

## **ASPECTS REGARDING THE ADOPTION OF E-COMMERCE IN ROMANIA**

*Daniel MICAN<sup>1</sup>*

**Abstract:** *The abundance of devices connected to the Internet has made electronic commerce much more versatile and complex. With the help of low investments, any company can enter the global market and compete with the big companies in the field. This has led to a change in the way business is conducted worldwide. Understanding the evolution of current markets and user behavior is a challenge for companies that are active in the sale of products and services. Therefore, in this article, we will analyze the data available for global markets and the differences between them and the local market in Romania. Thus, we will see the distribution of users on the largest market segments according to different key metrics such as usage, reach, revenue, penetration rate, ARPU, gender, users by age, sales channel and user income.*

**Keywords:** *Electronic commerce, Technology adoption, Segment analysis, Consumer behavior, E-commerce usage, Users attitude, Online shopping*

### **1. Introduction**

The multitude of devices currently on the market, such as computers, laptops, ultrabooks, smartphones, tablets or TVs connected to the Internet, allow users to access online retail offers and made online purchases to become not only more versatile but also more complex [1]. E-commerce has the major advantage of eliminating the need for huge investments and infrastructure spending to develop a global presence, which has led to a revolution in the way business is conducted worldwide. For developing countries, it has the potential to offer solutions to many of the important problems, such as the provision of distance healthcare or education [2].

The development of e-commerce offers a number of opportunities for producers and retailers, but it also comes with countless challenges for organizations, which requires a thorough review of both marketing strategies and consumer behavior information [3]. The implementation and use of electronic commerce allow on the one hand the access by the sellers of narrow market segments that are widely distributed, and on the other hand, the buyers can access the global markets, thus having access to a greater number of products, from to a variety of sellers, at lower

---

<sup>1</sup> Assistant Professor, Babeş-Bolyai University, Cluj-Napoca, Romania,  
daniel.mican@econ.ubbcluj.ro

costs. E-commerce brings advantages not only for large companies but also for small and medium-sized enterprises, which can compete with larger businesses, offering independence in time, as location, or facilitating communication [4]. Adopting e-commerce in business is an innovative move for any organization with significant effects in reducing costs, increasing quality and performance [5].

E-commerce is expected to continue its double-digit growth over the next five years, remaining the fastest growing form of commerce. Just as cars, airplanes, and electronics defined the twentieth century, so will e-commerce define business and society in the 21st century. The rapid move to an economy and an e-commerce company is driven by established companies such as Tesco, Ford, IBM, Carrefours and General Electric, but also by online companies such as Google, Amazon, Apple, Facebook, Yahoo, Twitter, or YouTube. Thus, students in the fields of business and information technology are recommended to establish a solid foundation in e-commerce in order to be efficient and successful managers in the next decade [6].

Regarding the international e-commerce market, according to [7], the revenues in 2019 are worth EUR 1,594,574 million. It is estimated that revenues will have an annual growth rate of about 10.4%, reaching a market volume of EUR 2,368,216 million, by 2023. The largest market segment is fashion, which has a market volume of 528,999 million. EUR in 2019. User penetration is 52.3% in 2019, and according to estimates, it is expected to reach up to 61.1% in 2023. The local e-commerce market in Romania, according to [8], amounts to EUR 2,465 million in 2019. It is estimated that revenues will have an annual growth rate of 10.0%, reaching a market volume of EUR 3.611 million, by 2023. The largest market segment in Romania is electronics & media, with a volume market share of EUR 747 million in 2019. The user penetration at the local level is 53.7% in 2019 and is expected to reach 58.6% by 2023.

For both e-commerce application developers and human-computer interaction researchers, adoption factors, as well as the moderating effects of demographic data, are important topics. Although there are research efforts to explain the adoption of e-commerce systems, one of the main questions to be answered is related to normative and affective factors [9]. Thus, in this article, we try to review the main features and to analyze the e-commerce market both globally and locally. Therefore, we will analyze the behavior of consumers shopping online and how they are distributed according to different metrics. The market's largest segments will be analyzed by key metrics for usage, reach, revenue, penetration rate, ARPU, gender, users by age, sales channel and user income.

## **2. Literature review**

Research in the field of e-commerce has grown enormously in recent years and has become extremely popular in both industry and academia. Thus, research trends in e-commerce are extensively represented in [10], where over 1000 articles were

analyzed on the topic of e-commerce between 1987 and 2017. Although this research is not exhaustive, it offers a broad perspective on research trends in e-commerce based on an extensive survey of IS magazines. In addition to evolution, e-commerce research is classified into three categories: business models, service relationships and technology. A model that explains how the strategic value of e-commerce is perceived and how it influences managers' attitudes to adopt e-commerce has been proposed in [4]. The obtained results reveal a significant relationship between the perceived strategic value of e-commerce and the factors that influence the adoption of e-commerce in SMEs. Specifically, top managers who perceived e-commerce as adding strategic value to the company had a positive attitude towards its adoption.

The dynamics of innovation adoption were studied in [5] and took into account both local and interactive effects of early adoption in relation to the late adoption of e-commerce. The results of the analysis show that the essential effects of early adoption are concentrated on the nature of innovations, and those of subsequent adoption are focused on the problems of implementing innovations. Unfortunately, there are countries that fail to fully enjoy the benefits of e-commerce. Therefore, it was found that there is a major difference between the rates of adoption, implementation, and use of e-commerce in developed and developing countries, the latter remaining significantly behind. The research carried out in [2] aims to understand the main reasons, respectively the barriers that these countries face and which impede the development and adoption of e-commerce. It also sheds light on the research of critical success factors and the measures that should be taken to stimulate e-commerce, respectively the potential impact for developing countries.

The acceptance of e-commerce by users is determined by the attitude towards the system and personal innovation in the field of information technology, and personal innovation has a moderating effect on the acceptance of e-commerce [3]. The social norms, perceived pleasure and the way they, together with the users' gender, influence the intention to adopt an e-commerce system were tested in [9]. The results of the study revealed that the influence of social norms is greater in the female group, and the influence of pleasure is stronger in the male group. In the context of choosing consumer sales channels [1], they stressed the need to understand the benefits that individuals get from each retail channel in order to determine efficient, customer-centric multi-channel sales strategies. The findings show that retailers can improve the consumer shopping experience by offering alternative channels that contribute differently to online customer browsing.

### **3. Data analysis and results**

The data extracted and aggregated in the tables of this research come from [8] and include the sale of goods through digital channels to a private user (B2C). Therefore, both purchases made from desktop computers and those purchased

through mobile devices are included. This paper does not include data from the electronic commerce market which refers, in particular, to digitally distributed services, digital media downloads or flows, digital purchase or resale of used goods, respectively B2B or C2C markets. The figures presented refer to the gross annual income and do not take into account the transport costs.

The Internet penetration rate [11] is defined as the percentage of the population that has ever used the Internet to browse for a product online, and Internet shopping adoption rate as the percentage of the population that has ever purchased anything directly online. More exactly, the penetration rate [8] is the measure of use, or reach, and indicates the share of individuals in a country, region, or group that uses e-commerce. The average revenue per user (ARPU) [12] is a key metric that is commonly used by regulators and industry observers to track and compare market performance. Table 1 shows the data for these indicators split on the five continents. Regarding the number of users, most are in Asia, with a value of 1,893.6 million users, and the fewest in Australia, with a value of 21.4. Europe and America have a close number of users, with values of 558.2 and 584.1 million. In terms of penetration rate, Europe is at the top, with a penetration rate of 66.1, followed by America with 60.8, and the lowest value is Africa 26.5. Regarding ARPU, Australia is by far the highest value, namely 846.06. Below is America with a value of 507.84, followed by Europe with a value of 463.55. Africa is at a great distance from the rest of the continents with a value of only 35.72.

**Table 1. E-commerce key metric for usage, reach and revenue**

	Africa	Asia	Australia	Europe	Americas
Users in millions	288.6	1,893.6	21.4	558.2	584.1
Penetration Rate (%)	26.5	44.2	55.5	66.1	60.8
ARPU in €	35.72	363.51	846.06	463.55	507.84

The revenues on the largest segments of the market, segmented by continent, are shown in Table 2. Thus, we can see that in the field of fashion, which holds the supremacy, the highest incomes are made in Asia, being worth 249,903 million €. The values for America and Europe in the field of fashion are very close, of 75,194, respectively 74,969. And Africa is in the last place, with a value of 2,605. In the field of electronics & media, Asia again ranks first with a value of 151,468, followed by America and Europe with fairly close values, namely 68,401 and 63,787, respectively. The least developed segment is the food & personal care, and the lowest value is 962 recorded in Africa and the largest one is 58,474 in Asia.

**Table 2. Revenues in the market's largest segments**

Revenue in million €	Africa	Asia	Australia	Europe	Americas
Fashion	2,605	249,903	5,998	74,969	75,194
Electronics & Media	3,202	151,468	3,703	63,787	68,401
Food & Personal Care	962	58,474	2,446	31,383	29,475
Furniture & Appliances	1,884	105,256	2,412	36,358	51,441
Toys, Hobby & DIY	1,657	123,242	3,551	52,273	72,134

Regarding the distribution of users by age ranges, we can see in Fig. 1 that there are significant differences between Asia and Europe. For the other continents, the data are not available, but we have included the data that are available for Romania. We can see that the age range 18-24 has a share of 23.3% in Asia and only 13.0% in Europe. This discrepancy is also maintained over the 25-34 year range where we have 34.3% in Asia and in Eurpoa 23.7%. In the range of 35-44, the values are relatively close. Differences are found in the range of 45-54, with a value of 14.0% for Asia and 22.9% for Europe. In the 55-64 range, the discrepancy is accentuated quite a lot, and the value of 4.4% for Asia is 3.9 times lower than the value of 17.0% for Europe. Therefore we can conclude that in Asia young people are very active and present on the Internet in the e-commerce market, and in Europe the old ones. As an overview, we can see in Fig. 1, that there are no major differences between the age segments between the inhabitants of Romania and those of Europe.

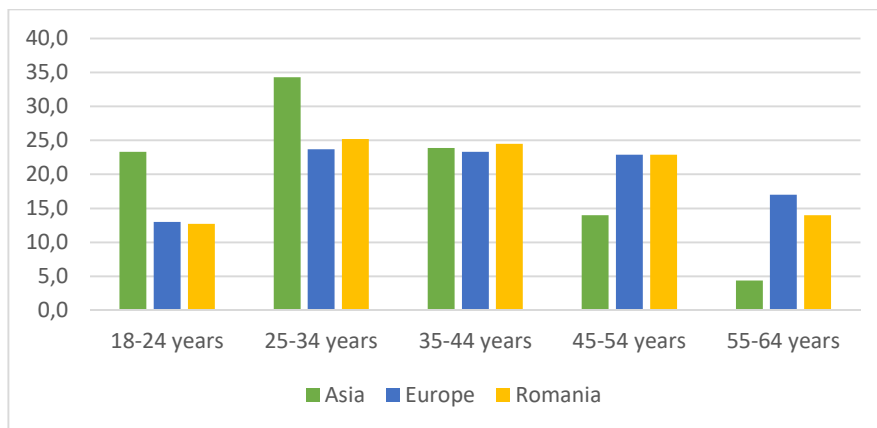


Figure 1. Distribution of users by age

In the following, we will take an overview of the e-commerce market in Romania. The data collected and presented in the following are extracted from [8] and

represent the latest available values, namely for 2017. In terms of the Romanian e-commerce market, it reached a value of 2,017 revenues in million €. In Table 3 we can see key metrics like revenue, number of users, penetration rate and ARPU on the main product segments.

**Table 3. Market share of the main ecommerce segments**

Category	Revenue in million €	Users in millions	Penetration Rate (%)	ARPU in €
Apparel	<b>315</b>	<b>5.3</b>	<b>27.1</b>	58.99
Bags & Accessories	64	2.8	14.3	22.64
Books, Movies, Music & Games	154	3.0	15.5	50.77
Consumer Electronics	<b>497</b>	<b>4.8</b>	<b>24.4</b>	<b>103.69</b>
DIY, Garden & Pets	35	2.7	13.9	12.92
Food & Beverages	30	1.6	8.2	18.92
Footwear	44	2.9	14.7	15.07
Furniture & Homeware	194	1.9	9.5	<b>103.20</b>
Hobby & Stationery	<b>246</b>	2.2	11.4	<b>109.49</b>
Household Appliances	133	3.5	17.6	38.48
Personal Care	131	<b>3.9</b>	<b>19.7</b>	33.80
Sports & Outdoor	72	2.1	10.9	33.57
Toys & Baby	102	2.9	14.5	35.54

In Romania, the highest revenues are brought by the electronics segment, which has a value of € 497 million, representing 24.64% of the total sales. In the second place is the apparel segment with a value of € 315 million, representing 15.62%, and the third is the hobby & stationery with € 246 million, representing 12.20%. The last places in terms of sales value are footwear, DIY, garden & pets, and food & beverages. Regarding the degree of penetration, the consumer and consumer electronics segments are again in the first place with 27.1%, respectively 24.4%, and in the third-place, it appears surprisingly personal that with 10.9%. The segments with the lowest penetration are sports & outdoor, furniture & homeware and food & beverages. Regarding the number of users in these segments, we can say that the values are strongly correlated with the penetration rate values. Thus, the ranking is kept similar for the two metrics. For the ARPU metric, the highest values are found for the hobby & stationery, consumer electronics, and furniture &

homeware categories, with fairly close values. On the opposite side of the ranking are again the segments food & beverages, footwear and DIY, garden & pets.

Analyzing the data in Table 4 we can see that in only four of the thirteen segments the percentage of men is higher than that of women. Thus, men are the majority in the consumer electronics (63%), sports & outdoor (57%), household appliances (53%) and DIY, garden & pets (50.50%) segments. In terms of women, the most popular category is bags & accessories (72%), followed by personal care (71.70%), apparel (59.80%) and toys & baby (59.30%). It seems that women's appetite for shopping is also reflected in online shopping, categorically outpacing men in nine of the thirteen categories analyzed.

**Table 4. Distribution of user preferences for the main market segments**

Category	Gender (%)		Users by age (%)				
	female	male	18-24 years	25-34 years	35-44 years	45-54 years	55-64 years
Apparel	59.8	40.2	<b>14.5</b>	24.9	23.9	22.6	14.1
Bags & Accessories	<b>72.0</b>	28.0	<b>17.9</b>	26.6	24.1	19.9	11.5
Books, Movies, Music & Games	51.2	48.8	13.7	23.5	24.0	23.8	15.1
Consumer Electronics	37.0	<b>63.0</b>	12.7	25.1	24.4	22.9	14.9
DIY, Garden & Pets	49.5	50.5	7.6	21.9	24.0	<b>27.6</b>	<b>18.9</b>
Food & Beverages	51.0	49.0	13.4	<b>29.0</b>	24.5	20.4	12.7
Footwear	55.5	44.5	14.5	25.2	25.2	22.1	13.1
Furniture & Homeware	56.4	43.6	9.6	28.9	24.6	23.1	13.9
Hobby & Stationery	56.4	43.6	12.5	24.3	25.7	23.4	14.0
Household Appliances	47.0	53.0	8.7	24.9	24.1	<b>25.2</b>	<b>17.1</b>
Personal Care	<b>71.7</b>	28.3	13.0	25.7	24.8	21.2	15.3
Sports & Outdoor	43.0	<b>57.0</b>	12.6	26.2	<b>26.9</b>	23.0	11.4
Toys & Baby	59.3	40.7	7.8	<b>32.8</b>	<b>31.6</b>	16.4	11.4

Regarding the age segments, we can see that the vast majority of users who buy online are in the ranges 25-34 (25.20%), 35-44 (24.50%) and 45-54 (22.90%). Regarding the distribution of users by age ranges and interest categories, we can see that the highest percentage, of 32.80%, is at the intersection of the range of 25-34 years with the toys & baby category. The next value of 31.60% is represented by the 35-44 range, which also has a preference for the toys & baby category. In the

following, we will detail the preferences of different age categories for the main market segments. Thus, the age group 18-24 is particularly interested in bags & accessories (17.90%), apparel (14.50%) and footwear (14.50%). Users between the ages of 25-34 are primarily interested in toys & baby (32.80%), food & beverages (29%) and furniture & homeware (28.90%). Those in the 35-44 range have preferences for toys & baby (31.60%), sports & outdoor (26.90%) and hobby & stationery (25.70%). As we age, we see that preferences for different categories are beginning to change significantly. Thus, for the age category 45-54 we see that the main preferences are represented by DIY, garden & pets (27.60%), household appliances (25.20%) and books, movies, music & games (23.80%). The preferences of the oldest users, namely those in the 55-64 range are somewhat similar to those of the previous age category. Thus, they mainly fall into the categories DIY, garden & pets (18.90%), household appliances (17.10%), respectively personal care (15.30%).

Regarding the distribution channels, we can see that online sales have the greatest advantage in the fields of consumer electronics and apparel, both with a value of 13%. Of all the categories for which we have data available, the category of food & beverages is the one with the lowest percentage of online sales, namely 0%.

**Table 5. Distribution channels and preferences for the main market segments**

Category	Sales Channels (%)		Users by income (%)		
	Online	Offline	low income	medium income	high income
Apparel	13	87	<b>28.6</b>	34.7	36.7
Bags & Accessories	7	93	26.0	<b>35.9</b>	38.0
Books, Movies, Music & Games	na	na	26.7	34.8	38.5
Consumer Electronics	13	87	25.3	34.3	40.4
DIY, Garden & Pets	na	na	25.0	34.1	40.9
Food & Beverages	0	100	26.7	32.7	40.6
Footwear	4	96	<b>27.1</b>	33.4	39.5
Furniture & Homeware	8	92	26.0	33.1	40.9
Hobby & Stationery	na	na	25.4	34.4	40.1
Household Appliances	7	93	25.7	33.4	<b>41.0</b>
Personal Care	4	96	26.7	<b>35.4</b>	37.9
Sports & Outdoor	na	na	21.5	30.4	<b>48.0</b>
Toys & Baby	na	na	23.8	<b>35.4</b>	40.8



Regarding the distribution of users according to income by main product categories, we can see that there are no major differences. Thus, users with the lowest incomes are mainly oriented to apparel and footwear. Those with average incomes have in the top of preferences the categories bags & accessories, personal care, and toys & baby. In contrast, high-income users prefer to spend money especially on sports & outdoor, home appliances, furniture & homeware, and DIY, garden & pets. An interesting observation that we can make by analyzing the data in Table 5 is that the sports & outdoor category is on the one hand in the top of the preferences of the users with high incomes, and on the other last place among the users with low incomes. The same is the case for the device, which is at the top of the preferences for users with low incomes and lastly for those with high incomes.

#### **4. Conclusion**

E-commerce has become a complex and dynamic domain due to the fact that any company can enter the market with a relatively small budget and compete with the big names in the field. The devices connected to the Internet are in continuous growth, consequently leading to the constant increase of the figures in e-commerce. Understanding the behavior of users, patterns and preferences for online shopping are essential for companies and businesses existing on the market today. Therefore, in this article, we have provided an overview of the e-commerce market globally, but especially locally for Romania. Analyzing the available data we could see the distribution of users on the most important market segments and used key metrics such as usage, reach, revenue, penetration rate, ARPU, gender, users by age, sales channel and user income.

Regarding the Romanian market, the highest revenues are brought by the electronics segment, which has a value of € 497 million and represents 24.64% of the total sales. From the current study, it appears that women's appetite for shopping is also reflected in online purchases, they categorically surpassing men in nine of the thirteen categories analyzed. The most popular segments among women are also the least popular among men. Thus, on the one hand, women's preferences are directed to areas such as bags & accessories, personal care, apparel, and toys & baby. And on the other hand, men's preferences are oriented towards the consumer electronics, sports & outdoor, household appliances and DIY, garden & pet segments.

According to the study it turned out that the interests of young people are especially for the field of fashion, especially to the segments of bags & accessories, apparel, and footwear. The interests of the elderly are aimed at recreational activities and leisure, especially to the segments of DIY, garden & pets, household appliances, and books, movies, music & games. In terms of distribution channels, we can see that online sales have the greatest advantage in the fields of consumer electronics and apparel. Another interesting observation from the current study is

that the sports & outdoor category is at the top of the preferences of the users with high incomes and last among the users of low incomes. The same is true of the device, which is at the top of the list of preferences for low-income users and lastly for high-income users.

## 5. References

- [1] G. Wagner, H. Schramm-Klein, and S. Steinmann, "Online retailing across e-channels and e-channel touchpoints: Empirical studies of consumer behavior in the multichannel e-commerce environment," *Journal of Business Research*, Elsevier Inc., 2018.
- [2] A. A. Alyoubi, "E-commerce in Developing Countries and how to Develop them during the Introduction of Modern Systems," in *Procedia Computer Science*, 2015, vol. 65, pp. 479–483.
- [3] Á. Herrero Crespo and I. Rodríguez del Bosque, "The effect of innovativeness on the adoption of B2C e-commerce: A model based on the Theory of Planned Behaviour," *Comput. Human Behav.*, vol. 24, no. 6, pp. 2830–2847, Sep. 2008.
- [4] E. E. Grandon and J. M. Pearson, "Electronic commerce adoption: an empirical study of small and medium US businesses," *Inf. Manag.*, vol. 42, no. 1, pp. 197–216, Dec. 2004.
- [5] H.-Y. Shih, "The dynamics of local and interactive effects on innovation adoption: The case of electronic commerce," *J. Eng. Technol. Manag.*, vol. 29, no. 3, pp. 434–452, Jul. 2012.
- [6] K. C. . 1944-author. Laudon and C. G. author. 12412 Traver, "E-commerce : business, technology, society / Kenneth C. Laudon, New York University, Carol Guercio Traver, Azimuth Interactive, Inc.," 2016.
- [7] "eCommerce - worldwide | Statista Market Forecast." [Online]. Available: [https://www.statista.com/outlook/243/100/ecommerce/worldwide?currency=e ur](https://www.statista.com/outlook/243/100/ecommerce/worldwide?currency=eur). [Accessed: 16-Oct-2019].
- [8] "eCommerce - Romania | Statista Market Forecast." [Online]. Available: <https://www.statista.com/outlook/243/148/ecommerce/romania>. [Accessed: 15-Oct-2019].
- [9] Y. Hwang, "The moderating effects of gender on e-commerce systems adoption factors: An empirical investigation," *Comput. Human Behav.*, vol. 26, no. 6, pp. 1753–1760, Nov. 2010.
- [10] B. Yoo and M. Jang, "A bibliographic survey of business models, service relationships, and technology in electronic commerce," *Electron. Commer. Res. Appl.*, vol. 33, Jan. 2019.
- [11] K. H. Lim, K. Leung, C. L. Sia, and M. K. Lee, "Is eCommerce boundary-less? Effects of individualism–collectivism and uncertainty avoidance on Internet shopping," *J. Int. Bus. Stud.*, vol. 35, no. 6, pp. 545–559, Nov. 2004.
- [12] P. McCloughan and S. Lyons, "Accounting for ARPU: New evidence from international panel data," *Telecomm. Policy*, vol. 30, no. 10–11, pp. 521–532, Nov. 2006.