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Position paper: Benchmarking the performance of global and emerging knowledge cities

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ABSTRACT

Knowledge-based development has become a new urban policy approach for the competitive cities of the global knowledge economy era. For those cities seeking a knowledge-based development, benchmarking is an essential prerequisite for informed and strategic vision and policy making to achieve a prosperous development. Nevertheless, benchmarked knowledge-based development performance analysis of global and emerging knowledge cities is an understudied area. This paper aims to contribute to the field by introducing the methodology of a novel performance assessment model—that is the Knowledge-Based Urban Development Assessment Model—and providing lessons from the application of the model in an international knowledge city performance analysis study. The assessment model puts renowned global and emerging knowledge cities—that are Birmingham, Boston, Brisbane, Helsinki, Istanbul, Manchester, Melbourne, San Francisco, Sydney, Toronto, and Vancouver—under the knowledge-based development microscope. The results of the analysis provide internationally benchmarked snapshot of the degree of achievements in various knowledge-based urban development performance areas of the investigated knowledge cities, and reveals insightful lessons on scrutinizing the global perspectives on knowledge-based development of cities.

1. Introduction

Rapidly globalizing economic phenomenon of knowledge economy that refers to the increased economic significance of knowledge generation, commercialization and use (Cooke, 2002; Cooke & Leydesdorff, 2006), has brought a new perspective to urban planning and development (Van Winden, 2010). In recent years, so-called 'knowledge-based urban development' (KBUD) has become a considerably popular urban policy approach for cities aiming to increase their competitive edges (Huggins, 2010; Lonnqvist, Kapyla, Salonius, & Yigitcanlar, 2014), upgrading their hard and soft infrastructures (Bulu, 2011; Yigitcanlar, O'Connor, & Westerman, 2008), and improving the quality of (urban) life and place (Yigitcanlar, Velibeyoglu, & Martinez-Fernandez, 2008). Whilst the applications of KBUD policy in the global knowledge cities are widespread—e.g., Austin, Barcelona, Helsinki, Manchester, Melbourne, Singapore (Grodach, 2011; Yigitcanlar, 2009)—during the last decade KBUD has also received an increasing attention from the emerging knowledge cities—e.g., Beijing, Brisbane, Dubai, Istanbul, Kuala Lumpur, Monterrey, Shenzhen (Huggins & Strakova, 2012; Yigitcanlar & Sarimin, 2011; Yigitcanlar & Velibeyoglu, 2008; Zhao, 2010).

To date, the KBUD pursuits of emerging knowledge cities of the world are heavily dependent on lessons from their prosperous global knowledge city counterparts. However, the literature only provides a limited understanding on the KBUD processes and success and failure pathways of the global knowledge cities. Correspondingly, for emerging knowledge cities that are seeking a thriving KBUD, benchmarking is an essential prerequisite for informed and strategic vision and policy making to achieve a similar prosperous development of those global knowledge cities. Nonetheless, benchmarked KBUD performance analysis of global and emerging knowledge cities is an understudied area (Carrillo, Yigitcanlar, Garcia, & Lonnqvist, 2014).

This research paper, therefore, aims to contribute to the understudied area by scrutinizing KBUD in the context of benchmarking the performance of global and emerging knowledge cities. Following a thorough review of the literature on knowledge cities, KBUD, city benchmarking, and performance assessment, this paper introduces the methodology of a novel performance assessment model—i.e., the KBUD Assessment Model (KBUD/AM). Then, it undertakes an empirical KBUD investigation of global and emerging knowledge cities where the performance assessment model puts renowned 11 cities under the KBUD microscope—i.e.,

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Birmingham, Boston, Brisbane, Helsinki, Istanbul, Manchester, Melbourne, San Francisco, Sydney, Toronto, and Vancouver. Subsequently, the paper discusses the results of the analysis, and lastly, in the light of the findings the paper draws insightful lessons on scrutinizing the KBUD performance of cities.

2. Literature review

2.1. Knowledge cities and knowledge-based urban development

In the era of knowledge economy, sustainable economic growth and prosperity are highly associated with knowledge-based activities, where cities are critical agents of development (Cabrita, Cruz-Machado, & Cabrita, 2013). Pressures and new developments in the global knowledge economy era have prompted cities to focus their competitive strategies on (re)building and improving their knowledge bases—e.g., innovation capabilities (Gabe, Abel, Ross, & Stolarick, 2012). This shift has increased the value of knowledge-based activities in such economies (Hu, Lin, & Chang, 2005). Knowledge-based production, however, generally clusters in areas with a rich base of scientific and cultural knowledge related to specific industries (Baptista, 1996). This spatial imperative has tended to polarize such high-growth activity in a limited number of cities of the world, housing rich clusters of knowledge industries and workers and lifestyle options (Audretsch, 1998; Yigitcanlar, Baum, & Horton, 2007).

The popularity of such high-growth urban locations has led to the formation of a new city brand—i.e., knowledge city that is coined at the end of the last century. Various scholars defined this city brand as: "a city purposefully designed to nurture knowledge" (Dvir & Pasher, 2004, p. 17); "short hand for a regional [knowledge] economy driven by high value added exports created through research, technology and brain power... [and a city that] invests significantly more of the GDP in education, training and research" (Ergazakis, Metaxiotis, & Psarras, 2006, p. 6); "[a] region that bases its ability to create wealth on its capacity to generate and leverage its knowledge capabilities" (Chatzkel, 2004, p. 62), and; "a city purposefully pursuing knowledge as a means for development... in which its citizenship undertakes a deliberate, systematic attempt to identify and develop its capital system, with a balanced and sustainable approach" (Carrillo, 2004, p. 34).

Even though, today knowledge city is a highly popular city brand, as mentioned earlier there are still not that many successful examples of such high-growth urban locations. Buckley and Mini (2000) see the main reason for the limited examples of such successful knowledge cities as either the lack or failure of KBUD policies that aim for the formation of conditions for knowledge economy excellence of cities that results from the effective investment in people and ideas that create an environment where knowledge is produced, exchanged and marketed. In other words, the lack of efficient and effective KBUD planning, implementation and management processes is a reason for the limited success in knowledge city formation efforts (Yigitcanlar & Lonnqvist, 2013). This makes scholars to turn their attention on ways to overcome this deficiency by further exploring the KBUD phenomenon.

The literature emphasizes on various complementary aspects of KBUD. For example, Knight (1995) sees KBUD as a powerful urban policy for the transformation of knowledge resources into local development that provides a basis for sustainable development. In his more recent work, Knight (2008) suggests adoption of KBUD policies to boost the social learning process as a way for citizens to inform and become informed about the nature of changes occurring in their city. According to Kunzmann (2008), KBUD is a policy with sturdy operational perspective since it is a key planning approach that provides an important collaborative development framework for all parties—i.e., public, private, academic, community—in the development of future strategic and knowledge-intensive urban and regional policies for attracting and retaining knowledge workers and knowledge-intensive industries, as well as nurturing of knowledge cities. Perry (2008) points out to the differing perspectives of KBUD policy as she identifies the three dimensions as process, acquisition and product, where in each case the relative importance of knowledge and space alters. In process-driven KBUD policy, knowledge is central and subject to change as a result of external pressures; whilst in acquisition-driven KBUD policy, knowledge itself is only a small part of the process, embedded in a wider set of economic, social, and cultural processes, and; in product-driven KBUD policy, much like the process-driven one, urban is only implied and peripheral and place is central to the concept of the knowledge city. However, according to her only a combination of all three dimensions into a more holistic KBUD vision can deliver desired outcomes.

Van Wezemael (2012) emphasizes on the heterogeneous context of KBUD due to its multidisciplinary and multifaceted nature—which is a complex and fuzzy concept—limiting its globally widespread inception. He suggests KBUD policy to reach beyond a neoliberal agenda of economic progress, and be viewed as a multiplicity and offer a rich potential to seek for alternative urban futures. Further dwelling on the idea of alternative urban futures and combination of KBUD perspectives, Maldonado and Romein (2010) argue that a sustainable KBUD policy only rests on a proper balance between: (*i*) economic quality, which depends on a good business climate to produce prosperity; (*ii*) socio-spatial quality, which is based on a good people climate for all people, and; (*iii*) organizational quality, which depends on coherence and consensus in the urban region, as well as a good interaction between main stakeholders (i.e., government, university, industry) to deliver concrete projects and initiatives. In line with their argument, Yigitcanlar (2010, 2011) introduces the four broad policy domains of KBUD—i.e., economic, societal, spatial, and institutional development-and describes KBUD as the new urban development policy of the knowledge era that aims to bring economic prosperity, environmental sustainability, a just socio-spatial order and good governance to cities. Yigitcanlar and Lonnqvist (2013) refer KBUD as a policy targeting of building a place to form perfect 'climates' for 'business, people, space/place and governance', and emphasize on the balance and integration of these climates. Fig. 1 illustrates the KBUD conceptual framework.

Economic development perspective of the KBUD policy aims to place endogenous knowledge assets in the heart of economic activities as it views knowledge as a locally embedded strategic and vital resource rather than exogenous, imported and supplementary (Lever, 2002; Nguyen, 2010). It aspires to build a knowledge economy producing prosperity achieved through strong 'macroeconomic' and 'knowledge economy foundations', and thus, forming a good 'business climate' (Carrillo et al., 2014).

Societal development perspective of the KBUD policy aims to increase skills and knowledge of residents as a mean for individual and communal development and societal high-level of achievements (Frane, Tomsic, Ronecevic, & Makarovic, 2005; Ovalle, Marquez, & Salomon, 2004). It seeks to form a knowledge society producing social equity achieved through strong 'human and social capitals', and 'diversity and independency', and thus, forming a good 'people climate' (Carrillo et al., 2014).

Spatial development perspective of the KBUD policy aims to promote conservation, development and integration of both natural and built environments, work towards building a strong spatial network relationship between urban development and knowledge clusters while driving an urban and environmental development that is ecologically friendly, high quality, unique and sustainable (Knight, 1995, 2008). It pursues to develop a knowledge milieu producing sustainability achieved through 'sustainable urban