

“The cost of IT ignorance”: outline of the italian survey

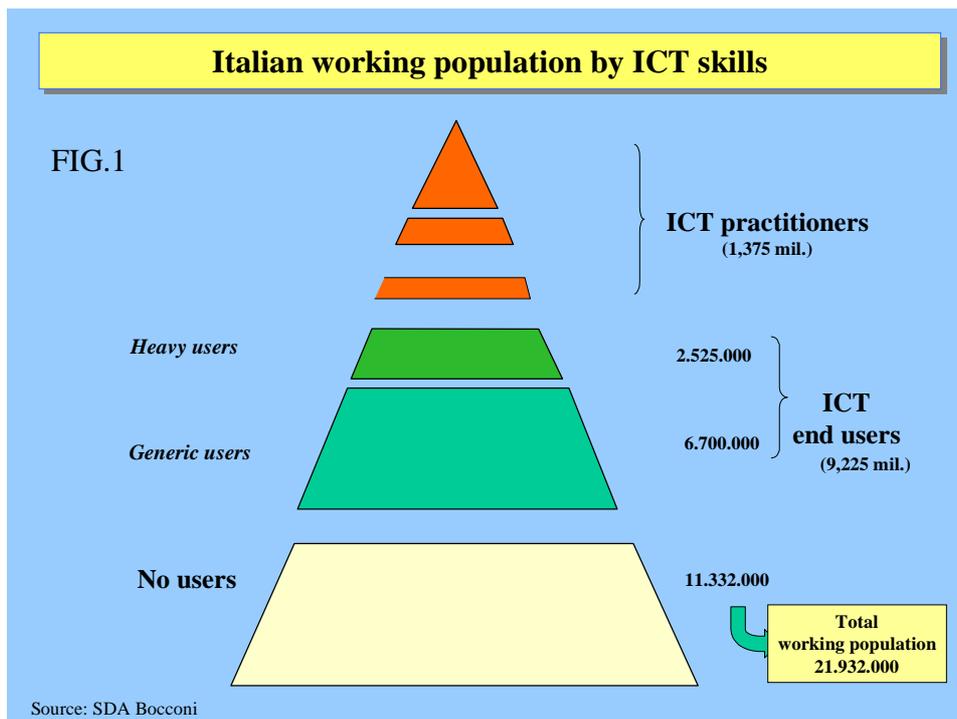
In 2003 AICA, jointly with Bocconi University, carried out a research on the “cost of digital ignorance”, concerning the italian market. The outline of the research is as follows:

- In the first section of the study we gave some general informations on the Information Society; for example we have figures showing the contribution of information and communication technologies to GNP and to GNP growth in US; or proving that in “ICT intensive” companies, there is an higher productivity growth .

We mentioned also the growing impact of information society on jobs; it’s quoted an European commission’s report stating that some 53% of european workers are now computer workers. As a consequence, there is an increasing demand for workers with adequate skill and a change of skill requirements for a wide range of occupations.

A specif analysis has been made in order to have an idea of the situation of ICT skills in the italian population, and so to estimate the number of ICT end users , beside the number of ICT practitioners and of no users.

The data we got are reported in Fig.1.



The estimates come from different sources: the official italian statistics, EITO, and specific surveys on the italian ICT marketplace.

ICT practitioners include (on the analogy of the study “IT practitioner skill in Europe) both ICT professionals and non-professional dedicated ICT workers.

The end-users have been split in two major categories: heavy users, that is people using heavily, systematically, computers in their jobs; and generic users, by difference.

From the data, it comes out that, also in Italy, more than 50% of working population is using computer at work.

• The second chapter of the Italian study is just a summary of some documents of European Commission referring to Information society; mainly those documents stressing the importance of skill update and of training

• The third chapter is specific to Italian environment, and summarizes the guidelines of Ministry of Technology related to the development of information society in Italy. In this chapter we gave also some data referring both to ECDL growth in Italy (as an indicator of IT literacy needs), and to the results of a survey we made over a sample of 1000 ECDL graduates. Objectives of the survey were to know the reasons for certification, the satisfaction level, the possible advantages ECDL gave, and, in the workforce, at what extent ECDL has been supported by employers or it has been a personal initiative.

• In the next chapter, to have a rough estimate of the cost, to the Italian economy, of the lack of adequate IT skills, the Norway study on the “hidden computer cost in the population” was taken into account.

Which are the major results of the study?

- Some 60% of the working time is spent on using computers
- The average time spent on solving IT problems is 2h51min per week
- The most time consuming problem is to help others, mainly in word processing/spreadsheet/data base/presentations/internet applications
- About 40% of the time is lost in office and Internet applications.

So a basic training, ECDL like, could avoid most of the problems and the time lost can be assumed as a significant input to evaluate the cost of ignorance.

Which assumptions have been made in order to roughly evaluate the cost of ignorance in the Italian market?

- As seen before, the number of generic users, in Italy, amounts to 6.700.000. Researchers took into account only generic users because they assumed that heavy users are more skilled and waste less time in computer problems.
- The time lost per week has been multiplied **by the number of generic users**
 $2\text{h } 51\text{ min} \times 6700000 = 19095000\text{ hours per week}$
- and then **by the number of working weeks** per year
 $19095000\text{hours} \times 48\text{ weeks} = 916560000\text{hours} = 114.570.000\text{ working days}$
- So, every year, more than one hundred millions working days are lost for lack of adequate skills.
- By considering the **daily average cost per employee**, in Italy, (136,6 €) we have an indication, in monetary terms, of the cost, to Italian economy, of IT ignorance equal to

$$136,6\text{€} \times 114.570.000 = 15,6\text{ billion €}$$

Also taking this number just as an indication it's really a quite impressive figure.

It was also given an estimate of the annual cost per generic user

$$2\text{h } 51\text{ min} \times 48\text{ week} = 17,1\text{ days per year}$$

$$136,6\text{€ per day} \times 17,1\text{days} = 2331\text{€}$$

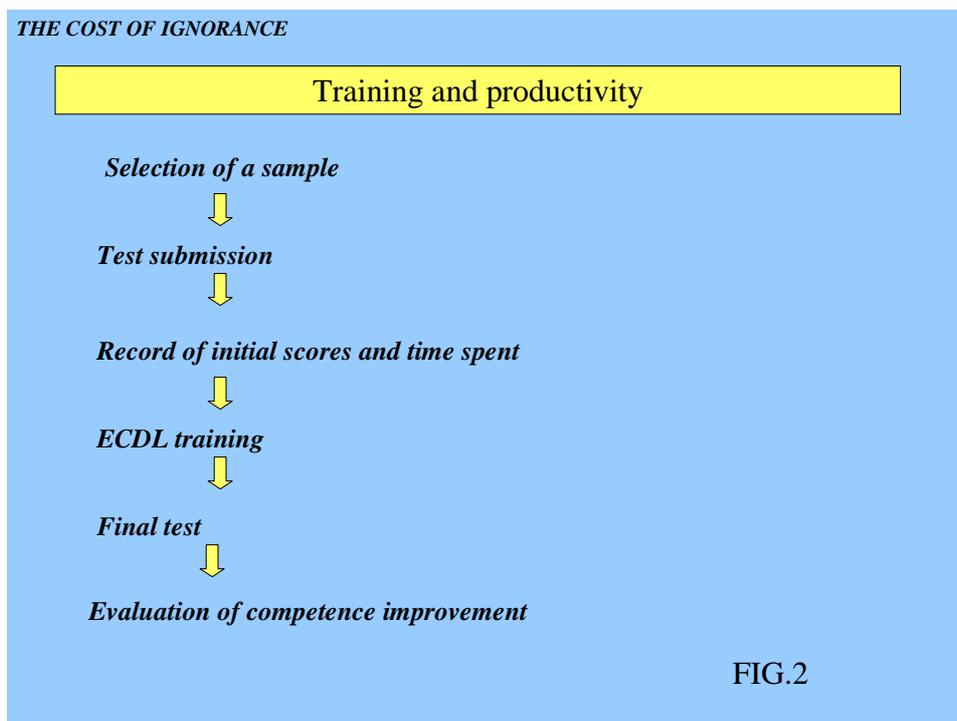
This figure is interesting because is much alike the one given by Gartner Group in the study on TCO; in this study the cost due to low end user productivity amounts to some 34% of the total cost of ownership.

- Then it was decided to estimate (Chapter 5) if, and at what extent, a basic IT training, ECDL like, can reduce the cost due to lack of competence. So it was selected a sample of 200 people, mostly students of Bocconi University, but also employees of medium large manufacturing companies, and this sample, before undergoing any training, was given a test: the test consisted of 37 questions, concerning the solution of problems in operating system area, or in Wordprocessing, spreadsheet, presentation, internet applications.

For each subject researchers kept a record of the score they got and the time spent in performing the task.

Most persons were not completely illiterate, but they had already some basic notion of informatics.

The sample subjects then underwent ECDL training and, later on, they repeated the test. (Fig.2)



In order to evaluate the competence improvement,(Fig.3) two different indexes have been used. In the first one the score's growth has been compared with the initial score. The average increase has been some 47% and the growth has been quite high specially in persons with initial low competence levels.

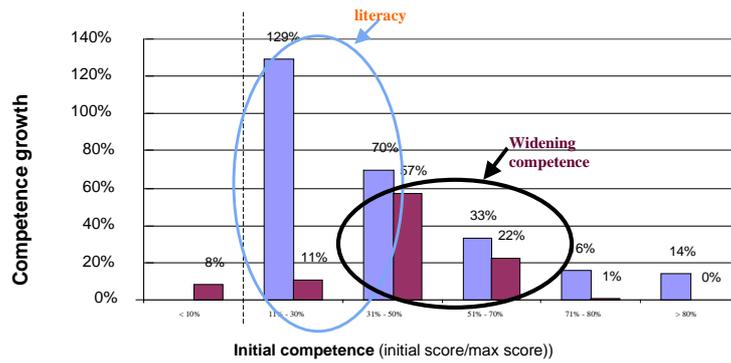
By considering the other index (difference in score over maximum achievable score), the most significant increases have been achieved by those persons who had already got some basic IT knowledge.

What does this mean? Training is improving competence whatever is the starting point.

- For people with low initial competence ECDL training has a strong literacy effect.
- For people who had already got some basic IT knowledge, ECDL training has the effect of refining, widening the competence level.

Competence improvement

FIG.3



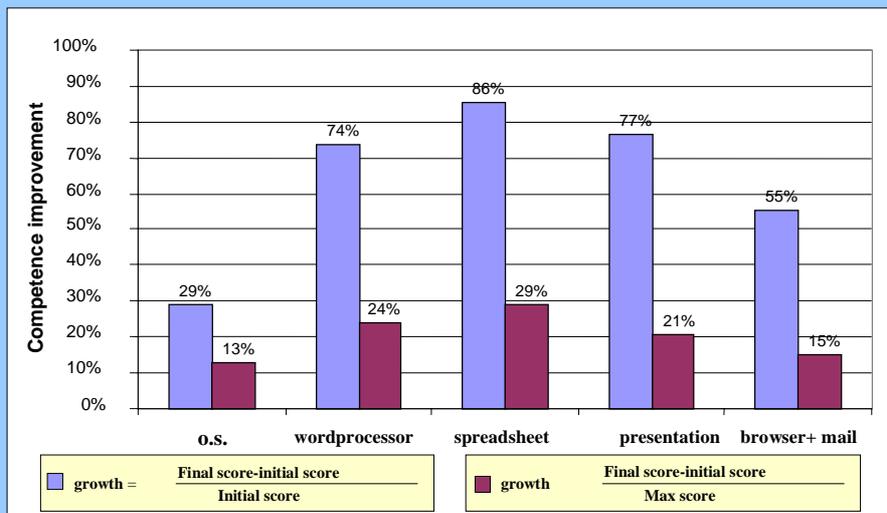
■ Growth = $\frac{\text{Final score} - \text{initial score}}{\text{Initial score}}$

■ Growth = $\frac{\text{Final score} - \text{initial score}}{\text{Max score}}$

Competence improvement differs by application.(Fig.4)

The highest growth has been registered in spreadsheet applications; then in word processing and presentation.

Competence improvement by application



As far as time reduction (in performing specific tasks) is concerned, the test was not designed to reward time savings.

- students are generally accustomed to use all the available time.
- besides, a significant reduction of time can reasonably be achieved only after a period spent on putting into practice the acquired notions.
- in any case persons having an initial knowledge at intermediate level performed the given tasks, after training, with a 10% average time reduction.

To summarize, which are the major effects of training on productivity:

- It makes possible to perform new tasks
- It makes possible to better perform given tasks
- It makes possible to save time
- It makes possible to reduce time lost because of lack of competence

Researchers tried then to estimate, in a quantitative way, the return on investment in training.

- A first item is given by the gain in productivity connected with the time saving in performing specific tasks. We assumed a 10% time reduction
So we have:

<i>Working time spent on using computers(h/w)</i>	24
<i>Time saving (after training)</i>	10%= 2,4 h/w
<i>Annual productivity increase(48 weeks x 2,4)</i>	115,2h
<i>Annual productivity gain (in €)</i>	1967€

- Another item concerns the reduction of “ the hidden computer costs”, specifically those costs connected with lack of adequate competence.

In spite of the low ratio, IT training is generally acknowledged to have a positive impact: in fact companies state that it has improved users' capability, productivity has increased, personnel is more satisfied, quality of documents is improved, personnel staff cost has been reduced; the negative effects which have been declared are the increased request for technological updating and a personal usage of computers. (Fig.6)

THE COST OF IGNORANCE

Italian manufacturing companies

Major effects of training

<u>positive effects</u>	% of companies
Improved users' capability	97%
Increased productivity	91%
More satisfied personnel	87%
Better quality of documents	80%
Less staff cost	58%

FIG.6

THE COST OF IGNORANCE

Italian manufacturing companies

Major effects of training

<u>Negative effects</u>	% companies
More demand for techn.update	63%
Personal usage of computers	45%

FIG.6