



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



شبكة المعلومات الجامعية
@ ASUNET



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of
15-25- c and relative humidity 20-40%

بعض الوثائق الأصلية تالفة

بالرسالة صفحات لم ترد بالاصل

Cairo University

Faculty of Economics and Political Science

Department of Economics

2.19
CP

The Role of Innovation in Creating the Knowledge-Based Economy

**Thesis Submitted for the Partial Fulfillment of the Requirement for a
Master's Degree of Economics**

Presented by:

Myriam Ramzy Michel Gad

Supervisor:

Ahmed Ghoneim
Dr. Ahmed Ghoneim

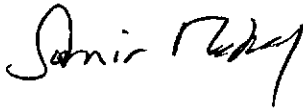
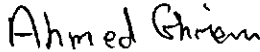
**Associate Professor, Faculty of Economics and Political Science,
Cairo University**

Cairo, 2011

The Approval Sheet

This is to certify that the committee has approved this thesis for Masters Degree in Economics with Grade: Excellent Dated: 3/1/2011 after the fulfillment of all requirements.

The Committee

Name	Position	Signature
1- Dr. Samir Makary	Professor of Economics at University of Helwan	
2- Dr. Adla Ragab	Professor of Economics and Vice Dean for Community Services and the Development of the Environment at the Faculty of Economics and Political Science	
3- Dr. Ahmed Ghoneim	Associate Professor of Economics at the Faculty of Economics and Political Science	

Acknowledgements

I would like to express my deepest gratitude to my professor and supervisor Dr. Ahmed Ghoneim, Associate Professor of Economics at the Faculty of Economics and Political Science, Cairo University, for his great effort with me, and for his knowledge, guidance and supervision during conducting this thesis.

I would also like to express my deepest gratitude to Dr. Samir Makary, Professor of Economics at University of Helwan, for accepting to preside the committee of the thesis defence.

I would also like to express my deepest gratitude to Dr. Adla Ragab, Professor of Economics and Vice Dean for Community Services and the Development of the Environment at the Faculty of Economics and Political Science, Cairo University, for accepting to participate in the thesis defence.

I would also like to thank all colleagues and employees at the faculty for the great help and assistance they provided me.

And special thanks to my family for the great support and assistance during the accomplishment of this thesis.

Name: Myriam Ramzy Michel Gad

Date and Place of Birth: 22/3/1984, Guiza

Degree: Masters in Economics

Grade: Excellent

Specialization: Economics

Supervisor: Dr. Ahmed Ghoneim

Title of Thesis: The Role of Innovation in Creating the Knowledge-Based Economy

Executive Summary

The study tackles the role of innovation in creating the knowledge-based economy. It aims to identify how the development of innovative capabilities contributes to the creation of the knowledge-based economy by examining the impact of innovation on economic growth and human development within the knowledge-based economy.

Chapter 1 reviews the theoretical literature of the economics of innovation by addressing the contribution of the classical economists, and the neoclassical and endogenous growth theorists. Smith (1776), Marx (1887) and Schumpeter (1934; 1939; 1942) argued that innovation is an endogenous process to the economic system, and is a central element to the evolution and the development of capitalism. Innovation is undertaken by the capitalists and the entrepreneurs who introduce new capital-intensive and cost-reducing technologies (new machinery) that enhance production efficiency. Moreover, they found that innovation improves the welfare of the whole society; the capitalist or the

entrepreneur would benefit from increased profits, and the labor would benefit from increased consumption and product varieties available at lower prices. Then, Solow (1956; 1957) developed the neoclassical growth model according to which capital accumulation is the main determinant of growth in the short and medium-runs, and exogenous technological change only sustains growth in the long-run. However, differently from Solow's growth model, new growth theories developed endogenous innovation-based growth models that explained differences in development levels by differences in technological levels. These models incorporated innovation as an endogenous factor that sustains long-run growth. Romer (1990), Aghion and Howitt (1992), and Grossman and Helpman (1991; 1994) argued that R&D activities are mainly undertaken by forward-looking and profit-maximizing private firms that aim to introduce horizontal and vertical innovations in order to earn private profits. They focused on the role of R&D sector, human capital, patent protection and knowledge spillovers in sustaining innovation and growth in the long-run. Hence, these theoretical arguments confirm that innovation can drive the creation and the development of the knowledge-based economy through its impact on economic efficiency, productivity, and sustained long-run growth.

Chapters 2, 3 and 4 examine the empirical impact of innovation on creating the knowledge-based economy by emphasizing its impact on economic growth and human development.

Chapters 2 and 3 examine the economic impact of innovation inputs and innovation outputs indicators. The empirical findings established a strong relationship between R&D efforts, innovation, patents protection, and economic growth. The empirical findings demonstrated that the development of innovative capabilities requires the enforcement of patent

protection that stimulates the undertaking of R&D efforts, especially by the private sector. In turn, this would result in increased patenting and scientific publications levels, and economic growth. Thus, R&D expenditures, R&D personnel, patents, patents protection, and scientific publications become key features and factors of growth within the knowledge-based economy. Empirical studies also found that developed countries are more able to enhance their innovative performance and to economically benefit from innovation than developing countries. This is explained by the fact that developed countries have stronger patent protection, higher shares of R&D performed and financed by the private sector, higher level of economic development, higher amount of financial resources and human capital allocated to R&D activities, higher demand for new innovative products, higher educational levels and quality, and higher degree of collaboration between public research institutions and the private sector that allows them to benefit from knowledge spillovers. Moreover, it was found that developing countries are more dependent upon foreign technologies; nonetheless, these countries need to enhance their domestic innovative capability and absorptive capacity in order to efficiently use and assimilate foreign technologies.

Chapter 4 analyzes the impact of innovation on human development by examining its impact on agricultural growth, nutrition, rural poverty, health and sanitation conditions, education, and environmental sustainability. It was found that agricultural R&D results in the introduction of new and improved crop varieties, new irrigation techniques, and new ways of using fertilizers. In turn, this results in increased land productivity, increased GDP per capita, and reduced poverty. The application of agricultural biotechnology results in the introduction of nutritionally enriched and genetically modified crops that

improve nutrition. Health-related R&D efforts also introduce new drugs and new medical technologies that are used for the diagnosis, treatment, and prevention of diseases. Moreover, ICTs are applied to increase the access to healthcare services and to improve their quality. In the field of education, on one hand, ICTs are applied to improve the access of poor people in remote rural areas to educational services by promoting distance education and e-learning, and on the other hand, ICTs are used to improve the quality of educational services by improving teaching methods, by promoting the training of educational personnel, by enhancing the intellectual and creative capabilities of students, and by enhancing computer literacy. Also, R&D efforts are undertaken to develop new and renewable energy technologies such as solar, wind and biogas energy technologies that address the increasing energy needs in an environmentally sustainable way. Consequently, it was found that innovation plays an important role in fostering human development, and in turn, improving the status of human development would enhance the country's ability to innovate. This implies that innovation and human development are mutually reinforcing.

Chapter 5 assesses the role of innovation in creating Egypt's knowledge-based economy. The reported data of the innovation inputs and outputs indicators in Egypt showed that Egypt's innovative performance still lags far behind that of developed countries such as the United States of America, France, Japan and South Korea, and some developing countries such as China, India and Turkey. However, the status of innovative activities in Egypt is much more similar to that of Morocco and Tunisia. Consequently, the economic impact of innovation in Egypt is expected to be weak and insignificant. This is explained by the weak patent protection, the low levels of R&D expenditures and