Conference Paper

A Statistical Analysis of E-Commerce in Greece: The Case of Young People in Central Macedonia

Persefoni Polychronidou[1], Xanthippi Chapsa[2], and Christos Tsitsakis[3]

[1]Department of Accounting and Finance, Eastern Macedonia and Thrace Institute of Technology & Department of Business Administration, Central Macedonia Institute of Technology, Greece
[2]Department of Business Administration, Central Macedonia Institute of Technology, Greece
[3]Department of Accounting and Finance, Technological Educational Institute of Central Greece, Lamia, Greece

Abstract

The way of commerce transactions has changed from traditional ways to new ones with the use of new technologies. E-commerce has rapidly developed abroad, while in Greece has been developed more slowly. The present paper focuses on the e-commerce in Greece. For that purpose, an empirical research has been conducted from November to December 2015 and 100 valid questionnaires were selected. The study empirically investigates the consumer behavior, the trust and safety in transactions and the advantages of e-commerce. Under this framework, the results of the empirical research are presented and the relevant findings are discussed.

Keywords: e-commerce, consumer behavior, statistical analysis

Corresponding Author:
Persefoni Polychronidou;
email: polychr@teiemt.gr

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1. Introduction

The economic crisis of the past years has affected all aspects of consumption [9, 12, 26]. Consumers are adjusted to new data, since there is a decrease of wages, a limitation of consumer loans, etc. [17, 21, 22, 24].

E-commerce is becoming an important factor for business sustainability, since Internet has become an integral part of everyday life [23]. Consumers want the best service with the least effort and companies promote their products and services through the cyberspace [2, 7].

Several researchers have studied the relation between age, gender, economical status and the consumer behaviour [18, 20, 23, 25]. Economic crisis is the reason that many consumers worldwide re-evaluate their consuming behaviour [6, 8–11, 15, 16, 19]; in Greece as well [1, 14], (Matsaganis, 2011).

As a consequence, the use of e-commerce is rapidly increasing. It is remarkable that 65% of internet users in the EU shopped online in 2015 [13] with the highest proportions to be found in Luxembourg, Denmark, the Netherlands and Finland. Greece is below the EU's average at 47%, while, at the same time, 30% of the Greek citizens have never used a computer [13].

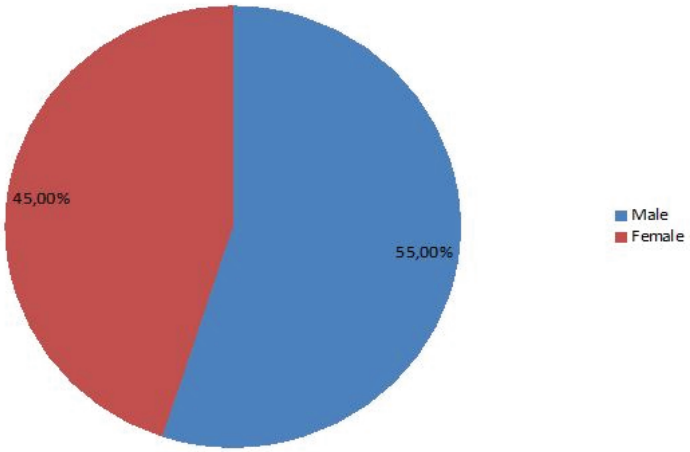

Figure 1: Gender of the respondents.

More specifically, 2.4 million Greeks (from the total population of 10.9 millions) have consumed and have spent 1624 euro on average in 2013 [10]. There has been a 20.4% e-commerce growth in 2014. Only 2.25% of the country's total turnover are electronic sales [11].

Thus, it is of crucial importance to study the behaviour of consumers in Greece. The goal of this paper is to impress the consuming behaviour of people in the region of Central Macedonia in Greece. For this purpose, an empirical research is conducted and the results of the statistical analysis are given. Finally, conclusions of this study are indicated.

2. Methodology

The study was conducted in Central Greece from November to December 2015. Data were collected using a structured questionnaire, containing 19 closed type questions. The questionnaires were distributed to a random sample of consumers. The 19 questions were grouped into four sections. Section 1 consisted of five questions related to demographic characteristics of the respondents. Section 2 consisted of four questions regarding the use of e-commerce. Section 3 gathered six questions concerning transactions and finally, section 4 contained four questions regarding safety. For the quantitative analysis a number of descriptive statistics tools were applied using the SPSS package (version 19).

3. Empirical Analysis

The questionnaire was filled in by 100 persons, 45 men and 55 women (Figure 1). The majority of the respondents are young people, and more specifically, forty six are less than 26 years old, twenty six are 26-35 years old, fourteen are 36-45 years old, thirteen are 46-55 years old and only one person is older than 55 years old (Figure 2).

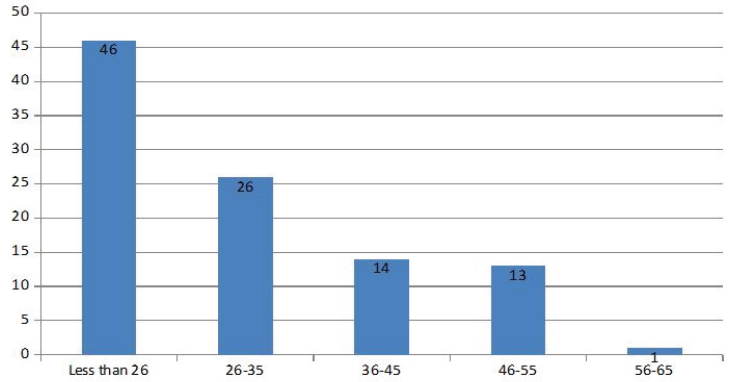

Figure 2: Age of the respondents.

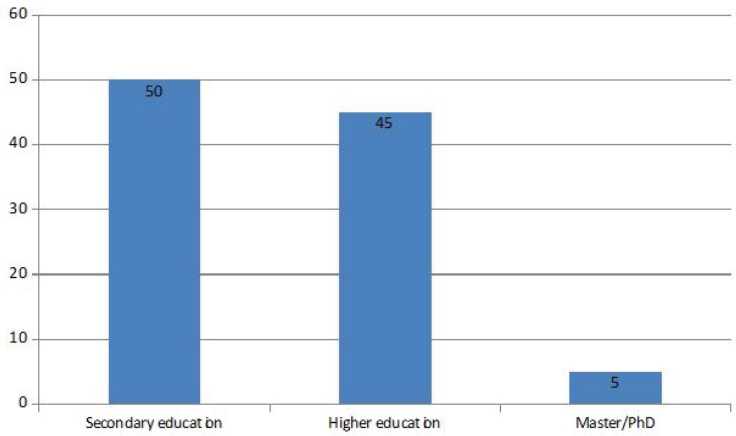

Figure 3: Level of education of the respondents.

Regarding the level of education of the respondents, half of them (50) have finished secondary education, forty five hold a Bachelor degree and five hold a master or a PhD (Figure 3).

The majority of the respondents are freelancers (41), nineteen are public servants, fifteen are public servants, thirteen are students, nine are unemployed, four are keeping their household and one person is retired (Figure 4).

Regarding the monthly income of the respondents, the majority –fifty three people earns less than 600 euro per month. Twenty two earn 601-900 euro, eleven earn 901-1200 euro, thirteen earn 1201-1500 euro and only one earn more than 1500 euro per month (Figure 5).

Seventy two of the respondents use e-commerce and twenty eight of the respondents do not use e-commerce. From the seventy two e-commerce users, 74% consume a few times in a year, 18% consume monthly (with the word consume, we mean the consumption derived from e-shopping), 7% weekly and only 1% daily (Figure 6).

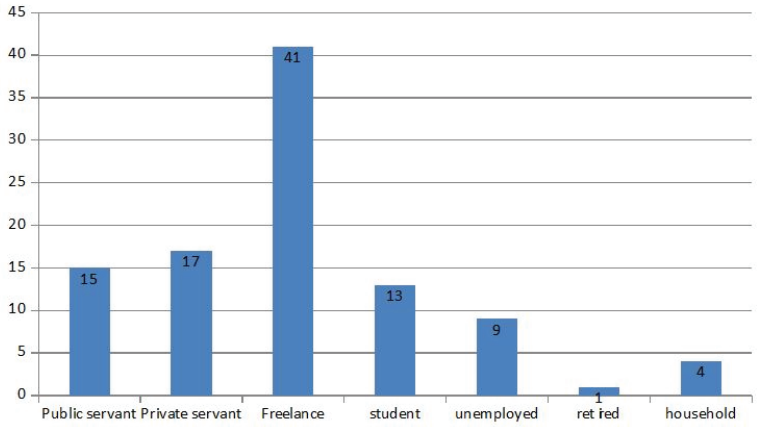

Figure 4: Occupation of the respondents.

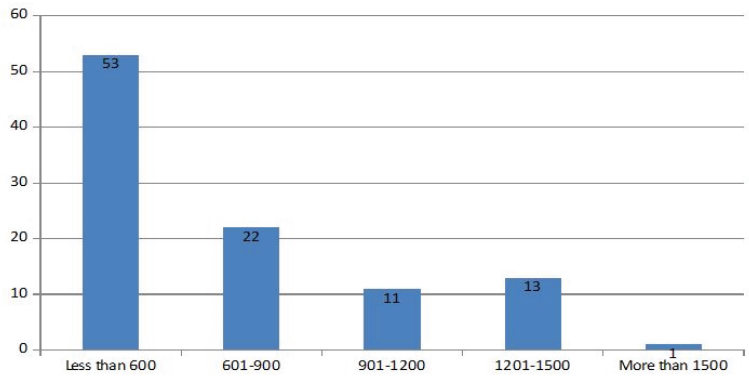

Figure 5: Monthly income of the respondents.

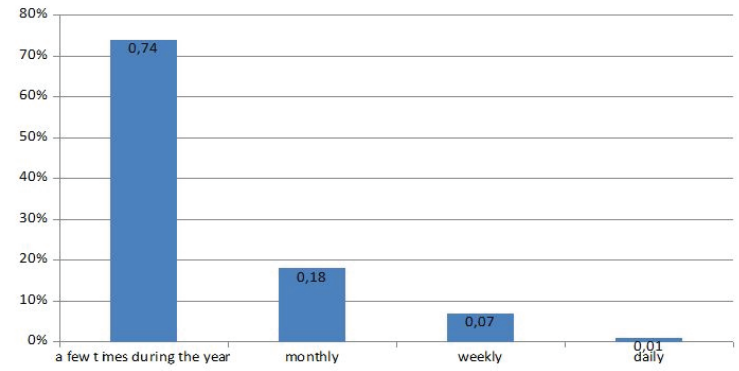

Figure 6: Frequency of consuming.

Twenty nine persons (40%) have consumed 2-5 times during the last semester, twenty four (33%) have consumed once and nineteen (27%) consumed more than 5 times. Twenty eight of the respondents do not use e-commerce at all (Figure 7).

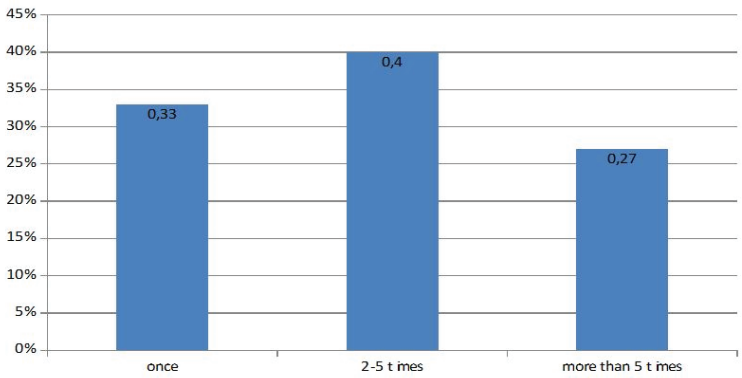

Figure 7: Frequency of consuming for the last semester.

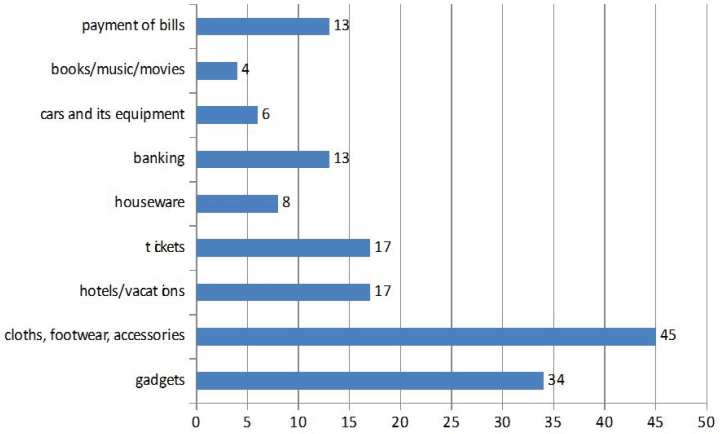

Figure 8: What is purchased online.

The majority of the respondents (45) have consumed cloths, footwear, accessories, thirty four have consumed gadgets, seventeen hotels/vacations or tickets and the rest purchases are shown in Figure 8. We must note that the respondents could chose up to three goods.

Most of the respondents (39%) spend more than 200 euro per year in e-commerce, while the rest are equally distributed as it is shown in Figure 9.

The majority of the respondents prefer to pay cash on delivery, or they use a debit card. As it is shown in Table 1, they do not prefer to use their credit card, PayPal and deposit money in a banking account.

The 'traditional' ways of searching for products' information are not preferred from our respondents, as they prefer to search in social networks, the companies' websites, review pages and in websites comparing prices (Table 2).

The respondents trust an online store and become its customer when a real store exists, when there is a variety of products and services and there is an easy and fast navigation at the website of a store. The rest of the respondents' replies are shown in Figure 10. We must note that they could choose three reasons at the most.

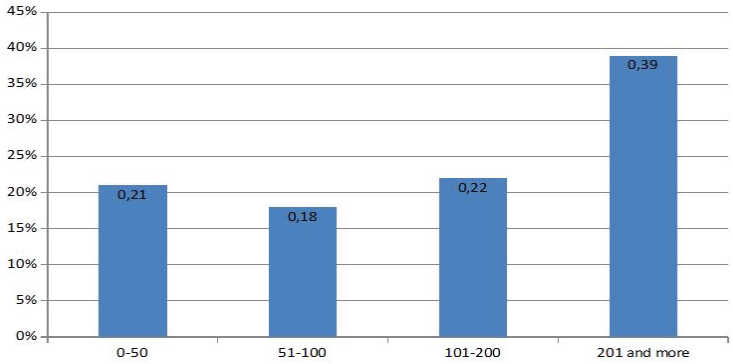

Figure 9: Annual expenditure in e-purchases.

	Never	Rarely	Usually
Credit card	47	14	11
Debit card	32	18	22
Cash on delivery	13	17	42
PayPal	53	15	4
Via a bank account	42	20	10

Table 1: You cover the online purchases ...

The respondents would "probably" consume from a store with low prices and good offers even though some of the other criteria are not met, but they are not sure about their reply, since the same number of the respondents declare that they wouldn't do so (Figure 11).

The low prices, the flexibility of time, the easy and fast use of e-commerce and the possibility of buying goods that are not available on domestic markets, seem to be the main advantages of e-stores (Table 3).

The majority of the respondents (89%) trust e-stores (Figure 12).

However, at the question "Do you consider that transactions with online stores are not always safe", 38% of the respondents agree with the statement, while one out of two do not agree nor disagree (Figure 13).

	Never	Rarely	Usually
Social networks	27	11	34
Blogs	29	27	16
Review pages	20	23	29
Websites of companies	29	11	32
Websites of comparing prices	24	18	30
Magazines	58	9	5
Shops' brochures	39	22	11
Newsletters	50	18	4

Table 2: You search in ... before consuming.

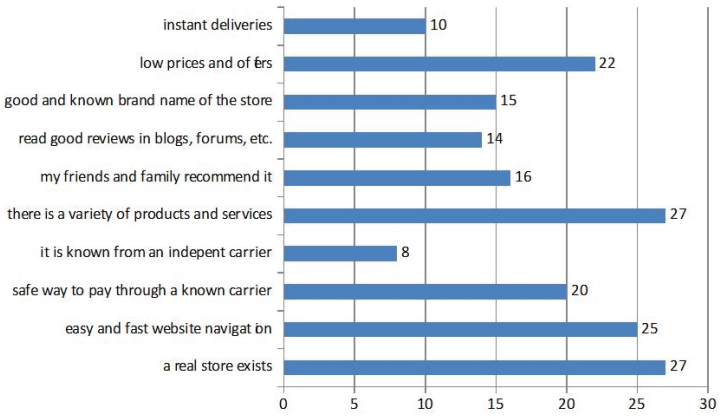

Figure 10: You trust an online store and become its customer when ...

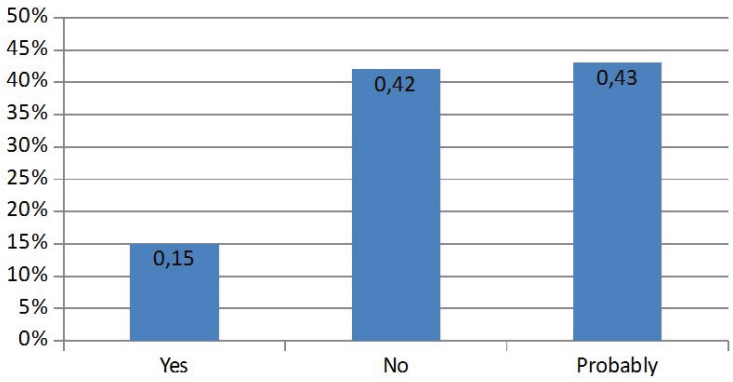

Figure 11: Would you consume from a store with low prices and good offers, even though some of the other criteria are not met?

One out of four (26%) intend to increase using e-commerce, 40% are going to keep on using it as they did in the past, only 3% will decrease using it and the rest (31%) are pensive regarding the use of e-commerce in the future (Figure 14).

Among the twenty eight of the respondents who do not use e-commerce, thirteen do not trust the transactions in websites and seven do not own a credit card. Other

	Not important at all	Not important	Neither one nor the other	Important	Very important
Low prices	2	1	4	32	33
Time flexibility	7	3	12	33	17
Easy and fast use	7	3	10	32	20
Possibility of buying goods not available on domestic market	7	1	12	30	22

Table 3: How important are the following advantages of e-stores?

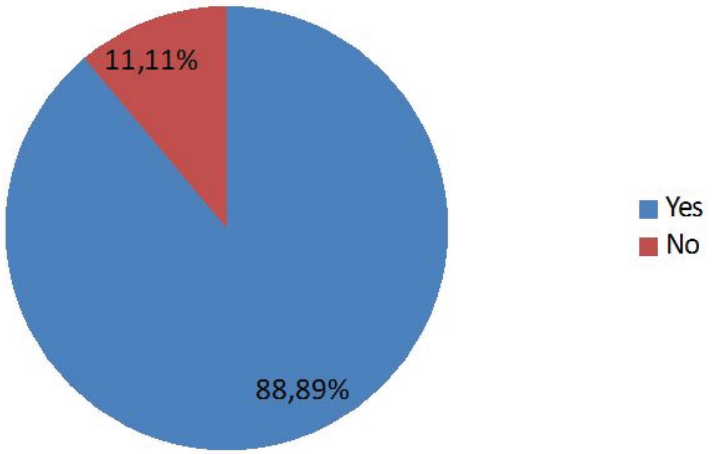

Figure 12: Do you trust e-stores?

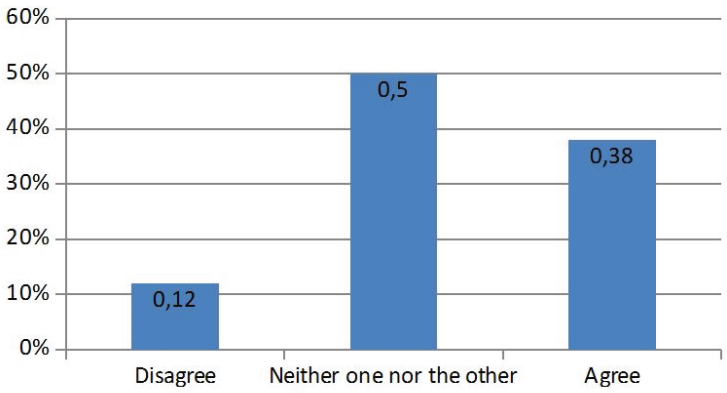

Figure 13: Do you consider that transactions with online stores are not always safe?

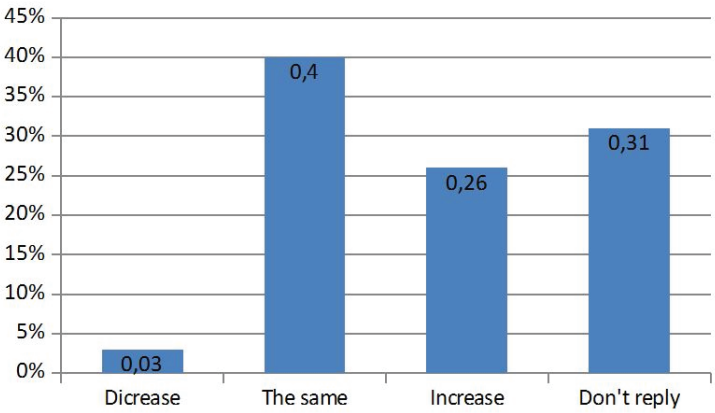

Figure 14: Do you intend to increase or decrease the on-line purchases in the future?

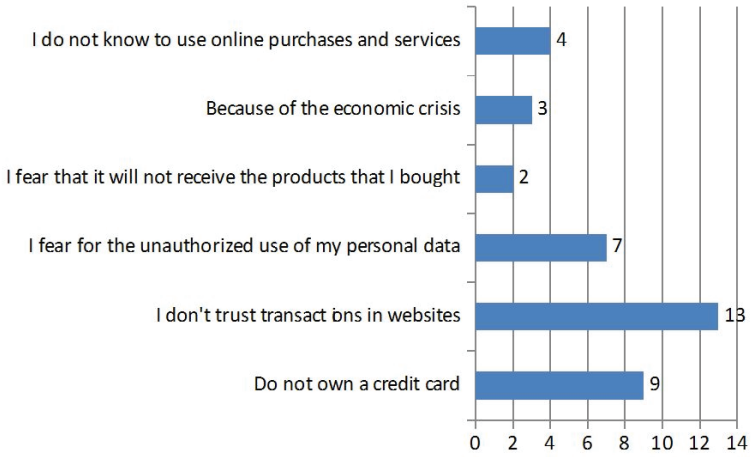

Figure 15: Why don't you use e-commerce?

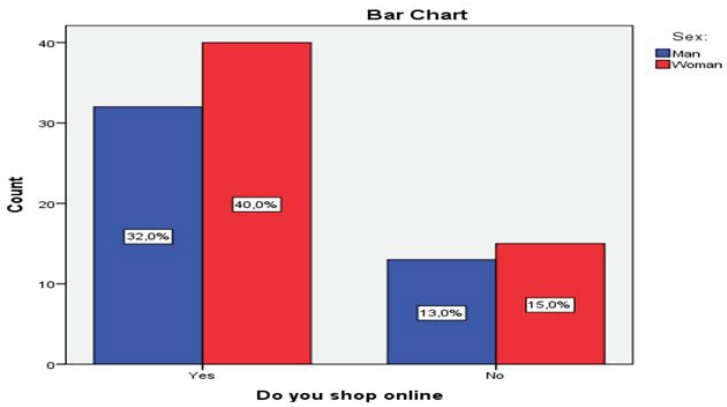

Figure 16: Gender of e-commerce users.

reasons are shown in Figure 15. We point out that in this question too, the respondents could choose two of the given reasons.

In Figure 16 the distribution of people who use e-commerce regarding their gender is shown, with the majority of them to be women.

Furthermore, we investigate if demographic and other economic factors are related with the e-shopping behavior of the respondents. The frequency of e-shopping in relation with the gender is shown in Table 4. The chi-square test of independence (the test of independence hypothesizes that "frequency" and "gender" are unrelated -that is, that the column proportions are the same across columns, and any observed discrepancies are due to chance variation) is used to determine whether there is a relationship between "frequency of e-shopping" and the "gender of the respondents". The computed chi-square statistic (the chi-square statistic measures the overall discrepancy between the observed cell counts and the counts you would expect if the column proportions were the same across columns) has a value of 0.701. Since the significance value of the statistic is higher than 0.05, the hypothesis of independence

			Frequency of consuming for the last semester			Total
			Once	2-5 times	>5 times	
Gender	Male	Count	10	12	10	32
		% within Gender	31.3%	37.5%	31.3%	100.0%
	Female	Count	14	17	9	40
		% within Gender	35.0%	42.5%	22.5%	100.0%
Total		Count	24	29	19	72
		% within Gender	33,3%	40.3%	26.4%	100.0%

Table 4: Frequency of e-shopping in relation with the gender.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.701[a]	2	.704
Likelihood Ratio	.698	2	.705
Linear-by-Linear Association	.462	1	.497
N of Valid Cases	72		

Table 5: Fequency of e-shopping in relation with the gender - Independence test. (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.44.)

can't be rejected at the 0.05 level. Thus, "frequency of e-shopping" and "gender of the respondents" are not related meaning that the frequency of e-shopping does not differ between two genders (Table 5).

"Expenditure" and "gender" are related, since the hypothesis of independence can't be rejected at the 0.10 level. The two genders spend differently (in this case, a larger chi-square statistic (5.573) indicates a greater discrepancy between the observed and expected cell counts-greater evidence that the column proportions are not equal, that the hypothesis of independence is incorrect, and, therefore, that "Expenditure" and "gender" are related-) their money when they shop online, with male spending more

			Expenditure in e-purchases			Total
			<100	100-200	>200	
Gender	Male	Count	9	11	12	32
		% within Gender	28.1%	34.4%	37.5%	100.0%
	Female	Count	19	5	16	40
		% within Gender	47.5%	12.5%	40.0%	100.0%
Total		Count	28	16	28	72
		% within Gender	38.9%	22.2%	38.9%	100.0%

Table 6: Expenditure in e-purchases in relation with the gender.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.573[a]	2	.062
Likelihood Ratio	5.640	2	.060
Linear-by-Linear Association	.642	1	.423
N of Valid Cases	72		

Table 7: Expenditure in e-purchases in relation with the gender- Independence test. a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.11.

			Expenditure in e-purchases			Total
			<100	100-200	>200	
Age	<25	Count	19	10	10	39
		% within Age	48.7%	25.6%	25.6%	100.0%
	25-35	Count	7	4	8	19
		% within Age	36.8%	21.1%	42.1%	100.0%
	>35	Count	2	2	10	14
		% within Age	14.3%	14.3%	71.4%	100.0%
Total		Count	28	16	28	72
		% of Total	38.9%	22.2%	38.9%	100.0%

Table 8: Expenditure in e-purchases in relation with age.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.405[a]	4	.052
Likelihood Ratio	9.563	4	.048
Linear-by-Linear Association	8.267	1	.004
N of Valid Cases	72		

Table 9: Expenditure in e-purchases in relation with age - Independence test. a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 3.11.

			Frequency of consuming for the last semester			Total
			Once	2-5 times	>5 times	
Age	<25	Count	16	17	6	39
		% within Age	41.0%	43.6%	15.4%	100.0%
	25-35	Count	6	7	6	19
		% within Age	31.6%	36.8%	31.6%	100.0%
	>35	Count	2	5	7	14
		% within Age	14.3%	35.7%	50.0%	100.0%
Total		Count	24	29	19	72
		% within Age	33.3%	40.3%	26.4%	100.0%

Table 10: Frequency of consuming in relation with age.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.409[a]	4	.116
Likelihood Ratio	7.469	4	.113
Linear-by-Linear Association	6.608	1	.010
N of Valid Cases	72		

Table 11: Frequency of consuming in relation with age - Independence test. a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 3.69.

			Frequency of consuming in the last semester			Total
			Once	2-5 times	>5 times	
Income	<600	Count	20	15	5	40
		% within Income	50.0%	37.5%	12.5%	100.0%
	600-900	Count	3	6	7	16
		% within Income	18.8%	37.5%	43.8%	100.0%
	>900	Count	1	8	7	16
		% within Income	6.3%	50.0%	43.8%	100.0%
Total		Count	24	29	19	72
		% within Income	33.3%	40.3%	26.4%	100.0%

Table 12: Frequency of consuming in relation with monthly income.

money than female. This is related with the purchases in products or services they prefer to buy (Tables 6 and 7).

Age seems to be a differentiating factor for the expenditure in e-purchases (Table 8), with the older people to spend bigger amounts than the younger ones (when both table variables are quantitative, Chi-square yields the linear-by-linear association test) (Table 9). Specifically, the computed Linear-by-Linear Association statistic has a value of 8.267. Since, the significance value of the statistic is lower than 0.01, the hypothesis of independence is rejected at the 0.01 level.

Similarly, since the significance value of the computed Linear-by-Linear Association is lower than 0.05, age and frequency of consuming for the last semester are related (Tables 10 and 11).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.937[a]	4	.005
Likelihood Ratio	16.560	4	.002
Linear-by-Linear Association	12.962	1	.000
N of Valid Cases	72		

Table 13: Frequency of consuming in relation with monthly income - Independence test. a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 4.22.

			Spending			Total
			<100	100-200	>200	
Income	<600	Count	20	12	8	40
		% within Income	50.0%	30.0%	20.0%	100.0%
	600-900	Count	4	3	9	16
		% within Income	25.0%	18.8%	56.3%	100.0%
	>900	Count	4	1	11	16
		% within Income	25.0%	6.3%	68.8%	100.0%
Total		Count	28	16	28	72
		% of Total	38.9%	22.2%	38.9%	100.0%

Table 14: Expenditure in e-purchases in relation with monthly income.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.448[a]	4	.006
Likelihood Ratio	15.168	4	.004
Linear-by-Linear Association	9.535	1	.002
N of Valid Cases	72		

Table 15: Expenditure in e-purchases in relation with monthly income- Independence test. a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 3.56.

Monthly income of the respondents has been, also, recoded. From the Linear-by-Linear Association test is evident that "monthly income" and "frequency of consuming in the last semester" are not unrelated, with the lowest incomes to consume less (Tables 12 and 13).

Monthly income seems to be, also, a differentiating factor for the expenditures in e-purchases (significance value of the statistic is equal to 0.002). Specifically, as it was expected, people with low income spend small amounts in purchases comparing to those with higher income (Tables 14 and 15).

4. Conclusions - Discussion

According to the present study, people in Central Macedonia prefer to use e-commerce after a search of information in websites and because of low prices and offers in e-shops. The majority prefer to pay with credit or debit cards. Both genders responded that the flexibility of hours in e-shopping is a very important factor for their preference. Almost all of them trust the e-shops, while they are divided in half regarding the trust in transactions. The main reasons for not realizing e-commerce transactions is the lack of a credit card, the lack of trust in transactions and the economic crisis in general. Almost half of the respondents declare that they will keep on e-consuming in the same way they used to do in the past.

The frequency of e-shopping does not differ between two genders. Two genders spend differently their money when they shop online. Male consumers spend more money than female. Older people spend bigger amounts than the younger ones. There is no difference in the frequency of consuming for the last semester among several age groups. As it was expected, the monthly income is a differentiating factor for the frequency of consuming in the last semester, with the lowest incomes to consume less. Furthermore, people with low income spend small amounts in purchases comparing to the people with high income.

In general, e-commerce is growing in Greece. It has altered the way of consuming and further changes and developments are expected. In a future study, our purpose is to broaden the sample of our data both arithmetically and geographically.

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