

## The Impact of E-Commerce and GDP on the Revenue of “One”

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### Abstract

Thanks to e-commerce it has never been easier to conduct business throughout the world and it has never been timelier enriching international customers. E-commerce is also an incurable tool for new businesses as it allows them to rapidly broaden their customers, interact with customers in businesses throughout the world, an inexpensive market and advertise the company worldwide. In the other hand the impact of GDP, positive or negative, is a very important one for the revenue of organizations within a country.

Given the fact that e-commerce has become a very profitable way to conduct business and GDP is another important factor for organizations, we have decided through this paper to analyze their impact on the revenue of one of the biggest mobile operators in Macedonia called “ONE”. At the end of the research we will be able to show whether investing in e-commerce has been profitable for the Macedonian mobile operator “ONE”.

**Keywords:** e-commerce; impact; organization; GDP;

## **1. Introduction**

In the last two decades technology has significantly changed. Computers specifically are now slicker, faster and most importantly more assessable. Convenience is becoming of more and more importance and contacting people throughout the world has never been easier. As a result of this e-commerce was born.

E-commerce stands for electronic commerce and is defined as: “The use of the Internet, the Web, and apps to transact business. More formally, digitally enabled commercial transactions between and among organizations and individuals” (Laudon & Traver, 2014).

Beyond strictly internet based businesses, e-commerce also entails improvements in business functions for traditional retailers (marketing, ordering, inventory, customer services). It also affects many business tasks including development, marketing, communications, sales, logistic, etc. These innovations in existing business functions drastically improve productivity and can have a dramatic impact on the economy.

In this research paper we will talk about how the investments on e-commerce will affect the revenue of the mobile operator in Macedonia-ONE, which seems to be very high if we see the results of some big companies, before and after starting to use the e-commerce. Also through this project we aim to see the impact of GDP on the revenue of ONE.

At the end of the paper, we will come up with some conclusions or results, which will be based on the gathered data of this company and then calculated in Stata 12 Program.

## **2. Literature Review**

In this part we will analyze the empirical effect of the E-commerce expenses and GDP in the revenue outcome of ONE, which is a mobile operator in Macedonia. This topic, in general, is a wide one and a lot of authors have given their opinions whether the impact of e-commerce or GDP on the revenue of a company is significant or not. Not all of them support the same opinion; some of their researches have also proven that the impact of e-commerce is not very significant when it comes to the revenue of the company. So as you can see from the results that we have already, we cannot say how much significant is the engagement of e-commerce at organizations or businesses in Macedonia. In order to do that

we have decided to analyze the revenue of ONE mobile operator, and how much this revenue is affected from the engagement of e-commerce on their strategy and the GDP.

After the analysis with the OLS model or regression model we will be able to come up with our conclusion and see at what significance rate stands the engagement of e-commerce and GDP in the revenue of this company.

### **2.1. Empirical evidence**

In this part we will analyze the empirical effect of the E-commerce expenses of one company and GDP in the revenue outcome of ONE, which is a mobile operator in Macedonia. This topic, in general, is a wide one and a lot of authors have given their opinions whether the impact of e-commerce or GDP on the revenue of a company is significant or not. Not all of them support the same opinion; some of their researches have also proven that the impact of e-commerce is not very significant when it comes to the revenue of the company. So as you can see from the results that we have already, we cannot say how much significant is the engagement of e-commerce at organizations or businesses in Macedonia. In order to do that we have decided to analyze the revenue of ONE mobile operator, and how much this revenue is affected from the engagement of e-commerce on their strategy and the GDP.

After the analysis with the OLS model or regression model we will be able to come up with our conclusion and see at what significance rate stands the engagement of e-commerce and GDP in the revenue of this company.

Smith (2000) on his own research analyzes the situation at which traditional companies can make higher profit. In his conclusion he says that first, it can save labour costs. It does not need so many staffs, such as sales executive, sales managers, accountants, web designers and so on. Quite the opposite, what e-commerce requires more is technology. For instance, you can set an auto-responder to the feedbacks of the customers, which can not only save labour but also promote efficiency. E-commerce may help the traditional companies make a high profit.

But as we mentioned earlier there are other authors like (Lukasz, 2008) who says that it was easier for larger firms in finding e-commerce solutions, than it was for small companies. Companies should be very careful when measuring the risk and potential benefits of implementing

ecommerce. Nevertheless, if the company mission doesn't comply with the plan, the result could be disastrous such as unsatisfied customers and low return of investments. Small firms are at a higher risk since they knowledge and other resources are limited. Beside these there are also other problems with transactions security, data security, order delay, etc. (Lukasz, 2008).

Every day the initiatives that are undertaken by firms towards the investments on the e-commerce market are increasing drastically. Nevertheless, "empirical support for the benefits to firms from e-commerce is weaker than glowing accounts in the popular press, based on anecdotal evidence, would lead us to believe (Subramani & Walden, 2001)."

The competition in this new market becomes stronger with every passing day. In order to develop an efficient and effective distribution system one has to carefully analyze all the possible factors which are important on the evaluation process. "Cornell University identified in their research that approximately 40% of bookings come from brand.com website, 30% from Global Distribution Systems (GDSs) used by travel agents and online agents, and the rest 30% from a mix of other sources. The importance of effective GDS channel distribution management is crucial, however "it is often the least one management knows about and fails to maximize revenues through this channel (Dirzanskyte, 2012).

*"One of the most important benefits of Internet marketing for buyers and sellers is saving the high costs of distribution, storage and transport. Thanks to this advantage, it is possible to offer reasonable prices without sacrificing profits" (Demirci & Alptekin, 2013).*

With the help of electronic markets the cost of making price changings, have significantly reduced. "For the first time providers are able to make immediate adjustments to prices quickly and realistically. As a proof of this, many online businesses today make automated adjustments to the prices, even on hourly basis (Demirci & Alptekin, 2013)." Nowadays there exist a lot of businesses that operate online and make changes on daily or hourly basis. Examples of such businesses online are: Ebay.com, Alibaba.com, Buy.com, Amazon.com, etc... Some of these businesses use an algorithm which will check for the prices of substitute products of its own and other businesses and compare them, at the moment that it will detect a lower price for the substitute product, it will immediately lower the price on the website it operates. In this case the prices could change even every second. These

algorithm are used by businesses which think that have very price sensitive customers. In this case the number of customers could increase very much, but the profit is very low or there are times when it can even be negative (Smith, 2000). *"The example of Buy.com highlights two things. Firstly, automated dynamic pricing is an option for businesses today. Secondly, a model too simplistic or erroneous can produce undesirable results"* (Demirci & Alptekin, 2013).

*"These trends in U.S. tax policy were largely driven by long-term "supply-side" arguments that lowering top marginal tax rates would encourage greater labour supply and reward entrepreneurship, thereby boosting long-run economic growth" (Gruber, Jon, & Saez, 2002). "A faster-growing economy was, in turn, supposed to benefit everyone. Many supply-side advocates even argued that cuts in top tax rates would spur so much additional (and taxable) economic activity that they would on net increase total tax revenue, or "pay for them." (Andrew, 2013).*

As you can see from the result of our empirical study the information we could gather is mixed not clear and leads to even more confusion. Nevertheless these researches serve us as a good reference and give us a lot of information for our future studies. Based on the fact that we do not have clear information whether using the e-commerce on you company will help you rise the revenue or not, there's a need for such a study which will give us some correct answers.

Through this project we will try to contribute on this field by testing the effect of engagement of e-commerce on the revenue of the company, and also how GDP influences the revenue of one company and make it a little bit easier for future researchers who will make a similar study.

## 2.2. Theoretical aspect

Implementing the e-commerce on a business has several advantages such as:

- Business can be conducted 24 hours 7 days a week, meaning that shops are not restricted to opening times.
- Start up running costs are low as expensive shops and stuff are not needed.
- Websites are easily updated to show offers and deals compared to paper based materials like magazines.
- Keyword searches allow items to be found quickly compared to having to look to large shops.

- Global market place means that customers can come from all over the world rather than in just one town, city or country.
- Gathering information about customers is easy through e-commerce because customers must enter their details such as e-mail and phone number, meaning that marketing directly to them is easy.

Taking in consideration these advantages and also some already published research studies, we decided on our first hypothesis. Nevertheless after doing some research we found that GDP also is thought to have a considerable impact on the revenue of a company. So our second hypothesis is about that. Below are listed the two hypotheses:

H1- Firms that engage on e-commerce have a considerable growth on their revenue.

H2- GDP influences the revenue of the company

### 3. Empirical Analysis

After theoretical and empirical evidence we will specify the equation of model with three variables. Here we will show which of the variables are dependent and which of them are independent.

At the beginning will do econometric model specification and assessment method and after the specification of the model, we will analyze the data, do econometric model calculation and interpretation of outcome. This part will also check the validity of hypotheses defined in the introduction of this paper.

#### 3.1. Specification of econometric model

The regression model we will use is:

$$Y = B_1 + B_2 X_1 + B_3 X_2 + u_i$$

where:

Y- Represents the dependent variable. In our case the dependent variable is the Revenue. The result of this variable depends on the value of the independent variables  $X_1$  and  $X_2$

X- Represents the independent variable. This variable is the one which is thought to have a considerable impact on the dependent one. We have two independent variables  $X_1$  is E-commerce and  $X_2$  is GDP.

$U_i$ - Is the stochastic variable or error term. It represents all unobservable factors that indicate on the results of the dependent variable. It is an unobservable variable which can have positive and negative values.

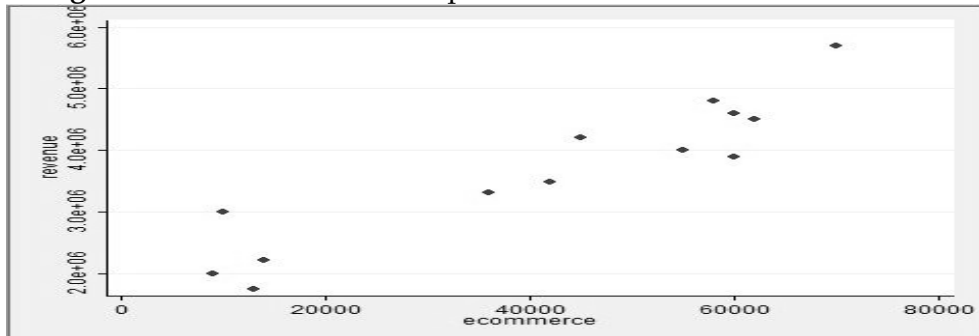
Through this model we understand how much influence have the independent variables e-commerce and GDP on the outcome of the dependent variable profit. In other word it shows how would profit be affected if there is and increase on e-commerce and GDP by one unit.

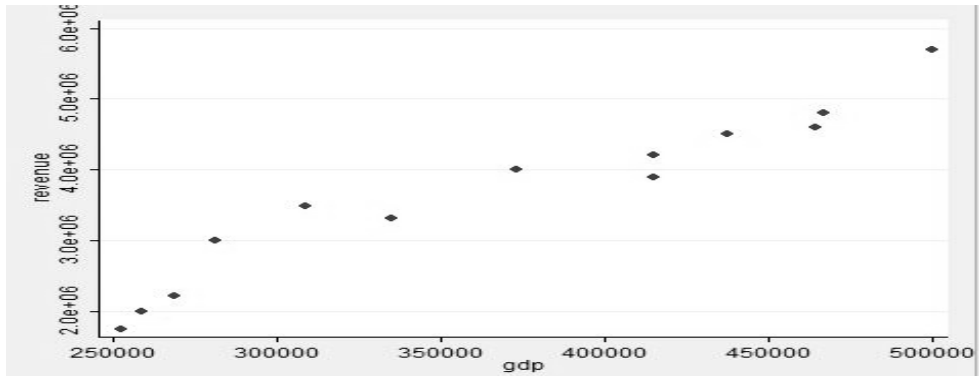
### 3.2. The econometric model data

The data that we have used during this research is taken from different places. Some of them like the information of the e-commerce expenses we have taken from the company itself and some other information like GDP we have taken from the official website of the government for different statistics in Macedonia. Because of the limitation of the information and time, we have to admit that we couldn't reach to analyze any other company except ONE mobile operator.

The variables that we have used on the project are: revenue, e-commerce and GDP.

**Figure 1:** Scatter Plot- Visual representation of data





**Source:** Authors' own presentation of data from Stata

From the Visual representation of data that we gathered from the Stata program we can see that the Model through the Origin is the best one to be used. But we still have to compare standard error, r-squared and t statistic, in order to be able to decide in a proper way which model is best to use.

#### 4. Calculations of Econometric Model and Interpretation of Results

In our project the main part is to find out the influence of independent variables in the dependent one. In order to do this we have to test hypothesis in multi regression model and in Log-Log model where the results will help us to accept both hypothesis, reject both, accept one of them or reject one of them.

In our model we have collected data for "ONE" Mobile operator for a period of 13 years. For 13 years we see how much expenses have the company ONE made in order to use e-commerce and also we have the data for the GDP for 13 year in a row.

With the regression analysis results are obtained on the bases of which it can be concluded and gain final result.

We can write the Econometric Model as:

$$\ln(\text{Revenue}_i) = B_1 + B_2 \ln(\text{E-commerce}) + B_3 \ln(\text{GDP}) + u$$

where: Y- in our model is the Revenue; B1- the coefficient of constant; B2 and B3- are partial coefficient of valuation; and u- stochastic component or standard error



We do the calculation using the program STATA 12 where at the end we find the results for B1, B2 and B3 known as evaluators of OLS (Ordinary Least Square).

After calculating the coefficients of validation B1, B2 and B3, we can write the three dimensional regress equations by calculating the corresponding values.

#### 4.1. Conventional Model

The conventional model, different from the model through the origin has also the constant B1.

We can see that B1= -0.26; B2= 0.09 and B3= 1.12 so

$$\begin{array}{l} \ln\text{Revenue} = -0.26 + 0.09\ln\text{E-commerce} + 1.12\ln\text{GDP} \\ \text{(se)} \qquad \qquad \qquad 3.40 \quad 0.11 \quad 0.34 \\ \text{(t)} \qquad \qquad \qquad -0.08 \quad 0.84 \quad 3.25 \end{array}$$

R-Squared= 0.90 which means that the dependent variable is influenced by the independent variables for 0.90\*100=90%.

From the results of the regression model we can say that both variables have a significant influence on the outcome of the dependent variable Revenue. From the regression results we can say that an increase of the E-commerce for 1% on average will increase the Revenue for 0.09%. Since standard error= 0.11 which is low, we can say that the coefficient has a significant influence on the dependent variable.

From the regression results we can say that an increase of the GDP for 1% on average will increase the Revenue for 1.12%. Since standard error= 0.34 which is low, we can say that the coefficient has a significant influence on the dependent variable, even better influence than e-commerce.

Note: we do not interpret the results of t statistics since they have to be compared with the t critical value from the statistics book.

#### 4.2. Model Through the Origin

The model through the origin is different from the conventional model in that it doesn't contain the constant B1.

B2= 0.100 and B3= 1.095

$$\begin{array}{l} \ln\text{Revenue} = 0.10\ln\text{E-commerce} + 1.09\ln\text{GDP} \\ \text{(se)} \qquad \qquad \qquad 0.05 \quad 0.04 \\ \text{(t)} \qquad \qquad \qquad 1.77 \quad 23.80 \end{array}$$

R-Squared= 0.99 which means that the dependent variable is influenced by the independent variables for  $0.99 \times 100 = 99\%$ .

From above we can see the coefficient of impact, standard error and t statistics, which are key determinants whether the impact of e-commerce and GDP have a significant result. In our case it turns out that their impact is very significant since the standard error is very low and r-squared is 99%.

We can say:

- An increase on the expenses of e-commerce for 1% will impact the revenue by increasing it by 0.100 %.
- An increase on the GDP for 1% will impact the revenue by increasing it for 1.09 %.

From these results we can see that ecommerce has a big influence on the future revenue of the company but still GDP has a greater influence on it.

### **4.3. Conventional Model vs. Model through the Origin**

In order to find out which model is better Conventional or Model through the Origin we have to go through some steps.

The first step is to analyze which model is better to be used through the data represented in the scatter plot. Above you can see the Scatter Plot graphics from where it is very clear that the data fits better the Model through the Origin.

The second step is to analyze both of the models in stata and see which of the models is more appropriate based on: t statistics, standard error and r-squared.

#### **For E-commerce:**

Since: t statistics is 1.77 in Model through the Origin and 0.84 in the Conventional Model,  $1.77 > 0.84$  we can say that Model Through the Origin is the best model to be used.

Since: standard error in Model through the Origin is 0.056 and 0.11 in the Conventional Model,  $0.056 < 0.11$  we can say that Model through the Origin is the best model to be used.

Since: r-squared in the Model through the Origin is 99% and 90% in the Conventional Model, we can say that the Model through the Origin is the best model to be used.

**For GDP:**

Since: t statistics is 23.80 in Model through the Origin and 3.25 in the Conventional Model,  $23.80 > 3.25$  we can say that Model Through the Origin is the best model to be used.

Since: standard error in Model through the Origin is 0.046 and 0.34 in the Conventional Model,  $0.046 < 0.34$  we can say that Model through the Origin is the best model to be used.

Since: r-squared in the Model through the Origin is 99% and 90% in the Conventional Model, we can say that the Model through the Origin is the best model to be used on this research study.

Based on the results of the regression model we have the right to confirm the Hypothesis that we had at the beginning of this project H1- Firms that engage on e-commerce have a considerable growth on their revenue. H2- GDP influences the revenue of the company.

**5. Recommendations**

Since this study is a case study and the results cannot be generalized there is a lot of space for future research on the same field. We have two main recommendations which would help to understand better the impact that e-commerce has in general in businesses in Macedonia.

First we would recommend to be done an investigation on whether there is a difference on the impact that e-commerce has on big and small organizations in Macedonia. The results of this investigation would have helped a lot on the decision that businesses would make on their investments.

Second we would recommend to be done an investigation that would make a comparison on the results of researches made outside Macedonia and the results of the same researches made in Macedonia. If the results of this research would be the same then it would mean a green light for businesses, which means that they could base their investment decisions for e-commerce, on hundreds and thousands investigation done around the world.

## 6. Conclusion

The project aim was to investigate the impact of e-commerce and GDP on the revenue of the mobile operator ONE for 13 years, from 2001 until 2013. The variables that have been used during this study are: revenue, ecommerce and GDP.

After literature reviews analysis, it is clear the both of these variables have a considerable impact on the revenue of any company. However not all of the businesses out there are aware of these two variables and that's why fail to generate a greater revenue.

The empirical results from the valued model tell us that e-commerce has a considerable impact on the growth of the revenue. Also results show that GDP has even a more considerable impact on the revenue of this company. From this we can see that the empirical studies support both of our hypothesis **H1- Firms that engage on e-commerce have a considerable growth on their revenue** and **H2- GDP influences the revenue of the company**.

At the same time, a considerable number of authors have also come up to a similar conclusion on their own research studies.

To sum up we would like to mention that, just like any other research study, during this one, we had our limitations also. What we mean by limitation is that we could have added more variable in order to have even more accurate and significant results, such as Advertisement for example. Nevertheless the information we gained by doing this study is very important and we think that there should be even more research studies towards this field.

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**Appendix 1: Data**

year	revenue	ecommerce	gdp
2001	1750900	13000	252393
2002	2000300	9000	258581
2003	2220300	14000	268694
2004	3000500	10000	280786
2005	3479016	42000	308447
2006	3306450	36000	334840
2007	4000000	55000	372889
2008	4200000	45000	414890
2009	3900000	60000	414622
2010	4500000	62000	437296
2011	4600000	60000	464187
2012	4800000	58000	466703
2013	5700000	70000	499559