

Chapter 12

Information and Communication Technologies (ICTs) for Industrial Development: Challenges and Opportunities

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ABSTRACT

Applicability of ICT has gained high research interests in both developed and developing countries due to the perceived social and economic benefits. With increased benefits of ICTs, many governments have invested heavily in the emerged technologies to gain competitive advantage over others in the business. Despite the high investment by many countries around the world, yet there are inadequate documentation about the cost - benefits of the massive ICT investment in developing countries especially Africa. Hence, developing an empirical study to reveal the perceived cost - benefits of ICT investment for the industrial development is critical. This chapter, presents a comprehensive review of various studies conducted in different countries of the world detailing the extent of ICTs, barriers hindering its use and the potential benefits. To date, there is existing empirical evidence to support the role of ICTs for industrial development in the developing countries, while the benefits of ICTs for industrial development in developing countries of Asia and Africa are not well documented.

INTRODUCTION

The adoption of the ICT facilities has attracted high research interests in many countries of the world due to its role in the support of the government development goals. The widespread use of ICTs by various production industries has created more chance for the constant changes in their operation and management models such that the industrial structures are converging in terms of the new business processes and organization structures. Besides, the ICTs ensures availability of valuable information to the people all over the world, including information about the improved farming techniques, markets for raw materials, prices of agricultural inputs, greener production techniques, markets for the industrial goods and products, access to information about health, education, government services to mention a few. However, access and use of ICT facilities might be hindered by inadequate telecommunications, electrical infrastructures and high cost of ICT appliances, e.g., computers, internet connectivity and little awareness on the benefits of ICT use for the development.

Tanzania as other developing countries strives to explore the benefits of ICT adoption in the development of the manufacturing and service industries. However, there are no empirical studies conducted to quantify cost - benefits of the ICT investment in the country. Nevertheless, considering the benefits of ICTs use, and mixed reactions on the benefits of ICTs for development, establishing empirical evidence is critical for future research. Hence, this chapter presents a comprehensive review of the literatures in relation to the adoption and use ICTs in both developed and developing countries and different questions to probe future research on ICT investment and their economic benefits. The challenges and opportunities of ICT use for industrial development, especially in developing countries are addressed, and the gaps of the ICT adoption between manufacturing and service industries are also covered that stimulates further research on ICTs and industrial development.

BACKGROUND

Information technology is critical towards the development of both manufacturing and service industries. In efforts to ensure availability of Information and Communication Technology (ICT), many developed and developing countries around the world have been invested and still investing heavily in ICT. The investments have been targeting at improving organizations efficiencies of their offerings. The countries have been investing in both human (staff) and physical resources (machines and equipments). Not only that, but also, the countries have been investing in technological transfer issues to empower their countries to adopt available proven technology (Bankole et al., 2011).

Many scholars from different regions of the world, have defined technology in different ways and their definitions vary in terms of scope and perspectives but, yet they contain similar message. For instance, Scientists define technology as the branch of knowledge that deals with creation and use of technical means and their interrelation with life, society and the environment, drawing upon such subjects as industrial arts, engineering, applied science and pure science. Under the economists perspectives, technology is defined as the purposeful application of information in the design, production and utilization of goods and services and in the organization of human activities. And then, sociologists defined technology as the product or the outcome of human activity. However, in broader means, technology can be defined as the technical means through which people use to improve their surroundings and also the knowledge of using tools, machines and various scientific approaches to do tasks efficiently. Considering the defi-

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