

Digital Economy Transformation: A Methodological debate

Majda AZARIZ, Pr. Kaoutar El MENZHI

*Department of Economics and Management School of Law, Economic and Social Sciences -Sousissi -
Mohammed V University in Rabat
Corresponding Author: Majda AZARIZ*

ABSTRACT: *In recent decades, digital transformation has become a highly topical issue not only in political, economic and social circles but also for many researchers. Indeed theorists of all horizons try to build a doctrine around this notion whose aspects are still confusing and difficult to define.*

In this work of research, we try to draw up a state of the art research and publications in the digital economy. We found that most authors argue that the digital economy today is firmly part of the global and local economy. It would affect all aspects of economic activity and would quickly creep into it. It would also induce a "digitization" in progress of the economy, which strongly questions the sustainability and definition of business models. According to them, the digital economy has an increasing propensity to experimentation, as well as to innovation of highly popular and relocated services in the immaterial; however, it would not reveal sustainable business models.

KEY WORDS: *Digital economy, new economy, Icts, digital transformation, public policies.*

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I. INTRODUCTION

Over the past few years, many research projects have been devoted to analysing the phenomena of digital anchoring in the economies of countries.

Many authors, belonging to several research orientations in economics, in management of organizations, in marketing and even sociology have in common to be interested in the direct and indirect effects of the introduction of digital in the lives of companies, private and public institutions and within the State.

Indeed, some authors argue that the digital economy today is firmly part of the global and local economy. It would affect all aspects of economic activity and would quickly creep into it. It would also induce a "digitization" in progress of the economy, which strongly questions the sustainability and definition of business models. According to them, the digital economy, had an increasing propensity to experimentation, as well as to innovation of highly popular and relocated services in the immaterial, however, it would not reveal sustainable business models.

However, the examination of this literature reveals real differences in the apprehension of this phenomenon, beginning with the wide variety of concepts used to designate it, for example: new information and communication technologies (ICT), digital, the digital age, etc.

The value of this kind of notional clarification exercise seemed important to us and constituted the first part of this article.

In addition, the analysis of a set of recent work converges on the use of the term "New Economy" which owes its success to the fact that it designates the same term a new and exciting sector, the information and telecommunications industries (ICT) and a new way of looking at the economy as a whole.

If one approaches the term in the narrowest way, the «new economy» would cover less than 10% of GDP within

so-called "developed" countries such as the United States or France, and even less in a country such as Morocco, which despite two editions of the Digital Morocco Plan would still be in the early stages it's digitization.

In a broader definition, this new economy could include all user sectors, ultimately the entire economy.

This debate on the scope of the new economy is not strictly methodological. Far from being a technical epiphenomenon, the ICT sector would be the visible part of a much broader transformation of industrial economies.

Through the detailed bibliography in this article, we have tried to answer the following main questions:

- Is the concept itself of a new economy true?
- To what extent would the different business models of the new economy generate or destroy value?

The reflections we have followed in the design of this article are similar to several currents but to address the issue at hand, we adopted a critical reading of bibliographic resources by following the conceptual register in order to clarify the concepts used to designate the phenomenon of the new digital economy throughout the literature met.

In this article, we will attempt to refute or confirm the following assumptions:

- H1: The new economy could include all sectors, in the long term the entire economy.
- H2: The “digital economy” and “digitization of the economy” movement would influence, develop or threaten traditional patterns of production and consumption in most industries and territories.

II. DIGITAL ECONOMY: NOTIONAL CLARIFICATION EXERCISE

Through the literature encountered, different organizations and authors according to prisms sometimes purely technical, sometimes in connection with their respective specialties (economics, organization management, labor law, sociology), have treated the notions of the new economy or digital economy.

Debates on the digital economy began in the United States when, in the 1990s, the United States experienced a period of sustained growth, combined with extremely low levels of unemployment and low inflation.

BAILEY and LAWRENCE (2001) questioned the existence of a “New Economy”. They testified that the belief of the emergence of what was now called New Economy was supported by the increase in productivity related to new technologies.

In addition to this; and despite the fall of the Internet bubble in 2000 that tarnishes the image of this new economy; BAILEY and LAWRENCE (2001) have shown that a substantial and above all structural acceleration of TFP (Total Factor Productivity) outside the IT sector has been achieved. They conclude that semantically speaking of New Economy, as a new cycle is wrong. Nevertheless, they say the new wave of innovation (largely linked to ICT) has affected so-called traditional industries as well as emerging enterprises, and by this the term new economy is fundamentally legitimate.

In the same sense, MEZOUAGUI (2007) addresses this point more deeply, arguing that the combination of intangible investment (both research and education and training) and the diffusion of Icts provided an explanation for the opening of a cycle, and then called the “new economy”.

In contrast to the authors mentioned above who discussed the new economy from a macroeconomic perspective, CARLSSON (2004) argued that while economic growth can be described at the macroeconomic level, this could not be explained at this level. He develops that the real new effect would be the combination of digitization and the Internet, which could be considered as a universal technology with a characteristic that it gauges main.

It is that we are witnessing an increasingly extraordinary connectivity of heterogeneous ideas and multiple actors, causing a disproportionate range of new combinations constituting a picture that could be described as "New Economy".

In the discussion on the new Economy (or Digital Economy), CARLSSON stresses the need to distinguish between two concepts: information and knowledge. Information can be defined as a collection of data, while knowledge can be defined as a structure (theory or hypothesis) that allows information to be organized and interpreted.

Thus, in the so-called old economy, the flow of information was physical: (money, invoices, face-to-face meetings, phone calls).

In the new [digital] economy, information in all its forms becomes digital reduced to pieces (bits) stored in computers and running at the speed of light through networks. A new world of possibilities is thus created.

According to its microeconomic vision of the digital economy, CARLSSON (2004) joins ORLIKKOWSKI and IACONO (2000) who are studying this phenomenon from a microsocial and organizational point of view. They consider that in academic circles or popular discussions; there is a tendency from a rhetorical and theoretical point of view to “objective” the digital economy and treat it as an external, independent, objective and inevitable phenomenon. According to them; conceptualizing the digital economy in this way is inappropriate and could be misleading. The authors propose to approach this phenomenon as a social evolution of our own modes of operation, and of the collective and individual efforts, they describe as complex and non-linear. According to the authors rather than focusing on market forces or technological infrastructure (the basic components of a conceptualized digital economy as external phenomena), they assume that organizational practices play a key role in creating and supporting this phenomenon.

In this same sense, BIALES (2013) proposes a deeper vision and considers the new economy according to two definitions:

- A strict definition: Icts are statistically classified into three groups: information technology (enterprises producing equipment and related services: operations, maintenance and commerce), electronics

(manufacture of components and of certain appliances) and telecommunications (service activities and manufacture of appliances)

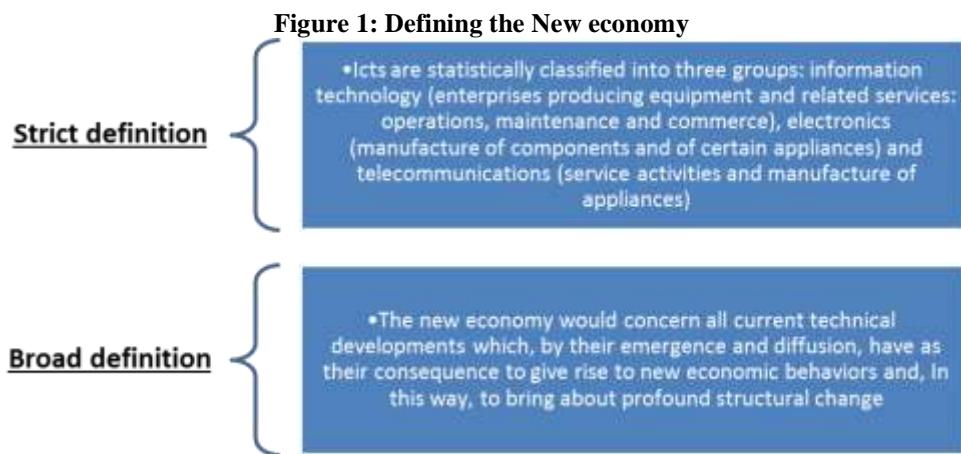
According to him, As the New ICT concern all economic sectors, the technical definition of the new economy can lead to call it the "digital economy".

It should also be noted that many authors (as BIALES 2013 rightly points out), arguing that today's Icts are no longer really new, prefer to refer directly and simply to «Icts»

- A broad definition according to which the new economy would concern all current technical developments which, by their emergence and diffusion, have as their consequence to give rise to new economic behaviors and, In this way, to bring about profound structural change.

Therefore, in order to define the new economy more broadly in terms of technology, BIALES(2013) stresses the importance of the intangible, knowledge, knowledge by invoking the growing weight of R & D expenditure and that of investment in skilled human capital.

Currently, in the institutional context, the most commonly used term is “digital economy”, which often refers to e-commerce, which seems too simplistic.



Source: Bialès (2013)

Thus, for the State Secretariat responsible for the prospective, evaluation, public policy and development of the digital economy in France, "the digital economy" means the activity of the telecommunications sectors, audiovisual, software, computer services and online services.

In "The digital economy: a new lever for growth for emerging economies?" PENARD and SUIRE (2009) provide a definition that, although very broad, we find somewhat satisfactory in this work. The term digital economy is used to describe these activities related to the production and trade of goods and services based on digital technologies or networks: communications goods and services, informational services, intermediation services through digital networks, electronic commerce,... ».

KAPLAN (2007) went even further by evoking a “digital civilization” to express the importance of the paradigm shift we are currently experiencing. The new paradigm is characterized, both by the erasing of a number of traditional boundaries (between the natural and the artificial, between the mechanical and the organic and between the digital and the physical), and by the “meta-convergence” of the science and techniques of matter (nanotechnologies), life (biotechnology) and information (information technology and cognitive science).

X. DALLOZ (1999) speaks to him about the "new digital and connected economy" (thus joining the strict definition of BIALES) and considers that the Internet is the heart of it. With the network of networks, a new economic model is born, that of free access, which extends from the university world of origin to the commercial world with the offer of free software and the multiplication of free online services.

Moreover, BIALÈS (2013) supports this idea by invoking the internet, since the mid-1990s as the universal platform for the convergence of computing, electronics and telecommunications.

According to him, the Internet has become the preferred and unparalleled way to route in record time and anywhere all forms of information and messages. «Internet, combined with new networks (Wi-Fi, Wimax, GPRS, UMTS...) and mobility tools (PDA, Smartphones, Tablets PC, Laptops...), now allows artisans, mobile workers, merchants, the liberal professions and small industrial enterprises, previously partitioned into fixed and restricted networks due to lack of financial, human and technological resources, integrate into all types of business networks at the local, regional, national or international level”.

III. DIGITAL ECONOMY: STRUCTURAL TRANSFORMATIONS AND NEW BUSINESS MODELS

Revisiting the Schumpeterian intuition, according to which technological innovation is a major engine of economic growth, work is converging to highlight a strong correlation between the importance of ICT in GDP and the pace of economic expansion (OECD, 2000).

High public investments, usually supported by private investments, in the access and operation of network infrastructures, this would have led to considerable productivity gains in industry and services. Capitalizing information and knowledge through the development of digital networks would have been at the heart of a wealth creation process (MEZOUAGUI, 2007).

However, the mechanical relationship between Ict and growth, far from being perfectly verified, is still the subject of controversy today. Externalities induced by the availability of public goods (theories of endogenous growth), the diffusion to other sectors of activity of the productivity gains achieved in the telecommunications sector, or the emergence of new activities with increasing yields and higher added value – as a result of the convergence of the telecommunications, informatics, electronics and audiovisual industries – economic growth (OECD, 2003).

Nevertheless, the contribution of Icts is difficult to make quantitatively beyond the multiplication of innovations and the considerable weight taken by information in economic and social activities.

BIALES (2013) distinguishes between two phenomena that support the advent of the new economy, namely the irrepressible extension of the market economy and the transformation of the entire economic and social system.

According to him, not only the information economy and the intangible economy extend the area of influence of market mechanisms to new activities but they also modify the competitive relationships in activities traditional (greater transparency and interactivity).

With the one he now calls "new economy", new jobs appear and old ones are being reconfigured. The new economy gives more importance to all professions, which have a high content of knowledge and information: managerial, professional and technical professions develop faster than others do. This brings us to the fact that the tertiary sector and the service economy, especially those for business, are naturally strengthened.

BIALÈS (2013) points out, however, which it is useful to remember that nearly 3/4 of service companies depend on their links with industry: This remains essential to the productivity of activities and to the competitiveness of the national economy.

In addition, the new economy is also recognized by the global dimension of production, marketing and management activities, hence its very close link with the now old phenomenon of global globalization.

From a strategic point of view, we will first consider the vision of the researchers PENARD and SUIRE (2009) who analyze that this economy is also characterized by a "modularity" essential to its deployment: digital services and products depend on a system whose users' only benefit when all the system modules are. Taken separately, each party has no interest in itself.

The two researchers point out that this interdependent brick logic determines the importance of a mastery of communication technology standards as an element of control over revenue collection – this is the case of Microsoft and its captive customers. This modularity/standardization questions the capacity of the territories to attract companies to design sub-parts of the system in a favorable environment.

On a completely different register, we will now focus on the vision of some authors regarding the significant change in business models in the digital age.

Indeed, we observe that the business models of the "digital economy" are being challenged by new online uses, services and sociability, changes that redefine the ways in which content is monetized and displace value creation within production channels.

CHOTARD (2009) explains this by the fact that the dematerialization of trade and goods leads to a shift from value creation to upstream production channels. It is organizing a redefinition of the distribution and distribution business (the influence of digital copies), or even short-circuited as in the case of Amazon and its electronic sale of books.

Unlike the so-called "classical" economy, the value of a digital asset or information diminishes because the technology makes it easily and everywhere accessible, as is the case with music files. They are distributed at a virtually zero marginal cost, the price tends towards zero (fixed costs linked to the networks excluded), so that the economic value can no longer be collected at the end of the chain, when it is used. What is becoming valuable is no longer the information or the digital asset circulating, but it is the tool that makes it possible to find and qualify them, that is information about the information.

In addition, CHOTARD (2009) rightly points out those economies of scale and consumer attention take precedence over traditional physical capital and intermediaries.

For CURIEN (2000), digital creates value, but it shifts its collection from usage to access. The digital economy therefore plays a major role in increasing productivity gains for the tasks of producing and disseminating information. Digital goods thus retain value through the ability to monetize their access and generate transfer costs.

IV. DIGITAL ECONOMY: NEW FIELDS OF RESEARCH

According to BOURREAU and PENARD (2016), researchers in the social sciences and humanities, and primarily economists, have an important role to play in better understanding these ongoing transformations, to analyze and measure the socio-economic effects of digital technologies, services and uses. This micro- and macro-economic, theoretical and empirical research is part of a new field of economic science, the “digital economy”.

The digital economy is more than a sub-domain of the industrial economy. It is not only a question of revisiting classic questions of the industrial economy such as online pricing, strategies of differentiation between physical and online offerings, the regulation of digital markets or the effect of advertising, but also to address new research issues such as the economics of platforms, big data and privacy (EINAY and LEVIN, 2014).

The digital economy also addresses issues specific to other areas of the economy such as the labor economy (AUTOR, 2015) through the questioning of digitalization and its effect on the work of individuals.

BRYNJOLFSSON and MC AFEELLE (2014) are joining forces to ensure that the digitization of the economy implies that the skills requirements of workers are becoming increasingly oriented towards new technologies. That the era of digitization is (and will increasingly be) the worst for those who have only “ordinary” skills and will not be able to use digital work tools (software computers and others).

On another aspect, the digital economy is approached in terms of its relationship with the geographical economy by SINAI and WALDFOGEL (2004).

According to their study of 16.5 million web pages, the collection and analysis of information on how trends in Internet connectivity and online and offline spending of the population studied to draw conclusions on whether the Internet serves as a substitute or complement for urban agglomeration.

The results showed that the Internet is still a new technology, with no major diffusion. Its impact on individual consumption was not yet significant.

This study seems currently obsolete having been carried out on the American market in 2004, but seems very interesting for the Moroccan case, because the penetration of the Internet and the democratization of online purchases are still in the early stages.

Finally, the digital economy is carrying a new methodological paradigm linked to the existence of massive and varied traces and data that can be collected on the Internet or via connected objects. Researchers can also implement large-scale experiments and observe real-time behavior.

According to EDELMAN (2012), “for researcher-collected data, the Internet opens exceptional possibilities both by increasing the amount of information available for researchers to gather and by lowering researchers’ costs of collecting information”.

However, this “data revolution” involves entry costs for researchers that could create or strengthen digital divisions between research teams, whether they have access to these data and the skills to exploit them (PENARD and RALLET, 2014).

V. CONCLUSION

The literature therefore abounds with many definitions of the digital economy. According to the discipline of each (economics, social sciences, marketing, and labor law), the latter is broken down according to a prism of notions which each time reveals a new facet.

Moreover, in addition to certain reductive definitions by some authors, which compartmentalize the new digital economy within a purely technical framework, most authors agree that, in the long term, this digital economy will encompass the entire economy and will eventually be appropriate for all sectors.

According to BOMSEL (2001), the digital economy should be distinguished from the “new economy”. The digital economy refers to the long process of disseminating information to the entire digital economy, its dynamic processing and transmission over high-speed networks. On the other hand, the “new economy” would refer rather to the discourse on these changes.

And it is indeed from this perspective that the “Conseil d’analyse économique France” recommended in 2015 in its analysis notes (COLIN , 2015) that in the field of regulation and competition policy, it would be preferable “...do not attempt to define a “digital sector”, regardless of its contours, to which special regimes would apply. Conversely, it is the set of sectoral regulations that should be made more dynamic and welcoming for digital innovation, by offering a right to experiment with new business models».

Therefore, we found it more judicious, to focus our research on the theme of digital transformation so as not to confine ourselves to the purely technical definition that some authors have attributed to the digital economy. We also tried not confine our thinking to a purely IT sector, and thus have a more global view of the research topic in order to take stock of the situation development of public policies deployed in the context of this transformation.

This work attempts to provide a snapshot of research and publications in the field of digital transformation.

As in any field that has recently become the focus of a community (academic or otherwise), there is a real epidemiology of knowledge. It is healthy but contributes a little, in this phase of youth or even genesis, to disturb the measure of a state of art (in the nobler sense of the term than a simple document).

Apart from this contemporary profusion of writings on the new digital economy, what is striking today for the observer of research in this field is their multidisciplinary nature? True contagion of ideas, the digital transformation is today the object of interest for economists, managers, jurists, sociologists, historians, psychologists, ethnologists.

Because of the first two traits, profusion and multidisciplinary, the field of research is currently marked by the absence of a unifying theory. Probably because we would find ourselves here in a pre-paradigmatic phase, that is to say in a phase where the first explorations of a reality lead to a set of scattered theories, the next step being then to progress towards a metatheory reconciling particular models. As a result, our work, which was an attempt to establish a state of the art, is far from being simplified.

Assumptions verification

H1. The new economy could include all sectors, that is ultimately the entire economy.	The literary journal to which we devoted the first part of this work allowed us to more or less define the methodological debate concerning first the notional clarification to be established between the digital economy and the new economy. On another level, while some authors have confined their work to the purely technological definition of the digital economy, the majority have confirmed our hypothesis.
H2. “Digital economy” and “digitization of the economy” movement would influence, develop or threaten traditional patterns of production and consumption in most industries and territories.	Many authors have devoted their work to studying the impact of the digitization of the economy on production and consumption patterns, and converge on the intimate conviction that the advent of this digital age is having some impact on usage. The study has presented us with a difficulty in refuting or confirming our hypothesis, which lies in the absence of identified and comprehensive indicators commonly adopted to measure this impact.

Source : Own work

Management contributions

This research is likely to be of interest to different actors. At the forefront of these players, are public bodies that enter the governance circle of digital strategies being developed in Morocco and other comparable countries? A better understanding of the mechanisms of digital transformation described by the literature, coupled with the analysis of achievements and limitations of previous strategies, would give them a better visibility in their decision-making.

Research's limits

As with any research, the results obtained must be assessed taking into account the limitations inherent in the study carried out. First, it will be essential to assess the impact of digital transformation by focusing on theories relating to the evaluation of public policies in order to identify the most relevant indicators to be studied. Then it is essential to ensure the completeness of statistical data and their relevance in view of the scarcity of publicly published indicators.

Future research paths

The limits mentioned above lead to new avenues of research. Studying the mechanisms of a country's digital transformation involves establishing a large-scale study with comprehensive qualitative and quantitative analysis to capture the myriad of aspects related to this topic.

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