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Effect of Government Data Openness on a Knowledge-Based Economy

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Abstract

Many governments have recently begun to adopt the concept of open innovation. However, studies on the openness of government data and its effect on the global competitiveness have not received much attention. Therefore, this study aims to investigate the effects of government data openness on a knowledge-based economy at the government level. The proposed model was analyzed using secondary data collected from three different reports. The findings indicate that government data openness positively affects the formation of knowledge bases in a country and that the level of knowledge base of a country positively affects the global competitiveness of a country.

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Keywords: Open data; Open government; Data openness; Knowledge-based economy; Endogenous growth theory; Global competitiveness

1. Introduction

Open innovation denotes the paradigm shift of firms and governments from closed to open [5]. This paradigm shift is characterized by the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for the external use of innovation. In this study, innovation, which is defined as something original and more effective, is viewed as the application of better solutions that meet new requirements or existing market needs. This application is achieved through more effective products, services, processes, and technologies that are readily available to markets, governments and society [28]. Therefore, to perform innovation successfully, abilities to acquire knowledge, to create new knowledge, and to diffuse this knowledge to others are important [28]. The capability of knowledge-based innovation at the

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government level ultimately enhances the level of the knowledge-based economy, which acts as a driving force to improve the competitiveness of a country [7].

Recently, many governments have started to adopt the concept of open innovation, what is also called, open government. It is a type of governance in which the citizens have the right to access the documents or data of the government to enable effective public oversight. In fact, the number of open data sites in the government level increased from 77 countries in 2013 to 86 countries in 2014 [9-10]. The first objective of government data openness is to improve the reliability of the government from the political perspective by increasing transparency of the government and to create new employment and business opportunities from the economic perspective by having more participation and collaboration with the private sector [26]. The second objective is to strengthen the global competitiveness of the government through economic innovation [26]. As government data openness is expected to have a positive effect on the national economy, global countries are pursuing the open data policy. However, studies on government data openness and its effect on the global competitiveness of the government have not received much attention until now.

To fill the research gap, this study attempts to investigate the effects of government data openness on the knowledge-based economy at the government level. Specifically, this study explores the following research questions:

- *How does government data openness affect the formation of a country's knowledge base?*
- *How does the level of knowledge base of a country affect its global competitiveness?*

2. Literature Review

2.1. Open data as a foundation of the knowledge-based innovation (economy) in a country

Open data is defined as "data that can be freely used, re-used and redistributed by anyone – subject only, at most, to the requirement to attribute and share alike" [26, p.6]. Open government data denote the "data and information produced or commissioned by government or government-controlled entities that are opened up for use and reuse by public and private agents alike" [20, p.102]. These open data are provided or utilized through an open data platform, which serves as a data archive, data repository, or data infrastructure. A data repository or a data infrastructure can provide direct benefits, such as creating new research opportunities, re-purposing and reuse of data, increasing research productivity, scholarly communication/access to data, stimulating new network/collaborations, and knowledge transfer to industry, thus increasing economic productivity and growth [21]. In addition, a data repository or a data infrastructure also gives indirect benefits, such as reducing re-creation/duplication of data, reducing loss of future research opportunities, lower future preservation costs, re-purposing data for new audiences, and re-purposing methodologies [21]. Therefore, open data are ultimately utilized to create the open knowledge bases of a country. These knowledge bases of a country can serve as a foundation of a knowledge-based economy through knowledge-based innovation.

2.2. Knowledge-based economy and global competitiveness: Endogenous growth theory

In the recent global economy, the share of intellectual capital as a way to contribute to economic growth greatly increased as the portion of knowledge-based industries increases. The OECD defined the knowledge-based economy as one that is "directly based on the production, distribution, and use of knowledge and information" [25, p.3]. That is, it is an economy in which knowledge plays an important role as the main engine for economic growth. According to the Asia-Pacific Economic Cooperation (APEC) [1], the knowledge-based economy has the following characteristics: 1) generalized innovation and technological change, 2) support from effective national innovation systems (i.e., networks between public and private sectors are formed and new technologies/methodologies are created and diffused through interactions in the networks), 3) continuous