Chapter 79
Importance of Perpetual Government–University–Industry (GUI) Collaboration Today

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ABSTRACT

The globalization of the 21st century has changed economic and other realities far beyond the expectations of most individuals. The competitive landscape continues to be reinvented due to such factors as accelerating globalization, changing demographics, rapid technological advances, shorter business/product life cycles, innovation, and productivity. This chapter focuses on why there is a need for perpetual Government-University-Industry (GUI) collaboration, especially in advanced economies, and some options on how to achieve it effectively. The chapter commences with an introduction to the realities of contemporary globalism that have raised the need for this collaboration, and the body then outlines the status of GUI collaboration in the world's four largest economies: China, India, Japan, and the USA. There is a model example of ideal GUI collaboration in the discussion section for reference. The conclusion synthesizes the earlier discussions and provides suggestions for consideration regarding optimum GUI collaboration, most notably a list of seven "Best Practices" provided by Massachusetts Institute of Technology in the USA.

INTRODUCTION

Collaboration between industry and academia is very important to create scientific knowledge or to develop solutions for production-sourced problems (Kaymaz & Eryiğit, 2011). There is a long history of University-Industry relationships, such as the National Research Council in the USA which united scientists in research universities with industry to assist with efforts in World War I (Furman & MacGarvie, 2007). A more recent example can be found in Canada's Natural Sciences and Engineering Research Council (NSERC) which

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works with local institutions like world-class McGill University (McGill University, 2012).

However, such collaboration in geopolitically very important nations such as Poland or Turkey (Friedman, 2009) has not yet developed as much as needed to create a truly competitive advantage in contemporary globalism (GE, 2012). There is even strong evidence that such efforts are sometimes lacking in advanced economic entities such as Canada's Quebec Province (Board of Trade of Metropolitan Montreal, 2011). Due to the six significant drivers mentioned below which are outside the realm of government control (IBM Corporation, 2008) in an era of hypercompetition, it is imperative for countries to expand beyond the traditional university-industry model to include *perpetual* Government-University-Industry (GUI) collaboration for competitive advantage today—the so-called "Triple Helix" (RIETI, 2012) that will hereafter be referred to in this article as the GUI Model:

- Accelerating globalization
- Changing demographics
- Rising environmental concerns
- Evolving societal relationships
- Threats to social stability and order
- Expanding impact of technology

THE JAPANESE CASE

One leading example of the GUI Model can be found in Japan, a country with a very long history of close cooperation between government and industry more than most other nations, and this has expanded to include academia. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) cooperates heavily with the Ministry of Economic Trade and Industry (METI) and top national universities such as the University of Tokyo (Todai). Todai Research engages in a wide variety of activities including the study of particle physics, medicine, archaeology, and financial markets (University of Tokyo, 2012) that is shared with Japan's Research Institute of Economy, Trade & Industry (RIETI), a think tank established in 2001 to conduct empirical and theoretical research for national policy-making.

Examples of such research include the study of ageing and retirement in Japan, the industrial output of China, firm productivity, or global governance in trade and investment (RIETI, 2012). RIETI also works closely with another major governmental institution established in 1958, the Japan External Trade Organization (JETRO), which promotes mutual trade and investment between Japan and the rest of the world. Over the past 12 years, JETRO has shifted towards promoting Foreign Direct Investment (FDI) into Japan to help small- and medium-sized Japanese firms maximize their global export potential (JETRO, 2012). The GUI Model has been one major factor helping Japan to be the 3nd largest economy in the world (US$4 trillion) behind the USA and China (NationMaster, 2012)—*despite the huge differences in population and natural resources.*

It is worth noting that as of 2008, the latest year available for reliable figures, Japan had the 4th highest percentage of total Research & Development (R&D) expenditures in the world against Gross Domestic Product (GDP) at approximately 3.5%, following Israel, Finland, and Sweden, respectively (NISTEP, 2012, p. 16).

THE USA CASE

Still the largest and most technologically powerful nation in the world (CIA Factbook, 2013), the United States began its involvement in university-industry collaboration during the Industrial Revolution. The Bayh-Dole Act of 1980—also known as the Patent and Trademark Law Amendments Act—was a landmark event in such collaboration as it gave universities the power to control their inventions resulting from federal government-funded research (United States Patent