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# Multimedia Super Corridor, Malaysia: knowledge-based urban development lessons from an emerging economy

## Structured Abstract

**Purpose:** Knowledge-based urban development (KBUD) has been an effective strategy and an opportunity for emerging economies for catching up with the developed economies. The paper aims to investigate and provide insights on KBUD in the context of emerging economies.

**Design/methodology/approach:** The paper scrutinizes the Multimedia Super Corridor of Malaysia (MSC) by focusing on the planning, development and orchestration of the knowledge corridor.

**Findings:** The paper reveals a number of lessons and insights drawn from the development of MSC as the largest manifestation of KBUD initiative in Malaysia.

**Originality/value:** The paper provides lessons and recommendations on the planning, development and management of KBUD for emerging economies that are seeking a prosperous development.

**Keywords:** Knowledge-based urban development; knowledge economy; knowledge corridor; emerging economy; Multimedia Super Corridor; Malaysia

**Article Type:** Case study

## Introduction

Cities are the engines of economic growth as a large share of the innovations and entrepreneurship takes place in cities that fosters economic growth (Pancholi *et al.*, 2014). The rapid urbanization along with globalization and knowledge economy in the 21st century has made the new century be referred as the century of cities. This new era has marked the beginning of the novel advancements in the field of ICT (Cooke, 2001). The rapid development of ICTs has made a significant impact on the overall socioeconomic fabric of our cities and created an urgent need for urban planners and administrators to explore new ways of strategizing planning and development that encompass the needs and requirements of the economy and society (Castells, 1996). The era of knowledge economy further placed knowledge to be the most crucial factor for national, regional and local economic development (Hearn and Rooney, 2008; Lonnqvist *et al.*, 2014), and led to the formation of knowledge cities (Yigitcanlar, 2014a). Advances in ICTs are inevitably making societies and cities increasingly knowledge-based, responsive and dynamic in order to answer to the needs of residents and to ensure their quality of lives. The nature of the urban development has, therefore, started to change accordingly as activities in the knowledge sector have become more important and they required conditions and environments, which are different from the commodity-based manufacturing activities (Knight, 1995; Yigitcanlar and Velibeyoglu, 2008).

At this instance, knowledge-based urban development (KBUD) is seen as an effective strategy in managing urban planning and development in order to ensure that

cities are competitive in the global market (Yigitcanlar and Lonnqvist, 2013). KBUD strategy constructs a new form of urban development for the 21st century that could potentially bring both economic prosperity and sustainable socio-spatial order to the contemporary city (Yigitcanlar and Dur, 2013). In order to realize a KBUD agenda, Yigitcanlar *et al.*, (2014) suggest that cities need to capitalize more on knowledge infrastructure, concentrate on well-educated people, focus more on technological, mainly electronic, infrastructure, and make connections to the global economy.

To a great extent, KBUD was initially triggered by the success of Silicon Valley and Cambridge Science Park in the 1970s, which has led to the goal of urban development focusing on developing technopoles or industrial parks to make optimal utilization of technological resources in the 1980s (Castells and Hall, 1994). Since then, cities in the developed economies such as Austin, Barcelona, Boston, Delft, Manchester, Melbourne and Toronto have set the trends in embracing knowledge as part of the cities development strategies (Yigitcanlar *et al.*, 2008a). KBUD has become more attractive because it relates to the interest of the city administrations in regional development policies by emphasizing the development and advancement of technologies and socioeconomic activities (Kunzmann, 2009; Yigitcanlar, 2010). KBUD has caught the attention of international organizations, city administrations, research communities and practitioners during the last couple of decades. For example, major international organizations, such as the World Bank (Chen and Dahlman, 2005), the European Commission (Morgan, 2007), the United Nations (Juma and Yee-Cheong, 2005) and the OECD (Cooke and Leydesdorff, 2006), have adopted knowledge management frameworks in their strategic directions regarding global development. This array of strategies indicates the strength of the link that has emerged amongst knowledge, knowledge management and urban development (Komninos, 2002; Ergazakis *et al.*, 2006). Popularity of KBUD strategies for the pursuit of competitiveness of cities and regions is evident in the OECD (2005) perspective.

The popularization of the KBUD has fuelled localized urban development strategies and actions within numerous emerging economies across the world. Currently, KBUD has become a pursuit for cities especially from the developing nations—Dubai, Kuala Lumpur, Istanbul, Monterrey, Shenzhen—to fast track the catching up process with their developed nation counterparts (Yigitcanlar and Sarimin, 2011; Yigitcanlar and Bulu, 2014). One of the major commonality of the developing nations that are seeking KBUD—Brazil, China, Malaysia, South Korea, Taiwan, Turkey—is that city development is prioritized through the national development strategies with a top-down planning approach (Zhao, 2010). For example, in Malaysia, the shift to the knowledge economy is part of a wider national plan to achieve the objective of the National Vision for 2020 by pushing Malaysia to achieve a level at par with the developed nations in terms of economic performance and technological capability (Islam, 2010). This national top-down vision supported the development of the Multimedia Super Corridor (MSC) project, which is the most significant tangible evidence of Malaysia's commitment to knowledge economy (Shapira *et al.*, 2006). MSC is the largest KBUD attempt and manifestation amongst the emerging economies (Awang *et al.*, 2013; Hansen and Ockwell, 2014), and thus is a noteworthy case for investigation.

In our earlier research, we investigated the KBUD journey of MSC through a cohesive review of the literature (Sarimin and Yigitcanlar, 2011), undertook an empirical investigation on the KBUD achievements of a Malaysian city, Seri Iskandar

(Yigitcanlar and Sarimin, 2011), and evaluated the most prominent KBUD assessment models (Sarimin and Yigitcanlar, 2012). In this paper, we aim to build on the past research findings and provide an in depth overview of and lessons from KBUD applications and experiences within the context of Malaysia. The paper, thus, scrutinizes the ambitious MSC project. Through the comprehensive review of the literature, and government policy document content and qualitative KBUD analyses, it sheds light on the Malaysian KBUD processes. By doing so, this paper provides lessons and recommendations on the planning, development and management of KBUD for other emerging economies.

## Literature Review

### *Knowledge-based urban development in Malaysia*

KBUD is spurred by the growth of knowledge economy, which refers to the generation of income through the creation, production, distribution and consumption of knowledge and knowledge-based products (Yigitcanlar *et al.*, 2008b). Figure 1 portrays the conceptualization of KBUD. It is concerned with economic, societal and spatial development along with institutional development as an enabler of the former three (Yigitcanlar and Lonnqvist, 2013). In other words, KBUD is the new urban development paradigm of the 21st century that highlights the following key policy and developmental characteristics (Yigitcanlar, 2011, 2014b; Carrillo *et al.*, 2014):

- (i) A knowledge-based development in a certain specific context;
- (ii) A knowledge-based planning strategy;
- (iii) A set of urban knowledge-based development policy;
- (iv) A balanced and integrated development approach;
- (v) A research stream within urban and regional studies;
- (vi) An initiative or a group of initiatives;
- (vii) An urban development paradigm;
- (viii) An urban and regional vision and objective for cities to pursue;
- (ix) A balanced and sustainable development approach.

[INSERT FIGURE 1]

KBUD has been a critical approach for Malaysia to achieve her ambitious vision of becoming a developed nation by 2020 (OECD, 2006; World Bank, 2010). Malaysia's economy has been going through a structural transformation since 1990s. Transformation has established a transition pace for the economy dominantly dependent on agriculture and primary commodities to move forward to a manufacture-based, export-driven economy spurred by high technology and capital-intensive industries (Ramasamy *et al.*, 2004). Emergence of the knowledge era, where knowledge replacing physical and natural resources as the key ingredient of economic development, has provided a new platform for Malaysia to move forward to achieve a more sustainable economic and socio-spatial growth and become globally competitive. Thus, basic foundations of the knowledge economy have been set in Malaysia's national development policies. The foundation is the concentration on the key areas including human resource development, science and technology, R&D, physical info structure, and financing and equity, which are the fundamental elements of building the

knowledge economy and minimizing the digital divide (Jaffee, 1998). The shift to the knowledge economy is a part of a wider plan to achieve the objectives of the National Vision of 2020. This vision was delineated by the 3rd Outline Perspective Plan, which states that the knowledge economy to provide a platform for Malaysia to sustain a rapid rate of economic growth, enhance global competitiveness, and strengthen Malaysia's capability to innovate, adapt and create endogenous technology.

The foundation initiatives for the knowledge economy in Malaysia started in the mid 1990s with the launch of National Information and Communication Technology Agenda (NITA) and KBUD initiatives (EPU, 2001). While the NITA objectives are very much geared towards the formulation of strategies and promotion of ICT utilization and development, KBUD initiatives are aimed at creating an ideal ICT and multimedia environment as well as a global test bed to enable Malaysia in the global competition to attract talent and investment. The basic physical infrastructures for the KBUD initiatives were completed in 1999. In addition to the telecom infrastructure, there are five designated knowledge hubs, which played a critical role on the achievement of KBUD goals (Mohan *et al.*, 2004). While progressing further towards the knowledge economy, Malaysia has started the experience of such development on the knowledge accumulated from the implementation of KBUD initiatives since 1990s, which has marked the beginning of the era of KBUD in Malaysia. KBUD initiatives are seen as the most significant tangible evidence of Malaysia's commitment to the knowledge economy. The corridor development project along with NITA serves as a catalyst to expand knowledge economy, in other words, ICT-related industries, by creating an attractive and suitable environment for the development of ICT industry in Malaysia (ERSD, 2000).

The most relevant context of KBUD has been embedded in the 6th challenge of the Vision 2020 of Malaysia: "to establish a scientific and progressive society, a society that is innovative and forward looking, one that is not only a consumer of technology, but also a contributor to the scientific and technological civilization of the future" (EPU, 2006, p.39). The Vision 2020 includes the planning and provision of ICT and telecom infrastructure in a multi-billion dollar MSC. It is intended to bring Malaysia to become a united nation, with a confident Malaysian society, infused by strong moral and ethical values, living in a society that is more democratic, liberal and tolerant, caring, economically just and equitable, progressive and prosperous, and in full possession of an economy that is competitive, robust and resilient. Hence, Malaysia needs to successfully transform itself into a knowledge economy where its potential growth will be lifted to a new and higher trajectory (Huff, 2005). This offers unparalleled opportunity for economic growth and prosperity, as well as bringing the country faster to the achievement of the vision.

Unlike similar KBUD projects in other emerging economies, Malaysia is explicitly attaching aspirations for both national development and national identity to MSC. As envisioned by the Malaysian Government, MSC is not to become just a physical location as a far eastern imitation of Silicon Valley, but representing a new paradigm in the creation of value for the age of global knowledge economy (Islam, 2010). Malaysia envisioned that KBUD initiatives would be the best platform to uplift the nation to be at par with the global aspirations and procedure a unique form of KBUD that incorporates economic goals with the socio-spatial vision of the country—i.e., Vision 2020. As noted by Bunnell (2002) and Islam (2010), it is simply not an easy task to achieve the Vision

2020 without successfully addressing the following key challenges: (i) Establishing a united Malaysian nation; (ii) Creating a psychologically liberated, secure, and developed Malaysian society; (iii) Developing a mature democratic society; (iv) Forming a community that has high morale, ethics, and religious strength; (v) Establishing a mature, liberal and tolerant society; (vi) Establishing a scientific and progressive society; (vii) Establishing a fully caring society; (viii) Ensuring an economically just society, and; (ix) Establishing a prosperous society.

Taylor (2003) states that Malaysia's long-term objectives of shifting Malaysia into the knowledge era are reflected in the various development plans. The fundamental strategy is to transform the nation into an information-based society, and to move away from the previous focus on resource-based industries. In this respect, the Malaysian government recognizes the importance of shifting its investments to intellectual capital and skilled manpower. Malaysia has always placed knowledge as a top priority in economic and social development. These will be translated into the policies incorporated in the national social and economic plans such as the 5-year Malaysia Plan and Outline Perspective Plan. In the 9th Malaysia Plan knowledge development is placed as the second of five priority development thrusts (Sarimin and Yigitcanlar, 2011). As a result of these policy and plans, today foreign direct investment plays a significant role in Malaysia's economic growth from the hypermarkets to electronics and ICT investment (Ahmed, 2012).

### ***Multimedia Super Corridor of Malaysia***

Malaysia's largest KBUD initiative is the MSC project (Evers, 2011; Phelps and Dawood, 2014). It covers an area of about 750 km<sup>2</sup> and is a hub designed to promote multimedia products and services by bringing together the legislative framework and next generation telecom infrastructure. MSC aims to create a world-class urban knowledge corridor with state-of-the-art infrastructure and vibrant environment to attract international talent and investment. MSC is a cluster of seven distinctive functional zones within the Klang Valley (Figure 2). There are two knowledge hub cities—i.e., Putrajaya and Cyberjaya. While Putrajaya acts as a new federal administrative center and electronic government, Cyberjaya is a development hub of ICT and multimedia companies, professional and students. There is an airport city, which serves as a service center to support Kuala Lumpur International Airport and aeronautical services center. A nucleus for local ICT SMEs is located in the Cyber Village. Tele-suburb is the residential zones, which comprises of smart homes, smart schools and smart neighborhood local centers. High-technology park is the location for industrial related activities and they include the high-tech industry, institution and R&D zones. The research center places a collaborative cluster of academic institutions and corporate R&D at the heart of MSC (Richardson *et al.*, 2012). MSC is home to a number of multinational companies such as Shell, HP, Ericsson, BMW, HSBC, and DHL. It is the chosen location for the nation's top smart education institutions such as Limkokwing University College of Creative Technology, Multimedia University, and Cyberjaya University College of Medical Sciences.

[INSERT FIGURE 2]

In 1990s, Malaysian Federal Government conceived of a new federal administrative capital built from scratch on former oil palm and rubber plantations called Putrajaya. It

was designed to be the new home to Malaysia's Federal Government ministries and national level civil servants, host diplomatic activities, and function as a potent symbol of the nation's ambitious modernization agenda and its new progressive Muslim identity, where in 1999 the seat of government was shifted from Kuala Lumpur. Putrajaya is emblematic of the trend of former colonies to reject the colonial capital and to replace it with a city that symbolizes the state's national ideology and aspirations (Moser, 2010).

Cyberjaya was officially launched in May 1997. It is designed to provide infrastructure and facilities to support multimedia industries in MSC. Cyberjaya is planned to accommodate approximately 240,000 residents and a working population of 10,000 foreign knowledge workers. Cyberjaya consists of designated zones for housing, enterprise, open space and greenery, research and government institutions, and commerce and businesses (Evers, 2011). The development aims to create a multimedia catalyst center for global R&D and design, with the capacity to be the operational headquarters for multinational firms. In achieving a world-class status, all developments in Cyberjaya and MSC are governed as whole by a set of guidelines, comprising of local plans and urban design guidelines. Cyberjaya was particularly planned to provide the best resources for smart families is easy access to greenery and open space, and allowing relaxation from the mental strains of cerebral knowledge work (Bunnell and Coe, 2005; Evers *et al.*, 2010).

In order to make MSC more attractive to local and international investors, a number of policies were developed. The first policy was focusing on the development of physical infrastructure including Kuala Lumpur city center, international airport and integrated logistics hubs, rapid rail link to Kuala Lumpur, a smart highway and two knowledge hub cities. The second one involves the execution of laws, policies and practices, which are purposely designed to encourage electronic commerce, facilitate the development of multimedia applications. There was a policy for the development of high-capacity telecom and logistic infrastructure, which is built on up to 10-gigabit digital optical fiber backbone, and using the ATM switches to provide optic fiber connections to buildings. This network has a 5-gigabit international gateway with direct links to the USA, Europe and Japan as well as the other nations in South East Asia. The final policy highlights the need for a high-powered one-stop-shop, Multimedia Development Corporation (MDeC), to monitor the operation of MSC. Several other actors and agencies played a key role in the planning, development and management or orchestration of MSC including Cyberview and Setia Haruman Corporations, and Sepang Municipal Council (Sarimin and Yigitcanlar, 2011).

In order to encourage the establishment of knowledge industries in MSC, the Government offers a Bill of Guarantee for the MSC status companies (Carrillo *et al.*, 2014). MSC status companies are also offered both the financial and non-financial incentives. The former includes five years exemption from Malaysian income tax, renewable to 10 years, or a 100% Investment Tax Allowance for up to five years on new investments made in MSC knowledge hub cities, duty free import of multimedia equipment as well as R&D grants for local SMEs. Meanwhile there is also non-financial incentives given and they include unrestricted employment of foreign knowledge workers, freedom of ownership, freedom to source capital globally, intellectual property protection, execution of cyber laws and a healthy physical environment (Evers, 2011).



Nevertheless, Jarman and Chopra (2008) suggest that despite the Malaysian government's continued monetary investment and support, the MSC has not yet achieved its aim in developing a leading ICT hub for R&D. Rather it has been more successful in developing lower value-added business support services, which are less likely to boost the overall incomes across society (Jarman and Chopra 2008). World Bank (2010) highlights that Malaysia has had mixed success in facilitating technology transfers from multinational companies and in multiplying domestic linkages with them. Therefore, according to Ross and Ali (2011), while the MSC strategy has had some notable success, it also faces significant future challenges. For instance, Malaysian firms had to compete for this overseas talent with Singapore, where wages for ICT workers were significantly higher than those paid in Malaysia. As for Benson and Brown (2007), this further emphasizes the need for Malaysian firms to train and retain local ICT workers, given the increasing difficulties in supplementing local skill shortages with overseas workers. Furthermore, during the recent global financial crisis (GFC) the economy was negatively affected when it recorded the highest negative growth in 2009 of the middle-income countries of East Asia (World Bank, 2010).

During the GFC, Malaysia has seen innovative digital technology and economy to play a vital role in the pathway to an economic recovery, and aimed for a digital revolution that can form the foundation of a sustainable global economy. Therefore, in recent years, new restructuring and development programmes have been put into action to further boost the progress of the MSC project and the country. These programmes include the Digital Malaysia Strategy, Economic Transformation Programme, and Government Transformation Programme.

The Digital Malaysia Strategy targets to foster an ecosystem driven by ICT in targeted aspects of the economy, governance and social interaction, and aims to establish a climate that intensifies innovation, investment and talent growth for both MSC and the rest of Malaysia (MDeC, 2013). As indicated in the Digital Malaysia Strategy, through establishing a strategic roadmap (a.k.a. DM354 Strategic Roadmap), by 2020 Malaysia aims to increase the: Digital economy contribution to gross domestic product (GDP) from 12% to 17% by increasing gross national income (GNI); World Economic Forum (WEF) Global IT Report ranking from top 30 to top 20 by enhancing productivity, and; IMD World Competitiveness Yearbook ranking from 16 to top 10 by improving the standard of living (MDec, 2014). It is a critical step towards achieving a thriving KBUD. This strategy is especially underpinned by three strategic thrusts that have been identified as critical game changers: Supply to demand-focused; Consumption to production-centric, and; Low knowledge-added to high knowledge-added (for detailed info on the Digital Malaysia projects, achievements and targets visit <http://www.digitalmalaysia.my/>).

The Economic Transformation Programme is formulated with an aim of not only to help Malaysia achieve its ambitions for developed nation status by 2020, but also in response to the shift in the global economic order. The Programme focuses on both MSC and the rest of Malaysia, and incorporates two crucial elements: The 12 National Key Economic Areas in which growth is encouraged, and; The six Strategic Reform Initiatives, which comprise the policies and procedures implemented to create a vibrant business environment (PEMANDU, 2014a). This new programme builds upon and further develop previous initiatives such as MSC and aims to raise Malaysia's GNI per capita to US\$15,000, creating 3.3 million new employment opportunities, and attracting

US\$444 billion in investments by 2020 (for detailed info on the Programme visit <http://etp.pemandu.gov.my/>).

The Government Transformation Programme is the most fundamental and important one amongst the relatively newly introduced strategy and programmes as the Government and governance have a highly critical role as the enabler of all socioeconomic activities and their outcomes—including KBUD. This programme aims to radically transform the way the Government worked in order to better serve for the nation and bring prosperity. The programme is an effort by Malaysia's current Government to address seven key areas concerning the people of the country in order to achieve a prosperous development, and receive the developed nation status (PEMANDU, 2014b). The national key results areas include: Reducing crime; Fighting corruption; Improving students outcomes; Raising living standards of low-income households; Improving rural basic infrastructure; Improving urban public transport, and; Addressing cost of living (for detailed info on the Programme visit <http://www.pemandu.gov.my/gtp/>).

## Analysis and Results

We applied the KBUD framework (Figure 1) qualitatively to assess MSC's development perspectives and provide further insights on the KBUD journey of the emerging economy (for more info on the framework see Carrillo *et al.*, 2014 and Yigitcanlar, 2014c). For this study, 18 executive and senior managers from the public, private and academic sectors in MSC are interviewed. Moreover, MSC residents' community perspectives are also reflected as a result of the interviews with two community organization leaders, bringing up the interviewee numbers to 20 (Table 1). These interviews are designed as face-to-face ones that each takes about 30 to 60 minutes. Interviews are undertaken in April-June 2013 by the second-author in Malaysian. The recorded interviews later on translated into English. Table 2 lists the qualitative outputs of the performance of MSC, along with this other findings based on the literature review and in-depth interviews with the experts are presented and discussed below.

[INSERT TABLES 1 & 2]

*Economic development:* Interviewees in consensus agreed on KBUD policies for MSC in particular have been creating a vibrant business environment and introducing new legislation and incentives to attract knowledge-intensive industry and businesses. The overall founding principles and key development strategies of the area are closely linked to the central conditions of KBUD, which in turn highlight Malaysia's ongoing transformation from a developing industrial society to a knowledge society. So far, even if the progress is slow (Hassan, 2012), in MSC many KBUD conditions have proven successful in stimulating national economic growth, such as: ICT and technological infrastructure; international investment and connections to the global knowledge economy; concentrations of knowledge workers; knowledge institutions; organizational capacity. In the strategic policy thrust, which concentrates on the development of e-commerce, e-services, e-learning, e-economy and e-sovereignty, actions have been coordinated with a number of tactical policies. These include Federal Government making necessary legislations, and strategies offering both attractive financial and other incentives to local and international investors. Interview results reveal that these

incentives seem to support KBUD within MSC positively. It is noted that besides internal dynamics, physical development of MSC is also subjected to the global economic conditions. Bunnell (2004) reminds us that the physical development of MSC suffered an inevitable delay of its supporting infrastructure due to economic recession in 1997. However, until recently the overall development of MSC was progressing quite well when compared to other digital districts such as Boston and Silicon Valley (Indergaard, 2003). Nonetheless, the GFC of 2008 has brought almost similar impact of the 1997 recession to the overall development of MSC. Nevertheless, MSC is a long-term plan, and it is fully supported by the Malaysian Federal Government and highly regarded as an emerging knowledge corridor. Although the Federal Government is the architect of and has its overall say of MSC vision, its implementation is largely driven by the private sector.

*Societal development:* Interviewees advocated that current MSC KBUD policies in practice needs strong actions to establish new residential, service and social areas that are world-class to cater for the requirements of the knowledge worker families and contribute to the quality of life and place. For instance, local universities do not have much reputation due to being mostly teaching focused. Newly establishing research-oriented universities may help improve this and support private sector R&D collaboration. However, a new university to gain a reputation internationally will take several decades. Even if the country is highly multicultural due to the Federal structure of Malaysia—i.e., the Federal system bringing Malay, Chinese and Indian ethnicities under one country—having a non-democratic local governance system—i.e., mayors being selected by the State rather than elected by the public—limits public's freedom. As identified by Lepawsky (2009), cultural politics play a form of social struggle over accumulation that conditions the economic geographies of MSC. On that point interviewees highlighted that increase in the local democracy may make MSC a more attractive place for international talent, where the investment may follow. Especially, the lack of efficient mechanisms for grassroots organization growth is underlined as a risk for societal development. Furthermore, interviewees raised some criticisms that are levied pertaining to issues related to social and cultural development, that the success in this domain cannot be solely evaluated with the monetary terms such as the statistics on job creation, where the true assessment should also include intangibles such as intellectual capital, ethics, values and independence. Lastly, interviewees widely recognized the relationship between gender equality and economic advancement, which is problematic in the case of MSC (see Elias, 2011).

*Spatial development:* Interviewees raised the challenge of climate change. Thus suggested KBUD policies to focus on the development of sustainable infrastructure for green industries to flourish in the region and improve the livability and sustainable urban development. Parallel to the views of Foo (2013), interviewees pointed the direction of education and awareness campaigns for achieving sustainable outcomes. Much like economic and institutional development, in this KBUD domain top-down planning and decision-making approach is one of the biggest obstacles. For instance, Cyberview, Setia Haruman Corporations and Sepang Municipal Council act as the master planner and developer of Cyberjaya, where corporations are entrusted with the tasks of planning, designing and provision of primary infrastructure for the Cyberjaya flagship zone. However, the planning and development process does not involve a participatory mechanism to include public and interest group views and not necessarily

concern of the sustainability measures. Lepawsky (2005a) highlights that MSC is unique and interesting as Malaysia is attaching aspirations for both national development and national identity to it. Although, there are some positive outcomes, still policies on urban development in such large scale and ambitious projects take long time to materialize. Therefore, as interviewees put forward in terms of spatial development of MSC, it is still early years for a comprehensive evaluation.

*Institutional development:* Interviewees recommended the establishment of authoritative organizations that orchestrate the KBUD and deal with the execution of the development and the legal procedures to aid in the advancement of e-development applications. Organizational capacity and institutional development processes required for successful KBUD, and MSC is influenced by a number of key government appointed agencies. MDeC is a one-stop agency, charged with the responsibility of facilitating the operation and ensuring the success; Cyberview Corporation is the government agency, which acts to spearhead the planning and development as the sole proprietor and is responsible for the physical development, land administration, enterprise matters, built form, provision of amenities, and maintenance. As stated by interviewees the top-down governance mechanism limits inter-organizational collaborative work and public participation. Additionally, it is mentioned that a more democratic policy-making process and charismatic leadership are amongst the key ingredients of securing a strong community support behind the development of MSC as a prosperous knowledge corridor.

### **Lessons and Insights**

In the light of the findings, there are a number of lessons and insights can be drawn from MSC being the largest manifestation of KBUD in Malaysia and unarguably across the emerging economies.

Firstly, placing MSC as one of the national agendas is perhaps, the best and unique strategy in realizing the success of KBUD in Malaysia. While other KBUD initiatives are locally based (Barcelona, Delft, Helsinki, Melbourne, San Francisco, Toronto), MSC is positioned as part of the Malaysia's national development agenda. The visions of MSC were later translated into series of development plans, which guide the direction of the future development for the country. This is a systematic approach in ensuring that elements of KBUD are being continuously embedded in the future socio-spatial development for the whole nation. However, this top-down Federal Government support and push to the development of the knowledge corridor has its downfalls as well. For example, MSC is lacking community support due to the lack of grassroots or bottom up approaches to support the development. Perhaps a joined up approach for such scale KBUD projects would be the most suitable one. Furthermore, the absence of local government elections is a serious burden on nurturing grassroots movements, which enriches the local democracy. Fortunately, even if it is not a common practice in Malaysia, bottom-up forces in civil society have strengthened recently—but so too have top-down forces—and their impact on public services is becoming greater (Mccourt, 2012). For instance, the Government Transformation Programme to supports public participation in some of the Government service provision decisions (PEMANDU, 2014b).

Secondly, the present achievements of MSC owe much to the concerted effort by

both the public and private sectors. Although the former is the chief architect of MSC vision and the main provider for the physical and information infrastructure, its implementation is largely driven by the private sector. A high government intervention and its continuous commitment in ensuring the success of this KBUD initiative will increase the confidence of international investors. It indicates a strong commitment given by the Malaysian Federal Government against unfavorable market forces. The creation of MDeC, being a one-stop-agency to oversee the operation of MSC is seen as the institutional factor that has contributed to the success. However, even though there is a degree of public-private-partnership, triple-helix-partnership (i.e., public, private, and academia partnership) is still to be established. The lack of strong university/academia involvement in the planning, development and management of the ambitious project is a serious problem for the sustainability of the knowledge corridor.

The third lesson, learned from MSC development, is that KBUD initiative has to be rightly sited and correctly phased. The first phase of MSC, which is located within the Klang Valley, offers a unique locational advantage. MSC has a 'unique niche' and it offers a comprehensive package with attractive surroundings and good quality of urban life (Taylor, 2003). The present pool of the local knowledge workers in Kuala Lumpur, the national capital region plays a big role in the early establishment of the KBUD initiative. Klang Valley offers a vibrant urban setting in Malaysia to further enhance the physical environment. However, there is too much emphasis on the physical dimension of the corridor, such as tens and perhaps hundreds of mega-malls, where the environmental concerns are rising (palm tree farms spreading across the forest areas). In order to achieve a sustainable KBUD the corridor should pay more attention not only on the cosmetic green (urban open spaces and parks), but also preservation and enhancement of natural resources, use of green technologies, and building a more efficient public transport system. This issue may also relate to the differing meanings of 'quality of urban life' in the developed and developing nation contexts.

Fourthly, KBUD focus in MSC has been mostly on the economic and infrastructure terms. This is a common problem in almost most of the emerging economies. While investing on the development and upgrade of the physical or hard infrastructure (ICT network, buildings, roads), these nations and cities should give enough emphasize on the soft and knowledge infrastructures (education, skill development and community building initiatives) as well. In recent years Malaysian Federal Government has understood the importance of such soft and knowledge infrastructures. The development of new research universities (Yigitcanlar and Sarimin, 2011), and creativity and entrepreneurship programs among the students (Hassan, 2013) are good indications of bridging the soft and knowledge infrastructure gap in the country. However, there is still too much to do for providing a strong knowledge and social backbone to MSC and communities. Moreover, according to Azmi (2010, p.71), "it has often been expressed that the existing laws that regulate content in the print world would be equally applicable to the digital world. That would include copyright, defamation, privacy, sedition and breach of confidence. Unfortunately, the extent of the applicability of such laws set to the digital world is largely untested in the Malaysian courts".

Fifthly, in theory the multicultural nature of Malaysia is a good opportunity to support the country's KBUD journey. However in practice, maintaining healthy multiculturalism in Malaysia in general and in MSC in particular is a serious challenge. As Bunnell (2002, p.119) states, "[in recent years] economic regionalization and

globalization are shown to have fomented a ‘re-scripting’ of Malay-centered visions of the nation... The multicultural imagining of Malaysia and, in particular, its relation to the ‘wooing’ of knowledge workers possessing putative cultural affinities with Malaysia’s non-Malay communities has potentially significant political resonances”.

The sixth lesson, we highlight is to understand and appreciate the role of local actors—particularly including universities—in the planning, development and orchestration of KBUD efforts. On that matter Hassan (2013, p.7) states, “[MSC] has been criticized for not achieving its desired goals... The core success factors which played a major role in the success of Silicon Valley are the central role of Stanford University, the entrepreneurial orientation of the society, and the skilled and creative workforce. Research shows that in the case of MSC University, involvement of universities in the planning and development was absent, the entrepreneurial orientation is weak, and brain drain is a serious issue”.

Next, as indicated by Jarman and Chopra (2008), while almost every region in the world wants to attract high-end operations in R&D of top multinational firms, developing countries are currently more successful in attracting the ‘lower order activities’ of multinationals that are being outsourced and off-shored to reduce costs. In this regard, MSC is a highly advantageous location. However, establishing the required human capital to participate in innovation and knowledge generation activities—‘high order activities’—will take much longer period (at least a generation or two) than putting together the physical infrastructure that currently exists in MSC. Hence, becoming competitive at the high order knowledge economy activities requires investment in people. At this instance, the new Digital Malaysia Strategy and Economic Transformation Programme could be potentially helpful in bridging this gap, if successfully applied as indicated in the Government policy reports (see MDeC, 2014; PEMANDU, 2014a).

The seventh lesson is that in Malaysia the bringing together of planning concepts and replication of global practices in a transnational network of interests is one important way in which MSC and its governance exceed conventional boundaries of the nation-state (Lepawsky, 2005b). However, by creating urban spaces in MSC with greater physical and economic affinities, such as world-class infrastructural development, is likely to increase investment differentials between the increasingly urbanized western peninsula and the rural areas of the country—resulting in a further deepened regional disparities in the country. Thus, efficient and effective policies for a balanced development should be put in place. Perhaps the expansion of MSC boundaries to entire Malaysia is a result of such policy need.

Lastly, the future of globalization and urbanization will most likely to bring new and bigger challenges as well as opportunities to both developed and developing nation cities. With the steady progress and entering to the next phase, MSC has clearly served as the best platform for the manifestation of KBUD principles and energies to move the country forward to achieve the Vision 2020—even though it is very far from reaching the status of a developed nation. MSC is seen as a powerful instrument to support Malaysia to become more responsive to the threats and opportunities posed by economic globalization, which is market driven and technology oriented. In orchestrating a successful KBUD, a comprehensive effort from all levels of government along with academia and the public is required to necessitate the success, which is

currently lacking in MSC. Moreover, healthy knowledge sharing and management practices will further develop MSC's competitiveness (Rahman, 2011; Awang *et al.*, 2013; Hansen and Ockwell, 2014). Furthermore, as a result of the sounding alarm bells of the GFC, Malaysia has now taken a policy shift—with the Digital Malaysia Strategy, Economic and Government Transformation Programmes—from largely targeting low value-added knowledge economy activities to high value-added ones (MDeC, 2014; PEMANDU, 2014a, 2014b).

## Conclusion

In recent years growth of many of the developing nation cities, in population, geographic and GDP terms, have been much higher than their developed nation counterparts—particularly in the breakthrough nations (Sharma, 2012). This rapid development creates many challenges to urban planner, developer and administrators. Basic challenges of urban growth involve the expansion and management of services, the collection and allocation of sufficient revenues to create infrastructure and to operate services in an adequate fashion, and the creation of a coherent planning framework for the city so that increasingly diverse populations can live together civilly and productively. In addition, especially what needed is the establishment of an institutional structure that both represents the constitutive parts of the growing city; while at the same time generating adequate authority to govern effectively.

These are not easy tasks even for developed economies; they are much more challenging for cities in emerging economies, where the majority of the population is underprivileged, and public resources are, as a result, extremely limited. The current development trend will continue and cities in the developing economies will continue to see increasing rates of urbanization. Emerging economies will also continue to experience the high-level stress of facing increased demands to provide infrastructure and create jobs without much of the needed resources and/or capacity. Implementation of KBUD will, therefore, be more challenging in the emerging economy context. Putting aside the financing issues of the KBUD projects, the followings are amongst these main KBUD challenges that local governments face:

- (i) Keeping urban planning, development and management flexible and ready to adapt to new developments in the economic or social front;
- (ii) Getting the best possible technical analysis to determine the infrastructure need—hard and soft infrastructure—and delivery modes;
- (iii) Pushing the agenda of excellence—emphasizing on full democracy, transparency, trust and public participation;
- (iv) Thinking big, long-term and focusing on sustainable practices—investing on the knowledge generators, education, research, creativity and innovation;
- (v) Looking at the big picture—overall city competitiveness, labor market, environmental quality, and outstanding social, human and intellectual capital achievements—and benchmarking their progress amongst the prosperous knowledge cities and their competitors;
- (vi) Developing a knowledge agenda for the city and region to promote KBUD through strategic planning and management;
- (vii) Building on KBUD strength by investing on their endogenous assets—as well as exogenous assets, however knowing that the unique edge would only be

- established from endogenous assets;
- (viii) Engaging the public, private, academic sectors—triple-helix partnership, and beyond this quadruple helix with involvement of community and stakeholders from the public;
  - (ix) Having collaborative and participatory mechanisms to link community leaders and members, and grassroots in the policy and decision-making processes;
  - (x) Establishing contracts vertically with the Federal/Central Government and horizontally with other municipalities and the public.

For the case of emerging economies, which many of them may have similar characteristics to Malaysia, putting the KBUD initiatives as part of the national agenda is an effective initial strategy. Even though it has its downfalls of not engaging local actors in the planning, development and orchestration processes, this issue can be resolved with supporting grassroots organizations and community involvement in the KBUD projects. Along with this the development of local KBUD agenda for the individual localities is critical. Beyond this what needed is not only the development of KBUD policies, but also a continuous and sound policy monitoring in ensuring all of the KBUD vision and objectives are achieved and hence making the city more competitive in the global arena.

MSC has shown that a particular attention is needed in the aspect of intangible factors of KBUD such as the attitude and culture of the society (knowledge communities) that makes up the essence of a successful KBUD. Community input in planning and development is highly important—but to achieve such involvement requires a democratic and transparent government with education campaigns on the knowledge-based development agenda. KBUD projects, when orchestrated appropriately, have the potential to equip the city to become an international center for knowledge industries and workers as well as building a knowledge society, as long as aforementioned challenges are overcome and turned into opportunities (Yigitcanlar *et al.*, 2007).

Lastly, it should be kept in mind that cities and urban regions of the developed nations that have a high level of economic growth generally have a long history of entrepreneurship and innovation (Palmborg, 2013). Besides, KBUD is a dynamic, participatory and strategic process and requires a careful and delicate planning and orchestration, where the real success cannot happen in a short span of time. Therefore, cities and urban regions of the emerging economies need to develop a long-term vision and effective policy, plans and actions, which require continuous evaluation and revision and when needed reinventing and repositioning themselves.

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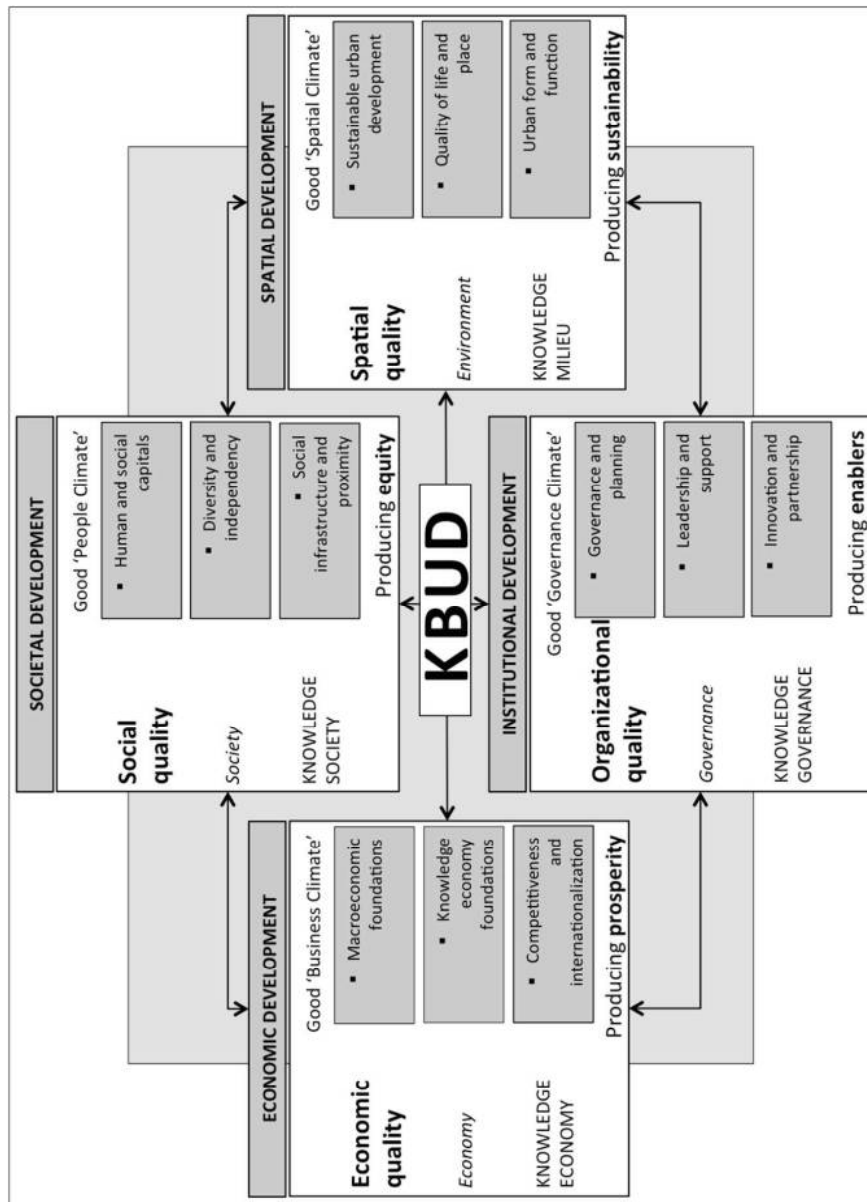


Figure 1. Knowledge-based urban development framework (derived from Yigitcanlar, 2014b)



Figure 2. Multimedia Super Corridor (derived from Phelps & Dawood, 2014)  
297x329mm (72 x 72 DPI)

**Table 1.** List of Interviewees

<b>Groups</b>	<b>Interviewee No</b>	<b>Affiliations</b>	<b>Positions</b>
GROUP 1: Public sector executive and senior managers	#1	Local Planning Authority	Director
	#2	Local Planning Authority	Assistant Director
	#3	Development and Coordination Corporation	General Manager
	#4	Development and Coordination Corporation	Manager
	#5	Land and Infrastructure Development Corporation	Director
	#6	Land and Infrastructure Development Corporation	Assistant Director
	#7	Design, Construction and Real-Estate Corporation	Manager
	#8	Design, Construction and Real-Estate Corporation	Assistant Manager
GROUP 2: Private sector executive and senior managers	#9	Multinational Corporation	Regional Manager
	#10	Multinational Corporation	Local Operations Director
	#11	Small- and Medium-size Enterprise	Chief Executive Officer
	#12	Small- and Medium-size Enterprise	General Manager
	#13	Senior Knowledge Worker and Manager	Senior Project Manager
	#14	Senior Knowledge Worker and Manager	Senior Project Manager
GROUP 3: Academic sector executive and senior managers	#15	University and Research Institute	Professor
	#16	University and Research Institute	Senior Research Fellow
	#17	Research and Development Centre	Director
	#18	Research and Development Centre	Senior Scientist
GROUP 4: Community groups	#19	Residents Association	President
	#20	Residents Association	Vice President

© Table 2. Knowledge-based urban development characteristics of MSC

SECTORS	ORGANIZATIONS	EXPERTS	ECONOMIC DEVELOPMENT			SOCIAL DEVELOPMENT		
			Macro-economic foundations	Knowledge economy foundations	Competitiveness and internationalization	Human and social capitals	Diversity and independency	Social infrastructure and proximity
Public	Local Planning Authority	#1	+	+	+	+	+	+
		#2	∩	∩	+	∩	+	+
	Development and Coordination Corporation	#3	∩	∩	+	∩	-	∩
		#4	∩	+	∩	+	∩	∩
	Land and Infrastructure Development Corporation	#5	∩	+	+	+	-	∩
		#6	-	∩	+	∩	∩	+
	Design, Construction and Real-Estate Corporation	#7	∩	+	+	+	-	∩
		#8	-	∩	+	+	-	∩
Private	Multinational Corporation	#9	∩	-	+	∩	∩	-
		#10	+	-	∩	∩	∩	-
	Small- and Medium-size Enterprise	#11	+	+	+	+	-	+
		#12	+	-	∩	+	-	∩
	Senior Knowledge Worker and Manager	#13	+	+	+	+	-	+
		#14	+	+	∩	∩	-	+
Academia	University and Research Institute	#15	∩	+	+	+	-	-
		#16	-	∩	∩	+	-	+
	Research and Development Centre	#17	∩	+	+	+	-	-
		#18	∩	+	∩	+	-	+
Community	Residents Association	#19	∩	∩	∩	∩	∩	+
		#20	+	+	+	+	∩	∩



Table 2. (Continued)

		SPATIAL DEVELOPMENT			INSTITUTIONAL DEVELOPMENT				
SECTORS	ORGANIZATIONS	EXPERTS	Sustainable urban development	Quality of life and place	Urban form and function	Governance and planning	Leadership and support	Innovation and partnership	
			*Sustainable urban development achievements	*Quality of life	*Urban density	*Dedicated development authority	*Civic and democratic leadership	*Innovation policies	
			*Sustainable transport achievements	*Urban safety and security	*Urban vibrancy	*Strategic planning	*Leadership in projects	*Support for clustering	
			*Climate change mitigation	*Cost of living	*Land use pattern	*City branding	*Community participation	*Triple helix partnership	
			*Energy efficiency	*Housing affordability	*Accessibility to urban services	*E-governance	*Knowledge society formation	*Industrial and business linkages	
Public	Local Planning Authority	#1	∞	+	+	+	∞	∞	
		#2	+	+	+	+	∞	+	
	Development and Coordination Corporation	#3	+	∞	∞	∞	∞	+	+
		#4	∞	∞	+	+	-	∞	+
	Land and Infrastructure Development Corporation	#5	+	∞	+	+	+	+	+
		#6	∞	+	+	+	+	+	∞
	Design, Construction and Real-Estate Corporation	#7	+	+	+	+	+	+	+
		#8	+	+	+	+	+	+	+
Private	Multinational Corporation	#9	-	∞	+	∞	-	∞	
		#10	∞	+	-	-	-	-	
	Small- and Medium-size Enterprise	#11	+	+	+	+	+	∞	+
		#12	+	+	+	+	+	∞	+
	Senior Knowledge Worker and Manager	#13	+	+	+	+	+	+	+
		#14	+	+	+	∞	+	+	∞
Academia	University and Research Institute	#15	∞	+	+	∞	+	∞	
		#16	+	+	∞	∞	∞	+	
	Research and Development Centre	#17	+	+	+	+	+	+	+
		#18	∞	+	+	+	+	+	+
Community	Residents Association	#19	+	∞	∞	+	+	∞	
		#20	+	∞	∞	+	+	+	

Notes: '+' Satisfactory performance, '∞' Neutral performance, '-' Unsatisfactory performance