Quantifying Mobility: A Proposed Index Model

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Abstract

The purpose of this research is to introduce a ranking model (Mobility Index) that can be used as to assess a city’s amenability to attract and sustain mobile technology investments. The discipline of information systems has provided a good amount of research on Internet mobile technologies and presented many models for diffusion. However, particular economic models that look at mobile technologies are still lagging. There are many studies on mobile learning and others are on mobile marketing. Since mobility is much more than apps, we contend that countries and cities will need to make themselves amenable to companies that invest in this area. However, there is no standard method of quantifying where a city ranks when it comes to it being attractive for a company. For this reason, we are proposing a mobility index.

Establishing a measuring index is a complex process as it spans many human and data factors. Starting with a minimal bias principle, we sought to gather data by polling a group of experts via a multi-phase Delphi approach. Because of lack of participation, that did plan did not work. We opted for an alternative approach. We focused on mining the literature for previous index studies to carve our index. The linear model generated here is derived from a rich index-relevant literature that focused on economic productivity and performance. The nature of this research lends itself to many different disciplines such as economics, social sciences, and technology innovation. The study uses Schumpeter’s economic innovation as its theoretical underpinnings and a neoclassical model as its operational framework. The authors believe that such a model can help assess innovations in mobile technologies, and furthermore, it can be used as a foundation for future models that can predict such innovations. A basic production function:

\[ Y_t = A_t f(K_t, Z_t N_t) \]

was used as a starting point. This growth metric formula provides a simple way of showing economic output through technological progress as well static population. This model provides the first step for further analysis of the macroeconomic environments in which we wish to index.

The proposed model has many useful uses that span various industries and organizations. The paper shares some of the possible applications in banking, retail, telecommunication, and transportation. Such potential applications illustrate the wide reach of this model. While the linear model still has more exploration (regarding \( w_1, w_2, \ldots, w_7 \), its core affords a rich framework for business, government, and higher education’s strategic planning and decision-making.