

# 4<sup>th</sup> ICITB

## INTERNET and ICT IMPACT ON ECONOMIC GROWTH

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### ABSTRACT

*Internet and Information and Communication Technologies (ICT) is an inseparable part of human life today. This paper discusses the impact of the internet and ICT on development and economic growth comes from international journals that discuss about it and of course with a different viewpoint. The research objective was to determine whether the internet and ICT impact on growth and economic development based on international journals and comparing the results of the international journals. The results of the -journal journal is that in general the internet and ICT has an impact on economic development and growth of a country. The difference is that the first journal is not only limited to the expansion of the Internet business, but changing the way of doing business; The second journal is ICT is not overly significant effect on economic growth but the effect on the reduction of energy consumption; The third journal is the increasing use of the Internet helped in marketing and communications; The fourth is the internet journals positive impact on economic growth; and fifth journal is the average ICT contribute positively to economic growth. The third journal is the increasing use of the Internet helped in marketing and communications; The fourth is the internet journals positive impact on economic growth; and fifth journal is the average ICT contribute positively to economic growth. The third journal is the increasing use of the Internet helped in marketing and communications; The fourth is the internet journals positive impact on economic growth; and fifth journal is the average ICT contribute positively to economic growth.*

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### INTRODUCTION

At the present time, the Internet and Information and Communication Technologies (ICT) can not be separated from human life. Since the development of the Internet since the beginning found up to now, almost all sides of human life associated with Internet presence. Internet which originally could only be accessed on a limited basis at that time led to the proliferation of Internet cafes as a means to surf in cyberspace until today can be accessed quickly and anywhere via a smartphone. The existence of

the Internet also makes access to information more quickly and easily than ever before.

In connection with the business world, both from small scale, national and even international scale through the Internet presence has become a necessity that can not be ignored and disregarded. The emergence of the term digital economy also can not be separated from the ease of accessing the internet. For small-scale business, where the internet is used as a means to introduce their products to the public, while for businesses that are national or even international level internet acts not only promote their products but to develop further as a means of opening up to the world by creating a website regarding the company's profile,

As mentioned earlier, the presence of the internet era coined the term digital economy and spawned startup. Digital economy is an era where the economy is not solely rely on physically meeting the first time that the meeting with a person but with the help of internet meetings to introduce the product until the Count by selling the products can be carried out from different places, even far apart. Digital economy also gave birth to the term virtual store, because business owners do not have a physical store, but the store virtual to introduce, promote and sell their products. Digital economy also removes restrictions especially distance and time. In addition, the presence of a digital economy also contributed to the economy in terms of employment and gave birth to young people who are creative, innovative and highly competitive. Here it can be seen how the Internet either directly or indirectly participated had a hand in developing the economy, both in developed countries and developing countries.

## **LITERATURE REVIEW**

### **High definition**

Purbo (in Prihatna, 2005) explains that the Internet is essentially a medium used to mengefesiensikan a communication process which is connected with a variety of applications, such as web, VoIP, E-mail. Allan (2005) explain that the internet is a collection of computer networks that are connected to each other physically and also has the ability to read and decipher the various communication protocols specified that often we are familiar with the term Internet Protocol (IP) and Transmission Control Protocol (TCP). Supriyanto (2006) says that the Internet is a relationship between different types of computers and networks in the world that has

an operating system and applications are different and, wherein the relationship leverages advances komunikasi devices such as phones and satellites that use standard protocols to have good communication, TCP / IP (Transmission Control / Internet Protocol). From the opinion of the experts mentioned above can generally be concluded that the Internet is a media / computer network, connected to each other, simplifying communication and can be accessed anywhere.

#### History of the Internet

Internet history began in the 1970s, which was originally developed for military purposes USA which was then revised so as to involve more computers. Roy Tomlinson who undertake the development and added a system called E-Mail, which is a means to send a message (letter) via a computer network and is limited in the United States. So that its scope became broader, Vinton Cerf and Bob Kahn sparked the idea of forming an international network of networks, known today as the Internet, which then growing with the birth of the browser and the term web or www by Tim Berners-Lee to make it easier to access existing site in the network, so that later can be enjoyed at this time and used for various activities.

#### Definitions of Economics

Economic closely related to daily activities, such as when the transaction to buy or sell goods. In general, the economy is divided into two, namely:

a. Macro economics

Macro Economics is the study of the overall economy, which affects the community and the market. Macroeconomics is closely related to the country's economy.

b. microeconomics

Microeconomics is the study of the economy as a partial or small parts, namely the formation of prices of goods, the amount of goods bought and sold, or the behavior of consumers and producers.

Economics is derived from the Greek Oikos and Nomos, Oikos means the family or household and Nomos meaning rules or regulations. Economic terms so that management of household rules. Economic definition sa adalah follows:

- a. Abraham Maslow says economic sense is a science that can solve the problems of human life through penggemblengan entire economic resources available is based on the theory and principles in an economic system that is considered to be efficient and effective.

- b. Adam Smith states that the economic sense is an investigation of the conditions and causes the absence or presence of the country's wealth.
- c. John Stuart Mill stated that the economic sense is a practical science that has been learned about the billing and expenses.
- d. Hermawan Kartajaya Stating that the notion of Economics is a container in which the industrial sector is being attached thereon.
- e. Aristotle argued that the economy is a branch that can be used in two ways which may be used and possibly in exchange for goods, so the economy has exchange value and use value.

From an economic sense can be concluded that the economy is one of the branches of science, involving economic resources and wealth of the country and is no less important to involve industry as well as related to the value of the exchange and billing.

## **RESEARCH METHOD**

The research method is done by reviewing international journals related to the research done of the impact of the internet and ICT on economic growth and development. International journals taken from the journals and papers have been published and are available on the internet. Review journal starts with understanding the purpose / background of the journal article, what is the subject of research, methods of research undertaken and the results of such research. The results are described in the narrative reviewed journals per journal. The conclusion of these journals are then that will ultimately be compared to one another, what is the distinguishing factor so that later the conclusions drawn from the comparison results support the hypothesis, namely that the Internet and ICT have an impact on economic growth and development. In the sub-sections below, will be discussed first on the definition and history of the internet as well as the definition of the economy. Then continue on the next chapter will discuss the results of the discussion and proceed with the conclusion.

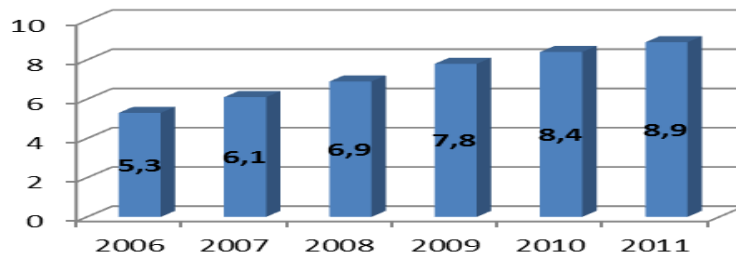
## **RESULTS AND DISCUSSION**

On the previous point has been stated how the development of the internet and the common thread with the economy, in particular its role in developing the economy. At this point, will discuss the views / posts results derived from international journals related to the role of the Internet to the development of the economy, as follows.

Elena-Iulia Apavaloaie with his article titled "The Impact Of The Internet On The Business Environment" which was published in Procedia Economics and Finance 15 (2014) pages 951 - 958. As an introduction, the author states that mankind has witnessed the development of agriculture, industry, technique and revolution, in which all these revolutions have an impact on the economic development of society. In today's business world of technology is a major catalyst activity changes of commercial and business development strategies. In the 21st century with new technology such as the internet, digital tv, smartphones and smart electronic has changed the face of the industry and the economy as radically as a result of digital technology, which in turn led to the term in the industry as "e-business revolution" (electronic business revolution) , Furthermore, the authors explain about "The evolution of the Internet in the world and in Romania". In the business environment, the Internet has created a framework that manufacturers and consumers around the world can create a permanent interactive dialogue. Internet has also become a tool to promote products and services both nationally and internationally. Below is a table regarding the development of internet users.

<b>WORLD INTERNET USAGE AND POPULATION STATISTICS</b>						
<b>June 30, 2012</b>						
<b>World Regions</b>	<b>Population (2012 Est.)</b>	<b>Internet Users Dec. 31, 2000</b>	<b>Internet Users Latest Data</b>	<b>Penetration (% Population)</b>	<b>Growth 2000-2012</b>	<b>Users % of Table</b>
<a href="#"><u>Africa</u></a>	1,073,380,925	4,514,400	167,335,676	15.6 %	3,606.7 %	7.0 %
<a href="#"><u>Asia</u></a>	3,922,066,987	114,304,000	1,076,681,059	27.5 %	841.9 %	44.8 %
<a href="#"><u>Europe</u></a>	820,918,446	105,096,093	518,512,109	63.2 %	393.4 %	21.5 %
<a href="#"><u>Middle East</u></a>	223,608,203	3,284,800	90,000,455	40.2 %	2,639.9 %	3.7 %
<a href="#"><u>North America</u></a>	348,280,154	108,096,800	273,785,413	78.6 %	153.3 %	11.4 %
<a href="#"><u>Latin America / Caribbean</u></a>	593,688,638	18,068,919	254,915,745	42.9 %	1,310.8 %	10.6 %
<a href="#"><u>Oceania / Australia</u></a>	35,903,569	7,620,480	24,287,919	67.6 %	218.7 %	1.0 %
<b><a href="#"><u>WORLD TOTAL</u></a></b>	<b>7,017,846,922</b>	<b>360,985,492</b>	<b>2,405,518,376</b>	<b>34.3 %</b>	<b>566.4 %</b>	<b>100.0 %</b>

Based on the table, it can be seen how the 34% of people in the world use the Internet most users in the Asian continent. From this table the authors state their internet embrace opportunities for economic gap when utilized properly in the context of global competition. Furthermore, the authors describe how the conditions of use of the internet in Romania, as in the following graph.



1. From these images can be viewed and compared that starting from 2006 to 2011 there was an increase for the growth of internet usage in Romania, while the access speed Romanian become one of the fastest in the world. Internet which was only accessible to young people then also be accessed by parents and people living in small or medium-sized town.

The author also states that there is a strong relationship between increased income and internet usage. Based on research conducted by the McKinsey Global Institute, as quoted by the authors to see the influence of the Internet on economic growth in 13 countries covering 70% of the world economy, the result is the Internet generates 3.4% of GDP in 13 countries. On the one hand eliminate internet 500K jobs over the last 15 years but generate 1.2 million new jobs. Furthermore, the authors write on "The influence of technology". The point here is that the Internet has created an opportunity and a contender for an existing business. The internet also poses a new business model. For the organization itself, in order to survive and thrive should be among others to adopt new technologies to reduce costs, improve customer relationships and build loyalty. The conclusion drawn is the author of the information technology (internet) is not just the expansion of the business, but the main impetus for change. Electronic business is not a trend but a revolutionary approach of the business concept. The existence of the Internet to make changes to contact customers, suppliers and employees, and many other types of promotions, that change the way of doing business. Consequently, both in terms of business and business-related relationships that can be summed up as the impact of the internet and ICT on economic growth and development. improving relationships with customers and build loyalty. The conclusion drawn is the author of the information technology (internet) is not just the expansion of the business, but the main impetus for change. Electronic business is not a trend but a revolutionary approach of the business concept. The existence of the

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- a. Hazuki Ishida with his article titled "The Effect Of ICT Development On Economic Growth And Energy" in 2015 which was published in Telematics and Informatics volume 32 pages 79-88. As an introduction to the journal author explains the rise in energy usage compared to the economic growth that started towards the end of World War II until the early 1970s in Japan. The increase in energy use is not directly proportional to the economic growth. Then, raised hope that ICT can be a middle ground on these issues, one of them with more output with less energy use. The Japanese government then also depend on ICT is not only limited increase market through technical innovation and global business, but also encourage the transport sector, and industrial buildings to reduce energy use. ICT

has grown to become a component of the rapid growth in Japan. The purpose of this journal according to the author is to explore the relationship between GDP and ICT Energy to test approaches autoregressive distributed lag (ARDL) using serial data years 1980-2010. The author of the journal subsequently conducted a literature study to describe the relationship between ICT and economic growth. Previous studies have found that there is a positive relationship between ICT and economic growth (Jipp, 1963; Gilling, 1975; Hardy, 1980; Saunders et al., 1983) is based on statistical data, but because it does not attach the variables studied so that previous studies did not provide enough data to see the relationship between ICT and economic growth. Future studies are relatively wider and deeper, but be normal if each country produces different results because of different methodologies and different time periods. The main problem is the variable measuring the development of ICT, because there are two ways of financial and non-financial factors. Previous research merely see two variables, namely ICT and GDP and no one has ever examined by ARDL. The authors then conducted a study of the literature to describe the relationship of ICT to energy consumption. From previous studies explain how the development of ICT influence on the reduction of energy consumption, for example, is the wireless technology reduces the production of paper and business travel, but on the other hand the skeptics are not convinced that ICT influence on the reduction of energy consumption, with the argument ICT developments affecting the energy used in the economy in two ways, namely direct and indirect impacts, although the results are not satisfactory at all visits from direct impact. The point is the previous studies have not used the serial technique of time to see a long-term relationship between ICT and energy. Furthermore, continuing with the results of research by the author is that the overall energy demand in the long term is not solely determined by the price and GDP, but also by ICT investment. The other is the impact of ICT on GDP growth were not statistically significant. Results from ARDL test is stable results in the long-term production and energy demand function. The conclusion then is taken ICT investments directly contribute to the reduction of energy use in moderation, but had no impact on the GDP increase. The Japanese government should not be looked at too high investment in ICT that lowers energy, since the substantial investment in ICT can create a drop in the Japanese economy. This conclusion can then be viewed in the framework of the Internet and ICT impact on economic growth in Japan is that ICT had no



significant impact on economic growth, but significant impact on the reduction of energy consumption. The Japanese government should not be looked at too high investment in ICT that lowers energy, since the substantial investment in ICT can create a drop in the Japanese economy. This conclusion can then be viewed in the framework of the Internet and ICT impact on economic growth in Japan is that ICT had no significant impact on economic growth, but significant impact on the reduction of energy consumption. The Japanese government should not be looked at too high investment in ICT that lowers energy, since the substantial investment in ICT can create a drop in the Japanese economy. This conclusion can then be viewed in the framework of the Internet and ICT impact on economic growth in Japan is that ICT had no significant impact on economic growth, but significant impact on the reduction of energy consumption.

- b. Marta Guerriero with his article titled "The Impact of Internet connectivity on economic development in Sub-Saharan Africa" in 2015 which was published in the Economic And Private Sector Evidence And Applied Knowledge Professional Services. As an introduction the author describes the Internet as a potential tool for economic growth and development quoted from the writings Dalberg in 2013. Not only that, the Internet also can connect remote populations to the market, giving people access to social services, expanding opportunities for education, innovation , increase civil liberties and access to government services. The author also states that there is a correlation that countries with fast internet access lower poverty levels, while if internet access is low, high poverty levels, although of course require further research. Furthermore, the authors stated purpose of the study is to identify and analyze the influence of rising internet access to economic development in Sub-Saharan Africa (SSA). The study was conducted through the study of documents originating from the data / literature available on the internet.

The author cites that based on estimates by 2014 there will be 172 million Internet users in Africa. Based on ITU statistics, Africa is the continent that is the fastest in the further growth of the Internet and that Internet access is done via mobile phones. The majority of internet users live in urban areas with the percentage of African countries most accessing the internet is Seychelles. Barriers arising from increased use of the internet is a difficult location to access the internet and internet charges are expensive. The author went on to

write about the "Impact on SMEs growth". SMEs or small and medium enterprises are key drivers of the economy in SSA, with the amount of 90% of all businesses. Based on studies conducted by the World Bank, 45% of businesses in the SSA is not connected to the internet, and a few who have their own websites or use email to interact with clients. But on the other hand the companies are connected to the Internet can obtain a profit because of the ease in communicating, acquiring information and marketing. The internet connection can also reduce costs and improve marketing and promotion (advertising). Another positive thing from the use of the internet by SMEs is the internet an opportunity to conduct direct sales and the growth of innovation and new business. Internal company in particular SMEs, the Internet provides benefits in terms of improving the efficiency of internal information, organization and supply chain management. The Internet is also useful as a tool to communicate with customers, updating inventory and introduce new products, and play a significant role in the growth of the company as well as to compete with competitors. Furthermore, the author describes in his writings on points "Impact On Economic Development And The Poor" is how the internet increase financial inclusion. Internet has the potential to encourage financial inclusion, providing full range of financial services for individuals and businesses, reduce transaction costs and expand the population. In conclusion the authors state that the internet connection in SSA still requires further development. The development of the internet increases in recent years were characterized by an increase in the number of users of smartphones, increase internet connection for SMEs, large population on the social networks that assist in marketing, communication and sharing of information and the emergence of local content on the Internet.

- c. Yuan Feng with his article titled "Internet and Economic Growth-Evidence from Chinese Provincial Panel Data" in 2016 which was published in *Modern Economy*, 2016, 7, pages 859-866. As an appetizer authors stated that Le Keqiang proposals regarding Internet + China terrific at the national congress in 2015. This strategy is to combine tradisonla industry with the internet through internet communication technology and framework to achieve a new economic performance, especially the tertiary industry, which then continues in the main industry and the second industry. China requires a new way to develop the economy and the Internet and information technology. In the Literature Review, the authors wrote that since generation of Internet Communication Technology (ICT),

the influence of ICT to the community has always been controversial, such as abusing, misusing on ICT and digital gap. There are two main methods used in ICT-related research and economic growth that is the first based on a comparison of data to look at the role of ICT and the other based on the sequence of time to examine the relationship between variables. Domestically, research on the relationship between ICT and economic growth late and limited. Based on local research can be seen that some of the factors of the Internet is not considered, some take into account the relationship between ICT and economic growth and others. Furthermore, the authors stated regarding "Theoretical Analysis of the Relationship between the Internet Communication Technology and Economic Growth". In this section the authors state that the internet creates the first large domestic commercial market leading E-Commerce business. Second, the freedom and openness of the Internet makes the dissemination of information and communication faster and provide a good channel for the spread of new technologies. The third is the internet has a strong positive externalities, which means that not only focus on one type of industry, but learn from one another across different industries, so that the entire region develops. Furthermore, the authors explain that the data used in the study from 2000 till 2014 except Tibet, Hong Kong, Macao and Taiwan. The analysis is by analyzing the relationship is between GDP by Internet Development Index, with the result that it is explicitly positive relationship between the two, while based on the basic regression authors found that the internet has a positive effect on economic growth, although still required to perform a regression analysis on a different time period due to a decline in temporary internet in 2010. The conclusion is internet is growing rapidly over the last 15 years, where the trend is very fast and very good. The next conclusion is the internet have significant effects on economic growth and the latter is the effect of economic promotion via the Internet can still be evolving. although it still needed to do a regression analysis on a different time period due to a decline in temporary internet in 2010. The conclusion is that the internet growing rapidly during the past 15 years, where the trend is very fast and very good. The next conclusion is the internet have significant effects on economic growth and the latter is the effect of economic promotion via the Internet can still be evolving. although it still needed to do a regression analysis on a different time period due to a decline in temporary internet in 2010. The conclusion is that the internet growing rapidly during the past 15 years, where the

trend is very fast and very good. The next conclusion is the internet have significant effects on economic growth and the latter is the effect of economic promotion via the Internet can still be evolving.

d. TD Stanley, Hristos Doucouliagos and Piers Steel with his article titled "Does ICT Generate Economic Growth? A Meta-Regression Analysis" in 2018 in the Journal of Economic Surveys (2018) Vol. 32, No. 3, pages 705-726. In the introduction the author explains the development of the more amazing technologies. These developments eventually led to a lot of research on the contribution of ICT to economic growth. Identifying the source of economic growth is very important for all countries, especially developing countries. In theory, most researchers stated that ICT should be a major stimulus on economic growth. Based on the neoclassical growth theory, economic growth is determined by the massive technological changes. Instead other theory states that growth is determined by investment in human and technological development. Which will be studied by the author is whether the level of influence the development of ICT and whether the effect on marginal contributing to growth.

Next is the theoretical background. As an example of Moore's law, the level of technological development is very good. Based on a review Draca et.al (2007), the effect of ICT on economic growth is usually studied under total productivity factor, the size of the fixed expenditure of capital and labor. According to Gordon's (2016) a great innovation that improve production occur more frequently than in previous decades. It also said that despite the development of ICT, he said only causes an increase in productivity compared with a reliable growth in productivity growth. Furthermore, the authors explain the type of ICT and through the meta-analysis will examine in particular on the effects of different growth on each type of ICT. ICT effects depending on where it occurs, particularly with respect to whether ICT contributes to economic development. On the other hand, this may be too optimistic that the ICT offer something higher in developing countries compared to developed countries. ICT can contribute not good even in case the automated process that replaces the conditions of labor, especially the less have the ability so that developing countries should be careful in investing in ICT. Next is the author states that in general the empirical study explores the impact of ICT pakah on economic growth or on productivity, with most studies focusing on growth.

Productivity is the key to growth. It is also to be considered the author whether the results would be different if only focus on productivity or economic growth. The issue of concern arising victims of economic growth and development, due to the possibility that growth causes high investment in ICT than the reverse. Meta analysis used by the author starts with a literature study on the relationship between ICT and economic growth through the paper with a maximum limit in February 2014. The paper then compared with the academic studies that discuss the relationship between ICT and economic growth. The results of the analysis are based on meta-analysis basis that the relationship between ICT and economic growth generates a value of 0.2, which means the effect is small. Furthermore, the authors look of Publication Selection Bias with the result still no clear evidence that there is a positive effect of ICT on economic growth. ICT is entered by the author here is a different technology ie telephone lines, mobile phones, computers and the Internet, with consideration of the effect will be different to the economic growth with the result that the greatest effect is produced on the internet compared to other technologies. Furthermore, the authors present the results of discussions with the points if ICT affect economic growth? The result is that the research literature suggests that technology has contributed positively to growth. In developed countries, all contribute to the growth of technology in developing countries, while there is preliminary evidence that the telephone line, internet and mobile technology contribute to economic growth, although further research is still needed to strengthen it. The conclusion drawn was that the author of ICT on average contribute positively to economic growth. Developed and developing countries obtain the advantages of phone lines and mobile phones, but the developing countries obtain more benefit from a computer compared to developed countries. In contrast, the authors found little evidence that the internet has a positive impact on economic growth.

## CONCLUSION

Based on the review of the above journal, in general they all declare that the Internet and ICT impact on economic growth, although not entirely clearly stated but implied / explicit. In the first journal, the conclusions drawn is the internet is a key driver for change, that change the way connect and communicate with customers, suppliers and employees as well as promotions that change the way of doing business that will affect

the economy. In the second journal, the conclusions drawn is the development of ICT has no significant effect on economic growth but significant effect on the reduction of energy consumption. In the third journal, the conclusions drawn are internet connections in SSA still requires development, but the use of the Internet are indicated by an increase for SMEs, and the changing pattern of marketing, communication and information via the Internet that will have an impact on the economy. In the fourth journal, the conclusions drawn is the internet have significant effects on economic growth. In the journal fifth is the average ICT contribute positively to economic development.

This article is certainly far from perfect. Furthermore, the authors expect no input from readers and make this article as a starting point for further research.

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