ARTICLE OPEN ACCESS

How Electronic Retailing Impact to Traditional Retailing - An Empirical Studied in the United States under Sales Value

Chu Ba Quyet, Hoang Cao Cuong

Thuongmai University

Email id: quyetcb@tmu.edu.vn, cuonghc@tmu.edu.vn

Abstract

Electronic retailing is the process of selling the goods and services through electronic media, particularly the internet. Nowadays, electronic retail sales are increasing. There are some ideas for that electronic retail sales growth will impact negatively to traditional retail sales. By analyzing the relationship between of electronic retail sales and traditional retail sale at the time 2000 – 2017 in the US, the purpose of this paper explains the nature of this impact. The results indicate that traditional retail sales have increased low during 2000 -2017 while electronic retail sales have increased higher. In nearest prospect, when both electronic retail sales shares and the growth speed of electronic retail sales reach to the larger amount and size, perhaps traditional retail sales will be negative growth. Used data are secondary data, using Microsoft excel 2010 for tabulating and graphing.

Keywords: ***electronic retail sales, traditional retail sales, impact of electronic retail sales, United States.***

Introduction

Electronic retailing is an important type of e-commerce. It is one of the important applications of the third industrial revolutionary achievement. Electronic retailing is expected to continue to grow strongly in the coming time. Starting around the end of the twentieth century, electronic retailing has been adopted by many businesses. It is also chosen by consumers as a regular shopping channel and replacing traditional shopping gradually. Electronic retailing has a lot of advantages. Electronic retailing has already impacted on traditional retail in developing process. This issue has published by a lot of past research.

The first view: Electronic retailing has a negative impact on retailers' revenue. This concept stems from the assumption that traditional retail sales will decline as a result of the growth of e-retail. Kesteloo Partner & Hoogenberg (2013) has noted that traditional retail sales will decline as a result of the growth of e-retailing, especially for those that require large display areas, or a large storage area. Wilson (2016) also claims that e-commerce has a negative impact on retailers' sales, and it causes to reduce the sales by up to 25 percent of traditional retail stores, and the consumer choice buying from online stores in the United States. Néstor Duch-Brown et al (2015), in a study of the impact of e-retailing on consumer and household appliances, suggested that traditional retail sales were declining due to the emergence of the online retail channel. The other negative impact of e-retailing on traditional retailing is not only the reduction of traditional retail sales (Wilson, 2016), (Duch-Brown & GCG, 2015), but also Increasing the number of traditional retailers going bankrupt (BSIC, 2017), and the numbers of small traditional stores will be more impacted by e-retailing and they have disappeared from the market. Lieber & Co. (2011) suggested the electronic 2 retailing will impact deeply on the traditional retail market, causing the increase of the number of people losing their jobs in the traditional retail industry.

The second point of view: e-retailing has a positive impact on traditional retail. Lieber & Syverson (2011) argued that the emergence of online channels in the marketplace can bring significant changes to the fundamentals of the market economy. This affects the results of both the market and individual levels. Although e-retailing impacts to traditional retail of sales, and in newly developed electronic retail markets, retail e-tail growth is higher than that of traditional retail, but the profitability of online stores are not so high. So, the decline of traditional retail stores is a trend, however, it is not the main reason to the traditional stores go bankrupt or shut down. Electronic retailing plays an important role in the retail industry, thanks to which traditional retailers can attract potential customers, and improve communication channels, enhancing their brand research and innovation than before, as well as increasing sales effectiveness (Lieber & GCT, 2011). Electronic retailing has had a positive impact on the retail industry, and is seen as a revolution in the retail industry. AmitSaha (2015) also argues that it is necessary to maintain and develop these two forms of retail, as they are mutually supportive, but traditional stores must innovate to fit into new business models.

However, how does the electronic retailing impact to traditional retailing in the USA? Whether as electronic retail sales increased, traditional retail sales will be decreased? Is there an exiting a cut

off relationship between electronic retail sales and traditional retail sales?

These are some questions need to clarify in this paper. By using the statistical figures of electronic retail sales and traditional retail sale at the time 2000 – 2017 in the USA, this article analyzes the impact of electronic retail sales to traditional retail sales in the USA economy. Finally, it gives some meaningful discussion in specific expected contexts at the time 2018-2020 in the US.

Theoretical development

E-commerce concept and e-tailing concept: E-commerce is the purchase, sale, exchange of goods, services, information through the Internet or computer networks and electronic means. Electronic commerce refers to using the Internet and intranets to purchase, sell, transport, or trade data, goods, or services (Turban et al, 2015). E-commerce transactions can take place between businesses and businesses, between businesses and consumers, or between two consumers. Electronic retailing is an ecommerce transaction between an enterprise to a consumer or between two consumers. Simply, retailing conducted over the Internet is called electronic retailing or e-tailing (Turban et al, 2015). E-tailing can be conducted through catalogs as well as online via auction. Electronic retailing and online selling are two terms interchangeable. From the consumer side, buyers can use desktop or laptop computers or smartphones connected to the Internet to purchase goods and services online. From the seller side, companies need to build an ecommerce website, or setting up an account in the e-marketplace, opening internet channels for online selling. This is one of the common ways for enterprises or companies to earn online sales.

Electronic retail sales or online sales: In USA, The United States Census Bureau releases the retail e-commerce sales figures annually. According to The United States Census Bureau, retail e-commerce sales are sales of goods and services where the business takes place over the Internet, an extranet, electronic data interchange (EDI) network, or other online system. Payment may or may not be made online, and delivery methods can be made online or offline. Business in this context is defined as an order placed by the buyer or price and terms of sale negotiated.

The two terms "electronic retail sales" and "traditional retail sales" are different words. In the past, when there was no e-commerce, retail sales of a business or a country or the economy is the traditional retail sales only. It is the total of the sales of retail goods over a stated period, usually a quarter or a year.

Since e-commerce has emerged, the retail sales of an enterprise or a country are calculated by the total of traditional retail sales plus electronic retail sales annually, usually in a fiscal year. So, the total retail sales in a particular country or specific enterprise is equal the total traditional retail sales plus electronics retail sales. The suggested equation is:

Total Retail Sales = Total traditional retail Sales + Total electronic retail Sales.

Until nowadays, there are not any country or economy in the world has online retail transaction separated only. However, in a specific business, there may be one or both kinds of retail transactions. For example, in a business has only a kind of electronic retail transaction, that business may also have electronic retail sales. When a business has two kinds of retail sales, calculating each kind of retail sales may not be difficult. The businessman may know each type of revenue separately, which kind of retail of sales increased or decreased clearance. Calculation of the separate cost, as well as the impact of these two types of retailing are not difficult.

Research questions

What is the impact of e-retail sales growth of traditional retail sales?
Whether increasing retail sales will reduce traditional retail sales in the USA economy?
When does the traditional retail sales growth is negative in the US economy?

Research methods

To answer these questions, this article examines the impact of e-retailing to traditional retailing based on the statistics on sale value, the growth rates for each type of sales in the time 2000 to 2017 in USA. The data are collected from the US Department of Commerce Statistics, eMarketer, and Statista@2018. The data are tabulated. Analysis results are based on charts by using the Microsoft Excel 2010 software. The analyzed equation is: Total retail sales = Total electronic retailing + Total traditional retail, in which:

Total retail sales denotes by: Vs_i,
Total traditional retail sales denotes by: Vt_i,
Total electronic retail sales denotes by: Vo_i,

The growth rate of traditional retail sales denotes by: p, then $p > 0$
Growth rate of electronic retail sales denotes by: q, then $q > 0$
The growth rate of total retail sales denotes by: k, then $k > 0$

The analyzed equations are:

$Vs_i = Vt_i + Vo_i$ describes the relationship between total electronic retail sales and total traditional retail sales in the year i.

$Vs_{i+1} = Vt_{i+1} + Vo_{i+1} = p*Vt_i + q*Vo_i$ describes the relationship between total electronic retail sales and total traditional retail sales in the year i + 1, also show the relationship between p, q, Vt_i and Vo_i.

$Vs_{i+1} = k*Vs_i$ show the relationship between total retail sales in the year i and i + 1.

Data source

Table 1: The total traditional retail sales, electronic retail sales and total retail sales yearly during the time 2000-2017

Year	Total electronic retail sales (in US $ Bil)	Total electronic retail sales' ratio	Total traditional retail sales (in US $ Bil)	Total retail sales fiscal year (in US $ Bil)
2000	25	0,84%	2955	2980

2001	35	1,14%	3025	3060
2002	47	1,54%	3009	3056
2003	60	1,84%	3200	3260
2004	74	2,13%	3396	3470
2005	90,0	2,43%	3606,7	3696,7
2006	115	2,96%	3765,1	3880,1
2007	132	3,4%	3873,8	4005,8
2008	141,89	3,6%	3811,01	3952,9
2009	144,4	3,97%	3494,1	3638,5
2010	165,0	4,2%	3724,5	3889,5
2011	192,0	4,68%	3908	4100
2012	229,0	5,3%	4071	4300
2013	261	5,85%	4199	4460
2014	298,3	6,43%	4341,7	4640
2015	341,5	7,22%	4388,5	4730
2016	394,9	8,1%	4465,1	4860
2017	452,5	8,96%	4597,5	5050

Sourse: US Department of Commerce, Census Bureau, Note: 2017 forecasted by eMarketer@2018,*

In table 1, total electronic retail sales' ratio equal Total electronic retail sales by Total traditional retail sales. In 2000, this ratio is 0.84 percent, and increased to 8.96 percent in 2017. Total retail sales fiscal year is the sum of Total electronic retail sales and Total traditional retail sales.

Result analyzing

The ratio of electronic retail sales in traditional retail sales: The ratio of electronic retail sales in traditional retail sales is increasing yearly, the opposite of ratio of traditional retail is 5 trending slow down year to year. The given data shown in 2000, electronic retail sales is 0.84 percent of total retail sales, reach to 4.32 percent in 2010, growth of approximately five times. This ratio is 8.96 in 2017. The average growth ratio at the time 2000 - 2017 is 0.45 percent. See in chart 1, we know the trend line of electronic retail sales is up, y = 0,4472x – 0, 1042, denotes the positive growth of the sale value of electronic retailing.

This function explains the rate of growth is reducing gradually. Contrary, the trend line of traditional retail sales is down.

Chart 1 illustrates the trend line of traditional retail sales ratio with growth coefficient is negative, y = -0,4399x + 99,979.

The ratio of traditional retail sales in 2000 is 99.16 percent, decreasing to 96 percent in 2009, and down to 91.04 percent in 2017. Because the total ratio of electronic retail sales and ratio of traditional retail sales equal 1, mean a part of the sum is increased then the difference will decrease.

First conclusion: the growth of ratio of electronic retailing value will cause the decrease of ratio of traditional retail sales. Electronics retailers are sharing market to traditional retailers. There is a moving of buyers from traditional shopping to online shopping were happening at the time 2000 for now.

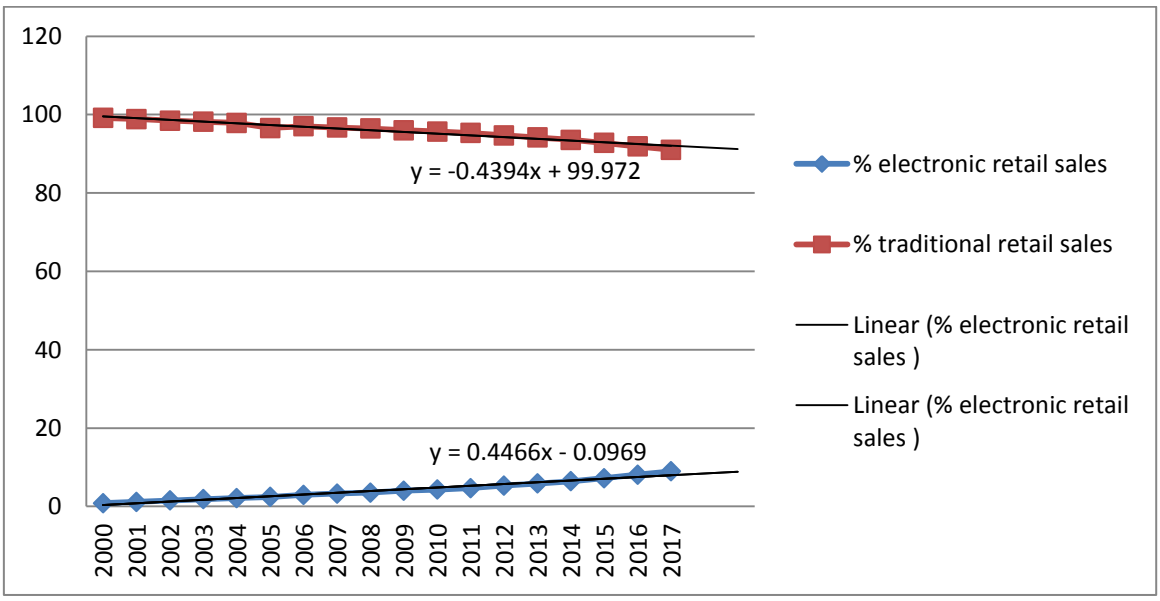

Figure 1: Ratio of both electronic retail sales and traditional retail sales in the US in 2000-2017, and the two functions illustrates the trend lines.

Second conclusion: Both electronic retail sales and traditional retail sales are increasing in temporary. The sales growth rate is the ratio of sales of the current year with the previous year or the next year to the current year. Chart 2 illustrates separately the growth rate of electronic retail sales, traditional retail sales and total retail sales year to year. In the stage 2000 - 2009, the growth rate of electronic retail sales was the highest between 30 percent to 40 percent. In 2009, this ratio was decreased to the lowest level, and recovery in the time 2010 to 2017. In the current several years, the growth rate of electronic retail was maintaining the averaged value about 14 percent to 15 percent. However, the growth rate of traditional retail was achieving a positive ratio level, even in the stage of 2000 – 2008, the averaged value of growth rate of traditional retail sales equal 4.5 percent, the lowest rate of growth happened in 2001 is 1.9 percent, and the highest rate of growth happened in 2005 is 6.1 percent. Exception in the year 2009, the growth rate or traditional retailing of sales was negative 8.8 percent because in this year the global economy was bottom of the recession.

The growth rate of traditional retail sales was recovered at the time 2011 to 2017. During these years, the averaged growth rate of traditional retail sale was about 2.5 percent to 3 percent. Although the electronic retail sales increase and the growth rate of electronic retail was fairly high at the time 2000 – 2017, and the ratio of traditional retail is decreased, the traditional retail of sales is executing a positive growth rate in the long period. Two trend lines illustrate the growth rate of traditional retail sales and electronic retail sales are down, with coefficient value is negative. Only the trend line with a growth rate of retail sale is up with coefficient is positive, but this growth rate is very small. By analyzing these figures and the relationship the growth rate of electronic retail sales and traditional retail sales, we can answer the second question:

When does the annual retail sales increase, but the traditional retail sales growth is negative in US?

Because the growth rate of electronic retail sales has been always higher the growth rate of traditional retail sales than the growth rate of total retail sales is higher the growth rate of traditional retail sales annually.

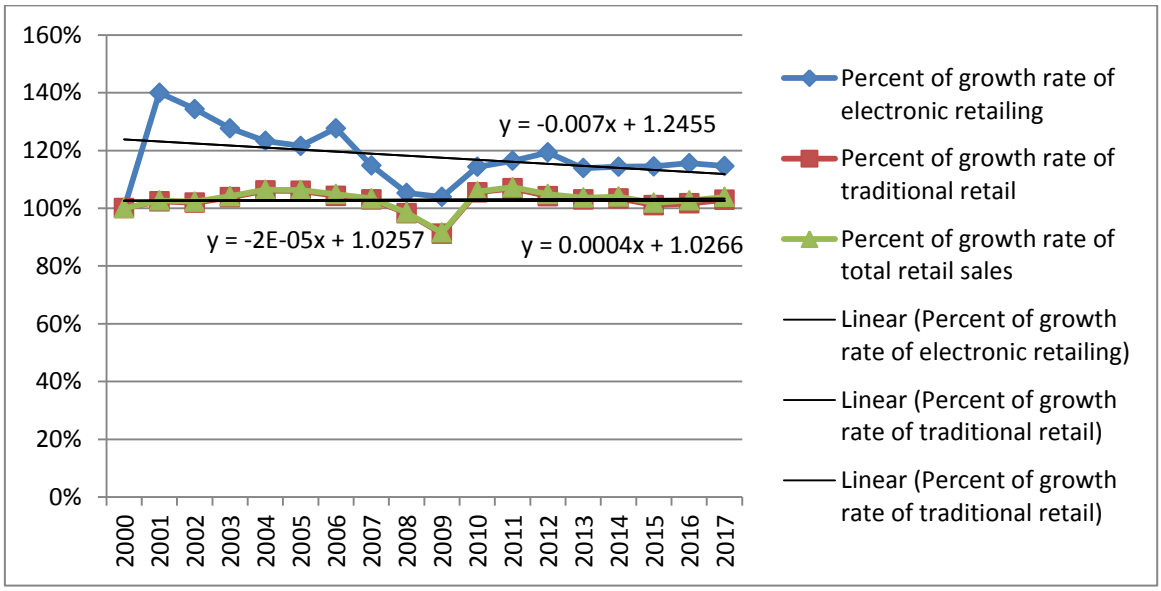

Figure 2: The growth rate of separately electronic retail, traditional retail and total retail in US from 2000 - 2017

In the above discussion, we see that the growth of electronic retail impacts to traditional retail but not absolutely. The growth rate of traditional retail sales reduces but the annual traditional retail sales is not decreasing. The current year' traditional retail sale is higher than the past year value and the next year retail sales is also higher than the present year retail sales.

With the various variables in the above equations, we can easily set up the following equation: $Vt_{i+1} = p*Vt_i = Vs_{i+1} – q*Vo_i = k*Vs_i – q*Vo_i$.

We see the next year' traditional retail sale Vt_{i+1} relates to the growth rate of total retail sales k, total current year' electronic retail sales Vo_i, and growth rate of electronic retail sales q. The reduces or increase of traditional retail sale depend on the reduces or increase of retail sale and increase or decrease of electronic retail sale. Two elements effect to next year' electronic retail sale are, first element: q, and the second element: the past year' electronic retail sale Vo_i. Because of this, although q is very high, example in the year 2001, 2002, q value is 140% and 134%, but Vo_i is very low about 1 percent of total retail sale then the resulting traditional retail sale is higher than previous year' traditional retail sale, $Vs_{i+1} > Vs_i$.

Even electronic retail sale achieved 8 per cent to 9 percent of total annual retail sale with the growth rate 15 percent to 17 percent in 2016 and 2017, but in these years the growth rate of retail sale achieved 2.7 percent to 3.9 percent, resulting in the growth rate of traditional retail sale is positive, $p > 1$.

Discussion

Electronic retailing affects to traditional retailing both in positive and negative terms, as discussed in the previous studies. However, in the United States, the largest economy in the world, through analyzing results show that electronic retailing has grown

dramatically in the past two decades, and has had an impact on traditional retail. Both electronic retail sales and traditional retail sales have increased. This proves that traditional retail and electronic retail does not cancel in the US economy. Contrarily, they are supporting mutual, as in previous studies. Destruction only occurs in some commodities, some markets, or companies that do not well in the combination of these two forms of retail.

May explain this situation as follows: The difference in the way of selling, the electronic retailing takes place over the Internet, so the ability to sell across borders and globally, while traditional retail mainly takes place at the store, in a specific place. Therefore, both the traditional retail sales and electronic retail sale are increased. It also explains the wrong thinking, the buyer moves online shopping will cause the decrease in store shopping. Actually, both online shopping and offline shopping are needed for buyer nowsday. Online selling or store selling is supporting each other effectively.

The development of trade in the United States shows that businesses, not just traditional retail businesses are also bankrupt. But this can be considered a natural rule for selection and to adapt to the new business environment.

Based on the result, it can be further discussed to predict and assume the future scenarios of the e-retailing sales for the year 2018-2020. However, the prediction is based on the assumptions drawn from the results. The table 2 is the indicator of the assumed scenario forecasted for the year 2018-2020.

Assumed scenarios in 2018 - 2020

The scenario for forecasting the growth rate of traditional retail sale may be reality in 2018 – 2020, the electronic retail sale will be shared 10 percent total traditional retail sales, and the growth rate of electronic retail sales will be 15 percent. By calculating q value when k value is varied, we can give the following statements (see Table 2).

Table 2: Assumed scenarios in which $Vt_i = 10\ Vo_i$, q = 15 percent

k =	**$Vt_i = 10\ Vo_i$, q = 15%**	**Statement**
1,01	p = 99,6	The growth rate of traditional retail sale is negative
1,02	p = 100,7	The growth rate of traditional retail sale is positive
1,03	p = 101,8	The growth rate of traditional retail sale is positive
k>1,03	p>101,8	The growth rate of traditional retail sale is positive

See the table 2, column 1, we know: if the growth rate of electronic retail sale has achieved 15 percent, and the growth rate of total retail sale is above 1 percent, then it is difficult or never happened the case p < 1. Forecast until to 2020, electronic retail sale will continue shares market to traditional retail sales, and the growth of electronic retail sale impacts to the decline in traditional retail sale is still small. Both traditional retail sales growth rate and electronic retail growth rate will be positive.

Assumed scenarios in the future

According to eMarketer @2018, electronic retail sale will be shared 10 to 11 percent of total retail sales, mean about 9 to 10 percent of total traditional retail sales in near future. If other elements such as: total demand, total supply and pricing are not strongly changing, the assumed scenario is tabled as following:

Table 3: Assumed scenarios for calculating the growth rate of traditional retail sale, according to the given figures q, and k

K	$Vt_i = 12\ Vo_i$, q = 120	Vt_i=10 Vo_i, q = 120	$Vt_i = 7\ Vo_i$, q = 120	Vti = 5 Voi, q = 110	Vti = 5Voi, q = 108
1,01	p = 99,4	p = 99,1	p = 98,3	p = 99,2	p = 99,6
1,02	p = 100,5	p = 100,2	p = 99,4	p = 100,4	p = 100,8
k>1,02	p >100,5	p>100,2	k = 1,03, p = 100,6	p>100,4	p>100,8
			k>1,03, p >100,6		

See table 3, six p values are less than 100. When p < 100, the growth rate of traditional retail sale is negative, the current year' traditional retail sale will be less than the previous year' traditional retail sale. Look the column 3 in the table 3, if electronic retail sale shares 10 percent of total traditional retail sales (approximate 9 percent of total retail sales), and in the current year, the growth rate of electronic retail sales reach to 20 percent, the growth rate of total retail sale is 1 percent only, then the growth rate of traditional retail sale is negative -0.9 percent (see the column 3, row 2). And when electronic retail sale shares 14 to 15 percent of total traditional retail sales, and the growth rate of electronic retail sales reach to 20 percent, the growth rate of traditional retail sale will be negative if the growth rate of retail sale is 2 percent (see column 4, row 3 in table 3).

Conclusions

The results of the paper may provide important implications for developing strategies in retail industry in the USA in the future. Although e-tailing has a lot of advantages for consumers and sellers, however e-tailing is only one of two types of selling. E-tailing is a choice and a substitute, but it is not changeable for traditional retail absolutely. In some case, e-tailing is a good choice for consumers, and vice versa for the seller. E-tailing will continue to develop with good speed growth. It will impact to traditional retail. Expected time, traditional retail will decrease to negative depending on the development of e-tailing shares in the amount and speed growth.

The limitations of research

Research excludes to analyse the impact of electronic retailing to traditional retailing by category, to study which electronic retailing of category effects strongly to traditional retail and vice versa.

References

[1] AmitSaha (2015), A Study on "The impact of online shopping upon retail trade business", *IOSR Journal of*

Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. PP 74-78.

[2] BSIC (2017), The Effects of E-Commerce on Shopping Malls and on the Consumer Retail Sector – a US Case Study, http://www.bsic.it/effects-e-commerce-shopping-mallsconsumer-retail-sector-us-case-study/

[3] Efraim Turban, D. King, J. Lee, Liang and C. Turban (2015), *Electronic commerce A Managerial and Social Networks Perspective*, Eighth Edition, Spriner Texts in Business and Economics.

[4] Ethan Lieber & Chad Syverson (2011), *Online vs. Offline Competition*, Prepared for the Oxford Handbook of the Digital Economy

[5] Marco Kesteloo Partner & Marc Hoogenberg (2013), *Offline retail in an online world*, Strategy& Formerly Booz & Compnay, PWC

[6] Marianne Wilson (2016), Study: E-commerce having negative impact on retailers' operating earnings, https://www.chainstoreage.com/article/sears-hopes-lure-store-shoppersmom-online-pickup/

[7] Néstor Duch-Brown, Lukasz Grzybowski and Frank Verboven (2015), *The impact of online sales on consumers and firms. Evidence from household appliances*. Institute for Prospective Technological Studies Digital Economy Working Paper 2015/15. JRC98079.

[8] US Department of Commerce (2006), Statistical Abstract of the United States: 2007, the national data book, 126 th edition, ISBN 0-16-076301-0.

List of website: www.emarketer.com, www.statista.com, www.census.gov