CAPACITY BUILDING WORKSHOP ON MEASURING THE USE AND IMPACT OF ICT ON SOCIAL AND ECONOMIC DEVELOPMENT 17-18 DECEMBER -TUNIS

MEASURING IMPACT OF ICT-EGYPT

EFFORTS BY MCIT-INFORMATION CENTER
SUPERVISED BY DR NAGWA ELSHENAWI, UNDERSECRETARY TO MINISTER FOR INFORMATION & STRATEGIC PLANNING

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INTRODUCTION

• A general notion that the ICT International community tend to agree upon is that: “the development of internationally comparable ICT statistics is essential for governments to be able to adequately design, implement, monitor and evaluate ICT policies”.

• While measuring infrastructure and access may be relatively less problematic, measuring impacts posts a lot of challenges. Nevertheless, it represents a great deal of the measurement process as it gives the value and meaning of ICT to the economy and society.

• ICT is a dynamic sector directly and indirectly connected to positive spillovers for countries aiming to grow and develop. Enhancing the Impact of ICTs is an efficient catalyst to faster facing the developmental challenges.

• ICT can impact various aspects of the economy and society like affecting productivity, cost effectiveness, economic growth, poverty reduction, health, education and overall development.

WHERE WE STAND..

In Egypt, despite high growth rates in the recent years the market is still far from saturation with huge areas for further growth and adding value and new policies must be developed to accommodate new demands and needs. This means measuring ICT impact is now more important than ever.
FEATURES OF MEASURING IMPACT IN ICT

- Impact has many sides: macro-level, micro-level, economic, social, environmental, direct, indirect, long-run, short-run, quantitative, qualitative, etc.
- Impact is complex because the causality direction is not always clear and sometimes is bilateral.
- Impact in ICT is even more complicated than the usual because ICT is about networking which diffuses impact in a way that might make it hard to catch.
- Impact is difficult to isolate. Context factors like human factor, education, laws and regulations may alter the way impact works.
- Impact needs an underlying infrastructure of databases and accurate figures not only within the ICT sector but across different sectors and areas which imposes a huge challenge.

PRE-REQUISITES FOR MEASURING IMPACT

- Enabling Variables:
  - Infrastructure Variables
  - Economic & Financial Variables
  - Value Added
  - Investment
  - Revenues
  - Jobs
  - Social & Political Perception measures
  - Satisfaction degree
  - Type of usage
  - Benefits and challenges
PRODUCING AN ICT DEFLATOR

- It has been suspected that the real ICT component of GDP underestimates the sector performance, because the deflator that it uses (CAPMAS Consumer Price Index (CPI)) overestimates the prices of its services.

- MCIT has conducted a project to treat this problem and to develop an alternative price index for ICT services in Egypt, that is more representative of the current ICT services in Egypt.

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PRODUCING AN ICT DEFLATOR

- The OECD’s “Guide to measuring the information society” and “Methodological guide for developing PPI for services” have been used as references for constructing the index.

- A quarterly price index for ICT services has been developed, based on a representative basket of the telecommunication services available in Egypt, starting from first quarter of the year 2002 till last quarter of 2007.

- The new index has four subcomponents:
  - Fixed line telecommunication services.
  - Mobile telecommunication services.
  - Internet services.
  - Postal services.

- Different types of services for each of those four subcomponents have been included in the index.
RESULTS

Comparison of MCIT PPI and MED Implicit Deflator 2006/07

PRODUCING AN ICT DEFLATOR

- After the four sub-indices are calculated, one composite index is compiled by giving weights to each of those four sub-indices based on the revenue generated from each of them.

- The base period for the index was fiscal year 2006/07, which is the same base period for the quarterly national accounts in Egypt. It is also the base year for the five year plan 2006/07 – 2011/12.

- Later in 2010 the deflator was revised as the composition of the Communication services basket was updated based on the new developments of the Egyptian ICT market and according to the ISIC vr4 classification.

- In early 2011/2012, the base year was changed from year (2006/2007) to be based upon year (2011/2012) in accordance to the new 5 – year national plan base year.
FDI IN ICT

Why conduct a research?

• No precise accurate figure for FDI in ICT existed
• Absence of clear methodology of calculation
• Differences in the two measures of FDI by CBE and GAFI
• CBE figure based solely on the foreign exchange records and is therefore an inadequate measure

What is FDI?

• Direct investment is providing finance or resources by a resident of foreign economy that establishes, or helps to establish, or purchases (or partly purchases) a business in Egypt.
• The FDI stock is the accumulation of investment while the flow is the annual change in FDI.

This project was conducted based on the IMF Balance of Payments Manual definitions of FDI.

FDI IN ICT

Methodology

• Adopt measures and procedures based on world’s best practice
• Adopted a clear definition of which businesses are in scope (FDI enterprises in the ICT sector)
• Defined the sample
  • Started with 16 major MNCs in the ICT sector
  • Conducted a test survey to examine feedback
• Designed the Survey
• Collected Data through:
  • Filled surveys
  • Financial Statements
  • Interviews
• The FDI flow was calculated as (new investment, reinvested earnings, and other claims and liabilities with related companies) plus revaluation of assets and liabilities that may have occurred.
POOLING DATA & ICT PORTAL

• In September 2005 MCIT-IC launched a new promising national project: "Measuring Information Society Project"

• Aims at providing the necessary, accurate and meaningful data about ICT sector in Egypt

• Measures ICT usage in different segments of the society: Households, Businesses, Government, Education, IT Clubs and internet cafés

• It collects all indicators calculated via surveys into one pool which can help experimenting the type of relationships that exist between different variables especially with the availability of the “Business Intelligence” tool

IMPACT OF ICT USAGE IN HOSPITALS

- Increased capacity of medical staff to constantly being aware of the latest updates (diseases, cures, devices)
- Increasing the efficiency of nurses, technicians, and workers at hospitals
- Better hospital response to emergencies and ambulance calls
- High speed and efficiency for illness diagnosis
- Better opportunities for R&D in the medical sector
- Better communications between all hospital departments
- Better opportunities for doctors to deal with large number of patients in less time and effort
- Forecast the average number of in-patients for future planning

Graph showing percentages of benefits of ICT usage in hospitals.
IMPACT OF ICT USAGE ON THE EDUCATION PROCESS

Increasing student's ability to accommodate the educational courses
Increasing the teachers' efficiency during the educational process
Improving the whole learning process in the schools

ICT IMPACT ON WOMEN

• MCIT is showing particular attention for
  • enabling females in the field of ICT
  • making use of their distinguished abilities and talents
  • provide the best opportunities for them to get educated
  • compete in the labor market
  • and hold high level managerial positions

• Highlights the need for measuring the ICT female statistics in Egypt

• The project aims at
  • supporting females in the field of ICT,
  • benefiting from their abilities
  • and helping them to overcome the challenges they are facing on both the educational and career levels.

• This project will consider success stories in Measuring ICT and Women in the Arab region as well as other regions.
TYPES OF IMPACT STUDIES

- Regulations
- Income levels
- Investments

ICT

Factors affecting ICT

Factors affected by ICT

MEASURING IMPACT OF ICT

BB STUDY: MEASURING IMPACT OF BB ON ECONOMIC GROWTH

- An attempt has been made by MCIT to measure the economic impacts of the Broadband in Egypt using similar macro-level econometric model proposed earlier by the World Bank in “Information and communications for development 2009” report.

- The model aims at testing the impact of Broadband Penetration and other variables on the average growth rate of the per capita GDP in Egypt.


- The last two years (2010/2011 and 2001/2012) are excluded from the analysis due to the negative impact of the political events on the economic growth in Egypt.

- Variables used in the model:
  - Dependent Variable:

  - Independent variables:
BB STUDY: MEASURING IMPACT OF BB ON ECONOMIC GROWTH

• The results show that – in Egypt - a 10% increase in broadband penetration leads to about 1% increase in the growth rate of per capita GDP.

• The results also show that both the investment rate and literacy rate have positive impact on growth rate per capita GDP. On the other hand, the global financial crisis has affected the growth rate of per capita GDP negatively.

LINKAGE STUDY: MEASURING IMPACT OF ICT ON OTHER ECONOMIC SECTORS

• Objective:
  • A study to measure the contribution of the ICT sector to output and the nature of linkages with other economic sectors
  • It presents the results of an input-output analysis of the significance of the ICT sector to the Egyptian economy
  • The methodology is based on the OECD’s study on 12 OECD countries titled “The contribution of the ICT sectors to economic growth in OECD countries: Backward and Forward Linkages”(OECD, 2008)
LINKAGE STUDY: MEASURING IMPACT OF ICT ON OTHER ECONOMIC SECTORS

Calculating Linkages and multipliers for supply and demand

- Demand Concepts:
  - *Demand Multiplier* is the change in output of domestic industries if total output of Communications increases by 1 unit.
  - *Backward Linkages* are the changes in output of domestic industries if the Communications industry stops using domestic inputs. Results are reported in percentage changes.

- Supply concepts
  - *The Supply Multiplier* is the effect on output in each sector of an extra 1 unit of total supply by the communication sector. Results are reported in units.
  - *Forward Linkages* are the changes in output if the communication sector stops supplying domestic industries. Results are reported in percentage changes.
LINKAGE STUDY: MEASURING IMPACT OF ICT ON OTHER ECONOMIC SECTORS

• The demand multiplier shows that an increase in demand on ICT output by 1 unit will increase total output by 1.23 units.
• Backward linkages show that if ICT sector stop using domestic inputs then total output will fall by 5.87%.
• The supply multiplier shows that an increase in ICT sector’s supply to other sectors by 1 unit will increase total output by 1.14 units.
• Forward linkages show that if ICT sector stops supplying inputs to domestic industries then total output will fall by 4.42%.

MEASURING IMPACT ON ICT IP STUDY: MEASURING THE IMPACT OF IPR ON ICT SECTOR

• A joint study project between MCIT and WIPO
• Provides empirical evidence in ICT sector in Egypt to guide IP policy making
• The research is concerned with “How IP impacts ICT innovation in Egypt”.
• Specifically, it sheds the light on the role of IP within ICT players characterized by a considerable number of MNCs and emerging local market.
• Aims at weighing any negative impacts against positive ones to conclude with recommendations to enhance positive spillovers and minimize negative ones.
IP STUDY: MEASURING THE IMPACT OF IPR ON ICT SECTOR

• A series of interviews took place with:
  • high rank officials in the sector (MCIT, NTRA, ITIDA, IPR office, Patent office..)
  • Training Centers and Incubators (TIEC, TIAC, SECC, ITI)
  • ICT companies (Valeo..)
  • Application developers (By2olak)
  • University (Ein Shams)

• Questions in the interview revolved around:
  • Basic awareness of IP
  • Existence of IP in business plans
  • IP Environment (Legislation, Training, specialized lawyers..etc)
  • Value of IP
  • Costs and challenges endured to obtain IP

FURTHER WORK

• MCIT-IC is working on other issues such as:
  • further compilation of the figure of FDI in the ICT sector,
  • calculating exports & imports of the sector,
  • and completion of the dynamic CGE model of the ICT sector impact; which will address different what if scenarios concerning growth & employment.

• Many challenges still exist with regard to:
  • reviewing the current methodologies,
  • developing a new set of indicators measuring various dimensions of ICT,
  • as well as reviewing the existing indicators to ensure their credibility and reliability.
# REFERENCES

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