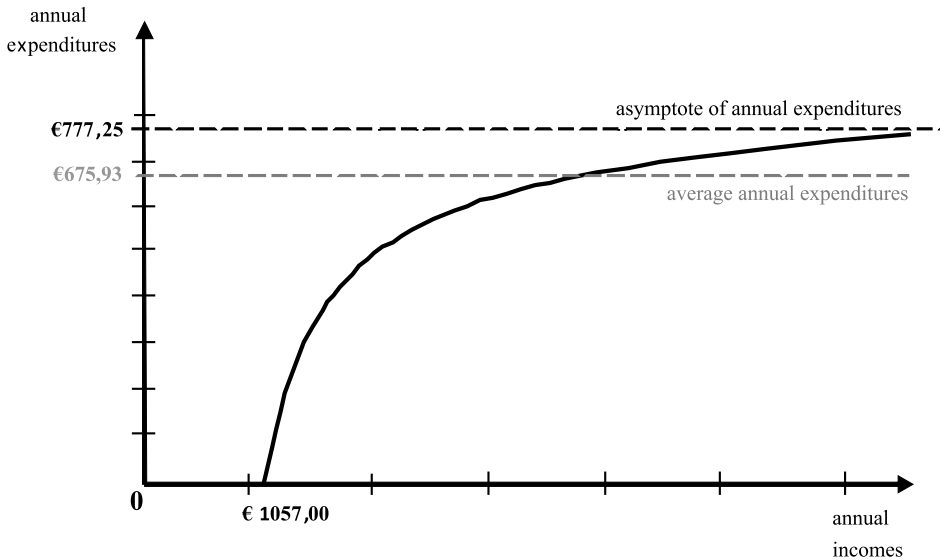


Figure 1. Törnquist II function of annual expenditures on Internet shopping of e-consumers from selected European countries

Conclusion

Summing up we may state that expenditures (both on single shopping, as well as on annual ones) reflect a big purchasing power of e-consumers from selected European countries. Differentiating expenditure of e-consumers in selected European countries is a large and the same size as the diversity of income – which confirms assumptions established in the preface. This differentiation is also high within national groups, which is confirmed by the high standard deviation. Expenditures will be increasing along with the development of electronic commerce. We may suppose that the highest increase will concern expenditures (shopping) for durable goods – which results from lower prices of such a type of products on the Internet) and food products (it is a group of products rarely bought on the Internet so far (excluding e-consumers from France). The increase of shopping in case of food will not exclusively be related to price, but rather with the comfort of doing such shopping. As the estimated Törnquist function indicates, annual expenditures on Internet shopping of the studied group of e-consumers may still increase, and in case of the subjects from Italy, Poland, and Romania at least of several hundred €.

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Summary

E-purchasing behaviour of consumers depend on of the volume of funds available to them. These however are derived from the amount of their budget, which is a compilation of income and expenditure. This article aims to analyze income and expenditure for the consumer online shopping from selected European countries. In this paper, the results of research on the comparative analysis of the behavior of e-consumers in Europe, carried out in 6 purposefully selected European countries (France, Poland, Portugal, Romania, Slovakia, and Italy).

Keywords: European e-customers' behaviour, customers' incomes, customer's expenditures