Data Center Regions and Economic Development: Implications Derived From Economic Analysis

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ABSTRACT

The amount of data generated worldwide has reached unprecedented levels, and its rate of growth continues to increase exponentially. Brought about by rapid advances in information technologies, as well as changes in lifestyles and business strategies, this explosion in the quantity of data has given impetus to a fast-growing demand for data storage, which, in turn, has paved the way for large-scale data centers. This article addresses the potential economic impact of the construction of a “data center region” in a developing country, using as a case study a development project in Konya, Turkey. The core focus of the analysis is on whether such a data center region could create positive spillovers that trigger further development in a developing region.

KEYWORDS
Data Centers, Digital Universe, Economic Development, Information Technology, Spillovers

1. INTRODUCTION

The amount of data generated worldwide has reached unprecedented levels, and its rate of growth continues to increase exponentially by virtue of rapid advances in information technologies, as well as changes in household lifestyles and business and government strategies and practices. Businesses generate data relative to internal processes and users (staff) and to external users (current and prospective clients, suppliers, etc.) to assist in strategic decision making, as well as to enhance their competitiveness. Governments generate data on all manner of public affairs, including fiscal statistics and information, and economic and social statistics, among many others. A diverse range of individuals, whether housewives or a CEO, generate and broadcast data such as photographs, videos, texts, messages and email texts, etc. Banks, stock exchanges and other financial institutions generate and disseminate financial data every second.

The explosion in the quantity of data has led to a growing need for rapid dissemination and massive storage, which has given impetus to a rapidly growing demand for storage spaces, especially large-scale data centers at a global level. These data centers have already been constructed widely in countries around the world, and many are still on the drawing boards or under construction, on their way to becoming centers to meet growing need and subsequent demand.
The key question this paper addresses is whether a region hosting a data center can create positive spillovers to trigger further development in a developing country. The growing demand for large-scale data centers can provide an economic environment where investment in a newly built data center is financially feasible, and which would create direct economic benefits to the investor in terms of cash flow, as well as to the region in the form of employment opportunities. Further along, a data center would bring in a circle of service providers that would create direct benefits to the region in terms of economic gains and prosperity. Hence, a new data center can theoretically have both a direct and indirect impact on development in the region.

This paper analyzes the question using a case study of a new data center project in the city of Konya, Turkey (Konya Plain Data Center Region-KOP DCR), by the Konya Plain Project Regional Development Administration. Recent global trends in data generation and the ensuing demand for data centers are reviewed, and the business concept of the KOP DCR project in Konya is explained. Further, the economic impact of the construction of a “data center region” as a project to aid development using this case study to illustrate the potential of a large data project in a developing country is discussed.

2. THE DIGITAL UNIVERSE: THE WORLD DATA MARKET

This section reviews the trends relating to the growth of data in today’s society and current activities to construct datacenters to store data. The latter is driven by the former. The former in turn is driven by a number of emerging factors.

2.1. The Growth of Data: The Digital Universe

The single fastest growing commodity (if it could appropriately be called so) throughout the last few decades has been information. The “digital universe,” which represents “the data we create and copy annually” (International Data Corporation-IDC, 2014) is expected to grow to 44 ZB (a zetta byte is 1000^9 gigabytes) by 2020 from an estimated 4.4 ZB in 2013. This is an estimated compound annual growth of 39%, almost equivalent to doubling every two years.

In contrast, the world economy in real terms grows at much lower rates. The World Economic Outlook database (April 2015 version) of the International Monetary Fund (IMF) projects the average real growth rate of the world economy to be 3.8% per annum between 2013 and 2020. When compared to world GDP growth rates, the growth rate of information—and thus data—will be significantly higher during the next years and perhaps decades.

In 2014, the digital universe was driven by businesses, government and consumers. According to IDC (2014), in 2013 consumers created 0.6 ZB, or 14%, of the 4.4 ZB digital universe. Businesses and government created 3.8 ZB (86%), of which 1.5 ZB was directly from businesses and the remaining 2.3 ZB was through consumers.

2.2. Sources of Growth for the Digital Universe

The reasons for the growth of the digital universe are diverse; however, they are primarily due to economic transactions and leisure activities, such as credit card expenditures and payment information registered and sent to the consumer, firm and bank; sporting and other entertainment events registered and broadcast by TV channels; photographs and videos shot, stored and distributed by individuals through the web; security cameras capturing footage almost everywhere; data on students stored by universities and schools; government data from employee payments to tax registers; and corporate information disseminated from servers to internal and/or external users.
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