

**UNIVERSITA DEGLI STUDI DI MILANO  
THE DEPARTMENT OF ECONOMICS, MANAGEMENT AND QUANTITATIVE  
METHODS (DEMM)**

**PhD Dissertation**

**Developing an Ecosystem Framework to Explore ICT Contribution to  
Socio-economic Development; An Empirical Analysis in MENA Region**

by

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July 2015

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**UNIVERSITA DEGLI STUDI DI MILANO**

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## **Abstract**

The information communication technology (ICT) is often considered as one of the main drivers and enablers of development in both developed and developing countries. Concerning the importance of this issue, many scholars have tried to examine the contribution of ICT to the development and to explore their interrelations. However, existing literature has covered different aspects of development, in most ICT4D (ICT for Development) studies just a particular aspect of development like economic, social, political, or cultural development have been taken into account, especially economic impacts. As ICT could have great contribution to the economic development, it could have some implicit and explicit social and political effects which could even marginalize economic impacts. So this type of ICT4D studies are fragmented in developing countries especially countries located in Middle East and North Africa (MENA) region. To narrow mentioned literature gap, there is a need for an integrated and comprehensive framework that would explain ICT contribution to various aspects of development in MENA region by taking advantage of ecosystem perspective.

On the other hand, concerning the progress and diffusion of ICT, this technology completely “hyper-connected” with its social and economic context as well as cultural and political circumstances. So, present era has been called “hyper-connected era” (GITR, 2013). This phenomenon changes interactions among various players in socio-economic context. Besides new opportunities to enhance the quality of life that resulted from hyper-connectivity phenomenon, it can introduce new threats concerning individual rights and cybercrime. To model this hyper-connectivity, developing an ecosystem framework is valuable in grasping all contextual factors, interactions and ICT key players which cause ICT-based socio-economic development. Moreover, the scarce of ICT4D research studies which have addressed both disruptive and progressive transformation impacts of ICT in MENA countries and the need for better understanding of the relationship between ICT and socio-economic development, makes this sort of study timely and worthwhile.

Hence, the main objective of this research is to explore ICT contribution to socio-economic development in MENA region countries through developing an ecosystem framework labeled as “ICT-based socio economic development (ISED) ecosystem framework”. To develop ISED ecosystem framework three major research questions are articulated. These research questions are as follows:

1. What are the main elements of ISED ecosystem framework?
2. What are the appropriate indicators to measure sub-pillars of ISED ecosystem framework?
3. How do sub-pillars of ISED ecosystem framework vary in selected countries of MENA region?

Based on both qualitative and quantitative analyses, this study investigates ICT contribution to socio-economic development across 17 selected MENA countries including: Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian, Tunisia, United Arab Emirates, and Yemen. To address first two research questions grounded theory research method and Delphi research method are employed. For third research question, guidelines of constructing composite index and correlation analysis are applied. In this way four sub-pillars concerning key ICT Entities which are interacting in a particular context have been determined. Also, six sub-pillars considering contextual factors (Capital Portfolio) which play key roles in obtaining particular level of ICT-based socio-economic development (ISED) have been defined. Moreover, the appropriate indicators in each sub-pillars were determined to measure these 10 sub-pillars in 17 MENA countries.

The empirical analyses unveil that there are a huge intra-regional gap in MENA region considering various sub-pillars of ISED ecosystem framework. Moreover, the correlation analysis shows that the 10 sub-pillars of ISED ecosystem framework are strongly and positively correlated and affect each other. The sub-pillars of ICT entity (IE) alone are not enough to allow ICTs to show fully their potential. It means that the six sub-pillars of capital portfolio (CP) that reflect the status quo of a nation plays a significant role to allow ICTs to appear their full potential. In other words, the serious weaknesses on 6 sub-pillars of contextual factors across MENA region countries hinder the overall potential of this region to leverage ICT entities to improve the level of ICT-based socio-economic development.