

The New Economy versus the Use of Information and Communication Technologies and Productivity of Algerian Companies in the Region of Oran

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Abstract— After a long and unusual growth experienced by the US during the nineties, the concept of new economy appeared to refer to this remarkable performance of the US economy. This concept emphasizes the relationship between the use of information and communication technologies and the growth and productivity of companies. The objective of this paper is to present the impact of information and communication technologies on Algerian companies after presenting a literature review on the phenomenon of new economy and information and communication technologies.

Index Terms— New Economy- Information Technology- growth- Algeria

1. INTRODUCTION

The new economy is a concept that appeared in the middle of the ninetieth decade in the United States to describe the increase in the growth generated by the Information and Communication Technologies. The literature analyzing this period highlights the positive impact that the information and communication technologies can have on several levels mainly business productivity. These results end the SOLOW paradox, which stated in 1987 the lack of positive effect of the use of ICT on productivity and growth.

Recognizing this, we wonder whether the same conclusions are valid for Algerian companies. Thus, the objective of this article is to answer the question: Has the use of information and communication technologies by Algerian companies positively affected their productivity? To answer this, we assume that the use of information and communication technologies positively influences the productivity of Algerian companies.

In this context, we present in this paper, at first a literature review on the new economy and ICT and their relationship to business productivity. And secondly, in order to test our hypothesis, we present the results of an empirical study on Algerian companies in the region of Oran. For this, we perform a regression analysis to test the relationship between the use of ICT in Algerian companies and their productivity.

2. LITERATURE REVIEW

In 1987, SOLOW¹ published an article in which he made the observation that despite the fact that the technological

revolution has changed the productive life, productivity growth is down hence the paradox: "You can see the computer age everywhere but in the productivity statistics. »

In the late 90s, signs of growth in productivity induced by information and communications technologies have begun to appear. These observations have led some observers to state that after years of investment in new technologies, the highest and longest growth was reached giving birth to a new economy.²

The latter, and after a media success of the concept in particular through the business section of the *Business Week* newspaper in December 1996³ (for the concept existed long before the study of MADRICK⁴) a long debate took over and much work has attempted to analyze this period. In 2001, the concept was officially adopted by the COUNCIL OF ECONOMIC ADVISERS⁵ (CEA) which justified it by the different and unique characteristics experienced by the US economy:

1. Since 1995, the growth rate of productivity has been more than twice the rate of the period 1973-1995.
2. Exceptionally low levels of the rate of inflation (2-3%) and unemployment (4%).
3. The disappearance of federal budget deficits.
4. The great performance of the US economy relative to other industrial economies in particular by its technological leadership in the world. This allowed it to have the highest per capita income and the fastest revenue growth in the major industrialized countries.

<http://www.standupeconomist.com/pdf/misc/solow-computer-productivity.pdf>, downloaded 04/03/2011.

²OCDE (2001), « La nouvelle économie : mythe ou réalité ? », p 11, <http://www.oecd.org/fr/economie/croissance/2380519.pdf>, downloaded 15/09/2006.

³BOUCHER, C. (2001). La Convention Nouvelle Economie. *XVIII èmes Journées Internationales d'Économie Monétaire et Bancaire, Pau*, 21-22, p 21.

⁴Madrack, J. G. (2001). *The business media and the new economy*. Joan Shorenstein Center on the Press, Politics and Public Policy, John F. Kennedy School of Government, Harvard University, p 03, http://dev.shorensteincenter.org/wp-content/uploads/2012/03/r24_madrack.pdf, downloaded 09/11/2011.

⁵U.S. Council of Economic Advisors, Economic Report of the President. Washington D.C.: DOC, 2001, p 22, www.presidency.ucsb.edu/economic_reports/2001.pdf, downloaded 03/04/2011.

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¹ SOLOW R., « We'd Better Watch Out », *New York Review of Books*, 12 juillet 1987, p 36,

The New Economy versus the Use of Information and Communication Technologies and Productivity of Algerian Companies in the Region of Oran

Studies of GODIN⁶, COHEN⁷ and VAN ARK & al.⁸, confirm this by characterizing the new economy by accelerating growth and increased productivity. The authors find which information and communication technologies that particularly constitute the main element of this phenomenon.

However, despite the shared findings on the new economy, after reading several documents (books, articles, theses ...) on the subject, it seems that there is no consensus on its definition. This is what we can note from these definitions:

ZAPPALÀ⁹ states that the definition of the concept of the new economy may have two levels. He distinguishes:

- At the popular level of usage, the concept refers to the companies involved in information and communication technologies, including the internet and also to differentiate between industries and companies of the old economy such as mining, traditional manufacturing and transportation.

- At the specialist level, the term refers to producers and companies using information technology as well as the broader implications of these technologies and know-how of economic and social structures of society. It is in this context that the term new economy may be substituted with the knowledge economy, the information economy, the information age or the network society.

JENTZSCH¹⁰ also notes two forms of definition of the new economy concept. He discerns between:

- A general definition derived from several sources such as The Bureau of Economic Analysis, which describes as new economy, an exceptional period in the US economy over the nineties (characterized by the great and long growth productivity with low inflation and unemployment rates). Or that of, Davies & al. describing the new economy as a "new paradigm" resulting from improved US economic performance in the 90s.

- A narrow definition based on empirical studies. Like that of GORDON which finds that the new economy is accelerating the pace of technical progress in information technology in the second half of the 90s, without considering his contributions before 1995. Or that of BOSWORTH and TRIPLET who find that information technology played a role in accelerating the growth and productivity of the US economy. These authors studied the period of the second half of the 90s. They found a distinction between the contribution of ICT to economic growth and labor productivity and its contribution to multifactor productivity.

For PAULRE¹¹ the term New Economy can have three similar but different meanings:

- It can be seen as the part of the economy devoted to the exploitation and development of New Information and Communication Technologies (NICT) (N for new, but they are no longer considered as such).

- Sometimes, it describes a genuine economic and technological revolution.

- Finally, the term can refer to some original performance and significant changes in the US economy that may not include a profound structural change.

Through the few definitions mentioned above, we can see the commonality of what the key role of information and communication technologies is in the development of the concept of the new economy. In fact, and according to CURIEN and MUTE¹², ICT, mainly the Internet is the incubator of the "new economy". That is why we introduce some definitions relating thereto. However, defining ICT in economics or management has no particular sign except a multitude of definitions due to the newness of the sector (created after the spectacular development of ICT to determine the field) and the dissimilarity of national accounting systems. On the other hand, and according to DIDIER and MARTINEZ¹³, one point remains common between all attempts to define the ICT sector and this point is that it includes the production of communication of information processing materials and the services made possible by use of these materials. Thus, for ARTHUS¹⁴ "ICTs represent activities driven closely to the production or use of computer or telecommunication hardware. These activities include:

- Manufacturing activities: communication electronic and computer equipment;
- Manufacturing activities of components for these materials;
- Creators of content for websites: RSS, video, multimedia, online stock exchange;
- Trade and the rental of these materials;
- Related services (telecommunication, IT services, consulting, data processing, ...);
- Software development (Internet access, software). »

For another view, we mention the main references in the definition of ICT, cited by Cohen and DEBONEUIL. This is the work of two great bodies; namely: the US Department of Commerce through its reports "The Digital Economy" and the Working Party on Indicators for the Information Society (WPIIS)] of OECD. This work led to circumscribe producing activities of goods

⁶GODIN, B. (2004). The new economy: What the concept owes to the OECD. *Research Policy*, 33(5), 679-690., p 681, www.csiic.ca/PDF/Godin_21.pdf, downloaded 11/02/2011.

⁷COHEN Elie, « L'avantage compétitif européen dans les technologies de la mobilité », Complément C du rapport de COHEN, D., DEBONNEUIL, M., STRAUSS-KAHN, D., DAVANNE, O., & DIDIER, M. (2000). *Nouvelle économie*. La documentation française, p 115, www.cae-eco.fr/IMG/pdf/028.pdf, downloaded 17/02/2010.

⁸VAN ARK, B., J. MELKA, N. MULDER, M. TIMMER & G. YPMA (2003), « ICT Investments and Growth Accounts for the European Union, 1980-2000 », Research Memorandum GD-56, Groningen Growth and Development Centre, Groningue, p 01, www.eco.rug.nl/ggdc/homeggdc.html, downloaded 05/04/2010.

⁹ZAPPALÀ, G. (2000). *Understanding the New Economy: The economic and social dimensions*. Research & Advocacy Team, The Smith Family.

¹⁰JENTZSCH, N. (2006). The new economy debate in the US: A review of literature. *Perspectives on Economic Growth*, 81-111, p 86-88.

¹¹PAULRE Bernard, « De la « New economy » au capitalisme cognitif », *Multitudes*, n° 02, 2000, p. 25-42., p 26-28, <http://www.cairn.info/revue-multitudes-2000-2-page-25.htm>, downloaded 12/10/2010.

¹²CURIEN, N., MUET, P. A., COHEN, E., DIDIER, M., & BORDES, G. (2004). *La société de l'information*. La documentation française, p 73, <http://www.ladocumentationfrancaise.fr/var/storage/rapports-publics/044000180/0000.pdf>, downloaded 15/02/2009.

¹³DIDIER Michel & MARTINEZ Michel, « Le poids des technologies de l'information et de la communication dans le système productif : Une comparaison entre la France et les États-Unis », Complément A dans COHEN & DEBONEUIL, op.cit., p 71.

¹⁴ARTHUS Patrick, « La nouvelle économie », édition la découverte, 2001, France, p 11.

and services in information and communication technologies that do not include the operations of manufacturing content or traditional publishing activities.

As can be seen, the definitions of ICT differ. Despite this, their impacts on business productivity are no longer debatable. In this context, PILAT¹⁵ summarized and described several studies on the impact of ICT on economic growth and productivity by ranking on three levels. We explain these studies in detail according to their classification in the following table:

Level	Author	Survey/Country	Period	Analysis
Macroeconomic	COLECCHIA and SCHREYER ¹⁶	Australia : Private, public enterprise and general government Canada : Total economy, business sector and government Finland : Total economy, business sector and government France : Total economy and major institutional sectors Germany, Italy, Japan, United Kingdom, United States : Total economy	1980-2000	the contribution of ICT capital to economic growth in nine OECD countries
	VAN ARK, & al. ¹⁷	the European Union (12/15 pays)	1980-2000	output and productivity growth
	JORGENSEN ¹⁸	Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.	1980-2001	international comparisons of economic growth among
	SCHREYER, & al. ¹⁹	the G-7 countries and Australia	1980-2001	capital services measures
Sectorial	VAN ARK, & al. ²⁰	52 industries in 16 OECD Countries: Austria, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Sweden, Spain, Switzerland and the United Kingdom, Canada, Japan and the United States	1990-2000	international differences in the labor productivity performance across ICT producing industries, intensive ICT-using industries and less intensive users, with an additional breakdown to manufacturing and service industries.
	PILAT, & al. ²¹	zone OECD	1990-2000	the contribution of ICT producing sectors and user growth of labor productivity and multifactor productivity
	O'MAHONY & VAN ARK ²²	Comparing the EU with The US for the total	1979-2001	Productivity Performance

¹⁵ PILAT Dirk, "THE ECONOMIC IMPACTS OF ICT – WHAT HAVE WE LEARNED THUS FAR?", Organization for Economic Co-operation and Development, PAPER PREPARED FOR THE 4TH ZEW CONFERENCE ON THE ECONOMICS OF INFORMATION AND COMMUNICATION TECHNOLOGIES, MANNHEIM, JULY 2-3, 2004, p 3-4, ftp.zew.de/pub/zew-docs/div/IKT04/Paper_Pilat.pdf, downloaded 15/06/2009.

¹⁶ COLECCHIA, A. & P. SCHREYER (2001), « The Impact of Information Communications Technology on Output Growth », Documents de travail de la DSTI 2001/7, OCDE, Paris, www.oecd.org/eco/growth/2496902.pdf, downloaded 14/03/2010.

¹⁷ VAN ARK, B., J. MELKA, N. MULDER, M. TIMMER & G. YPMA (2003), op.cit.

¹⁸ JORGENSEN, D.W. (2003), « Information Technology and the G7 Economies », Harvard University, December, document non publié, www.nber.org/chapters/c0882.pdf, downloaded 12/06/2009.

¹⁹ SCHREYER, P., P.-E. BIGNON & J. DUPONT (2003), « OECD Capital Services Estimates: Methodology and A First Set of Results », OECD Statistics Working Papers 2003/6, OCDE, Paris, http://www.oecd-ilibrary.org/economics/oecd-capital-services-estimates_658687860232, downloaded 14/02/2010.

²⁰ VAN ARK, B., R. INKLAAR & R.H. MCGUCKIN (2002), « Changing Gear – Productivity, ICT and Service Industries: Europe and the United States », Research Memorandum GD-60, Université de Groningue, décembre.

²¹ PILAT, D., F. LEE & B. VAN ARK (2002), « Production et utilisation des TIC : perspectives sectorielles sur la croissance de la productivité dans la zone OCDE », Revue économique de l'OCDE, n° 35, Paris, pp. 47-78, www.oecd.org/fr/eco/croissance/22035599.pdf, downloaded 02/01/2010.

The New Economy versus the Use of Information and Communication Technologies and Productivity of Algerian Companies in the Region of Oran

		economy.		
	PILAT & WÖLFL ²³	OECD countries	1990-2002	overall productivity growth in OECD countries
Microeconomic	ARVANITIS ²⁴	survey of Swiss business sector		Productivity labor and complementarities
	ATROSTIC & al. ²⁵	Survey on the use of computer networks in the US , survey on the use of ICT in Denmark, the IT survey on working in Japan , survey on advanced technologies		productivity labor (USA, Japan) , productivity multifactorial (Japan)
	BALDWIN & SABOURIN ²⁶	Survey of Advanced Technology in Canada		Market share, productivity labor
	GRETTON & al. ²⁷	Longitudinal Survey of companies survey of the use of IT in Australia		productivity labor , PMF , adoption of IT
	HALTIWANGER & al. ²⁸	Survey on the use of computer networks in the United States , panel on EAB institutions in Germany		productivity labor

Source : by the author based on PILAT's²⁹ summary

From these results, PILAT distinguished three effects of information and communication technologies. These are:

1. The contribution of ICT investment in the growth of the capital stock and consequently improving the productivity of labor.
2. The rapid technological advances in the production of ICT goods and services can participate in advancing the efficiency of capital and labor, or multifactor productivity (MFP) in the ICT-producing sector.
3. A wide dissemination and use of ICT throughout the economy can contribute to more efficient firms and therefore to increase multifactor productivity.

However, it should be noted that much of the interest in the potential impact of ICT on growth is not related to the ICT-producing sector, but to the potential benefits arising from their use in the production process of other parts of the economy. The use of ICT can have several effects on productivity.³⁰

In fact, the work of DESQ et al., Cited by BELLAJ³¹, who based their study on a synthesis of 1018 articles published from 1977 until 2001. They found that the dominant field of research in information systems is centered on the problem of evaluating information technology. They noticed that the concern to investigate the relationship between IT and the business performance is permanent, although it has undergone changes over the years. The author recalled that the objective of economic theory was to find the form of the economic function (mathematical function), that helps to explain the variance of the output, and suits information and communication technology. The majority of empirical studies in this perspective used productivity as a measure of performance.

22 O'MAHONY, M. & B. VAN ARK (2003) (eds), EU Productivity and Competitiveness: An Industry Perspective– Can Europe Resume the Catching Up Process?, Communauté européenne, Luxembourg. <http://ec.europa.eu/DocsRoom/documents/3032/attachments/1/translations/en/renditions/native>, downloaded 14/06/2010.

23 PILAT, D. & A. WÖLFL (2004), « ICT production and ICT use – what role in aggregate productivity growth? », dans OCDE (2004), The Economic Impact of ICT – Measurement, Evidence and Implications, OCDE, Paris, browse.oecdbookshop.org/oecd/pdfs/free/9204051e.pdf, downloaded 26/03/2013.

24 ARVANITIS, S. (2004), "Information Technology, Workplace Organisation, Human Capital and Firm Productivity: Evidence for the Swiss Economy", in: OECD (2004), The Economic Impact of ICT – Measurement, Evidence and Implications, OECD, Paris.

25 ATROSTIC, B.K., P. BOEGH-NIELSEN, K. MOTOHASHI and S. NGUYEN (2004), "IT, Productivity and Growth in Enterprises: Evidence from New International Micro Data", in: OECD (2004), The Economic Impact of ICT – Measurement, Evidence and Implications, OECD, Paris.

26 BALDWIN, J.R. and D. SABOURIN (2002), "Impact of the Adoption of Advanced Information and Communication Technologies on Firm Performance in the Canadian Manufacturing Sector", STI Working Paper 2002/1, OECD, Paris.

27 GRETTON, Paul, JYOTHIGALI and DEAN PARHAM (2004), "The Effects of ICTs and Complementary Innovations on Australian Productivity Growth", in: OECD (2004), The Economic Impact of ICT – Measurement, Evidence and Implications, OECD, Paris, <http://www.pc.gov.au/research/completed/ict-innovations/eictci.pdf>, downloaded 23/06/2013.

28 HALTIWANGER, J., JARMIN, R., & SCHANK, T. (2003). Productivity, investment in ICT and market experimentation: micro evidence from Germany and the US (No. 19). Diskussionspapiere/Friedrich-Alexander-Universität Erlangen-Nürnberg, Lehrstuhl für Arbeitsmarkt-und Regionalpolitik, <http://www.econstor.eu/bitstream/10419/28302/1/366241974.pdf>, downloaded 04/02/2013.

29 PILAT Dirk, "THE ECONOMIC IMPACTS OF ICT – WHAT HAVE WE LEARNED THUS FAR?", op.cit.

30 PILAT, D., F. LEE & B. VAN ARK (2002), op.cit., p 59.

31 BELLAJ Moez, « Technologies de l'information et performance organisationnelle : différentes approches d'évaluation », Manuscrit auteur, publié dans "LA COMPTABILITE, LE CONTRÔLE ET L'AUDIT ENTRE CHANGEMENT ET STABILITE, 2008, France, p 02-03, <http://halshs.archives-ouvertes.fr/docs/00/52/23/42/PDF/p45.pdf>, downloaded 15/02/2014.

The study of STRATOPOULOS and DEHNING³² is also part of this logic of global analysis and more specific understanding of the link between information technologies and the company's financial performance. The authors, after an empirical analysis of a list of 100 companies with successful use of IT in 1993, found that firms that invest in IT and are usually good IT users perform better financially.

Also, the empirical results of the study of HITT and BRYNJOLFSSON³³, on 370 large companies over the period 1988-1992 show that ICT investment has a significant impact on business results.

After research on hundreds of companies, BRYNJOLFSSON found that: "companies that use many computers are generally more productive than those who use them little or not at all." ³⁴

In this context, we present the field study we conducted to see this ICT-productivity relationship in Algerian companies.

3. EMPIRICAL STUDY

1. METHODOLOGY

To test our hypothesis, we have conducted a field study to analyze the impact of ICT use on productivity of Algerian companies. For our sample, we used the directory of the Chamber of Commerce and Industry of Oran. This directory classifies firms into four categories: Trade, Industry, Service and BTPH. Our study will target companies of all sizes and from all sectors.

After contacting 572 companies by email and telephone solicitation, 38 companies have agreed to participate in our survey.

The questionnaire we used comprises three components: the first is intended to map the company (its characteristics: ownership type, company size, creation date, legal form and industry). The second concerns the use of ICT. While the third focuses on business productivity.

Before administering the questionnaire, we considered it to be tested on a sample and then calculated its reliability and validity. Its reliability was calculated using Cronbach's alpha = 0.91. As to its validity, we calculated the Auto validity square root = 0.91 = 0.95. Since the measurement tool is reliable and valid, we have administered it to companies. The study started on December 1, 2012 and ended on February 28, 2013.

The mapping of participating companies in the survey is summarized in the following table:

Characteristics of participating companies	Staff	Nbr effective	effective %
Ownership Type	Publique	2	5,3 %
	Privé	36	94,7 %
	Mixte	0	0,0 %
Creation Date	av90	3	7,9 %
	ent90-2000	7	18,4 %
	apr2000	28	73,7 %
Business Sector	BTPH	6	15,8 %
	COMMERCE	12	31,6 %
	INDUSTRIE	8	21,1 %
	SERVICE	12	31,6 %
Legal Form	SPA	2	5,3 %
	SARL	19	50,0 %
	EURL	9	23,7 %
	SNC	0	0,0 %
	GROUPEMENT	0	0,0 %
	AUTRES	8	21,1 %
Company Size	TPE	18	47,4 %
	PE	12	31,6 %
	ME	7	18,4 %
	GE	0	0,0 %
	TGE	1	2,6 %

From this table, we can notice that 94.7% of companies participating in the survey are private, 73.7% of the 28 companies were created after 2000, 63.2% of these companies are active in the service sector (31.6% for trade and 31.6% service). Half of these companies have an LLC legal form type (Limited Liability Company). Finally, 47.4% of the 28 companies are very small in size (very small business: from 1 to 9 employees).

2. RESULTS AND DISCUSSION

32 STRATOPOULOS, T. & B. DEHNING, « Does Successful Investment in Information Technology Solve the Productivity Paradox? », Information and Management, vol. 38, no 2, 2000, p. 103-117, <http://www.sciencedirect.com/science/article/pii/S037872060000586>, downloaded 11/04/2010.

33 HITT Lorin M. and BRYNJOLFSSON Erik, « Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value », MIS Quarterly, Vol. 20, No. 2 (Jun., 1996), pp. 121-142, p 136, <http://home.business.utah.edu/actme/7410/Productivity.pdf>, downloaded 12/08/2014.

34 according to RÉJEAN ROY, « PRODUCTIVITÉ ET TI : Maximiser l'impact des technologies sur son organisation », CEFRIO – PERSPECTIVES, 2005, p 08, <http://www.algeriatelecom.dz/veilletech/bulletin65/pdf/profilsetmetiers3.pdf>, downloaded 12/06/2014.

The New Economy versus the Use of Information and Communication Technologies and Productivity of Algerian Companies in the Region of Oran

To test the impact of ICTs on Algerian companies' productivity, we performed a linear regression. Taking into account our problematics and hypothesis, it appears that the use of ICT is considered as an independent variable, while the productivity of enterprises is the dependent variable. In conducting the regression analysis by SPSS 20.0 software, we obtained the following table:

Model Summary

Model	Change in statistics				
	Change in R-square	change F	ddl1	ddl2	Sig. change F
1	.001 ^a	.032	1	36	.860

a. Predicted values (constants) , var1ICTs

Analysis of variance factor by simple linear regression we performed to determine if the productivity of Algerian companies varies according to the use of ICT by the company in this table, indicates $F(1, 36) = 0.32$, $p = 0.86$. Since the test is not significant, it tells us that there is no correlation between ICT and productivity of Algerian companies in the region of Oran. This result indicates that the hypothesis that we issued is not confirmed.

Yet, most studies have dealt with the subject of the relationship ICT / productivity finds a significant and positive correlation between the two variables. We cite as a reminder a few.

BELORGEY et al.³⁵ state that: "The positive and significant role of ICT on productivity is confirmed." The authors return to the period of the nineties (in the US) and note that these new technologies could help to explain the changes in the productivity of this decade. They cite several analyses suggesting that the sharp increase in the average growth rate of US productivity in the second half of this decade can be attributed in the most part to the production and use of these technologies.

Similarly, the OECD³⁶ report on the perspectives of information technologies studied the growth of SMEs in relation to the changing intensity of computers between 1992 and 1999 in 17 OECD countries. It has noted a positive relationship between the two variables, the countries with the largest increase in the penetration of computers in the 90s also had a faster recovery in MFP growth between the 80s and the 90s. In light of these studies and those cited in the review of literature on the one hand, and by taking into account our results on the other hand, we can assume that the characteristics of the sample we studied do not allow us to achieve such a result and / or we have to take into account other explanatory variables. For among the determinants of the impact of information and communication technologies, there is the size and age of the business. According to PILAT³⁷, most of the studies that have analyzed these links have concluded that the adoption of advanced technologies, such as ICT, increases with the size of companies and institutions. He cites data about the UK which show that large companies with over 250 employees are more likely to use network technologies such as Intranet, Internet or EDI than small businesses; they are also more likely to have their own website. These large firms account for 38% of all major UK companies, but less than 5% of small companies. However, small businesses with 10 to 49 employees are more likely to use the Internet as a unique network technology. These differences are due in the most part to the different uses of network technologies in large and small businesses. In fact, large companies can use these technologies to reorganize the flow of information and communication internally and integrate these flows throughout the production process. While some small businesses use the Internet only for marketing purposes.

Similarly, the interaction between size and age is also important, since it provides a link to business creation. PILAT cites LUQUE's study that noticed that age may have a role, according to company size. Since small new facilities are more likely to adopt advanced technologies than little old establishments.

[2] ARVANITIS, S. (2004), "Information Technology, Workplace Organisation, Human Capital and Firm

CONCLUSION

The new economy is a matter of ICT impact on business productivity that impacts on growth at the macro level. The objective of this paper was to test this relationship in Algerian companies in the region of Oran. In our study, we suggest that the use of ICT by Algerian companies does not affect their productivity. Therefore, we assume that this result depends on the characteristics of the surveyed companies (mostly private companies, LLC type, very small, created after 2000 and active in the service sector) and / or we need to consider other related explanatory variables.

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[3] Productivity: Evidence for the Swiss Economy", in: OECD

[4] (2004), The Economic Impact of ICT – Measurement, Evidence and Implications, OECD, Paris.

[5] ATROSTIC, B.K., P. BOEGH-NIELSEN, K. MOTOHASHI and S. NGUYEN (2004), "IT, Productivity and Growth in Enterprises: Evidence from New International Micro Data", in: OECD (2004), The Economic Impact of ICT – Measurement, Evidence and Implications, OECD, Paris.

[6] BALDWIN, J.R. and D. SABOURIN (2002), "Impact of the Adoption of Advanced Information and Communication Technologies on Firm Performance in the Canadian Manufacturing Sector", STI Working Paper 2002/1, OECD, Paris.

³⁵ BELORGEY Nicolas, LECAT Rémy, MAURY Tristan-Pierre, « Déterminants de la productivité par employé : une évaluation empirique en données de panel », *BULLETIN DE LA BANQUE DE FRANCE* – N° 121 – JANVIER 2004, p 87-88, https://www.banque-france.fr/fileadmin/user_upload/banque_de_france/archipel/publications/bdf_bm/etudes_bdf_bm/bdf_bm_121_etu_6.pdf downloaded 12/06/2014.

³⁶ OCDE, « La nouvelle économie : mythe ou réalité ? », 2001, p 25, <http://www.oecd.org/fr/economie/croissance/2380519.pdf>, downloaded 15/09/2006.

³⁷ PILAT Dirk (2004) ,op.cit., p 24.

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The New Economy versus the Use of Information and Communication Technologies and Productivity of Algerian Companies in the Region of Oran

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